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EFFECT OF MALLKHAMB TRAINING ON SELECTED PHYSICAL FITNESS VARIABLES AMONG COLLEGE LEVEL BOYS

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ABSTRACT

The study was to find out the effect of Mallkhamb training on selected physical fitness variables among college level boys**.** For this purpose fifteen college level boys were selected from Ramakrishna Mission Vivekananda University, faculty of general & adapted physical education & yoga, Coimbatore. The subject's age ranged from 18 to 25 years and was selected by true random group design. The experimental group consists of 15 subjects. The experimental group underwent malkhamb training for a period of six weeks and subjects were tested before and after the training programme. Standardized tests were used to test the selected variables. The data were analyzed statistically by using paired t ratio in order to find out the significant differences between the pre test and post test scores. After six weeks of malkhamb training the experimental group showed significant improvement on the selected physical fitness variables namely strength and flexibility

KEYWORDS: Malkhamb training Strength and Flexibility

Mallakhamb

Mallakhamb is a traditional Indian sport in which a gymnast performs feats and poses in concert with a vertical wooden pole or rope. The word also refers to the pole used in the sport. Mallakhamb derives from the terms malla which denotes a wrestler and khamba which means a pole. Mallakhamba can therefore be translated to English as "pole gymnastics".

History

The earliest mention of Mallkhamb can be traced back to the 12th Century where it is mentioned in the classic "MANASOLHAS" (1135 A.D.).For about seven centuries after that, the art form remained dormant until it was given a new lease of life by BALAMBHATTADADA DEODHAR, the renowned teacher of PESHWA BAJIRAO-II during the first half of the 19th century.

However, competitive Mallkhamb at the National level first made its appearance at the National Gymnastics Championships held at the Pahadganj Stadium, Delhi, in the year 1958. It was here that the Gymnastic Federation of India proposed to recognize the game and include it in subsequent National Gymnastics Championships.

In the Mallkhamb history, two places mentioned prominently are Saptashringi & Kothure. Saptashringi at Wani. Nashik is the birthplace of Mallkhamb & Kothure is the birthplace of founder of Mallkhamb - Sir Balambhatt Dada Deodhar.

Both these place, even today are very peaceful & really 'Untouched' by the perversed Modernisation. It is really worth to visit them once in a life.

Strength

Strength is the ability of muscles to overcome resistance. It is the ability to exert a force against a resistance. Type of strength needed for one kind of work may not be needed for one

kind of work may not be needed for other kind of work. For example 'power lifter' and a runner both need different kind of strength. Strength is the capability of the muscles force that comes out by constriction to overcome. Therefore three types of strength.

Maximum Strength

It is the exerted in a single maximum contraction of muscle. Maximum strength is the force of greatest potential exerted by muscle to overcome a resistance in a single maximum contraction.

Explosive Strength

Exertion of force by quick contraction of muscle is explosive strength. It is the ability to overcome a resistance with fast contraction. In the combination of speed and strength is power and explosive strength. It increases the ability to overcome resistance with a fast contraction.

The combination of speed and strength is power and explosive strength actually is the combing of speed and strength. Therefore explosive strength can also be said as power, which is off course one of the main component of physical fitness, activities involving forming or boarding essentially need explosive strength.

Strength Endurance

Exertion of force long duration is strength endurance. It is the ability to express over a longer period of time. It is quite apparent from the terminology that strength with endurance component. It is ability to overcome resistance under fatigue. Activities of longer duration need this element of physical fitness.

Flexibility

Range of motion of joints is flexibility of an individual. It is the ability to moving joints in full range of motion. It is obvious that it's because of muscles movement is performed; therefore flexibility is that quality of the muscles that enables the joints of the body to move easily through a complete range of movement. Flexibility determines the extent of extension and flexion of a joint. The type of joint determines the degree of flexibility. Flexibility is essential for good performance and it also presents performer from injuries.

Statement of the Problem

The purpose of the present study is to find out the effect of Mallkhamb training on selected physical fitness variables among college level boys.

METHODOLOGY

Independent variables

Malkhamb Training.

Dependent variables

Physical fitness variable

1. Strength
2. Flexibility

Variables And Test Item

S.No	Variables	Test Item	Units
1.	Strength	Pull ups	In counts
2.	Flexibility	Sit and reach	In centimeters

Training Programme

Experimental Group	Malkhamb training
Duration	6 weeks
Session	5 days a week, 1 session per day
Duration of one session	60 minutes

Statistical Technique

The present study was treated by **paired't'ratio**. It was considered as the most appropriate statistical technique for the present study.

TABLE-I

THE PRE AND POST RESULTS OF MEAN AND STANDARD DEVIATION & 't' RESULTS OF STRENGTH OF COLLEGE LEVEL BOYS

Variable	Test	Mean	S.D	DM	σ DM	't'
Strength	Pre Test	9.33	1.95	1.42	0.36	4.89*
	Post Test	11.13	2.94			

**Significant Level of significant was fixed at 0.05 with df 14 Table value 2.14

Table-I Indicates pre and post test of strength, mean and standard deviation of college level boys. The experimental group pre and post test mean values are 9.33 and 11.13 and standard deviation values are 1.95 and 2.94 and obtained't' value is 4.89 which is greater than table value 2.14 with df 14. The finding of the study indicates that experimental group significant improvement on strength impact of mallakhamb training of college level boys.

FIGURE-1

THE MEAN VALUES OF PRE AND POST TEST OF STRENGTH AMONG COLLEGE LEVEL BOYS

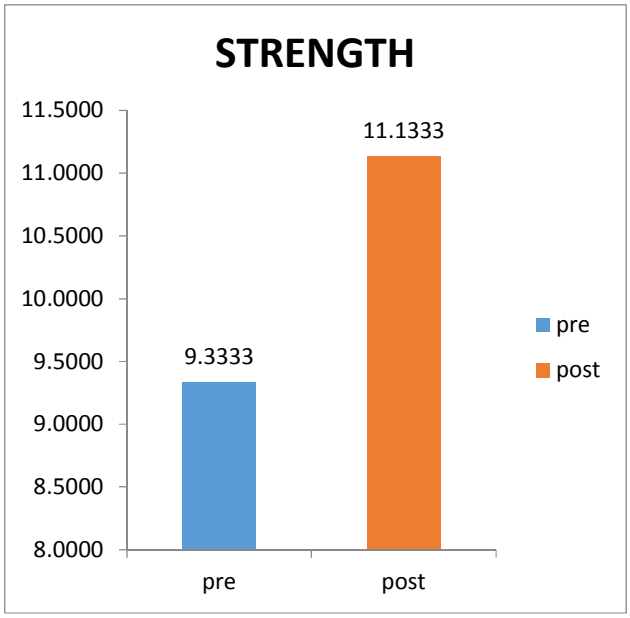

Figure:1 clearly indicate that mean values compared with pre and post test with significant improvement on strength of college level boys.

TABLE-II

THE PRE AND POST RESULTS OF MEAN AND STANDARD DEVIATION & 't' RESULTS OF FLEXIBILITY OF COLLEGE LEVEL BOYS.

Variable	Test	Mean	S.D	DM	σ DM	't'
Flexibility	Pre Test	14.74	1.82	0.29	0.77	20.56*
	Post Test	16.31	1.74			

*Significant Level of significant was fixed at 0.05 with df 14 Table value 2.14

Table-II Indicates pre and post test flexibility mean and standard deviation of college level boys. The experimental group pre and post test mean values are 14.74 and 16.31 and standard deviation values are 1.82 and 1.74 and obtained't' value is 20.56 which is greater than table value 2.14 with df 14. The finding of the study indicates that experimental group has significant improvement of flexibility on mallakhamb training of college level boys.

FIGURE-2

THE MEAN VALUES OF PRE AND POST TEST OF FLEXIBILITY OF COLLEGE LEVEL BOYS

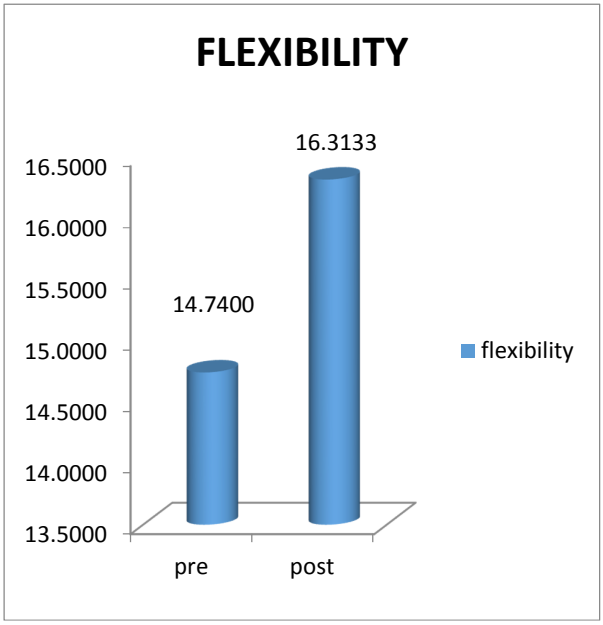

Figure:2 clearly indicate that mean values compared with pre and post test with significant improvement of flexibility on college level boys.

CONCLUSIONS

1. It was concluded that the malkhamb training group made a significant changes on selected physical fitness variables namely strength and flexibility from base line to post test.

RECOMMENDATIONS

1. The similar may be conducted in different physical variables.
2. The similar study may be conducted on female subjects instead of pole mallakhamb rope mallakhamb can be used.
3. The similar study may be conducted different variables like anthropometrical physiological, psychological and bio chemical variables.
4. The similar study may be conducted different levels of mallakhamb players (district, state and international)
5. The similar study may be conducted on different age levels.

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VARIOUS SPORTS TECHNOLOGIES ARE USED IN DEVELOPING THE SPORTS PERFORMANCE

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ABSTRACT

Sport and exercise science like most areas of life have been affected greatly by technological advancements. It is difficult to imagine modern sports and various sub-disciplines of exercise science without technologies. The use of technologies is, without exception, tainted with frustration and ambivalence. Paradoxically, it is the omnipresence of technology that has contributed most to people's inability to fully grasp the scope and depth of its influence and also uncertainty as to what role various technological advancements play in sports. Indeed, the influx of sport technologies has profoundly changed the landscape of sport and exercise science. Importantly, technology has in many ways changed what we think of as the athletic body. Therefore, this paper examines the impact of technology on sport performance, considering the theories of technology and quest for improved performance, types of sport technologies, the advantages and disadvantages of sport technologies in modern day sports. It is recommended that those managing, handling and using sport must be equipped to make wise choices on the type and use of sport technologies that would assist in the right performance.

KEYWORDS: Performance, Sport Technology, Video Technology.

INTRODUCTION

Technology is changing the face of modern sports, sports psychology and coaching. State-of-theart technologies are used to optimize performance in sports as diverse as cycling, speed-skating, swimming, golf, skiing, surfing, football/soccer ball, tennis racket and ball, running, facilities and many more. Technology in sport today is found in countless forms with each innovation has potentially positive and beneficial outcomes. Understanding the implications of sport technologies involve basic typology used in classifying, these are done in six types of sport technologies though not mutually exclusive, in some cases same technologies could fit into multiple categories. The categories include: self-technologies, rehabilitative technologies, landscape technologies, movement technologies, implement technologies and database technologies. While some of the technologies are yet to make an impact on sport, understanding of many types of sport technologies help to obtain a better perspective on which technological options athletes eventually have access to and impact on sport performance.

Types of Sport Technologies

Self -Technologies

This represents the most obvious and distributing for many people form of technology due to the potential of fundamentally and often permanently alter an athlete's physical or psychological being/make-up. Banned performance-enhancing drugs are the most recognizes of these technologies. Self-technologies encompass other kinds of athletic innovations, of which are also controversial. Others include surgical procedures, prosthetic/bionic limbs, sport psychological interventions and genetic engineering are all classified as self-technologies. The presence of certain self-technologies in sport may be seen as future such as bionic prostheses (as used by Oscar Pistorius). Scientists working on a muscle-building vaccine derived from

engineering genes already recognised the implications of their work for sport. Thus, the generic alteration of athletes or gene doping is a human genome projects to map all the genes in the human body, which can increases the muscle mass. Although it is unclear whether the long-term effects are safe or not. Under this view, technology is ethically neutral. It is neither good nor bad in itself. Rather, what matters is the end or purpose to which the technology is merely the means. While equipment such as a prosthesis or a wheelchair are fundamental for some persons with a disability to carry out their daily living (Haisma, vanDerwoude, Slam, Bergen & Bussmann, 2006; Pasquina, Bryant, Huang, Roberts, Nelson & Flood, 2006), advances in this technology, such as an energy storing prosthetic foot, make a lower limb amputee's gait faster and more efficient (Brodtkorb, Henriksson, Johanesen-munk & Thidell, 2008).

Landscape Technologies

This form of technology involves the sporting environment which include the way spectators watch sport events. Prominent landscape technology is the increase of modern multipurpose sport complexes, complete with JumboTron screens retractable domes, soaring cameras, mondo tracks and artificial grass. Bates (1996) argues that modern athletes have an intimate relationship with the technological sporting landscapes. Track and field athletes use new tactics because they can monitor their competitors on the JumboTrons coming down the home stretch. Some discus and javelin throwers even throw. The high-tech stadium is interesting in often attempt to replicate the atmosphere of other traditional style stadiums. Sport and exercise science, like most areas of life, has been affected greatly by technological advances (Wintler, 1996). In fact, it is difficult to imagine modern sports and the various subdisciplines of exercise science without the technologies that currently taken for granted. Can you imagine doing biomechanical analyses without computers, performing VO2max testing without underwater weighing, or training for Olympic-level track and field events without modern training techniques and assessment procedures? How about watching sports on television with only one or two camera angles?

Global positioning system (GPS) uses 24 satellites and ground stations as reference points to calculate geographic locations and accurately track a specific activity. For example, using a portable GPS unit provides information about altitude, distance, time, and average velocity during hiking. A graph depicting the uphill and downhill portions of the terrain is also provided. Global positioning system can be used in conjunction with accelerometers to assess and monitor physical activity (Schutz & Herren 2000; Rodriguez, Brown & Troped 2005; Troped et al. 2008). As the small receivers become more affordable and accessible to the general public (in laptop computers and mobile telephones), GPS may be more widely used to assess and promote physical activity

Implement Technologies

It includes equipment that athletes use or that they kick, hurl or otherwise propel. Other examples include football/soccer helmets equipped with warning devices and radios; shark suits that allow swimmers to move efficiently slice through the water and high-tech running shoes, golf clubs and tennis rackets. The interesting controversy involving these kinds of technologies is the use of fish-finding computers in sport fishing. This technology uses tools (pedometer or balance board), media (video, audio, or both), and social interaction (playing with another person) to persuade individuals to adopt the behaviour without their actually knowing it.

Rehabilitative Technologies

These are substances and procedures used to treat moderate to severe injuries make up rehabilitative technologies. They also include medicine used by healthy athletes who just want to counter the otherwise debilitative effects of their training regimens. Typically, these technologies are located in sports clinics and training facilities and are administered by

specialists in athletic training or sports medicine. Rehabilitative technologies include any kind of anti-inflammatory

Movement Technologies

It refers to those devices and procedures that are designed to assess the form and efficiency of an athlete's body. The most common of such include videotape analysis, although there are much more sophisticated instruments that provide detailed computerized information on an athlete's biomechanics. On like the other form of technology movement technologies are often not visible within the competitive arenas. Besides helping to improve an athlete's existing technique, the data yielded by movement techniques may also facilitate conceptual or stylistic shifts that allow the athlete to compete in a mechanically, aesthetically and kinesthetically novel manner.

The introduction of technology as profoundly changes the nature of sport and sports participants. The use of high-speed video technology (goal-line technology) wish have change the response to ball that crosses the goal line without officials' presence or sightseeing. The use of (mini) digital cameras, body-worn sensors, wireless transmission, and mobile computers has revolutionaries the way coaches and sport psychologists interact with individual players and teams. Individual body-worn sensors can yield real-time biometric player data that may inform coaching decisions during a game or may be used to analyze a player progress over time. Warburton and colleagues (2009) reported that interactive video game cycling significantly increased steady-state heart rate and energy expenditure compared to traditional cycling at constant, sub maximal workloads; the two forms of cycling (traditional and interactive video game cycling) resulted in similar ratings of perceived exertion.

Database Technologies

It involves computer innovations that allow athletes and coaches to know everything they need to know about their opponents and themselves. Database programmers have greatly affected the way that many and most professional coaches and players do their business. Informational feedback technologies (a Nike GPS sports watch; a Polar heart rate monitor) allow individual athletes to continuously track their progress on important physiological and performance parameters. Even when not training for an Olympic gold medal, technology can play a positive and supporting role, helping people to get motivated in adhering to a healthy exercise routine, or in rehabilitating after injury.

Competitive level of modern sports, especially high level of sport performance has been close to the limits of natural conditions of mankind, the idea of using the natural advantages, original training methods, to limit the movement of human beings, has long been a dream. The large number of computer technology, biological engineering, new materials and energy technology, information technology, and theory of modern science and technology have been widely used in sports fields, making the face of sports and sports training environment greatly changed and improved, training methods updated, site equipment improved, greatly improved the level of competitive sport, the wide range of functions and effects of sports therefore has been fully exhibited.

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COMPARISON OF ENDURANCE AND ARM STRENGTH AMONG UNIVERSITY COLLEGE OF ENGINEERING BIT CAMPUS WOMEN FOOTBALL AND HOCKEY PLAYERS

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ABSTRACT

Fifteen hockey and fifteen football players who were selected from University College of Engineering BIT Campus, Tiruchirappalli male hockey and football players were selected as subjects for this study and their age ranged between 19 and 25 years. The level of confidence set for the significance was 0.05 levels. The physical fitness variables of hockey and football players were used for statistical analysis. Comparing the two means of physical fitness of hockey and football players, it was found that there was an appreciable variation in it. This difference in the means is due to the nature of the events and it was tested for significant. The null hypotheses were put into test by subjecting the difference in the physical fitness of hockey and football players for statistical significance by calculating' ratio.

KEYWORDS: Soccer, Fitness, Shuttle Run and Cardio-respiratory endurance

INTRODUTION

Sport is important in other ways when one's body works better his mind works better, his brain and his body are interrelated. Sports allows you to low of tension, to forget your problems for a while, and to go out and have a good time, no matter when other pressures one may be under in his life.Fitness is the deciding factor in our daily tasks and it decides the effectiveness of the activities we prefer. So, the athlete's seeking a place in competitive sports must admit the physical fitness first and motor fitness next, he principle in the strength training is to overcome a given resistance, be it in the form of an apparatus, sports implement or one's own body weight. But for success, one must train with the use of a specific type of progressive resistance exercise to suit the individual needs and kind of sports concerned.The origin of the word hockey is obscure. Hockie was forbidden in the Statutes of Galway in 1527. The word may derive from comocke and the Anglo-Saxon word for 'hook', hok; alternatively, it may come from the French word for a shepherd's crook, hocquet.The game had been taken to India by British servicemen, and the first clubs formed there in Calcutta in 1885.

The Beighton Cup and the Aga Khan tournament had commenced within ten years. Entering the Olympic Games in 1928, India won all five of its games without conceding a goal, and went on to win in 1932 until 1956, and then in 1964 and 1980. Pakistan won in 1960, 1968, and 1984. The International Hockey Federation has continued to grow and now consists of 112 member associations, spread around five continents.Origin of the soccer is shrouded in mystery. May be it started with a man and something when that man was kicking and something around and when another man cut in and tried to take that something from him.The game football is one of the most interesting and strenuous games played by thousand of people all around the world. Many countries claim's that this game has been played in their countries from very ancient times in some form or other. It is gathered that in ancient china, a game resembles football was played with a ball made of eight stripes and stuffed with hair. The ancient Greeks played a game called "EXPISKUROS" in which the ball was played by kicking. The ancient Romans also played a game called "HARPASTUM" which resembled the game

football. The game soccer was introduced in India in 19th century. In its early days it looks on form of the battle against the foreign rulers.

METHODOLOGY

Fifteen hockey and fifteen football players who were selected from University College of EngineeringBIT Campus,Tiruchirappalli male hockey and football players were selected as subjects for this study and their age ranged between 19 and 25 years. The level of confidence set for the significance was 0.05 levels. The physical fitness variables of hockey and football players were used for statistical analysis. Comparing the two means of physical fitness of hockey and football players, it was found that there was an appreciable variation in it. This difference in the means is due to the nature of the events and it was tested for significant. The null hypotheses were put into test by subjecting the difference in the physical fitness of hockey and football players for statistical significance by calculating' ratio.

Selection of Variables

Based on the general conscious, the following variables were taken up for the study:

1. Endurance
2. Arm Strength

Selection of Tests

The present study was undertaken to analyse the selected physical fitness such as cardio-respiratory endurance and arm strength of hockey and football players. The investigator analysed various Literatures, has consulted the experts in physical education and selected the test items, which were standardized and most suitable for the purpose of this study. They were presented in Table-I.

TABLE-I
TESTS SELECTION

SL.No	Variables	Test Items
1	Endurance	Cooper12min run/walk test
2	Arm strength	Pull-ups

TABLE-II
INTRACLASS CORRELATED CO-EFFICIENT VALUES ON SELECTED CRITERION VARIABLES

SL.No	Test	'R' value
1	Cardio-respiratory endurance	0.93*
2	Arm strength	0.89*

Statistical Technique

The following statistical procedure was followed to examine the difference in physical and physiological fitness such as speed, agility, flexibility, resting pulse rate and breath holding time among sportsmen and non-sportsmen.According to Clarke and Clarke the't' ratio of the difference between the means and standard error of the differences between means were calculated. The't' ratio is necessary for a given level of significance andthe't' ratio applied small sample.

ANALYSIS OF DATA AND RESULTS OF THE STUDY

TABLE-III

THE MEAN, STANDARD DEVIATION AND'T' RATIO ON ENDURANCE AND ARM STRENGTH OF UNIVERSITY WOMEN FOOTBALL AND HOCKEY PLAYERS

Variables	Soccer players		Hockey players		't' ratio
Endurance	2785.19	129.85	2543.51	122.01	8.10*
Arm strength	13.51	0.98	16.20	1.88	8.18*

*Significant at 0.05 level of confidence. The table value for the significance is 2.04.

Table III indicates the mean, standard deviation and't' ratio of Endurance and Arm strength of University women soccer and Hockey players. The values of mean & S.D were 9.16 +0.93, 2785.19 + 129.85 and 13.51 + 0.98 for soccer players respectively. The values of mean & S.D were 10.20 + 0.81, 2543.51+ 122.01 and 16.20 + 1.88 for Hockey players respectively. The "t" ratio for these values was 6.54, 8.10 and 8.18 respectively.

The obtained "t" ratio for Endurance & Arm strength was found significant at 0.05 level of confidence. Since these values were higher than the required table value of 2.04

DISCUSSION ON FINDINGS

1. In the cardio-respiratory endurance the football players have better performance than the hockey players.
2. The result of the study shows that the hockey players have better arm strength than the football players.

CONCLUSIONS

1. The result of the study revealed that the football players have better Cardio-respiratory endurance than the hockey players.
2. After analyzing the results, it was concluded that the hockey players have better Arm strength than the football players.

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ISOLATED COMBINED EFFECTS OF SPECIFIC DRILLS WITH TRAINING GADGETS ON SELECTED ON PHYSIOLOGICAL AND SKILL PERFORMANCE VARIABLES OF TENNIS LEARNERS

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ABSTRACT

Technology Aided coaching's are man-made means developed to reach human interests or goals in or relating to a particular sport. Technology in sports is a technical means by which sportsmen attempt to improve their training and competitive surroundings in order to enhance their overall athletic performance. It is the knowledge and application of using specialized equipment and the latest modern technologies to perform tasks more efficiently. To achieve this purpose total forty five (N=45) subjects selected from Levo Sports academy, Coimbatore. The subject's age were ranged between 18 to 21 years. The subjects equally divided in to three groups Group-I specific drills training group (n-15) (SDTG), Group-II specific drills with training gadgets group-n-15 (SDWTG), Group-III acted as control group The selected criterion variables are physiological variable vital capacity, skill performance variables were forehand drive and backhand drive. The criterion variables were measured with vital capacity measured with wet spiro meter skill performance variables measured with Hewitt forehand and backhand drive test. The experimental groups were underwent training specific drills, specific drills with training gadgets ball feeding machine up to 12 weeks, evening 5 pm to 6 pm. Pre and post test data collected were treated with ANCOVA. If obtained 'F' ratio was significant scheffe's post hoc test used. Level of significant was fixed at 0.05. The significant improvement of experimental groups on selected physiological variables vital capacity, forehand and backhand drive of tennis learners due to specific drills with training gadgets. The better training (group –II)effects for improving the physiological variable were vital capacity and skill performance variables forehand and backhand for tennis learners compared with other training group and control group. The control group did not improve selected criterion variables for tennis learners.

KEY WORDS: Specific Drills, Training Gadgets and Vital capacity

INTRODUCTION

Technology Aided coaching's are man-made means developed to reach human interests or goals in or relating to a particular sport. Technology in sports is a technical means by which sportsmen attempt to improve their training and competitive surroundings in order to enhance their overall athletic performance. It is the knowledge and application of using specialized equipment and the latest modern technologies to perform tasks more efficiently. Examples of sporting technologies include tennis ball feeding machine, Pole vault poles, athletic sports gear (clothing and footwear), advanced computer stimulations and motion capture. Recent developments in sporting technologies have created a variety of products aimed at improving and increasing athletic performance **(Prashant and Prabhat 2014).** Athletic health can be maintained and observed, and injuries treated, through the production of modern sporting technologies such as heart rate monitors, pedometers and body-fat monitors. Through this, a greater deepened knowledge of the human body and its potential has been recognized, allowing athletes to train and compete in sports to a much older age. Participant safety at all times has also been made possible through the development of certain sporting equipment, such as helmets and body protection which are used in boxing and ice hockey to help prevent injuries.

Modern sporting technologies have also made competition judging easier and more accurate, and spectator interest and excitement is enhanced by sports performance. Training gadgets are used in the study thera band and ball feeding machine to in the study to find out the training effects. The purpose of the study was find out The purpose of the study was to find out isolated combined effects of specific drills with training gadgets on selected on physiological and skill performance variables of tennis learners.

Statement of Problem

The purpose of the study was to find out isolated combined effects of specific drills with training gadgets on selected on physiological and skill performance variables of tennis learners.

METHODOLOGY

To achieve this purpose total forty five (N=45) subjects selected from Levo Sports academy, Coimbatore. The subjects age were ranged between 18 to 21 years. The subjects equally divided in to three groups Group-I specific drills training group (n-15) (SDTG), Group-II specific drills with training gadgets group-n-15 (SDWTG), Group-III acted as control group The selected criterion variables are physiological variable vital capacity, skill performance variables were forehand drive and backhand drive. The criterion variables were measured with vital capacity measured with wet spiro meter skill performance variables measured with Hewitt forehand and backhand drive test. The experimental groups were underwent training specific drills, specific drills with training gadgets ball feeding machine up to 12 weeks, evening 5 pm to 6 pm. Pre and post test data collected were treated with ANCOVA. If obtained 'F' ratio was significant scheffe's post hoc test used. Level of significant was fixed at 0.05.

Training Program

Week	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
	D	MC	D&MC	D	MC	D&MC	D	MC	D&MC	MC	MC	D
Load	50	40	55	55	45	55	60	50	60	55	60	65
Set	8	6	5	6	6	4	6	4	3	4	3	5
Rep	3	6	5	5	5	5	7	4	4	3	3	9

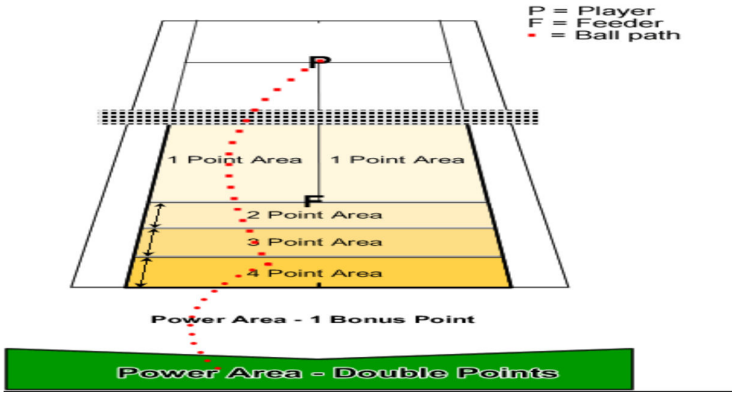
*D➔ Specific Drills with Partner *D &MC Specific Drills with Machine feeding Drills

*MC➔Machine Feeding Drills

Specific drills are

i. forehand to forehand,
ii. backhand to backhand,
iii. backhand to forehand
iv. forehand to backhand
v. Cross court shots
vi. Down the line shots

Procedure



RESULTS

TABLE-I
ANALYSIS OF COVARIANCE ON VITAL CAPACITY OF EXPERIMENTAL TRAINING GROUP AND CONTROL GROUP OF TENNIS LEARNERS

Test	Source of Variances	Sum of Squares	df	Mean Squares	Obtained 'F' Ratio
Pre Test	**Between**	0.003	2	0.002	0.013
	Within	4.936	42	0.118	
Post Test	**Between**	1.335	2	0.668	7.60*
	Within	3.689	42	0.088	
Adjusted Post Test	**Between**	1.30	2	0.650	12.10*
	Within	2.202	41	0.054	

* *Significant*

(The table value for significance at 0.05 level of confidence with df 2 and 42 and 2 and 41 are 3.22 and 3.21, respectively).

It is clear from the table-I that the pre test ($F = 0.013$, $p > 0.05$) showed no significant difference in vital capacity. However, post ($F = 7.60$ $p < 0.05$) and adjusted post test ($F = 12.10$, $p < 0.05$) value showed significant difference. The covariate is significant, indicating that vital capacity before training no significant improvement and after 12 weeks of combined effect of specific drills with training gadgets training effects had significant improvement of vital capacity due to training effects as statistically proved. Since, adjusted post test mean also significant.

TABLE-II
SCHEFFE'S TEST FOR THE DIFFERENCE BETWEEN THE ADJUSTED POST-TEST PAIRED MEANS OF VITAL CAPACITY

Adjusted Post-test Means			Mean Differences	Confidence Interval
Specific Drills Training Group	Specific Drills with Training Gadgets Training Group	Control Group		
3.35	3.61	-	0.26*	0.20
3.35	-	3.21	0.14	0.20
-	3.61	3.21	0.40*	0.20

* Significant at 0.05 level of confidence.

The table -II shows the adjusted post-test mean difference of vital capacity between specific drills training group and specific drills with training gadgets training group and specific drills training group and control group, specific drills with training gadgets training group and control group are 0.26, 0.40 and 0.40 respectively, which were greater than 0.20 at 0.05 level of confidence. The results of the study showed that, specific drills training group and specific drills with training gadgets training groups has significantly differed on vital capacity when compared to control group, but between the training significant differences was found. Hence it was concluded that specific drills with training gadgets training group was better method to increase the vital capacity.

FIGURE-1
THE MEAN VALUES ARE EXPERIMENTAL AND CONTROL GROUPS OF VITAL CAPACITY OF TENNIS LEARNERS

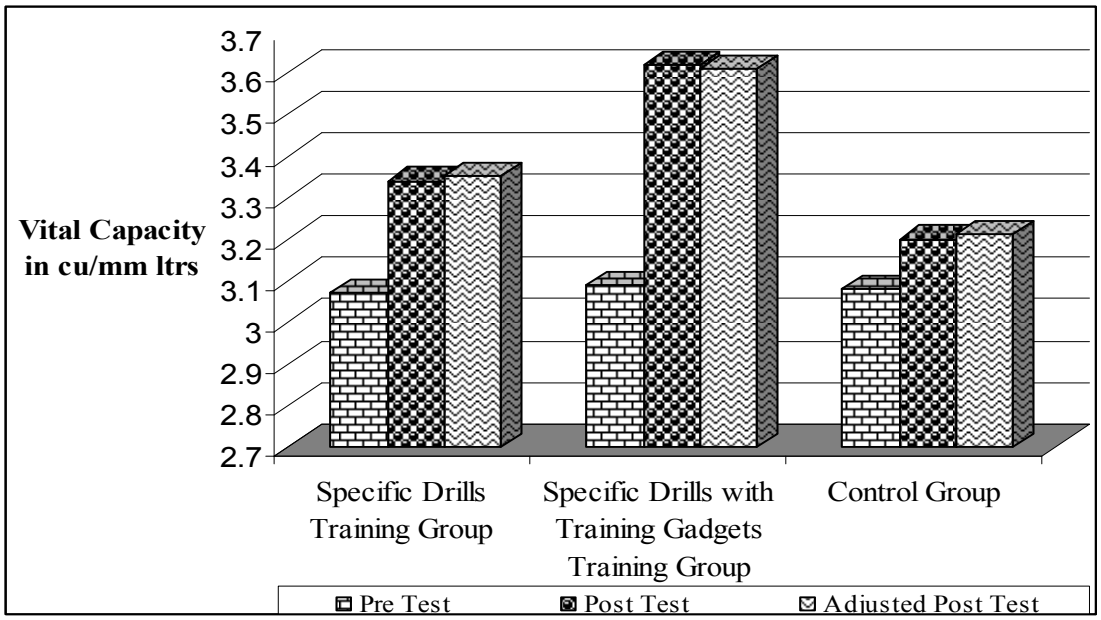


Figure:1 Clearly indicates that experimental groups better improved compared with control group are vital capacity of the tennis learners.

TABLE-III
ANALYSIS OF COVARIANCE ON FOREHAND DRIVE OF EXPERIMENTAL TRAINING GROUP AND CONTROL GROUP OF TENNIS LEARNERS

Test	Source of Variances	Sum of Squares	Df	Mean Squares	Obtained 'F' Ratio
Pre Test	**Between**	0.311	2	0.156	0.018
	Within	355.467	42	8.463	
Post Test	**Between**	550.578	2	275.289	37.80*
	Within	305.867	42	7.283	
Adjusted Post Test	**Between**	547.004	2	273.502	60.03*
	Within	186.794	41	4.556	

* *Significant*

(The table value for significance at 0.05 level of confidence with df 2 and 42 and 2 and 41 are 3.22 and 3.21, respectively).

It is clear from the table-III that the pre test ($F = 0.018$, $p > 0.05$) showed no significant difference in forehand drive. However, post ($F = 37.80$ $p < 0.05$) and adjusted post test ($F = 60.03$, $p < 0.05$) value showed significant difference. The covariate is significant, indicating that forehand drive before training no significant improvement and after 12 weeks of combined effect of specific drills with training gadgets training effects had significant improvement of forehand drive due to training effects as statistically proved. Since, adjusted post test mean also significant.

TABLE-IV
SCHEFFE'S TEST FOR THE DIFFERENCE BETWEEN THE ADJUSTED POST-TEST PAIRED MEANS OF FOREHAND DRIVE

Adjusted Post-test Means			Mean Differences	Confidence Interval
Specific Drills Training Group	Specific Drills with Training Gadgets Training Group	Control Group		
31.60	36.61	-	5.01*	1.85
31.60	-	28.11	3.49*	1.85
-	36.61	28.11	8.50*	1.85

* Significant at 0.05 level of confidence.

The table -IV shows the adjusted post-test mean difference of forehand drive between specific drills training group and specific drills with training gadgets training group and specific drills training group and control group , specific drills with training gadgets training group and control group are 5.01, 3.49 and 8.50 respectively, which were greater than 1.85 at 0.05 level of confidence. The results of the study showed that, specific drills training group and specific drills with training gadgets training groups and control group has significantly differed on forehand drive when compared to control group, but between the training significant differences was found. Hence it was concluded that specific drills with training gadgets training group was better method to increase the forehand hand drive.

FIGURE-2
THE MEAN VALUES ARE EXPERIMENTAL AND CONTROL GROUPS OF FOREHAND DRIVE OF TENNIS LEARNERS

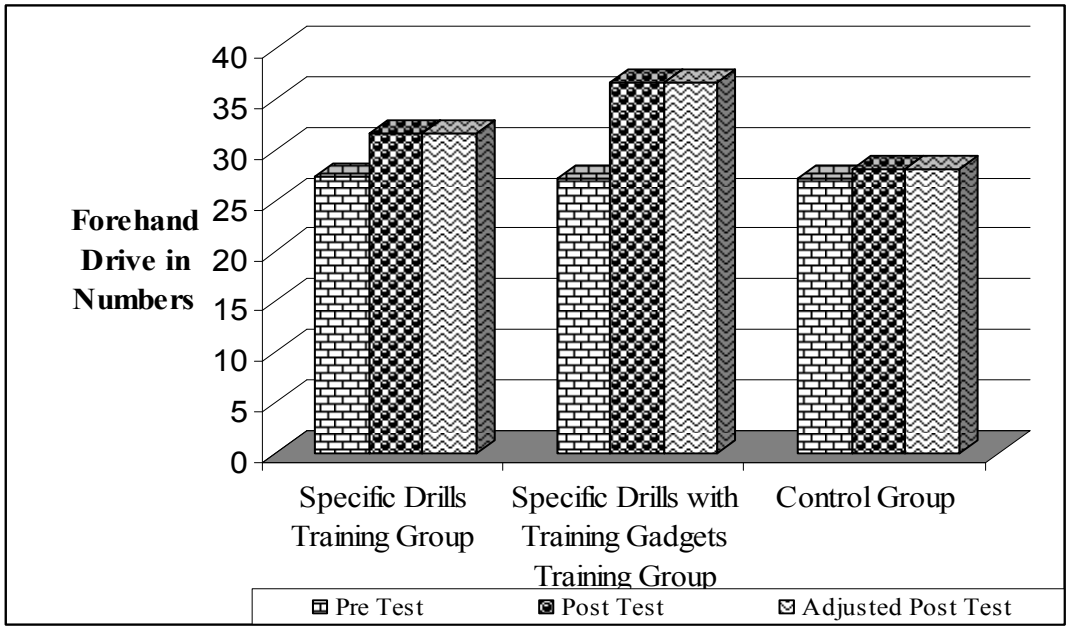


Figure:2 Clearly indicates that experimental groups compared with control group with significant improvement on forehand drive of the tennis learners.

TABLE-V
ANALYSIS OF COVARIANCE ON BACKHAND DRIVE OF EXPERIMENTAL TRAINING GROUP AND CONTROL GROUP OF TENNIS LEARNERS

Test	Source of Variances	Sum of Squares	Df	Mean Squares	Obtained 'F' Ratio
Pre Test	**Between**	0.312	2	0.156	0.020
	Within	318.80	42	7.590	
Post Test	**Between**	504.578	2	252.289	43.59*
	Within	243.067	42	5.787	
Adjusted Post Test	**Between**	513.785	2	256.892	54.38*
	Within	193.688	41	4.724	

* *Significant*

(The table value for significance at 0.05 level of confidence with df 2 and 42 and 2 and 41 are 3.22 and 3.21, respectively).

It is clear from the table-V that the pre test ($F = 0.020$, $p > 0.05$) showed no significant difference in backhand drive. However, post ($F = 43.59$ $p < 0.05$) and adjusted post test ($F =$ 54.38, $p < 0.05$) value showed significant difference. The covariate is significant, indicating that backhand drive before training no significant improvement and after 12 weeks of combined effect of specific drills with training gadgets training effects had significant improvement of backhand drive due to training effects as statistically proved. Since, adjusted post test mean also significant.

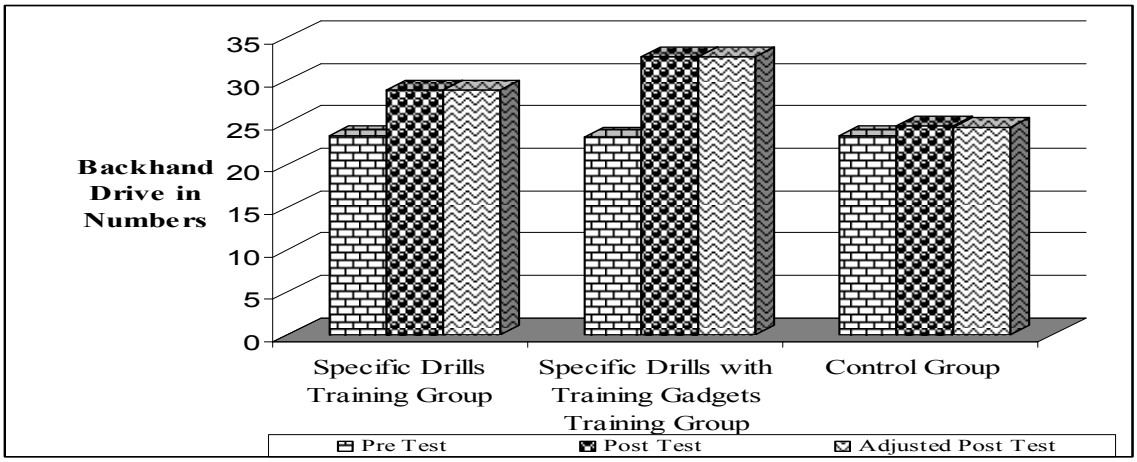
TABLE-VI
SCHEFFE'S TEST FOR THE DIFFERENCE BETWEEN THE ADJUSTED POST-TEST PAIRED MEANS OF BACKHAND DRIVE

Adjusted Post-test Means			Mean Differences	Confidence Interval
Specific Drills Training Group	Specific Drills with Training Gadgets Training Group	Control Group		
28.79	32.77	-	3.98*	1.90
28..79	-	24.49	4.30*	1.90
-	32.77	24.49	8.28*	1.90

* Significant at 0.05 level of confidence.

The table -VI shows the adjusted post-test mean difference of backhand drive between specific drills training group and specific drills with training gadgets training group and specific drills training group and control group , specific drills with training gadgets training group and control group are 3.98, 4.30 and 8.28 respectively, which were greater than 1.90 at 0.05 level of confidence. The results of the study showed that, specific drills training group and specific drills with training gadgets training groups and control group has significantly differed on backhand drive when compared to control group, but between the training significant differences was found. Hence it was concluded that specific drills with training gadgets training group was better method to increase the backhand drive.

FIGURE-3
THE MEAN VALUES ARE EXPERIMENTAL AND CONTROL GROUPS OF BACKHAND DRIVE OF TENNIS LEARNERS



DISCUSSION ON FINDINGS

Based on results of the study shows that experimental groups significant improvement on physiological variable vital capacity and skill performance variables are forehand and backhand drive of tennis learners due to specific drills with training gadgets with ball feeding machine. The results of the study consent with other studies technology will improve the performance Purcell **K (1981)** and Connel **O (1995)** and **Dyer JT (1938)** and **Robertson K (2000).** Effect of technology used training method will improve on performance of tennis performance **(Dae and Gab 2012).**

CONCLUSIONS

1. The experimental group's significant improvement on vital capacity and forehand, backhand drive due to specific drills training and specific drills with training gadgets (ball feeding machine) tennis learners.
2. There is significant difference between experimental and control groups of vital capacity and forehand and backhand drive of tennis learners.
3. The best method specific drills with training gadgets (ball feeding machine)to improve the vital capacity and skill performance variables forehand and backhand drive of tennis learners.

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INFLUENCE OF YOGA ON SELECTED PHYSIOLOGICAL AND BIO-CHEMICAL VARIABLES AMONG ADULT MEN

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ABSTRACT

The purpose of the study was to find out the effect of yoga training on selected physiological and bio-chemical variables among adult women. To achieve the purpose of the study, twenty four subjects were selected from Manonmaniam Sundaranar University, Tirunelveli, Tamilnadu, India, at random and their age ranged from18- 22 years. The selected subjects were divided into two groups namely yoga training and control groups with twelve subjects each. Independent Variables.-Yoga training,Dependent Variables-Physiological Variables-Resting pulse rate, Breath holding time, Bio chemical Variables-Glucose, Total cholesterol, Hemoglobin. Statistically analyzed with dependent –t test to find out the significant improvement between pre and post- test means of four experimental groups separately and two way analysis of covariance (ANCOVA) was used to find out the significant difference among experimental groups. There was a significant improvement takes place on selected physiological and bio chemical variables such as resting heart rate, breath holding time, glucose, total cholesterol and hemoglobin due to the effect of yoga training among adult women. There was significant difference exists between the adjusted post test means of experimental and control group on selected physiological and bio chemical variables such as resting heart rate, breath holding time, glucose, total cholesterol and hemoglobin.

INTRODUCTION

Yoga - An Overview

Yoga is an ancient technique practiced by sages and yogis as a desirable and healthy way of life. The very meaning of yoga is to achieve a balance within the internal and external environment, thereby seeking to attain mental, spiritual and physical well-being. This is made possible through the practice of "Pranayama" or breathing exercises, "Asana" or specific postures, and Meditation (Taimni, 1981). It is thought that practicing yoga over a period of time leads to a decrease in respiratory rate, muscular relaxation along with calming of the mind, which might be interpreted at least partly as a decreased state of arousal **(Maharishi Mahesh Yogi, 1969., & Nagendra, H. R., Nagarathna, R, 1977).**

People‘s attitude towards health, spirituality, way of life and our place in society have changed quite dramatically, as people are looking for answers for their everyday problems. In these chaotic times our environment is fighting for survival and we humans suffer more and more from physical and psychological stress, with new diseases developing while old ones, that we thought we could handle with antibiotics, return with a vengeance in the midst of our society. We can't always control these developments, but we can learn to face them. And to this end, Yoga is as good an invention as it has ever been **(“Yoga has gained”, 2009).**

Purpose of the study

The purpose of the study was to find out the effect of yoga training on selected physiological and bio-chemical variables among adult women

Selection of Subjects

The purpose of the study was to find out the relative effect of yoga practices on the selected variables, physiological and bio chemical variables of women students. To achieve

the purpose of the study, twenty four subjects were selected from Manonmaniam Sundaranar University, Tirunelveli, Tamilnadu, India, at random and their age ranged from18- 22 years. The selected subjects were divided into two groups namely yoga training and control groups with twelve subjects each.

Selection of Variables

Independent Variables

1. Yoga training

Dependent Variables

Physiological Variables

1. Resting pulse rate,
2. Breath holding time

Bio chemical Variables

1. Glucose, 2.Total cholesterol, 3.Hemoglobin

Selection of Tests

S.NO	Criterion Variables	Test Items/Instrument	Unit of Measurement
1	Resting Heart rate	Radial Pulse Method	In numbers
2	Breath holding time	Nostril method	In seconds
3	Glucose	GOD- PAP method	Mg/dl
4	Total Cholesterol	Lipid Panel or lipid profile	Mg/dl
5	Hemoglobin	cyanmethaemoglobin	Mg/dl

Stastical Procedure

The collected data from the four experimental groups prior to and immediately after the instruction period on selected criterion variables were statistically analyzed with dependent ―t‖ test to find out the significant improvement between pre and post- test means of four experimental groups separately and two way analysis of covariance (ANCOVA) was used to find out the significant difference among experimental groups. In all the cases .05 level of significant was fixed to test the hypotheses.

Resting Heart Rate

The Analysis of dependent _t' test on resting heart rate of pre-test and post test means of experimental group and control group have been analyzed and presented in Table II.

TABLE - II

THE SUMMARY OF MEAN AND DEPENDENT „t" TEST FOR THE PRE AND POST TESTS ON RESTING HEART RATE OF EXPERIMENTAL GROUP AND CONTROL GROUP

Group	Number	Mean		t-value
		Pre Test	Post Test	
Experimental Group	12	89.42	73.83	7.76*
Control Group	12	86.5	84.67	0.62

*Significant at .05 level. (The table value required for .05 level of significance with do 11 is 2.20)

The table II shows that, the obtained pre and post test mean values of experimental and control groups on resting heart rate were 89.42, 73.83, 86.5 and 84.67 respectively. The table values required for significant difference with df 11 at 0.05 level is 2.20. Since, the obtained _t'- ratio value of experimental group on resting heart rate is 7.76 which is greater than the table value. Hence, it is concluded that the experimental group had significantly improved on resting heart rate due to the effect of yoga training. However control group showed insignificant on resting heart rate

TABLE - III
ANALYSIS OF COVARIANCE (ANCOVA) ON RESTING HEART RATE OF EXPERIMENTAL AND CONTROL GROUP

Adjusted post test means		Source of variance	Sum of squares	Df	Mean square	F - ratio
Experimental Group	Control group	Between	957.21	1	957.21	13.75*
72.86	85.64	Within	1462.51	21	69.64	

* Significant at 0.05 level

(The table value required for significance at 0.05 level with df 1 and 21 is 4.32)

Table III shows that the adjusted post test means values on resting heart rate of experimental and control group are 85.64 and 72.86 respectively. The obtained f- ratio of 13.75 for adjusted post test mean is greater than the table value 4.32 with df 1 and 21 required for significance at 0.05 level of confidence. The results of the study indicate that there is a significant mean difference exist between the adjusted post test means of experimental and control groups on resting heart rate.

Breath Holding Time

The Analysis of dependent ‗t' test on breath holding time of pre-test and post test means of experimental group and control group have been analyzed and presented in Table V.

TABLE - IV
THE SUMMARY OF MEAN AND DEPENDENT„t‟ TEST FOR THE PRE AND POST TESTS ON BREATH HOLDING TIME OF EXPERIMENTAL GROUP AND CONTROL GROUP

Group	Number	Mean		t-value
		Pre Test	Post Test	
Experimental Group	12	16.02	25.25	8.23*
Control Group	12	15.43	16.04	2.16

*Significant at .05 level.

(The table value required for .05 level of significance with df 11 is 2.20)

The table IV shows that, the obtained pre and post test mean values of experimental and control groups on breath holding time were 16.02, 25.25, 15.43 and and 16.04 respectively. The table values required for significant difference with df 11 at 0.05 level is 2.20. Since, the obtained‗- ratio value of experimental group on breath holding time is 8.23 which is greater than the table value. Hence, it is concluded that the experimental group had significantly improved on breath holding time. However control group showed insignificant on breath holding time.

TABLE - V
ANALYSIS OF COVARIANCE (ANCOVA) ON BREATH HOLDING TIME OF EXPERIMENTAL AND CONTROL GROUP

Adjusted post test means		Source of variance	Sum of squares	df	Mean square	F - ratio
Experimental Group	Control group	Between	460.84	1	460.84	60.74*
25.01	16.22	Within	159.32	21	7.58	

* Significant at 0.05 level

(The table value required for significance at 0.05 level with df 1 and 21 is 4.32)

Table V shows that the adjusted post test means values on breath holding time of experimental and control group are 25.01 and 16.22 respectively. The obtained f- ratio of 60.74 for adjusted post test mean is greater than the table value 4.32 with df 1 and 21 required

for significance at 0.05 level of confidence. The results of the study indicate that there is a significant mean difference exist between the adjusted post test means of experimental and control groups on breath holding time.

Glucose

The Analysis of dependent' test on glucose of pre-test and post test means of experimental group and control group have been analyzed and presented in Table VII.

TABLE - VI

THE SUMMARY OF MEAN AND DEPENDENT 't' TEST FOR THE PRE AND POST TESTS ON GLUCOSE OF EXPERIMENTAL GROUP AND CONTROL GROUP

Group	Number	Mean		t-value
		Pre Test	Post Test	
Experimental Group	12	94.5	78.75	2.55*
Control Group	12	76.83	75.67	2.01

*Significant at .05 level.

(The table value required for .05 level of significance with df 11 is 2.20)

The table VI shows that, the obtained pre and post test mean values of experimental and control groups on sugar were 94.5, 78.75, 76.83 and 75.67 respectively. The table values required for significant difference with df 11 at 0.05 level is 2.20. Since, the obtained _t'- ratio value of experimental group on glucose is 2.55 which is greater than the table value. Hence, it is concluded that the experimental group had significantly improved on sugar. However control group showed insignificant on sugar.

TABLE - VII

ANALYSIS OF COVARIANCE (ANCOVA) ON GLUCOSE OF EXPERIMENTAL AND CONTROL GROUP

Adjusted post test means		Source of variance	Sum of squares	df	Mean square	F - ratio
Experimental Group	Control group	Between	356.22	1	356.22	5.32*
73.08	81.17	Within	3219.68	21	153.32	

* Significant at 0.05 level

(The table value required for significance at 0.05 level with df 1 and 21 is 4.32)

Table VII shows that the adjusted post test means values on glucose of experimental and control group are 73.08 and 81.17 respectively. The obtained f- ratio of 5.32 for adjusted post test mean is greater than the table value 4.32 with df 1 and 21 required for significance at 0.05 level of confidence. The results of the study indicate that there is a significant mean difference exist between the adjusted post test means of experimental and control groups on glucose.

Total Cholesterol

TABLE - VIII

THE SUMMARY OF MEAN AND DEPENDENT t TEST FOR THE PRE AND POST TESTS ON TOTAL CHOLESTEROL OF EXPERIMENTAL GROUP AND CONTROL GROUP

Group	Number	Mean		t-value
		Pre Test	Post Test	
Experimental Group	12	167.33	150.08	5.56*
Control Group	12	163.25	162.25	2.09

*Significant at .05 level.

(The table value required for .05 level of significance with df 11 is 2.20)

The table VIII shows that the obtained pre and post test mean values of experimental and control groups on total cholesterol were 167.33, 150.08, 163.25 and 155.25 respectively.

The table values required for significant difference with df 11 at 0.05 level is 2.20. Since, the obtained ‗t'- ratio value of experimental group on total cholesterol is 5.56 which is greater than the table value. Hence, it is concluded that the experimental group had significantly improved on total cholesterol. However control group showed insignificant on total cholesterol.

TABLE - XI

ANALYSIS OF COVARIANCE (ANCOVA) ON TOTAL CHOLESTEROL OF EXPERIMENTAL AND CONTROL GROUP

Adjusted post test means		Source of variance	Sum of squares	df	Mean square	F - ratio
Experimental group	Control group	Between	1933.68	1	1933.68	12.22*
138.65	156.69	Within	3322.28	21	158.20	

* Significant at 0.05 level

(The table value required for significance at 0.05 level with df 1 and 21 is 4.32)

Table XI shows that the adjusted post test means values on total cholesterol of experimental and control group are 138.25 and 155.69 respectively. The obtained f- ratio of 12.22 for adjusted post test mean is greater than the table value 4.32 with df 1 and 21 required for significance at 0.05 level of confidence. The results of the study indicate that there is a significant mean difference exist between the adjusted post test means of experimental and control groups on total cholesterol.

Hemoglobin

TABLE - X

THE SUMMARY OF MEAN AND DEPENDENT t TEST FOR THE PRE AND POST TESTS ON HEMOGLOBIN OF EXPERIMENTAL GROUP AND CONTROL GROUP

Group	Number	Mean		t-value
		Pre Test	Post Test	
Experimental Group	12	9.88	9.89	2.78*
Control Group	12	9.39	9.45	1.23

*Significant at .05 level.

(The table value required for .05 level of significance with df 11 is 2.20)

The table X shows that, the obtained pre and post test mean values of experimental and control groups on hemoglobin were 9.88, 9.89, 9.39 and 9.45 respectively. The table values required for significant difference with df 11 at 0.05 level is 2.20. Since, the obtained ‗t'- ratio value of experimental group on hemoglobin is 2.78 which is greater than the table value. Hence, it is concluded that the experimental group had significantly improved on hemoglobin.

TABLE - XI

ANALYSIS OF COVARIANCE (ANCOVA) ON HEMOGLOBIN OF EXPERIMENTAL AND CONTROL GROUP

Adjusted post test means		Source of variance	Sum of squares	df	Mean square	F - ratio
Experimental group	Control group	Between	5.37	1	5.37	5.76*
10.3	9.32	Within	19.57	21	0.93	

* Significant at 0.05 level

(The table value required for significance at 0.05 level with df 1 and 21 is 4.32)

Table XI shows that the adjusted post test means values on haemoglobin of experimental and control group are 10.3 and 9.32 respectively. The obtained f- ratio of 5.76 for

adjusted post test mean is greater than the table value 4.32 with df 1 and 21 required for significance at 0.05 level of confidence. The results of the study indicate that there is a significant mean difference exist between the adjusted post test means of experimental and control groups on haemoglobin.

Discussion on Findings

The result of study indicated that there was a significant improvement takes place on all selected physiological and bio chemical variables such as resting heart rate, breath holding time, glucose, total cholesterol and hemoglobin due to the effect of yoga training among adult women.

The result of the study also indicated that, there was significant difference exists between the adjusted post test means of experimental and control group on all selected physiological and bio chemical variables such as resting heart rate, breath holding time, glucose, total cholesterol and hemoglobin.

CONCLUSIONS

1. There was a significant improvement takes place on selected physiological and bio chemical variables such as resting heart rate, breath holding time, glucose, total cholesterol and hemoglobin due to the effect of yoga training among adult women.
2. There was significant difference exists between the adjusted post test means of experimental and control group on selected physiological and bio chemical variables such as resting heart rate, breath holding time, glucose, total cholesterol and hemoglobin.

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EFFECT OF SURYANAMASKAR WITH KRIYA PRACTICES ON SELECTED MOTOR FITNESS COMPONENTS AMONG INTER COLLEGIATE MALE ATHLETS

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Good health is the right of every human being. But this right depends on individual, social and environmental factors. Along with environmental or social factors to a large extent, we can develop a better immune system and a better perception of oneself so that other conditions do not affect us adversely and we can achieve good health.

Yoga is one of the most powerful drugless system of treatment. It is having its own concept of wellness which has been scientifically understood and presented by many. Yoga can be adopted as lifestyle for promoting our physical and mental health. Yoga, if introduced at the school level, would help to inculcate healthy habits and lifestyle to achieve good health. The aim of yoga thus, at the school level, is to encourage a positive and healthy lifestyle for physical, mental and emotional health of children. Yoga helps in the development of strength, stamina, endurance and high energy at physical level. It also empowers oneself with increased concentration, calm, peace and contentment at mental level leading to inner and outer harmony Surya Namaskar is not a mere sequence of Asanas. It combines body movement with breath and awareness. One can combine Asana, Pranayama, Dhyana and all the other 8 limbs of Yoga in this practice. • When we combine the body movement with rhythmic breathing, the practice becomes extraordinarily powerful. We can further add power to the practice with a meditative state of mind and using mantras

Kriyas are the yogic techniques to cleanse the internal organs. According to Hatha Yoga Pradipika, there are six cleansing techniques called Shat Kriyas. They are Kapalabhati, Trataka, Neti, Dhouti, Nauli and Vasti.Shat means "six" and kriya means "cleansing". Yogic kriya remove the waste materials of our internal organs which are not expelled normally. Therefore, the aims of Hatha Yoga and of the Shatkriyas are to cleanse the internal organs and thereby create harmony between the major pranic flows, Ida and pingala, and attaining physical and mental purification and balance

Purpose of the study

The purpose of the study was to Effect of Suryanamaskar with Kriya Practices on Selected Motor Fitness Components among Inter Collegiate Male Athletes,

METHODOLOGY

Selection of subjects

A total of 20 students' from affiliated colleges of Manonmaniam Sundaranar University were selected as subjects and their Age ranged between 20-23 years. They were divided into experimental and control group randomly, after the pre-and post test the subject (N-20) was randomly assigned into two equal groups of 10 athletes each. The group were assigned as experimental group and control group. The experimental group underwent suryanamaskar with kriya practice for a period of eight weeks. The post tests were conducted on the above said variables. The training programme was schedule as 6.00 am-7.00am for three alternative days in a week.

Selection of Test

S.No	Criterion Variables	Name of the test	Unit/Measurement
1	Speed	50 yard Dash	In Seconds
2	Agility	Shuttle run	In Seconds
3	Flexibility	Sit and reach test	In Centimetres
4	Balance	Stroke balance test	In Seconds

Statistical techniques

The data collected from the two group namely suryanamaskar with kriya practices group and control group on selected motor components were statistically analyzed by using T ratio in order to determinate the difference if any among the group at pre-post test. The calculated T ratio is tested for significant at 0.05 level of confident.

TABLE-I

DIFFERENCE IN MEAN, STANDARD DEVIATION, STANDARD ERROR AND T RATIO ON SELECTED MOTOR FITNESS COMPONENTS

Variables	Group	Mean	Mean Difference	Standard Deviation	Standard Error	T-Ratio
Speed	Pre-Test	8.809	0.8272	0.7176	0.2271	13.75*
	Post-Test	7.982		0.6882	0.2178	
Agility	Pre-Test	11.29	1.5	0.4841	0.2344	2.64*
	Post-Test	9.79		0.7978	0.6365	
Flexibility	Pre-Test	53.50	8.00	3.206	1.014	13.86*
	Post-Test	61.50		3.779	1.95	
Balance	Pre-Test	118.99	33.95	61.108	19.325	12.01*
	Post-Test	15.94		67.685	21.404	

*Significant at 0.05 level of confidence

(The table value required for 0.05 level of significant with df is 2.26)

Table shows the significant difference was found in speed between experimental and control group (t=13.75< 0.05), which means experimental group are having more speed when compared with control group.Table shows the significant difference was found in agility between experimental and control group (t=2.64 < 0.05), which means experimental group are having more agility when compared with control group.Table shows the significant difference was found in flexibility between experimental and control group (t=13.86 < 0.05), which means experimental group are having more flexibility when compared with control group. Table shows the significant difference was found in balance between experimental and control group (t=12.01 < 0.05), which means experimental group are having more balance when compared with control group

CONCLUSION

Suryanamaskar with kriya practice had significantly developed the speed, agility, flexibility, balance of the inter collegiate male athletes

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MEASUREMENT OF PHYSICAL ACTIVITY BY VARIOUS MONITORING DEVICES

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ABSTRACT

Advances in technology continue to provide numerous options for physical activity assessment. These advances necessitate evaluation of the validity of newly developed activity monitors being used in clinical and research settings. This paper provides basic information about the monitoring devices like accelerometer, pedometer, heart rate monitors and armbands that can be applied outside the laboratory in a free-living environment to track energy expenditure, physical activity durations and levels, and lifestyle information.

INTRODUCTION

The accurate assessment of physical activity (PA) and sedentary behavior in free-living conditions has always been a challenge in epidemiological research [1]. Continued efforts to improve assessment techniques are critical for systematic advancements of the field [2]. The accurate measurement of PA is important to clarify the strength and nature of the dose–response relation between PA and health, to identify current and changing activity levels within populations, to monitor adherence to activity guidelines and to determine the effectiveness of interventions designed to promote PA [3].

Research has demonstrated the benefits of physical activity (PA) and the negative consequences of sedentary behavior for physical and mental wellbeing [4-5]. Thus, PA has become increasingly prominent as an intervention tool; however, research is often hindered by the challenge of employing a valid, reliable measure that also adequately satisfies the research question or design [6-7]. The aim of this commentary is to summarize the main methods of measuring PA.

Currently, three general categories of sensors are used for measuring physical activity in humans: Movement sensors, physiological sensors, and Contextual sensors. Depending on the desired outcome measures, a sensor or a combination of sensors (arrays or networks) can be used for multiple purposes. In this paper devices based on movement and physiological sensors are discussed viz. accelerometer, pedometer (movement sensors), heart rate monitor and armbands (physiological sensors).

Accelerometer

An accelerometer (Figure 1) is a device that measures acceleration (rate of change of velocity) and are increasingly used in the biological sciences. Recordings of acceleration are translated into a metric of interest, which can be biological (e.g. energy expenditure) or PA patterns (e.g. stationary) [8]. Accelerometers can be used to compute physical activity volume, rate, and time spent in different intensities of exercise, and can be used for broader characterizations such as achievement of public health guidelines and classification by physical activity levels. Strengths of accelerometers include minute-by-minute on-line monitoring, capturing intensity level [9–11], feasibility with young children [12], accuracy with static and

dynamic behaviors [13], and large memory capacities [14]. However, accelerometers are expensive and require technical expertise, specialized hardware, software, and individual programming. Devices can be worn in numerous places on the body, including waist, hip, and thigh.

Figure 1: An Accelerometer

Figure 2: A Pedometer

Pedometers

A pedometer is a device, usually portable and electronic or electromechanical, that counts each step a person takes by detecting the motion of the person's hands or hips. The technology for a pedometer includes a mechanical sensor and software to count steps. Their simplicity, relatively low cost, and ability to pick up short durations of PA make these devices popular. Pedometer data also tend to be correlated with biological outcomes and predictors (e.g. age, BMI). Pedometers appear to yield the most accurate data for running and moderate walking, as these behaviors require forward vertical motion. Pedometers do not record intensity, frequency, or duration of PA [14], have significantly less data storage capacity than accelerometers. Pedometers work best for documenting relative changes in PA or ranking individuals.

Heart Rate Monitor

Heart rate monitoring is a physiological indicator of PA and energy expenditure providing real-time data on the frequency, duration, and intensity of PA in an unobtrusive (e.g., they can be worn as watches or on the chest), low-effort way for periods up to one month. HR monitors (figure 3) capture energy expenditure during activities not involving vertical trunk displacement that many accelerometers and pedometers miss [15] and are best suited to categorize subjects' PA levels (i.e., highly active, somewhat active, sedentary) as opposed to the exact amount of PA. Advanced models use optics to measure heart rate which measures changes in blood flow by shining a light from an LED through the skin and measuring how it scatters off blood vessels. Some models use either infrared light or red visible light to measure the heart rate. In addition to measuring the heart rate, devices using this technology are able to measure blood oxygen saturation (SpO_2)

Figure 3: A Heart Rate

Figure 4: An Armband

Armbands

In recent years, armband technology has been developed and validated [16] in an effort to address the limitations of other devices. Several versions of the armband exist (e.g., Sense Wear, Health Wear, body bugg) [17] and they use motion and heat-related sensors (i.e., heat flux, galvanic skin response, skin temperature, body temperature). Heat Flux sensors measures the rate at which heat is dissipating from the body. Galvanic Skin Response measures sweat

and the dilation of the sweat glands. Skin temperature measures change in the surface temperature of the skin. These sensors calculate and report: Total energy expenditure (kCal), active energy expenditure (kCal), resting energy expenditure (kCal), total number of steps, physical activity duration (PAD) and sleep duration. Armbands have proven to be excellent devices for tasks of daily life (or low to moderate activity), but have not been ideal for higher intensity exercise.

CONCLUSION

Physical activity is a multi-dimensional construct and thus, there is no measure that can assess all facets of PA. The above discussed devises are a few to mention as there are many other devices which can monitor the physical activity like electromechanical switches (for heel strike detections), mercury switches, inclinometers, gyroscopes and goniometers (for angles or postures). Even global positioning systems (GPS) can now be added to the list. But accelerometers, pedometers, heart rate monitors and armbands are currently the most widely used sensors in human physical activity monitoring in clinical and free-living settings.

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CHANGES OF MENTAL HEALTH AND SELF CONCEPT THROUGH AEROBIC EXERCISE AND YOGIC PRACTICES AMONG MALE STUDENTS

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ABSTRACT

These studies examined the changes of mental health and self concept through aerobic exercise and yogic practices among male students. To achieve this purpose of the study forty five male students were selected from J.J. College of Arts and Science, Pudukkottai and they were randomly assigned into two experimental groups and one control group of fifteen each, such as aerobic exercise group (Group-I), yogic practices group (Group-II) and control group (Group-III). The ages of the subjects were ranged from twenty to twenty five years. The experimental group I underwent aerobic exercise, group II underwent yogic practices for four days per week for the period of ten weeks training program and Group III was control group. Which did not have any specified training. The dependent variables namely mental health and self concept were selected as criterion variables and it was measured by administering Peter Becker Questionnaire and mukta rani rastogi questionnaire test. The data were collected from each subject before and after the training period and statistically analyzed by analysis of variance (ANOVA) and analysis of covariance (ANCOVA). It was concluded that yogic practices group is found to be better than aerobic exercise group and control group for improving the mental health and self concept among male students.

KEYWORDS: Aerobic Exercise, Yogic Practices, Mental Health and Self Concept.

INTRODUCTION

Mental health is defined as a state of personal mental well being in which individuals feel basically satisfied with themselves, their roles in life, and their relationship with others. Mental health is the measure of a person's ability to shape his environment to adjust to life as he has to face it and to do so with a reasonable amount of satisfaction, success, efficiency, and happiness **(Robert S.Woodworth., and D.G.Marquis., 1968)**

Self concept can be conceived as set beliefs about self that are presumed to be dominant feature in social perception and resulting in attribution and self-conceptional process. Self concept is 'the experience of one's own being. It is an organized cognitive structure comprised of a set of attitudes, beliefs and values that cut across all facets of experience and action, organizing and trying together a variety of specific habits, abilities, outlooks, ideas and feelings that a person displays **(Burns, R.B., 1981)**

Aerobic means with oxygen and refers to the use of oxygen in the body's metabolic system or energy generating process. An aerobic exercise refers to exercise that involves or improves oxygen consumption by the body. Many types of exercise in aerobics. The definitions are performed at moderate levels of intensity for extended periods of time. Aerobic capacity describes the functional capacity of the cardio respiratory system which includes heart, lungs and blood vessels. Aerobic capacity is defined as the maximum amount of oxygen the body can use during a specified period, usually during intense exercise. It is a function both of cardio respiratory performance and the maximum ability to remove and utilize oxygen from circulating blood. **(Cooper., Kenneth., 1984)**

Yoga is universally benefiting all people of all ages. The study of yoga is fascinating to those with a philosophical mind and is defined as the silencing of the mind's activity which leads to complete realization of the intrinsic nature of the Supreme Being. The aim of yoga is to devise ways and means of helping to better emotion and intellectual concentration. The word yoga is derived from the root "YUJ" or yoke that means union or merger (to bend together or concentrate). The merger of soul with god and the experience of oneness with him are meant by yoga. Yoga is a systematic physical practice to improve awareness, to develop willpower and to realize self, join traditional consciousness (jeevathama) to super consciousness (paramathama). **(Vethathiri., 1985)**

Aim of the Study

The aim of the study is to find out the changes of mental health and self concept through aerobic exercise and yogic practices among male students.

METHODOLOGY

To achieve this purpose of the study forty five male students were selected from J.J. College of Arts and Science, Pudukkottai and they were randomly assigned into two experimental groups and one control group of fifteen each, such as aerobic exercise group (Group-I), yogic practices group (Group-II) and control group (Group-III). The ages of the subjects were ranged from twenty to twenty five years. The experimental group I underwent aerobic exercise, group II underwent yogic practices for four days per week for the period of ten weeks training program and Group III was control group. This did not have any specified training. The dependent variables namely mental health and self concept were selected as criterion variables and it was measured by administering Peter Becker Questionnaire and mukta rani rastogi questionnaire test. The data were collected from each subject before and after the training period and statistically analyzed by analysis of variance (ANOVA) and analysis of covariance (ANCOVA). It was concluded that yogic practices group is found to be better than aerobic exercise group and control group for improving the mental health and self concept among male students. All the cases 0.05 level of confidence was to test the hypotheses.

AN ALYSIS OF THE DATA

The effect of dependent variables on mental health and self concept was determined through the collected data by using appropriate statistical techniques and the results are presented below. Table I presents pre and post test mea ns and the results of the analysis of variance and covariance of aerobic exercise group, yogic practices group and control group on mental health and self concept.

TABLE - I

ANALYSIS OF VARIANCE AND COVARIANC OF THE DATA ON MENTAL HEALTH AND SELF CONCEPT OF PRE AND POST TEST SCORES OF AEROBIC EXERCISE GROUB, YOGIC PRACTICES GROUP AND CONTROL GROUP

Variables	Test	Aerobic exercise group	Yogic practices group	Control group	Source of Variance	Sum of Squares	Df	Mean Squares	'F' Ratio
Mental Health	Pre Test Mean	60.80	61.27	61.00	Between	1.644	2	.822	.027
					Within	1263.33	42	30.08	
	Post Test Mean	65.27	67.73	61.47	Between	298.98	2	149.49	**5.38***
					Within	1167.60	42	27.80	
	Adjusted mean	65.46	67.52	61.49	Between	282.026	2	141.013	**30.87***
					Within	187.279	41	4.568	
Self Concept	Pre Test Mean	172.80	171.87	172.73	Between	8.133	2	4.067	.056
					Within	3071.07	42	73.12	
	Post Test Mean	177.33	180.87	173.00	Between	465.73	2	232.87	**4.03***
					Within	2427.07	42	57.79	

	Adjusted mean	177.05	181.38	172.77	Between	555.075	2	277.54	**69.71***
					Within	163.240	41	3.981	

*** Significant at .05 level of confidence**. (The table values required for significance at .05 level of confidence for 2 and 42 and 2 and 41 are 3.22 and 3.23 respectively)

Table-I shows that analyzed data on mental health and self concept assessed through Peter Becker questionnaire test and mukta rani rastogi questionnaire test. Pre test means of mental health and self concept for an aerobic exercise group (Experimental group I), yogic practices group (Experimental group II) and control group were 60.80, 61.27, 61.00 and 172.80, 171.87, 172.73 respectively. The obtained F ratio 0.027 and 0.056 was lesser than the required table value of 3.22. Hence the pre test was insignificant. The post test means were 65.27, 67.73, 61.47 and 177.33, 180.87, 173.00 respectively. The obtained F ratio 5.38 and 4.03 were greater than the required table value of 3.22. Hence the post test was significant. The adjusted post test means were 65.46, 67.52, 61.49 and 181.38, 177.05, 172.77 respectively. The obtained F ratio was 30.87 and 69.71 which is greater than the required table value of 3.23. Hence the adjusted post test was significant at 0.05 level of confidence for the degrees of freedom 2 and 41.

Since, three groups were compared, whenever they obtained 'F' ratio for adjusted post test was found to be significant, the Scheffe's test was applied to find out the paired mean differences and it was presented in Table II.

TABLE II
THE SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN PAIRED MEANS ON MENTAL HEALTH AND SELF CONCEPT OF EXPERIMENTAL AND CONTROL GROUPS

Variables	Aerobic exercise group	Yogic practices group	Control Group	Mean Differences	Confidence Interval Value
Mental Health	65.46	67.52		2.06	**1.98***
	65.46		61.49	3.97	
		67.52	61.49	6.03	
Self Concept	177.05	181.38		4.33	**1.85***
	177.05		172.77	4.28	
		181.38	172.77	8.61	

***Significant at .05 level of confidence**

(*Significant at 0.05 level of confidence; Scheffe's C.I value is 1.98 and 1.85).

Post-hoc test was conducted to evaluate the pair-wise difference among the adjusted post test means for experimental groups and control group in mental health and self concept. The Scheffe's test was used to three pair-wise comparisons with confidence interval value of mental health and self concept is 1.98 and 1.85. The results showed that the adjusted post test means of yogic practices group (M = 67.52) had significantly better than aerobic exercise group (M = 65.46) and control group (M = 61.49) in mental health. Yogic practices group (M = 181.38) had shown significantly better than Aerobic exercise group (M = 177.05) and control group (M = 172.77) in self concept respectively.

Adjusted means of aerobic exercise group, yogic practices group and control group on mental health and self concept are presented in Figure I and II.

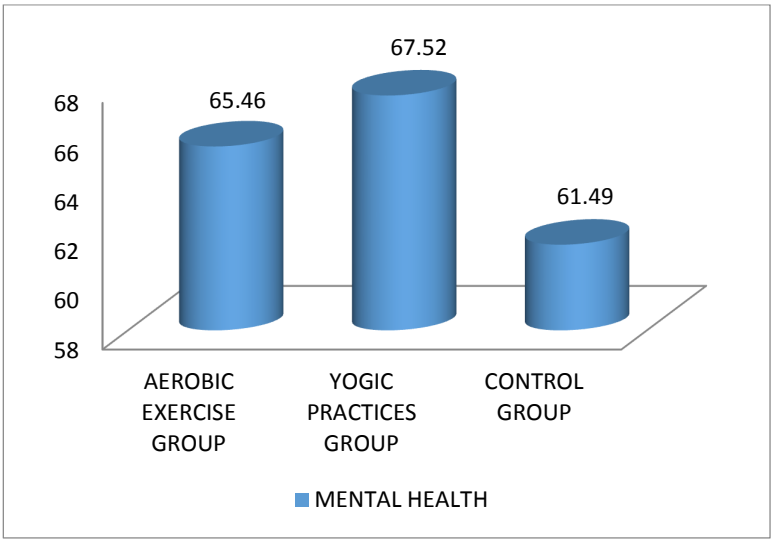

FIGURE – I

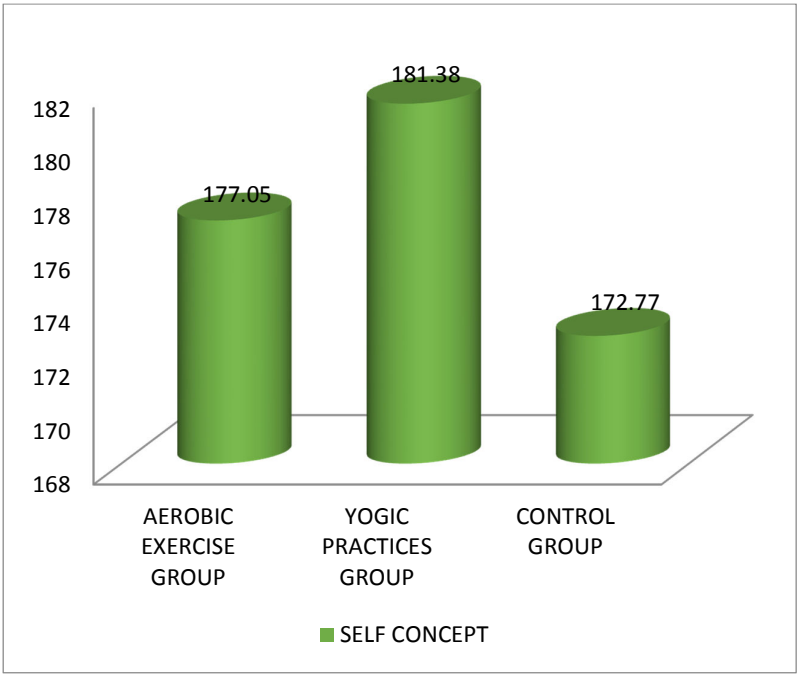

FIGURE - II

DISCUSSION AND FINDINGS

The results of the present study demonstrated that ten weeks training program of aerobic exercise group, yogic practices group and control group has showed significant improvement in the selected dependent variable of mental health and self concept. It is understood that there were significant differences between the aerobic exercise group and yogic practices group, aerobic exercise group and control group, yogic practices group and control group on selected mental health and self concept among male students.

CONCLUSIONS

1. Two experimental groups namely aerobic exercise group and yogic practices group have achieved significant improvement as compared to control group towards improving the selected criterion variables such as mental health and self concept.

2. It is concluded that Yogic practices group found to be better than aerobic exercises group in improving mental health and self concept.
3. It is concluded that aerobic exercise group found to be better than control group in improving mental health and self concept.
4. Control group was insignificant improvement in psychological variables of mental health and self concept.

RECOMMENDATION

The following recommendation for future research is based on the results of this investigation and the related literature. Hence, it is recommended that physical education experts should give importance to the aerobic exercise and yogic practices for the school and college students which will helps to develop physical, physiological and psychologically. Hence the students can be very active and alive in the class room and also healthy in their life style.

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EFFECT OF DIFFERENT DEPTH LEVELS OF SAND TRAINING ON PHYSIOLOGICAL VARIABLES OF TEAM SPORTS ATHLETES

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ABSTRACT

The purpose of this study was to the effect of different depth levels of sand training on physiological variables of team sports athletes. Total 60 male students were selected randomly as subjects who were used to play regularly in the sports and games from Pondicherry. The age group of the subjects was between 13-14 years. The subjects were divided into four groups, each group consisting of 15 subjects. Group-1undergone 2cm depth sand training (2CMSDG), Group-2was undergone 4cm depth sand training (4 CMSDG) and Group-3 was undergone 6cm depth sand training (6 CMSDG) Group-4 was control group (CG) did not participate in any specific training. The experimental groups were undergone training of sprinting, own body weight exercises and jumping exercises for three alternate days in a week for totally 12 weeks. This study was restricted to selected physiological variables such as Heart rate, Peak expiratory flow rate, Anaerobic power and Aerobic capacity. These variables were tested pre and post data. The data were examined by applying analysis of Co-variance and LSD post hoc test and the level of significance was set at 0.05 levels. Based on the analysis of statistical results, it was clearly evident that 2cm depth sand training (2CMSDG), 4cm depth sand training (4CMSDG), 6cm depth sand training (6CMSDG) had significantly improved the physiological variables such as Heart rate, Peak expiratory flow rate, Anaerobic power and Aerobic capacity when compared to control group. 4CMSDG and 6CMSDG had better improvement in Heart rate, Peak expiratory flow rate and anaerobic power than 2CMSDG and control group. The 2CMSDG, 4CMSDG and 6CMSDG had improvement in aerobic capacity than the Control group.

KEYWORDS: Heart rate, Peak expiratory flow rate, Anaerobic power and Aerobic capacity, Depth sand training, sprinting, own body weight exercises, jumping exercises.

INTRODUCTION

Sand is a great training tool for improving speed and agility. It provides resistance that challenges muscles, helping to make to faster and more explosive. The constant shifting under feet engages small stabilizer muscles that improve balance and reduce the risk of injury. Sand training gives an excuse to work out in the great outdoors. (John M. Cissik July 29, 2012) Soft sand training surfaces can offer a higher energy cost and lower impact training stimulus when compared to firmer training venues such as grass and red soil etc. However sand training research to data has been conducted over a limited range of exercise type and performance outcomes, with the practical implications for applied sport setting such as team sports largely unknown. Sand can burn up to two and half times more calories than the same training on solid surfaces. With numerous scientific studies backing it up, sand training is a great way to gain the edge over the competition. Sand running increases the intensity of training and builds strength because of the resistance they offer when running. Sand has a strengthening effect as

well as boosting the athletes' power and is ideal for athletes who depend on high running speeds. To reduce the possibility of injury sand training should be conducted once the athlete has a good solid base of strength and endurance. The importance of sand surface training knowledge must have for any coach, athlete, parent, fitness enthusiast, or therapist looking to enhance their training knowledge and add an effective tool to their current training methodology.

Aim of the Study

The aim was to establish whether different depth sand training is an appropriate exercise for training the physiological variables such as Heart rate, Peak expiratory flow rate, Anaerobic power and Aerobic capacity that it produces an overload on the athlete with inducing better changes in these variables.

The other aim was to establish that, which depth sand training is the best improvement in physiological variables than other depth sand training.

Statement of the Problem

To find out the effect of different depth levels of sand training on physiological variables of team sports athletes.

MATERIALS AND METHODS

Selection of subjects

The subjects were chosen from Government higher secondary schools, Pondicherry. The subjects were randomly assigned to four groups. Group-1as 2cm depth sand training group (2CMSDG), Group-2as 4cm depth sand training group (4CMSDG), Group-3 as 6cm depth sand training group (6CMSDG) and Group-4 was control group (CG). Each group consisted of15 athletes. The age of the subjects was 13-14years. All the subjects had good physical fitness and had been participated in regular school sports activities.

Selection of the Variables

Independent variables: The physical exercises training consists of sprinting, own body resistance training and jumping exercises on three different depths of sand training methods which were named as 2cm Sand training, 4cm Sand training and 6cm Sand training selected as independent variables.

Dependent variables: The physiological variables such as Heart rate, Peak expiratory flow rate, Anaerobic power and Aerobic capacity were taken for consideration as dependent variables.

Test Administration

Sl.No.	Physiological variables	Test items	Units of Measurement
1.	Heart rate	Heart rate monitor test	In numbers
2.	Peak expiratory flow rate	Peak flow meter test	In milliliters
3.	Anaerobic power	Margaria kalamen test	In watts
4.	Aerobic capacity	Hardward step test	In fitness index (Percentage)

Training Programme

The training program was employed for all experimental groups for 12weeks, the training sessions are weekly three alternate days of Monday, Wednesday and Friday between 5 pm to 6 pm, each session consisting of 60 minutes per session including warming up and warming down. The training load was progressively increased 5% from 60% of 1RM to 85% of 1RM, the intensity was increased once in two weeks. The volume, sets per repetition was progressively increased one to four weeks as 1x3 repetitions, five to eight weeks as 2x3 repetitions and nine to twelve weeks as 3x3 repetitions respectively. For all weeks rest intervals between the exercises 30 to 60 seconds and between the set was constant to 5 minutes. The

exercises selected for this study are short sprinting exercise, own body weight exercise and jumping exercises. The control group did not taken part any specific training during these intervention periods.

Statistical Techniques

The ANCOVA was used as a statistical tool to find out the effective mean difference among the experimental groups of 2cm Sand training, 4cm Sand training, 6cm Sand training and Control group were taken for consideration as dependent variables on Heart rate, Peak expiratory flow rate, Anaerobic power and Aerobic capacity. LSD post hoc test was applied to know the significant difference between the group interventions. Results were reported as the mean ± SD of all observations, and the level of significance was set at $p<0.05$.

RESULTS AND DISCUSSION

TABLE-I
ANALYSIS OF COVARIANCE ON PHYSIOLOGICAL VARIABLES OF 2CMSDG, 4CMSDG, 6CMSDG AND CG

Variables	Adjusted Post-test Mean				df	Sum of Squares	Mean Squares	F-ratio
	2CMSDG	4CMSDG	6CMSDG	CG				
Heart rate (Numbers)	77.179	75.510	74.084	85.761	B 3 W 55	1232.999 69.295	411.000 1.260	**3.588***
Peak Expiratory Flow rate (Milliliters)	364.696	378.659	385.953	344.026	B 3 W 55	14417.981 3426.037	4805.994 62.292	**77.153***
Anaerobic Power (Watts)	945.831	1041.474	1005.176	799.302	B 3 W 55	489092.442 202973.128	163030.814 3690.421	**44.177***
Aerobic Capacity (Fitness index in Percentage)	101.956	102.345	105.018	90.401	B 3 W 55	1842.802 1519.434	614.267 27.626	**22.235***

*significance at 0.05 levels,

(The table value required for 0.05 level of significance with df 3 &55, 56 is 2.775,2.772)

It is evident from above table that adjusted posttest means of 2cmSDG, 4cmSDG, 6cmSDG and CG Heart rate, were 77.179, 75.510, 74.084, 85.761numbers found to be significant with an F value of 326.215the table value 2.775. Similarly for Peak Expiratory Flow rate adjusted posttest means were 364.696, 378.659, 385.953, 344.026 milliliters found to be significant with an F value of 77.153, for Anaerobic Power adjusted posttest means were 945.831, 1041.474, 1005.176, 799.302 watts found to be significant with an F value of 44.177, and for Aerobic Capacity adjusted posttest means were 101.956, 102.345, 105.018, 90.401 fitness index in percentage found to be significant with an F value of 22.235 than the table value 2.775. Therefore, LSD posttest was applied to find out significant difference between the adjusted posttest means of groups are presented in the table-II.

TABLE-II
LSD POST HOC TEST FOR 2CMSDG, 4CMSDG, 6CMSDG AND CG OF THE ADJUSTED POST-TEST MEANS OF PHYSICAL FITNESS VARIABLES

Variables/ Groups	Adjusted Post-test means				Mean Differences	Confidence Interval
	2CMSDG	4CMSDG	6CMSDG	CG		
Heart rate (Numbers)	77.179	75.510	-	-	**1.670***	1.662
	77.179	-	74.084	-	**3.096***	
	77.179	-	-	85.761	**8.582***	
	-	75.510	-	85.761	**10.251***	
	-	-	74.084	85.761	**11.677***	
Peak Expiratory Flow rate (Milliliters)	364.696	378.659	-	-	**13.963***	11.691
	364.696	-	385.953	-	**21.257***	
	364.696	-	-	344.026	**20.669***	
	-	378.659	-	344.026	**34.663***	
	-	-	385.953	344.026	**41.926***	
Anaerobic Power (Watts)	945.831	1041.474	-	-	**95.643***	63.631
	945.831	-	-	799.302	**146.529***	
	-	1041.474	-	799.302	**242.172***	
	-	-	1005.176	799.302	**205.87***	
Aerobic Capacity (Fitness Index in percentage)	101.956	-	-	90.401	**11.554***	5.505
	-	102.345	-	90.401	**11.943***	
	-	-	105.018	90.401	**14.616***	

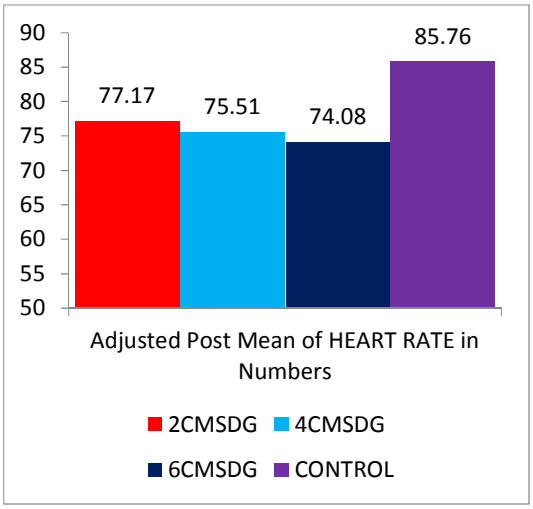
* Significant at 0.05 level.

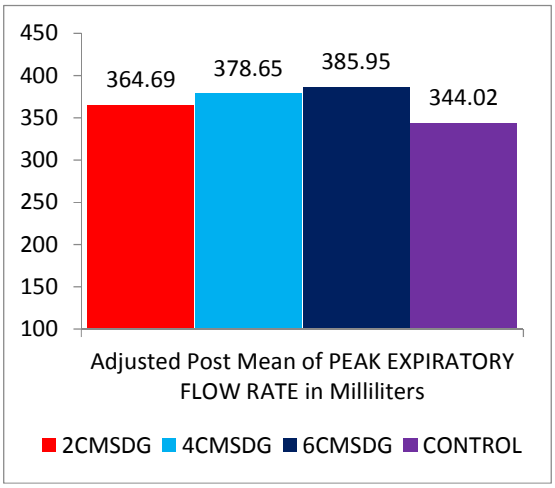
The results were found from the above table that, there is significant difference in Heart rate between 2CMSDG with 4CMSDG, 6CMSDG and CG. Similarly there is significant difference between 4CMSDG with 2CMSDG and CG. Similarly there is significant difference between 6CMSDG with 2CMSDG, and CG. There is no significant difference between 4CMSDG and 6CMSDG groups.

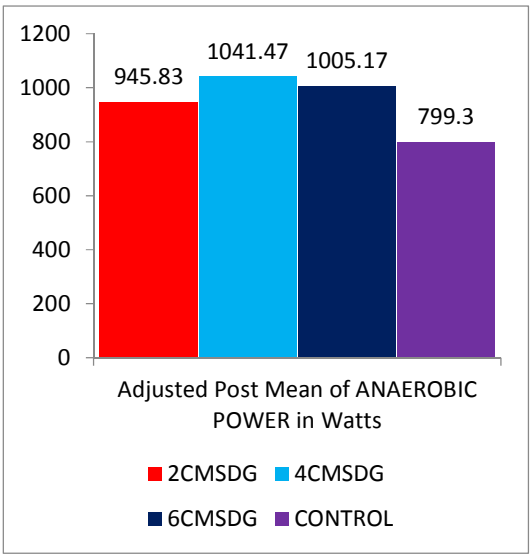
The results were found from the above table that, there is a significant difference in Peak Expiratory Flow rate between 2CMSDG with 4CMSDG, 6CMSDG and CG. Similarly there is a significant difference between 4CMSDG with 2CMSDG and CG. Similar significant result was found between 6CMSDG with 2CMSDG and CG. There is no significant difference between 4CMSDG and 6CMSDG groups.

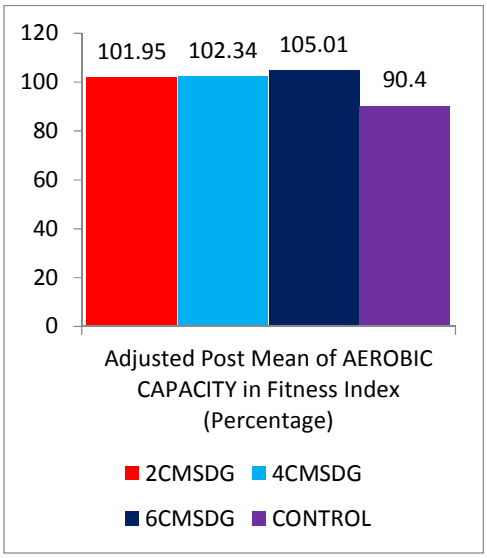
The results were found from the above table that, there is a significant difference in Anaerobic power between 2CMSDG with 4CMSDG and CG. Similarly there is a significant difference between 4CMSDG with 2CMSDG and CG. Similar significant result was found between 6CMSDG and CG. There was no significant difference found between 2CMSDG and 6CMSDG, similarly no significant difference was found between 4CMSDG and 6CMSDG.

The results were found from the above table that, there is a significant difference in Aerobic power between 2CMSDG and CG. Similarly there is a significant difference between 4CMSDG and CG. Similar significant result was found between 6CMSDG and CG. There was no significant difference found among the experimental groups.









CONCLUSIONS

1. From the results it was concluded that, all experimental group had significantly improved Physiological variables than the control group.
2. From the results it was also concluded that, 4cm Sand depth training and 6cm Sand depth training was better reduced the number of heart rate than 2cm Sand depth training and Control group. 2cm Sand depth training was better than control group in heart rate.
3. From the results it was also concluded that, 4cm Sand depth training and 6cm Sand depth training was better increased in peak expiratory flow rate (milliliters) than 2cm Sand depth training and control group. 2cm Sand depth training was better than control group in peak expiratory flow rate.
4. In anaerobic power (watts); 4cm Sand depth training was better improvement than 2cm Sand depth training and Control group. 6cm Sand depth training and 2cm Sand depth training was better than control group in anaerobic power (watts). No significant result was found among 4cm Sand depth training and 6cm Sand depth training.
5. It was concluded that 2cm Sand depth training, 4cm Sand depth training and 6cm Sand depth training was significantly improved fitness index (percentage) in Aerobic capacity than Control group. No significant result found among the experimental groups.

Recommendations

1. 4cm and 6cm depth sand training is the best training to improve heart rate, peak expiratory flow rate and anaerobic power.
2. 2cm, 4cm and 6cm depth sand training is also best training to improve aerobic capacity.

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ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGY IN SPORTS TRAINING

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ABSTRACT

Computers play a key role in how individuals work and how they live. Many individuals use computers for education, entertainment and business purposes. Now we use Information and Communication Technology as part of or life. The emergence and use of information communication technology in this century is a significant development affecting the teaching and learning of physical education and sports. Information and Communication Technology applications can improve the learning process in physical education easier and accurate. The students and the teachers can both benefit.

INTRODUCTION `

Our world today has changed a great deal with aid of information and communication technology. Thing that were once done manually or by hand have now become computerized operating systems , which simply require a single click of a mouse to get a task completed. With the aid of Information and Communication Technology we are not only able to stream line our business processes but we are also able to get constant information in real time that is up to the minute and up to date. Information and Communication Technology is the technology required for the processing of data and other information. It is the combination of telecommunication and computer science for the capture, storage, and transmission of information to any nook and corner of the world. Basically Information and Communication Technology has two parts –computer technology and communication technology. Computer technology provides the basis for processing of data to convert it into useful information. Communication technology also called telecommunication technology; consist of electronic devices and systems for communication over long distance.

Information and Communication Technology changed the teaching and learning processes drastically. Searching for knowledge in the library and imparting them to the students by teachers in the library and book shops are no longer needed. Not only the required information's but the methodology of the pedagogy also available in the internet The teachers are now free to use various facilities of the computer and communication advantages both in classroom and at their homework. The increased powerful and lesser cost computers and other information devices are made classrooms for most effective transactions. The teaching aids such us LCD projector and other audio visual devices make classrooms wonderful. The students can interact with experts and professors of other institutions with the help of interactive instructional initiatives. A number of learning tools simulations and instructional software are available in the web teachers can now able to expose students to outside places

In general the word training is commonly used term in human language but in broad sense training may be define as an organised and systematic instructional process which aim is to improve the individual's physical, psychological and intellectual performance capacity. Sports training are the basic forms of preparation of sportsmen. Based on scientific knowledge, sports training are a pedagogical process of sports perfection through which systematic effect on psycho-physical performance ability and performance readiness aims at leading the sportsman to high and the highest performance.

ADVANTAGES OF INFORMATION AND COMMUNICATION TECHNOLOGY LEARNING

- It can work from any location at any time
- It is less expensive to operate
- It can accommodate any number of learners
- It is flexible as the learner can select the timing according to his convenience
- It facilitates faster learning as the learner can move directly to the needed information
- It provides consistent knowledge as the information is retrieved from the same database
- It can lead to increased retention and a stronger grasp on the subject

COMPONENTS OF INFORMATION AND COMMUNICATION TECHNOLOGY

There are six components in Information and Communication Technology

1. People

People are needed to supply the data to the ICT system and also to make judgments and decisions from the output supplied from the system.

2. Data

Data is the raw material of any ICT system and this is processed by the system to provide the information which is the output produced by the system.

3. Procedures

Procedures determine what needs to be done and when. It also covers the passing of data or information between different people.

4. Hardware

Hardware these are the physical components that make up the ICT system. If you can touch it, then it is hardware. Hardware includes input devices, storage, processor, output device and communication devise

5. Software

These are the computer programs which provided the step-by-step instructions to get the job done.

6. Information

Information is the output from an ICT system

BENEFITS OF INFORMATION AND COMMUNICATION TECHNOLOGY IN SPORTS TRAINING

1. It helps to create full-fledged students who are able to concentrate better on both practical and theoretical work.
2. It helps students to develop a better understanding of their own body parts and that of the human body in general.
3. Throughout Information and Communication Technology tools, pupils can benefit from immediate feedback to improve their observational and analysis skills.
4. General improvement in the performance level of the majority of the pupils' work, as they struggle their way to look impressive especially if their performance will be analysed on a digital video system.
5. It can be used to **model or demonstrate** what you are teaching. Therefore it acts as a great teaching tool for learning new skills and enabling your students to reach the "mastery phase" of skill development.
6. Trainers, team doctors and coaches can utilize heart rate and sensors data to prevent injuries when players are about to exceed their physical thresholds.
7. The Coach can have the self-appraisal through the Information technology.
8. Storing the personal data's of athletes.
9. Search engine for the latest training in sports.

CONCLUSION

Information and Communication Technology applications can improve the learning process in physical education easier and accurate. The students and the teachers can both benefit. It is an integral part of education. The teaching aids such us LCD projector and other audio visual devices make classrooms wonderful. The students can interact with experts and professors of other institutions with the help of interactive instructional initiatives. Information technology play vital role in the human being in particularly in field of sports and games. It helps to avoid mistake in organization and administration of various sports and games at world level.

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BMI STATUS OF SCHOOL BOYS IN PUDUCHERRY

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ABSTRACT

The aim of the study was to determine the BMI status among school boys in Puducherry. A lot has been researched in terms of childhood obesity and this issue is compared to some sort of epidemic in the present times. But in developing country like India, not much effort in taken to record the status of BMI for school students especially in Puducherry. Thus the researcher identified this as a gape and initiated the study to record the status of school boys in relation to BMI. 1711 participants were recruited for the purpose from various schools in Puducherry. Their age ranged between 7-12 years as per the school records. Their height and weight was measured and the BMI was computed. The collected data is presented in this paper. The findings of the present study strongly indicated that the most of the children significantly underweight and cases of obesity was significantly low.

Keywords: Health, BMI, Overweight, Nutrition, Physical Activity.

INTRODUCTION

In 1948 the World Health Organization officially defined health as a "state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." Presently three out of four peoples are found to be suffering from over weight (obesity) which is due to the excess amount of fat accumulated in adipose tissue. This has gained epidemic proportions in the developed countries like the US. In India the cases of childhood obesity is not as in the US but on the contrary data shows that in India too, 44% of children under the age of 5 are underweight. This issue is widespread in Asia and Africa, where nearly half of all deaths in children under 5 are attributable to under nutrition, translating into the loss of about 3 million young lives a year. Under nutrition or malnutrition puts children at greater risk of dying from common infections, increases the frequency and severity of such infections, and contributes to delayed recovery. Malnutrition among children under-five years of age, is a major public health problem in India. This is reflected by the fact that the prevalence of under-weight children in India is among the highest in the world, and is nearly double that of Sub-Saharan Africa. Globally, underweight population has declined while obese population has increased since 1975, a study had found. In 1975, 13.8% men and 14.6% women were underweight. These proportions declined to 8.8% for men and 9.7% for women in 2014. Obese population shares were just 3.2% for men and 6.4% for women in 1975 which have risen to 10.8% for men and 14.9% for women in 2014.

Aims and Objectives of this Study

- This study promotes the importance of adopting and leading a healthy life.
- It collects the data in the present actual situation among school children.
- This study encourages children & their parent to be conscious in their health and well being.
- To create awareness in the society to prompt them towards a healthy way of life.

Delimitations

- The study was conducted on Government School boys from Puducherry region.
- 1711 participants from schools in Puducherry region were only engaged for this study.
- Their age ranged from 7 to 12 Years.
- The study was limited to BMI scores of the participants.
- A standard Stadio-meter and weighing machine were used in this study.

Limitations

- The subject's previous medical conditions were not considered.
- The subjects posture was ignored with regard to height measurement.
- The subjects dress was ignored as a limitation.

Hypothesis

- It was hypothesized that significant number of children will be in healthy BMI range.

METHODOLOGY

Selection of Subjects

To achieve the purpose of this study 1711 school boys who volunteered for the study were recruited from Puducherry region. Their age ranged from 7 to 12 years. The selected participants were selected from 21 Government school from 3 zones in Puducherry.

Selection of Variables

The variable selected for this study was BMI (Body Mass Index).

TEST ADMINISTRATION AND THE RESULT OF THE STUDY

Procedure

Height was measured with a Stadio-meter (cms) and weight was measured with a standard weighing machine (kgs).

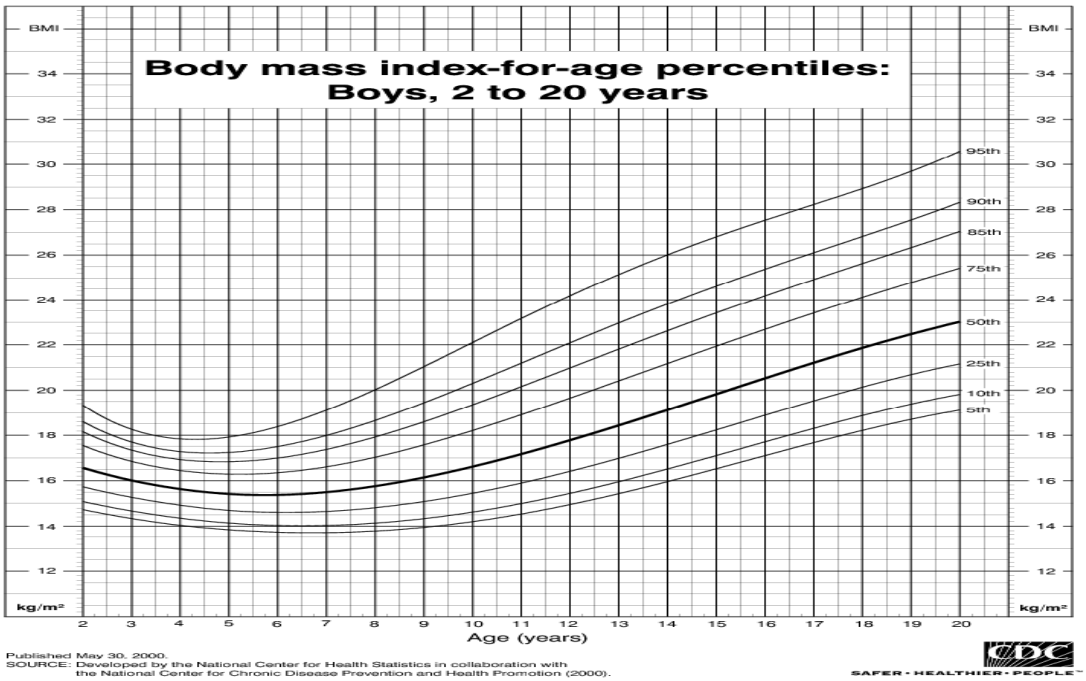
Calculation:

BMI = Weight (kg) /Height (h2).

Body Mass Index (BMI) Percentiles for Boys in the age range of 2 to 20 Years

The BMI percentile in the standardized norms in given in the chart below

Growth Charts:



Description: This chart shows the Body Mass Index (BMI) percentiles for boys from 2 to 20 years old.

Description of Percentile Chart:

The curved lines show BMI percentiles. For example, the top curved line shows the 95% percentile, which means that 95% of children are at or under that value. The bottom of the chart shows ages, from 2 to 20 years. The left and right sides of the chart show BMI values. The chart shows that at age 2 years 95% of boys have a BMI less than 19.4 and 5% have one less than 14.6. At 20 years 95% of boys have a BMI less than 30.6, and 5% have one less than 19.

Procedure of Child's BMI Percentile

To measure the BMI of a person, one must check on either side of the chart, and read horizontally across until one reaches the vertical line for the child's age. Then check where that point is among the percentile lines.

Children's Weight Status

The BMI for children is calculated the same way as for adults. However, it is interpreted differently. Here are the weight status classifications for use with the above graph.

Collection of Data

The height and weight of all the participants were measured after which the BMI was calculated and tabulated so as to categorize of body type of the participants.

Percentile	Weight Status
95th-100th	Overweight
85th-95th	At Risk of Overweight
5th-85th	Normal
5th or less	Underweight

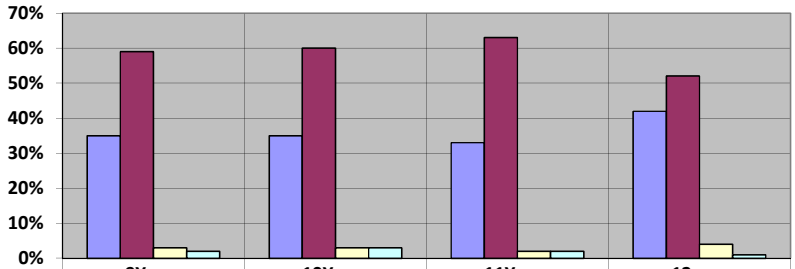
RESULT

The results obtained from the study are summarized independently in Table: I. From the study/investigation concluded that,

Figure-I

Result of BMI									
Age	Underweight 5th or less	%	Normal 5th-85th	%	At Risk of Overweight 85th-95th	%	Overweight 95th-100th	%	Total
9 Years	101	35	172	59	10	3	7	2	290
10 Years	103	35	177	60	8	3	8	3	296
11Years	146	33	279	63	10	2	7	2	442
12 Years	290	42	358	52	25	4	10	1	683
	640		986		53		32		1711

The graph showing the School students BMI (9 to 12 Years independently)



	9Years	10Years	11Years	12ears
Underweight 5th or less	35%	35%	33%	42%
Normal 5th-85th	59%	60%	63%	52%
At Risk of Overweight 85th-95th	3%	3%	2%	4%
Overweight 95th-100th	2%	3%	2%	1%

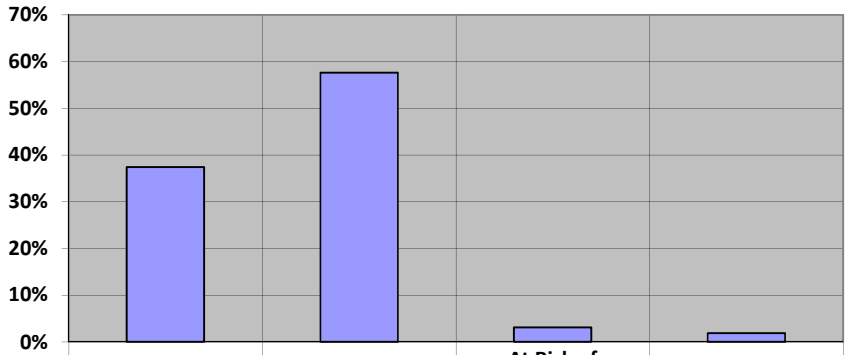
The results obtained from the study are cumulatively summarized in Table: II. From the study/investigation it is concluded that:

Over all Result of BMI in Percentile scale					
Percentile	Underweight 5th or less	Normal 5th-85th	At Risk of Overweight 85th-95th	Overweight 95th-100th	Total %
No of Children 9 to 12years	640	986	53	32	1711
%	37.41	57.63	3.10	1.87	100

Out of the total of 1711 participants 640(37%) were underweight, 986 (58 %) were in normal weight category, 53 (3%) were in the risk of Overweight and 32(2%) were Over-weight.

Figure-II

The graph showing the School students BMI (9 to 12 Years cumulatively)



	Underweight 5th or less	Normal 5th-85th	At Risk of Overweight 85th-95th	Overweight 95th-100th
9-12Years	37%	58%	3%	2%

CONCLUSION

Based on the BMI scored that was recorded for all the participants, the following conclusions were drawn- Prevalence of under nourishment among children under-five years of age were relatively high. The distribution of risk factors and its influence on malnutrition among children in a given set up should be analyzed in planning diverse measures that aims to overcome this problem. Strengthening public health interventions for mild malnutrition cases and other vulnerable groups with a focus on their socioeconomic development is a step in right direction. More research on local population on overweight, obese and malnourished school going children should be encouraged in a big way so that the true and reflective data is available with the stake holders and authorities for suitable remedial measures.

Nutrition is among any human's fundamental needs, and access is even more imperative for a child. Regular access to food drives progress, and it is heartening that a nation-wide Rapid Survey on Children (RSOC), in association with UNICEF showed a marked improvement in malnutrition. NGOs like Save the Children can add increased access to nutrition, as well as counseling of nutrition choices to India's less fortunate.

To overcome this issue to conduct a regular health awareness camp and to explain the importance of physical activity & nutrition supplement and also the children them self change his/her behavior until otherwise there is no use of it. And also the parent support, guide and motivate them in correct path way of their life. According to the hypothesis is was mentioned that there will be significant number of the total of 1711 respondent will be in healthy BMI range and 58% (986)of subjects were in normal weight category and remaining children were under weight and very few were overweight . Hence, the hypothesis was accepted but one has to consider suitable measures for brining the malnourished children to healthy BMI percentile.

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EFFECT OF CORRECTIVE EXERCISES PROGRAMME AMONG ATHLETES WITH FLAT FEET ON FOOT ALIGNMENT FACTORS

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ABSTRACT

Foot posture, like most human anthropometric characteristics, varies considerably among children, adults and the older population. Therefore, there is a need for strategies to accurately classify foot posture and define normal and potentially 'abnormal' foot types. The main objective of this study is to find out the effectiveness of corrective exercises programme influence to change the flat feet alignment factors after 12 weeks of training. To achieve this purpose 550 athletes tested by foot morphology such as angle of arch foot, medial longitudinal arch, navicular height by using pedograph method. From the total population 78 athletes had flat feet out of which forty voluntary participations were selected for this study. The selected subjects divided into two groups, such as experimental group (EG) (n=20) and control group (CG) (n=20). Experimental group were undergone training of corrective exercise programme for five days in a week for total twelve weeks. The control group did not participate any specific corrective exercise training to improve foot morphology. Both the group athletes were tested prior (pretest) to training and after the treatment period (posttest) on foot alignment factors and the data were analyzed and interpreted with ANCOVA and paired sample 't' test, the level of significance is at 0.05 level. The result was concluded that, 12 weeks of corrective physical exercises programme for experimental group (EG) significantly improved in angle of arch foot (AAF), navicular height (NAH) and medial longitudinal arch (MLA). The experimental group (EG) compare with control group (CG) better significant improvement on angle of arch foot (AAF) and Navicular height (NAH) of the flat feet players when compare to control group (CG).

KEYWORDS*:* corrective exercises, angle of arch foot, medial longitudinal arch, Navicular height

INTRODUCTION

Flat feet also called pes planus or fallen arches is a postural deformity in which the arches of the foot collapse, with the entire sole of the foot coming into complete or near-complete contact with the ground. Some individuals (an estimated 20–30% of the general population) have an arch that simply never develops in one foot (unilaterally) or both feet (bilaterally). There is a functional relationship between the structure of the arch of the foot and the biomechanics of the lower leg. The arch provides an elastic, springy connection between the forefoot and the hind foot. This association safeguards that a majority of the forces incurred during weight bearing of the foot can be dissipated before the force reaches the long bones of the leg and thigh. In pes planus, the head of the talus bone is displaced medially and distal from the navicular. As a result, the spring ligament and the tendon of the tibialis posterior muscle are stretched, so much so that the individual with pes planus loses the function of the medial longitudinal arch (MLA). If the MLA is absent or nonfunctional in both the seated and standing

positions, the individual has “rigid” flatfoot. Flatfoot is often a complex disorder, with diverse symptoms and varying degrees of deformity and disability. There are several types of flatfoot, all of which have one characteristic in common: partial or total collapse (loss) of the arch. A common and usually painless condition, flatfeet can occur when the arches don't develop during childhood. Some children have flexible flatfoot, in which the arch is visible when the child is sitting or standing on tiptoes, but disappears when the child stands. Most children outgrow flexible flatfoot without problems. Arches can also fall over time. Years of wear and tear can weaken the tendon that runs along the inside of your ankle and helps support your arch. This flat foot mostly affects the sports performance.

Statement of the Problem

The present study is designed to examine effect of corrective exercise programme among athletes with flatfeet on foot alignment factors. There is no sufficient remedies and solution for to correct the flat foot for athletes this study was a good attempt to get the solution for this problem.

METHODOLOGY

Selection of the Subjects

To achieve this purpose 550 athletes were tested by foot morphology such as angle of arch foot, medial longitudinal arch, navicular height. The sample was selected from the regional athletes of Puducherry, India. Forty voluntary participations were agreed and selected for this second part of the research. The selected subjects were divided into two groups experimental group (n=20) and control group (n=20). Experimental group were undergone training of corrective exercise for five days in a week for total twelve weeks. The control group did not participate any specific training to improve foot morphology.

Selection of Variables

The independent variable as corrective physical exercise and dependent variables are foot alignment factors.

Foot Alignment Factors

- Angle of Arch foot
- Medial Longitudinal arch
- Navicular height

12 WEEKS TRAINING PROGRAMME FOR COUNTERACTIVE (CORRECTIVE) EXERCISES

Week	Days	Exercise	Volume	Duration
Week 1	Monday to Friday	Calf rises, Step stretch, Towel curls, Doming, Toe spread & squeeze	10 sets of 10 reps 30 seconds rest interval between exercise	Total 1 hour in a session of a day including 10minutes warming up 40 minutes exercise and 10 minutes are stretching exercise.
Week 2	Monday to Friday	Tennis ball exercise, tippy toe walk, side walk, walk in sand, towel stretch	2 minutes for 3 sets 30 seconds rest interval between exercise	Total 1 hour in a session of the day including 10 minutes warming up 40 minutes exercise and 10 minutes are stretching exercise.
Week 3	Monday to Friday	Tip-toe coin push	10 sets of 10 reps	Total 1 hour in a session of the day including 10 minutes warming up 40
		Roll of the feet with golf ball	2 minutes in 3 sets	

		Downward facing dog	2 minutes in 3 sets	minutes exercise and 10 minutes stretching exercise.
		Frozen can roll	10 sets of 10 reps	
		Theraband pull-single leg	10 sets of 10 reps	
Week 4	Monday to Friday	Toe walk, toe jagging, step walk, single leg hops, double leg hops	2 minutes for 3 sets 30 seconds rest interval between exercise	Total 1 hour in a session of the day including 10 minutes warming up 40 minutes exercise and 10 minutes stretching exercise.
Week 5	Monday to Friday	Foam roller	10 sets of 10 reps rest interval between exercises	Total 1 hour in a session of the day including 10 minutes warming up 40 minutes exercise and 10 minutes stretching exercise.
		Single leg directional hops		
		Three points lunges		
		Squad jacks		
		Single leg mountain climbers		
Week 6	Monday to Friday	Single leg balance – squat, standing jump, lateral jump, single leg balance on forefoot, eccentric heel drop	2 minutes for 3 sets 30 seconds rest interval between exercise	Total 1 hour in a session of the day including 10 minutes warming up 40 minutes exercise and 10 minutes stretching exercise.
Week 7	Monday to Friday	Board , band, balance training, on the spot jump, duck walk	2 minutes for 3 sets 30 seconds rest interval between exercise	Total 1 hour in a session of the day including 10 minutes warming up 40 minutes exercise and 10 minutes stretching exercise.
Week 8	Monday to Friday	Calf rises, Doming, Step stretch,	10 sets of 20 reps 30 seconds rest interval between exercise	Total 1 hour in a session of the day including 10 minutes warming up 40 minutes exercise and 10 minutes stretching exercise.
Week 9	Monday to Friday	Tennis ball exercise, tippy toe walk, side walk, calf rises	5 minutes for 3 sets 30 seconds rest interval between exercise	Total 1 hour in a session of the day including 10 minutes warming up 40 minutes exercise and 10 minutes stretching exercise.
Week 10	Monday to Friday	Toe walk, toe jagging, step walk, single leg hops, double leg hops	5 minutes for 3 sets 30 seconds rest interval between exercise	Total 1 hour in a session of the day including 10 minutes warming up 40 minutes exercise and 10 minutes stretching exercise.

Week 11	Monday to Friday	Board , band, balance training, on the spot jump, duck walk	5 minutes for 3 sets 30 seconds rest interval between exercise	Total 1 hour in a session of the day including 10 minutes warming up 40 minutes exercise and 10 minutes stretching exercise.
Week 12	Monday to Friday	Single leg balance – squat, standing jump, lateral jump, single leg balance on forefoot, eccentric heel drop	5 minutes for 3 sets 30 seconds rest interval between exercise	Total 1 hour in a session of the day including 10 minutes warming up 40 minutes exercise and 10 minutes stretching exercise.

Test Administration

Sl. No	Variables	Test	Unit
1	Angle of Arch foot	Padegraph foot print test	Centimeters
2	Medial Longitudinal arch	Padegraph foot print test	Centimeters
3	Navicular height	Navicular drop test	Centimeters

RESULTS

To find out the pre and posttest intervention difference in experimental group due to application of corrective physical exercise programme for 12 weeks, paired sample t-ratio was applied.

TABLE - I

THE SUMMARY OF PRETEST, POSTTEST MEANS AND DEPENDENT 'T' TEST ON ANGLE OF ARCH FOOT, NAVICULAR HEIGHT, MEDIAL LONGITUDINAL ARCH ON EXPERIMENTAL AND CONTROL GROUP

Group	Foot Alignment Factors	Pre-test (Mean ±SD)	Post-test (Mean ±SD)	MD	Df	T- ratio
Experimental Group (EG)	**Angle of Arch Foot (AAF) (Centimeters)**	15.00 ±10.336	22.85 ± 6.301	7.850	19	**5.204***
	Navicular Height (NAH) (Centimeters)	2.91 ± 0.576	3.46 ± 0.634	0.545	19	**9.909***
	Medial Longitudinal Arch (MLA) (Centimeters)	1.25 ± 0.379	1.98 ± 0.351	0.730	19	**7.738***
Control Group (CG)	**Angle of Arch Foot (AAF) (Centimeters)**	26.25 ± 4.399	26.30 ± 4.414	0.050	19	0.438
	Navicular Height (NAH) (Centimeters)	3.68 ± 0.473	3.67 ± 0.494	0.005	19	0.370

	Medial Longitudinal Arch (MLA) (Centimeters)	2.11 ± 0.227	2.11 ± 0.220	0.000	19	0.000

*Significance at 0.05 level with df 19 is 2.086.

The above table shows the results of the angle of arch foot for experimental group, the attained t-ratio value was 5.204, found to be significant at the table value 2.086, it was understood that experimental group had significantly improved angle of arch foot due to the corrective exercise programme for 12 weeks.

The above table shows the results of the navicular for experimental group, the attained t-ratio value was 9.909, found to be significant at the table value 2.086, it was understood that experimental group had significantly improved navicular height.

The above table shows the results of the medial longitudinal groupt for experimental group, the attained t-ratio value was 7.738, found to be significant at the table value 2.086, The experimental group had significantly improved medial longitudinal arch.

The above table shows that, the result for control group, the attained t-ratio value for AAF was 0.438, NAH was 0.370 and MLA was 0.000 found to be less than the table value 2.086, it was understood that control group had no significant result in all variables.

TABLE - II

THE SUMMARY OF ADJUSTED POST MEANS ON ANGLE OF ARCH FOOT, NAVICULAR HEIGHT, MEDIAL LONGITUDINAL ARCH ON EXPERIMENTAL AND CONTROL GROUPS

(in Centimeters)

Test	Experimental Group (EG)	Control Group (CG)	Df	Sum Of Squares	Mean Square	F- ratio
Angle of Arches of Foot (AAF)	25.962	23.188	B 1 W 37	50.359 390.894	50.359 10.565	**4.767***
Navicular Height (NAH)	3.852	3.283	B 1 W 37	2.074 1.213	2.079 0.033	**63.419***
Medial Longitudinal Arch (MLA)	2.191	1.909	B 1 W 37	0.267 2.416	0.267 0.065	**4.087**

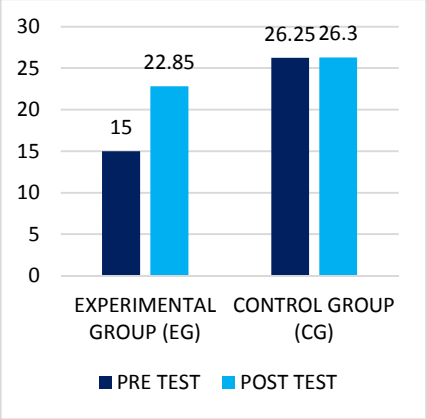
*significance at 0.05 level of confident with df 1, 37 for f table value is 4.10

It was evident that adjusted posttest of experimental group and control group on angle of arches of foot were the adjusted posttest means were 25.962 and 23.188 respectively. The obtained F-ratio value was 4.767, which is higher than the table value 4.10 with df 1 and 37 required for significance at 0.05 level. It shows that there used to be significant change among the adjusted post-test means of experimental group (EG) and the control groups (CG) on angle of arches of foot.

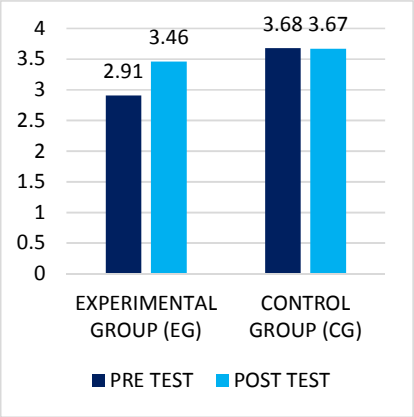
The obtained F-ratio value on was 63.419, which is higher than the table value 4.10, it shows that significant improvement among the adjusted post-test means of experimental group (EG) and the control groups (CG) on navicular height.

The obtained F-ratio value was 4.087, which is higher than the table value 4.10, it shows that there used to be insignificant change among the adjusted post-test means of experimental group (EG) and the control groups (CG) on medial longitudinal arch.

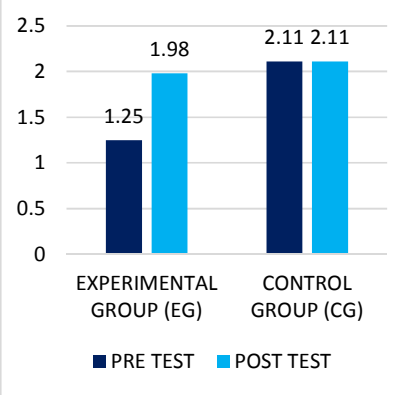
Angle of Arches of Foot (AAF) (Centimeters)



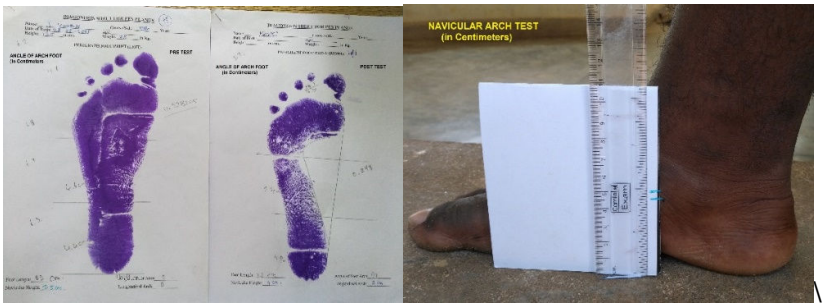
Navicular Height (NAH) (Centimeters)



Medial Longitudinal Arch (MLA) (Centimeters)



FIGURES OF PRE AND POST TEST ON ANGLE OF ARCH FOOT (AAF), NAVICULAR HEIGHT (NAH) AND MEDIAL LONGITUDINAL ARCH (MLA) OF FLAT FEET ATHLETES



CONCLUSIONS

From the interpretation of the data the following conclusions were drawn

1. The 12 weeks of corrective physical exercise intervention for experimental group (EG) improves the Angle of Arch Foot (AAF), Navicular Height (NAH) and Medial Longitudinal Arch (MLA) from the Flat Feet (FF) players.
2. The control group (CG) was no significant change on the flat feet.
3. The experimental group (EG) compare with control group (CG) better significant improvement on angle of arch foot (AAF) and Navicular height (NAH) of the flat feet players.
4. The result showed that, there was no significant improvement on medial longitudinal arch (MLA) of the players when compared with control group.
5. Over all the result, it was concluded that the corrective physical exercise progrmme would help the flat feet players and recovered from the fall feet in to improved arches of foot.
6. The corrective physical exercises are the best method of training to improve foot alignment factors.

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PERFORMANCE OVERVIEW OF SWIZ MASTER AND SPAIN MASTER AT THE GRAND SLAM

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ABSTRACT

The present world Tennis is influenced by few Tennis players. Swiz master Roger Federer and the Spain Rafael Nadal could not be avoided when we talk about Tennis at present. That's why I have taken up these two players to analyse in this study. Swiz master Roger Federer first Grand slam came in the year 2003 at Wimbledon against Australian Mark Philippoussis and the recent one achieved in 2018 at Australia in the Australian Open against Marin Cilic of Croatia. He is almost played greatest Tennis at Grand slam level nearly 15 years since 2003 till date. Another player Rafael Nadal also a great Tennis Player ever produced by Spain. The left hander also influenced the world tennis since 2005 to till date. His first grand slam title came in the year 2005 at French open against Mariano Puerta of Argentina, and the recent one achieved in 2017 at US Open in USA against Kevin Anderson of South Africa. The left hander known to be the clay court specialist hence his most no of Grand Slam achieved in the same surface. All the result information collected from the authenticated website to present in this paper till 2018 Australian open.

INTRODUCTION

Tennis is basically a racket sport that may be played by an individual against a partner or opponent. It is also played doubles format where two players consist of each team. Players in Tennis use a tennis racket that is threaded with cord, to strike a hollow rubber ball. The ball has to rally over or around a net and into the opponent's court. The objective of the game is to play the ball in such a way that the opponent is not able to play or valid return. The player who is unable to return the ball into the opponent's court will not get the point.

The modern game of tennis originated in Birmingham, England, in the late 19th century as lawn tennis and the literature says that, the first match played between 1859 and 1865, Birmingham in England. Tennis was part of the Summer Olympic Games program from the very first 1896 Summer Olympics, unfortunately it was dropped after the 1924 Summer Olympics due to disputes between the International Lawn Tennis Federation and the International Olympic Committee over allowing amateur players to compete. After two appearances as a demonstration sport in 1968 and 1984 it is returned as a full medal sport in the 1988 Summer Olympics and has been played at every edition of the Games since then.

Tennis is played at all levels of people for the professional tennis as well for gaining fitness at all ages. This beautiful sport can be played for wheelchair users also. The rules of modern tennis have changed little since the 1890s. Two exceptions are that from 1908 to 1961 the server had to keep one foot on the ground at all times, and the adoption of the tiebreak in the 1970s.

Purpose of the Study

The purpose of the study was to compare the winner and runner in the Grand slam level of Roger Federer from Switzerland and Spain player Rafael Nadal.

METHODOLOGY

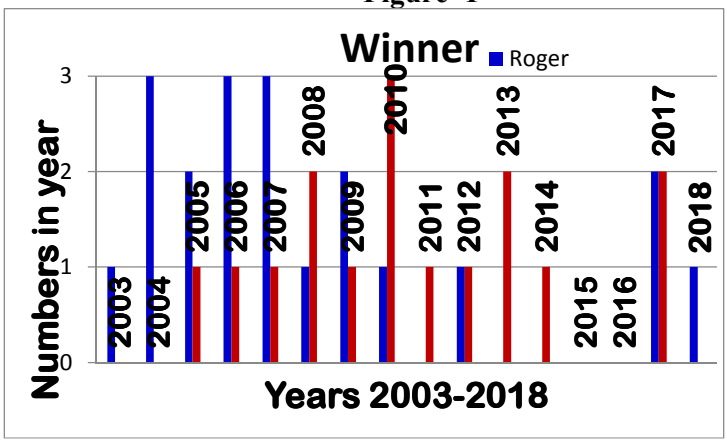
To attain the purpose of this present study, I have taken winners of all four Grand slams as well Runners of Roger Federer from Switzerland and Spain player Rafael Nadal from authenticated website.

TABLE I
ROGER FEDERER AND RAFAEL NADAL ALL-TIME RECORD AS WINNER IN GRAND SLAM

Roger Federer			Rafael Nadal		
Position	**Year**	**Grand slam**	**Position**	**Year**	**Grand slam**
Winner	2003	Wimbledon	**Winner**	2005	French Open
Winner	2004	Australian Open	**Winner**	2006	French Open
Winner	2004	Wimbledon	**Winner**	2007	French Open
Winner	2004	US Open	**Winner**	2008	French Open
Winner	2005	Wimbledon	**Winner**	2008	Wimbledon
Winner	2005	US Open	**Winner**	2009	Australian Open
Winner	2006	Australian Open	**Winner**	2010	French Open
Winner	2006	Wimbledon	**Winner**	2010	Wimbledon
Winner	2006	US Open	**Winner**	2010	US Open
Winner	2007	Australian Open	**Winner**	2011	French Open
Winner	2007	Wimbledon	**Winner**	2012	French Open
Winner	2007	US Open	**Winner**	2013	French Open
Winner	2008	US Open	**Winner**	2013	US Open
Winner	2009	French Open	**Winner**	2014	French Open
Winner	2009	Wimbledon	**Winner**	2017	French Open
Winner	2010	Australian Open	**Winner**	2017	US Open
Winner	2012	Wimbledon	--	--	----
Winner	2017	Australian Open	--	--	----
Winner	2017	Wimbledon	--	--	----
Winner	2018	Australian Open	--	--	----

Table I describes about the performance of the Roger Federer of Switzerland at the Grand slam level. His first Grand slam came in the year 2003 at Wimbledon against Australian player, named Mark Philippoussis and the recent one achieved in 2018 at Australia in the Australian Open against Marin Cilic of Croatia. He achieved of winning total 20 Grand slam which is huge in number also first Tennis player to achieve this till today. Table I also describes about the performance of the Rafael Nadal of Spain at the Grand slam level. His first Grand slam came in the year 2005 French Open against Mariano Puerta of Argentina, and the recent one achieved in 2017 at US Open in USA against Kevin Anderson of South Africa. He achieved of winning total 16 Grand slam which is significant achievement in number in the present world Tennis.

Figure -I



Graphical work represents the Winner of both the Legendary players from the career beginning to after completion of 2018- Australian open.

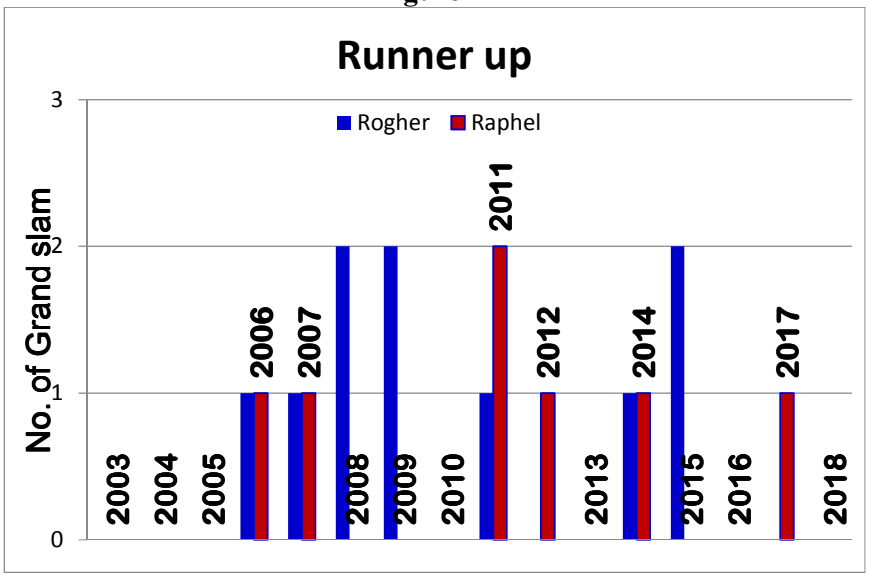
TABLE - II

ROGER FEDERER AND RAFAEL NADAL ALL-TIME RECORD AS RUNNER-UP IN GRAND SLAM

Roger Federer			Rafael Nadal		
Position	**Year**	**Grand slam**	**Position**	**Year**	**Grand slam**
Runner	2006	French Open	**Runner**	2006	Wimbledon
Runner	2007	French Open	**Runner**	2007	Wimbledon
Runner	2008	French Open	**Runner**	2011	Wimbledon
Runner	2008	Wimbledon	**Runner**	2011	US Open
Runner	2009	Australian Open	**Runner**	2012	Australian Open
Runner	2009	US Open	**Runner**	2014	Australian Open
Runner	2011	French Open	**Runner**	2017	Australian Open
Runner	2014	Wimbledon	--	--	----
Runner	2015	Wimbledon	--	--	----
Runner	2015	US Open	--	--	----

Table II describes that the Grand slam Runner came in the year 2006 at French open in the clay surface against Rafael Nadal of Spain and the latest Runner position secured by the Swiz master Roger Federer in 2015 at US Open in the hard surface against Novak Djokovic from Serbia. He became 10 times runner-up in the Grand slam which directly indicate that he made 30 final appearances throughout his carrier. Table II also describes that the first Grand slam Runner came in the year 2006 at Wimbledon in the grass surface against Roger Federer of Switzerland and the latest Runner position secured by the Spain talent Rafael Nadal in 2017 at Australian Open in the hard surface against Roger Federer of Switzerland. First and the latest runner - up came against Roger Federer of Switzerland, He became 7 times runner-up in the Grand slam which directly indicate that he made 23 final appearances throughout his carrier. The similarity for both the legends, the runner up came through against each of them.

Figure-II



Graphical work represents the Runner-up of both the legendary players from the career beginning to after completion of 2018- Australian open.

CONCLUSION

There are so many Tennis players played great Tennis around the world and they have made significant influence in the world Tennis. Roger Federer from Switzerland and Spain player Rafael Nadal presently playing great Tennis and these two players made huge influence in world Tennis. Being the great in Tennis players and also presently playing tennis also made huge no of winning Grand slam made me take up this study.

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EFFECT OF AEROBIC EXERCISES ON SELECTED PHYSICAL FITNESS VARIABLES AMONG FOOTBALL PLAYERS

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ABSTRACT

The purpose of the study was to find out the effect of aerobic exercises on selected Physical variables among football players. To achieve the purpose of the present study, thirty football players from Madurai districts at school level .were selected as subjects at random and their ages ranged from 14 to 17 years. The study was formulated as a true random group design. The subjects (N=30) were randomly assigned to two equal groups of fifteen football players each. Pre test was conducted for all the subjects on selected physical variables. This initial test scores formed as pre test scores of the subjects. The groups were assigned as Experimental Group and Control Group in an equivalent manner. Experimental Group was exposed to aerobic exercises and Control Group was not exposed to any experimental training other than their regular daily activities. The duration of experimental period was 12 weeks. After the experimental treatment, all the thirty football players were tested on their selected physical variables. This final test scores formed as post test scores of the subjects. The pre test and post test scores were subjected to statistical analysis using dependent't' test. In all cases 0.05 level of significance was fixed to test hypotheses. The aerobic exercises group had shown significant improvement in all the selected physical variables among football players after undergoing aerobic exercises group for a period of twelve weeks.

KEYWORDS: Aerobics exercises, flexibility, explosive power, Football.

INTRODUCTION

Aerobic exercise and fitness can be contrasted with anaerobic exercise, of which strength training and weight training are the most salient examples. The two types of exercise differ by the duration and intensity of muscular contractions involved, as well as by how energy is generated within the muscle. Initially during aerobic exercise, glycogen is broken down to produce glucose, but in its absence, fat metabolism is initiated instead. The latter is a slow process, and is accompanied by a decline in performance level. The switch to fat as fuel is a major cause of what marathon runners call "hitting the wall". Anaerobic exercise, in contrast, refers to the initial phase of exercise, or any short burst of intense exertion, in which the glycogen or sugar is consumed without oxygen, and is a far less efficient process. Operating anaerobically, an untrained 400 meter sprinter may "hit the wall" short of the full distance (Cooper, 1969).

Aerobic capacity describes the functional status of the cardio respiratory system, (the heart, lungs and blood vessels). Aerobic capacity is defined as the maximum volume of oxygen that can be consumed by one's muscles during exercise. It is a function both of one's cardio respiratory performance and of the ability of the muscles to extract the oxygen and fuel delivered to them. To measure maximal aerobic capacity, an exercise physiologist or physician will perform a VO_2 max test, in which a subject will undergo progressively more strenuous

exercise on a treadmill, from an easy walk through to exhaustion. The individual is typically hooked up to a respirometer to measure oxygen, and the speed is increased incrementally over a fixed duration of time. The higher a cardio respiratory endurance level, the more oxygen transported to exercising muscles, the longer exercise can be maintained without exhaustion and accordingly the faster they are able to run. The higher aerobic capacity, the higher the level of aerobic fitness. The Cooper and multi-stage fitness tests can also be used to functionally assess aerobic capacity. Aerobic capacity can be improved through a variety of means, including Fartlek training (Edvardsen, et al. 2011).

Statement of the Problem

The purpose of the study was to find out the effect of aerobic exercises on selected Physical fitness variables among football players.

Significance of the Study

The study was significant in the following ways.

1. This study would help to assess the physical performance variables among football players.
2. The results of the study would help to introduce the concepts of aerobic exercises.
3. The results of the study would motivate the football players to practice aerobic exercises.
4. Further it may give additional information to the physical education professionals and the society.

Hypothesis

It was hypothesised that aerobic exercises group would significantly improve the selected physical variables among football players.

Delimitations

The study was confined to the following aspects.

1. Only thirty football players at school level from Madurai district, Tamilnadu, India were chosen as the subjects.
2. The age of the subjects ranges from 14 to 17 years.
3. The training period was limited to 12 weeks.
4. One experimental groups and one control group were employed in this study.
5. The study was delimited to the following Physical variables.

Physical Variables

- Flexibility
- Explosive power

Selection of Subjects

The purpose of the study was to find out the effect of aerobic exercises on selected physical fitness variables among football players. To achieve the purpose of the present study, thirty football players from school level from Madurai districts .were selected as subjects at random and their ages ranged from 14 to 17 years.

Experimental Design

The study was formulated as a true random group design. The subjects (N=30) were randomly assigned to two equal groups of fifteen football players each. Pre test was conducted for all the subjects on selected physical variables. This initial test scores formed as pre test scores of the subjects. The groups were assigned as Experimental Group and Control Group in an equivalent manner. Experimental Group was exposed to aerobic exercises and Control Group was not exposed to any experimental training other than their regular daily activities. The duration of experimental period was 12 weeks. After the experimental treatment, all the thirty football players were tested on their physical variables. This final test scores formed as post test scores of the subjects.

STATISTICAL TECHNIQUES AND ITS JUSTIFICATION

The pre test and post test scores were subjected to statistical analysis using dependent 't' test. In all cases 0.05 level of significance was fixed to test hypotheses.

TABLE –I
VARIABLES AND TEST

S.No	Variables	Tests	Unit of Measurement
1	flexibility	Trunk flexibility test	centimetre
2	Explosive power	Vertical jump	centimetre

RESULTS

The findings pertaining to analysis of dependent 't' test between experimental group and control group on selected physical variables among footballers for pre-post test respectively have been presented in table II to III.

TABLE –II
SIGNIFICANCE OF MEAN GAINS & LOSSES BETWEEN PRE AND POST TEST SCORES OF EXPERIMENTAL & CONTROL GROUP ON FLEXBILITY

Group	Pre- test	Post- test	Standard Devation		Std error mean	t- ratio
			Pre	post		
Experimental group	3.81	8.04	3.08	2.78	0.29	14.56*
Control group	4.10	4.14	2.88	2.89	0.03	1.09

* Significant at 0.05 level

To find out difference experimental and control group of aerobic practices in flexiblity Difference in two group –ratio was employed and the level of significance was set at 0.05. Experimental group pre and post –test mean value were 3.81, 8.04, respectively. In control group pre and post- test were the mean value was 4.10, 4.14, respectively. In experimental the obtained t- ratio 14.56.was greater than the table value of 2.15 so it is found to be significant. In control group the obtained t- ratio 1.09 was lesser than the table value of 2.15 so it was found to be insignificant.

FIGURE- I
COMPARISONS OF PRE – TEST MEANS AND POST – TEST MEANS FOR EXPERIMENTAL & CONTROL GROUP ON FLEXIBILITY

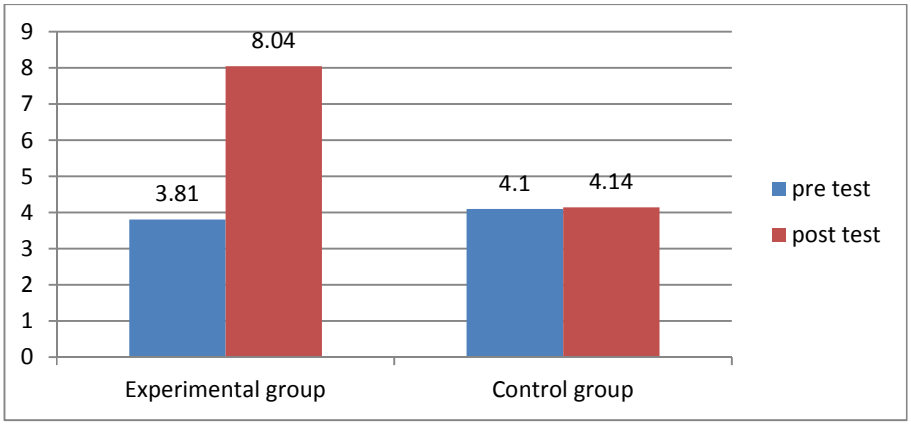


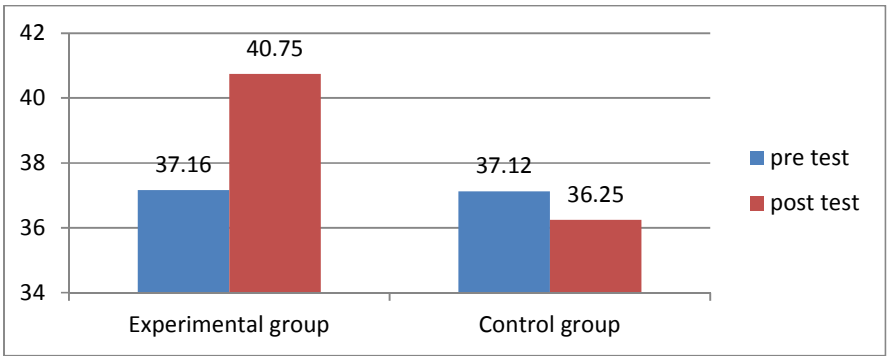
TABLE –III
SIGNIFICANCE OF MEAN GAINS & LOSSES BETWEEN PRE AND POST TEST SCORES OF EXPERIMENTAL & CONTROL GROUP ON EXPLOSIVE POWER

Group	Pre- test	Post- test	Standard Devation		Std error mean	t- ratio
			Pre	post		
Experimental group	37.16	40.75	5.84	5.37	0.29	12.37*
Control group	37.12	36.25	2.43	2.17	0.902	0.96

* Significant at 0.05 level

To find out difference experimental and control group of aerobic practices in explosive power Difference in two group –ratio was employed and the level of significance was set at 0.05. Experimental group pre and post –test mean value were 37.16, 40.75, respectively. In control group pre and post- test were the mean value was, 37.12,36.25 respectively. In experimental the obtained t- ratio12.37 .was greater than the table value of 2.15 so it is found to be significant. In control group the obtained t- ratio 0.96was lesser than the table value of 2.15 so it was found to be insignificant.

FIGURE- II
COMPARISONS OF PRE – TEST MEANS AND POST – TEST MEANS FOR EXPERIMENTAL & CONTROL GROUP ON EXPLOSIVE POWER



CONCLUSION

From the analysis of the data, the following conclusions were drawn:

1. The aerobic exercises group had shown significant improvement in all the selected physical variables among football players after undergoing aerobic exercises group for a period of twelve weeks.

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EFFECT OF FARTLEK TRAINING ON HEART RATE AMONG COLLEGE WOMEN ATHLETES

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ABSTRACT

The purpose of the present study was to investigate the effect of fartlek training on heart rate among college women athletes. To achieve the purpose of the study thirty college women athletes were selected from Alagappa University College, Karaikudi, during the year 2017. The subject's age ranges from 18 to 24 years. The selected players were divided into two equal groups consists of 15 women athletes each namely experimental group and control group. The experimental group underwent fartlek training programme for six weeks. The control group was not taking part in any training during the course of the study. Heart rate was taken as criterion variable in this study. The selected subjects were tested on heart rate was measured through the palpation method is at wrist (radial artery). Pre-test was taken before the training period and post- test was measured immediately after the six week training period. Statistical Technique't' ratio was used to analyse the means of the pre-test and post test data of experimental group and control group. The results revealed that there was a significant difference found on the criterion variable. The difference is found due to fartlek training given to the experimental group on heart rate when compared to control group.

Keywords: Fartlek training, Heart rate and't' ratio.

INTRODUCTION

The physical and physiological variables considered as the fundamental important in the training process upon which the training elements are completed, where achieving levels of performance associates with possession of levels of physical and physiological abilities by the player that is significantly related to skills and tactical performance **(Khataiba, A.Z., 1996)**

Numerous training methods were developed to promote the level of performance, Fartlek training method is one of the most recent methods for the team games. A Fartlek exercise are known as changing speed or speed play, discriminates for other methods that its work can be conducted in a similar feature to performance time during the games. Moreover, Fartlek exercise considered as one of the most important training methods that work on developing the player's aerobic and anaerobic capacities **(Hvilivilzky, B., 1999.)**

METHODOLOGY

The purpose of the study was to find out the effect of fartlek training on heart rate among college women athletes. To achieve this purpose of the study, thirty college women athletes were selected as subjects at random. The age of the subjects were ranged from 18 to 24 years. The selected subjects were divided into two equal groups of fifteen subjects each, such as fartlek training group (Experimental Group) and control group. The experimental group underwent fartlek training for three days per week for six weeks. Control group, which they did not undergo any special training programme apart from their regular physical activities as per their curriculum. The following physiological variable, namely heart rate was selected as criterion variable. All the subjects of two groups were tested on selected criterion variable heart rate was measured through the palpation method is at wrist (radial artery) test at prior and

immediately after the training programme. The‘t’ test was used to analysis the significant differences, if any, in between the groups respectively. The 0.05 level of confidence was fixed to test the level of significance which was considered as an appropriate.

ANALYSIS OF THE DATA

The significance of the difference among the means of the experimental group was found out by pre-test. The data were analysed and dependent‘t’ test was used with 0.05 levels as confidence.

TABLE - I

ANALYSIS OF T-RATIO FOR THE PRE AND POST TESTS OF EXPERIMENTAL AND CONTROL GROUP ON HEART RATE

Scores in beats per minute

Variables	Group	Mean		SD		Sd Error		df	‘t’ ratio
		Pre	Post	Pre	Post	Pre	Post		
Heart rate	Control	69.13	68.73	1.30	1.33	0.34	0.34	14	1.31
	Experimental	68.80	66.07	1.74	1.16	0.45	0.30		**10.25***

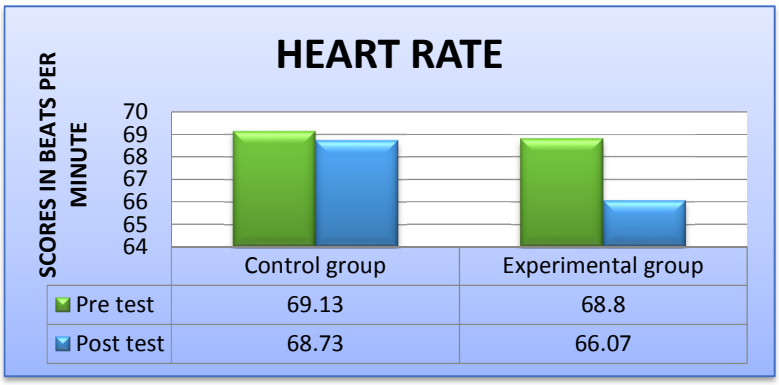
**Significance at .05 level of confidence.*

The Table-I reveals that the mean values of pre-test and post-test of the control group on heart rate were 69.13 and 68.73 respectively. The obtained ‘t’ ratio was 1.31, since the obtained ‘t’ ratio was less than the required table value of 2.14 for the significant at 0.05 level with 14 degrees of freedom it was found to be statistically insignificant. The mean values of pre-test and post-test of the experimental group on heart rate were 68.80 and 66.07 respectively. The obtained ‘t’ ratio was 10.25*since the obtained ‘t’ ratio was greater than the required table value of 2.14 for significance at 0.05 level with 14 degrees of freedom it was found to be statistically significant. The result of the study showed that there was a significant difference between control group and experimental group in heart rate. It may be concluded from the result of the study that experimental group improved in heart rate due to six weeks of fartlek training.

Figure-1

BAR DIAGRAM SHOWING THE PRE AND POST MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUP ON HEART RATE

Scores in beats per minute



DISCUSSIONS ON FINDINGS

The result of the study indicates that the experimental group, namely fartlek training group had significantly improved the selected dependent variable, namely heart rate, when compared to the control group. It is also found that the improvement caused by fartlek training when compared to the control group. The result of this study on heart rate has in line with the study conducted by Abdelmohsen Zakaria Ahmed..**, (2011).**

CONCLUSIONS

1. There was a significant difference between experimental and control group on heart rate after the training period.
2. There was a significant improvement in heart rate. However the improvement was in favour of experimental group due to six weeks of fartlek training.

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SPORTS ENGINEERING AND VARIOUS TYPES OF ADVANCED TECHNOLOGIES IN SPORTS

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ABSTRACT

Technological advancement is a natural process, and with its introduction into a sport, athletes simply become "better". Technologies in sports are man-made means developed to reach human interests or goals in or relating to a particular sport. Technology in sports is a technical means by which athletes attempt to improve their training and competitive surroundings in order to enhance their overall athletic performance. It is the knowledge and application of using specialized equipment and the latest modern technologies to perform tasks more efficiently. In this, paper discussed efficient technologies that will help in enhancing the performance and quality of sports. It is without doubt that engineering and technology have played an important role not only in improving the performance of an athlete, but also in making sports more entertaining and safe. This article provides an insight into how engineering and technology have affected sports in many ways transforming it from just a past time to more exciting and competitive world events. Apart from the impact of engineering in sports, the history of the application of engineering and technology in sports is also elaborated. Furthermore, research conducted in related fields worldwide is highlighted. A brief overview of sports engineering research in Malaysia is also presented.

Keywords*:* Sports Engineering and Sports Technology

INTRODUCTION

Sports engineering is a relatively new engineering discipline that has made inroads over the past couple of decades. However, the existence of its essence predates centuries ago. Sports were used by great scientists to describe the phenomenon of science and vice versa. It is not uncommon that the general public could not distinguish between the difference between sports engineering and sports science. Sports engineering may be defined as the technical application of mathematics and physics to solve sporting problems by means of design, development and research into external devices used by athletes to enhance their performance. Conversely, sports science is defined as the analysis in terms of motion, physiology, biomechanics and psychology of an athlete. The best sports engineering research applies sound engineering principles to equipment and uses sports science expertise to assess the improved performance of both the athlete and the equipment.

History of Engineering in Sports

The term sports engineering were coined in the 1990's but from a historical standpoint, its inception has existed as far back as three centuries ago. Newton's famous remark on the flight mechanics of a tennis ball in his letter to Oldenburg in 1671 may indirectly be regarded as the earliest contribution of engineering to the field of sports (Newton, 1671). The theories regarding the ball's spinning properties were further developed and explained in the following centuries by Magnus as well as Lord Rayleigh r Elaake, 1999)(Rayleigh, 1877).The industrial revolution circa 1760 further propelled the sports industry with the inroads of sports equipment production alongside other main productions by manufacturers. Instead of merely being a game that was meant to be championed by the physically astute, the inclusion of improved equipment has apparently been a game changer. Manufacturers took this cue seriously, as improved equipment translates into the increase of sales volume, which in turn, leads into the experimentation on different designs and materials on sports equipment. Here, lies the fusion of engineering knowledge, which evolves the world of sports. The instances where this unification transpires are briefly described in this article

with respect to its involvement from the early of the 19th century till this present day (Bhania et al. 2012).

Engineering in Sports

Humans have used tools and technology to enhance the things we do. In sports, it is without doubt that engineering and technology have played an important role not only in improving the performance of an athlete, but also in making sports more entertaining, yet safe. There are huge numbers of technology being applied in various sports. Hence, to name a few, we have categorized the technologies applied in sports into four distinctive engineering disciplines, namely materials engineering, computational modeling, instrumentation, as well as design and ergonomics.

How Can Technology Are Used To Enhance Athletic Performance

Sports gear such as clothing and footwear should be user-friendly and include valuable properties such as strength, flexibility, density, thickness, durability, toughness, resistance to moisture and more importantly cost. Footwear is generally considered more for comfort and injury avoidance rather than performance enhancement. Whereas the full body suits were used in swimming. Are often claimed to rationalize the competitor's performance times where winning or losing the race is hundredths of a second. In tennis racket has been created in order to provide enhanced ball speed, and reduce the potential vibration that can lead to a condition known as tennis elbow. In other sorting equipment such as the golf club, the overall mass of the club the overall mass of the club has decreased which is believed to result in a greater achievable distance and possible a more precise shot. The bicycle has also undergone modern day advances with the development of specialist wheels, pneumatic tires; break levers and pedals, which are all aimed at increasing stability and rigidity of the bicycle. The most efficient technology is the high speed cameras which are used in sports. There are various high speed cameras such as high speed –greater than 100 FDS (frames per second) still cameras, motion cameras. Motion cameras are more useful in sports Medicine, Physical education and sports, DV Camera-60 FPS, Digitals Still Camera-0 to 1 FPS, Multiple Cameras requires identical format and frame rate.

Technology in Sports Equipments and Sports Wears

Materials engineering in sports includes the development of new textile materials that are used in sportswear, invention of new materials to be used in sports equipment and development of new materials for sports playing surface. Advances in textile for swimsuit are an example of textile engineering in sports that has produced significant impact on athlete's performance. Early advances in swimsuit design were to make the swimsuit as small as possible to reduce drag. Then, nylon was invented in 1950's, which replaced the conventional woolen fabric that tends to absorb water during the race. The introduction of Lycra in 1980's enabled suits to be cheaper, better fitting and more comfortable to wear.

The LZR suit and other polyurethane full body suits were worn for 2 years (2008 — 2009) over which more than 130 world records were broken. In 2010, FINA introduced new rules that limited the coverage of the suits (waist to knee for men, and shoulder to knee for women) and prevent the use of polyurethane or non-knitted textile panels. Despite the ban, nine world records were broken in the 2012 Olympics in London, which proves that the suit is not the only equipment that plays important role in increasing swimmers' performance. Thus, researchers have already started focusing on hydrodynamics of goggles and swim caps.

Apart from textile, the invention of composite material has also produced significant impact on sports, such as the pole vault. In 1900 Olympics, the pole vault was won with a height of 3.30 m. In 1994, Sergey Bubka set the world record for pole vault at the height of 6.14 m, an 86% improvement (Haake, 2009). The substantial increase in pole vault height is the result of material development. Early vaulting poles were made from solid wood. It was heavy, and this limits the run up speed of the athletes, which subsequently slows down their launch velocity. The

pole must be able to store large amounts of energy without breaking, whilst its mass is kept to the minimum (Haake, 2012).

Instrumentation

Instrumentation that involves sensors and electronic components also plays a major role in advancing sports to a whole new level, for instance, the video technology that assists official's decisions. A prominent example would be the Hawk-Eye system used in tennis. Hawk-Eye uses a network of on court cameras to track the trajectory of the ball and use modeling techniques to predict where it lands. Hawk-Eye was introduced in 2005 and the system now offers players three challenges to umpire decisions. Controversial line calls can now be resolved by calling up the Hawk-Eye referral system. Hawk-Eye decision stands even if it differs from that of the umpires. The acceptance by players, officials and spectators for the use a computational Decision Review System indicates that the sport of tennis is one that is constantly evolving, embracing technology and using it to improve the game for all involved.

How can Technologies by Used to Analyze Athletic Performance

Technologies such as CAD (Computer aided design) can play a major role in the improvement of sporting equipment. CAD allows virtual design and testing techniques to be applied to all aspects of sport and equipment research and development. CAD offers an efficient means of considering an assessing new products and ideas and is primarily used to improve safety, comfort and effectiveness of specialized sports equipments; CAD is also used regularly in the justification of physical fact figures and for both competitive and training circumstances. Other technologies such as "smart" equipment can be used evaluate performance. Example of "smarts" equipments technologies include devices used for exercise stress testing and cardiovascular assessment, human reaction time and frequency of movement meters, and jump and run characteristics devices.

Benefits of Advanced Sporting Technologies

Recent development in sporting technologies has created a variety of products aimed at improving and increasing athletic performance. Athletic health can be modern sporting technologies such as heart rate, monitors, pedometers and body- fat monitors, through this a, greater depended knowledge of the human body and its potential has been recognized, allowing athletes to train complete in sports to much older age. Participant safety at all times has also been made possible through the development of certain sporting equipment, such as helmets and body protection which are used in boxing and ice hockey to help prevent injuries. Modern sporting technologies have also made competition judging easier and more accurate, and spectator interest and excitement is enhanced by broadcasting and in-stadium displays (scoreboard).

CONCLUSION

This paper dealt with the historical aspect, the impact as well as current research with regard to sports engineering. Sports engineering, in essence, is the fusion between the knowledge of sports science and the principles of engineering. It is apparent that, although sports engineering has been considered/deemed as a relatively new field of study, its presence or the philosophy behind it could be traced back centuries ago. It is evident that this field has an immense impact on sports and even more so at this present day. With the rapid advancement of technology and state of the art research, sports engineering has indeed became a game changer, redefining sports perceived by man once before.

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CONTRIBUTION OF BIOLOGICAL CLOCK IN SPORTS

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ABSTRACT

This is a review article, review collected from the books, Google scholar, wiki library, Pumped are used to analysis the data. Circadian rhythm is any biological process that displays an endogenous; entrain able oscillation of about 24 hours. These 24-hour rhythms are driven by a circadian clock. The formal study of biological temporal rhythms, such as daily, tidal, weekly, seasonal, and annual rhythms, is called chronobiology. Processes with 24-hour oscillations are more generally called diurnal rhythms; strictly speaking, they should not be called circadian rhythms unless their endogenous nature is confirmed. The daily light –dark cycles make rhythmic change in the physiological, Psychomotor, Physical fitness, Environmental factors and rest and sleep. "Biological clock" time clocks around fixed 24 hours approximately based on the reviews. The bias in event –scheduling for the early evening can in, some sports be controlled .In time trails in competitive cycling the frequency of races in more evenly distributed through the day light hours. In general, humans retire for sleep after dark, when body temperature is falling. Morning awakening coincides with an upswing in body temperature. That the timing of arousal and physical activity is intimately linked to the time of day and circadian rhythms appears self-evident; a few studies suggest that physical activity or arousal can synchronize the internal clock. According to the various reviews deep sleep at 2.00 am, Low level body temperature at 4.30 am, Blood pressure rise at 6.45 am, Melatonin 7.30 am stopped ,Testosterone secretion 9.00 am, Best coordination 14.30 pm, reaction time 15.30 pm, cardiovascular efficiency at 17.00 pm, Body temperature at 19.00 pm. Because of this review article we can know the old and recent studies how exit the biological clock and its role of contribution in sports. We concluded that based on the research we can find the specific time management and good training section for some physiological variables.

Keywords : Biological clock, chronobiology. Circadian rhythm, sports and rhythm.

INTRODUCTION

Circadian rhythm is any biological process that displays an endogenous; entrain able oscillation of about 24 hours. These 24-hour rhythms are driven by a circadian clock. The formal study of biological temporal rhythms, such as daily, tidal, weekly, seasonal, and annual rhythms, is called chronobiology. Processes with 24-hour oscillations are more generally called diurnal rhythms; strictly speaking, they should not be called circadian rhythms unless their endogenous nature is confirmed. Although circadian rhythms are endogenous, they are adjusted to the local environment by external cues called zeitgebers , which include light, temperature and redox cycles. Circadian rhythms display several important characteristics. First, circadian rhythms are generated by an internal clock, or pacemaker. Therefore, even in the absence of cues indicating the time or length of day, circadian rhythms persist. The precise length of a cycle varies somewhat among individuals and species. Although organisms generate circadian rhythms internally, they are ordinarily exposed to daily cycles in the environment, such as light and darkness. The internal clock that drives circadian rhythms is synchronized, or entrained, to daily time cues in the environment. In fact, the light-dark cycle is the principal

entraining agent in most species, and recent research suggests that it is very powerful in synchronizing human circadian rhythms. The sleep wake schedule and social cues may also be important entraining agents in humans. When synchronized to the 24-hour day, the timing of sleep usually bears a characteristic relationship to the environment and to other circadian rhythms in the body. In general, humans retire for sleep after dark, when body temperature is falling. Morning awakening coincides with an upswing in body temperature. That the timing of arousal and physical activity is intimately linked to the time of day and circadian rhythms appears self-evident; a few studies suggest that physical activity or arousal can synchronize the internal clock. With this review article researcher explain the biological and circadian studies role in sports. Circadian time in sports importance is clearly explained that help to promote for new outcome in "chronobiology" field.

Now researcher found some cap in chronobiolody field, the contribution sports research. Based on the following reviews that is clearly exit on table I.

TABLE - I
SOME REVIEWS AND SUMMARY RESULT

Attributes	**Experiment mode**	**Study by**	**Summary**
Aerobic	Swimming	Arnett (2001)	These studies have demonstrated an increased physical performance capability and VO2max in the later part of the day. The increase in physical performance was also highly correlated to body temperature, which was also found to be consistently higher later during the day
		Arnett (2002)	
		Martin and Thompson (2000)	
Anaerobic/ Strength/Power	Cycling	Atkinson et al. (2005)	
		Edwards et al. (2005) a	
		Reilly and Garrett (1998)	
	Swimming	Kline et al. (2007)	Anaerobic fitness, strength and power have shown to be significantly higher during the day. Although increases in physical performance are correlated to the increase in body temperature, these studies have also shown an increase in neural drive and better coordination between agonist-antagonist contractions. Specific time-of-day training may help improve physical performance at the particular time, however, better performance was still observed later during the day.
	Cycling/Wingate	Bernard et al. (1998)	
		Bessot et al. (2007)	
		Bessot et al. (2006)	
		Giacomoni et al. (2006)	
		Hill et al. (1992)	
		Moussay et al. (2003)	
		Reilly and Down (1992)	
		Souissi et al. (2002)	
		Souissi et al. (2007)	
	Resistance/ Plyometrics	Bird and Tarpenning (2004)	
		Häkkinen et al. (1988)	
		Kraemer et al. (2001)	
		Pereira et al. (2011)	
		Sedliak et al. (2008)	
		Sedliak et al. (2008)	
		Sedliak et al. (2007)	
		Taylor et al. (2011)	
		Teo et al. (2011)	

Agility/ Coordination	Soccer	Reilly et al. (2007)	A consistent finding in racquet sport was an increase in serve shot velocity and handgrip on the racquet; however, serve accuracy was not consistent with time of -day variation. Soccer specific skills were more consistent with time-of-day variation, showing increased ability to dribble and more accurate shots later in the day.
	Racquet Sport	Atkinson and Speirs (1998)	
		Edwards et al. (2005)	
Psycho-social	Time-of-day preference	Brown et al. (2008)	Although studies are limit, the results demonstrate better performance in physical activity during the time of an individual's chronotypological preference (ie. Morning chronotypes perform better in the earlier part of the day).
Ladder and circuit training	Time day performance	Dr.D.kathignanavel& Mr.P.Arul Deva paul (2017)	The result says late evening group have good significant for sports *homosapien.*

RESULT AND CONCLUSION

Based on the reviews and its result that late evening and morning are good time to do physical activity and late evening is very good time because of circadian oscillation . after the 2011 we found little cap in the research in circadian and chronobiolgy study and so again recently 2017 only it will grown and that study have make now ides because that concentrate the training section and time variance in a day . So that researcher concluded that circadian rhythm contributes the performance of sports players.

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WELLNESS PROGRAMME FOR UNIVERSITIES

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NEED

- Wellness is a holistic concept which stresses the fact that you do not get diseased and then go for a healthy living rather make healthy living an integral aspect of life.
- Quality of life has decreased alarmingly thanks to the technological advancement, unhealthy eating and leading an abusive life.

DEFINITION OF WELLNESS

That condition of the human organism which consists of its health and disease status and risk potential. There are varying degrees of wellness, ranging from death to optimal well-being. Genuine health or wellness is not just the absence of disease or infirmity, it is a state of positive well-being. It induces the physical, mental, spiritual, and socio-emotional dimensions of life. Total well- being translates into the practice of positive lifestyle behaviors and good health habits.

DIMENSIONS OF WELLNESS

Emotional

Coping effectively with life and creating satisfying relationships.

Financial

Satisfaction with current and future financial situations.

Social

Developing a sense of connection, belonging, and a well-developed support system.

Spiritual

Expanding our sense of purpose and meaning in life.

Occupational

Personal satisfaction and enrichment derived from one's work

Physical

Recognizing the need for physical activity, diet, sleep and nutrition.

Intellectual

Recognizing creative abilities and finding ways to expand knowledge and skills.

Environmental

Good health by occupying pleasant, stimulating environments that support well- being

Majority of the Indian youth are part of the University system

- Barring a few who participate in the Inter collegiate tournaments annually the rest does not involve in any structured activity programme.
- This leads to the onset of lifestyle diseases at a very early stage.

THE UNIVERSITY WELLNESS COMMITTEE UWC

- The UWC needs to be constituted.
- Vice-Chancellor – Patron
- DPE/SO – Coordinator
- HOD's – Executive members
- A representative from all the other committees
- Local Panchayat member
- The university union and staff union rep.

THE PROGRAMME

The UWC will meet at the beginning of the academic year and frame the annual wellness programme which should be:

- Flexible
- Enjoyable
- Variety oriented and not competitive
- In tune with each universities structure
- Catering to the need of the new gen.

FOR WHOM?

- The UWC Employee wellness programme (Teaching & Non-teaching) UWC-EWP
- The UWC Student wellness programm UWC - SWP
- The UWC Community wellness programme UWC - CWP

THE CONTENT

- Dance forms (Wellness dance, Zumba or low impact aerobics)
- Yoga (Asanas, pranayama & meditation)
- Natural play
- Camping, Trekking or even a day picnic
- Celebrating Days
- Flash mobs, street plays
- Any other possible means

UNIVERSITY WELLNESS CENTRE

State of the art round the clock functioning University wellness centre under the jurisdiction of the UWC needs to develop.

- Each University employee and student can have access to the following services under UWC:
  - Health Guidance & counseling
  - Heath assessment
  - Personnel training
  - Aquatics
  - Indoor sports

UNIVERSITY ADOLOSCENT FITNESS SCHOLARSHIPS (UAFS)

- A unique venture embraced by a few universities with considerable success. Students are offered scholarships if they qualify through the fitness standards approved by the UWC. Studies have proved that UFAS has lured students into activity which then they have embraced throughout.

UNIVERSITY ADOLOSCENT FITNESS SCHOLARSHIPS (UAFS)

Qualifying standards

- Quarterly goals based on the initial assessment
- Complete daily journals
- Complete volunteer service
- Quarterly assessment
- Monthly educational presentation
- Shows improvements

THE BENEFIT

Each individual who qualifies the scholarship eligibility requirements will be getting an amount which will be equal to 90% of his/her total University expenditure annually.

The framing of the eligibility and the granting of the scholarship will be the responsibility of the UWC.

TIME LINE

excluding the students who apply for UFAS

- First month of the academic year
    - Initial meeting of the UWC
    - Preliminary Health related physical fitness assessment (Based on a standard scale)

Second month onwards – launch of the structured programme

Yearend Reassessment of the health related physical fitness

WHEN TO INVOLVE?

- Physical education to be entered as one of the courses under the Open/common or soft-core category.
- The students under the above department get educated through the UWC.
- They in turn launch it in their respective parental department
- UWC intramural programmes
- International days, National days, festivals or community programmes
- After college hours for residential students
- An UWC Hour per week per department per batch can be included (needs university regulation change)

END NOTE

- Wellness if not now, it will be never.
- The writing is on the wall:
    - "Perform or Perish"

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EFFECT OF JOGGING ON MENTAL HEALTH AMONG ALAGAPPA VARSITY BASKETBALL PLAYERS

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ABSTRACT

The purpose of the present study was to investigate the effect of jogging on mental health among Alagappa varsity basketball players. To achieve this purpose of the study thirty male students were selected from Alagappa University, Karaikudi, during the year 2018. The subject's age ranges from 18 to 22 years. The selected students were divided into two equal groups consists of 15 men students each namely experimental group and control group. The experimental group underwent a jogging training programme for six weeks. The control group was not taking part in any training during the course of the study. Mental health was taken as criterion variable in this study. The selected subjects were tested on mental health was measured Trier Personality Inventory for Mental Health (TPIMH) devised by Peter Becker. Pre-test was taken before the training period and post- test was measured immediately after the six weeks training period. Statistical Technique 't' ratio was used to analyse the means of the pre-test and post test data of experimental group and control group. The results revealed that there was a significant difference found on the criterion variable. The difference is found due to jogging given to the experimental group on mental health when compared to control group.

Keywords: Jogging, Mental Health and 't' ratio.

INTRODUCTION

Jogging is defined as a fitness or recreational activity that involves running at a moderate pace, often over long distance. Jogging is a form of trotting or running at a slow or leisurely pace. The main intention is to increase fitness with less stress on the body than from faster running. Dr. George Sheehan, a running expert, have said "the difference between a jogger and a runner is an entry blank". Others are usually more specific, defining jogging as running slower than 6 mph (10 minute per mile pace, 10 km/h, 6 min/km). **(Fixx, 1977)**.

Mental health is a great deal more than mere absence from mental illness or realization of self formed values. It implies a degree of maturity of mind and emotional development proportional to an individual's chronological age and related to his social and emotional background. Mental health calls for integration of personality and it signifies judgment freed from distortion due to emotional pressure and secondly consciousness freed from the obsession of the self. Positive Mental Health can be achieved if the following conditions are kept in view; good Physical Health, self acceptance, accepting other people, a confidential relationship, an active attitude, social participation, satisfying work, creative experiences and scientific approach. The term mental health has been defined by different authors and psychologists in different ways.

Cutts and Mosley (1941) "Mental health is the ability to adjust satisfactorily to the various strains we meet in life and mental hygiene as the means we take to assume this adjustment".

Laycock (1944) defined mentally healthy person as "one who has achieved a satisfactory philosophy of life, understand his or her own problems, has achieved social

adequacy, emotional maturity and balance, finds enjoyment in his / her work and has established a good set of living habits.

Dorherty (1953) explained that mental health means a great deal more than mere absence from mental illness or realization of self formed values. It implies a degree of maturity of mind and emotional development proportional to an individual's chronological age and related to his social and emotional background. Mental health calls for integration of personality and it signifies judgement freed from distortion due to emotional pressure and secondly consciousness freed from the obsession of the self.

Statement of the Problem

The purpose of the study was to find out jogging on mental health among Alagappa varsity basketball players.

METHODOLOGY

The purpose of the study was to find out the jogging on mental health among Alagappa Varsity basketball players. To achieve this purpose of the study thirty male students were selected from Alagappa University, Karaikudi and they were randomly assigned into one experimental group and another one is control group of fifteen each, such as various physical drills training (group-I) and control group (group-II). The experimental group I underwent jogging for the period of six weeks training program and Group II as control group was not taking any part of training during the course of the study. The dependent variable namely mental health was selected as a criterion variable and it was measured by Trier Personality Inventory for Mental Health (TPIMH) devised by Peter Becker. The data were collected from each subject before and after the six weeks training period. Statistical technique 't' ratio was used to analysis the means of the pre-test and post-test data of experimental group and control group. The 't' test was used to analysis the significant differences, if any, in between the groups respectively. The 0.05 level of confidence was fixed to test the level of significance which was considered as an appropriate.

ANALYSIS OF THE DATA

The significance of the difference among the means of the experimental group was found out by pre-test. The data were analysed and dependent 't' test was used with 0.05 levels as confidence.

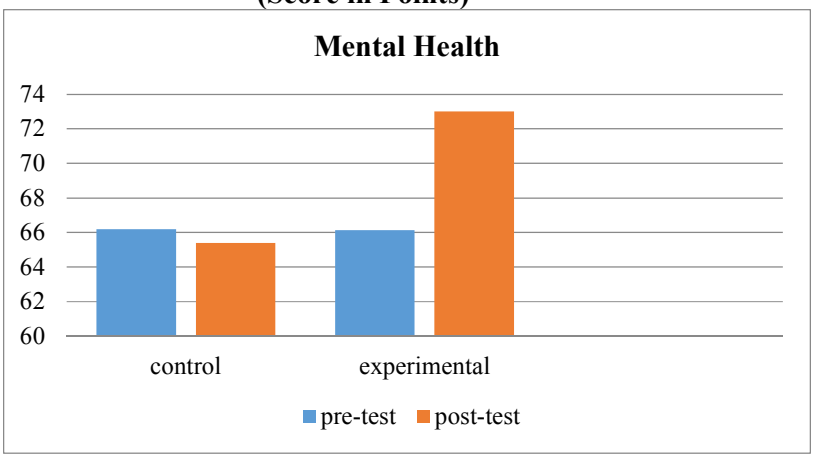
TABLE I
ANALYSIS OF T-RATIO FOR THE PRE AND POST TESTS OF EXPERIMENTAL AND CONTROL GROUP ON MENTAL HEALTH
(Scoring in Points)

Variables	Group	Mean		SD		Sd Error		df	't' ratio
		Pre	Post	Pre	Post	Pre	Post		
Speed	Control	66.20	65.40	4.18	3.92	1.08	1.01	14	.485
	Experimental	66.13	73.00	3.85	2.20	0.99	0.57		**7.262***

***Significance at .05 level of confidence.*

The Table-I shows that the mean values of pre-test and post-test of the control group on mental health were 66.20 and 65.40 respectively. The obtained 't' ratio was **.485**, since the obtained 't' ratio was less than the required table value of 2.14 for the significant at 0.05 level with 14 degrees of freedom it was found to be statistically insignificant. The mean values of pre-test and post-test of the experimental group on mental health 66.13 and 73.00 respectively. The obtained 't' ratio was **7.262*** since the obtained 't' ratio was greater than the required table value of 2.14 for significance at 0.05 level with 14 degrees of freedom it was found to be statistically significant. The result of the study showed that there was a significant difference between control group and experimental group in agility. It may be concluded from the result of the study that experimental group improved in mental health due to six weeks of jogging.

Figure-1
BAR DIAGRAM SHOWING THE PRE AND POST MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUP ON MENTAL HEALTH
(Score in Points)



DISCUSSIONS ON FINDINGS

The result of the study indicates that the experimental group, namely jogging group had significantly improved the selected dependent variable, namely mental health, when compared to the control group. It is also found that the improvement caused by jogging when compared to the control group.

CONCLUSIONS

1. There was a significant difference between experimental and control group on mental health after the training period.
2. There was a significant improvement in mental health. However the improvement was in favour of experimental group due to six weeks of jogging.

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EFFECT OF PLYOMETRIC TRAINING ON BIO-MOTOR VARIABLES AMONG ALAGAPPA VARSITY ATHLETES

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ABSTRACT

The purpose of the present study was to investigate the effect of plyometric training on physical variables among varsity athletes. To achieve this purpose of the study thirty male students were selected from Alagappa University, Karaikudi, during the year 2018. The subject's age ranges from 18 to 22 years. The selected students were consists of 15 men students namely experimental group. The experimental group underwent a plyometric training programmes for six weeks. The dependent variables are Speed and power was taken as criterion variable in this study. The selected subjects were tested on speed was measured by recorded in timings and power was measured by sargent jump. Pre-test was taken before the training period and post-test was measured immediately after the six weeks training period. Statistical Technique 't' ratio was used to analyse the means of the pre-test and post test data of experimental group. The results revealed that there was a significant difference found on the criterion variables. The difference is found due to plyometric training given to the experimental group on speed and power**.**

Keywords: Plyometric Training, Speed, Power and 't' ratio.

Introduction

The term plyometric has been derived from the Greek word 'pleythyein' means "to augment" or "to increase" and the shorter Greek words 'plio' means "more" and 'plyo' means "to move" and 'metrics' means "to measure" or "length" **(Radcliffe, 1999)**.

An athlete can be very strong and still not be very powerful, simply because of a low rate of utilization, i.e., the ability to contract strong muscles in a very short period of time. Gains in strength can only be transformed into power by applying specific power training methods. It is probable that one of the most successful of these methods is training employing plyometric exercises **(Bompa, 1999)**.

Plyometric type of exercises has been used successfully by many athletes, a method of training to enhance power. In order to realize the potential benefits of plyometric training the stretch shortening cycle must be invoked. This requires careful attention to the technique used during the drill or exercises. In addition, the coupling time or ground contact time must be as short as possible **(Douge, 1998)**.

Speed is the capacity to travel or move very quickly. Like all biomotor abilities speed can be broken down into different types. It may mean the whole body moving at maximal running speed, as in the sprinter. It may involve optimal speed, such as the controlled speed in the approach run of the jumping events **(Balakrishnan, 2007)**.

Explosive power mainly depends on strong muscle. The abdominal and leg strength plays a vital role on the performance of jumpers and in developing abdominal and leg strength, jumping exercise has a major role. Only the energetic aspect of substrate utilization represents

the biological basis, as many investigators believe. Indeed, the most peculiar factors for explosive power development must be formed in neuro-muscular properties **(Cabri et al., 1988)**.

Statement of the Problem

The purpose of the study was to find out plyometric training on bio-motor variables among Alagappa varsity athletes.

METHODOLOGY

The purpose of the study was to find out the plyometric training on bio-motor variables among Alagappa Varsity ahletes. To achieve this purpose of the study thirty male students were selected from Alagappa University, Karaikudi and they were randomly assigned into one experimental group of fifteen, such as experimental group (plyometric training). The experimental group underwent plyometric training for the period of six weeks training program and was taking any part of training during the course of the study.

Sl.No	Criterion Variables	Test Items	Unit of Measurements
1.	Speed	50 Meter Dash	In Seconds
2.	Power	Sargent Jump	In Centimetres

The dependent variable namely speed was selected as a criterion variable and it was measured by recorded in timings and power was measured by sergeant jump. The data's were collected from each subject before and after the six weeks training period. Statistical technique 't' ratio was used to analysis the means of the pre-test and post-test data of experimental group. The 't' test was used to analysis the significant differences, if any, in between the groups respectively. The 0.05 level of confidence was fixed to test the level of significance which was considered as an appropriate.

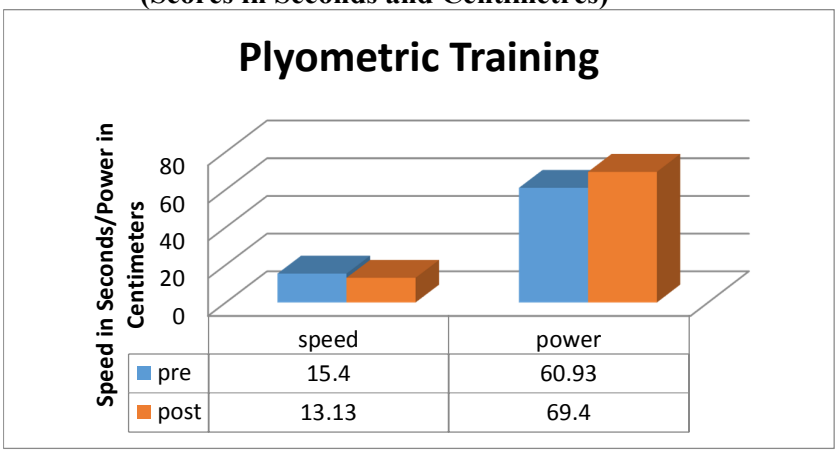
ANALYSIS OF THE DATA

Group	Variables	Mean		SD		Sd Error		df	't' ratio
		Pre	Post	Pre	Post	Pre	Post		
Plyometric Training	**Speed**	15.40	13.13	0.74	0.64	0.190	0.165	14	**8.50***
	Power	60.93	69.40	3.88	2.64	1.00	0.68		**14.69***

***Significance at .05 level of confidence.*

The Table-I shows that the mean values of pre-test and post-test of the experimental group on speed were 15.40 and 13.13 respectively. The obtained 't' ratio was **8.50***, since the obtained 't' ratio was less than the required table value of 2.14 for the significant at 0.05 level with 14 degrees of freedom it was found to be statistically significant. The mean values of pre-test and post-test of the experimental group on power 60.93 and 69.40 respectively. The obtained 't' ratio was **14.69*** since the obtained 't' ratio was greater than the required table value of 2.14 for significance at 0.05 level with 14 degrees of freedom it was found to be statistically significant. The result of the study showed that there was a significant differences between experimental group in speed and power. It may be concluded from the result of the study that experimental group in speed and power due to six weeks of plyometric training.

Figure-1
BAR DIAGRAM SHOWING THE PRE AND POST MEAN VALUES OF EXPERIMENTAL GROUP ON SPEED AND POWER
(Scores in Seconds and Centimetres)



DISCUSSIONS ON FINDINGS

The result of the study indicates that the experimental group namely plyometric training group had significantly improved the selected dependent variable, namely speed and power.

CONCLUSIONS

1. There was a significant difference between experimental group on speed and power after the training period.
2. There was a significant improvement in speed and power. However the improvement was in favour of experimental group due to six weeks of plyometric training.

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VIDEO AND SOFTWARE TECHNOLOGY USING IN SPORTS AND GAMES: A PERSPECTIVE VIEW

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ABSTRACT

The world of sport is continually changing over the years, and the use of technology is just one of those areas that have made an impact on many sports in the modern day. Video analysis is a truly powerful tool, but it's not appropriate to use for everything and one should only use it for specific reasons. Responding to the increased demand for better online coverage, the video coverage real-time data and video streaming, encouraging fans to amplify their viewing experience, with stats, live updates and social media streams enhancing the video package. Player heat maps and info graphics add depth to coverage, while recent innovations include a multi-camera option, enabling fans to watch, rewind and review key events from any available coverage camera. The video capturing and analysis help to allow an athlete and coach to share the same view or perspective together, literally getting them on the same visual page together. Captures specific measurements that must modulate to improve performance in an objective and finite way. From these video coverage and uses of technology in sports concluded that it discovers truths in match that couldn't extract by any other means with movement, skill, or sporting technique. These techniques teach how other performers execute a movement and build a movement strategy that may be effective for the athlete. Using multi number of software technology to easy updating of data and storage as well as play and replay of match and match situation according to the player's caution or official caution.

Keywords: Technology, Video coverage, Software, Video analysis.

INTRODUCTION

Sports technologies are a part of the growing global sports and recreation industry. The improvement of technology and innovation to advance performance. Innovations in technology are applied across all areas of sports science, sports medicine, sports surgery, sports rehabilitation and sports coaching to enhance sport performance. In many ways, the emerging era of the 'technology driven sport space' is changing both the way that we practice and the way we connect with sport. It is an integral part of life and will become increasing. Video analysis is useful for identifying and correcting problems. Technology such as performance analysis software, field of play sensor, timing devices, video and motion replay cameras are used to analysis the performance. In earlier days, whatever the decision was made by the match official was considered the last word. Technology strives to remove the element of human error during the match has been played. Modern sporting technologies have also made competition judging easier and more accurate. New *technologies, hawk eye, and video replays has become common place in many elite sports. Such advances have helped to ensure sporting results are more accurate and have continued to help athletes develop tactics and strategy and visualize their performances more accurately.*

TECHNOLOGY IN SPORTS AND GAMES

CAMERA COVERAGE

Hawk –Eye Technology

Hawk-Eye is a sports tracking device. It is based on the triangulation of using visual images and timing data provided by a number of high-speed video cameras located at different locations and angles around the area of play. It uses a camera taking 600 frames a second with the information is analyzed by the computer. It can track any type of bounce, spin, swing and seam movement of the ball. It uses multiple cameras to track the ball and resolve line judging disputes, output a constant stream of data IBM can process into a useful data.

Sky Cam

Sky cam, it's a flying camera, wire-flown, remote-controlled camera, and it's been zooming around stadiums and other venues. It produces images between 60-90 degrees from the ground surface.

Camera Helicopter

Camera Helicopter is placed in a helicopter and provides atmosphere view inside the stadium and surrounding areas.

Spider cam

The Spider Cam is a video camera that can move both horizontally and vertically over the pitch, using a cable pulley system. The Spider Cam has a pilot that moves the camera to provide different views of the pitch, the players, the officiating staff and the fans.

Anchor cam

Anchor cam sits at mid field, up high and moves back and forth with the action if it's a sport with the ball, typically this camera follows the ball.

Net cam

Net cam is Located behind the net, it was placed in a special tool. It could take scenes going on around the net with a very ideal.

Rail cam

Rail cam is using in the outside the track in athletics. This camera tracks the running from starting to finishing by rail through the running area. Especially this cam is highly using in the 100-meter sprinting.

SOFTWARE USING IN THE SPORTS AND GAMES

Piero

Piero is used to highlight and track football players to identifying lines on the pitch. The location of the camera with respect to the pitch and track the camera as it moves.It is also used for athletics. They developed SPLASHOMETER to enhance diving coverage.

GIS Software

Geographic Information Systems (GIS) is being effectively used to identify characteristics, patterns, and movements of players. It is used in football, soccer, rugby, swimming and other sports for accurate athlete performance analysis. The GIS software is used to draw the patterns of the winning shot of each player and their movement of the two players during the match.

Motion Analysis Software

'Dart fish' can provide pupils with visual images of their performances that can be slowed down but also enlarged. The footage can be saved and stored. It is used for all sports.

360 Degree Replay Technology

Free D Video captures 360 degree views to assess the angles on the sideline. Twenty-eight high-definition cameras positioned around the arenas capture video that can seamlessly be compiled into one shot.

C360 Coverage Technology

C360 coverage camera has a single Panomorph lens that captures 6K images and allows the production team to zoom in on up to four independent areas with up to 2X zoom without impacting resolution. prototype software-based server from EVS is also on hand for recording. EVS (Enhanced Vision system) server is able to ingest the high-resolution images and work very quickly in real time, it can also be streamed simultaneously viewers over the internet can watch the same image and each can create a customized viewing experience.

Field Lynx Software

Field Lynx is used for the scoring and administration of field events in athletics. It allows athletes operators to access athlete listings, score events and instantly upload results to any computers or scoreboards. Results can be entered directly to a Windows-based mobile device and shared instantly with scoreboards, officials, or announcers throughout the venue.

Laser Lynx Distance

Laser Lynx is a laser-based electronic distance measurement device for using throwing and jumping events.

Lynx Photo Finish software

To assess the accuracy photo finish result ***Finish Lynx*** software technology is using in the international athletic competitions.

TECHNOLOGY USING IN THE VARIOUS GAMES

Tennis

Hawk-Eye is used for *line call coverage*. It helps to umpire whether the ball "in" or "out".

Software:

IBM (International Business Machines) is now scanning automatically generating highlight video clips of important or exciting moments. It tracks three variables: Noise level, Action recognition and Crowd cheering.

Cyclops

Cyclops is know as "magic eye" service line machine, it is bolted into the sideline of the net. The system works that infrared beam ran along the service line. The service line umpire holding the control box pushes the button to activate the system before the serve and deactivate after the ball lands. A good serve triggers a green light, while a fault serve triggers a red light and a loud beep.

Trinity

Trinity is an electronic net cord. It was comprised of sensors that were placed at each end of the net and a cable that was fitted to an umpire-operated hand control. The umpire would press a button when the serving player tossed the ball and would release it after the ball crossed the net. A beep sounded if the ball touched the net cord.

Football

Goal line assessment. If the ball *fully* crosses the goalmouth, an encrypted signal is transmitted to the referee via a watch or an earpiece within half of a second, alerting them to a goal**. Remember, the ball must fully cross the line for it to count as a goal.**

Basketball

Hawk-Eye replays vision to review 'last touch' decisions in the final two minutes of games, and also to determine whether players release the ball before the shot clock expires.

Volleyball

Referees communication headsets, Video challenge system, Electronic score sheet and led score card.

Cricket

Snick-o-Meter

Sinck-o-meter is a very sensitive microphone located in one of the stumps, it can pick up the sound when the ball nicks the bat. This technology is only used to give television audiences

more information and to show if the ball did or did not actually hit the bat. Unfortunately, at this stage the umpires do not get the benefit of hearing 'snicko', though a Real-time Snickometer is being developed to supplement Hot Spot technology.

Super slow motion

Super slow motion is situated around the stadium record images at 500 frames per second (fps) compared to normal cameras that record images at 24 fps. This technology has been used to show replays to analyze run outs or stumping.

Speed gun

This machine uses a Doppler radar to determine the speed of the ball leaving the bowler's hands. The gun is located near the sight-screen and using microwave technology, relays a beam across the pitch that detects movements.

Hot spot

Hot spot is used to review whether the bat hit has the ball.

Snooker

Hawk Eye is used for players line of view, shadowed area and blue dot, where the cue ball touches the specified ball first or any other bal.

Badminton

Hawk-Eye is used in line call decisions, service faults and also to analyze the shuttle speed.

Field Hockey

Hawk-eye helps officials to make decisions during the match, such as short corners, obstruction and foul play.

Rugby

Hawk-eye enhanced video replay and review technology will operate at Rugby. It used to strengthen the accuracy and efficiency of the Television Match Official (TMO) decision-making process, the technology that the TMO will have access to is being enhanced with access to simultaneous multiple angle replays in real-time and slow motion along with zoom-functions.

GPS Rugby ball

GPS locomotor chip into the ball for more accuracy on decisions such as whether the ball was grounded or over the try line.

Assisting the Umpires / Referees

Technology is help to referees make the right call. Basketball referees use replay systems to make sure players are shooting within the time allotted by the shot clock. In cricket, the umpires out on the field are in communication via wireless technology with the other umpire. The third umpire is also asked to adjudicate on run out decisions, which he makes without consultation with the two central umpires. Replays could be used to decide off-side decisions, whether a ball passes over the goal line, and clarify penalty decisions. In tennis the line ball in and out assessing by replay laser technology.

ATHLETICS

Electronic Starting Block

With one pull of the trigger, a bang, a flash and a start pulse are all emitted at the same time. The start pulse is sent to the timing device, and signaling the start of the race. The competitors all 'see' the light flash from the gun at the same time, but to ensure that they all 'hear' the sound simultaneously too, the noise is reproduced from a mini speaker positioned behind each racer's starting block. It measure the runner's reaction time not by movement but by the pressure they exert against the foot pad, then they are deemed to have started too early and a false start will be confirmed.

Electronic Starting Pistol

When the trigger is pulled, the sound of a gunshot being played over a loudspeaker at the starting line of the race. A light flashes from the electronic pistol to complete the simulation and start the race time.

Fully Automatic Timing System

Start Sensor detects the start signal and instantly relays it to Finish Lynx for accurate fully automatic timing and results.

Line-Scan Camera aimed at the finish line captures 1,000 frames per second or accurate, time-stamped results images.

Timing Software captures photo-finish results & integrates hardware like displays, wind gauges. and additional cameras.

Wind Gauge

An **anemometer** is a device used for measuring the speed of wind, and is also a common station instrument. Wind assistance is normally expressed in meters per second, either positive or negative. A positive measurement means that the wind is helping the runners and a negative measurement means that the runners had to work against the wind. The terms "tail wind" and "head wind" are also frequently used. A tail wind pushes the runners forward (+) while a head wind pushes the runners backwards (-). ***Full Time*** **(*FT) Technologies*** makes Wind Sensors for measuring wind speed and wind direction. With no moving parts, built-in heaters, and resistance to a wide range of environmental factors, FT wind sensors are maintenance-free and will last for years, even in the harshest of climates.

ADVANTAGE

- ✓ The technology using in various sports and games helps through the development of certain sporting equipment, such as helmets and body protection which are used for example in cricket and hockey.
- ✓ Modern sporting technologies have also made officiating easier and more accurate, and spectator interest and excitement is enhanced by broadcasting and in-stadium displays or scoreboards.

DISADVANTAGE

- ✓ The technology can disrupt or slow down 'game'. e.g. time taken for playback
- ✓ The technology could be an unfair advantage / be expensive / be dependent on sponsor e.g. technology not equally available to all places of competition arena.
- ✓ The technology reduces traditional ethic or nature of sport / can lead to 'win at all costs' ethic

  e.g. use of high tech equipment at junior or local level / TV or internet or modern media that has made sport a global 'product'.

CONCLUSIONS

1. Technology makes better information available to the coaches and athletes and it serves the sport on many different levels, it enables better match analysis, performance ranking, player selection, and predictions to give interesting to all.
2. The Hawk-Eye system is a typical example of a beneficial technology that provides a multitude of information during cricket, tennis and some other matches.
3. Recent developments in sporting technologies have created a variety of products aimed at improving and increasing the sports performance.
4. The video capturing and analysis help to allow an athlete and coach to share the same view or perspective together, literally getting them on the same visual page together. Captures specific measurements that must modulate to improve performance in an objective and finite way.
5. Video coverage and uses of technology in sports concluded that it discovers truths in match that couldn't extract by any other means with movement, skill, or sporting

technique. These techniques teach how other performers execute a movement and build a movement strategy that may be effective for the athlete.

6. Using multi number of software technology to easy updating of data and storage as well as play and replay of match and match situation according to the player's caution or official caution.

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APPLICATION OF SIMPLE BIOMECHANICAL TOOLS IN EVERYDAY LIFE

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ABSTRACT

A desire for a healthy body is the first step in the progress towards a healthy and peaceful life. The effort an individual has to put in order to achieve and maintain a healthy body requires complete commitment as well as discipline towards regular physical activity and nutrition. Though, individuals may have enough knowledge in performing the physical activities and nutrition, they may not have good awareness in measuring and analyzing their fitness levels. To help them overcome this aspect, they have to be exposed to the use of simple tools that can help them analyze the biomechanics their body. This paper brings out the importance of a few simple, economically affordable biomechanical analyzing tools to help individuals track their fitness levels. The tools described can effectively motivate individuals to proceed further with their training activities and create good awareness of what is being done and what needs to be done.

INTRODUCTION

Biomechanics provides tools that are needed to analyze human motion, improve performance, and reduce the risk of injury. In order to facilitate the use of these biomechanical tools, this paper will emphasize the simple methods of using the tools in everyday life. Technology is the term usually used to refer the tools and methods of applying scientific knowledge to solve problems or perform tasks in a easier way.

The following are some of such equipments that can be used to analyze the human posture in relation to Biomechanics.

1. **Foot Print Analyzer (Pedograph)**

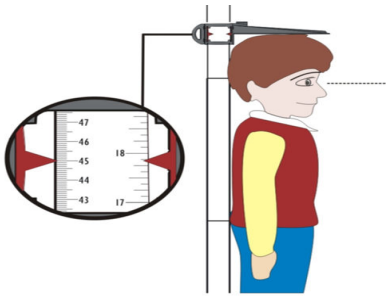
Measures posture related deformities and deviation of human feet.

1. Flat feet
2. High arch and low arch
3. Angles of the feet and arches

An easy method to measure and analyze ones feet is to print the shape of their arch by undergoing the “wet test.” A simple wet test can tell if one has flat or high arches thereby helping one to choose the right pair of footwear. It also helps to measure the supination and pronation of feet. Excessive pronation and supination can cause a number of ailments that affect the foot, ankle, knees, hips and back. Some of the more common symptoms of excessive pronation and supination are listed below.

Pain in the Arch, Pain in the Heel, Flat feet, Corns and calluses, Ankle sprain, Shin Splints, Achilles tendinitis, Knee pain.

2. **Stadiometer**



A **stadiometer** is a piece of medical equipment used for measuring human height. It is usually constructed out of a ruler and a sliding horizontal headpiece which is adjusted to rest on the top of the head. Stadiometers are used in routine medical examinations and also clinical tests and experiments.

Devices with similar concept, although with higher resolutions, are used in industrial metrology applications, where they are called height gauges.

3. **Weighting Machine**

Weighing scales are commonly used everywhere to measure the weight. There are variety of weighing machines which can accurately weigh from the closest gram to several tons.A simple weighting machine can assess your whole body weight.

The scores from the Height and Weight are taken to compute the BMI of a person which gives a rough idea about one person being under weight, normal weight, overweight or obese.

4. **Leg Length Discrepancy Measurement Tool**

Leg length discrepancy or Anisomelia, is defined as a condition in which the paired lower extremity (limbs) have a noticeably unequal length. The delta leg is a simple tool which can help to asses our Leg length discrepancy thereby helping one to choose the right pair of footwear or adjust the insoles so as to lessen the burden on the weight bearing joints and supporting muscles such as pain in the foot, ankle, knees, hips and back. Some of the more common symptoms are Pelvis shift , Low back pain (LBP) , Idiopathic Scoliosis, Iliotibial band syndrome, Foot pronation, and Stress fractures lower extremity.

5. **Tape**

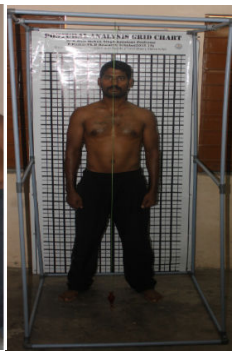
The insertion tape is designed to measure the circumferences of certain body parts, such as the **waist circumference , Hip circumference,** mid-upper arm circumference. These are regarded as useful indicators of the nutritional status of a human being, and also helps to classify ones body type such as endomorphy, mesomorphy and ectomorphy.

6. **Grid Chart (Plumb Line)**

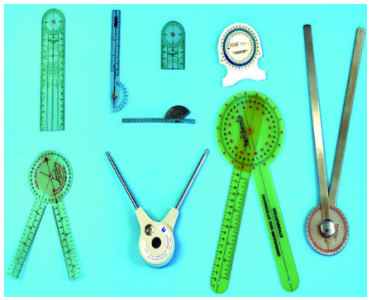
Use of plumbline for the evaluation of posture, along with a postural grid is very simple and very economical. Evaluation can be made in accordance with the guidelines which are given by Kendall, in form of ideal plumb line references on body alignment and posture.

7. Back (Spine) Curvature Analyzer

Kypholordometer, is a low-cost non-invasive instrument proposed for measuring spinal curvature in the Sagittal plane. Kypholordometry is a quantitative method with excellent intra- and inter-examiner reliability for evaluating lumbar curvature. It's a tool which helps to analyses the spine curvature disorder namely Lordosis, Kyphosis, Soliosis.


8. Goniometer



Goniometers are used to analyze different joint angles in a human body. It not only to measures joint Range of Movement, but, also for the assessment of one's posture . Measurement of postural angles, such as neck inclination angle, (Cranio-vertebral angle) and cranial rotation angle (Sagittal head tilt) by using manual goniometry has been reported in the literature. Manual Goniometry possesses good to excellent reliability and thus, it can be used as a reference for comparison with newer methods of postural assessment.

CONCLUSION

The cost of sophisticated bio-mechanical tools can be too costly for everyday use and simplicity of operation due to which the general public are unable to buy a them and use them regularly. The testing in Posture in labs too can be an expensive affair considering the need to use the evaluation frequently. The people could know and understand the use of simple biomechanical tools which can help them to assess their posture and state of their health. This will help them have a better understanding on how their body mechanics works and also conduct further research on such aspects so that stronger conclusions can be drawn.

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EFFECT OF DIFFERENT PHASES OF TRAINING ON BODY COMPOSITION AMONG VARIABLES UNIVERSITY KABADDI PLAYERS

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ABSTRACT

In physical fitness, body composition are used to describe the percentages of fat, bone and muscle in human bodies. Because muscular tissue takes up less space in our body than fat tissue, our body composition, as well as our weight, determines leanness. The subjects (n=90) were randomly assigned to three equal groups of thirty men high school kabaddi players. The groups were assigned as Experimental Groups-I, II and control group respectively. Pre-tests were conducted for all the subjects on selected physical and physiological variables, breath holding time, cardiovascular. The experimental groups participated in their respective aerobic interval training combined with yogic practices and anaerobic interval training combined with yogic practices for a period of 12 weeks. The post-tests were conducted on the above said dependent variables after a period of 12 weeks training on all the three groups, namely, experimental group-I, experimental group-II and control group. The differences between the initial and final scores on selected dependent variables were considered as the effect of selected experimental treatments. To test the statistical significance, the obtained data were subjected to statistical treatment using ANCOVA. In all cases 0.05 levels was fixed to test the hypothesis.

INTRODUCTION

Athletic performance has dramatically progressed over the past few years. Performance levels unimaginable before are now commonplace, and the number of athletes capable of outstanding results is increasing. One factor is that athletics is a challenging field, and intense motivation has encouraged long, hard hours of work. Also, coaching has become more sophisticated, partially from the assistance of sport specialists and scientists. A broader base of knowledge about athletes now exists, which is reflected in training methodology (Cassidy, Jones and Potrac, 2008). Improving skill means that the performance of any motor task becomes more efficient thereby reducing the time taken to complete the task and the level of effort required. This increased level of skillfulness could also mean more enjoyment and satisfaction for the performer by increasing the ease with which the task can be completed or by allowing new, more complex skills to be attempted. If by understanding the processes that govern the control of movement we can show the way for all individuals to improve their ability to perform the myriad of motor tasks that they confront.

Game of Kabaddi

Kabaddi is basically a combative sport, with seven players on each side; played for a period of 40 minutes with a 5 minutes break (20-5-20). The core idea of the game is to score points by raiding into the opponent's court and touching as many defense players as possible without getting caught on a single breath. One player, chanting Kabaddi!!! Kabaddi!!!! Kabaddi!!!! Charges into the opponent court and try to touch the opponent closest to him, while the seven opponents make maneuvers to catch the attacker. This is Kabaddi, the match of one against seven, known as the game of struggle.

History of Kabaddi

The origin of the game dates back to pre-historic times played in different forms. The modern Kabaddi game was played all over India and some parts of South Asia from 1930. The first known framework of the rules of Kabaddi as an indigenous sport of India was prepared in Maharashtra in the year 1921 for Kabaddi competitions on the pattern of Sanjeevani and Gemini in a combined form. Thereafter a committee was constituted in the year 1923, which amended the rules framed in 1921. The amended rules were applied during the All India Kabaddi tournament organized in 1923.

Sports Training

Most scientific knowledge, whether from experience or research, aims to understand and improve the effects of exercise on the body. Exercise is now the focus of sport science. Research from several sciences enriches the theory and methodology of training, which has become a branch of science. The athlete is the subject of the science of training. The athlete is the subject of the science of training. The athlete represents a vast source of information for the coach and sport scientist. Training is not a recent discovery. In ancient times, people systematically trained for military and Olympic endeavours.

Body mass index (BMI)

The body mass index (BMI) is a heuristic proxy for human body fat based on an individual's weight and height. BMI does not actually measure the percentage of body fat. It was invented between 1830 and 1850 by the Belgian polymath Adolphe Quetelet during the course of developing "social physics". Body mass index is defined as the individual's body weight divided by the square of his or her height. The formulae universally used in medicine produce a unit of measure of kg/m2.

Per cent body fat:

A person's body fat percentage is the total weight of the person's fat divided by the person's weight and consists of essential body fat and storage body fat. Essential body fat is necessary to maintain life and reproductive functions. The percentage for women is greater than that for men, due to the demands of childbearing and other hormonal functions. Essential fat is 3%–5% in men, and 8%–12% in women. Storage body fat consists of fat accumulation in adipose tissue, part of which protects internal organs in the chest and abdomen.

Skills

The ability to co-ordinate different muscles in order to perform a combination of specific movement smoothly and effectively is called skill. Skill is that in which technique is applied automatically without conscious thought. The most important characteristic of skill is the execution of an exercise related to the concerned sport which results in good performance. Technique should be applied with dexterity, economy of movement and easily without any tension. Mastery over such techniques of the game is what is known as skill. Complete control over the techniques of the game is the basis for achieving top class performance. In Kabaddi, the skills used by the raider are called offensive skills. The raider has to use his limbs in order to come in contact or touch the opponent, so as to score points. This is accomplished by leg touches such as toe-touch, foot touch, squat leg thrust, kicks etc, with lower extremities and various hand touches with upper extremities. Apart from these basic skills, the raider must also learn advanced skills like counter-action for escape from different holds. Mastery over these offence techniques will make the player a skilful raider. We shall study each technique in detail with the associated training methods in the next few chapters.

Different phases of training:

Sports training programme phases revolve around peaking for major competitions, phases generally progress as follows, and the first phase of training prepares the athlete for more intensive weight training with heavier weight loads. It is referred to as the conditioning phase, the hypertrophy phase, or the starter phase. Fitness training programmes typically

advance to a more intensive training phase where weight loads are consistently increased until fitness training goals are met under intensive training phase. Then the athlete performs a maintenance or inseason phase in which the athlete stabilize the level of performance which enables for major competition at the right time. The off season phase permits for an active rest so that the athlete can gain recovery in preparation for the next season phase.

Physical Characteristics and Kabaddi

In performance and high performance sport, a great importance is given to the physical condition. It is in fact the preoccupation for the adaptation of the sportsman's body to growing physical and mental efforts, to which all the parts of the human body participate. The contemporary Kabaddi game, characterised by high intensity motor activities, places upon players a wide spectrum of requirements on all their capabilities. One can hardly single out any ability or a characteristic which is not engaged in the performance of Kabaddi players. Basic and specific motor abilities and cardio-respiratory capacities, such as explosive strength, required at the centre line. As well as agility and speed which are indispensable for the efficient solving of game situations? A high level of aerobic capacity ensures the slower onset of fatigue and a fast recovery, whereas anaerobic capacity is responsible for endurance in high intensity repetitive activities.

Rationale for taking-up this Study

In India, Kabaddi is a popular sport, played by men and women almost in all states and union territories. Since, the researcher is a player, official and coach in Kabaddi game; he felt that there is a need for an analytical study in order to discriminate the factors associated in predicting the success in Kabaddi at inter-collegiate level. Moreover, very little research had been done on Kabaddi players, which motivated the investigator to take up the study

Operational Definition of the Terms Kabaddi

Kabaddi is a combative team game, played with absolutely no equipment, in a rectangular court, either out doors of indoors with seven players on the ground in each side. Each side takes alternate chances at offense and defence. The basic idea of the game is to score points by raiding into the opponents' court and touching as many defense players as possible without getting caught on a single breath. During play, the players on the defensive side are called 'Antis' while the player of the offense is called the 'Raider'. Kabaddi is perhaps the only combative sport in which attack is an individual attempt while defence is a group effort. The attack in Kabaddi is known as a 'Raid'. The antis touched by the raider during the attack are declared out if they do not succeed in when their side scores points against the opposite side during their raiding turn or if the remaining players succeed in catching the opponent's raider. The team with the most points after two periods of 20 minute wins.

CONCLUSIONS

It was concluded that different phases of resistance training can be better utilized for improving body composition variables by university level men Kabaddi players. The aerobic interval training combined with yogic practices and anaerobic interval training combined with yogic practices significantly improved physiological variable such as, breath holding time of high school kabaddi players. And considering between the treatment groups, it was found that aerobic interval training with yogic practices was significantly better than anaerobic interval training with yogic practices in improving breath holding time. The aerobic interval training combined with yogic practices and anaerobic interval training combined with yogic practices significantly improved physiological variable such as, cardiovascular endurance of high school kabaddi players. And there was no significant between the treatment groups in altering cardiovascular endurance.

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YOGA PRACTICES AND SPORTS PERFORMANCE

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ABSTRACT

Yoga has been practiced for around 5,000 years. There is evidence that the practice of yoga improves physical and mental performance. Although most poses are not aerobic in nature, they do in fact send oxygen to the cells in the body by way of conscious deep breathing and sustained stretching and contraction of different muscle groups. Whatever sport you choose to practice, yoga can enhance and complement your ability. Most sports build muscular strength and stamina, often in specific areas of the body. Yoga can benefit professional sports persons, it is necessary to explore what is required to play a sport and play it well. It is well acknowledged that to play any sport, we must develop the basic skills and continually train the body so that we can apply the skill in a refined and polished way. This of course requires considerable time, energy and commitment to practice the skill at hand. Having a body that is flexible, strong and controlled is also another important consideration, if one is not able to move the body with the grace, velocity and speed required, then performance will be lackluster. So, we can say that yoga is very beneficial to everyone especially for sportsmen.

INTRODUCTION

Yogic techniques, which aim at physical and mental self culture, have convincing scientific bases and produce consistent physiological changes It has been reported that yogis are capable of remarkable feats of endurance and controlling their autonomic functions There is evidence that the practice of yoga improves cardio respiratory efficiency and performance quotient. In an earlier work from our laboratories, we have demonstrated that subjects trained in yoga can achieve a state of deep psychosomatic relaxation associated with a significant reduction in oxygen consumption. Yoga is both preventive and therapeutic and has shown to offer both physical and mental benefits to the body and mind. If we go back to the roots of the word, we find that the term 'Yoga' has its origins in Sanskrit. It means to unite – Yoga helps the body to unite with the other vital metaphysical aspects of the mind and spirit. It is also often defined as a lifestyle which aims to have a healthy mind within a healthy body. Most simply defined, yoga is a set of poses or 'asanas', coupled with breathing techniques, which help impart strength and flexibility to the body while helping to balance the mind and its' thinking. Unlike other physical forms of exercises, like the aerobics, by practicing yoga, one can not only achieve physical health, but also mental and spiritual well-being. There is a great need of yoga and yogic practices to be taught and also to practice yoga, to overcome physical, mental and physiological problems. Our mind and body is capable of bearing the load of tension to a certain limit. If tension continues beyond that limit, then the balance of the psycho-physiological processes is disturbed, and that results into various symptoms of maladjustment the mind expresses the tension in the form of impulses that flow from the brain to various muscles of the body. Therefore the practice is an ideal complement to other forms of exercise and an extreme advantage to any sport.

What is Yoga?

The word 'Yoga' is derived from Sanskrit root *yuj* which means 'join' or 'unite'. This may be taken as the union of body, mind and soul, and is used in the literature both as an end as well as means. As an end, yoga signifies 'integration of personality' at the highest level. As

means, yoga includes various practices and techniques which are employed to achieve the development of such integration. These practices and techniques are means in the yogic literature and are also referred collectively as 'Yoga'.

Yoga: meaning and initiation

The term Yoga has its verbal root as (Yuj) in Sanskrit. Yuj means joining (Yujyate anena iti Yogaḥ). Yoga is that which joins. What are the entities that are joined? In the traditional terminology it is joining of the individual Self with the universal Self. It is an expansion of the narrow constricted egoistic personality to an all pervasive, eternal and blissful state of Reality. Pātañjala Yoga is one among the six systems of Indian philosophy known as Ṣaḍdarśanas. One of the great Rṣis (Seers), Patañjali, compiled the essential features and principles of Yoga (which were earlier interspersed in Yoga Upaniṣads) in the form of 'Sūtras' (aphorisms) and made a vital contribution in the field of Yoga, nearly 4000 years ago (as dated by some famous western historians). According to Patañjali, Yoga is a conscious process of gaining mastery over the mind. The scope of Yoga as portrayed in the Bhagavadgītā and Upaniṣads is far more comprehensive. As Swami Vivekananda puts it "It is a means of compressing one's evolution into a single life or a few months or even a few hours of one's bodily existence". In general, there is a growth process due to interactions with nature in all creation. But it may take thousands and millions of years for this natural growth; that is the long, instinctive way in animals. Manas, endowed with discrimination power, conscious thinking faculty, the intellect *(Buddhi)* and well-developed voluntary control systems, aspires to accelerate his growth. Yoga is that systematic conscious process which can compress the process of man's growth greatly. Sri Aurobindo emphasizes on all-round personality development at the physical, mental, intellectual, emotional and spiritual levels. He means by Yoga a methodical effort towards self-perfection by the development of the potentialities latent in the individual. It is a process by which the limitations and imperfections can be washed away resulting in a super human race.

Yoga – Its History

Yoga has its origin thousands of years ago in India. It has originated from a universal desire to attaining happiness and getting rid of sufferings. According to yogic lore, Shiva is considered the founder of yoga. A number of seals and fossil remains of Indus Valley Civilisation, dating back to 2700 BC indicates that yoga was prevalent in ancient India. However, systematic reference of yoga is found in Patanjali's Yogadarshana. Maharishi Patanjali systematised the yogic practices. After Patanjali, many sages/yogis contributed to its development and as a result yoga has now spread all over the world. In this sequence, on 11 December 2014, the United Nations General Assembly (UNGA) with 193 members approved the proposal to celebrate 'June 21' as the 'International Yoga Day'.

Importance of Yoga

Good health is the right of every human being. But this right depends on individual, social and environmental factors. Along with environmental or social factors to a large extent, we can develop a better immune system and a better perception of oneself so that other conditions do not affect us adversely and we can achieve good health. Health is a positive concept. Positive health does not mean merely freedom from disease, but it also include a jubilant and energetic feeling of well-being with an amount of general resistance and capacity to easily cultivate immunity against specific offending agents. Yoga is one of the most powerful drugless system of treatment. It is having its own concept of wellness which has been scientifically understood and presented by many. Yoga can be adopted as lifestyle for promoting our physical and mental health. Yoga, if introduced at the school level, would help to inculcate healthy habits and lifestyle to achieve good health. The aim of yoga thus, at the school level, is to encourage a positive and healthy lifestyle for physical, mental and emotional health of children. Yoga helps in the development of strength, stamina, endurance and high energy at physical level. It also

empowers oneself with increased concentration, calm, peace and contentment at mental level leading to inner and outer harmony.

Benefits of yoga on Sports Performance

- **Mental health**

Let us first begin with the benefits of Yoga on mental health. After all, good mental health is of paramount importance for being healthy physically as well. As advised above, breathing technique forms an integral part of Yoga. Do I hear you asking 'how?' It really is very basic – by breathing deep and right, something that you would be doing when you practice Yoga, you are inhaling more oxygen and allowing the cells of your body to have access to that oxygen for a longer period of time.

A common practice in yoga is to breathe only from one nostril at a time, while holding the other one closed with the tip of your finger. Medical research has shown that this boosts increased activity of the opposite side of the brain, leading to better cognitive performance and tasks associated with the other side of the brain. Regular yoga practice helps children with attention deficit disorder and people suffering from anxiety, depression and mood swings. It also helps keep the mind calm and reduce stress and thereby increase the general well-being of the person.

Strength - Asanas

Ever wondered, why so many of us, after a hard day's work, come and plonk ourselves, on our home sofas, with very little energy to even fetch a glass of water for ourselves. This is caused by lack of inner strength. Certain asanas of the yoga help generate inner strength. Inner strength is essential in doing day to day activities and in preventing you from injuries. This is especially useful, as we grow old and need more energy and strength to do the same activity.

Flexibility - Asanas

The popular notion that you need to be flexible in order to do yoga is incorrect; it is really the other way round – you should do yoga so that you can be more flexible. If you have a flexible body, you find it easy to do tasks. A lot of poses in Yoga concentrate on stretching and improving your flexibility. With yoga, not only the muscles of the body, but also the softer tissues of your body are worked out, resulting in less build-up of the lactic acid, which is responsible for stiffness in various parts of the body. Yoga increases a range of motions of the less used inner muscles and helps in lubrication of joints. The result is a more flexible body, able to perform tasks easily.

Cardiovascular - Pranayama

Yoga has a lot of positive effects on the cardiovascular system of our body. A healthy cardiovascular system is responsible for preventing heart attacks, strokes and hypertension. Heart disease is a problem which has roots in an improper lifestyle, faulty diet and negative thinking. Our thoughts, emotions and feelings affect our body and negative emotions/thoughts send a series of complex and unhealthy chemical processes throughout the body, giving alarms that something is amiss. Yoga tends to control these by bringing in fresh life-giving oxygen. The antioxidant properties of Yoga help in preventing the negative emotions and promote a general well-being in the body.

Memory improvement - Dhyanam

Yoga helps in retaining information better and for a longer period of time due to its focus on concentration and meditation. By breathing right, concentrating and meditating, more blood flows to the brain, making it supple and ready to accept more information and reproduce that information when required.

Effects of yoga on different factors

SPIRIT

Inspiration - Motivation

Everything starts from the Spirit. The athlete must first be inspired, meaning "in spirit", having a desire to compete, play, or win. To have team spirit. If the athlete lacks spirit he won't play his best. Yoga connects the athlete deeper with his Spirit through the meditative poses thus allowing him/her to tap into their pure potentiality, unlimited. This occurs when the athlete practices yoga as a meditation, so that union with the infinite spirit that is also the infinite potentiality is achieved.

BODY

Perspiration - Implementation

Inspiration and preparation are still not enough. Perspiration is what makes it all happen. In order to ultimately fulfil the desire of the Spiritual body and execute the strength and game plan of the mental body, the athlete must have a finely tuned, flexible and strong Physical body. This is where the athlete's game is fully benefited by the physical aspect of practicing yoga asanas. The body is available to move beyond old limitations to peak performance.

Physical effects

- Increase suppleness through stretching muscles.
- Improves joint mobility by lengthening ligaments to their healthy limits.
- Reduces risk of injury and assists with injury rehabilitation.
- Effective as a form of soft tissue and collagen fibre rehabilitation.
- Helps to bring the body back into alignment and improves posture.
- Increases stride length.
- Enhances co-ordination and agility.
- Contributes to improved cardiovascular fitness and stamina.
- Teaches athletes how the body performs and functions as a synergistic unit.
- Lowers resting heart rate and increases VO2 max.

Psychological effects

- Relieves performance anxiety and stress, and frees athletes from mental distractions.
- Improves focus.
- Develops determination and self-discipline.
- Teaches athletes to challenge themselves and go outside of their comfort zone.
- Reduces stress and provides a method of relaxation.
- Breath work provides athlete with techniques they can use whilst competing to control arousal levels.
- Helps athletes to achieve flow and get in 'the zone'.
- Teaches athletes how to use imagery and relaxation.
- Helps athletes to understand the importance of relaxing, resting, and recovering.

CONCLUSION

Yoga offers new learning possibilities to a wider group of students than traditional sports or fitness curriculum, making it a valuable addition to any educational program. Additionally, adding yoga to a school's curriculum will help provide a quality physical education program as modification of traditional physical education yoga in sports as important as other think it helps us in different ways and different levels in a sports men life. Yoga can play a key role in cultivating mind control and concentration which helps a sportsperson to perform at their game. It offers children and adults an opportunity to experience success in physical activity, which can help build a foundation of strong of life. However, curriculum specialists, teachers, trainers and students should know and analyze seriously the real challenges of yoga education in classroom settings and real life as well

As highlighted above, researcher find out that yoga in sports as important as other think it helps us in different ways and different levels in a sports men life. We have improved our performance by daily yoga practicing in order to perform a sporting action efficiently and effectively, a person needs to have a high degree of concentration and focus with a mind that is calm and controlled, Yoga can help a sportsperson to have evenness of mind and control of their thoughts even during stress and/or adversity. Yoga can play a key role in cultivating mind control and concentration which helps a sportsperson to perform at their peak leaves and yoga helps us a lot.

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IMPACT OF TECHNOLOGY ON BASKETBALL

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ABSTRACT

Technology plays an important role in field of basketball and it also shows different technologies used in the field of basketball and the difference it makes in basketball field. Technology not only enriches the game quality for the audience for watching a match but also leaves a powerful impact on them.

INTRODUCTION

The game that has begun with a peach basket and a Canadian teacherDr. James Naismith in Springfield in 1891. Basketball started to grow quickly as 20th Century and is one the most famous games all over the World. It was first started in America as college level game slowly and now it's a Professional level game played all over the world.

In this 21st Century world Technology play a vital role in day to day life. Technology is set of techniques, methods and processes used for embedding technological equipment's in field of sports as well. Technology in sports has expanded in a flourished manner and changing over the timeline and the use of technology in sports is only the single aspect which has made an impact in the modern world in the field of sports.

Basketball

Basketball's first phase is far more primitive than what it has become today. Initially it was affixed to an elevator track with a peach basket until Mr. Naismith decided to cut open the basket as the person had to climb and take the ball out after the team has scored the point. Basketball had become the brand new sport at that time and no specific ball was specified for playing the game. At the initial stage of basketball it was played with the soccer ball with which dribbling was not possible. Today the orange pebbled ball that we all know and love as a basketball was invented in 1950's. Since those days from peach basket to the awkward soccer ball and now to the orange pebbled ball, basketball has seen and undergone lots of changes.

Technology

The word technology was derived from a Greek word "Techic" that means skills or arts, and "logia" means study or science. Thus, Technology means the Study of an art or skill. However, according to the historian Paul Sattler, the term Technology is derived from the Latin word "Texere" which means 'to construct' or 'waive'. So it does not only means use of machines as we all know in common, but it means any practical art of applying scientific knowledge.

Thus, Technology in sports plays a vital role in the modern world and as in televisions, mobile phones, tablets, etc., it is playing a vital role of accurate results, replays, etc.,.

Objective of Study:

The objective of the study is to know the impact of technology on the basketball game.

Hypothesis

There is a huge development in basketball field though technology.

Discussion

This article aims at describing the development of technology in Basketball game. With all the existing ways to view a basketball game – tablet, smartphone, television that provides all the different modes of replay, video-recording, reviews, etc., as per the demand of the audience. The biggest event of the basketball game is the NBA which is National Basketball Association which is professional basketball league in North America which comprises of 30 teams (29 from USA and 1 from Canada) for both men and women which is organised by FIBA also known as International Basketball Federation which has also become the World's Most Tech – Savvy Sport. NBA has been the most progressive leagues in the field of technology.

The following are the technologies used in the field of basketball:

1. Instant Replay: Instant Replay in Basketball first ever came in 2002-2003 season.Instant Replay is a video recording of something that recently occurred which was both shot and telecast live. In this replay the video which is already been telecast and shown in live has been replayed for the viewers to see again and analyse what had taken place in the game. In NBA, the officials must watch an instant replay of the potential buzzer beater to determine the shot was released before the time expired or the line was touched or not for the clarity of the ball positioning, last touch, etc.,

Image 1: Official seeing replay in between game@ NBA season

2. Rookie gear technology: Rookie gear provides a lighter ball, for a better experience and is designed to weigh less than standard youth balls for kids until 8year. A lighter ball creates better experience allowing the kids to practice proper fundamentals more easily and efficiently which builds the confidence in them which they need with a ball that is appropriate in size and weight. Young athlete learns faster and performs better than ever before. The advantage of Rookie Gear technology:
    - Weighs 15% less than the traditional balls.
    - Premium soft Grip technology Cover.
    - For indoor and outdoor use.

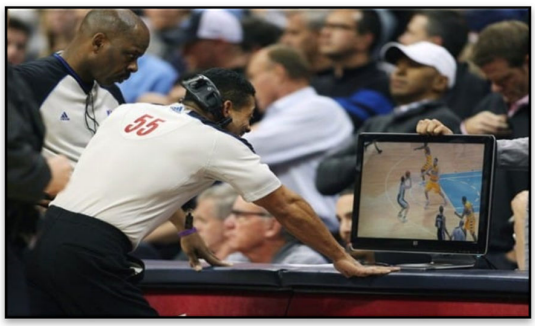

Image 2: Rookie Gear Technology

3. Grip control: The new developed, two layered sponge rubber design gives a soft grip, perfect game characteristics and a very long durability in category of outdoor balls. Because of its high-end composite and high pebble design this ball has a superior grip as well as new and improved touch.

Image 3: Showing the Shot Clock Technology

4. Shot clock: Shot clock has first come into basketball in 1954 in Syracuse, New York. The shot clock has transformed the basketball like nothing else. In basketball shot clock is designed to increase the pace of the game. The offensive team has to shoot the basket before the shot clock expires and if the offensive team fails to score a field score within the time

limit, they are assessed a violation resulting in the turnover to the opponents. Thus, the shot clock technology has significantly improved the pace of the game which in turn results the players taking lot more shoots in the game. The shot clock is used to time possessions by the offensive team and it is used in basketball as it is played at high level.

5. Scoreboard: The scoreboard shows both the time left and the scores of both the teams. Most high school scoreboard displays the number of foul of both the teams as well. College level scoreboard comprises of the shot clock and the number of time outs for each team. The shot clock have its own buzzer system sounding a different octave to avert any confusion with the game clock system. Since 1991, the NBA have compulsory that each shot clock carry a duplicate readout of the time left in the period in addition to shot clock.

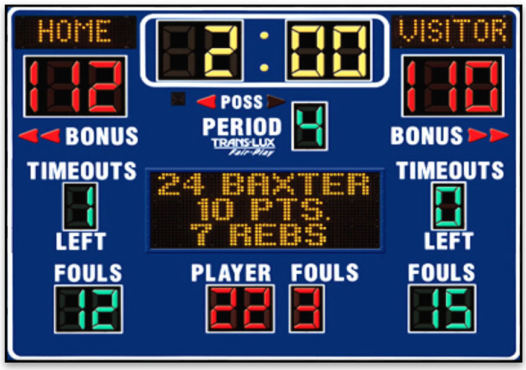

Image 4: Scoreboard Technology in basketball

6. Analysis:Each player can see and work on their mistakes and faults committed in the game by seeing the recording of the game and each player can analyse and improve their performance for the future games.

RESULT

Thus, with the technology each player themselves as well as other young emerging players can learn tricks and techniques for improvement of their game. Technology not only gives the audience an enjoyable experience by watching but also the players an experience of learning.

CONCLUSION

Technology is now considered as one of the most important tools and techniques in the field of basketball. Thus, making a very important impact in the field of basketball. Also from the above discussion it is seen that technology has made a great impact in the field of basketball.

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IMPACT OF SOCIO-ECONOMIC STATUS OF DROPPED -OUT SPORTS WOMEN IN MADURAI DIST

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ABSTRACT

Purpose of the study was to find out the impact of socio-economic status of dropped - out sports women in madurai district. To achieve the purpose of the study 500 sports dropped out women from Madurai district were selected their age arrange from 18 to 30 years. Survey method was adopted for this study tool used for this study was socio economic index questionnaire. The dropped out from very low socio economics status are maximum numbers. The most important reasons for dropped out was found to be the person this is generally acknowledge to be big problem for athlete.

Key words: socio economics status, dropped out sports women, Economic Constraint

INTRODUCTION

In a developing country like India sports is never a **prime occupation**. In proportion to the population men and women hardly take part in physical activities let alone participation in sports. Tamil Nadu being a traditional state, women are less encouraged in sports; if at all they only participate on their own will they have to face a lot of hardships and hurdles that hampers their progress. Many a times they **quit sports (drop out)** unable to come to terms with the reality. And girls continue to dropout in sport more than boys since the Indian society still has a long way to go in order achieve gender equality in sports.

Social, cultural, practical and personal reasons are few of the reasons behind sports women dropping out from sports.

Women sports participation can be improved a lot in a county like India though women who have done well but a substantial number have dropped out without being able to fulfill their potential.

Economic Constraint

Girls from economically disadvantaged backgrounds can find the costs associated with equipment, transportation and competition unrealistic for their families. Additionally, playing sport can mean time away from paid jobs and work that generates income for a family, such as farming. Girls are often pulled out of school early to work and provide income for the family. Parents will be resistant to letting their daughter stop an activity that brings the family money and start an activity that, as many cultures regard, is a waste of time or won't get her anywhere.

PURPOSE OF THE STUDY

Purpose of the study was to find out the impact of socio-economic status of dropped - out sports women in madurai dist

HYPOTHESIS

It is hypothesized that females with very low socio-economic status (SES) would be the highest to drop out of sports.

METHODOLOGY

Selection of subject

For this study 500 sports dropped out women have been selected for Madurai district.

Here consists the sample of only women sports dropouts from Madurai District. Their age ranged between 18-30 years.

Collection of data

The required data has been taken from the information given by the District Sports Office of Madurai collected from various colleges' and institutions within the district.

Classification of group

The variables classify in to five groups namely very high socio economic status (SES), high SES, average SES, low SES, very low SES.

SELECTION OF VARIABLES

The variables selected for the study was socio economic status (SES). The tool used for the study socio economic status index questionnaire.

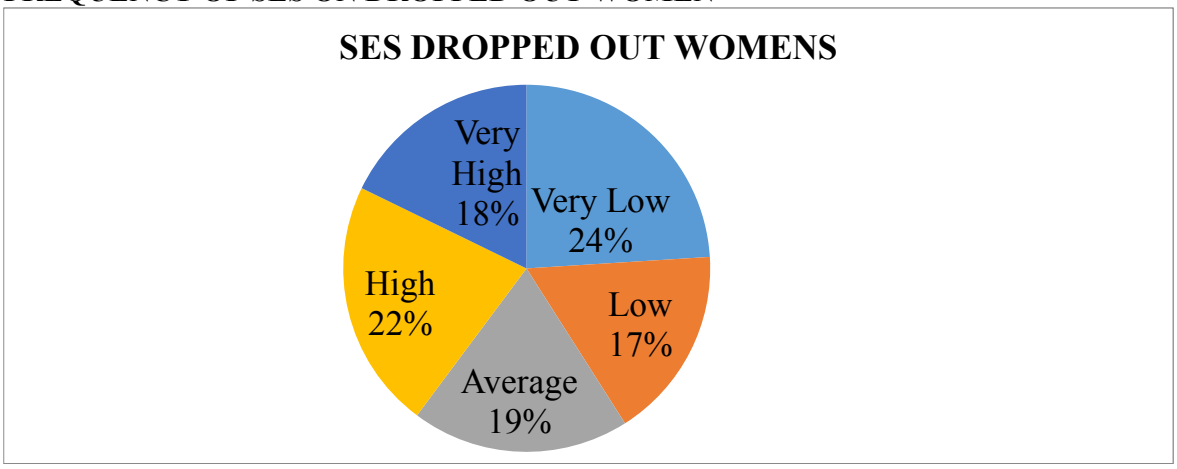
TOOLS USED

The tool used for the study socio economic status index questionnaire. The data has been collected among the respondents with the help of a "Socio Economic status" Questionnaire by prof.R.P.Verma,et.al.

TABLE I: PERCENTAGE ANALYSIS OF SOCIO ECONOMIC STATUS

	TOTAL
Very Low	120
Low	85
Average	96
High	110
Very High	89
TOTAL	500

FREQUENCY OF SES ON DROPPED OUT WOMEN



DISCUSSION ON FINDING

From the table I shows that high level of SES is having the very low of more than 120 women's of dropped out from the sports is very low of SES. And the following of 110 dropped out women's are high level of SES, the least number of women's are dropped out from the sports are 85 persons are low level of SES. The researcher finding out of the dropped out from very6 low socio-economic status (SES) are maximum number. Dropped out women from very low economic status don't want compete with others and after attend a certain level in sports and a need to go for a ant kind of job like such as government and private sector with the help of merit sports person certificate (MSP). They want to fulfill their family need.

DISCUSSION ON HYPOTHESIS

It is hypothesized that very low socio-economic status (SES) are maximum drop out in sports.

According to the result the study it shows that dropped out female maximum numbers are from very low socio-economic status (SES). Hence the research hypothesis is thus accepted

CONCLUSION

The result reveals that socio-economic status (SES) places a major role. Considering the other things to do was the most important reasons for dropout were found to be the socio economic status of the person. This is generally acknowledged to be a big problem for athletes. The most frequently reason for attrition found in the majority of investigations is the problem. If one wants to attain peak level in sports coach or physical education teacher needs to identify the psychological issues and sociological issues of the sports women and give counseling to them so as to avoid sports dropout.

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ANALYSIS OF TEAM PERFORMANCE IN SOUTH ZONE INTER UNIVERSITY CRICKET WOMEN TOURNAMENT 2012

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ABSTRACT

The purpose of the study was to analyze the team performance in south zone inter university cricket women tournament in 2012. This study was conducted only on the south zone inter university women teams performance in 2012. Ten teams only participated in south zone Inter university women cricket tournament at Puducherry in 2012. The study was limited to performance variables such as, bowling average and strike rate. For the purpose of analyze the top two teams (Qualified for All India Inter University Tournament) of the south zone inter university cricket women tournament namely Calicut and Pondicherry were considered as successful teams and other teams as unsuccessful teams. Independent t test and was used for statistical analysis. There was no significant difference between successful teams and unsuccessful teams in the selected variables.

Key word: Bowling average, Batting strike rate, South zone cricket.

INTRODUCTION

Cricket is a sport that has been played around the world for more than eight centuries. Cricket is a bat-and-ball team sport that originates in England and is now played in more than 100 countries. Such popular game's popularity in the Indian sub continent, that this part of the world now ranks foremost in terms of followers and the amount of cricket played.

Now days many of us are delighted to watch and exhibit the talents of cricket for the women especially in Indian women cricketers are dominating in every aspects of cricket. (They are Deepti Sharma (all rounder), Mithaliraj (batting), Harmanpreet Kaur (batting) Jhulan Goswami (bowling) etc.)

Bowling Average

The average number of runs scored off a bowler for each wicket he has taken total runs conceded divided by number of wickets taken.

$$\text{Bowling Average} = \frac{\text{Total runs given}}{\text{Total wicket taken}}$$

Batting Strike Rate

Batting strike rate is defined for batsmen as the average number of runs scored per 100 balls faced. The higher the strike rate the more effective a batsman is at scoring quickly.

$$\text{Batting strike rate} = \frac{\text{Total runs scored}}{\text{Total balls faced}}$$

Statement of The Problem

Purpose of the study was to analysis the team performance in south zone inter university cricket women tournament 2012.

Hypothesis

The hypothesis states that there would be a significant difference between successful team and unsuccessful teams in the selected variables.

METHODOLOGY

This study was conducted only among south zone inter university women teams performance in 2012. Ten teams only participated in south zone Inter university women cricket tournament in Puducherry 2012. The study was limited to performance variables such as, bowling average and strike rate. For the purpose of comparison the top two teams (Qualified for All India Inter University Tournament) of the south zone inter university cricket women tournament namely Calicut and Pondicherry were considered as successful teams and other teams as unsuccessful teams. The data was statistically analyzed by using "t" ratio to find out the significant difference between two groups.

Results and Statistical Analysis

Analysis of "t" ratio was used to analyze the collected data. The obtained scores of successful team and unsuccessful teams in performance variables such as, bowling average and strike rate have been presented in the table.

TABLE I

STRIKE RATE BETWEEN SUCCESSFUL TEAM AND UNSUCCESSFUL TEAMS IN SOUTH ZONE INTER UNIVERSITY CRICKET WOMEN TOURNAMENT 2012-13

Group	MEAN	SD	SEM	MD	T
Successful	85.72	31.65	12.92	12.38	0.76
Unsuccessful	73.35	37.44	10.01		

Required t value (df 18) = 2.101 * Significant

Table VI revels that there is no significant difference between successful team and unsuccessful team in the Strike rate as the obtained t value 0.76 is less than the required value of 2.101.

Bar Diagram showing Strike Rate between Successful Team and Unsuccessful Teams in South Zone Inter University Cricket Women Tournament 2012-13

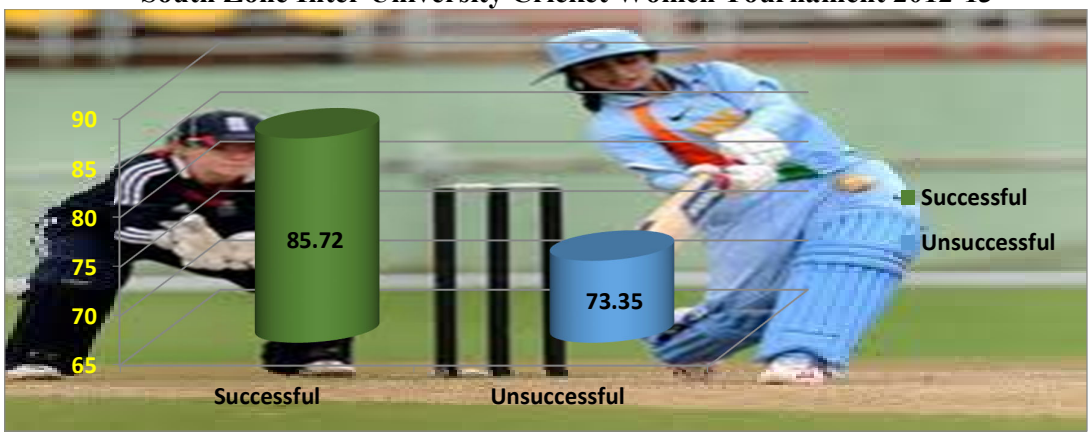

TABLE II

BOWLING AVERAGE BETWEEN SUCCESSFUL TEAM AND UNSUCCESSFUL TEAMS IN SOUTH ZONE INTER UNIVERSITY CRICKET WOMEN TOURNAMENT 2012-13

Group	MEAN	SD	SEM	MD	T
Successful	17.79	11.59	4.73	14.51	1.64
Unsuccessful	32.31	28.02	7.49		

Required t value (df 18) = 2.101 * Significant

Table VIII revels that there is no significant difference between successful team and unsuccessful team in the bowling average as the obtained t value 0.40 is less than the required value of 2.101.

BAR DIAGRAM SHOWING BOWLING AVERAGE BETWEEN SUCCESSFUL TEAM AND UNSUCCESSFUL TEAMS IN SOUTH ZONE INTER UNIVERSITY CRICKET WOMEN TOURNAMENT 2012-13

DISCUSSION ON HYPOTHESIS

The hypothesis states that there would be a significant difference between successful team and unsuccessful teams in the selected variables.

From the table I- II, it is observed that there is no significant difference between successful team and unsuccessful teams in the selected variables. Therefore the research hypothesis is rejected and null hypothesis is accepted.

CONCLUSION

The summary the present study shows that analyze of team performance in south zone inter university cricket women tournament reveals that there is no significant difference in bowling average between successful team and unsuccessful teams. There is no significant difference in strike rate between successful team and unsuccessful teams.

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INFLUENCE OF SPECIFIC STRENGTH TRAINING AMONG HEARING IMPAIRED STUDENTS

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ABSTRACT

The purpose of the study was to find out the influence of specific strength training on abdominal and leg strengths among hearing impaired students. To achieve the purpose of this study, 24 male hearing impaired students were randomly selected as subjects from the Deaf and Dump School, Tirunelveli District, Tamilnadu, India. Their age ranged from 14 to 16 years. The selected participants were randomly divided into two groups of 12 in each group such as group 'A' specific strength training (n=12) and group 'B' acted as control group (n=12). Group 'A' underwent specific strength training for three alternative days per week and each session lasted for an hour for six weeks. Control group was not exposed to any specific training but they were participated in other regular activities. The selected criterion variables abdominal strength was assessed by sit-ups test and leg strength was assessed by wall sit test. The pre and post tests data were collected on selected criterion variables prior to and immediately after the training program. The pre and post-test scores were statistically examined by applying dependent 't' test and Analysis of Co-Variance (ANCOVA) for selected variables. It was concluded that there was significant improvement on abdominal and leg strengths to the influence of specific strength training when compared to the control group among the hearing impaired students.

Kew words: specific strength training, abdominal strength, leg strength, hearing impaired students

INTRODUCTION

Sense of hearing is a complex sense involving both the ear's ability to detect sounds and the brain's ability to interpret those sounds, including the sounds of speech. Hearing loss is a common problem caused by noise, aging, disease, and heredity [1].

Training is an essential pursuit for a healthy and uplifted life and important for all people. However it has a more different importance for a disabled person. Hence sport can open a new window for disabled individuals who already face many obstacles in their lives and live together with the stress created by these obstacles [2].

Hearing is an important sensory ability in psychomotor development of human beings and forms the basis of communication for cognitive, affective and behavioural development to take place [3]. Hearing loss is the diminished ability to detect, recognize, discriminate, perceive and comprehend auditory information [4]. It is usually diagnosed early in life [5]. Recent studies have demonstrated that hearing impairment is independently associated with poorer physical functioning [6].

Physical fitness is a state of well-being that allows people to performs daily activities with vigor, reduce the hypo kinetic problems and establish a fitness base for participation in a variety of physical activities [7]

Purpose of the Study

The purpose of the study was to find out the influence of specific strength training on abdominal and leg strengths among hearing impaired students

METHODOLOGY

To achieve the purpose of this study, 24 male hearing impaired students were randomly selected as subjects from the Deaf and Dump School, Tirunelveli District, Tamilnadu, India. Their age ranged from 14 to 16 years. The selected participants were randomly divided into two groups of 12 in each group such as Group'A' specific strength training (n=12) and Group 'B' acted as control group (n=12). Group 'A' underwent specific strength training for three alternative days per week and each session lasted for an hour for six weeks. Control group was not exposed to any specific training but they were participated in their regular activities. The selected criterion variables abdominal strength was assessed by sit-ups test (in numbers) and leg strength (in seconds) was assessed by wall sit test. The pre and post tests data were collected on selected criterion variables prior to and immediately after the training program. The pre and post-test scores were statistically examined by applying dependent 't' test and Analysis of Co-Variance (ANCOVA) for selected variable. All the level of significant was fixed at 0.05 level of confidence.

ANALYSIS OF DATA

The results of analysis of covariance on the criterion measures were given in the following tables.

Abdominal Strength

TABLE -I

SUMMARY OF MEAN AND DEPENDENT'T'-TEST FOR THE PRE AND POST TESTS ON ABDOMINAL STRENGTH OF EXPERIMENTAL AND CONTROL GROUPS (in numbers)

Tests		Pre Test	Post Test	't' – Value
Experimental Group	Mean	25.37	31.69	5.93*
	SD	2.11	1.53	
Control Group	Mean	25.12	26.37	1.07
	SD	2.19	2.30	

*Significant at .05 level.

The table value required for 0.05 level of significance with df 11 is 2.20.

The table I shows that the pre-test mean value of experimental group and control group are 25.37 and 25.12 respectively and the post test means are 31.69 and 26.37 respectively. The obtained dependent t-ratio values between the pre and post test means of experimental group and control group are 5.93 and 1.07 respectively. The table value required for significant difference with df 11 at 0.05 level is 2.20. Since, the obtained 't' ratio value of experimental group are greater than the table value, it is understood that experimental group had significantly improved the abdominal strength. However, the control group has not improved significantly. The 'obtained t' value is less than the table value, as they were not subjected to any specific strength training.

The analysis of covariance on abdominal Strength of experimental group and control group have been analysed and presented in Table II.

TABLE - II

ANALYSIS OF COVARIANCE ON ABDOMINAL STRENGTH OF EXPERIMENTAL AND CONTROL GROUPS

Adjusted Post Test Means		Source of Variance	Sum of Square	df	Means Square	F-ratio
Exp.Group	Control Group					
32.17	26.01	Between	250.96	1	250.96	33.96*
		With in	155.19	21	7.39	

*Significant at .05 level. The table value required for significance at 0.05 level with df 1 and 21 is 4.32.

Table II shows that the adjusted post test mean values of experimental and control groups are 32.17 and 26.01 respectively. The obtained F-ratio value is 33.96, which is greater than the table value 4.32 with df 1 and 21 required for significance at 0.05 level. Since the value of F-ratio is greater than the table value, it indicates that there is a significant difference among the adjusted post-test means of experimental and control groups on abdominal strength.

The mean values of experimental and control groups on abdominal strength were graphically represented in the figure 1.

Leg Strength

TABLE III
SUMMARY OF MEAN AND DEPENDENT 'T'-TEST FOR THE PRE AND POST TESTS ON LEG STRENGTH OF EXPERIMENTAL AND CONTROL GROUP
(in seconds)

Tests		Pre Test	Post Test	't' – Value
Experimental Group	Mean	22.27	40.29	14.43*
	SD	4.36	3.66	
Control Group	Mean	21.20	23.44	1.80
	SD	3.42	3.02	

**Significant at .05 level. The table value required for 0.05 level of significance with df 11 is 2.20.*

The table III shows that the pre-test mean value of experimental and control groups are 22.27 and 21.20 respectively and the post test means are 40.29 and 23.44 respectively. The obtained dependent t-ratio values between the pre and post test means of experimental and control groups are 14.43 and 1.80 respectively. The table value required for significant difference with df 11 at 0.05 level is 2.20. Since, the obtained 't' ratio value of experimental group are greater than the table value, it is understood that experimental group had significantly improved the leg strength. However, the control group has not improved significantly. The 'obtained t' value is less than the table value, as they were not subjected to any specific strength training.

The analysis of covariance on leg strength of experimental and control groups have been analysed and presented in Table IV

TABLE IV
ANALYSIS OF COVARIANCE ON LEG STRENGTH OF EXPERIMENTAL GROUP AND CONTROL GROUP

Adjusted Post Test Means		Source of Variance	Sum of Square	df	Means Square	F-ratio
Experimental Group	Control Group					
41.82	23.17	Between	997.40	1	997.40	36.75*
		With in	569.94	21	27.14	

*****Significant at .05 level. The table value required for significance at 0.05 level with df 1 and 21 is 4.32.

Table IV shows that the adjusted post test means of experimental group and control groups are 41.82 and 23.17 respectively. The obtained F-ratio value is 36.75 which is greater than the table value 4.32 with df 1 and 21 required for significance at 0.05 level. Since the value of F-ratio is greater than the table value, it indicates that there is a significant difference among the adjusted post-test means of experimental and control groups on leg strength.

The mean values of experimental and control groups on leg strength were graphically represented in the figure 2.

DISCUSSION AND FINDING

The results of the study indicated that the experimental group namely, specific strength training group had significantly improved in the selected dependent variables namely abdominal strength and leg strength. It is, also found that the improvement influenced abdominal strength and leg strength by specific strength training group was greater than control group. **Aslan, Calik, & Kitiş (2012)** planned in order to determine physical activity levels of visually impaired children and adolescents and to investigate the effect of gender and level of vision on physical activity level in visually impaired children and adolescents. The results of our study suggested that the physical activity level of visually impaired children and adolescents was low, and gender affected physical activity in low vision children and adolescents.**Maes, De Kegel, Van Waelvelde, & Dhooge (2014)** compared with the balance performance of hearing-impaired (HI) children with and without vestibular dysfunction to identify an association between vestibular function and motor performance. These results indicate an association between vestibular function and motor performance in HI children, with a more distinct motor deterioration if a vestibular impairment is superimposed to the auditory dysfunction.

CONCLUSION

1. There was significant improvement on abdominal strength due to the influence of specific strength training among hearing impaired students.
2. There was significant improvement on leg strength due to the influence of specific strength training among hearing impaired students
3. The experimental group had achieved significant difference on selected physical variables such as abdominal strength and leg strength among hearing impaired students when compared to control group.

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EFFECTIVENESS OF 6 WEEKS PLYOMETRIC EXERCISES IN IMPROVING VERTICAL JUMP PERFORMANCE OF ATHLETES

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ABSTRACT

The objective of the study is to find whether 6 weeks Plyometric exercise is effective in improving vertical jump performance of athletes. The study is quasi experimental in nature. 10 university level athletes were selected using simple random sampling. The vertical jump height was measured using vertical jump test before and after the 6week plyometric training. 6 week Plyometric exercises is significantly effective in improving vertical jump performance of athletes. The t "cal" value was 13.90 and the t "tab" value was 2.262. The results of the study make us to conclude that 6 week Plyometric exercises is significantly effective in improving vertical jump performance of athletes.

Key words: Plyometric exercises, Vertical jump performance.

INTRODUCTION

Many athletic events rely on the ability of the athletes to produce power. Power represents one component of athletic fitness that may be most indicative of success in sports requiring extreme and rapid force production. Power can be increasing by either increasing that the amount of work or force that is produced by the muscle on by decreasing the amount of time required to produce the force.

In many sports the ability to produce force rapidly may be more important than maximum force production.

Plyometric exercises are designed to enhance the athlete's ability to reach maximal force over the shortest period of time. Plyometric exercises involves stretching the muscles immediately before making rapid concentric contraction. Eccentric muscle contractions are rapidly followed by concentric contraction in many sport skills in team of individual sports. When muscles are stretched during an eccentric contraction, they store elastic energy, and this energy, accompanied by a rapid concentric contraction produces more power than an independent concentric contraction.

Plyometric exercises such as jumping, hopping, skipping and bounding are executed with the goal of increasing dynamic muscular performance. Therefore, Plyometric exercises has been widely used for increasing dynamic athletic performance such as vertical jump ability, speed, agility and muscle activation of lower extremities.

METHODOLOGY

In this study, a careful attention on individual subjects who performed exercises were taken and they performed their exercises only under supervision.

10 university level athletes were selected for the study.

The subjects are well explained about the program and they were co-operative too. As plyometric exercises are high intensity exercises only alternative days were selected for the training as continuous exercises might injure their tissues.

Exercises were done on grass surface, as the cemented surface will increase the ground reaction force. All the subjects were asked to wear well cushioned stable shoes to absorb some of the inevitable impacts.

All the subjects took part in the experiment on a voluntary basis signing a consent form and demographic data were collected from each participant. The purpose of the study was explained to all subjects.

Before starting the exercise the subjects were checked for their performance using

- Vertical jump test
- vertical jump test

The Vertical jump test measures the highest distance jumped from a semi crouched position by use of the following protocol.

Standing reach height was measured for each subjects by asking them to stand with preferred shoulder adjacent to a wall with feet flat and reach to the maximum height. Standing reach height represents the distance from the wall mark (middle finger) to the floor, in centimeter (cm)

The subjects were instructed to bend their knees upto about 90 degree angle while moving arms back in a winged position and thrust upwards, touching as high as possible on the wall. Three trials of the jump test were allowed for the subjects and the highest score was noted as his vertical jump reach.

Vertical jump height (cm) was computed as the difference between standing reach height and vertical jump height achieved.

The subjects were given sufficient warm up and then provided with following form of plyometric exercises.

6 WEEK PLYOMETRIC TRAINING PROTOCOL

Training Week	Training Volume	Plyometric drills	Set x Repetition	Training intensity
1	90	Side to side ankle hops standing jump and reach front cone hops	2 x 15 2 x15 6 x 15	Low Low Low
2	120	Side to side ankle hops standing long jump lateral jump over barriers double leg hop	2x 15 2 x 15 6 x 15 10 x 3	Low Low Medium Medium
3	120	Side to side ankle hops standing long jump lateral jump over barrier double leg hops lateral cone hops	2 x 12 2 x 12 6 x 4 8 x 3 2 x 12	Low Low Medium Medium Medium
4	140	Single leg bounding standing long jump lateral jump over barrier lateral cone hops tunk jumping with knee up	2 x 12 3 x 10 8 x 4 3 x 10 4 x 6	High Low Medium Medium Medium
5	140	Single legs bounding jump to box double leg hops lateral cone hops tuck jump with knee up lateral jump over barrier	2 x 10 2 x 10 6 x 3 2 x 11* 6 x 5 3 x 10	High Low Medium Medium High High

6	120	Jump to box depth jump to prescribed height double leg hops lateral cone hops tuck jump with knees up lateral jump single leg	2 x 11 * 4 x 5 6 x 3 2 x 10 4 x 5 2 x 10	Low Medium Medium Medium High High

These exercises were given to the athletes once a day on alternate days for a period of six weeks. At the end of 6th week, post-test scores of vertical jump performance were measured in a similar fashion as that of pre- test scores and were recorded.

RESULT AND DISCUSSION

TABLE PAIRED "T" TEST FOR EXPERIMENTAL GROUP (Plyometric exercises)

Variable	t-cal value	t table value
Vertical jump Performance	13.90	2.262

*** Signifacant at 5%level**

***** 6 week Plyometric exercises is significantly effective in improving vertical jump performance of athletes.

DISCUSSION ON FINDINGS

The increase in the vertical jump performance achieved might be due to the following reasons.

Plyometric exercises involve stretching the muscles immediately before making rapid concentric contraction. Eccentric muscle contractions are rapidly followed by concentric contraction in many sport skills in team of individual sports. When muscles are stretched during an eccentric contraction, they store elastic energy, and this energy, accompanied by a rapid concentric contraction produces more power than an independent concentric contraction.

CONCLUSION

The result of the study makes us to conclude that plyometric exercises are significantly effective in improving vertical jump performance

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EFFECTIVENESS OF TAPING IN REDUCING PAIN ON PATIENTS WITH PERONEAL TENDONITIS

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ABSTRACT

The purpose of the study is to find the effectiveness of taping in reducing pain on patients with peroneal tendinitis. This study is experimental in nature. Thirty subjects were selected and divided into two equal groups by using simple random sampling technique. Pretest assessments of pain were taken for all the subjects using visual analogue scale. After the pretest assessment the experimental group I underwent laser therapy and experimental group II underwent laser therapy with taping for the period of one week. Post test scores were taken after one week for both the groups in a similar fashion as that of pretest. The results of the study favored taping is effective in reducing pain of peroneal tendinitis.

KEY WORDS: Visual Analogue scale, Taping, Laser, Peroneal Tendinitis.

INTRODUCTION

Peroneal tendonitis, also referred to as peroneal tendinopathy, is a rare but aggravating injury that can cause pain in the outside of the foot and up the outside of the lower leg when we run.

The peroneal muscle at the back of the lower leg has a tendon which runs behind the lateral malleolus or the bony bit on the outside of the ankle. Overuse can cause the peroneal tendon to rub on the bone and become inflamed.

Overuse is the most common cause of peroneal tendonitis. Sudden increases in training levels, inappropriate footwear or poor training techniques tend to be to blame. Abnormal foot position, muscle sprain and muscle imbalance are also common causes.

Runners who run along slopes cause excessive eversion or rolling out of the foot are more susceptible to developing symptoms. As the foot rolls outwards the peroneal tendon is stretched more across the bone increasing the friction between the tendon and the bone.

It's hard to say whether peroneal tendonitis really is more common in men than women, or if this is just random statistical noise, but injuries to the Achilles and patellar tendon are more common among men, too, so there may be something to this trend.

Laser therapy can be effective in improving the healing process and in reducing inflammation and pain and restore the normal range of motion which is restricted due to pain.

Laser is the acronym for light amplification by the stimulated emission of radiation. Laser therapy is widely used in the treatment of inflammatory conditions and soft tissue injuries for tissue healing and pain control.

Taping techniques are practiced widely in the treatment and rehabilitation of the injured patient in order to aid the healing process by supporting and protecting the injured structures.

METHODOLOGY

This study is experimental in nature. Thirty subjects were selected and divided into two equal groups by using simple random sampling technique. Pretest assessments of pain were taken for all the subjects using visual analogue scale.

After the pretest assessment the experimental group I underwent laser therapy and experimental group II underwent laser therapy with taping for the period of one week.

Post test scores were taken after one week for both the groups in a similar fashion as that of pretest.

The VAS is represented as a straight unmarked line usually 10cm in length; at either end of line are poles or anchors that are defined as extreme limits of the sensation like no pain and worse pain.

The sample is asked to mark the line at a point correspondent to the severity of his/her pain during ankle eversion.

PROCEDURE – EXPERIMENTAL GROUP -I

Laser therapy

After the pre-test assessment the group I samples were subjected to laser therapy.

The patient was positioned in supine lying with a pillow placed under the knee so that the patient is made to lie comfortable and the treatment area, lateral side of the ankle joint is exposed well. The area was cleaned. The investigator stood on the affected side.

Laser therapy was given using an infra red laser with a wave length 904 nm. The area of tenderness was identified and a pulsed mode laser therapy was given with a frequency of 550 Hz using direct contact method for a period of 90 seconds once a day for a period of seven days.

EXPERIMENTAL GROUP –II

The experimental group II received laser therapy in a similar fashion as that of experimental group I.

Following this taping was applied to them after determining the amount of eversion that produces tendon discomfort.

The ankle was shaved 12 hours prior to taping (to prevent painful removal of hairs and skin irritation). The skin was cleaned, to remove any grease or sweat and kept dry. Low irritant Fixomull tape was applied as an under-wrap to reduce the likelihood of skin irritation with rigid tape over the top of this.

The foot and ankle were kept in a neutral position (i.e. the foot and toes should be approximately perpendicular to the lower leg), an anchor was applied on the lower one third of the leg and another one was made on the forefoot. Then the tape started from the medial side travels down through medial malleolus and under the feet and travels up trough lateral malleolus and supports the peroneous tendon and reaches the anchor. Two or three stirrups are made in a similar fashion.

Then another tape startrd from the fore foot anchor on the medial side and travels through the medial malleolus, Achilles tendon, lateral malleolus and reaches the anchor on the lateral side. Two or three stirrups are made in a similar fashion. Then the anchor was done again on the lower one third of the foot and forefoot.

The taping was removed and changed every day following laser therapy.

Post test measurement of pain was collected at the end of the seventh day in a similar manner as that of pretest measurement.

RESULTS

The collected data were subjected to paired‘t’ test and individually for experimental group I and experimental group II.

TABLE - I

PAIRED ‘T’ TEST FOR EXPERIMENTAL GROUP I (LASER THERAPY)

Variable	‘t’ cal value	‘t’ tab value
Pain	7.25	2.145

The‘t’ calculated value was matched with ‘t’ table value at 5% level of significance and found that ‘t’ calculated value is greater than ‘t’ table value. There is a significant reduction in pain.

TABLE - II

PAIRED‘T’ TEST FOR EXPERIMENTAL GROUP II (LASER THERAPY WITH TAPING)

Variable	‘t’ cal value	‘t’ tab value
Pain	9.45	2.145

The‘t’ calculated value was matched with ‘t’ table value at 5% level of significance and found that ‘t’ calculated value is greater than ‘t’ table value. There is a significant reduction in pain.

After the paired t-test data was subjected to independent t-test to analysis any significant difference between experimental group I and experimental group II.

TABLE III

INDEPENDENT ‘T’ TEST

Variable	‘t’ cal value	‘t’ tab value
Pain	5.14	2.050

After independent t test,‘t’ calculated value was matched with ‘t’ table value at 5% level of significance and found that ‘t’ calculated value is greater than ‘t’ table value. There is comparatively more reduction of pain in the group which had additionally taping with Laser therapy.

DISCUSSIONS AND FINDINGS

Laser therapy is significantly effective in reducing pain on patients with Peroneal Tendonitis. The reduction of pain following Laser may be as Laser therapy decreases the inflammatory process and there by enhances healing.

This has also a high beneficial effect on nerve cells which block pain transmitted by these cells to the brain and which decreases nerve sensitivity. Another pain blocking mechanism involves the production of high levels of pain killing chemicals such as endorphins and enkephalins from the brain and adrenal gland.

Laser therapy with taping is significantly effective in reducing pain on patients with Peroneal Tendonitis.

Taping can prevent injury or facilitate an injured athlete's return to competition in general the tape should limit the abnormal or excessive movement of a sprained joint while also providing support to the muscle that the sprain has compromised.

Taping can be more effective in providing proprioceptive feedback

Taping is to support the ligaments and capsule of unstable joints by limiting excessive or abnormal anatomical movement enhance proprioceptive feedback from the thumb.

Taping supports and decrease the passive instability of a joint is enhancing the active stability and thereby reduces the stress on the muscles and tendons crossing that.

For these reasons laser therapy is more effective when it is given in combination with taping than laser therapy alone.

The reduction of pain following laser therapy with taping may because of the above said effects of laser therapy along with the additional benefits of taping which support and protect the injured part from stress and strain which aid in healing process as well as provide better pain relief.

CONCLUSION

The results of the study makes us to conclude that Laser therapy with Taping is significantly more effective than Laser therapy alone in reducing pain on patients with Peroneal Tendonitis.

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INFLUENCE OF MALLAKHAMB PRACTICE ON SPEED AND FLEXIBILITY AMONG COLLEGE LEVEL HOCKEY PLAYERS

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ABSTRACT

The purpose of the study was to find out the Influence of Mallakhamb practices on speed and flexibility among college level players. To achieve the purpose of the study thirty male hockey players, were randomly selected from Vinayaka Missions Research Foundation, Salem. The age of subjects ranged from 18 to 25 years. The subjects were randomly assigned into two groups of fifteen each, such as experimental and control groups. The experimental group participated in the Mallakhamb practices for 3 days a week, one session per day and for 8 weeks each session lasted 90 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups. The results of the study showed that there was significant level differences exist between Mallakhamb practices and control group. And also Mallakhamb practices group showed significant improvement on speed and flexibility compared to control group.

Keywords: Mallakhamb, speed and flexibility.

INTRODUCATION

The Mallakhamb is an art. Mallakhamb is one of the most ancient art in the field of physical culture will power or strength with in associated with perfect physical fitness makes a man more inspired in thriving for his earthly mission, and it makes the good health. It is a scientific and systematic methodology in acquiring a sound body and mind. This universal truth of healthy body and mind was thoroughly understand and accepted by our ancestor's right from the evaluation of the human race and they were practicing. One of the main reasons for attaching all those qualities and virtues can be attributed to the magic Mallakhamb culture, the in separable one ness of monkey **(Deshpande, 1986)**.

The word Mallakhamb is comprised of Mallakhamb – Mallar Khambam – Malla – Mallar denotes – man of strength (power) – veeran – Gymnast. Khamb which is denotes in wooden pole. Therefore translated as a gymnast pole.

Mallakhamb as the name suggests is a pole used by wrestler for practicing their skills in the game KUSTI. But now a days the trend has changed and it has got a special identity. Mallakhamb needs concentration. speed and flexibility. It is the only game which played against gravity. **(Mahesh Atale. R, 2003).**

METHODOLOGY

To achieve the purpose of the study thirty male hockey players, were randomly selected from Vinayaka Missions Research Foundation, Salem. The age of subjects ranged from 18 to 25 years. The subjects were randomly assigned into two groups of fifteen each, such as experimental and control groups. The experimental group participated in the Mallakhamb

practices for 3 days a week, one session per day and for 8 weeks each session lasted 90 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups.

TABLE-I
CRITERION MEASURES

S.No	Criterion measure	Test items	Unit of measurement
1	Speed	30 mts dash	in seconds
2	Flexibility	Sit and Reach	in centimeters

TABLE – II
DESCRIPTIVE ANALYSIS OF PHYSICAL VARIABLES AMONG EXPERIMENTAL AND CONTROL GROUPS

S.No	Variables	Group	Pre-Test Mean	SD (±)	Post –Test Mean	SD (±)	Adjusted Mean
1	Speed	MPG	4.79	0.03	4.54	0.02	4.54
		CG	4.81	0.04	4.67	0.13	4.67
2	Flexibility	MPG	23.39	0.24	22.01	0.60	21.99
		CG	23.49	0.30	22.91	0.54	22.94

MG= Mallakhamb practice group CG= Control group

The tables-II the pre, post-test means, standard deviations and adjusted means on speed and Flexibility among college level player's were numerical presented. The analysis of covariance on selected variables of mallakhamb practices group and control group is presented in table – III

TABLE – III
COMPUTATION OF ANALYSIS OF COVARIANCE ON SPEED AND FLEXIBILITY AMONG COLLEGE LEVEL HOCKEY PLAYERS

S.No	Variables	Test	Sum of variance	Sum of squares	df	Mean square	F ratio
1	Speed	Pre-test	B.G.	0.002	1	0.002	1.34
			W.G.	0.04	28	0.002	
		Post-test	B.G.	0.13	1	0.13	13.47*
			W.G.	0.27	28	0.01	
		Adjusted means	B.S.	0.11	1	0.11	11.44*
			W.S.	0.26	27	0.01	
2	Flexibility	Pre-test	B.G.	0.06	1	0.06	0.81
			W.G.	2.13	28	0.07	
		Post-test	B.G.	6.10	1	6.10	18.45*
			W.G.	9.25	28	0.33	
		Adjusted means	B.S.	6.59	1	6.59	20.61*
			W.S.	8.63	27	0.32	

**Significant at 0.05level of confidences*

(The table values required for significance at 0.05 level of confidence for 1 & 28 and 1 & 27 are 4.20 and 4.21 respectively).

In the table the results of analysis of covariance on speed and flexibility. The obtained 'F' ratio of 1.34 and 0.81 for Pre-test means was less than the table value of 4.20 for df 1 and 28 required for significance at 0.05 level of confidence on vital capacity, forced vital capacity, slow vital capacity, and maximum voluntary ventilation. The obtained 'F' ratio of 13.47 and 18.45 for post-test means was greater than the table value of 4.20 for df 1 and 28 required for significance at 0.05 level of confidence on speed and flexibility. The obtained 'F' ratio of 11.44 and 20.61 for adjusted post-test means was greater than the table value of 4.21 for df 1 and 4.21 required for significance at 0.05 level of confidence on speed and flexibility. The result of the study indicated that there was a significant difference among the adjusted post test means of mallakhamb practice group on control group. And also mallakhamb practice group showed significant improvement on speed and flexibility compared to control group.

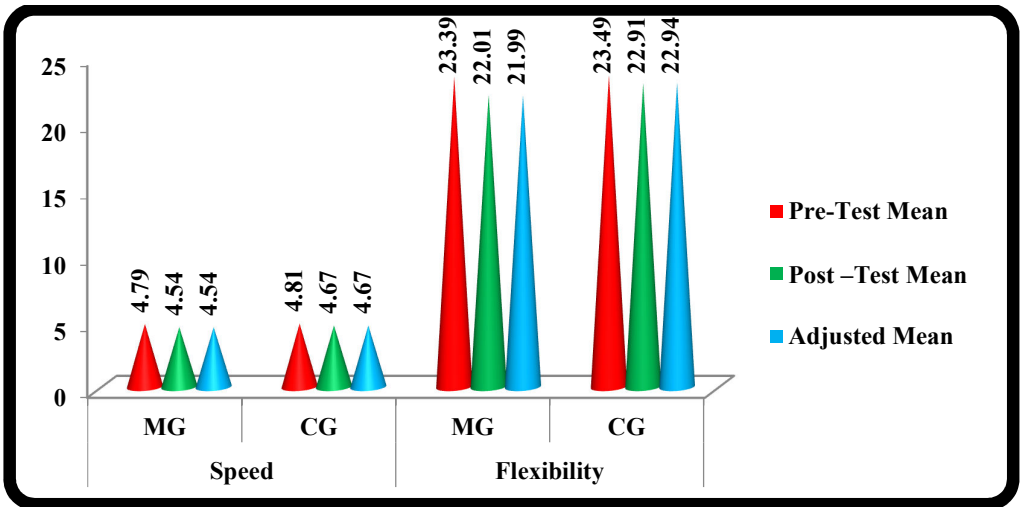

Figure-I The pre, post and adjusted mean values of speed and flexibility of both experimental group and control groups are graphically represented in the figure-I

DISCUSSION OF FINDINGS

The results of the study indicate that the experimental group which underwent mallakhamb practice had showed significant improved in the selected variables namely such as speed and flexibility when compared to the control group. The control did not show significant improvement in any of the selected variables. The past studies on selected physical variables also **Saravanan and Mahaboobjan (2016), Srinivasan and Sri Mahesh Babu (2016).**

CONCLUSIONS

From the analysis of data, the following conclusions were drawn.

1. The experimental group hockey players showed significant improvement in all the selected variables such speed and flexibility.
2. The control group hockey players did not show significant improvement in any of selected variabless.

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IMPACT OF PRANAYAMA PRACTICES ON AGILITY AND MUSCULAR STRENGTH IN SPORTS PERSONS

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ABSTRACT

The aim of the study is to assess the impact of pranayama practices on agility and muscular strength in sports person. A group thirty randomly selected male players of department of physical education, Bharathidasan University, Tiruchirappalli, aged 18 - 25 years, volunteered to participate in the study. They were randomly assigned into two groups as Experimental group A (PP- Pranayama Practices) N=15 and Group C (control) N=l5. The subjects from Group A were subjected to a 12-weeks Pranayama training programme. Student's t-test for independent data was used to assess the between group A and C differences for dependent data to assess the Post-Pre differences. The level of $p<0.01$ was considered significant. The agility and muscular strength significantly improved in Group Y compared with the control one. The yoga asana training may be recommended to improve agility and muscular strength, and may contribute to enhance sports performance.

Keywords: Pranayama, agility, muscular strength.

INTRODUCTION

The term "yoga" and the English word "yoke" are derived from Sanskrit root "yuj" which means union. Yoga is a psycho-somatic-spiritual discipline for achieving union & harmony between our mind, body and soul and the ultimate union of our individual consciousness with the Universal consciousness **(Madanmohan, 2008)**. yoga is an ancient practice that was developed to promote physical health as well as an awareness of one's true nature. It consists of a series of postures, called asanas, and various breathing exercises, called pranayama, which encourage balance between the physical, mental/emotional, and spiritual aspects of a human being. In short, Yoga has been practiced for thousands of years. It is based on ancient theories, observations and principles of the mind and body connections. Substantial research has been conducted to look at the health benefits of yoga - yoga postures, pranayama and meditation **(Thangapandiyan et al, 2016**) These yoga practices might be interacting with various somatic and neuro-endocrine mechanisms bringing about therapeutic effects (**Malhotra and Singh, 2002)**. The overall performance is known to be improved by practicing yoga techniques (**Upadhyay et al, 2008**) and their effects on physical functions were reported **(Hadi 2007).** Yoga practices can also be used as psycho-physiological stimuli to increase the secretion of melatonin which, in turn, might be responsible for perceived well-being **(Harinath et 2004).** Yoga may be as effective as or better than exercise at improving a variety of health-related outcome measures **(Ross and Thomas; 2010)** and as a result this study was undertaken to find out the impact of pranayama training on agility and muscular strength in sports persons.

METHODOLOGY

Thirty subjects randomly selected male players of department of physical education, Bharathidasan University, Tiruchirappalli, aged 18 - 24 years, volunteered to participate in the study. Their body height ranged from 170 to 180 cm and body mass from 68 to76 kg. They

were randomly assigned into two groups: Group A (experimental N=15) and Group C (control N=15).The subjects from Group A were subjected to a 12 weeks pranayama training programme. This lasted for 12 weeks with consistent daily 45 min session, was conducted for continuous six days in a week except Sunday. The subjects underwent their training programme with the strict supervision of the investigator. All the subjects involved in the training programme were questioned periodically about their status throughout the training period. None of them reported any pain or injury. However, no complained and inability was received from the subjects.

The training consisted of a variety of pranayama:

1. Bastrika
2. Bramari
3. Nadisodhana

SELECTION OF VARIABLES AND TESTS

The Subjects were tested on the following physical fitness variables.

S.No.	Variables	Test
1	Agility	Shuttle Run
2	Muscular Strength	Sit Ups

The shuttle run test was used to monitor the agility of the subjects. The time taken by the subjects between the audible signal 'start' and the finishing of the run was recorded to be the score. The time was recorded correct in seconds. The sit-ups test was used to assess the muscular strength. The score of the test is the number of correctly executed sit-ups performed by the subjects in 60 seconds.

DATA ANALYSIS

Values are presented as mean values and standard deviation(SD). The Student t' test was used to compare parameters within groups. Data was analyzed using SPSS Version 16.0 (Statistical Package for the Social Sciences, version 16.0, SPSS Inc, Chicago, IL, USA).

The results of agility and muscular strength in sports persons from the pranayama (Group A) and control (Group C) groups are following,

The mean of Agility of pre test of experimental group and post test of experimental group was 13.48 and 12.52 respectively, whereas the mean of agility of pre test of control and post test of control group was 13.85 and 13.79. The "t" value in case of experimental group was 9.45** and for control group it was 0.65. Since, Ho (null hypothesis) is rejected at 0.01 level of significance.

The mean of muscular strength of pre test of experimental group and post test of experimental group was 19.13 and 23.33 respectively, whereas the mean of muscular strength of pre test of control and post test of control group was 20.53 and 20.33. The "t" value in case of experimental group was 13.47** and for control group it was 0.54. Since, Ho (null hypothesis) is rejected at 0.01 level of significance.

DISCUSSION ON FINDINGS

We found significant increases in agility and muscle strength .Scientific studies on pranayama demonstrate that yoga improves dexterity, strength and musculoskeletal coordination of the practitioners. Pranayama practice is mainly isometric exercises which provide optimally maintained stretch to the muscles. In this study, the 12 weeks of pranayama training programme showed significant improvement in balance and agility. These findings are supported by other reports. Pranayama are known to improve one's overall performance and work capacity. **Sharma et al (2008)** conducted prospective controlled study to explore the short-term impact of a comprehensive but brief lifestyle intervention based on yoga practices, on subjective well being in normal and diseased subjects **(Thangapandiyan et al, 2016**). Normal healthy individuals and subjects having hypertension, coronary artery disease, diabetes

mellitus or a variety of other illnesses were included in the study. Yoga asana were also shown to improve flexibility and health perception Muscular strength increased significantly in group C. Prior pranayama investigations that specifically measured isometric muscular strength with the hand dynamometer yielded conflicting results. Blumenthal et al. (1989) showed no changes, whereas **Madan et al (2008)** reported significant improvements in hand-grip strength resulting from yoga practice.

CONCLUSION

In conclusion, the present study suggests that 12 weeks of pranayama training had significant effect on balance and agility through a variety of effects **(Monro, 1997).** These data provide more evidence to support the beneficial effect of pranayama training on agility and muscular strength and thus, such training may be recommended to enhance sports performance.

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EFFECTS OF YOGIC PRACTICES ON AGILITY AND MUSCULAR STRENGTH AMONG KABADDI PLAYERS

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ABSTRACT

The aim of the study is to assess the effects of 6-weeks yogic practices on agility and muscular strength in sportsmen. A group of thirty male Kabaddi players were selected from the department of physical education, Bharathidasan University, Tiruchirappalli. Their age ranged in between 18 - 24 years. They were randomly assigned into two groups: Y (experimental N=15) and C (control N=l5). The subjects from Group Y were subjected to a 6-weeks yogic practices training programme. t-test was used to assess Pre - Post differences. The level of $p<0.01$ was considered significant. The agility and muscular strength significantly improved in Group Y compared with the control one. The yoga asana training may be recommended to improve agility and muscular strength, and may contribute to enhance sports performance.

Keywords: Yogic Practices, Agility, Muscular Strength.

INTRODUCTION

The term "yoga" and the English word "yoke" are derived from Sanskrit root "yuj" which means union. Yoga is a psycho-somatic-spiritual discipline for achieving union & harmony between our mind, body and soul and the ultimate union of our individual consciousness with the Universal consciousness **(Madanmohan, 2008).**yoga is an ancient practice that was developed to promote physical health as well as an awareness of one's true nature. It consists of a series of postures, called asanas, and various breathing exercises, called pranayama, which encourage balance between the Yoga has been practiced for thousands of years. It is based on ancient theories, observations and principles of the mind-body connections. The overall performance is known to be improved by practicing yoga techniques **(Upadhyay et al, 2008)** and their effects on physical functions were reported **(Hadi 2007).** Yoga practices can also be used as psycho-physiological stimuli to increase the secretion of melatonin which, in turn, might be responsible for perceived well-being **(Harinath et, 2004).** Yoga may be as effective as or better than exercise at improving a variety of health-related outcome measures **(Ross and Thomas; 2010)** and as a result this study was undertaken to find out the effects of 6-weeks yogic training on agility and muscular strength in sportsmen.

METHODS

Their age ranged in between 18 - 24 years. Their body height ranged from 172 to 180 cm and body mass from 68 to76 kg. The subjects from Group A were subjected to a 6-weeksyogic practices programme. This lasted for 6- weeks with consistent daily 50 min session, was conducted for continuous six days in a week with Sunday as a relaxing day. The training consisted of a variety of yogic practices:

1. Suriyanamaskar
2. Parivitakonasana
3. Dhanurasana

4. Chakra-asana
5. Halasana

SELECTION OF VARIABLES AND TEST

- Agility /Shuttle Run Test
- Muscular Strength / Sit-ups Test

The Sit-ups test was used to assess the muscular strength. The score of the test is the number of correctly executed sit-ups performed by the subjects in 60 seconds. Shuttle Run test was used to monitor the agility of the subjects. The time taken by the subjects between the audible signal 'start' and the finishing of the run was recorded to be the score. The time was recorded correct in seconds.

DATA ANALYSIS

Values are presented as mean values and SD. The Student t' test was used to compare parameters within groups. Data was analyzed using SPSS Version 16.0 (Statistical Package for the Social Sciences, version 16.0, SPSS Inc, Chicago, IL, USA). The results of agility and muscular strength in sportsmen from the yoga asana (Y) and control (C) groups are presented in the following tables.

The mean of Agility of pre test of experimental group and post test of experimental group was 13.48 and 12.52 respectively, whereas the mean of agility of pre test of control and post test of control group was 13.85 and 13.79. The "t" value in case of experimental group was 9.45** and for control group it was 0.65. Since, Ho (null hypothesis) is rejected at 0.01 level of significance.

The mean of muscular strength of pre test of experimental group and post test of experimental group was 19.13 and 23.33 respectively, whereas the mean of muscular strength of pretest of control and posttest of control group was 20.53 and 20.33. The "t" value in case of experimental group was 13.47** and for control group it was 0.54. Since, Ho (null hypothesis) is rejected at .01 level of significance.

DISCUSSION ON FINDINGS

We found significant increases in agility and muscle strength .Scientific studies on yoga demonstrate that yoga improves dexterity, strength and musculoskeletal coordination of the practitioners. Postures assumed during yoga practice are mainly isometric exercises which provide optimally maintained stretch to the muscles. In this study, the 6-weeks of yogic practices training programme showed significant improvement in balance and agility. These findings are supported by other reports. **Sharma et al., (2008)** conducted prospective controlled study to explore the short-term impact of a comprehensive but brief lifestyle intervention based on yoga, on subjective well being in normal and diseased subjects. Normal healthy individuals and subjects having hypertension, coronary artery disease, diabetes mellitus or a variety of other illnesses were included in the study. They reported significant improvement in the subjective well being scores of 77 subjects within a period of 10 days as compared to controls. Yoga asana were also shown to improve flexibility and health perception **(Cowen and Adams, 2005).** Muscular strength increased significantly in Y group (Table 2). Prior yoga investigations that specifically measured isometric muscular strength with the hand dynamometer yielded conflicting results. **Blumenthal et al., (1989)** showed no changes, whereas **Madanmohan et al., (2008)** reported significant improvements in hand-grip strength resulting from yoga practice. However, since isometric strength is specific to the muscle group and the joint angle being tested, **(Kitai and Sale., 1989)** hand-grip strength is a poor measure of general body strength.

CONCLUSION

The present study suggests that a 6-weeks of yoga asanas training had significant effect on balance and agility **(Monro, 1997).** These data provide more evidence to support the beneficial effect of yoga asana training on agility and muscular strength and thus, such training may be recommended to enhance sports performance.

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ANALYSIS OF PSYCHOLOGICAL SKILLS IN HANDBALL PERFORMANCE BETWEEN SUCCESSFUL AND NON SUCCESSFUL TEAMS

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ABSTRACT

The purpose of the study was to compare the athletic coping skills between successful and non-successful Handball players. To achieve the purpose, a total of 80 Handball players (successful team players = 40, and non-successful team players =40) were selected randomly from the affiliated colleges of Manonmaniam Sundaranar University, Tirunelveli. The age of the subject were ranged from 21-25 years. The players and non successful handball players according to the position in the Manonmaniyam Sundaranar University Intercollegiate Handball Tournament during the year 2017. The athletic psychological skills such as confidence & achievement motivation, peaking under pressure,& concentration were selected as criterion variables for the study. Athletic coping skills was measured through athletic coping skills inventory -28(ACSI-28) questionnaire, and it was developed by smith et al in the year of 1995. Static group comparison design was used. All the subjects were tested on selected criterion variables. The collected data were statistically analyzed by using independent t ratio. The level of significance was fixed at .05 level of confidence for all the cases to test the hypotheses. In conclusion, there was a significant difference exists between successful and non successful handball players on peaking under pressure there was a no significant difference exists between successful and non successful handball players on confidence & achievement motivation, concentration. Successful handball players were found strong in all selected athletic coping skills when compared to non successful handball players.

Kew words: Analysis, Psychological Skills, Successful and Non Successful team Handball

INTRODUCTION

Many psychological factors have direct relation with competitions whether the game is success or failure. Modern man lives in a mental world in which the important skills and success based on his psychological makeup. Various factors have been isolated which are responsible for the excellence in sports. Apart from better training, good equipments, proper atmosphere, some other factors which play an important role at the time of competition at any level in all sports. Psychological factors such as, mental depression, mental imagery, anxiety, self confidence and concentration **(Kamlesh, 2007)**.

Handball is a game of skill. But it's also a game of athletic ability and movement. To be a good player, not only do you have to know the game and have good handball skills, but you also have to be extremely agile. Improving your ability to move quickly around the court and you'll be a better player. The game is all about movement: whether it's driving by a player on offense, sliding to defend a dribbler, or going after a loose ball...increasing your quickness

and agility gives you an edge over the competition. Handball is a game of movement. But it's also a game of stops-and-starts. Think about a typical trip down the court as an offensive player: sprint to the offensive end of the floor, hustle 10 or 12 feet across the court to set a screen, roll to the basket, make a quick move to get open to catch a pass, pass and screen away, cut to the basket for a potential offensive rebound. It's all about footwork, movement, mobility. The defensive end of the floor requires equal (or even greater mobility and agility) **("Handball is", 2011).**

Purpose of the Study

The purpose of the study was to compare athletic Psychological skills confidence & achievement motivation, peaking under pressure,& concentration between successful and non-successful handball players.

METHODOLOGY

To achieve the purpose of this study, 80 male handball players were selected randomly from the Manonmaniam Sundaranar University Intercollegiate Handball Tournament. Their age ranged from 21 to 25 years. The selected participants were randomly divided into two groups such as Group'A' 'successful Handball players (n=40) and Group 'B' non successful Handball playes (n=40) according to the position secured in the Manonmaniam Sundaranar University Intercollegiate Handball Tournament during the year 2017. Item developed Questionnaire method was adopted as a tool to collect data on athletic coping skills for this investigation. Athletic coping skill was measured through Athletic Coping Skills Inventory-28 (ACSI-28) Questionnaire, and it was developed by smith et al in the year of 1995. Data collected from the survey was transferred from paper questionnaire directly into a computer manually by the primary investigator, and then the data were read and analyzed using SPSS version 17.0.Static group comparison design was used. All the subjects were tested on selected criterion variables. The collected data were statistically analyzed by using independent t-ratio. The level of significance was fixed at .05 level of confidence for all the cases to test the hypothesis.

Analysis of Data

TABLE I
SUMMARY OF MEAN AND INDEPENDENT 't' TEST ON CONFIDENCE AND ACHIEVEMENT MOTIVATION OF SUCCESSFUL AND NON-SUCCESSFUL HANDBALL PLAYERS

Group	Number	Mean	Standard Deviation	't' value
Successful Handball Players	40	10.42	2.54	0.19
Non-Successful Handball Players	40	10.33	2.18	

Table value required for significance at .05 levels for't' with 78 is 1.99.

From the table I, the mean values of successful and non-successful handball players were 10.42 and 10.33 respectively, since the obtained't' test value is 0.19 which is lesser than table value of 1.99 with df 78 at 0.05 level of confidence. It was concluded that there was no significant difference exists between successful and non-successful Handball players on confidence and achievement motivation. However successful Handball players were found strong confidence and achievement motivation when compared to non-successful Handball players. The mean values of successful and non-successful Handball players on confidence and achievement motivation were graphically represented in figure I.

TABLE – II

SUMMARY OF MEAN AND INDEPENDENT 't' TEST ON PEAKING UNDER PRESSURE OF SUCCESSFUL AND NON-SUCCESSFUL HANDBALL PLAYERS

Group	Number	Mean	Standard Deviation	't' value
Successful Handball Players	40	10.43	2.33	1.43*
Non-Successful Handball Players	40	9.68	2.35	

*Significant at .05 Level. Table value required for significance at .05 levels for 't' with 78 is 1.99. (Peaking under pressure was scored in numbers).

From the table II, the mean values of successful and non-successful handball players were 10.43 and 9.68 respectively, since the obtained 't' test value is 1.43 which is greater than table value of 1.99 with df 78 at 0.05 level of confidence. It was concluded that there was a significant difference exists between successful and non-successful Handball players on peaking under pressure. However successful Handball players were found strong peaking under pressure when compared to non-successful Handball players.

TABLE – III

SUMMARY OF MEAN AND INDEPENDENT 't' TEST ON CONCENTRATION OF SUCCESSFUL AND NON-SUCCESSFUL HANDBALL PLAYERS

Group	Number	Mean	Standard Deviation	't' value
Successful Handball Players	40	11.6	2.37	1.97
Non-Successful Handball Players	40	10.43	2.93	

Table value required for significance at .05 levels for 't' with 78 is 1.99. (Concentration was scored in numbers).

From the table III, the mean values of successful and non-successful handball players were 11.6 and 10.43 respectively, since the obtained 't' test value is 1.97 which is lesser than table value of 1.99 with df 78 at 0.05 level of confidence. It was concluded that there was no significant difference exists between successful and non-successful Handball players on concentration. However successful Handball players were found strong concentration when compared to non-successful Handball players. The mean values of successful and non-successful Handball players on concentration were graphically represented in figure III.

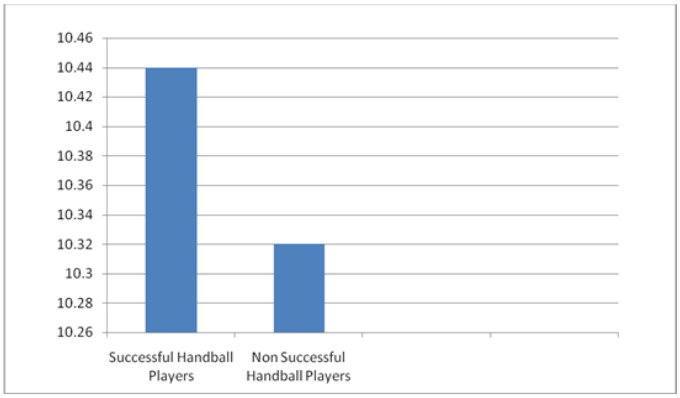

Figure I: **Mean Values of Successful and Non-Successful Handball Players on Confidence and Achievement Motivation**

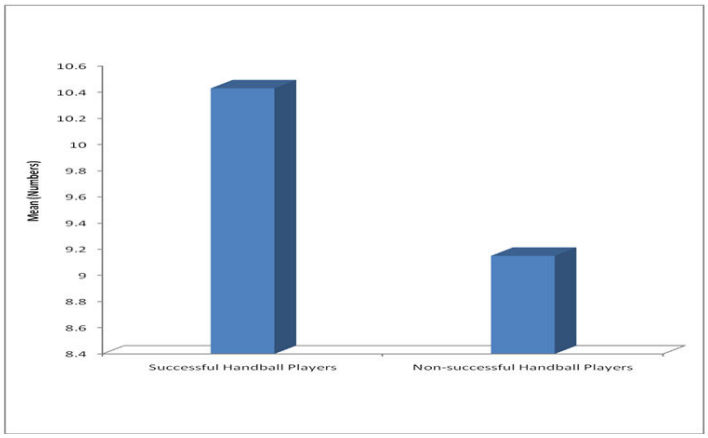

Figure II: **Mean Values of Successful and Non-Successful Handball Players on Peaking Under Pressure**

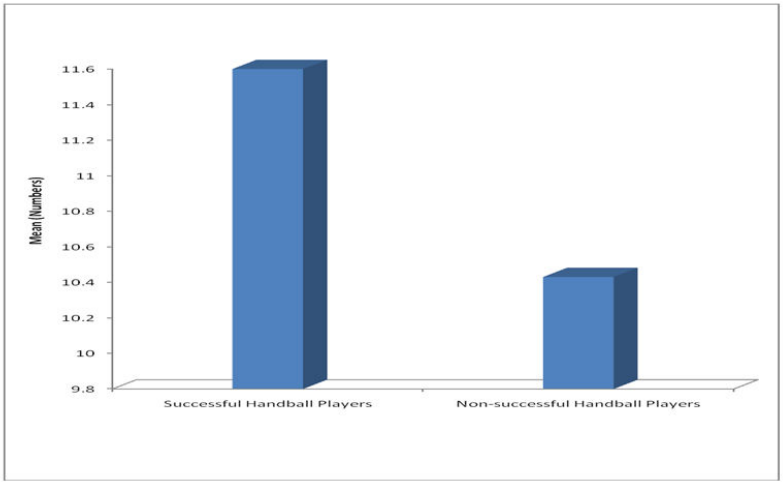

Figure III: **Mean Values of Successful and Non-Successful Handball Players on Concentration**

CONCLUSIONS

1. There was no significant difference between successful and non-successful Handball players on confidence & achievement motivation.
2. There was a significant difference exists between successful and non-successful Handball players on peaking under pressure.
3. There was no significant difference between successful and non-successful Handball players on confidence

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EFFECT OF SPECIFIC SKILL TRAINING PROGRAMME WITH YOGA NIDRA ON SELECTED SKILL PERFORMANCE VARIABLES OF HANDBALL PLAYERS

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ABSTRACT

The purpose of this study was to find out the effect of specific skill training programme with yoga Nidra on selected skill performance variables of handball players**.**The investigator selected 24handball players who were studying in SRKV Maruthi College of Physical Education and faculty of GAPEY, Ramakrishna Mission Vivekananda University, Coimbatore. Their age were ranged from 19 to 25 years. The selected subjects were considered as two groups in that twelve subjects were acted as control group and no training was given this group and another twelve subjects were acted as experimental group this group was undergone the training. The criterion variables namely dribbling, jump shot and diving shot have been selected as dependent variables for this study. The training period would be the twelve weeks. The data was analyzed by the use of paired't' test. The level of significance at 0.05. The results shows that dribbling, jump shot and diving shot of the selected subjects was significantly improved on experimental group of due to the specific skill training with yoga Nidra.

Keywords:dribbling, jump shot and diving shot.

INTRODUCTION

Team handball originated in the 1980s when a German gymnastics instructor. Konard Koch, developed the structure and rules of the game.as we know today, the modern game of handball developed from 3 ball games. The game also gained popularity in Sweden and surrounding countries of Denmark. The rules of hazena and handball games were published almost at same time. The first rulebook came out in 1906 and the first hazena rulebook was published in 1908.The first international match was played in 1925 in halle, Germany between teams for Austria and Germany.

Nowadays the handball play various way

- Field handball
- Indoor handball

YOGA NIDRA

Yoga nidra (yoga sleep),is an expression widely used to denote the highest state of consciousness. Although yoga nidra means yogic sleep, it is actually a wakeful state of deep introversion. Some contemporary yoga authorities employ the phrase yoga – nidra to designate a state of deep relaxation. In the stages, the process involves relaxing the body, part by part, and harmonizing mind.

YOGA NIDRA BENEFITS

The practice of yoga nidra starts with a personal intention. so while it truly depends on the intention, yoga nidra will help you rest, restore, de- stress, increase awareness,undo bad habits, And eventually understand your true calling and higher purpose.and we all need more of that right**,** the beginning, whether you fall asleep during practice (which is quite common) or not, you'll start feeling more rested and restored. One hour of yoga nidra is as restful as a few hours of sleep, according to Swami Satyananda—so it's a great tool to rely on when you're feeling under-rested. And as you progress, you can use yoga nidra as a spiritual practice to help

clarify and execute your purpose as you spend more time inside your mind, fusing your consciousness with your powerful subconscious.

In one fascinating study that scanned the brains of men and women doing yoga nidra, researchers found that practitioners' brains showed that they were at once in a deep resting state similar to sleep, but they weren't asleep at all. Actually, they were completely conscious. "The measurements show, for the first time, that one can be completely aware in such a deep state that one can consciously experience and control the brain's activity simultaneously. This confirms that meditation is the fourth major state, equal to dreaming, sleeping, and wakefulness."

METHODOLOGY

This purpose of study 24 subjects were selected in college level handball players. Selected from Ramakrishna Mission Vidyalaya Maruthi College of Physical Education, Ramakrishna Mission Vivekananda University, and Coimbatore. The subjects were equally divided in randomly in to two groups, namely group-I experimental group and group-II, control group. The subject's age was ranged from 19 to 25 years. The selected dribbling, jump shot and diving shot. Experimental group: 12 players are assigned randomly to the experimental group and they have undergone 12 weeks of training by using the specific skill training with yoga nidra. Control group: another 12 players are assigned randomly to the control group. The dependent variables are tested with dribbling, jump shot and diving shot was tested by using Makas H. Lakde dribbling, jump shot and diving shot test. The pre and post test data were collected and treated with dependent 't' test. The level of confidence was fixed at 0.05

Training Schedule

Everyday the of specific skill training started with yoga nidra relaxation exercise.

Duration - 12 weeks
Weekly - 5 days (Morning and Evening)
Time - 45 minutes

DRIBBLING

The data obtained on dribbling of the experimental and control group were analyzed using the paired 't' test presented in table – I

TABLE- I

THE MEAN, STANDARD DEVIATION AND 't' VALUE OF EXPERIMENTAL AND CONTROL GROUP ON DRIBBLING

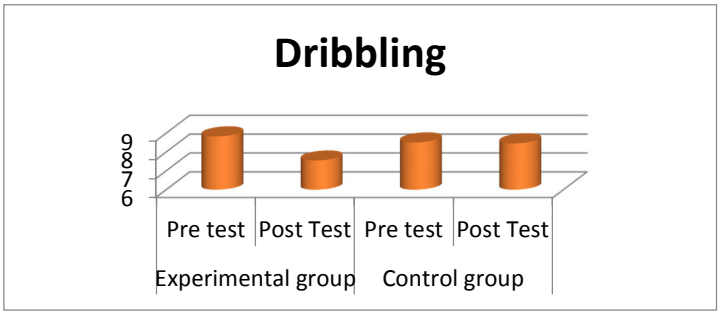
Group	Test	Mean	SD	DM	SE	't'
Experimental group	Pre test	8.83	0.50	1.27	0.26	4.91*
	Post-test	7.55	0.54			
Control group	Pre test	8.51	0.58	0.05	0.24	0.21
	Post test	8.46	0.56			

* Significant

Level of confidence 0.05 with df 11 table value 2.14

Table-I shows that mean values of dribbling experimental and control groups. The experimental group obtained 't'result is 4.91 which is greater than the table value, so significant. The control group obtained 't' result is 0.21 which is lesser than table value. So insignificant.

FIGURE- I
THE MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUP ON JUMP SHOT



JUMP SHOT

The data obtained on of the jump shot experimental and control group were analyzed using the paired 't' test presented in table – II.

TABLE- II

THE MEAN, STANDARD DEVIATION AND 't' VALUE OF EXPERIMENTAL AND CONTROL GROUP ON JUMP SHOT

Group	Test	Mean	SD	DM	σ DM	't'
Experimental group	Pre test	34.50	3.32	9.17	3.95	8.04*
	Post-test	43.67	2.06			
Control group	Pre test	34.67	2.87	0.17	0.52	0.32
	Post test	2.87	3.56			

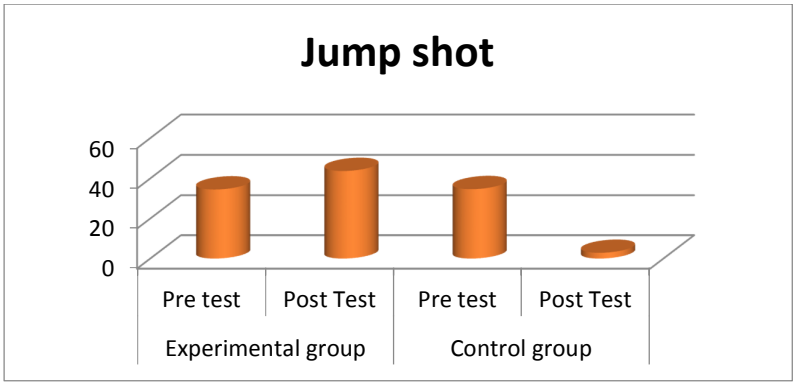
* Significant

Level of confidence 0.05 with df 14 table value 2.14

Table-II shows that mean values of jump shotexperimental and control groups. The experimental group obtained 't' result is 8.34 which is greater than the table value, so significant. The control group obtained 't' result is 1.39 which is lesser than table value. So insignificant.

FIGURE-II

THE MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUP ON JUMP SHOT



DIVING

The data obtained on divingof the experimental and control group were analyzed using the paired 't' test presented in table

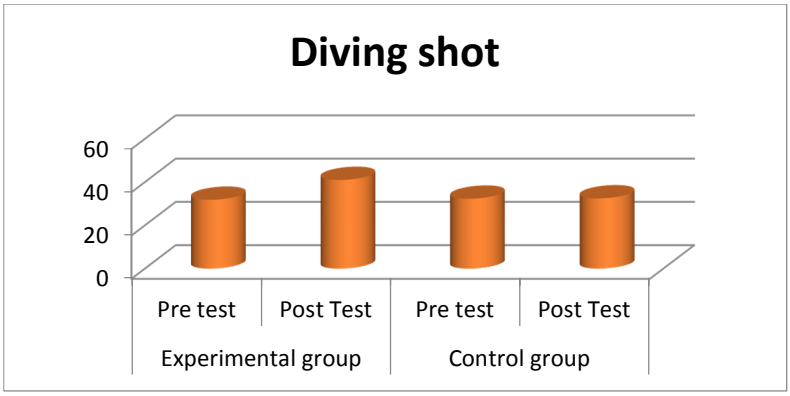
TABLE- III
THE MEAN, STANDARD DEVIATION AND 't' VALUE OF EXPERIMENTAL AND CONTROL GROUP ON DIVING

Group	Test	Mean	SD	DM	σ DM	't'
Experimental group	Pre test	31.83	6.00	9.17	7.11	4.27*
	Post-test	41.00	2.76			
Control group	Pre test	32.33	4.42	0.17	0.52	0.32
	Post test	32.50	5.05			

*significant Level of confidence 0.05 with df 14 table value 2.14

Table-III shows that mean values of diving experimental and control groups. The experimental group obtained 't' result is 9.92 which is greater than the table value, so significant. The control group obtained 't' result is 2.01 which is lesser than table value.So insignificant.

FIGURE- III
THE MEAN VALUES OF EXPERIMENTAL GROUP AND CONTROL GROUP ON DIVINGSHOT



DISCUSSION ON FINDINGS

From the result of the present investigation, it was concluded that the handball players are undergone the twelve weeks training on specific skill training with yoga nidra it improved on selected skill performance variables (dribbling, jump shot and diving shot). The results consent with other studiesthe effect of specific resistance training on over arm throwing performance, (Ettema, et al. 2007). The effect of stretching during warming up on the flexibility of junior handball players, (Zakas et al. 2002).

CONCLUSION

The following conclusions have been drawn.

1. It was concluded that skill performance variables (dribbling, jump shot and diving shot) has significantly improved through twelve weeks specific skill training with yoga nitra.

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EFFECT OF SPECIFIC SKILL TRAINING ON WITH AND WITHOUT VISUAL AIDS ON SELECTED SKILL PERFORMANCE VARIABLES OF COLLEGE LEVEL MALE HANDBALL PLAYERS

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ABSTRACT

A sport is an important ingredient of Physical Education and is a worldwide Phenomenon today. The unprecedented popularity and better organization of sports Activities and competitions would have been impossible without the recognition of the Importance of sports for the modern civilization. Team Handball originated in the 1890s when a German gymnastics instructor, Konrad Koch, developed the structure and rules of the game. As we know today, the modern game of Handball developed from 3 ball games. The purpose of the study was to find out effect of specific skill training on with and without visual aids on selected skill performance variables of college level male Handball players. To fulfill the purpose of the study, thirty-six college level Handball players were selected from Sri Ramakrishna Mission Vidyalaya Maruthi College of physical education, Ramakrishna Mission Vivekananda University, Faculty of General and Adapted Physical Education and Yoga and Ramakrishna Mission Vidyalaya College of arts and science, Periyanaickenpalayam Coimbatore and Tamilnadu and ages ranged between 17 to 25 years. The selected subjects were divided into three equal groups consisting twelve each. Experimental group - I underwent specific skill training with visual training, experimental group - II specific skill without visual training group for a period of 12 weeks. Group - III acted as control group (CG), the subjects in control group were not engaged in any training programme. The study was delimited to the following dependent variables like skill performance variables dribbling and jump shoot. The following standardized tests were used to measure the skill performance variables (Makas H. Lakde, 2008). In order compare the effect of treatment on selected skill performance variables among the three groups, analysis of covariance was used. Whenever, the "F" ratio for adjusted post-test was found to be significant to determine which of the three paired means significantly differed, the Scheffe's test was applied. The result of the study showed that specific skill training with visual training group is better than the specific skill training without visual training group and control group in skill performance variables of college level male handball players.

Keywords: Specific skill training, with and without visual aids and Handball.

INTRODUCTION

A sport is an important ingredient of Physical Education and is a worldwide Phenomenon today. The unprecedented popularity and better organization of sports Activities and competitions would have been impossible without the recognition of the Importance of sports for the modern civilization. The value of exercise programmers is becoming evident as more and more People are participating in such programmers and scientific evidence shows that their Benefits are accumulated.

Running, jumping, throwing, climbing and hanging from the basic pattern of motor movements throughout the life of human beings. Physical activities promote muscular strength, sit-ups, agility, speed and coordination of Muscular strength, which are the basis for all physical work of the human body. Fitness for living is at home on the farm, in the factory, or in military service Implies freedom from disease; enough strength, agility, sit ups and skill to meet the demands of daily living, sufficient reserves to withstand ordinary stresses without Harmful strain, mental development and emotional adjustment appropriate to the individual. The limitations of fitness are determined largely by inheritance. Adequate nutrition, sufficient Rest and relaxation, suitable work, appropriate medical and dental care is also important in maintaining fitness. In fact, properly directed exercise is the only known means for acquiring the ability to engage in taste demanding sustained physical effort. For this reason, physical education is indispensable in schools and colleges in to develop strong and enduring bodies. (Gabor (1981).

Team Handball originated in the 1890s when a German gymnastics instructor, Konrad Koch, developed the structure and rules of the game. As we know today, the modern game of Handball developed from 3 ball games. The game of the new game played outdoor with 11 players a side on a soccer field. Therefore, in 1928 in Amsterdam, the international amateur Handball federation was founded and in short time managed to have Handball introduced at the 1936 Olympics games in Berlin. Handball is a team sport in which two teams of seven players each pass a ball to throw it into the goal of the other team. The team with the most goals after two periods of 30 minutes wins. Modern Handball is usually played indoors, but outdoor variants exist in the forms of field Handball.

Vision is one of the several sensory organs which receive information from the external environment and for years it has been recognized that many sports place demands on vision and particular visual skills. The earliest proponent of this concept was Galen, a Roman Physician who in the second century believed that there is a relationship between ball sports, body and visual status (Hitzeman & Beckerman, 1993). Inspite of this early recognition of visual importance in sports it stood neglected for many years and it was not before the middle of 20th century that new scientific opinions were developed and the thought, “sports being a multidisciplinary approach” came into picture (Jafarzadehpur & Yarigholi, 2004).

Better visual skills in sports play major role in the performance of the sports person. Vision in most typically defined as a process through which data are received and integrated with other input into the brain and with the stored information, the meaning is abstracted and the organism institutes an appropriate output. The previous studies have proved that the psychomotor skills could be improved through visual training. There are evidences which supports the claim of vision, playing an important role in the perceptual ability of an athlete relating proportionately to his/her motor response Revien & gabor (1981) state that visual abilities affect sports performance and the acquisition of motor skills, which can be improved with training. Supporting the same Quevedo, et. al. (1999); sated that sports vision training is conceived as a group of techniques directed to reserve and improve the visual the visual function, with the goal on incrementing sports performance through a process that involves teaching the visual behaviour required in the practice of different sporting activities. The purpose of the study was to find out effect of specific skill training on with and without visual aids on selected skill performance variables of college level male Handball players.

METHODS AND MATERIALS

To fulfill the purpose of the study, thirty-six college level Handball players were selected from Sri Ramakrishna Mission Vidyalaya Maruthi College of physical education, Ramakrishna Mission Vivekananda University, Faculty of General and Adapted Physical Education and Yoga and Ramakrishna Mission Vidyalaya College of arts and science, Periyanaickenpalayam Coimbatore and Tamilnadu and ages ranged between 17 to 25 years. The selected subjects were divided into three equal groups consisting twelve each. Experimental group - I underwent specific skill training with visual training, experimental group - II specific skill without visual training group for a period of 12 weeks. Group - III acted as control group (CG), the subjects in control group were not engaged in any training programme. All the subjects were healthy and physically fit. The nature and importance of the study was explained to the subjects and they expressed their willingness to serve as subjects in this study. The subjects were free to withdraw their consent in case of feeling any discomfort during the period of their participation but there was no dropout during the study. The study was delimited to the following dependent variables like skill performance variables dribbling and jump shoot. The standardized tests were used to measure the skill performance variables (Makas H. Lakde, 2008). To make the study more scientific the subject reliability, reliability of data, instrument reliability, tester reliability was established.

Statistics Procedure

In order compare the effect of treatment on selected skill performance variables among the three groups, analysis of covariance was used. Whenever, the "F" ratio for adjusted post-test was found to be significant to determine which of the three paired means significantly differed, the Scheffe"s test was applied.

RESULTS AND DISCUSSION

TABLE – I

ANALYSIS OF COVARIANCE ON DRIBBLING OF SPECIFIC SKILLS WITH VISUAL AIDS TRAINING GROUP SPECIFIC SKILLS WITHOUT VISUAL AIDS GROUP AND CONTROL GROUP

Test	Experimental Group 'A'	Experimental Group 'B'	Control Group	Source of variance	Sum of square	df	Mean square	'F' ratio
Pre test Mean (±SD)	8.83	8.68	8.51	B.M	0.60	2	0.30	0.97
				W.G	10.21	33	0.31	
Post test Mean (±SD)	7.55	7.97	8.46	B.M	4.96	2	2.48	9.13*
				W.G	8.96	33	0.27	
Adjusted Post test Mean	7.57	7.97	8.44	B.S	4.28	2	2.14	7.77*
				W.S	8.80	32	0.27	

Table – I shows that the pre-test means on dribbling of the specific skill with visual aids training group, specific skill without visual aids training group and control group are 8.83, 8.68 and 8.51 respectively. The obtained "F" ratio value of 0.97 for pre-test score of specific skill with visual aids training group, specific skill without visual aids training group and control group on dribbling is less than the required table value of 2.87 for significance with df 2 and 33 at 0.05 level of confidence.The post-test means on dribbling of the specific skill with visual aids training group, specific skill without visual aids training group and control group are 7.55, 7.9 and 8.46 respectively. The obtained "F" ratio value of 9.13 for post-test score of specific skill with visual aids training group, specific skill without visual aids training group and control group on dribbling is greater than the required table value of 2.87 for significance with df 2 and 33 at 0.05 level of confidence.

The adjusted post-test means on dribbling of the specific skill with visual aids training group, specific skill without visual aids training group and control group are 7.57, 7.97, and 8.44 respectively. The obtained "F" ratio value of 7.77 for adjusted post-test score of specific skill with visual aids training group, specific skill without visual aids training group and control group on dribbling is greater than the required table value of 2.87 for significance with df 2 and 33 at 0.05 level of confidence.

The above statistical analysis indicates that there is a significant difference in dribbling after the training period. Further to determine which of the paired means has a significant difference, the scheffe"s test was applied. The result of follow-up test is presented in table – II.

TABLE - II

SCHEFFE'S POST HOC TEST FOR THE DIFFERENCE BETWEEN ADJUSTED POST-TEST MEAN OF DRIBBLING

Experimental Group-'A' (Specific Skill with visual aids Training group)	Experimental Group-'B' (Specific Skill without visual aids Training group)	Control Group	Mean Difference	Required C.I
7.57	7.97	-	0.40	0.47
7.57	-	8.44	0.87*	
-	7.97	8.44	0 .47*	

**** Significant at 0.05 level of confidence.***

Table - II show that the adjusted post-test mean difference in dribbling between specific skill with visual aids training group and specific skill without visual aids training group, specific skill with visual aids training group and control group, specific skill without visual aids training group and control group are 0.87 and 0.47, which were greater that the confidence interval value of 0.47 at 0.05 level of confidence.

It may be concluded from the results of the study that specific skill with visual aids training group and specific skill training without visual aids training group have significantly improved in the dribbling when compared with the control group. Moreover, the specific skill with visual aids training has more improvement than the specific skill without visual aids training group. The mean value on dribbling of specific skill with visual aids training group, specific skill without visual aids training group and control group are graphically represented in figure – 1.

Figure - 1

MEAN VALUE OF SPECIFIC SKILL WITH VISUAL ADS TRAINING, SPECIFIC SKILL WITHOUT VISUAL AIDS TRAINING AND CONTROL GROUP ON DRIBBLING OF COLLEGE LEVEL HANDBALL PLAYERS

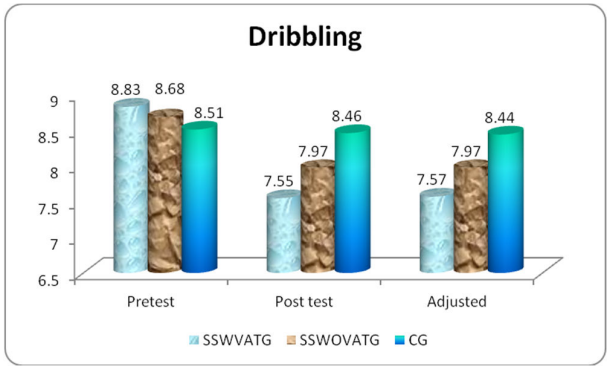


TABLE - III

ANALYSIS OF COVARIANCE ON JUMP SHOT OF SPECIFIC SKILLS WITH VISUAL AIDS TRAINING GROUP SPECIFIC SKILLS WITHOUT VISUAL AIDS GROUP AND CONTROL GROUP

Test	Experimental Group 'A'	Experimental Group 'B'	Control Group	Source of variance	Sum of square	df	Mean square	'F' ratio
Pre test Mean (±SD)	34.50	34.33	34.67	B.M	0.67	2	0.33	0.02
				W.G	578.33	33	17.52	
Post test Mean (±SD)	43.67	40.67	34.83	B.M	484.22	2	242.11	22.38*
				W.G	357.00	33	10.81	
Adjusted Post test Mean	43.67	40.68	34.81	B.S	486.11	2	243.06	22.08*
				W.S	352.20	32	11.00	

Table - III shows that the pre-test means on jump shot of the specific skill with visual aids training group, specific skill without visual aids training group and control group are 34.50, 34.33and 34.67 respectively. The obtained "F" ratio value of 0.02 for pre-test score of specific skill with visual aids training group, specific skill without visual aids training group and control group on jump shot is less than the required table value of 2.87 for significance with df 2 and 33 at 0.05 level of confidence.

The post-test means on jump shot of the specific skill with visual aids training group, specific skill without visual aids training group and control group are 43.67, 40.67 and 34.83 respectively. The obtained "F" ratio value of 22.38 for post-test score of specific skill with visual aids training group, specific skill without visual aids training group and control group on jump shot is greater than the required table value of 2.87 for significance with df 2 and 33 at 0.05 level of confidence.

The adjusted post-test means on jump shot of the specific skill with visual aids training group, specific skill without visual aids training group and control group are 43.67, 40.68 and 34.81 respectively. The obtained "F" ratio value of 22.08 for adjusted post-test score of specific skill with visual aids training group, specific skill without visual aids training group and control group on jump shot is greater than the required table value of 2.87 for significance with df 2 and 33 at 0.05 level of confidence.The above statistical analysis indicates that there is a significant difference in jump shot after the training period. Further to determine which of the paired means has a significant difference, the scheffe"s test was applied. The result of follow-up test is presented in table – VI.

TABLE – VI

SCHEFFE'S POST HOC TEST FOR THE DIFFERENCE BETWEEN ADJUSTED POST-TEST MEAN OF JUMP SHOT

Experimental Group-'A' (Specific Skill with visual aids Training group)	Experimental Group-'B' (Specific Skill without visual aids Training group)	Control Group	Mean Difference	Required C.I
43.67	40.68	--	2.99	3.17
43.67	--	34.81	8.86*	
--	40.68	34.81	5.87*	

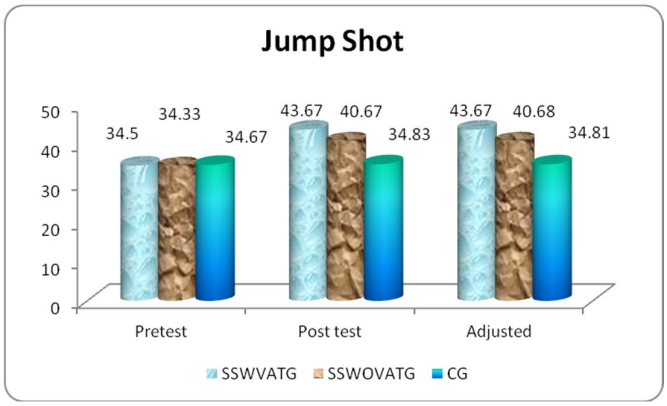
Significant at 0.05 level of confidence.

Table – VI show that the adjusted post-test mean difference in jump shot between specific skill with visual aids training group and specific skill without visual aids training group, specific skill with visual aids training group and control group, specific skill without visual aids training group and control group are 8.86 and 5.87 which were greater that the confidence interval value of 3.17 at 0.05 level of confidence.

It may be concluded from the results of the study that specific skill with visual aids training group and specific skill training without visual aids training group have significantly improved in the jump shot when compared with the control group. Moreover, the specific skill with visual aids training has more improvement than the specific skill without visual aids training group. The mean value on jump shot of specific skill with visual aids training group, specific skill without visual aids training group and control group are graphically represented in figure – 2.

Figure – 2

MEAN VALUE OF SPECIFIC SKILL WITH VISUAL ADS TRAINING, SPECIFIC SKILL WITHOUT VISUAL AIDS TRAINING AND CONTROL GROUP ON JUMP SHOT OF COLLEGE LEVEL HANDBALL PLAYERS



DISCUSSION ON FINDINGS

The prime intention of the researcher is to analyse the specific skill training on with and without visual aids on selected skill performance variables of college level male Handball players. The results of the study indicated that the experimental groups namely specific skill training with visual aid training group had significantly influenced the skill performance variables namely dribbling, Jump shot all two experimental groups had undergone systematic training over 12 weeks duration. The control group had not shown significant improvement on any of the selected variables as they were not subjected to any of the specific training similar to that of the experimental groups. Hence, it is understood that the selected training means had influenced the criterion variables.

It is concluded that the specific skill training with visual aids training group is found to be better than specific skill training without training group and control group in improving the dribbling and jump shot performance of the male Handball players. The results indicate that the improvement in dribbling and jump shot performance is due to the impact of specific skill training with visual aid training programme. The results agree with the study done by Sandhu Jaspal, Maman Paul and Balashab Tate (2008) The findings of the study is in par with the literatures that impact of visual skills training program helps to improve performance of a fundamental skills performance.

CONCLUSIONS

From the analysis of the data, the following conclusions are drawn,

1. The specific skill training with visual aids training group had shown significant improvement in all the selected skill performance variables of college level male Handball players.
2. The specific skill training without visual aids training group had shown significant improvement in all the selected skill performance variables of college level male Handball players.
3. The control group had not shown significant changes in all the selected skill performance variables of college level male Handball players.
4. The results of the study showed that there is a significant difference among the adjusted post test means of the experimental groups in the selected skill performance variables of college level male Handball players.
5. The result of the study showed that specific skill training with visual training group is better than the specific skill training without visual training group and control group in skill performance variables namely dribbling and jump shoot due to the impact of specific skill training with visual aid training programme.

Recommendations

Recommendations for implementation

1. The results of this study clearly indicate that effect of specific skill training on with and without visual aids on selected skill performance variables of college level male Handball players.
2. Hence, it is recommended that director of physical education and physical educators in the field of physical education should include specific skill training and visual aid training programme may be including their schedules.
3. It is suggested that similar specific skill training and visual aid training programme may be include the physical education syllabus.

Recommendations for future research

1. A similar study may be conducted on normal people to assess their level in the selected variables.
2. A similar study may be conducted on different games and sports.
3. A similar study may be conducted in greater detail to assess changes on hematological and biochemical variables.
4. Similar types of studies can be undertaken for different age groups and also for overweight men and women.

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COMPARATIVE ANALYSIS OF SELECTED MOTOR SKILL RELATED PHYSICAL FITNESS VARIABLES BETWEEN SPORTS HOSTEL AND NON SPORTS HOSTEL MEN KABADDI PLAYERS

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ABSTRACT

The purpose of the present study was to find out the compare the selected motor skill related physical fitness variables between sports hostel and non-sports hostel men kabaddi players. To achieve the purpose of the study, the investigator selected forty men subjects which consist of twenty sports hostel kabaddi players from sports development authority of Tamil Nadu (SDAT) and twenty non sports hostel kabaddi players in Chennai, Tamilnadu. Their age ranged between 19 to 25 years. The following variables namely speed, explosive strength and cardio vascular endurance were selected for the study. They were tested with 50 meter dash, vertical jump and Harvard step test respectively. The "t" ratio was used to analyze the collected data. From the analysis of data it was proved that there was significant difference in speed, explosive strength and cardio vascular endurance between sports hostel and non sports hostel kabaddi players. Further the analysis shows that the sports hostel kabaddi players were better than the on sports hostel kabaddi players in speed, explosive strength and cardio vascular endurance.

Key words: Speed, Explosive Strength, Cardio Vascular Endurance, Sports Hostel, Non Sports Hostel, Kabaddi Players

INTRODUCTION

A motor skill is an international movement involving a motor or muscular component, that must be learned and voluntarily produced to perform goal-oriented task, according to Knapp, Newell and sparrow

Physical fitness is the basic fitness of all the fitness. Physical fitness is not only of the most importance keys to a healthy body also the basic of dynamic and creative activity. It consisted many components. Each of which is specific physical fitness a combination of total aspects then single characteristics.

The ability to perform a movement in a short period of time. In other words, "speed may be defined as the capacity of the individual to perform successive movements of the same pattern at a fast rate". (A Yobu, 2010)

The explosive strength is a function of force and times define as the rate of performing work. The explosive strength is defined as the rate of expenditure of energy.

It is the capacity of the individual to release maximum force in the shortest period of time.(Mathews,1981) A, 1982)

It is the ability to persist in physical activity that requires oxygen for physical exertion. (Barrow and Mc gee, 1982)

According to karpovich and sinning (1971) cardio vascular endurance is the capacity or ability of heart-lung system to deliver blood.

The Sports Authority of India (SAI), a successor organization of the IXth Asian Games held in New Delhi in 1982, was set up as a Society registered of Societies Act, 1860 in pursuance of the Resolution No. 1-1/83/SAI dated 25th January 1984 of the Department of Sports.

India with the objective of promotion of Sports and Games as detailed in the Resolution. It is also entrusted with the responsibility of maintaining and utilizing, on the behalf of Ministry of Youth Affairs & Sports. In its attempt to develop excellence in sports, SAI carries out a countrywide talent scouting exercise and nurtures the promising talent by providing coaching sports facilities and exposure to competition at state, national and international level. Besides maintaining and utilize the infrastructure created in Delhi for the ASIAD – 1982. SAI is constantly engaged in improving the sports facilities in various states. The sports authority of India is managed by general body and governing body. The general body chaired by the honourable prime minister of India. This scheme is conceived to impart training, coaching and nutritional support to sports persons who have attained advanced level of sports proficiency. The scheme envisages training of State level players in order to enable them to take part in National and International tournaments.

Statement of the Problem

The purpose of the study was to compare the selected motor skill related physical fitness variables between sports hostel and non-sports hostel men kabaddi players.

Hypothesis

It is hypothesized that there would be significant difference in selected motor skill related physical fitness variables between sports hostel and non sports hostel men kabaddi players.

METHODOLOGY

To achieve the purpose of the study twenty sports hostel kabaddi players from sports development authority of Tamil Nadu (SDAT) and twenty non sports hostel kabaddi players from Chennai district were selected randomly as subjects for this study. Their age ranged between 19 to 25 years. The following variables on namely speed, explosive strength and cardio vascular endurance were selected for the study. They were tested with 50 meter dash, vertical jump and Harvard step test respectively. The "t" ratio was used to analyze the collected data.

RESULTS AND DISCUSSION

TABLE – I

STANDARD DEVIATION AND "T" RATIO MEAN OF SPEED EXPLOSIVE STRENGTH AND CARDIO VASCULAR ENDURANCE

Variable	Group	Mean	SD	SEM	MD	t
Speed	Sports Hostel	6.5965	0.452	0.101	0.318	2.272*
	Non Sports Hostel	6.9145	0.433	0.097		
Explosive Strength	Sports Hostel	226.15	3.88	0.88	46.6	8.174*
	Non Sports Hostel	179.55	18.20	5.64		
Cardio Vascular Endurance	Sports Hostel	88.55	6.576	1.471	7.6	2.704*
	Non Sports Hostel	80.95	10.71	2.395		

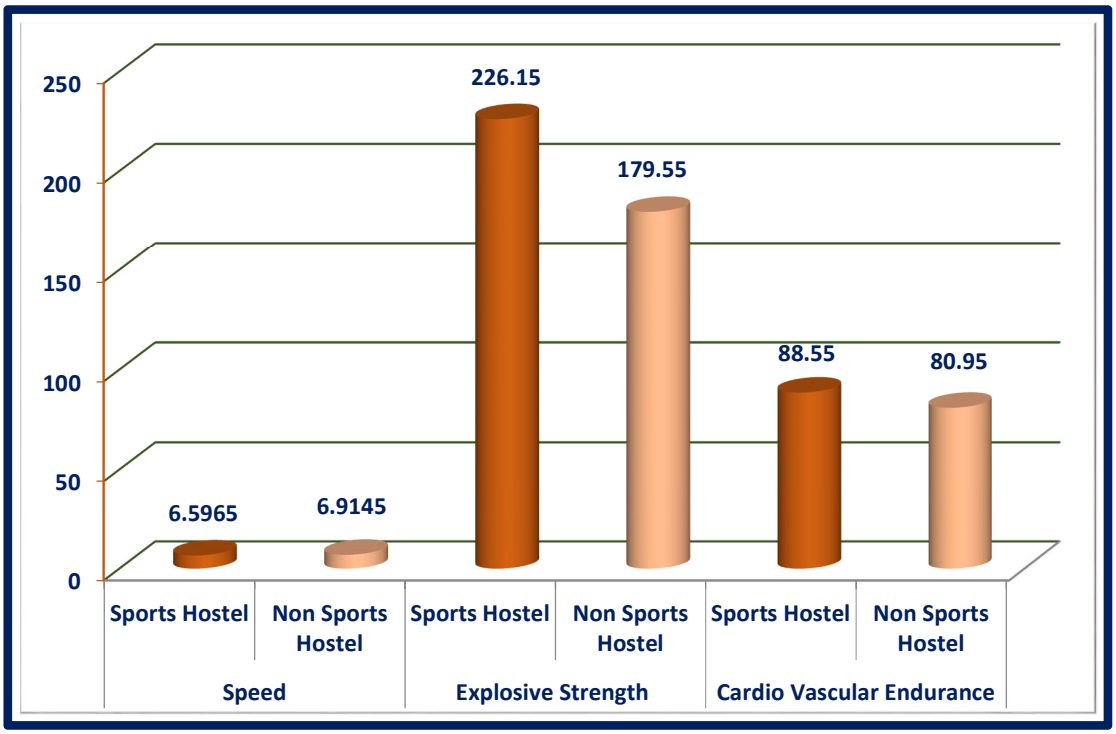
Significant at0.05 level for't' test with df 38. The table value is 2.021

From the analysis of data it was proved that there was significant difference between sports hostel and non sports hostel speed, explosive strength and cardio vascular endurance as the calculated't' value 2.272, 8.174 and 2.704 respectively were greater than the required 't' value of 2.021 with the df 38 at 0.05 level of confidence, It shows that there was significant difference between the sports hostel and non sports hostel in speed, explosive strength and

cardio vascular endurance. The sports hostel kabaddi players were better in speed, explosive strength and cardio vascular endurance than non sports hostel kabaddi players.

Figure - 1

BAR DIAGRAM SHOWING THE MEAN VALUES OF SPORTS HOSTEL AND NON SPORTS HOSTEL MEN KABADDI PLAYERS



CONCLUSIONS

1. It was concluded that there was a significant difference in speed, explosive strength and cardio vascular endurance between sports hostel and non sports hostel kabaddi players.
2. It was concluded that the sports hostel kabaddi players were better than the on sports hostel kabaddi players in speed, explosive strength and cardio vascular endurance.

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EFFECT OF CIRCUIT TRAINING ON SELECTED PHYSICAL FITNESS VARIABLES AMONG MEN KABADDI PLAYERS

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ABSTRACT

The purpose of the study was to find out the effect of six weeks circuit training on selected physical fitness variables of inter collegiate men kabaddi players. A total of thirty (N=30) men Kabaddi Players were selected the from Department of Physical Education, Bharathidasan University, Tiruchirappalli, Tamilnadu. The age of the subjects ranged from 18 to 24 years. The Subjects were randomly assigned to two equal groups of fifteen each and named as Group 'A' experimental group and Group 'B' control group. Group 'A' were underwent circuit training for three days per week for a period of six weeks for Group 'B' there was no specific training. All the subjects were tested on the selected physical fitness variables such as leg strength, leg explosive power and abdominal strength endurance before and after six weeks of circuit training. The data pertaining to the physical fitness variables were statistically analyzed with analysis of covariance (ANCOVA). In all cases 0.05 level of confidence was fixed as a level of confidence to test the hypothesis. The finding of the study reviles that the experimental group had made a significant difference in all the selected physical fitness variables such as leg strength, leg explosive power and abdominal strength endurance when compared to control group. Hence it was concluded that six week of circuit training improved the selected physical fitness variables of inter college men Kabaddi players.

Keywords: Circuit Training, Leg Strength, Leg Explosive Power, Abdominal Strength Endurance

INTRODUCTION

Circuit training is a form of conditioning combining resistance training and high intensity aerobics. It is designed to be easy to follow and target strength building as well as muscular endurance. An exercise "circuit" is one completion of all prescribed exercises in the program. When one circuit is complete, one begins the first exercise again for another circuit. Traditionally, the time between exercises in circuit training is short, often with rapid movement to the next exercise. circuit training is taking fitness enthusiasts by storm and it has even become attractive to thousands who once called themselves couch potatoes. circuit training is an activity that you can accomplish in short period, yet it can make dramatic changes in how your body looks and feels Many who train circuit will tell you that having a firm body not only feels great but also positively affects how they to others.

METHODOLOGY

Subjects For the present study the investigator selected a total of thirty (N=30) men Kabaddi players were selected from Department of Physical Education, Bharathidasan University, Tiruchirappalli, Tamilnadu. The age of the subjects ranged from 18 to 24 years. The subjects were randomly assigned to two equal groups of fifteen each and named as Group 'A' and Group 'B'. Group 'A' underwent circuit training and Group 'B' there was no specific training. The variables were selected by reviewing and studying related literature in detail and the following physical fitness variables were selected.

TABLE- I
SELECTION OF VARIABLES AND TEST

S.No.	Variables	Test
1	Leg Strength	Leg Dynamometer
2	Leg Explosive Power	Standing Broad Jump
3	Abdominal Strength Endurance	Bend knee Sit-ups

EXPERIMENTAL DESIGN

The pre and post-test random group design was used as experimental design in which thirty men subjects were divided into two groups one experimental group and one control group of fifteen subjects each. The experimental group underwent circuit weight training and control group acted as the control. The subjects tested on selected criterion variables were leg strength, abdominal strength endurance and leg explosive power prior to and immediately after the training programme.

TREATMENT

The experimental group were underwent circuit training trice a week for a period six weeks. Move from exercise to exercise with no more than 30 seconds of rest in between. When they complete one circuit, rest for 1 – 2 minutes, and then complete the second circuit and the training tempo was 2 counts for the concentric action and 3 counts for eccentric action. Each work out was for a duration of 45 - 60 minutes (excluding warm ups and cool down). The training programmers were conducted at physical education college ground. Exercise prescribed below was continuous throughout the duration but, intensity had changed after every week. The collected data from the two groups prior to and immediately after the training programme. The selected physical fitness variables were statistically analyzed with analysis of covariance (ANCOVA). In all cases 0.05 level of confidence was fixed as a level of confidence to test the hypothesis.

ANALYSIS AND INTERPRETATION

The analyst of data shows that the pre and post-test mean of leg strength between experimental group and control group were 96 + 8.68, 94+ 8.03 and 105.37+8.68, 95.17+7.58 respectively. The obtained 'F' ratio value 0.14 for pre-test mean and 11.51 for post-test on leg strength. The required table value is 4.20 for significant at 0.05 level of confidence with df 1 and 28. It indicated that the pre-test was insignificant and post-test was significant at 0.05 level of confidence. The adjusted post-test mean of leg strength between the experimental group and control group were 115.05 and 96 respectively. The 'F' ratio value 115.0.5 for adjusted post-test mean is higher than the required table value 4.21 for significant at 0.05 level of confidence with df 1 and 27. The result of the study indicated that there was significant difference between the adjusted post-test mean of experimental group and control group.

The pre and post-test mean of leg explosive power between experimental group and control group were 2.32 + 0.18, 2.46 + 0.20 and 2.17 + 0.18, 2.37 + 0.30 respectively. The obtained 'F' ratio value 1.09 for pre-test mean and 23.33 for post-test on leg strength. The required table value is 4.20 for significant at 0.05 level of confidence with df 1 and 28. It indicated that the pre-test was insignificant and post-test was significant at 0.05 level of confidence. The adjusted post-test mean of leg explosive power between the experimental group and control group were 2.65 and 2.30 respectively. The 'F' ratio value 143.3 for adjusted post-test mean is higher than the required table value 4.21 for significant at 0.05 level of confidence with df 1 and 27. The result of the study indicated that there was significant difference between the adjusted post-test mean of experimental group and control group.

The pre and post-test mean of abdominal strength endurance between experimental group and control group were 36.30 + 4.67, 44.41 + 5.76 and 39.17 + 5.49, 39.17 + 5.13 respectively. The obtained 'F' ratio value 2.38 for pre-test mean and 5.48 for post-test on leg

strength. The required table value is 4.20 for significant at 0.05 level of confidence with df 1 and 28. It indicated that the pre-test was insignificant and post-test was significant at 0.05 level of confidence. The adjusted post-test mean of leg explosive power between the experimental group and control group were 45.85 and 38.30 respectively. The 'F' ratio value 92.50 for adjusted post-test mean is higher than the required table value 4.21 for significant at 0.05 level of confidence with df 1 and 27. The result of the study indicated that there was significant difference between the adjusted post-test mean of experimental group and control group.

DISCUSSION ON FINDING

The result of the study shows that six week circuit training resulted in the improvement of leg strength, leg explosive power and abdominal strength endurance of kabaddi players. The increase in the abdominal strength and endurance may be due to the fact that the abdomen exercises were done both in the training and cool down session. Increase in the leg strength and leg explosive power may be due to the circuit weight training exercise intensity and their movement speed and explosiveness. The findings of the present study regarding these variables are in agreement with the finding of Masamoto, et al., (2003), Ford HT (1983), McGovern and Michael B, (2004) [8] and Berryman N, et al., (2010).

CONCLUSION

1. Based on the results, it can be revel that the six weeks of circuit training significantly improved the leg strength, leg explosive power and abdominal strength endurance.
2. The results of the study provided the evidence, that the circuit training is an effective method for developing the physical fitness variables such as leg strength, leg explosive power and abdominal strength endurance.

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EFFECT OF CIRCUIT TRAINING ON RESPIRATORY FREQUENCY AMONG MALE HANDBALL PLAYERS

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ABSTRACT

The purpose of the present study was to investigate the effect of circuit training on respiratory frequency among male handball players. To achieve the purpose of the study thirty college men students were selected from colleges affiliated to Alagappa University, during the year 2018. The subject's age ranges from 18 to 25 years. The selected players were divided into two equal groups consists of 15 men students each namely experimental group and control group. The experimental group underwent a circuit training programme for six weeks. The control group was not taking part in any training during the course of the study. Respiratory frequency was taken as criterion variable in this study. The selected subjects were tested on Respiratory frequency was measured through heart rate monitor. Pre-test was taken before the training period and post- test was measured immediately after the six weeks training period. Statistical technique't' ratio was used to analyse the means of the pre-test and post test data of experimental group and control group. The results revealed that there was a significant difference found on the criterion variable. The difference is found due to circuit training given to the experimental group on Respiratory frequency when compared to control group.

Keywords: Circuit Training, Respiratory Frequency and't' ratio.

INTRODUCTION

"Sport is a universal language that can bring people together, no matter what their origin, background, religious beliefs or economic status''

Games and Sports have been part of human life almost since the immemorial. Be it a necessity for his survival i.e. hunting for food and shelter, safety from wild animals or other enemies or as pursuit of pleasure, the games and sports have been indispensable to mankind and have been part of his culture. Though the origin of sports is lost in antiquity, it is quite certain that physical activity has been a basic necessity of life, more than fun and diversion, for his survival depended on it. Gradually along with the process of evolution, such activities become more of play and became part of culture of tribes. People used sports and games as a means of transmitting the cultural heritage of their tribes. Games, sports and physical activities persisted despite the rise and fall of ancient civilizations as a cultural heritage, which was passed on from one generation to another. Today games and sports have emerged as universal cultural phenomena**.(Singh Ajmer, Jagtar and BainsJagdish 2006)**

This training method is based on the fact that any activate sets in fatigue in the body, and rest is needed to ward off this fatigue. If a parson gets rest in between his work periods, his capacity of work increases. The circuit training bring about improvement is respiratory and blood circulation systems of our body. It improves co-ordination among various body systems. These types of co-ordination are known as cardiovascular adjustment. **(Kansal R. D 2009)**

Circuit Training has become increasingly popular among women. This type of training provides a one-stop total body exercise session, combining aerobic and strength training into a time efficient workout. Circuit Training reduces body weight and inches and is one of the most versatile methods of exercising **(Frank, 1990)**

METHODOLOGY

Selection of subjects

The purpose of the study was to find out the effect of circuit training on respiratory frequency among male handball players. To achieve this purpose of the study, thirty college men players were selected as subjects at random. The age of the subjects were ranged from 18 to 25 years.

Selection of variable

Independent variable

- Circuit training

Independent variable

- Respiratory frequency

Experimental design

The selected subjects were divided into two equal groups of fifteen subjects each, such as a circuit training group (Experimental Group) and control group. The experimental group underwent circuit training for three days per week for six weeks. Control group, which they did not undergo any special training programme apart from their regular physical activities as per their curriculum. The following physiological variable, namely Respiratory frequency was selected as criterion variable. All the subjects of two groups were tested on selected criterion variable Respiratory frequency was measured through heart rate monitor at prior to and immediately after the training programme.

Statistical technique

The 't' test was used to analyse the significant differences, if any, difference between the groups respectively.

Level of significance

The 0.05 level of confidence was fixed to test the level of significance which was considered as an appropriate.

ANALYSIS OF THE DATA

The significance of the difference among the means of the experimental group was found out by pre-test. The data were analysed and dependent 't' test was used with 0.05 levels as confidence.

TABLE - I

ANALYSIS OF T-RATIO FOR THE PRE AND POST TESTS OF EXPERIMENTAL AND CONTROL GROUP ON RESPIRATORY FREQUENCY

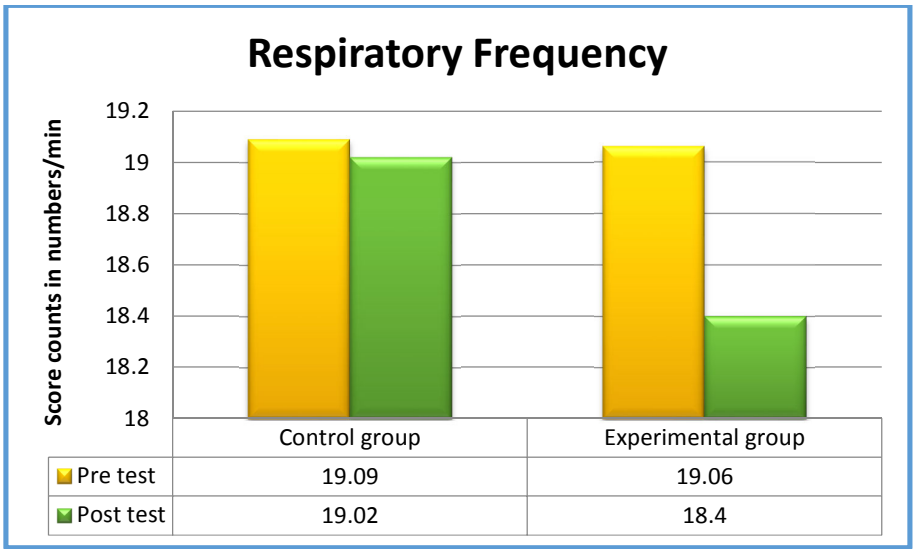
(Scores counts in number per minute)

Variables	Group	Mean		SD		df	't' ratio
		Pre	Post	Pre	Post		
Respiratory frequency	Control	19.09	19.02	0.35	0.53	14	0.38
	Experimental	19.06	18.40	0.34	0.28		**8.53***

**Significance at 0.05 level of confidence.*

The Table-I shows that the mean values of pre-test and post-test of the control group on Respiratory frequency were 19.09 and 19.02 respectively. The obtained 't' ratio was 0.38, since the obtained 't' ratio was less than the required table value of 2.14 for the significant at 0.05 level with 14 degrees of freedom it was found to be statistically insignificant. The mean values of pre-test and post-test of the experimental group on Respiratory frequency were 19.06 and 18.40 respectively. The obtained 't' ratio was 8.53* since the obtained 't' ratio was greater than the required table value of 2.14 for significance at 0.05 level with 14 degrees of freedom it was found to be statistically significant. The result of the study showed that there was a significant difference between control group and experimental group in heart rate. It may be concluded from the result of the study that experimental group improved in respiratory frequency due to six weeks of circuit training.

FIGURE-1
BAR DIAGRAM SHOWING THE PRE AND POST MEAN VALUES OF EXPERIMENTAL AND CONTROL GROUP ON RESPIRATORY FREQUENCY



DISCUSSIONS ON FINDINGS

The result of the study indicates that the experimental group, namely circuit training group had significantly improved the selected dependent variable namely Respiratory frequency, when compared to the control group. It is also found that the improvement caused by circuit training when compared to the control group. The result of this study on Respiratory frequency has in line with the study conducted by **Dr. Jatinder Kumar (2017).**

CONCLUSION

On the basis of the results obtained the following conclusions are drawn,

3. There was a significant difference between experimental and control group on Respiratory frequency after the training period.
4. There was a significant improvement in respiratory frequency. However the improvement was in favor of experimental group due to six weeks of circuit training.

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EFFECT OF BATTLE ROPE TRAINING ON SELECTED PHYSICAL AND PERFORMANCE VARIABLES AMONG KABADDI PLAYERS

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ABSTRACT

The purpose of the study was to find out the effect of battle rope training on selected physical and performance and performance variables among kabaddi players. To achieve the purpose of the study twenty four kabaddi players have been randomly selected from vinayaka missions research foundation (Deemed to be university), salem district in the state of Tamil Nadu, India. The age of subjects were ranged from 18 to 25 years. The subjects had past experience of at least three years in kabaddi and only who those represented their respective college teams were taken as subjects. The subjects were randomly assigned into two groups of twelve each, such as experimental and control groups. The experimental group participated in the battle training for 3 days a week, one session per day and for 6 weeks each session lasted 45 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups. The results of the study showed that there was significant differences exist between battle rope training group and control group. And also battle rope training group showed significant improvement on explosive power, core strength and performance variables compared to control group.

Key words: battle rope training, explosive power, core strength,

INTRODUCTION

Kabaddi is essentially an Indian game, which commands huge popularity in India as well as in its hinterland. In India, Kabaddi is popular in different names. In the southern parts of India, the game is referred to as Chedugudu or Hu-Tu-Tu. In eastern India, it is fondly called Hadudu (for men) and Kit-Kit (for women). The game is known as Kabaddi in northern India. Breath control, raid, dodging and movement of hand and feet are the basic skills that one has to acquire, in order to play Kabaddi.

The Battling Ropes System was created and developed by John Brookfield. John is a multiple world record holder and the author of the popular book, Mastery of Hand Strength. Battle ropes are commonly used as a high intensity interval training (HIIT) tool to develop an athlete's strength, power, explosiveness, as well as their anaerobic and aerobic endurance. Battling Ropes or heavy rope training gives the entire body countless benefits. The great thing about training with the Battling Ropes is that movements and techniques can be modified for exercisers of just about any fitness level; from using both hands to grip and work only one end of the rope, to adding more advanced movements that include lower body movements along with the upper body work.

Recently, large diameter ropes (1-2 inches) weighing approximately 20 to 75 pounds called battling ropes have emerged as an alternative training apparatus for HIIT programs. Battling ropes are typically 40 to 50 feet in length and are anchored securely to the floor in the middle

of the rope, creating two lengths of 20-25 ft. With knees slightly bent, the exerciser grasps the ends of the extended rope and moves his/her arms rapidly in an up and down motion with a vertical displacement of the rope. There are a number of exercises that can be done with battling ropes but two common motions are: both arms moving together called the "double whip" and both arms moving opposite to one another in the vertical plane called the "alternating whip". One advantage of using battle ropes is the degree in which they can be progressed and regressed, via altering exercise selection (unilateral/bilateral limb movements), posture (i.e. standing, kneeling, sitting, prone, supine) and adding additional compound movements to the exercise (i.e. squats, lunges, hops, jumps, shuffles). Apart from exercise selection, exercise intensity is also dependent on rope size, diameter and length, rest period and also the speed and amplitude of wave motion. Stanforth et al (2015) and Ratamess et al (2015).

Adam Linens (2015) opined that battle ropes are a great tool to help improve hand speed, grip strength, upper body strength & endurance, core strength & stability, and increase overall fitness level and conditioning. Using the ropes to perform basketball specific movements challenges the core to maintain good body position while completing the exercise, much like being bumped, grabbed, and fouled while playing the game.

METHODOLOGY

To achieve the purpose of the study twenty four kabaddi players have been randomly selected from vinayaka missions research foundation (Deemed to be university), salem district in the state of Tamil Nadu, India. The age of subjects were ranged from 18 to 25 years. The subjects had past experience of at least three years in kabaddi and only who those represented their respective college teams were taken as subjects. The subjects were randomly assigned into two groups of twelve each, such as experimental and control groups. The experimental group participated in the battle training for 3 days a week, one session per day and for 6 weeks each session lasted 45 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups.

TABLE-I
CRITERION MEASURES

S.No	Criterion measure	Test items	Unit of measurement
1	Explosive power	Seated medicine ball throw	In centimeters
3	Core strength	Plank test	In seconds(1/100)
4	Performance	Subjective rating	In points

TABLE – II
DESCRIPTIVE ANALYSIS OF PHYSICAL AND PERFORMANCE VARIABLES AMONG EXPERIMENTAL AND CONTROL GROUPS

S.No	Variables	Group	Pre-Test Mean	SD (±)	Post – Test Mean	SD (±)	Adjusted Mean
1	Explosive power	BTG	3.95	0.04	4.28	0.12	4.29
		CG	3.98	0.06	4.08	0.18	4.08
2	Core strength	BTG	89.76	5.70	143.73	14.58	143.63
		CG	88.09	4.96	97.99	27.23	98.10
3	Performance	BTG	5.61	0.08	7.20	0.12	7.17
		CG	5.65	0.07	6.46	0.84	6.49

BTG = battle rope training group CG= Control group

The tables-II the pre, post-test means, standard deviations and adjusted means on physical and performance of kabaddi players were numerical presented. The analysis of covariance on selected variables of battle rope training group and control group is presented in table – III

TABLE – III
COMPUTATION OF ANALYSIS OF COVARIANCE ON PHYSICAL AND PERFORMANCE VARIABLES AMONG KABADDI PLAYERS

S.No	Variables	Test	Sum of variance	Sum of squares	df	Mean square	F ratio
1	Explosive power	Pre-test	B.G.	0.006	1	0.006	1.99
			W.G.	0.062	22	0.003	
		Post-test	B.G.	0.23	1	0.23	9.33*
			W.G.	0.55	22	0.02	
		Adjusted means	B.S.	0.23	1	0.23	9.16*
			W.S.	0.54	21	0.02	
2	Core strength	Pre-test	B.G.	16.63	1	16.63	0.58
			W.G.	629.49	22	28.61	
		Post-test	B.G.	12557.01	1	12557.0	26.31*
			W.G.	10498.43	22	477.20	
		Adjusted means	B.S.	12118.19	1	12118.19	24.26*
			W.S.	10487.78	21	499.41	
3	Performance	Pre-test	B.G.	0.009	1	0.009	1.21
			W.G.	0.15	22	0.007	
		Post-test	B.G.	3.30	1	3.30	8.96*
			W.G.	8.106	22	0.36	
		Adjusted means	B.S.	2.610	1	2.61	7.16*
			W.S.	7.653	21	0.36	

**Significant at 0.05level of confidences*

(The table values required for significance at 0.05 level of confidence for 1 & 22 and 1 & 21 are 4.30 and 4.33 respectively).

In the table the results of analysis of covariance on explosive power, core strength and performance. The obtained 'F' ratio of 1.99, 0.58 and 1.21 for Pre-test means was less than the table value of 4.30 for df 1 and 22 required for significance at 0.05 level of confidence on explosive power, core strength and performance. The obtained 'F' ratio of 9.33, 26.31 and 8.96 for post-test means was greater than the table value of 4.30 for df 1 and 22 required for significance at 0.05 level of confidence on explosive power, core strength and performance. The obtained 'F' ratio of 9.16, 24.26 and 7.16 for adjusted post-test means was greater than the table value of 4.33 for df 1 and 21 required for significance at 0.05 level of confidence on explosive power, core strength and performance. The result of the study indicated that there was a significant difference among the adjusted post test means of battle rope training group and control group. And also battle rope training group showed significant improvement on explosive power, core strength and performance compared to control group.

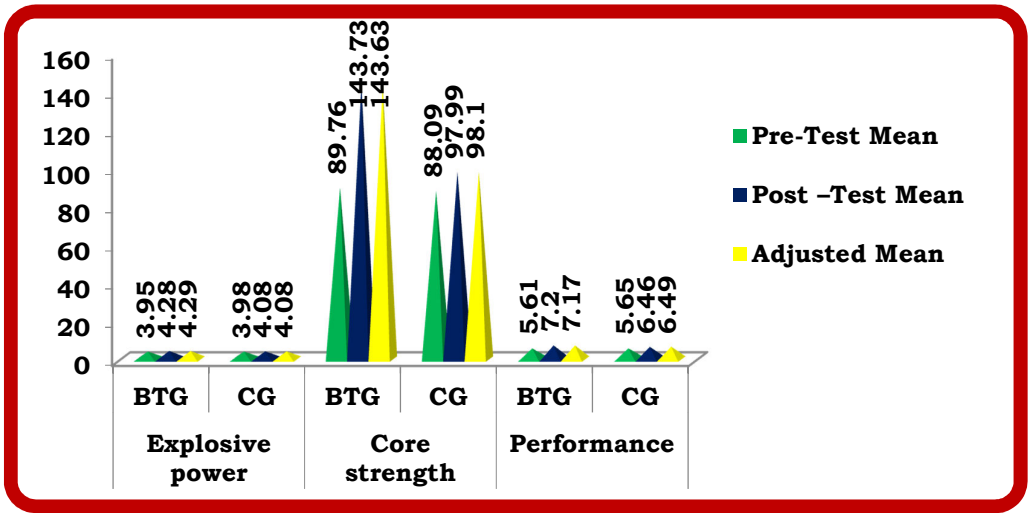

FIGURE-I THE PRE-TEST, POST-TEST AND ADJUSTED POST-TEST MEAN VALUES OF BATTLE ROPE TRAINING GROUP AND CONTROL GROUP ON EXPLOSIVE POWER, CORE STRENGTH AND PERFORMANCE

DISCUSSION OF FINDINGS

The results of the study indicate that the experimental group which underwent battle rope training group had showed significant improved in the selected variables namely such as explosive power, core strength and performance when compared to the control group. The control group did not show significant improvement in any of the selected variables. The past studies on selected physical and performance reveals of Prakash and Kaba Rosario (2017), Bobu Antony et al (2015) and Colin McAuslan (2013).

CONCLUSIONS

From the analysis of data, the following conclusions were drawn.

1. The experimental group showed significant improvement in all the physical variables such as explosive power, grip strength, core strength and performance.
2. The control group did not show significant improvement in any of selected variables.

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IMPACT OF WEIGHT TRAINING ON SELECTED POWER PARAMETERS AND PERFORMANCE OF VOLLEYBALL PLAYERS

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ABSTRACT

The purpose of the study was to find out the impact of weight training on selected power parameters and performance of volleyball players. To achieve the purpose of the study twenty four male volleyball players have been randomly selected from various colleges in and around salem district in the state of Tamil Nadu, India. The age of subjects were ranged from 18 to 25 years. The subjects were randomly assigned into two groups of twelve each, such as experimental and control groups. The experimental group participated in the of weight training for 3 days a week, one session per day and for 8 weeks each session lasted 45 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups. The results of the study showed that there was significant differences exist between of weight training group and control group. And also of weight training group showed significant improvement on explosive power, leg strength and performance variables compared to control group.

Key words: *explosive power, leg strength, weight training*

INTRODUCTION

Volleyball is an explosive sport in which a successful performance is largely determined by the capacity to demonstrate repeated bouts of maximal or Near maximal power Patrick Holmberg (2013). Volleyball is an explosive sport in which the objective is to pass a ball over a net in such a way that the opponent is unable to successfully return the ball back over the net. Rallies, which commonly include powerful actions such as spiking, blocking, diving, and serving, are followed by relatively long recovery periods Cardoso et al (2006). A successful performance is largely determined by the capacity to demonstrate repeated bouts of maximal or near-maximal power Garhammer (1980). Weight training is a common type of strength training for developing the strength and size of skeletal muscles. It uses the force of gravity (in the form of weighted bars, dumbbells or weight sacks) to oppose the force generated by muscle through concentric or eccentric contraction. Weight training uses a variety of specialized equipment to target specific muscle groups and types of movement. Weight training is concerned with improving the condition of the body in terms of strength, power, and endurance through the use of repetitive movements (or attempted movements in the case of isometric exercises) against a resisting load of some kind. Weight training physically improves the muscles involved and the body builder exploits this by using weight training methods in such a way that they change the shape of his body, since he strives for certain desired

proportions. Weight training seems to be one of the better means of increasing both overall body strength and the development of isolated muscle groups. (Booth E.G, 1957). According to Cambell,(1962) weight training produces significantly greater increase in physical fitness than does a normal conditioning programme alone. Muscle strength and power are important determinants of a successful performance in many individual and team sports. Consequently, during the past decades much attention both from coaches and researchers has been focused on determining the optimal training methods for the development of strength, power and competitive performance. Resistance training for volleyball is a common and routine part of any player's strength and conditioning program. Volleyball is a highly competitive sport that requires athletes to be quick, powerful and coordinated. Volleyball players are well-known for sticking to their resistance training program. They realize the extreme benefit that strength training for volleyball has on their performance

METHODOLOGY

To achieve the purpose of the study twenty four male volleyball players have been randomly selected from various colleges in and around salem district in the state of Tamil Nadu, India. The age of subjects were ranged from 18 to 25 years. The subjects were randomly assigned into two groups of twelve each, such as experimental and control groups. The experimental group participated in the of weight training for 3 days a week, one session per day and for 8 weeks each session lasted 45 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups.

TABLE-I
CRITERION MEASURES

S.No	Variables	Test/Equipment used	Measuring unit
1	Explosive power	Seated Medicine Ball Throw	In centimetres
2	Leg strength	Dynamometer	In kg
3	Performance	Subjective rating	In points

RESULT

TABLE – II
DESCRIPTIVE ANALYSIS OF POWER PARAMETERS AND PERFORMANCE OF EXPERIMENTAL AND CONTROL GROUPS

S.No	Variables	Group	Pre-Test Mean	SD (±)	Post –Test Mean	SD (±)	Adjusted Mean
1	Explosive power	**WTG**	4.61	0.07	4.97	0.04	4.96
		CG	4.59	0.06	4.78	0.22	4.79
2	Leg strength	**WTG**	45.57	0.44	49.79	0.63	49.89
		CG	45.88	0.60	48.85	1.10	48.74
3	Performance	**WTG**	4.97	0.04	5.18	0.17	6.45
		CG	4.78	0.22	5.27	0.18	5.74

WTG = weight training group CG= Control group

The tables-II the pre, post-test means, standard deviations and adjusted means on explosive power, leg strength and performance of male volleyball players were numerical presented. The analysis of covariance on selected variables of weight training and control group is presented in table – III.

TABLE – III
COMPUTATION OF ANALYSIS OF COVARIANCE ON POWER PARAMETERS AND PERFORMANCE VARIABLES AMONG MALE VOLLEYBALL PLAYERS

S.No	Variables	Test	Sum of variance	Sum of squares	Df	Mean square	F ratio
1	Explosive power	Pre-test	B.G.	0.56	1	0.56	1.99
			W.G.	6.20	22	0.28	
		Post-test	B.G.	5.30	1	5.30	6.55*
			W.G.	17.80	22	0.80	
		Adjusted means	B.S.	0.17	1	0.17	7.51*
			W.S.	0.50	21	0.02	
2	Leg strength	Pre-test	B.G.	0.003	1	0.003	0.58
			W.G.	0.10	22	0.005	
		Post-test	B.G.	0.21	1	0.21	8.63*
			W.G.	0.55	22	0.02	
		Adjusted means	B.S.	7.26	1	7.26	10.23*
			W.S.	14.91	21	0.71	
3	Performance	Pre-test	B.G.	0.04	1	0.04	1.41
			W.G.	0.72	22	0.03	
		Post-test	B.G.	2.48	1	2.48	7.67*
			W.G.	7.11	22	0.32	
		Adjusted means	B.S.	2.85	1	2.85	8.99*
			W.S.	6.67	21	0.31	

**Significant at 0.05level of confidences*
(The table values required for significance at 0.05 level of confidence for 1 & 22 and 1 & 21 are 4.30 and 4.33 respectively).

In the table the results of analysis of covariance on explosive power, leg strength and performance. The obtained 'F' ratio of 1.99, 0.58 and 1.41 for Pre-test means was less than the table value of 4.30 for df 1 and 22 required for significance at 0.05 level of confidence on explosive power, leg strength and performance. The obtained 'F' ratio of 6.55, 8.63 and 7.67 for post-test means was greater than the table value of 4.30 for df 1 and 22 required for significance at 0.05 level of confidence on explosive power, leg strength and performance. The obtained 'F' ratio of 7.51, 10.23 and 8.99 for adjusted post-test means was greater than the table value of 4.33 for df 1 and 21 required for significance at 0.05 level of confidence on explosive power, leg strength and performance. The result of the study indicated that there was a significant difference among the adjusted post test means of weight training group and control group. And also weight training group showed significant improvement on explosive power, leg strength and performance compared to control group.

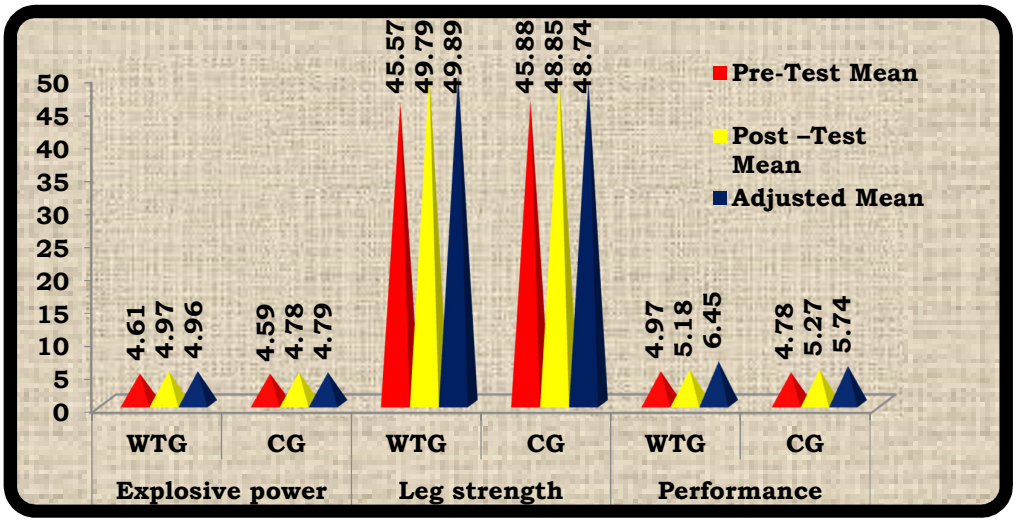

Figure-I **THE PRE, POST AND ADJUSTED MEAN VALUES OF EXPLOSIVE POWER, LEG STRENGTH AND PERFORMANCE OF WEIGHT TRAINING GROUP AND CONTROL GROUP ARE GRAPHICALLY REPRESENTED IN THE FIGURE-I**

DISCUSSION OF FINDINGS

The results of the study indicate that the experimental group which underwent weight training had showed significant improved in the selected variables namely such as explosive power, leg strength and performance when compared to the control group. The control group did not show significant improvement in any of the selected variables. The past studies on selected power parameters and performance reveals Anoop Nazeer (2016), Vishnu Raj (2017), Patrick Holmberg (2013) and Cardoso et al (2006).

CONCLUSIONS

From the analysis of data, the following conclusions were drawn.

1. The experimental group showed significant improvement in all the power parameters of explosive power, leg strength and performance variable.
2. The control group did not show significant improvement in any of selected variables.

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IMPACT OF E-CONTENT BASED COACHING ON SELECTED FUNDAMENTAL SKILLS IN KABADDI

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ABSTRACT

The purpose of the study was to observe the impact of e-content based coaching on selected fundamental skills in kabaddi. To achieve the purpose of this study 30 male under graduate students from vinayaka mission' college of Physical Education, salem, Tamilnadu, India were selected as subjects and their age ranged between 17 and 20 years. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects were randomly assigned to two equal groups of fifteen each and named as Group 'A' and Group 'B'. Group 'A' underwent teaching & coaching with e-content package and Group 'B' undergone teaching & coaching without e-content package. The teaching & coaching with e-content group were shown the content developed electronically by the investigators and the other group was given teaching & coaching only in the court. Both the groups undergone respective schedule for eight weeks on alternate days. Teaching & coaching session in the court lasted for 60 minutes and e-content schedule was meted out for 20 minutes. The fundamental skills namely toe touch, hand touch, kicking, angle catch, thigh catch and hip catch in kabaddi were selected as variables. The subjective rating was done by three qualified coaches on each skill selected in this study. The rating was done on 10 points scale by each coach and average on each skill was taken as individual score. Analysis of covariance was used, where the final means were adjusted for differences in the initial means, and the adjusted means were tested for significance. From the analysis of data it was found that the teaching & coaching combined with e-content package group showed significant improvement on toe touch, hand touch, kicking, angle catch, thigh catch and hip catch in Kabaddi.

Keywords: coaching, kabaddi, toe touch

INTRODUCTION

E-learning materials have been developed for a variety of disciplines. In the area of sport and physical education, which focuses on human motion, media for picturing this motion, such as video and animations, are particularly useful. They allow presenting how to perform certain motions and to illustrate sports techniques. Variations in speed (e.g. slow motion), viewpoint or degree of abstrac-tion (e.g. stick figure animation) provide various modes of presentation. Throughout the last years increasing efforts in developing and using multimedia based courses and materials to be used for teaching sport in theory and practice can be observed (Sorrentino, 2001; Wiksten et al., 2002; Katz, 2003; Multimedia e-learning systems have been developed for sports or disciplines of sport science such as sports biomechanics (Tavi et al., 1992, In addition, interdisciplinary solutions have been strived for. Baca et al., 2005 have designed and implemented a comprehensive modular system falling into this category. Their starting points are sports. Questions related to these sports are answered from the perspective of sport scientific disciplines in a highly interdisciplinary way. Modules are organized in the form of a matrix of sports and sport scientific disciplines.

Multimedia materials and learning environments have also been developed for technical and tactical education. The system mentioned above (Baca et al., 2005), for example, includes manifold animations and video sequences to assist instructors and students to comprehend sports motions and technical/tactical actions as applied in game sports. One specific emphasis lies in the methodical organization of the learning process of sports techniques. Leser et al. (2009) present an application for learning tactics in soccer. They presume that dynamical visualizations are advantageous when communicating tactical behavior. This assumption is supported by the meta analysis performed by Hoffler and Leutner, 2007, which confirms the effectiveness of such instruction materials for comprehending dynamic phenomenological and real situations.

METHODOLOGY

To achieve the purpose of this study 30 male under graduate students from vinayaka mission' college of Physical Education, salem, Tamilnadu, India were selected as subjects and their age ranged between 17 and 20 years. The study was formulated as a true random group design, consisting of a pre-test and post-test. The subjects were randomly assigned to two equal groups of fifteen each and named as Group 'A' and Group 'B'. Group 'A' underwent teaching & coaching with e-content package and Group 'B' undergone teaching & coaching without e-content package. The teaching & coaching with e-content group were shown the content developed electronically by the investigators and the other group was given teaching & coaching only in the court. Both the groups undergone respective schedule for eight weeks on alternate days. Teaching & coaching session in the court lasted for 60 minutes and e-content schedule was meted out for 20 minutes. The fundamental skills namely toe touch, hand touch, kicking, angle catch, thigh catch and hip catch in kabaddi were selected as variables. The subjective rating was done by three qualified coaches on each skill selected in this study. The rating was done on 10 points scale by each coach and average on each skill was taken as individual score. Analysis of covariance was used, where the final means were adjusted for differences in the initial means, and the adjusted means were tested for significance.

RESULT

TABLE – II

DESCRIPTIVE ANALYSIS OF SELECTED FUNDAMENTAL SKILLS OF TEACHING & COACHING WITH AND WITHOUT E-CONTENT PACKAGE GROUPS

S.No	Variables	Group	Pre-Test Mean	SD (±)	Post –Test Mean	SD (±)	Adjusted Mean
1	Toe touch	TCWECPG	3.74	0.03	7.17	0.43	7.19
		TCWOECPG	3.76	0.04	6.38	0.74	6.36
2	Hand touch	TCWECPG	4.77	0.04	7.15	0.08	7.16
		TCWOECPG	4.79	0.06	6.31	0.66	6.31
3	Kicking	TCWECPG	4.57	0.13	7.32	0.24	7.31
		TCWOECPG	4.54	0.15	6.47	0.96	6.48
4	Angle catch	TCWECPG	4.47	0.23	7.50	0.21	7.51
		TCWOECPG	4.37	0.20	6.80	0.78	6.80
5	Thigh catch	TCWECPG	4.28	0.28	6.45	0.20	6.45
		TCWOECPG	4.31	0.27	6.01	0.65	6.02
6	Hip catch	TCWECPG	4.32	0.17	7.52	0.36	7.52
		TCWOECPG	4.30	0.19	6.95	0.82	6.95

TCWECPG = Teaching & coaching with e-content package group

TCWOECPG = Teaching & coaching without e-content package group

The above table documents the pre & post tests means, standard deviations and adjusted mean values of teaching & coaching with and without e-content package groups on selected

fundamental skills in kabaddi. The analysis of covariance on teaching & coaching with and without e-content package groups on selected fundamental skills in kabaddi is presented in table – III

TABLE – III
THE ANALYSIS OF COVARIANCE ON TEACHING & COACHING WITH AND WITHOUT E-CONTENT PACKAGE GROUPS ON SELECTED FUNDAMENTAL SKILLS IN KABADDI

S.No	Variables	Test	Sum of variance	Sum of squares	Df	Mean square	F ratio
1	Toe touch	Pre-test	B.G.	0.002	1	0.002	1.34
			W.G.	0.05	28	0.002	
		Post-test	B.G.	4.71	1	4.71	12.70*
			W.G.	10.38	28	0.37	
		Adjusted means	B.S.	4.83	1	4.83	12.72*
			W.S.	10.25	27	0.38	
2	Hand touch	Pre-test	B.G.	0.002	1	0.002	0.81
			W.G.	0.08	28	0.003	
		Post-test	B.G.	5.29	1	5.29	23.63*
			W.G.	6.27	28	0.22	
		Adjusted means	B.S.	5.27	1	5.27	22.79*
			W.S.	6.24	27	0.23	
3	Kicking	Pre-test	B.G.	0.003	1	0.003	0.15
			W.G.	0.58	28	0.02	
		Post-test	B.G.	5.41	1	5.41	10.89*
			W.G.	13.91	28	0.49	
		Adjusted means	B.S.	5.24	1	5.24	10.29*
			W.S.	13.74	27	0.50	
4	Angle catch	Pre-test	B.G.	0.07	1	0.07	1.55
			W.G.	1.32	28	0.04	
		Post-test	B.G.	3.66	1	3.66	11.09*
			W.G.	9.25	28	0.33	
		Adjusted means	B.S.	3.57	1	3.57	10.44*
			W.S.	9.24	27	0.34	
5	Thigh catch	Pre-test	B.G.	0.009	1	0.009	0.10
			W.G.	2.22	28	0.07	
		Post-test	B.G.	1.46	1	1.46	6.21*
			W.G.	6.59	28	0.23	
		Adjusted means	B.S.	1.38	1	1.38	5.90*
			W.S.	6.31	27	0.23	
6	Hip catch	Pre-test	B.G.	0.002	1	0.002	0.06
			W.G.	0.97	28	0.03	
		Post-test	B.G.	2.43	1	2.43	5.96*
			W.G.	11.45	28	0.40	
		Adjusted means	B.S.	2.43	1	2.43	5.73*
			W.S.	11.45	27	0.42	

**Significant at 0.05level of confidences*

(The table values required for significance at 0.05 level of confidence for 1 & 28 and 1 & 27 are 4.20 and 4.21 respectively).

In the table the results of analysis of covariance on toe touch, hand touch, kicking, angle catch, thigh catch and hip catch. The obtained 'F' ratio of 1.34, 0.81, 0.15, 1.55, 0.10 and 0.06 for Pre-test means was less than the table value of 4.20 for df 1 and 28 required for significance at 0.05 level of confidence on toe touch, hand touch, kicking, angle catch, thigh catch and hip catch. The obtained 'F' ratio of 12.70, 23.63, 10.89, 11.09, 6.21 and 5.96, for post-test means was greater than the table value of 4.20 for df 1 and 28 required for significance at 0.05 level of confidence on toe touch, hand touch, kicking, angle catch, thigh catch and hip catch. The obtained 'F' ratio of 12.72, 22.79, 10.29, 10.44, 5.90 and 5.73 for adjusted post-test means was greater than the table value of 4.21 for df 1 and 27 required for significance at 0.05 level of confidence on toe touch, hand touch, kicking, angle catch, thigh catch and hip catch. The result of the study indicated that there was a significant difference among the adjusted post test means of on teaching & coaching with and without e-content package groups on toe touch, hand touch, kicking, angle catch, thigh catch and hip catch. And also teaching & coaching with e-content package group showed significant improvement on toe touch, hand touch, kicking, angle catch, thigh catch and hip catch compared to teaching & coaching without e-content package group.

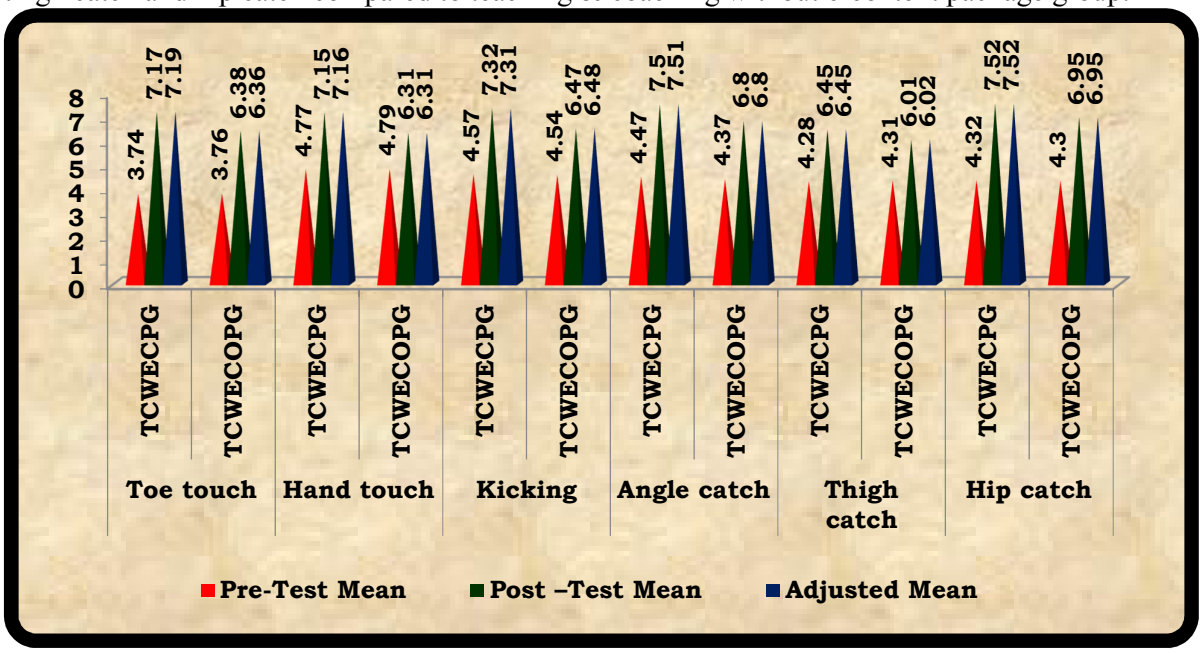

Figure-I THE PRE, POST AND ADJUSTED MEAN VALUES OF TOE TOUCH, HAND TOUCH, KICKING, ANGLE CATCH, THIGH CATCH AND HIP OF BOTH TEACHING & COACHING WITH AND WITHOUT E-CONTENT PACKAGE GROUPS ARE GRAPHICALLY REPRESENTED IN THE FIGURE-I.

DISCUSSION OF FINDINGS

The results of the study indicate that the teaching & coaching combined with e-content package showed significant improvement on all selected fundamental skills in kabaddi and also practicing skills combined with e-content package shown significant improvement than the other group. The past studies on selected fundamental skills reveals of Elayaraja et al (2010) in Ivin Jabakumar et al (2011), Leser (2005), Wiksten et al (2002)

CONCLUSIONS

From the analysis of data, the following conclusions were drawn.

1. It was found that the teaching & coaching combined with e-content package showed significant improvement on all selected fundamental skills in kabaddi.
2. It was also found that practicing skills combined with e-content package shown significant improvement than the other group.

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INFLUENCE OF SLACKLINE TRAINING ON SELECTED PHYSICAL AND PERFORMANCE VARIABLE AMONG VOLLEYBALL PLAYERS

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ABSTRACT

The purpose of the study was to find out the influence of slackline training on selected physical and performance variable among volleyball players. To achieve the purpose of the study twenty four male volleyball players have been randomly selected from various colleges in and around Erode district in the state of Tamil Nadu, India. The age of subjects were ranged from 18 to 25 years. The subjects were randomly assigned into two groups of twelve each, such as experimental and control groups. The experimental group participated in the of slackline training for 3 days a week, one session per day and for 8 weeks each session lasted 45 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups. The results of the study showed that there was significant differences exist between of slackline training group and control group. And also of slackline training group showed significant improvement on balance, leg strength and performance variables compared to control group.

Key words: slackline training, balance, leg strength

INTRODUCTION

A slackline is composed of nylon webbing and is stretched tight enough between two anchor points that people can balance on it (Balcom, 2005). Depending on the length and the tension of the slackline, the line characteristics (amplitude and frequency of the line sway) can be altered and thus, the task difficulty can be adjusted. In general, the line has highly elastic properties and is in this respect similar to a trampoline. The activity of slacklining is defined as 'the action of retaining balance while standing or moving on a tightened band'. slacklining is defined as 'the action of retain-ing balance while standing or moving on a tightened band Keller et al (2002). Ithas been demonstrated to activate or provide training-induced improvements in the rate of force development in lower limb activity, prevention of injury in elite athletes, postural stability and postural control as a more challenging exercise for the knee and hip joints than multi-functional rocker boards and air cushions Pfusterschmied et al (2013). slacklining could be a valuable adjunct exercise for lower limb rehabilitation programmes, particularly in the outpatient setting and in circumstances where the quadriceps are inhibited and activation is required Gabela et al (2013). Zhao suspects that slackline training could boost devotees' balance in "trail running, hiking, skiing, and stand-up paddle boarding. Slacklining improves postural control and enhances functional knee joint stability which is induced from enhanced preparatory muscle activation of the rectus femora's Pfusterschmied el al (2013).

METHODOLOGY

To achieve the purpose of the study twenty four male volleyball players have been randomly selected from various colleges in and around Erode district in the state of Tamil Nadu, India. The age of subjects were ranged from 18 to 25 years. The subjects were randomly assigned into two groups of twelve each, such as experimental and control groups. The experimental group participated in the of slackline training for 3 days a week, one session per day and for 8 weeks each session lasted 45 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups.

TABLE-I
CRITERION MEASURES

S.No	Variables	Test/Equipment used	Measuring unit
1	Balance	Stork balance test	In seconds(1/100)
2	Leg strength	Dynamometer	In kg
3	Performance	Subjective rating	In points

RESULT

TABLE – II
DESCRIPTIVE ANALYSIS OF PHYSICAL AND PERFORMANCE VARIABLES AMONG EXPERIMENTAL AND CONTROL GROUPS

S.No	Variables	Group	Pre-Test Mean	SD (±)	Post – Test Mean	SD (±)	Adjusted Mean
1	Balance	**STG**	5.57	0.02	5.75	0.04	5.76
		CG	5.59	0.03	5.64	0.10	5.64
2	Leg strength	**STG**	43.97	0.57	47.97	0.59	47.98
		CG	43.80	0.49	44.85	1.86	44.84
3	Performance	**STG**	5.73	0.14	6.99	0.64	7.01
		CG	5.81	0.15	6.41	0.52	6.40

WTG = slackline training group CG= Control group

The tables-II the pre, post-test means, standard deviations and adjusted means on balance, leg strength and performance of male volleyball players were numerical presented. The analysis of covariance on selected variables of slackline training and control group is presented in table – III.

TABLE – III
COMPUTATION OF ANALYSIS OF COVARIANCE ON PHYSICAL AND PERFORMANCE VARIABLES AMONG MALE VOLLEYBALL PLAYERS

S.No	Variables	Test	Sum of variance	Sum of squares	Df	Mean square	F ratio
1	**Balance**	Pre-test	B.G.	0.001	1	0.001	1.99
			W.G.	0.01	22	0.001	
		Post-test	B.G.	0.07	1	0.07	11.46*
			W.G.	0.14	22	0.007	
		Adjusted means	B.S.	0.07	1	0.074	10.53*
			W.S.	0.14	21	0.007	

2	Leg strength	Pre-test	B.G.	0.16	1	0.16	0.58
			W.G.	6.29	22	0.28	
		Post-test	B.G.	58.52	1	58.52	30.65*
			W.G.	41.99	22	1.90	
		Adjusted means	B.S.	57.48	1	57.48	28.76*
			W.S.	41.96	21	1.99	
3	Performance	Pre-test	B.G.	0.03	1	0.03	1.41
			W.G.	0.50	22	0.02	
		Post-test	B.G.	2.01	1	2.01	5.79*
			W.G.	7.63	22	0.34	
		Adjusted means	B.S.	2.06	1	02.06	5.72*
			W.S.	7.57	21	0.36	

**Significant at 0.05level of confidences*
(The table values required for significance at 0.05 level of confidence for 1 & 22 and 1 & 21 are 4.30 and 4.33 respectively).

In the table the results of analysis of covariance on balance, leg strength and performance. The obtained 'F' ratio of 1.99, 0.58 and 1.41 for Pre-test means was less than the table value of 4.30 for df 1 and 22 required for significance at 0.05 level of confidence on balance, leg strength and performance. The obtained 'F' ratio of 11.46, 30.65, and 5.79 for post-test means was greater than the table value of 4.30 for df 1 and 22 required for significance at 0.05 level of confidence on balance, leg strength and performance. The obtained 'F' ratio of 10.53, 28.76 and 5.72 for adjusted post-test means was greater than the table value of 4.33 for df 1 and 21 required for significance at 0.05 level of confidence on balance, leg strength and performance. The result of the study indicated that there was a significant difference among the adjusted post test means of slackline training group and control group. And also slackline training group showed significant improvement on balance, leg strength and performance compared to control group.

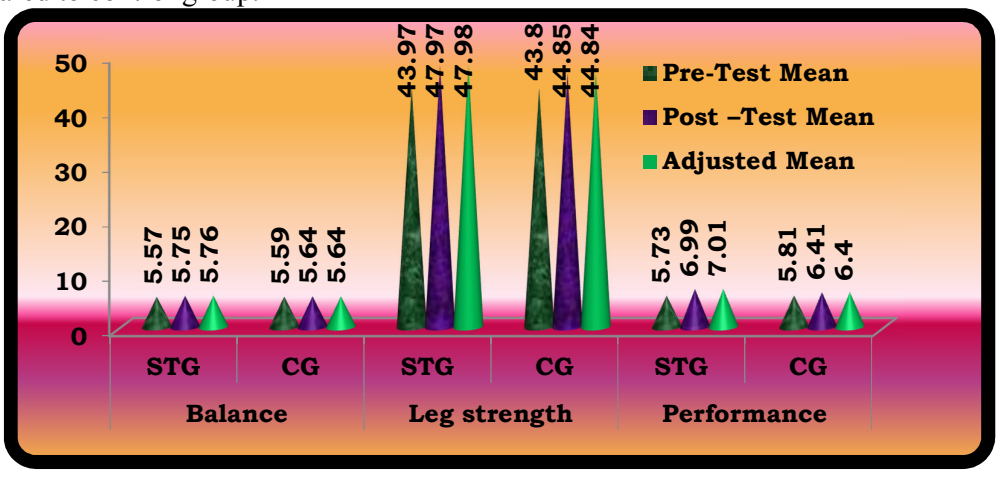

Figure-I **THE PRE, POST AND ADJUSTED MEAN VALUES OF BALANCE, LEG STRENGTH AND PERFORMANCE OF SLACKLINE TRAINING GROUP AND CONTROL GROUP ARE GRAPHICALLY REPRESENTED IN THE FIGURE-I**

DISCUSSION OF FINDINGS

The results of the study indicate that the experimental group which underwent slackline training had showed significant improved in the selected variables namely such as balance, leg strength and performance when compared to the control group. The control group did not show significant improvement in any of the selected variables. The past studies on selected physical and performance variables reveals Granacher et al (2010), Gabela et al (2013) and Keller et al (2013).

CONCLUSIONS

From the analysis of data, the following conclusions were drawn.

1. The experimental group showed significant improvement in all the physical variables of balance, leg strength and performance variable.
2. The control group did not show significant improvement in any of selected variables.

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EFFECT OF TRIPHASIC TRAINING WITH TAPERING ON SELECTED PHYSIOLOGICAL AND PERFORMANCE VARIABLES AMONG MALE VOLLEYBALL PLAYERS

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ABSTRACT

The purpose of the study was to find out the effect of triphasic with tapering on selected physiological and performance variables among male volleyball players. To achieve the purpose of the study twenty four male volleyball players have been randomly selected from various colleges in and around salem district in the state of Tamil Nadu, India. The age of subjects were ranged from 18 to 25 years. The subjects were randomly assigned into two groups of twelve each, such as experimental and control groups. The experimental group participated in the of triphasic training with tapering for 3 days a week, one session per day and for 8 weeks each session lasted 45 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups. The results of the study showed that there was significant differences exist between of control group and triphasic training with tapering group. And also of triphasic training with tapering group showed significant improvement on vital capacity, forced vital capacity and performance variables compared to control group.

Key words: Vital capacity, forced vital capacity, triphasic training

INTRODUCTION

Volleyball is a social game, where next to the good coordination and cleverness comes up to the important place team players good rapprochement and cooperation Adams, et al (2002). Modern volleyball requires for player a good physical endurance, parallel it is very important to develop speed and explosive power and force endurance. Vertical jump ability is critical for success in volleyball. Jumping is utilized during the jump set, jump serve, blocking and spiking. Successful performance in modern elite volleyball demand from each player excellent physical, technical, and tactical preparation A successful player must not only be able to jump high but must also be able to reach that height quickly, this requires an ability to generate power in a very short time Stojanovic, el al (1996).

Cal Dietz opined that triphasic training breaks down dynamic, athletic movements into their three components (eccentric, isometric, and concentric), and maximizes performance gains by applying stress to the athlete in a way that allows for the continuous development of strength, speed, and power. Triphasic training is that all dynamic muscle actions consist of three phases: eccentric, isometric, and concentric Dietz and Peterson (2012). If only the concentric movement is trained, athletic movement and performance will be limited by the weaker eccentric and isometric movements. Therefore, the purpose of the triphasic phase is to

individually develop and strengthen all three movements in order to create a strong link between the phases of dynamic movements and optimize performance Dietz and Peterson (2012). Triphasic training is to train the nervous system Dietz and Peterson (2012). The nervous system encompasses the entire body, so by training the legs triphasically, the athletes are also inducing similar neurological changes in their upper body, without the added stress Dietz and Peterson (2012). The combination of slight overreaching with a download week enhances the super compensation effect and increases performance (Dietz & Peterson, 2012). Triphasic pattern of exercise-induced alterations of blood rheology is uncompletely understood, but increased blood fluidity may improve several steps of oxygen transfer to muscle, as clearly demonstrated in hypoxic conditions. Increasing evidence emerges from the literature, that blood fluidity is a physiological determinant of fitness.

The primary goal of the taper period is to elevate performance in preparation for a major competition—in this program, the MIAC play-offs (Bompa & Haff, 2009). Tapering is the best method of stimulating super compensation and elevating the athletes' performance prior to a major competition (Bompa & Haff, 2009). The taper period should last from 8 to 14 days and have a reduction in training volume and intensity (Bompa & Haff, 2009). For team sports, the training volume during the first taper microcycle should be reduced to obtain an unloading effect, and intensity should also be reduced to 50-60% of 1RM (Bompa & Haff, 2009).

METHODOLOGY

To achieve the purpose of the study twenty four male volleyball players have been randomly selected from various colleges in and around salem district in the state of Tamil Nadu, India. The age of subjects were ranged from 18 to 25 years. The subjects were randomly assigned into two groups of twelve each, such as experimental and control groups. The experimental group participated in the of triphasic training with tapering for 3 days a week, one session per day and for 8 weeks each session lasted 45 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups.

TABLE-I

CRITERION MEASURES

S.No	Criterion measure	Test items	Unit of measurement
1	Vital capacity	Spiro meter	In liter/s
2	Forced vital capacity		
3	Performance	Subjective rating	In points

TABLE – II

DESCRIPTIVE ANALYSIS OF PHYSIOLOGICAL AND PERFORMANCE VARIABLES AMONG EXPERIMENTAL AND CONTROL GROUPS

S.No	Variables	Group	Pre-Test Mean	SD (±)	Post –Test Mean	SD (±)	Adjusted Mean
1	Vital Capacity	CG	2.67	0.04	2.89	0.15	2.89
		TPTWTG	2.66	0.03	3.00	0.05	3.00
2	Forced vital capacity	CG	3.65	0.06	3.88	0.16	3.89
		TPTWTG	3.68	0.04	4.11	0.29	4.11
3	Performance	CG	4.99	0.25	5.53	0.44	5.56
		TPTWTG	5.09	0.25	6.02	0.26	6.00

CG= Control group TTWTG = Triphasic training with tapering group

The tables-II the pre, post-test means, standard deviations and adjusted means on vital capacity, forced vital capacity and performance of male volleyball players were numerical presented. The analysis of covariance on selected variables of control group and triphasic training with tapering group is presented in table – III

TABLE – III

COMPUTATION OF ANALYSIS OF COVARIANCE ON PHYSIOLOGICAL AND PERFORMANCE VARIABLES AMONG MALE VOLLEYBALL PLAYERS

S.No	Variables	Test	Sum of variance	Sum of squares	Df	Mean square	F ratio
1	Vital capacity	Pre-test	B.G.	0.001	1	0.001	0.58
			W.G.	0.03	22	0.002	
		Post-test	B.G.	0.07	1	0.07	5.45*
			W.G.	0.31	22	0.01	
		Adjusted means	B.S.	0.07	1	0.07	4.83*
			W.S.	0.30	21	0.01	
2	Forced vital capacity	Pre-test	B.G.	0.004	1	0.004	1.29
			W.G.	0.06	22	0.003	
		Post-test	B.G.	0.31	1	0.31	5.61*
			W.G.	1.23	22	0.05	
		Adjusted means	B.S.	0.28	1	0.28	4.89*
			W.S.	1.22	21	0.05	
3	Performance	Pre-test	B.G.	0.06	1	0.06	0.93
			W.G.	1.45	22	0.06	
		Post-test	B.G.	1.42	1	1.42	10.47*
			W.G.	3.00	22	0.13	
		Adjusted means	B.S.	1.10	1	1.10	8.75*
			W.S.	2.64	21	0.12	

**Significant at 0.05level of confidences*

(The table values required for significance at 0.05 level of confidence for 1 & 22 and 1 & 21 are 4.30 and 4.33 respectively).

In the table the results of analysis of covariance on vital capacity, forced vital capacity and performance. The obtained 'F' ratio of 0.58, 1.29 and 0.93 for Pre-test means was less than the table value of 4.30 for df 1 and 22 required for significance at 0.05 level of confidence on vital capacity, forced vital capacity and performance. The obtained 'F' ratio of 5.45, 5.61 and 10.47 for post-test means was greater than the table value of 4.30 for df 1 and 22 required for significance at 0.05 level of confidence on vital capacity, forced vital capacity and performance. The obtained 'F' ratio of 4.83, 4.89 and 8.75 for adjusted post-test means was greater than the table value of 4.33 for df 1 and 21 required for significance at 0.05 level of confidence on vital capacity, forced vital capacity and performance. The result of the study indicated that there was a significant difference among the adjusted post test means of control group and triphasic training with tapering group. And also triphasic training with tapering group showed significant improvement on vital capacity, forced vital capacity and performance compared to control group.

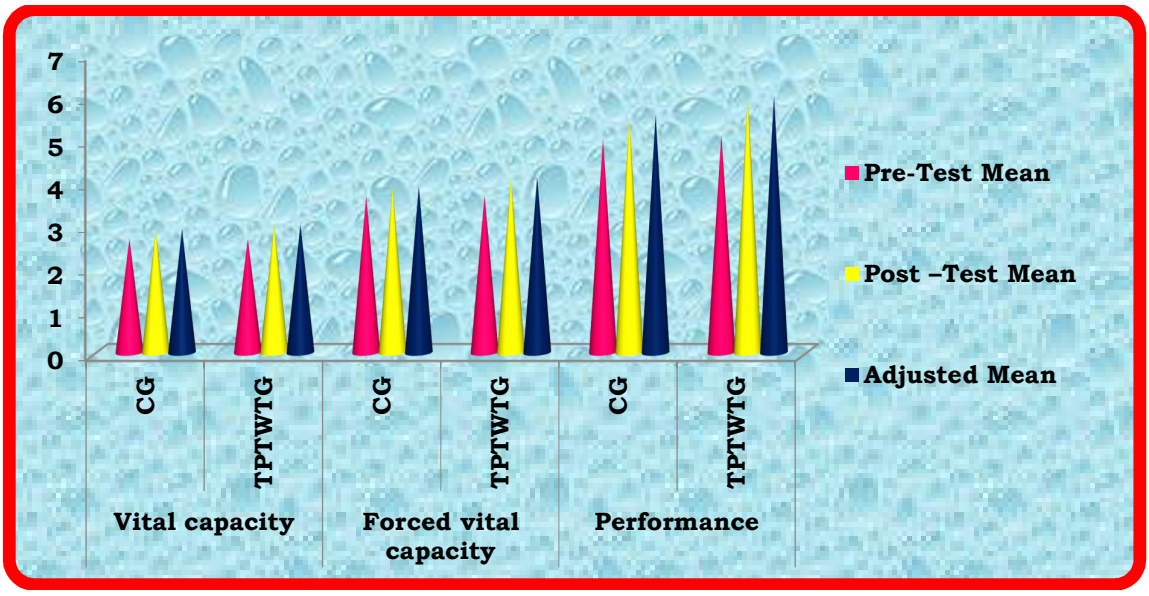

Figure-I THE PRE, POST AND ADJUSTED MEAN VALUES OF VITAL CAPACITY, FORCED VITAL CAPACITY AND PERFORMANCE OF CONTROL GROUP AND TRIPHASIC TRAINING WITH TAPERING GROUP ARE GRAPHICALLY REPRESENTED IN THE FIGURE-I

DISCUSSION OF FINDINGS

The results of the study indicate that the experimental group which underwent triphasic training with tapering had showed significant improved in the selected variables namely such as vital capacity, forced vital capacity and performance when compared to the control group. The control group did not show significant improvement in any of the selected variables. The past studies on selected strength parameters and performance reveals Pérez-Turpin et al (2014)

CONCLUSIONS

From the analysis of data, the following conclusions were drawn.

1. The experimental group showed significant improvement in all the physiological variables of vital capacity, forced vital and performance variable.
2. The control group did not show significant improvement in any of selected variables.

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IMPACT OF CIRCUIT WEIGHT TRAINING ON SELECTED BIOCHEMICAL VARIABLES AMONG COLLEGE LEVEL WEIGHT LIFTERS

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ABSTRACT

The purpose of the study was to find out the impact of circuit weight training on selected biochemical variables among college level weight lifters. To achieve the purpose of the study thirty college level weight lifters have been randomly selected from various colleges in and around chennai district in the state of Tamil Nadu, India. The age of subjects were ranged from 18 to 25 years. The subjects were randomly assigned into two groups of fifteen each, such as experimental and control groups. The experimental group participated in the of Circuit weight training for 3 days a week, one session per day and for 8 weeks each session lasted 45 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups. The results of the study showed that there was significant differences exist between of Circuit weight training group and control group. And also of circuit weight training group showed significant improvement on total cholesterol, low density lipoprotein and high-density lipoprotein compared to control group.

Key words: total cholesterol, low density lipoprotein, weight lifters

INTRODUCTION

Circuit weight training was devised by British researchers Morgan and Adamson. As a training method for improvement in all functions of the body, aerobic and anaerobic exercises are conducted together aimed at improvement of muscle strength and muscle endurance. Circuit weight training utilizes small intensity loads and does not include resting between exercises. Weight training is a representative resistance exercise method with short exercise times and high loads. For weight training, resistance exercise tools, such as barbells and dumbbells, are used. This exercise method is used for body building, physical training, muscle strength training and recovery from injuries.

Biochemical parameters like blood lactate, haemoglobin, urea, uric acid and lipid profiles have an advantage in regulating the training load. Assessment of blood lactate levels during pre and immediately post exercise can be useful to determine the lactate threshold level during training and competition Nielsen and Weber (2007). Hemoglobin represents the iron status of the body Suhr et al (2009). Oxygen is transported to muscle primarily by haemoglobin Suhr et al (2009). During aerobic exercise the demand of oxygen increases at the working muscle, so an optimum level of haemoglobin is required to perform at the highest level with high intensity. As swimming performance depend much on the aerobic component of the athlete, therefore the players need to maintain normal haemoglobin level to optimize performance. The serum level of urea and uric acid are used for assessment of training related stress Urhausen and

Kindermann (2002). During the training these parameters may be evaluated at regular intervals to assess the training load imposed on the athlete Urhausen and Kindermann (2002).

METHODOLOGY

To achieve the purpose of the study thirty College level weight lifters have been randomly selected from various colleges in and around chennai district in the state of Tamil Nadu, India. The age of subjects were ranged from 18 to 25 years. The subjects were randomly assigned into two groups of fifteen each, such as experimental and control groups. The experimental group participated in the of Circuit weight training for 3 days a week, one session per day and for 8 weeks each session lasted 45 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups.

RESULT

TABLE – I

DESCRIPTIVE ANALYSIS OF BIOCHEMICAL VARIABLES OF EXPERIMENTAL AND CONTROL GROUPS

S.No	Variables	Group	Pre-Test Mean	SD (±)	Post –Test Mean	SD (±)	Adjusted Mean
1	Total cholesterol	CWTG	168.13	10.52	155.26	1.47	155.13
		CG	167.26	9.75	161.92	9.95	162.06
2	High-density lipoprotein	CWTG	41.33	2.31	42.86	.57	42.86
		CG	41.06	2.68	40.72	2.26	40.72
3	Low density lipoprotein	CWTG	101.20	11.82	109.33	6.20	109.36
		CG	101.60	9.89	102.78	8.72	102.75

WTG = Circuit weight training group CG= Control group

The tables-I the pre, post-test means, standard deviations and adjusted means on total cholesterol, high-density lipoprotein and low density lipoprotein of weight lifters were numerical presented. The analysis of covariance on selected variables of circuit weight training and control group is presented in table – II.

TABLE – II

COMPUTATION OF ANALYSIS OF COVARIANCE ON BIOCHEMICAL VARIABLES AMONG COLLEGE LEVEL WEIGHT LIFTERS

S.No	Variables	Test	Sum of variance	Sum of squares	Df	Mean square	F ratio
1	Total cholesterol	Pre-test	B.G.	5.63	1	5.63	0.05
			W.G.	2882.66	28	102.95	
		Post-test	B.G.	332.50	1	332.50	6.56*
			W.G.	1417.45	28	50.62	
		Adjusted means	B.S.	359.67	1	359.67	8.59*
			W.S.	1130.34	27	41.86	
2	Low density lipoprotein	Pre-test	B.G.	.53	1	.53	0.08
			W.G.	176.26	28	6.29	
		Post-test	B.G.	34.24	1	34.24	12.49*
			W.G.	76.72	28	2.74	
		Adjusted means	B.S.	34.25	1	34.25	12.06*
			W.S.	76.68	27	2.84	

3	**High-density lipoprotein**	Pre-test	B.G.	1.20	1	1.20	0.01
			W.G.	3328.00	28	118.85	
		Post-test	B.G.	321.19	1	321.19	5.60*
			W.G.	1603.77	28	57.27	
		Adjusted means	B.S.	327.88	1	327.88	5.88*
			W.S.	1504.55	27	55.72	

**Significant at 0.05level of confidences*

(The table values required for significance at 0.05 level of confidence for 1 & 28 and 1 & 27 are 4.20 and 4.21 respectively).

In the table the results of analysis of covariance on total cholesterol, high-density lipoprotein and low density lipoprotein. The obtained 'F' ratio of 0.05, 0.08 and 0.01 for Pre-test means was less than the table value of 4.20 for df 1 and 28 required for significance at 0.05 level of confidence on total cholesterol, high-density lipoprotein and low density lipoprotein. The obtained 'F' ratio of 6.56, 12.49 and 5.60 for post-test means was greater than the table value of 4.20 for df 1 and 28 required for significance at 0.05 level of confidence on total cholesterol, high-density lipoprotein and low density lipoprotein. The obtained 'F' ratio of 8.59, 12.06 and 5.88 for adjusted post-test means was greater than the table value of 4.21 for df 1 and 27 required for significance at 0.05 level of confidence on total cholesterol, high-density lipoprotein and low density lipoprotein. The result of the study indicated that there was a significant difference among the adjusted post test means of circuit weight training group and control group. And also circuit weight training group showed significant improvement on total cholesterol, high-density lipoprotein and low density lipoprotein compared to control group.

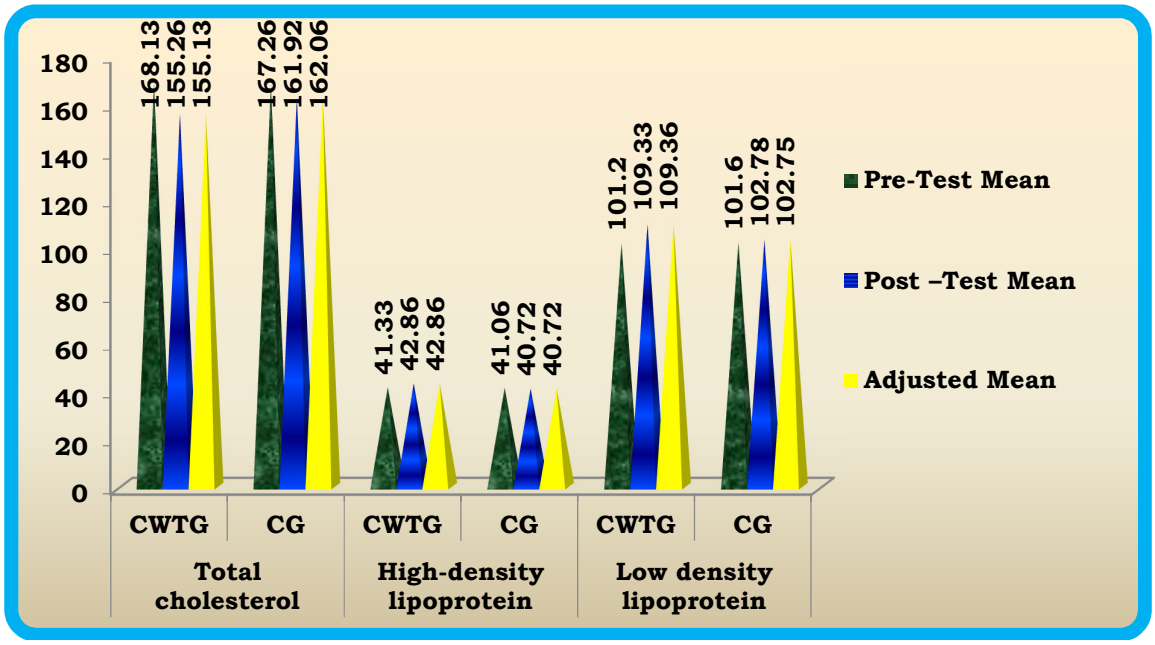

Figure-I **THE PRE, POST AND ADJUSTED MEAN VALUES OF TOTAL CHOLESTEROL, HIGH-DENSITY LIPOPROTEIN AND LOW DENSITY LIPOPROTEIN OF CIRCUIT WEIGHT TRAINING GROUP AND CONTROL GROUP ARE GRAPHICALLY REPRESENTED IN THE FIGURE-I**

DISCUSSION OF FINDINGS

The results of the study indicate that the experimental group which underwent circuit weight training had showed significant improved in the selected variables namely such as total cholesterol, high-density lipoprotein and low density lipoprotein when compared to the control group. The control group did not show significant improvement in any of the selected variables. The past studies on selected biochemical variables reveals Seyed Morteza Tayebi et al (2010), Kelley et al (2009), Jurimae et al (1990).

CONCLUSIONS

From the analysis of data, the following conclusions were drawn.

1. The experimental group showed significant improvement in all the biochemical variables of total cholesterol, high-density lipoprotein and low density lipoprotein.
2. The control group did not show significant improvement in any of selected variables.

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EFFECTIVENESS OF ULTRASOUND THERAPY AND POST ISOMETRIC RELAXATION TECHNIQUE VERSUS ULTRASOUND THERAPY ALONE FOR THE REDUCTION OF PAIN IN PATELLAR TENDINITIS

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ABSTRACT

The aim of the study is to know the additional effects of Post isometric relaxation for pain reduction in patellar tendonitis when given along with Ultrasound therapy. Twenty samples with mild or moderate unilateral sub-acute patellar tendonitis between the age group of 20 -35 years were selected randomly and divided into two equal groups randomly. Pretest measurement of pain was done using visual analogue scale for both the groups. After the pretest assessment, the experimental group received Ultrasound therapy and Post isometric relaxation technique and Control group received Ultrasound therapy for 7days and on the 7th day, posttest measurement of pain was done in a similar fashion as that of pretest measurement. The results of the study favored Experimental group who received Ultrasound therapy and Post isometric relaxation technique in the reduction of pain in patellar tendinitis.

INTRODUCTION

Patellar tendonitis is a typical functional overload syndrome in athletes who submit their extensor mechanism to intense and repetitive loading eg. Volley ball and basket ball players, high and long jumpers, weight lifters, cyclists and soccer players.

The key to diagnosis is exact localization of point of maximum tenderness in the skeletally immature, the location of epiphysis. The management of this particular condition includes Non- steroidal anti inflammatory drugs, heating pads, stretching, ice massage and exercises.

Ultrasound is a passive modality that is conventionally used as a best form of heat treatment for soft tissue injuries .The use of it dates back to 1940s. A high frequency sound wave is produced by ultrasound modality that is directed towards the sore area to ease pain and stimulate soft tissue repair.

Post isometric relaxation is a soft tissue stretching used to lengthen both acute and chronic short muscles. The post isometric relaxation technique begins by placing the muscle in a stretched position. Then an isometric contraction is exerted against minimal resistance. Relaxation and gentle stretch follow as the muscle releases.

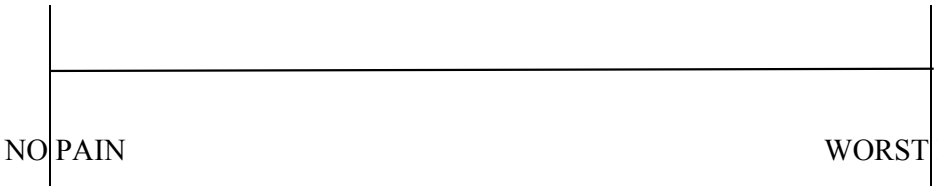
METHODOLOGY

20 patients suffering from patellar tendonitis were selected randomly and divided randomly into two equal groups consisting of 10 members in each group. Both the groups underwent a pretest assessment of pain with the help of visual analogue scale.

Pretest measurement of pain was done in the following fashion using visual analogue scale.

It consisted of a 10 cm horizontal line with two end points. One end was labeled as “no pain” and another end labeled as “worst paint ever”.

The patients were required to place a mark on the 10 cm line at a point which corresponds to the level of pain intensity he/she presently felt during resisted extension of knee. The distance in cm from the low end of the visual analogue scale to the mark of patient’s pain was used as a numerical index of the severity of pain.



After the pre – test assessment was over, the experimental group received Ultrasound therapy and Post isometric relaxation technique for a period of 7 days.

The patient was made to lie in side lying with the affected leg up on a couch. The researcher stood on the side and identified and area of tenderness. Ultrasound therapy was given using 1 MHZ frequency and 0.25 – 0.75 W/cm^2 intensity in pulsed mode (1:4) for a duration of 4 minutes twice a day.

It was followed by Post isometric relaxation technique. Patient was asked to lie prone and hip was slightly extended with a help of a bed sheet at the lower thigh. Then the knee was flexed until the point of limit where further flexion was not possible. At this juncture, the patient was asked to extend the knee against the resistance applied by the physiotherapist of approximately 20% of maximum effort by the patient to create isometric contraction for 10 counts followed by taking a deep breath in and out. The therapist now moved the limb into few more degrees of flexion to reach the new barrier point and process was repeated 2 times.

The Control group received Ultrasound therapy for a period of 7 days in the similar position as that of experimental group.

Both the groups underwent post test assessment for pain after a period of 7 days of treatment in a similar fashion and were recorded in a separate proforma maintained for each individual subject.

A pilot study was done one month before the main study with six subjects to know the feasibility of the study.

The collected data was subjected to statistical analysis using paired‘t’ test individually for both the groups and an independent ‘t’ test to compare their effectiveness.

RESULTS

The results of the statistical analysis are represented here in the following tables.

TABLE- I

STATISTICAL RESULTS FOLLOWING PAIRED‘t’ TEST

	Experimental Group	Control Group
‘t’ calculated value	9.89.	5.46
‘t’ table value	2.62	2.62

The data collected was subjected to paired ‘t’ test individually for experimental group & control group and found that the ‘t’ calculated values of the paired ‘t’ test for pain of experimental group was 9.89. ‘t’ calculated values of the paired ‘t’ test for pain of control group was 5.46. The‘t’ table value for 9 degrees of freedom at 5% level of significance was found to be 2.62. The‘t’ calculated value of paired‘t’ test for experimental group and control group for pain was matched with‘t’ table values. The‘t’ calculated values were found to be greater than‘t’ table value. It was found both groups showed reduction in pain.

TABLE II

STATISTICAL RESULTS FOLLOWING INDEPENDENT‘t’ TEST

‘t’ calculated value	3.54
‘t’ table value	2.101

After the paired‘t’ test. The data was subjected to independent‘t’ test to analyze the difference in improvements between experimental group and Control group. ‘t’ calculated value of independent ‘t’ test for pain was found to be 3.54. The‘t’ table value for 18 degrees

of freedom and 5% level of significance was found to be 2.101. The‘t’ calculated value of independent‘t’ for pain was matched with’t’ table values. The‘t’ calculated values were found to be greater than ‘t’ table value and it was found that there is a statistically significant difference in improvement between the groups in favor of experimental group with regard to pain.

The following results were obtained after subjecting the data to statistical analysis

1. There was a statistically significant reduction in pain for the patients treated with Ultrasound therapy and Post isometric relaxation technique.
2. There was a statistically significant reduction in pain for the patients treated with Ultrasound therapy.
3. There was a statistically significant difference in improvement produced by Ultrasound therapy and Post isometric relaxation technique than Ultrasound therapy alone in reduction of pain.

DISCUSSION ON FINDINGS

The results are in favor of Ultrasound therapy and Post isometric relaxation technique than Ultrasound therapy alone for reduction of pain. This may be because of the following reason. Post isometric relaxation aids in the relaxation of the muscle and reduction of protective spasm. A reduction in spasm may contribute to reduction in pain directly and improved circulation due to relaxation again may also contribute to reduction of pain. Increase in mobility of the muscle and decreased stimulation of triggers might also contribute to reduction of pain.

LEWIT et al (1999): concluded that post isometric relaxation is directed towards relaxation of hypertonic muscle, especially if this relates to reflex contraction or the involvement of myofascial trigger points.

ROBERT et al (2007): found that muscle energy technique effectively reduces muscle tension, spasm, pain and increases range of motion of joints whose function depends on the involved muscles.

CONCLUSION

The results of the study make us conclude that Ultrasound therapy and Post isometric relaxation technique provides better results than Ultrasound therapy alone for the reduction of pain in patellar tendinitis. Hence Post isometric relaxation technique needs to be used an important adjunct to Ultrasound therapy in the management of Patellar tendonitis.

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INFLUENCE OF MALLAKHAMB PRACTICES ON PSYCHOLOGICAL VARIABLES AMONG KABADDI PLAYERS

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ABSTRACT

The purpose of the study was to find out the Influence of Mallakhamb practices on psychological variables among kabaddi players. In order to achieve the purpose of the study, twenty four male kabaddi players have been randomly selected from various colleges in and around Salem district, Tamil Nadu state, India. The age of subjects ranged in between 18 to 29 years. The subjects were divided into two groups of twelve for each, such as experimental and control groups. The experimental group participated mallakhamb training for 3 days a week, one session per day and for 8 weeks, each session lasted 90 minutes. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups. The results of the study showed that there was significant differences exist between mallakhamb practice group and control group. And also mallakhamb practice group showed significant improvement on self confidence, achieve motivation and anxiety compared to control group.

Key words: Mallakhamb, Self Confidence, Achieve Motivation and Anxiety

INTRODUCTION

The word "Mallakhamb" is composed of *malla* which denotes a gymnast or a man of strength and *khamb* which means a pole. Mallakhamb can therefore be translated to English as *pole gymnastics*. The earliest mention of Mallkhamb can be traced back to the 12th Century where it is mentioned in the classic “MANASOLHAS” (1135 A.D.).For about seven centuries after that, the art form remained dormant until it was given a new lease of life by BALAMBHATTADADA DEODHAR, the renowned teacher of PESHWA BAJIRAO-II during the first half of the 19th century However, competitive Mallkhamb at the National level first made its appearance at the National Gymnastics Championships held at the Pahadganj Stadium, Delhi, in the year 1958. It was here that the Gymnastic Federation of India proposed to recognize the game and include it in subsequent National Gymnastics Championships. Mallakhamb is a pure Indian Game. It is a sport that combines various exercises that improve flexibility, strength, coordination and agility. Along with neuromuscular development, areas of personal character, discipline and self-motivation will be strongly enhanced. Becoming top player isn’t for everyone, but benefits of learning this sport are everlasting. It improves the concentration, helps enhancing immunity power, increases the competitive spirit, and to fight the stress levels in an organized and better ways. Mallakhamb! the name itself indicates that 'Malla' means wrestler and 'Khamb' means pole. It’s a wrestler’s pole. In 'Manas-olhas' by Someshwar Chalukya and 'Manusmruti' had the earliest refrences about the Mallakhamb. Then, on the 17th Century Shri. Balambhatta Dada Deodhar introduced this game to others. There

are many types of Mallakhamb as Pole, Rope, Hanging, Niradhar(without support), on cane, on floating platform, Mallakhamb with weapons etc. But at competitive level only Pole, Rope and Hanging Mallakhamb are being performed by Mallakhamb Pates. The boys are performing on Pole, Rope and Hanging Mallakhamb and girls on Rope Mallakhamb. (History & Benefits Of Mallakhamb.Shanti Sharma Et Ai 1990).

METHODOLOGY

To achieve the purpose of the study twenty four men kabaddi players have been randomly selected from in and around salem district, Tamil Nadu state, India. The age of subjects were ranged in between 18 to 29 years. The subjects were divided into two groups of twelve for each, such as experimental and control groups. The experimental group participated mallakhamb training for 3 days a week, one session per day and for 8 weeks, each session lasted 90 minutes.. The control group maintained their daily routine activities and no special training was given. The subjects of the two groups were tested on selected variables prior and immediately after the training period. The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups.

TABLE-I
CRITERION MEASURES

S.No	Criterion measure	Test items	Unit of measurement
1	Self Confidence	Self Confidence Questionnaire (Hardy and Nelson, 1972)	In Points
2	Achievement Motivation	Sports Achievement Motivation Questionnaire (M.L.Kamlesh 1991)	In Points
3	Anxiety	Trait Anxiety Questionnaire (Spielberger, 1972)	In Points

TABLE – II
DESCRIPTIVE ANALYSIS OF PSYCHOLOGICAL VARIABLES AMONG EXPERIMENTAL AND CONTROL GROUPS

S.No	Variables	Group	Pre-Test Mean	SD (±)	Post –Test Mean	SD (±)	Adjusted Mean
1	Self Confidence	MG	33.86	0.66	40.19	0.95	40.12
		CG	34.32	0.91	35.88	3.05	35.95
2	Achievement Motivation	MG	26.46	0.85	29.97	0.59	29.90
		CG	26.21	0.74	26.81	1.48	26.88
3	Anxiety	MG	54.94	0.58	52.99	0.51	53.04
		CG	55.24	0.62	54.76	1.00	54.71

MG= Mallakhamb group CG= Control group

The tables-II the pre, post-test means, standard deviations and adjusted means on Psychological variables of men kabaddi player's weres numerical presented. The analysis of covariance on selected variables of mallakhamb practices group and control group is presented in table – III

TABLE – III
COMPUTATION OF ANALYSIS OF COVARIANCE ON PSYCHOLOGICAL VARIABLES AMONG MEN KABADDI PLAYERS

S.No	variables	Test	Sum of variance	Sum of squares	df	Mean square	F ratio
1	Self Confidence	Pre-test	Between groups	1.27	1	1.27	1.99
			Within groups	13.96	22	0.63	
		Post-test	Between groups	111.12	1	111.12	21.66*
			Within groups	112.84	22	5.12	
		Adjusted means	Between sets	95.84	1	95.84	18.01*
			Within sets	111.74	22	5.32	
2	Achievement Motivation	Pre-test	Between groups	0.37	1	0.37	0.58
			Within groups	14.16	22	0.64	
		Post-test	Between groups	60.15	1	60.15	47.09*
			Within groups	28.09	22	1.27	
		Adjusted means	Between sets	53.35	1	53.35	48.05*
			Within sets	23.31	21	1.11	
3	Anxiety	Pre-test	Between groups	0.52	1	0.52	1.41
			Within groups	8.06	22	0.36	
		Post-test	Between groups	18.69	1	18.69	29.39*
			Within groups	13.99	22	0.63	
		Adjusted means	Between sets	15.79	1	15.79	25.09*
			Within sets	13.21	22	0.62	

**Significant at 0.05level of confidences*
(The table values required for significance at 0.05 level of confidence for 2 & 33 and 2 & 32 are 3.29 and 3.30 respectively).

In the table the results of analysis of covariance on self confidence, achieve motivation and anxiety. The obtained 'F' ratio of 1.99, 0.58 and 1.41 for Pre-test means was less than the table value of *4.30* for df 1 and 22 required for significance at 0.05 level of confidence on self confidence, achieve motivation and anxiety. The obtained 'F' ratio of 21.66, 47.09 and 29.39 for post-test means was greater than the table value of *4.30* for df 1 and 22 required for significance at 0.05 level of confidence on self confidence, achieve motivation and anxiety. The obtained 'F' ratio of 18.01, 48.05 and 25.09 for adjusted post-test means was greater than the table value of *4.33* for df 1 and 21 required for significance at 0.05 level of confidence on self confidence, achieve motivation and anxiety. The result of the study indicated that there was a significant difference among the adjusted post test means of mallakhamb practices group and control group on self confidence, achieve motivation and anxiety. And also yogic with mallakhamb practices group showed significant improvement on self confidence, achieve motivation and anxiety compared to control group.

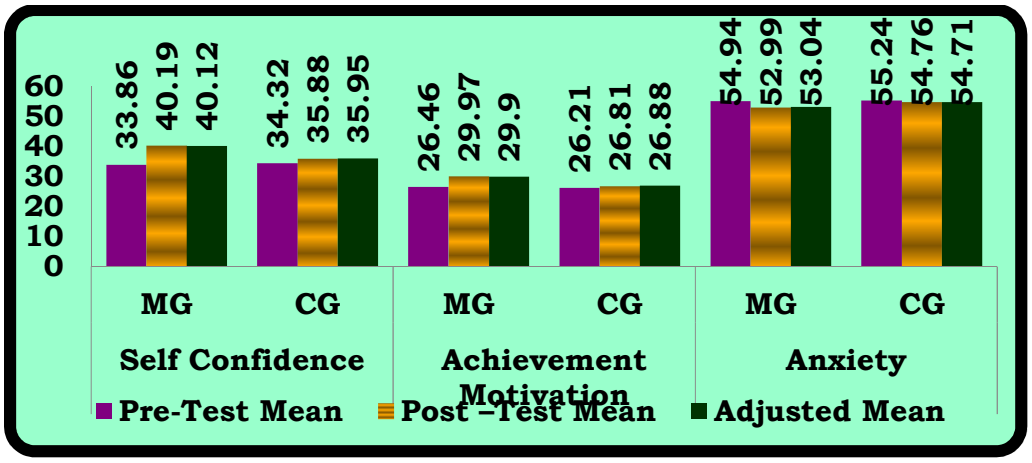

FIGURE-I THE PRE, POST AND ADJUSTED MEAN VALUES OF SELF CONFIDENCE, ACHIEVE MOTIVATION AND ANXIETY OF BOTH EXPERIMENTAL GROUP AND CONTROL GROUPS ARE GRAPHICALLY REPRESENTED IN THE FIGURE-I

DISCUSSION OF FINDINGS

The results of the study indicate that the experimental group which underwent mallakhamb practice had showed significant improved in the selected variables namely such as self confidence, achieve motivation and anxiety when compared to the control group. The control did not show significant improvement in any of the selected variables. The past studies on selected psychological variables also **Saravanan and Mahaboobjan (2017) & Natarajan others (2011)** found that significance improvement in all the selected psychological variables when compared with control group. Hence, the Kabaddi players of experimental groups showed noticeable increase in self confidence and achievement motivation & decreases in anxiety levels which may be due to twelve weeks of yogic practice group and mallakhamb practice group. At the same time, when the experimental groups were compared, the yogic practice group showed significant increase in self confidence and achievement motivation & decreases in anxiety level.

CONCLUSIONS

From the analysis of data, the following conclusions were drawn.

1. The experimental group kabaddi men players showed significant improvement in all the psychological variables self confidence, achieve motivation and anxiety.
2. The control group kabaddi men players did not show significant improvement in any of selected variables.

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EFFECT OF ELASTIC STRENGTH TRAINING ON SELECTED PHYSICAL FITNESS VARIABLES OF UNIVERSITY MEN HIGH JUMPERS

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ABSTRACT

The aim of the present study was to find out the effect of elastic strength training on selected physical fitness variables of university men high jumpers. To achieve the purpose of the study, thirty university male high jumpers were selected randomly from Department of Physical Education and Sports Sciences, Annamalai University, Chidambaram. The selected subjects were classified into two groups of fifteen each. Group I underwent eight weeks of elastic strength training programme, so as to be an experimental group. Group II acted as control group to find out the influence of elastic strength training programme. The criterion variables selected for the present study are speed - 50 meters dash, leg strength - leg dynamometer and explosive power - vertical jump. The elastic strength training group underwent training 3 days per week for eight weeks. They performed 50 to 80 foot contacts per session. The training resulted in significant improvement in speed ($F = 35.24$, $p < 0.05$), leg strength ($F = 47.47$, $p < 0.05$) and explosive power ($F = 19.62$, $p < 0.05$). It is concluded that university high jumpers experience significant improvement in lower extremities strength and power.

Keywords: *Elastic strength, high jumpers, speed, power, dynamometer*

INTRODUCTION

The ability to jump high is important in high jump. Therefore, an increased knowledge about factors limiting vertical jumping ability is of interest for both coaches and athletes. A common experience among coaches is that up to a certain degree almost any type of training program will increase the vertical jumping capacity which enhances high jump performance. However, an increased performance level of the athlete will require more specific and individually adapted training methods (Salvi Shah 2012).

In this age of specialization in athletics, the strength requirements of the jump events, demand debate about maximum strength, strength endurance and *elastic strength.* The adjective *"elastic"* is particularly appropriate since muscles possess high elasticity. Muscles are composed of contractile elements (actin and myosine) and elastic elements that are in parallel and in series. The neuromuscular system accepts and expels rapid loading at high velocity through the coordination of both *reflexes* and these *elastic* and *contractile* components of muscle. Due to these facts the definition of "elastic strength" occurred: (the ability of the neuromuscular system to overcome resistance with a high speed of contraction). Using the jumping events as an example, coaches were aware that a pre stretch state had to precede the muscle work or flexion state of the muscles for the stretch reflex to work, so the idea of pre-tensing the leg muscles of the plant foot just before the foot landed in the plant phase of jumping became the norm (Salvi Shah 2012). Gradually jump events stated inculcating elastic strength training in their regular training schedule. The aim of the present study was to find out the effect of elastic strength training on selected physical fitness variables of university college men high jumpers.

Methods

Subjects

Subjects and variable

To accomplish the purpose of the study thirty university male high jumpers were selected randomly from Department of Physical Education and Sports Sciences, Annamalai University, Chidambaram, Tamilnadu. The selected subjects were classified into two groups of fifteen each. Group I underwent eight weeks of elastic strength training programme, so as to be an experimental group. Group II acted as control group to find out the influence of elastic strength training programme. The criterion variables selected for the present study are speed - 50 meters dash, leg strength - leg dynamometer and explosive power - vertical jump. These subjects were tested before and after eight weeks of training.

Training

The elastic strength training group underwent training 3 days per week for eight weeks. They performed 50 to 80 foot contacts per session (Table 1).

TABLE - I
ELASTIC STRENGTH TRAINING PROGRAMME FOR UNIVERSITY HIGH JUMPERS

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Volume	**50 FC**		**60 FC**		**70 FC**		**80 FC**	
Exercises	Squat jumps 1x10		Squat jumps 1x10		Squat jumps 1x10		Line hops 3x10	
	Multiple long jump 5x3		Split squat jump 2x5		Split squat jump 3x5		Ankle hops 1x10	
	Lateral long jump 5x1		Tuck jump 5x1		Multiple cone hops 5x3		Cone hops 2x5	
	Pike jump 5x1		Lateral long jump 5x1		Lateral long jump 5x1		Squat jumps 2x5	
	Two leg jump/reach 5x1		Weighted squat jump 10x1		Weighted squat jump 10x1		Split squat jump 2x5	
	Single leg jump/reach 5x1		Box jump 2x5		Box jump 2x5		Long jump 5x1	
	18 inch depth jump 5x1		12 inch depth jump 10x1					

FC - Total Foot contacts per training session as determined by total sets and repetitions for that session.

Statistical technique

The experimental design used for the present investigation was Analysis of Covariance (ANCOVA). Since two groups are involved post hoc test was not applied to determine the significant paired mean differences. The level of confidence was fixed at 0.05 to test the significance. The data was analysed in computer system by using statistical package for social science (SPSS) version 17.

RESULTS

It is clear from the table 1 that there is no significant difference between elastic strength training and control group on speed, leg strength and explosive power before commencement of training. However, there is a significant difference on speed ($F = 5.58$, $p < 0.05$), leg strength ($F = 7.61$, $p < 0.05$) and explosive power ($F = 8.01$, $p < 0.05$) during post test. Thereby it inferred that the elastic strength training significantly improved selected physical fitness variables in university male high jumpers.

TABLE - II
SUMMARY OF ANCOVA ON AEROBIC CAPACITY

Variables	Testing Conditions	Elastic Strength training	Control group	SOV	SS	df	MS	*F*
Speed (sec)	Pre (M ± SD)	7.49±0.37	7.53±0.41	B	0.011	1	0.011	0.07
				W	4.287	28	0.153	
	Post (M ± SD)	6.87±0.36	7.52±0.42	B	0.837	1	0.837	5.58*
				W	4.195	28	0.150	
	Adjusted (M)	7.07	7.53	B	0.005	1	0.005	35.2*
				W	0.004	27	0.0002	
Leg Strength (kg)	Pre (M ± SD)	46.20±6.07	46.25±5.21	B	0.01	1	0.01	1.07
				W	0.24	28	8.43	
	Post (M ± SD)	50.21±6.42	46.95±4.99	B	0.213	1	0.213	7.61*
				W	0.776	28	0.028	
	Adjusted (M)	50.03	46.91	B	1121.2	1	1121.2	47.7*
				W	637.85	27	23.62	
Explosive power (cm)	Pre (M ± SD)	27.33±2.72	27.40±2.53	B	0.033	1	0.033	0.005
				W	192.93	28	6.89	
	Post (M ± SD)	35.73±6.36	28.53±4.51	B	76.80	1	76.80	8.01*
				W	268.67	28	9.60	
	Adjusted (M)	34.13	27.86	B	79.72	1	79.72	19.6*
				W	109.69	27	4.06	

*Significant at 0.05 level of confidence

Further, table 1 clearly shows that after adjusting pre-test scores, there was a significant difference between the two groups on adjusted post test scores on speed ($F = 35.2$, $p < 0.05$), leg strength ($F = 47.7$, $p < 0.05$) and explosive power ($F = 19.6$, $p < 0.05$). Thus, it is concluded that eight weeks of elastic strength training significantly improved speed (8.27%), leg strength (8.67%) and explosive power (30.73%) than control group.

DISCUSSION ON FINDINGS

Leg strength is the primary source of power in many sports. According to Gambetta (2007) the legs can be seen as a functional unit of a closed kinetic chain without which an athlete cannot have speed, strength, power or suppleness to perform. In the present study 8.67% of improvement is elicited in leg strength as result of elastic strength training. Since, leg strength significantly influences high jumpers speed and explosive power which may enhance their jumping performance. Hence, it has been shown that muscular strength is related to sprinting performance (Young, McLean, & Ardagna, 1995). Speed and explosive power significantly improved as a of elastic strength training. This finding is in accordance with Thomas, French & Hayes, (2009), Sáez-Sáez De Villarreal *et al.,* (2009), Markovic & Mikulic, (2010), Sáez-Sáez De Villarreal *et al.,* (2010). In the present study the changes are elicited in selected physical fitness variables may be because of effective elastic strength training programmes with optimal level of university high jumpers that enhanced both neural and muscular characteristics (Delecluse, 1997).

CONCLUSION

It is concluded that elastic strength training programme for 8 weeks is effective in improving the university male high jumpers performance on speed, leg strength and explosive power. This optimal training load may be adopted during preparation of university high jumpers who require greater amount of leg strength, speed and explosive power to jump higher.

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IMPACT OF YOGIC PRACTICES ON SELECTED PHYSIOLOGICAL VARIABLES AMONG MALE TYPE-2 DIABETES PATIENTS

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ABSTRACT

Yoga is the science of right living and as such is intended to be incorporated in daily life. The purpose of this present study was to find out the impact of yogic practices on selected physiological variables among male type-2 diabetes patients. . To achieve the purpose of the study, thirty male type-2 patients (Higher level) in the age-group of 35-55 years with diabetes of 1-5 years duration were selected from Gadhar Yoga Center, Salem District, Tamil Nadu State, India. For this study, patients of nephropathy, retinopathy (proliferative) and coronary artery disease or any other complications of diabetes were excluded. The age, height and weight of the selected subjects ranged from 35 to 55 years, 1.50 to 1.82 meters and 55 to 78 kilograms. The collected data were analyzed statistically through descriptive analysis and analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups. The analysis reveals that the yogic practices group showed significant level difference in all the selected psychological variables when compared with control group. Hence, the male type 2 diabetes patients of experimental group showed noticeable decrease in breath holding time, systolic blood pressure and diastolic blood pressure which may be due to twelve weeks of yogic practices.

INTRODUCTION

Yoga is the science of right living and as such is intended to be incorporated in daily life. It works on all aspects of the person, the physical, vital, emotional, psychic and spiritual. **(Saraswati, 2009).** Yoga has existed in some form for thousands of years. Its history which can be traced back to the time of the vedic culture – around 2800 BC – is closely entwined with the Hindu religion (vedic philosophy was also the starting point of Hinduism). Yoga which is closely associated with Hinduism and other tradition including Buddhism, Jainism and Tantra is best described as a spiritual rather than a religious practice. This means that anyone can practice yoga, it can be incorporated into a religious belief or it can be practiced alone as a form of secular spirituality. Yoga provides humankind not only with a spirituality path but also with a method for "right living" a set of moral ethical and practical guidelines that help one to live a balanced and healthy life. **(Fraser, 2001).**

Diabetes mellitus has become a major public health problem. The prevalence and incidence of diabetes mellitus have increased considerably over the past 50 years, and increases have been seen in both developed and developing nations. Globally, it is estimated that there will be some 330 million cases by 2025 **(International Diabetes Federation 2007; Wild et al. 2004)**. The disease is associated with metabolic and vascular complications, which affects primarily the eye, kidneys, peripheral nerves, and heart. These complications are responsible for most of the excess morbidity and mortality associated with the disease, and there are an estimated 2.9 million excess deaths per year attributable to the disease **(Roglic et al. 2005)**. Increased morbidity from blindness, heart disease, and renal failure vastly increase the direct and indirect medical costs associated with the disease.

Physical activity is a key contributor to prevention or delay of type-2 diabetes via sustained weight loss **(Hamman, et al. 2006)**. In addition, both moderate and vigorous physical activities have been associated with higher insulin sensitivity **(Davis et al. 1998)**, a relationship mediated partly by BMI. A meta-analysis of prospective studies of moderate-intensity physical activity and development of type-2 diabetes found a significant protective effect (relative risk 0.83) even after

adjustment for BMI **(Jeon et al. 2007)**. Of note for implementation of primary prevention programme, even regular walking (typically ≥2.5 hours/week) compared with almost no walking was significantly associated with lower risk for type-2 diabetes.

METHODOLOGY

The purpose of the study was to investigate the impact of yogic practices on selected anthropometric, biochemical and physiological variables among male type-2 diabetes patients. To achieve the purpose of the study, thirty male type-2 patients (Higher level) in the age-group of 35-55 years with diabetes of 1-5 years duration were selected from Gadhar Yoga Center, Salem District, Tamil Nadu State, India. For this study, patients of nephropathy, retinopathy (proliferative) and coronary artery disease or any other complications of diabetes were excluded. The age, height and weight of the selected subjects ranged from 35 to 55 years, 1.50 to 1.82 meters and 55 to 78 kilograms.

The present study mainly focus on yogic practices and its influences on selected physiological variables among male type-2 diabetes patients. The following factors also influence the risk of developing type-2 diabetes. High blood pressure, or hypertension, is a condition that often affects type-2 diabetes. With these causes to visualize the status the variables underlie the physiological variables Breath holding time, Systolic blood pressure, Diastolic blood pressure chosen as the criterion variables. The investigator has selected the following variables as criterion measures. The collected data were analyzed statistically through descriptive analysis and analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups.

RESULT AND DISCUSSION

The results of the study indicates that the yogic practices had significantly influenced selected variables such as breath holding time, systolic blood pressure and diastolic blood pressure variables among male type-2 diabetes patients as experimental group had undergone yogic practices over 8 weeks duration. The control group had not shown significant level difference on any of the selected variables as they have not subjected to any of the specific practices/conditioning similar to that of experimental group. Hence, it is understood that the selected training means had influenced on the criterion variables.

Physiological variables

The analysis reveals that the yogic practices group showed significant level difference in all the selected psychological variables when compared with control group. Hence, the male type 2 diabetes patients of experimental group showed noticeable decrease in breath holding time, systolic blood pressure and diastolic blood pressure which may be due to twelve weeks of yogic practices. The results of this investigation are also supported by the following studies of **Kumar and Kalidasan, (2014); Habibi, et. al., (2013); Tenzin, et. al., (2010); Jain, et. al., (1993); Kyizom, et. al., (2010); Singh, et. al., (2004).**

TABLE – I

ANALYSIS OF COVARIANCE OF THE DATA ON BREATH HOLDING TIME OF PRE, POST AND ADJUSTED POST TESTS SCORES OF YOGIC PRACTICES AND CONTROL GROUPS (In mmHg)

Test	CG	YPG	SOV	SS	df	MS	F-ratio
Pre-test							
Mean	28.33	28.44	**B.M**	0.10	1	0.10	1.34*
SD(±)	0.24	.31731	**W.G**	2.22	28	0.08	
Post-test							
Mean	30.26	31.50	**B.M**	11.59	1	11.59	8.72*
SD(±)	1.60	0.28	**W.G**	37.20	28	1.32	
Adjusted post-test							
Mean	30.24	31.52	**B.S**	11.65	1	11.65	8.49*
			W.S	37.04	27	1.37	

**significant at 0.05 level of confidence*

The table I indicates that the pre-test mean values on breath holding time of control group and yogic practices group are 28.33 and 28.44 respectively. The obtained 'F' ratio 1.34 for pre-test scores was less than the table value 4.20 for degrees of freedom 1 and 28 required for significance at 0.05 level of confidence on breath holding time. The post-test mean values on systolic blood pressure of control group and yogic practices group are 30.26 and 31.50 respectively. The obtained 'F' ratio 8.72 for post-test scores was greater than the table value 4.20 for degrees of freedom 1 and 28 required for significance at 0.05 level of confidence on breath holding time. The adjusted post-test means of control group and yogic practices group are 30.324 and 52 respectively. The obtained 'F' ratio of 8.49 for adjusted post-test means was greater than the table value of 4.21 for degrees of freedom 1 and 27 required for significance at 0.05 level of confidence on breath holding time. The results of the study indicated that there was a significant level difference among the adjusted post-test means of control group and yogic practices group on breath holding time.

TABLE – II

ANALYSIS OF COVARIANCE OF THE DATA ON SYSTOLIC BLOOD PRESSURE OF PRE, POST AND ADJUSTED POST TESTS SCORES OF YOGIC PRACTICES AND CONTROL GROUPS (In mmHg)

Test	YPG	CG	SOV	SS	df	MS	F-ratio
Pre-test							
Mean	127.39	127.49	**B.M**	0.062	1	0.062	0.812
SD(±)	0.24	0.30	**W.G**	2.138	28	0.076	
Post-test							
Mean	124.43	122.62	**B.M**	24.403	1	24.403	7.319*
SD(±)	2.56	0.27	**W.G**	93.363	28	3.334	
Adjusted post-test							
Mean	124.45	122.60	**B.S**	25.156	1	25.156	7.334*
			W.S	92.610	27	3.430	

**significant at 0.05 level of confidence*

The table II indicates that the pre-test mean values on systolic blood pressure of control group and yogic practices group are 127.39 and 127.49 respectively. The obtained 'F' ratio 0.81 for pre-test scores was less than the table value 4.20 for degrees of freedom 1 and 28 required for significance at 0.05 level of confidence on systolic blood pressure. The post-test mean values on systolic blood pressure of control group and yogic practices group are 124.43 and 122.62 respectively. The obtained 'F' ratio 7.39 for post-test scores was greater than the table value 4.20 for degrees of freedom 1 and 28 required for significance at 0.05 level of confidence on systolic blood pressure. The adjusted post- test means of control group and yogic practices group are 124.45and 122.60 respectively. The obtained 'F' ratio of 7.33 for adjusted post-test means was greater than the table value of 4.21 for degrees of freedom 1 and 27 required for significance at 0.05 level of confidence on systolic blood pressure. The results of the study indicated that there was a significant level difference among the adjusted post-test means of control group and yogic practices group on systolic blood pressure.

TABLE – III

ANALYSIS OF COVARIANCE OF THE DATA ON DIASTOLIC BLOOD PRESSURE OF PRE, POST AND ADJUSTED POST TESTS SCORES OF YOGIC PRACTICES AND CONTROL GROUPS (In mmHg)

Test	YPG	CG	SOV	SS	Df	MS	F-ratio
Pre-test							
Mean	85.49	85.51	**B.G**	0.01	1	0.01	0.15
SD(±)	0.26	0.31	**W.G**	2.33	28	0.08	
Post-test							
Mean	83.69	82.32	**B.G**	14.15	1	14.15	11.86*
SD(±)	1.51	0.30	**W.G**	33.40	28	1.19	

Adjusted post-test							
Mean	83.70	82.31	**B.S**	14.34	1	14.34	11.66*
			W.S	33.18	27	1.22	

*****significant at 0.05 level of confidence*

The table III shows that the pre-test mean values on diastolic blood pressure of control group and yogic practices group are 85.49 and 85.51 respectively. The obtained 'F' ratio 0.15 for pre-test scores was less than the table value 4.20 for df 1 and 28 required for significance at 0.05 level of confidence on diastolic blood pressure. The post-test mean values on diastolic blood pressure of control group and yogic practices group 83.69 and 82.32 respectively. The obtained 'F' ratio 11.86 for post-test scores was greater than the table value 4.20 for df 1 and 28 required for significance at 0.05 level of confidence on diastolic blood pressure. The adjusted post-test means of control group and yogic practices group are 83.70 and 82.31 respectively. The obtained 'F' ratio of 11.66 for adjusted post-test means was greater than the table value of 4.21 for df 1 and 27 required for significance at 0.05 level of confidence on diastolic blood pressure. The results of the study indicated that there was a significant level difference among the adjusted post-test means of control group and yogic practices group on diastolic blood pressure.

CONCLUSION

From the analysis of data, the following conclusions were drawn.

1. The control group male type 2 diabetes patients did not show significant level difference in any of selected variables such as breath holding time, systolic blood pressure and diastolic blood pressure.
2. The yogic practices of group male type 2 diabetes patients showed significant a difference on selected physiological variables such as breath holding time, systolic blood pressure and diastolic blood pressure.

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OBESITY UPDATE: IMPAIRMENT FACTORS AND REDUCTION PATH OF OBESITY IN INDIA

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ABSTRACT

Obesity in India has reached epidemic proportions in the 21st century, with morbid obesity affecting 5% of the country's population. India is following a trend of other developing countries that are steadily becoming more obese. Unhealthy, processed food has become much more accessible following India's continued integration in global food markets. Obesity is a major risk factor for cardiovascular disease; NGOs such as the Indian Heart Association have been raising awareness about this issue. China with 15.3 million and India with 14.4 million had the highest numbers of obese children; the US with 79.4 million and China with 57.3 million had the highest numbers of obese adults in 2015. Maintaining your ideal body weight is a balancing act between food consumption and calories needed by the body for energy. The kinds and amounts of food you eat affect your ability to maintain your ideal weight and to lose weight. Now developing countries like India, china has facing more problems because of life style and sedentary working system. Children's are mostly play with laptop and mobile phone they forget the traditional sport. so that we concluded that India the fastest growing country list in obesity and so it right time to improve the physical activity and diet management to reduce the obesity. **Keywords:** Obesity, Physical activity, Diet, Reduction obesity

INTRODUCTION

Obesity in India has reached epidemic proportions in the 21st century, with morbid obesity affecting 5% of the country's population. India is following a trend of other developing countries that are steadily becoming more obese. Unhealthy, processed food has become much more accessible following India's continued integration in global food markets. This, combined with rising middle class incomes, is increasing the average caloric intake per individual among the middle class and above income households. Obesity is a major risk factor for cardiovascular disease; NGOs such as the Indian Heart Association have been raising awareness about this issue. China with 15.3 million and India with 14.4 million had the highest numbers of obese children; the US with 79.4 million and China with 57.3 million had the highest numbers of obese adults in 2015.

Overweight and obese

Overweight are medically defined by body mass index (BMI). An individual with a BMI of 25 to 29.9 is clinically classified as overweight. A BMI of 30 or more is classifying as obese.

Impairment factors associated with obesity

There are more than 30 medical conditions that are associated with obesity. The most prevalent obesity-related diseases include

- Diabetes
- High blood pressure
- High cholesterol
- Heart disease

- Stroke
- Gallbladder disease
- Gastroesophageal Reflux Disease (GERD)
- Osteoarthritis
- Sleep apnea and respiratory problems
- Some cancers

Causing Associate factors of obesity

Diet

In 2016 a review supported excess food as the primary factor. Dietary energy supply per capita varies markedly between different regions and countries. It has also changed significantly over time. From the early 1970s to the late 1990s the average food energy available per person per day (the amount of food bought) increased in all parts of the world except Eastern Europe. The widespread availability of nutritional guideline has done little to address the problems of overeating and poor dietary choice. From 1971 to 2000, obesity rates in the United States increased from 14.5% to 30.9%.As societies become increasingly reliant on energy-dense, big-portions, and fast-food meals, the association between fast-food consumption and obesity becomes more concerning. In the United States consumption of fast-food meals tripled and food energy intake from these meals quadrupled between 1977 and 1995.

Sedentary lifestyle

Obesity is the result of interplay between genetic and environmental factors.Polymorphisms in various genes controlling appetite and metabolism predispose to obesity when sufficient food energy is present. As of 2006, more than 41 of these sites on the human genome have been linked to the development of obesity when a favorable environment is present.People with two copies of the FTO gene (fat mass and obesity associated gene) have been found on average to weigh 3–4 kg more and have a 1.67-fold greater risk of obesity compared with those without the risk allele. The differences in BMI between people that are due to genetics varies depending on the population examined from 6% to 85%.

Obesity is a major feature in several syndromes, such as Prader–Willi syndrome, Bardet–Biedl syndrome, Cohen syndrome, and MOMO syndrome. (The term "non-syndromic obesity" is sometimes used to exclude these conditions.) In people with early-onset severe obesity (defined by an onset before 10 years of age and body mass index over three standard deviations above normal), 7% harbor a single point DNA mutation.

Illness

Certain physical and mental illnesses and the pharmaceutical substances used to treat them can increase risk of obesity. Medical illnesses that increase obesity risk includes several rare genetic syndromes (listed above) as well as some congenital or acquired conditions: hypothyroidism, Cushing's syndrome, growth hormone deficiency, and the eating disorders: binge eating disorder and night eating syndrome. However, obesity is not regarded as a psychiatric disorder, and therefore is not listed in the DSM-IVR as a psychiatric illness. The risk of overweight and obesity is higher in patients with psychiatric disorders than in persons without psychiatric disorders.

Social determinants

The correlation between social class and BMI varies globally. A review in 1989 found that in developed countries women of a high social class were less likely to be obese. No significant differences were seen among men of different social classes. In the developing world, women, men, and children from high social classes had greater rates of obesity. An update of this review carried out in 2007 found the same relationships, but they were weaker. The decrease in strength of correlation was felt to be due to the effects of globalization. Among developed countries, levels of adult obesity, and percentage of teenage children who are overweight, are correlated with income inequality.

Exercise and obesity

The National Health and Examination Survey (NHANES I) showed that people who engage in limited recreational activity were more likely to gain weight than more active people. Other studies have shown that people who engage in regular strenuous activity gain less weight than sedentary people. Physical activity and exercise help burn calories. The amount of calories burned depends on the type, duration, and intensity of the activity. It also depends on the weight of the person. A 200-pound person will burn more calories running 1 mile than a 120-pound person, because the work of carrying those extra 80 pounds must be factored in. But exercise as a treatment for obesity is most effective when combined with a diet and weight-loss program. Exercise alone without dietary changes will have a limited effect on weight because one has to exercise a lot to simply lose 1 pound. Regular exercise is an important part of a healthy lifestyle to maintain a healthy weight for the long term. Another advantage of regular exercise as part of a weight-loss program is a greater loss of body fat.

- Improved blood sugar control and increased insulin sensitivity (decreased insulin resistance),
- Reduced triglyceride levels and increased "good" HDL cholesterol levels,
- Lowered blood pressure,
- Reduction in abdominal fat,
- Reduced risk of heart disease,
- Release of endorphins that make people feel good.

Diet and obesity

The first goal of dieting is to stop further weight gain. The next goal is to establish realistic weight-loss goals. While the ideal weight corresponds to a BMI of 20-25, this is difficult to achieve for many people. Thus, success is higher when a goal is set to lose 10%-15% of baseline weight as opposed to 20%-30% or greater. It is also important to remember that any weight reduction in an obese person would result in health benefits. One effective way to lose weight is to eat fewer calories. One pound is equal to 3,500 calories. In other words, you have to burn 3,500 more calories than you consume to lose 1 pound. Most adults need between 1,200-2,800 calories per day, depending on body size and activity level to meet the body's energy needs.

Prevention

- Eat a variety of foods.
- Balance the food you eat with physical activity -- maintain or improve your weight.
- Choose a diet with plenty of grain products, vegetables, and fruits.
- Choose a diet low in fat, saturated fat, and cholesterol.
- Choose a diet moderate in sugars.
- Choose a diet moderate in salt and sodium.
- Limiting unhealthy foods (refined grains and sweets, potatoes, red meat, processed meat) and beverages (sugary drinks)
- Increasing physical activity
- Limiting television time, screen time, and other “sit time”

- ❖ Improving sleep.
- ❖ Reducing stress.

CONCLUSION

Maintaining your ideal body weight is a balancing act between food consumption and calories needed by the body for energy. The kinds and amounts of food you eat affect your ability to maintain your ideal weight and to lose weight. Now developing countries like India, china has facing more problems because of life style and sedentary working system. Children's are mostly play with laptop and mobile phone they forget the traditional sport. so that we concluded that India the fastest growing country list in obesity and so it right time to improve the physical activity and diet management to reduce the obesity.

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THE EFFECT OF MAXIMUM STRENGTH AND PLYOMETRIC TRAINING FOLLOWED BY CESSATION ON EXPLOSIVE STRENGTH

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ABSTRACT

The purpose of the study is to find out the effect of maximum strength and plyometric training followed by cessation on Explosive Strength**.** For this purpose, forty five men students from University College of engineering BIT Campus Anna University Tiruchirapalli Tamilnadu, India, during the year 2010-2011 were selected as subjects at random. The age, height and weight of the subjects ranged from 17 to 21 years, 162 to 171 cms and 54 to 68 kg respectively, and the means were 19.7 years, 166 centimeters and 57 kilograms respectively. The selected groups divided into two experimental groups and control group. In the experimental group, the first group (n = 15, MST) performed the Maximum Strength Training, the second group (n = 15, PT) performed the Plyometric Training the third group (n = 15 CG) acted as the control group. The training programme for the duration of twelve weeks with three days per week. In the study, two different training approaches were adopted as independent variables, i.e., Maximum Strength Training (MST) and Plyometric Training (PT). The Explosive strength was chosen as a criterion variable. It was measured by vertical jump and unit of measurement was centimeters. The pre and post test random group design was used. Two ways Analysis of Variance (ANOVA) (3x6) with repeated measures on last factor was used to find out significant adjusted post test mean difference of three groups with respect to speed and Scheffe's post hoc test was used to find out pair-wise comparisons between groups with respect to Explosive strength.

Keywords: 1. Maximum Strength Training 2. Plyometric Training 3. Explosive strength 4. Two ways Analysis of Variance (ANOVA) (3x6)

INTRODUCTION

Sport and games involve competition. Without competition, there is no game. Competition provides a forum within which people strive to become competent, to become excellent. The opportunities for rivalry within sport are many and varied: team against team, individual against individual, individual against a record, individual now against a previous best performance, individual against a physical barrier. Competition involves individuals and groups striving for excellence within the rules and traditions that make up a sport, including all the festival characteristics that give the sport additional flavor and meaning **(Siedentop, 1998)**.The word training means different things in different fields. In sports the word training is generally understood to be synonym of doing exercise. In a narrow sense training is physical exercise for the improvement of performance. Training involves constructing an exercise programme to develop an athlete for a particular event. This increasing skill and energy capacities are equal consideration ***(Singh, 1984).*** Physical training refers to the processes used in order to develop the components of physical fitness as for example, how to improve aerobic endurance, to stretch and relax muscles, to increase arm and shoulder strength to the related exercise and programmes to specific requirements or individual sports (***Hazeldine, 1985).***

Strength is the neuromuscular capability to overcome an external and internal resistance. The maximum strength that an athlete can produce depends on the biomechanical characteristics of a movement, and the magnitude of contraction of the muscles involved. In

addition, the maximum strength is also a function of the intensity of an impulse **(Bompa, 1999).**Most sports require power, muscular endurance or both. The level of maximum strength affects both power and muscular endurance. Power cannot reach high standards without a high level of maximum strength because power is the product of speed and maximum strength. Strength and power are the most critical for many sports. All team sports and speed-power dominant sports rely on solid strength and power development. Understanding the mechanics and physics of strength training and incorporating those principles into our training program will give our athletes a competitive edge **(Ibid).** In this study an attempt is made to find out the effect of maximum strength and plyometric training followed by cessation on Explosive strength.

METHODOLOGY

The study involved a single dimensional design with three groups assigned with different training approaches. For this purpose, forty five men students from University College of engineering BIT Campus Anna University Tiruchirapalli Tamilnadu, India, Tamilnadu, India, during the year 2010-2011 were selected as subjects at random. The age, height and weight of the subjects ranged from 17 to 21 years, 162 to 171 cms and 54 to 68 kg respectively, and the means were 19.7 years, 166 centimeters and 57 kilograms respectively. The selected groups divided into two experimental groups and a control group. In the experimental group, the first group (n = 15, MST) performed the Maximum Strength Training, the second group (n = 15, PT) performed the Plyometric Training the third group (n = 15 CG) acted as the control group. The training programme for the duration of twelve weeks with three days per week. In the study, two different training approaches were adopted as independent variables, i.e., Maximum Strength Training (MST) and Plyometric Training (PT). The Explosive strength was chosen as a criterion variable. It was measured by vertical jump and unit of measurement was centimeters. The pre and post test random group design was used. Two ways Analysis of Variance (ANOVA) (3x6) with repeated measures on last factor was used to find out significant adjusted post test mean difference of three groups with respect to speed and Scheffe's post hoc test was used to find out pair-wise comparisons between groups with respect to Explosive strength.

TABLE - I
THE MEAN AND STANDARD DEVIATION ON EXPLOSIVE STRENGTH OF PRE TEST, POST TEST AND FOUR CESSATIONS DATA OF EXPERIMENTAL GROUPS

Groups		Pre Test	Post Test	First Cessation	Second Cessation	Third Cessation	Fourth Cessation
Maximum Strength Training Group	Mean	37.67	40.87	39.53	39.13	38.73	37.53
	SD	0.72	0.83	0.64	0.83	0.59	0.92
Plyometric Training Group	Mean	37.93	41.07	40.87	39.80	38.80	37.07
	SD	7.83	1.22	1.25	1.37	1.37	1.22
Control Group	Mean	37.47	37.53	37.60	37.47	37.40	37.27
	SD	1.64	1.77	1.81	1.60	1.88	2.02

Table I shows that pre test mean and standard deviation values on Explosive Strength for Maximum Strength Training, Plyometric Training and Control groups are 37.67 ± 0.72 , 37.93 ± 7.83, and 37.47 ± 1.64 respectively. The post test mean and standard deviation values

on Explosive Strength for Maximum Strength Training, Plyometric Training and Control groups are 40.87 ± 0.83, 14.07 ±1.22, and 37.53 ± 1.77 respectively. The first cessation mean and standard deviation values on Explosive Strength for Maximum Strength Training, Plyometric Training and Control groups are 39.53 0.64, 40.87 ± 1.25 and 37.60 ± 1.81 respectively. The second cessation mean and standard deviation values on Explosive Strength for Maximum Strength Training, Plyometric Training and Control groups are 39.13 ± 0.83, 39.80 ± 1.37 and 37.47 ± 1.60 respectively. The third cessation mean and standard deviation values on Explosive Strength for Maximum Strength Training, Plyometric Training and Control groups are 38.73 ± 0.59, 38.80 ± 1.37 and 37.40 ± 1.88 respectively. The fourth cessation mean and standard deviation values on Explosive Strength for Maximum Strength Training, Plyometric Training and Control groups are 37.53 ± 0.92, 37.07 ± 1.22 and 37.27 ± 2.02 respectively.

The data of Explosive Strength have been analyzed by two way Analysis of Variance (ANOVA) (3x6) with repeated measures on last factor and the obtained results are presented in Table I-A.

TABLE I-A
THE TWO WAY ANALYSIS OF VARIANCE ON EXPLOSIVE STRENGTH OF MAXIMUM STRENGTH TRAINING, PLYOMETRIC TRAINING AND CONTROL GROUPS AT SIX DIFFERENT STAGES OF TESTING PERIODS

Source of Variance	Sum of Squares	Df	Mean Squares	F-ratio
A factor (Groups)	164.32	2	82.16	6.27*
Error I	550.07	42	13.10	
B factor (Tests)	210.74	5	42.15	11.90*
AB factor (Interaction) (Groups and Tests)	100.17	10	10.01	2.83*
Error II	743.80	210	3.54	

**Significant at .05 level*

(The table values required for being significant at .05 level of confidence with df 2 and 42, 5 and 210 & 10 and 210 were 3.22, 2.26 and 1.87 respectively)

Table I-A shows that the obtained 'F' ratio values 6.27, for row (groups) on Explosive Strength which is greater than the required table vale 3.22 for significance with df 2 and 42. If further shows that the obtained "F" ratio value 11.90 for column (tests) on Explosive Strength is greater than the required table value 2.26 for significance with df 5 and 210. It also shows the obtained "F" ratio value 2.83 for interaction effect (groups x tests) on Explosive Strength is also greater than the required table value 1.87 for significance with df 10 and 210. From the table I-A, the obtained F value of Interaction A x B (Groups x Different stages of Tests) shows that there is significant difference existing among the paired means of interaction A x B on Explosive Strength ($P < 0.05$).The results of the study indicate that there is a significant difference in the interaction effect (between rows (Groups) and columns (Tests)) on Explosive Strength. Since the interaction effect was significant, the simple effect test was applied as follow up test and the data are presented in Table I-B.

TABLE I-B
THE SIMPLE EFFECT SCORES OF GROUPS (ROWS) AT THREE DIFFERENT STAGES OF TESTS (COLUMNS) ON EXPLOSIVE STRENGTH

Source of Variance	Sum of Squares	df	Mean Squares	"F" ratio
Groups Within Pre test	1.64	2	0.82	0.23
Groups Within Post test	118.18	2	59.09	16.68*
Groups Within First Cessation	80.93	2	40.47	11.43*
Groups Within Second Cessation	43.33	2	21.67	6.12*
Groups Within Third Cessation	18.71	2	9.36	2.64
Groups Within Fourth Cessation	1.64	2	0.82	0.23
Tests and Maximum Strength Training Group	116.09	5	23.22	6.56*
Tests and Plyometric Training Group	193.79	5	38.76	10.94*
Tests and Control Group	0.99	5	0.20	0.06
Error II	743.80	210	3.54	

**Significant at .05 level*

(The table values required for being significant at .05 level of confidence with df 2 and 210, 5 and 210 were 3.04 and 2.26 respectively)

Table I-B shows that the obtained F-ratio for Groups within post test, first cessation and second cessation, are 16.68. 11.43 and 6.12 indicating that there is a significant difference between the paired means of groups within post test on Explosive Strength.Table 8-B shows that F-ratio values obtained for tests within Maximum Strength Training Group and tests within Plyometric Training Group are 6.56 and 10.94 indicating that there is a significant difference exists among the paired means of tests within Maximum Strength Training Group and tests within Plyometric Training Group on Explosive Strength. Rest of the pairs is not significant.Since three groups and six different stages of tests were compared, whenever the obtained F-ratio value was found to be significant in the simple effect, the Scheffe's test was applied as post hoc test to find out the paired mean difference, if any and it has been presented in Table I-C, Table I-D, Table I-E, Table I-F and Table I-G.

TABLE I-C
THE SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN PAIRED MEANS OF POST TEST WITH DIFFERENT GROUPS ON EXPLOSIVE STRENGTH

Maximum Strength Training Group	Plyometric Training Group	Control Group	Mean difference	Confidence interval
40.87	41.07		0.20	1.69
40.87		37.53	3.33*	1.69
	41.07	37.53	3.53*	1.69

**Significant at .05 level.*

The above table clearly indicates that the mean difference between Maximum Strength Training and Control groups, Plyometric Training and Control groups 3.33 and 3.53 respectively. The values are greater than the confidence interval value 1.69, which shows significant difference at .05 level of confidence. Maximum Strength Training and Plyometric Training groups have the mean difference 0.20. The value is less than the confidence interval value 1.69, which shows insignificant difference at 0.5 level of confidence.It may be concluded from the results of the study that there is a significant difference between the post test means of Maximum Strength Training and Control groups, Plyometric Training and Control groups on Explosive Strength at post test period. The post test value of Maximum Strength Training and Plyometric Training groups shows insignificant difference.

TABLE I-D

THE SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN PAIRED MEANS OF GROUPS ON EXPLOSIVE STRENGTH

(FIRST CESSATION)

Maximum Strength Training Group	Plyometric Training Group	Control Group	Mean Difference	Confidence Interval
39.53	40.87		1.33	1.69
39.53		37.60	1.93*	1.69
	40.87	37.60	3.27*	1.69

**** Significant at .05 level of confidence***

Table I-D shows that the mean difference between Maximum Strength Training and Control groups, Plyometric Training and Control groups, are 1.93 and 3.27 respectively. The values are greater than the confidence interval value 1.69, which shows significant difference at .05 level of confidence. Maximum Strength Training and Plyometric Training groups have the mean difference 1.33. The value is less than the confidence interval value 1.69, which shows insignificant difference at 0.5 level of confidence.It may be concluded from the results of the study that there is a significant difference between the post test means of Maximum Strength Training and Control groups, Plyometric Training and Control groups on Explosive Strength at post test period. The post test value of Maximum Strength Training and Plyometric Training groups shows insignificant difference.

TABLE I-E

THE SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN PAIRED MEANS OF GROUPS ON EXPLOSIVE STRENGTH

(SECOND CESSATION)

Maximum Strength Training Group	Plyometric Training Group	Control Group	Mean Difference	Confidence Interval
39.13	39.80		0.67	1.69
39.13		37.47	1.67	1.69
	39.80	37.47	2.33*	1.69

**** Significant at .05 level of confidence***

Table 8-E shows that the mean difference between Plyometric Training and Control groups is 2.33. The value is greater than the confidence interval value 1.69, which shows significant difference at .05 level of confidence. Maximum Strength Training and Plyometric Training groups, Maximum Strength Training and Control groups were 0.67 and 1.67. The value is less than the confidence interval value 1.69, which shows insignificant

difference at 0.5 level of confidence.It may be concluded from the results of the study that there is a significant difference between the post test means of Plyometric Training and Control groups on Explosive Strength at post test period. The post test value of Maximum Strength Training and Plyometric Training groups and Maximum Strength Training and Control groups shows insignificant difference.

TABLE I-F
THE SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN PAIRED MEANS OF TESTS ON EXPLOSIVE STRENGTH
(MAXIMUM STRENGTH TRAINING GROUP)

Pre Test	Post Test	First Cessation	Second Cessation	Third Cessation	Fourth Cessation	Mean difference	Confidence Interval
37.67	40.87					3.20*	2.31
37.67		39.53				1.87	2.31
37.67			39.13			1.47	2.31
37.67				38.73		1.07	2.31
37.67					37.53	0.13	2.31
	40.87	39.53				1.33	2.31
	40.87		39.13			1.73	2.31
	40.87			38.73		2.13	2.31
	40.87				37.53	3.33*	2.31
		39.53	39.13			0.40	2.31
		39.53		38.73		0.80	2.31
		39.53			37.53	2.00	2.31
			39.13	38.73		0.40	2.31
			39.13		37.53	1.60	2.31
				38.73	37.53	1.20	2.31

**** Significance at .05 level of confidence***

Table I-F shows that the mean difference between pre test and post test values and first cessation and fourth cessation values, are 3.20 and 3.33 respectively on Explosive Strength of Maximum Strength Training Group which are greater than the confidence interval value 2.31 at 05 level of confidence. And the mean difference between pre test and first cessation values, pre test and second cessation values, pre test and third cessation, post test and second cessation, post test and third cessation values, post test and fourth cessation values, first cessation and second cessation values, first cessation and third cessation values, second cessation and fourth cessation values, third cessation and fourth cessation values 1.87, 1.47, 1.07, 0.13, 1.33, 1.73, 2.13, 0.40, 0.80, 2.00, 0.40, 1.60 and 01.20 respectively on Explosive Strength are less than the confidence interval values 2.31 at .05 level of confidence. Hence, the results of the study show that there is a significant difference pre test and post test values and first cessation and fourth cessation values on Explosive Strength of Maximum Strength Training Group. It was also found that there was no significant difference between pre test and first cessation values, pre test and second cessation values, pre test and third cessation, post test and second cessation, post test and third cessation values, post test and fourth cessation values, first cessation and second cessation values, first cessation and third cessation values, second cessation and fourth cessation values, third cessation and fourth cessation values, on Explosive Strength of Maximum Strength Training Group.

TABLE I-G
THE SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN PAIRED MEANS OF TESTS ON EXPLOSIVE STRENGTH (PLYOMETRIC TRAINING GROUP)

Pre Test	Post Test	First Cessation	Second Cessation	Third Cessation	Fourth Cessation	Mean difference	Confidence Interval
37.93	41.07					3.13*	2.31
37.93		40.87				2.93*	2.31
37.93			39.80			1.87	2.31
37.93				38.80		0.87	2.31
37.93					37.07	0.87	2.31
	41.07	40.87				0.20	2.31
	41.07		39.80			1.27	2.31
	41.07			38.80		2.27	2.31
	41.07				37.07	4.00*	2.31
		40.87	39.80			1.07	2.31
		40.87		38.80		2.07	2.31
		40.87			37.07	3.80*	2.31
			39.80	38.80		1.00	2.31
			39.80		37.07	2.73*	2.31
				38.80	37.07	1.73	2.31

**** Significance at .05 level of confidence***

Table I-G shows that the means difference between pre test and post test values, pre test and first cessation values, post test and fourth cessation values, first cessation and fourth cessation values, second cessation and fourth cessation values, 3.13, 2.93, 4.00, 3.80 and 2.73 respectively on Explosive Strength of Plyometric Training Group are greater than the confidence interval value 2.31 at 05 level of confidence. And the mean differences between pre test and second cessation values, pre test and third cessation, pre test and fourth cessation, post test and first cessation, post test and second cessation, post test and third cessation values, first cessation and second cessation values, first cessation and third cessation values, second cessation and third cessation values, third cessation and fourth cessation values 1.87, 0.87, 0.87, 0.20, 1.27, 2.27, 1.07, 2.07, 1.00 and 1.73 respectively on Explosive Strength are less than the confidence interval values 2.31 at .05 level of confidence.

Hence, the results of the study show that there is a significant difference between pre test and post test values, pre test and first cessation values, post test and fourth cessation values, first cessation and fourth cessation values, second cessation and fourth cessation values on Explosive Strength of Plyometric Training Group. It was also found that there was no significant difference between pre test and second cessation values, pre test and third cessation, pre test and fourth cessation, post test and first cessation, post test and second cessation, post test and third cessation values, first cessation and second cessation values, first cessation and third cessation values, second cessation and third cessation values, third cessation and fourth cessation values on Explosive Strength of Plyometric Training Group.

DISCUSSION ON FINDINGS

Sedano et al (2011) found out 10-week plyometric program may be an effective training stimulus to improve explosive strength compared to a more conventional physical training program. The improvements in explosive strength can be transferred to acceleration capacity and kicking speed but players need time to transfer these increases. **Hasegawa et al (2011)** pointed out strength and plyometric training integrated into the 8 week running program improved running performance and running economy to the same extent as the running only training, but with approximately 25% less running volume than the running only training. The increase of reactive leg strength and power appear to transfer into improved running economy more effectively, versus running only training. **Rezaimanesh et al (2011)** revealed that 4 weeks

of plyometric training had a significant effect ($p<0.05$) on the EMG of the biceps femoris while performing the Squat Movement(absolute strength) but the EMG for the biceps femoris was insignificant ($p>0.05$) for the vertical jump(explosive power). **Arazi and Asadi (2011)** conclude that plyometric training in water can be an effective technique to improve sprint and strength in young athletes. **Wilson (1996)** was found out the effort to gain greater insights into the adaptations invoked by plyometric and weight training. **John Parthiban (2006)** pointed out the trend was in favor of plyometric training with 60% intensity group for Explosive Power. The data support the use Maximum Strength training and Plyometric training for the duration of twelve weeks with three days per week.

CONCLUSION

1. All the experimental groups namely Maximum Strength training, and Plyometric training groups have achieved significant improvement on Explosive Strength.
2. Significant differences were found among Maximum Strength training, and Plyometric training groups towards improving the Explosive Strength.
3. It is also concluded that Plyometric Training Group is better than Maximum Strength Training and Control Group towards improving the Explosive Strength.
4. There was no significant reduction in the performance of explosive strength during the first and second cessation of detraining period.
5. Significant reduction in the performance of explosive strength was found during the third and forth cessation of detraining period.

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ANALYSIS FOR LEVEL OF SELECTED PSYCHOLOGICAL VARIABLES AMONG PUDUCHERRY KERALA AND TELANGANA STATE'S MEN SANTHOSH TROPHY SOCCER PLAYERS

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ABSTRACT

In this analysis 16 men soccer players from each three selected states randomly (Puducherry, Kerala and Telangana) totally 48 subjects were acted as subjects who are all participated santhosh trophy in 2016-17. From selected subject's researcher were collected qualitative data through questionnaire after issuing of questionnaire researcher was explained the purpose of this study and meaning of each question in their own language for minimizing statistical error. In this examination following psychological variables were used which is Sports Competition Anxiety, Ego- Orientation, Task- Orientation and Mental Health. The data were collected at Chennai Nehru stadium where they attended Santhosh Trophy Tournament. Sampling: Purposive random sampling methods were used for this inquiry for choosing subjects. Statistics: after collected data for statistical analysis one way ANOVA in SPSS 16th version were used. Results: there is no significant difference among selected state's men soccer players on the variable of sports competition anxiety and mental health furthermore Ego orientation and task orientation variables showing significant difference among selected state players with degrees of freedom 2 and 45 and significance 0.05 level. These selected psychological parameters may affect their team performance in several ways and this results will helpful for build their psychological phenomena in future competitions.

Keywords: Sports Competition Anxiety, Ego and Task Orientation and Mental Health

INTRODUCTION

In all the sports and games selective psychological impact is more essential like sports competition anxiety, aggression, Ego orientation and so on., because based on mental health every individual may execute their maximum performance in all the sports and games. The sports person who is having enough strong mental health they can prevent behavioural disturbances, prevent over training, muscle and joint injuries, mentally imbalance, reducing anxiety, mind distraction, self-efficiency especially in the game of football (Marco 2005) because in this game more number of motor qualities are involving like endurance strength, agility, co-ordination reaction in skills kicking, dribbling, heading, shooting, throw in, passing so if the player went to execute the skill properly with effective mentally they have to have enough strength, then only they can play their best skills without mistakes depends upon playing situation as well competition.

Objective of this study

Objective for this investigation is "Analysis for Level of Selected Psychological Skills among Puducherry Kerala and Telangana State's Men Santhosh Trophy Soccer Players".

METHODOLOGY

In this investigation 16 men soccer players were taken randomly from selected Puducherry, Kerala and Telangana states totally 48 subjects were participated. In this inquiry four psychological data were collected through standard questionnaire (Anxiety, Ego-

Orientation, Task-Orientation and Mental Health) in a qualitative manner and collected data were converted in to quantitative and applied statistical application for evaluation. Proper explanation of study and the meaning of each question were given with their own language by researcher/ (translators). The collected quantitative data were used in SPSS package for statistical analysis ANOVA were used to identify the differences among selected group with 0.05significane level.

		N	Mean	Std. Deviation	Std. Error
Anxiety	**Puducherry**	16	17.4375	3.24487	.81122
	Kerala	16	17.1875	1.90504	.47626
	Telangana	16	16.5625	2.98817	.74704
	Total	48	17.0625	2.73983	.39546
Ego Orientation	**Puducherry**	16	3.2250	.86217	.21554
	Kerala	16	2.7312	.41428	.10357
	Telangana	16	3.5500	.63561	.15890
	Total	48	3.1688	.73257	.10574
Task Orientation	**Puducherry**	16	4.2375	.41932	.10483
	Kerala	16	3.8500	.56921	.14230
	Telangana	16	4.5125	.19621	.04905
	Total	48	4.2000	.49723	.07177
Mental Health	**Puducherry**	16	58.8125	8.15858	2.03965
	Kerala	16	53.3750	5.90903	1.47726
	Telangana	16	56.0625	8.33842	2.08460
	Total	48	56.0833	7.72075	1.11439

In this study based on collected data the level of sports competition anxiety in Puducherry Kerala and Telangana state's men Santhosh trophy soccer players mean values are above mentioned order 17.44, 17.19 and 16.56 moreover in same order standard deviation values are 3.245,1.91 and 2.99. In this result Telangana soccer players showing less level of Anxiety among other state's men soccer players.

In Ego orientation variable mean values are Puducherry state men soccer players ego level is 3.23, Kerala players level is 2.73 and Telangana players group level is 3.55. Moreover standard deviations of Puducherry, Kerala and Telangana players Values are 0.862, 0.414 and 0.635. it shows that Kerala players were having less Ego than other two Puducherry and Telangana players.

In task orientation variable mean values are Puducherry state men soccer players task level is 4.24, Kerala players level is 3.85 and Telangana players group level is 4.51. Moreover standard deviations of Puducherry, Kerala and Telangana players Values are 0.419, 0.569 and 0.196. It shows that Telangana players were having better task orientation than other two Puducherry and Kerala players.

In mental health variable of Puducherry, Kerala and Telangana states men soccer players mean values are 58.813, 53.375 and 56.063. Moreover standard deviations of Puducherry, Kerala and Telangana players Values are 8.158, 5.909 and 8.338. It shows that Puducherry players were having better mental health than other two Telangana and Kerala players.

F' RATIO TABLE SELECTED PSYCHOLOGICAL PARAMETERS AMONG PUDUCHERRY, KERALA AND TELANGANA MEN SANTHOSH TROPHY SOCCER PLAYERS

		Sum of Squares	df	Mean Square	F	Sig.
Anxiety	Between Groups	6.500	2	3.250	.422	.658
	Within Groups	346.312	45	7.696		
	Total	352.812	47			

Ego Orientation	Between Groups	5.439	2	2.719	6.185	.004
	Within Groups	19.784	45	.440		
	Total	25.223	47			
Task Orientation	Between Groups	3.545	2	1.773	9.878	.000
	Within Groups	8.075	45	.179		
	Total	11.620	47			
Mental Health	Between Groups	236.542	2	118.271	2.075	.137
	Within Groups	2565.125	45	57.003		
	Total	2801.667	47			

The table value for significant at 0.05 level with 2 & 45 degrees of freedom 'f' table value is= 3.20and respectively*.

In this above table shows 'F' ratio results of selected psychological parameters among Puducherry, Kerala and Telangana men Santhosh trophy soccer players. The anxiety variable calculated 'F' ratio value is 0.422 is lesser than required table value 3.20 moreover calculated P value 0.659 is higher than required value 0.05. Hence this results indicating that there is no significant difference among selected Puducherry, Kerala and Telangana men Santhosh trophy players on selected sports competition anxiety variable.

Based on above 'F' ratio results of selected psychological variables among Puducherry, Kerala and Telangana state men Santhosh trophy soccer players. The Ego-Orientation variable calculated 'F' ratio value is 6.185 is higher than required table value 3.20 moreover calculated P value 0.004 is lesser than required value 0.05. Hence this results discovered that there is a significant difference among selected Puducherry, Kerala and Telangana men Santhosh trophy players on selected Ego- Orientation variable.

Based on above table 'F' ratio results shows selected psychological parameters among Puducherry, Kerala and Telangana men Santhosh trophy soccer players. The Task Orientation variable calculated 'F' ratio value 9.878 is higher than required table value 3.20 moreover calculated P value 0.000 is lesser than required value 0.05. Hence this results representing that there is a significant difference among selected Puducherry, Kerala and Telangana men Santhosh trophy players on selected Task Orientation variable with statistical conformation.

In this above table shows 'F' ratio results of selected psychological parameters among Puducherry, Kerala and Telangana men Santhosh trophy soccer players. The Mental Health variable calculated 'F' ratio value is 2.05 is lesser than required table value 3.20 moreover calculated P value 0.137 is higher than required value 0.05. Hence this results representing that there is no significant difference among selected Puducherry, Kerala and Telangana men Santhosh trophy players on selected Mental Health variable.

Scheffe's Post-Hoc Table for Selected Psychological Parameters among Puducherry, Kerala and Telangana State men Santhosh Trophy Players

Variables	(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.
Anxiety	**Puducherry**	**Kerala**	.25000	.98081	.968
		Telangana	.87500	.98081	.674
	Kerala	**Puducherry**	-.25000	.98081	.968
		Telangana	.62500	.98081	.817
	Telangana	**Puducherry**	-.87500	.98081	.674
		Kerala	-.62500	.98081	.817
Ego Orientation	**Puducherry**	**Kerala**	.49375	.23443	.121
		Telangana	-.32500	.23443	.390
	Kerala	**Puducherry**	-.49375	.23443	.121
		Telangana	-.81875*	.23443	.005

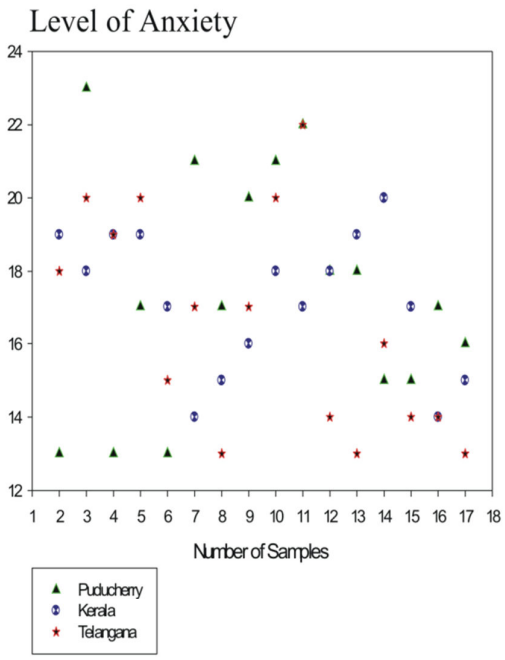
	Telangana	**Puducherry**	.32500	.23443	.390
		Kerala	.81875*	.23443	.005
Task Orientation	**Puducherry**	**Kerala**	.38750*	.14977	.044
		Telangana	-.27500	.14977	.197
	Kerala	**Puducherry**	-.38750*	.14977	.044
		Telangana	-.66250*	.14977	.000
	Telangana	**Puducherry**	.27500	.14977	.197
		Kerala	.66250*	.14977	.000
Mental Health	**Puducherry**	**Kerala**	5.43750	2.66933	.137
		Telangana	2.75000	2.66933	.592
	Kerala	**Puducherry**	-5.43750	2.66933	.137
		Telangana	-2.68750	2.66933	.606
	Telangana	**Puducherry**	-2.75000	2.66933	.592
		Kerala	2.68750	2.66933	.606
*. The mean difference is significant at the 0.05 level.					

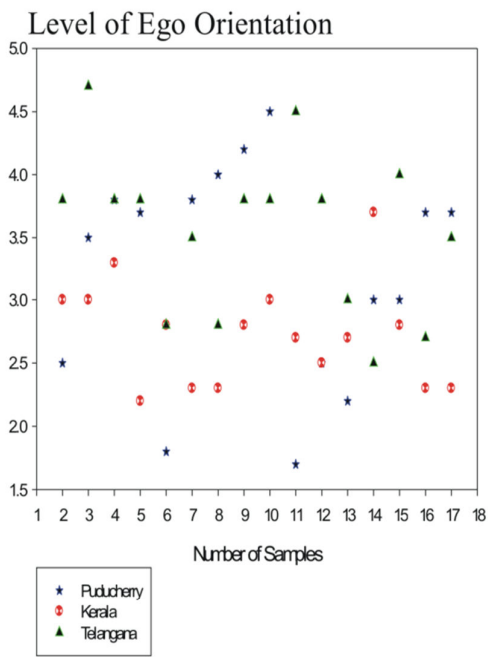
In sports competition anxiety variable mean difference between Puducherry and Kerala santhosh trophy men soccer players' value is 0.25 and P value is 0.968. The difference between Puducherry, Telangana players group mean value is 0.875 and P value 0.674 moreover Kerala and Telangana players group mean difference is 0.63 and P value 0.817. In this all the P values are higher than required P value 0.05. Hence researcher declaring that there is no significant difference when compare mean values of all the groups in the variable sports competition anxiety.

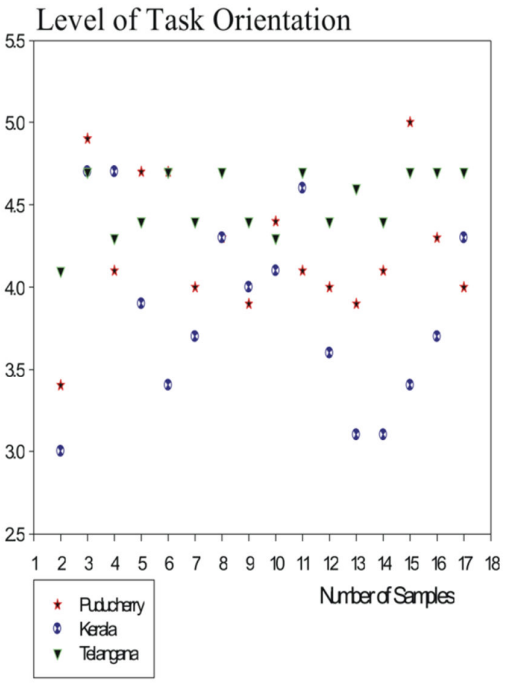
In ego orientation variable mean differences between puducherry and kerala state's santhosh trophy men soccer players is 0.494, P value 0.12. Mean differences between telangana and puducherry is 0.819, P value 0.390. Moreover telangana and kerala is 0.819 P values 0.05 which is less than required P value. Hence based on this calculation there is a significant difference in telangana and kerala but there is no significant difference between puducherry and kerala, puducherry and telangana when compare mean values on the variablke of ego orientation.

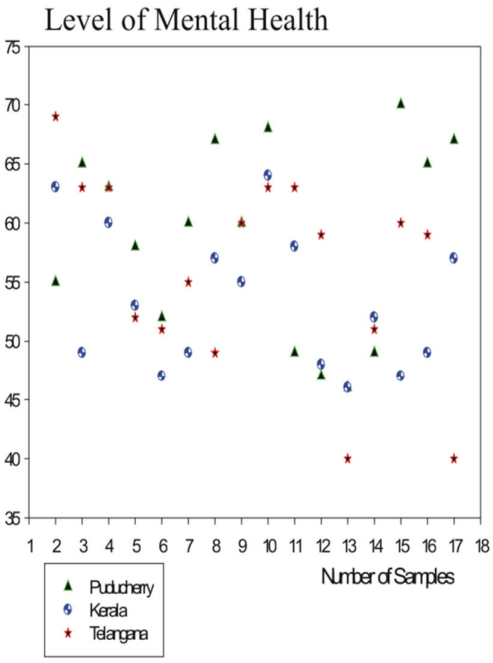
In task orientation the difference between puducherry Vs kerala mean difference 0.388 and P value 0.044 is lesser required value 0.05. Difference between telangana and puducherry mean difference 0.275 and P value 0.197 is higher than 0.05 moreover mean difference between telangana Vs kerala is 0.663, P value 0.000 is showing highly significant difference. In this telangana Vs puducherry is not showing significant difference on the variable of task orientation.

In mental health puducherry –kerala and telangana state men santhosh trophy soccer players mean difference between puducherry and kerala is 5.44 P.value 0.137. Between puducherry and telangana mean values 2.75, P.value 0.592. bwtween telangana and kerala 2.688 P value 0.606. In this all the calculated P values are higher than required P value 0.05. Hence this result indicating that there is no significant difference among and between selected groups in mental health variable.









THIS ABOVE DIAGRAM SHOWS DATA FOR SPORTS COMPETITION ANXIETY, EGO, TASK ORIENTATION AND MENTAL HEALTH VARIABLES OF SELECTED PONDICHERRY, KERALA AND TELANGANA STATE'S MEN SANTHOSH TROPHY PLAYERS

CONCLUSION

In this psychological inquiry among all the three Puducherry, Kerala and Telegana state's on men Santhosh trophy football players were showing significant difference among the state's on the variables Ego orientation, task orientation, mental health and sports competition anxiety variables was not shown any significant difference among selected state's men soccer players. As per above showing results in sports competition variable sports competition anxiety through playing number of practice match, positive thoughts from coaches and instructors. In ego orientation variable Puducherry and Telangana men soccer players need to reduce ego among team mates that may leads to show their better game performance in all competitions. In task orientation kerala men soccer players have to improve their task orientation than other two puducherry and telangana state's men soccer players that may leads to improve their better performance in the entire way. These all above said variables combine to influence mental health. Hence researcher declaring that all santhosh trophy men soccer players making them self or through their instructors/coaches/ Experience players strong enough on above selected psychological parameters that may enhance (or) help to show their maximum better performance in all the sports and games in various ways.

Key points

The following suggestion was made by the researcher based on collected data and results.

- ✓ Puducherry santhosh trophy (2016) men soccer players have to practice too reduce sports competition and Ego orientation. They have to improve in task orientation moreover they have to maintain the mental health among the team mates.
- ✓ Kerala players have to reduce sports competition anxiety, they had less Ego orientation, and they must improve Task orientation and mental health than the opponent players that may lead to show their better performance.
- ✓ Telangana state men soccer players have to practice for reduce sports competition anxiety and Ego orientation and other two variables such as Tsk orientation and mental health they are in average level among selected states men soccer players even though they have to concentrate on above said variables to maintain this psychological parameters for show better playing capability.

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COMPARISON OF REACTION TIME AND UPPER BODY STRENGTH AND ENDURANCE BETWEEN INTERCOLLEGIATE MEN VOLLEYBALL AND HOCKEY PLAYERS

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ABSTRACT

The purpose of the study was to assess the difference on reaction time and upper body strength and endurance between inter collegiate men volleyball and hockey players. To achieve the purpose of the study the investigator randomly selected 100 players (i.e. 50 players in volleyball and 50 players in hockey) from Tamil Nadu physical education and sports university inter collegiate men volleyball and hockey tournament. The criterion variables selected for this study was visual reaction time and upper body strength and endurance. The collected data were analyzed by using the independent 't' test, to interpret the results. The level of confidence was fixed at 0.05 levels. It was concluded that there was no significant difference found on reaction time and upper body strength and endurance between inter collegiate men volleyball and hockey players of Tamil Nadu Physical Education and Sports University.

INTRODUCTION

A sport is an organized, competitive, entertaining and skillful physical activity requiring commitment, strategy and fair play in which a winner can be defined by objective means. It is governed by a set of rules or customs. In sports the key factors are the physical capabilities and skills of the competitor when determining the outcome (winning or losing). The physical activity involves the movement of people, animals and/or a variety of objects such as balls and machines or equipment. In contrast, games such as card games and board games, though these could be called mind sports and some are recognized as Olympic sports, require primarily mental skills and only mental physical involvement. Non-competitive activities, for example as jogging or playing catch are usually classified as forms of recreation.

Volleyball

Volleyball is a team sport in which two teams of six players are separated by a net. Each team tries to score points by grounding a ball on the other team's court under organized rules.[1] it has been a part of the official program of the games since 1964.the complete rules are extensive. But simply, play proceeds as follows: a player on one of the teams begins a 'rally' by serving the ball (tossing or releasing it and then hitting it with a hand or arm), from behind the back boundary line of the court, over the net, and into the receiving team's court. The receiving team must not let the ball be grounded within their court. The team may touch the ball up to 3 times but individual players may not touch the ball twice consecutively. Typically, the first two touches are used to set up for an attack, an attempt to direct the ball back over the net in such a way that the serving team is unable to prevent it from being grounded in their court.

Hockey

The game was introduced to the dominions of colonies by British soldiers. A natural flair for the game was shown by the Indians. They possessed superior technical skills and had an instinctive feel for tactics. They rode high on the crest of a were of success in a glittering golden chariot throughout the length the length and breadth of the world until they suffered their first major reverse Rome in 1960. International hockey played on artificial grass is a fast, exciting game requiring high levels of individual skill, tactical awareness and mental and

physical fitness. Many hours of hard work by coaches and players go into preparing teams to meet the demands of modern day tournaments.

METHODOLOGY

The purpose of the study was to analyze the reaction time and upper body strength and endurance between inter collegiate men volleyball and hockey players of Tamil Nadu physical education and sports university. To achieve the purpose of the study, 100 inter collegiate players were selected as subject randomly from volleyball and hockey game. The subjects were selected from inter collegiate men volleyball and hockey players who participated in the intercollegiate tournament of Tamil Nadu physical education and sports university. The age group of the subjects was ranged from 18 to 28 years. The research scholar selected the reaction time and upper body strength and endurance as variable for the study. The investigator conducted visual reaction time test through reaction timer and upper body strength and endurance through pushups test for all the subject for the both volleyball and hockey players and the obtained data were analyzed statistically by using independent 't'-test to find out the significant difference between the volleyball and hockey players. The result was tested at 0.05 level of confidence.

RESULTS

TABLE-I

COMPUTATION OF 't' RATIO ON REACTON TIME BETWEEN THE INTER COLLEGIATE MEN VOLLEYBALL AND HOCKEY PLAYERS

PLAYERS	M	SD	σ DM	DM	t-ratio
VOLLEYBALL	0.126	0.023	0.0041	0.0028	0.69
HOCKEY	0.129	0.017			

* Significant at 0.05 levels.

Table I reveals that the mean of reaction time for inter collegiate men volleyball players was 0.126with the standard deviation of 0.023 and hockey players was 0.129 with the standard deviation of 0.017. The obtained 't' ratio 0.69 was found to be lesser than the required table value of 1.98 at 0.05 level of confidence for 98 degrees of freedom. This indicates that there was no significant difference on reaction time between the Inter collegiate men volleyball and hockey players.

FIGURE-I

BAR DIAGRAM SHOWING THE MEAN DIFFERENCE BETWEEN INTER COLLEGIATE MEN VOLLEYBALL AND HOCKEY PLAYERS ON REACTION TIME

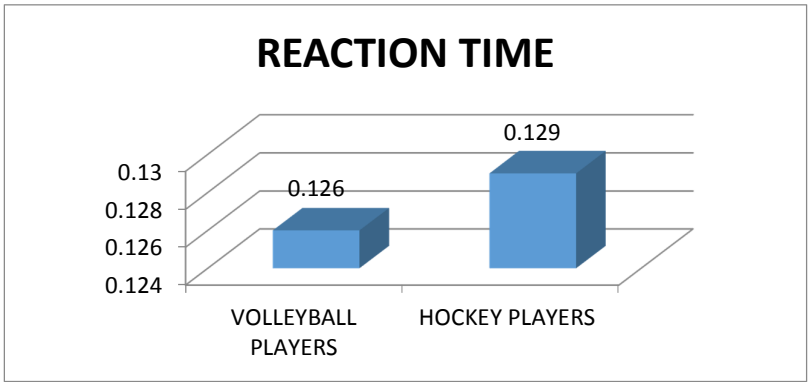


TABLE-II

COMPUTATION OF 't' RATIO ON UPPER BODY STRENGTH AND ENDURANCE BETWEEN INTER COLLEGIATE MEN VOLLEYBALL AND HOCKEY PLAYERS

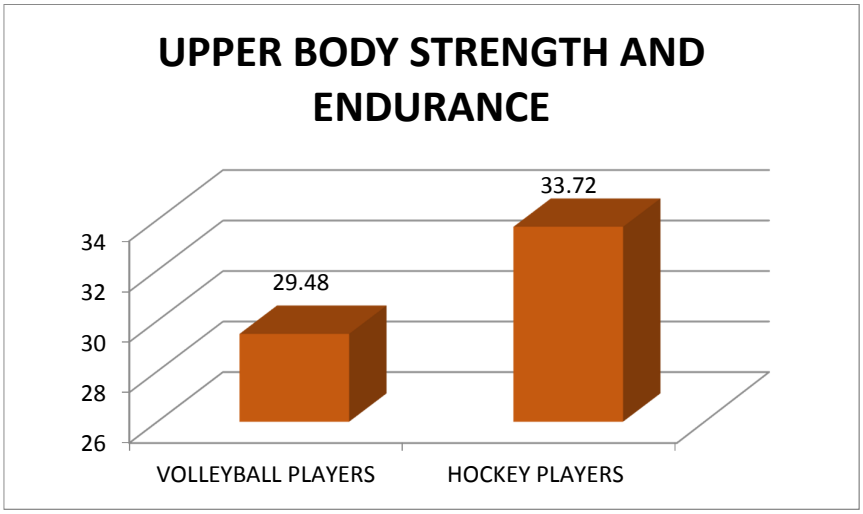
PLAYERS	M	SD	σ DM	DM	t-ratio
VOLLEYBALL	29.48	10.65	2.54	4.24	1.667
HOCKEY	33.72	14.49			

* Significant at 0.05 levels.

Table II reveals that the mean of upper body strength and endurance for inter collegiate men volleyball players was 29.48 with the standard deviation of 10.65and hockey players was 33.72 with the standard deviation of 14.49. The obtained 't' ratio 1.667 was found to be lesser than the required table value of 1.98 at 0.05 level of confidence for 98 degrees of freedom. This indicates that there was no significant difference on upper body strength and endurance between the Inter collegiate men volleyball and hockey players.

FIGURE-II

BAR DIAGRAM SHOWING THE MEAN DIFFERENCE BETWEEN INTER COLLEGIATE MEN VOLLEYBALL AND HOCKEY PLAYERS ON UPPER BODY STRENGTH AND ENDURANCE



DISCUSSION ON FINDINGS

The results of the study reveals that, there was no significant difference found on reaction time between the Inter collegiate volley ball and hockey players and also when comparing the mean values of reaction time for the inter collegiate volley ball and hockey players the inter collegiate volleyball players were slightly better than hockey players.

The results of the study reveals that, there was no significant difference found on upper body strength and endurance between the Inter collegiate volley ball and hockey players even though when comparing the mean values of upper body strength and endurance for the inter collegiate volley ball and hockey players the inter collegiate hockey players were better than volleyball players.

CONCLUSIONS

Based on the results of the study it was concluded that there was no significant difference found on reaction time and upper body strength and endurance between the Inter collegiate volley ball and hockey players of Tamil Nadu Physical Education and Sports University. But when comparing the mean values of Inter collegiate volley ball and hockey players of Tamil Nadu Physical Education and Sports University the volleyball players were slightly better than hockey players on reaction time where as the hockey players were better than volleyball players on upper body strength and endurance.

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HAWKEYE TECHNOLOGY IN CRICKET

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ABSTRACT

Hawk-Eye is a computer system used in cricket, tennis, snookers and other sports to visually track the path of the ball and display a record of its most statistically likely path as a moving image. Hawk-Eye as the most innovative technology provider in sports broadcasting and is a development that will reinforce the groups presence and influence**.** This is one of the most advanced technology being used in sports. It is also a great tool which can be used by players, statisticians, tacticians, coaches to analyze previous games and come up with strategies for subsequent ones

INTRODUCTION

'Hawk-Eye' system is also called timely response system, which assists to define referee penalty accuracy. 'Hawk-Eye' system principle is relative simple, but is very accurate. It is composing of 8~10 pieces of high speed cameras, four computers and large screen, it defines whether tennis is outside or not by different orientation ball positions records. 'Hawk-Eye' system has become an indispensible tracking system in some large-scale tennis courts. In tennis competitions, tennis moves at high speed, after landing it is prone to generate issues disputes about whether tennis is in line or out of line as well as other similar ones. And by 'Hawk-Eye' system it can relative correct record and judge ball landing point positions, and eliminate similar problems occurrence. 'Hawk-Eye' system working principle is not complicated. It firstly cuts competition field space into measurement unit that counts by millimeter with the help of computer calculation. Then, utilize high speed cameras to capture tennis motion process different positions, and generate images. Finally make use of timely imaging, use large screen to indicate tennis motion trajectory and drop point. The whole process only takes less than 10 seconds. 'Hawk-Eye' system has been approved by British royal television institution as early as 2001. In 2003, due to its widely used in tennis, it has achieved national American television highest Emmy award 'Outstanding contribution award in science and technology'. 'Hawk-Eye' system has been widely used in tennis competition field, and it has overturned 30%~40% disputed calls. The system applied degrees are different in different competitions. Such as in baseball and hemisphere, the system hasn't been widely used. While in tennis, many top athletes show that they like 'Hawk-Eye' system, because it let penalty to be more accurate.

Hawk-eye is the name of a line-calling system which traces a ball's trajectory and sends it to a virtual-reality machine. Hawk-Eye uses six or more computer-linked television cameras situated around the court. The computer reads in the video in real time, and tracks the path of the ball on each camera. These six separate views are then combined together to produce an accurate 3D representation of the path of the ball. The Hawkeye system was invented by a young British computer expert Paul Hawkins, and was launched in 2001. It was first used in television coverage of sporting events such as Test cricket, and has now reached the stage of being used by officials in tennis to assist in adjudicating close line calls [1] The Nasdaq-100

Open in Miami was the first tour event to officially use the technology. The 2006 US Open was the first Grand Slam event to feature the system, followed by the 2007 Australian Open. At the Australian Open, only centre court matches utilize the technology.

Cricket is a ball game played within a predetermined area. A system comprising of video cameras mounted at specific angles can be used to take pictures. These pictures are then used to locate the position of the ball. The images are then put together and superimposed on a predetermined model to form a complete visualization of the trajectory of the ball. The model includes, in this case, the pitch, the field, the batsmen and fielders etc. For this to be possible, we need to sample images at a very high rate and thus need efficient algorithms which can process data in real time. Such technologies are widely used today in various sports such as Tennis, Billiards which also fall in the category of ball games played within a restricted area. Our discussion will mostly contain applications which specific to the game of cricket, however in some cases, we will mention how similar techniques are applied in other games

Cricket

LBW

Hawkeye can accurately figure out the trajectory of the ball and predict the direction of the ball using mathematical calculations. This is used to decide whether a batsman was out. Thus, the system determines the exact point at which the ball struck the batsman. Using the trajectory of the ball up to that point, the system predicts the path the ball would have taken had the batsman not been present in the way. Thus one can know the lateral position of the ball with respect to the stumps as well as the height of the ball at the point when it reaches the line of the stumps. The figure 4 gives an example of the trajectory of the ball being predicted.

Fig 1: Prediction

Note that in this picture, the system has got rid of the batsman from the picture so as to give us a complete view of the path of the ball since it left the bowler's hand. This is exactly what one needs to decide if the ball would have hit the stumps and if that is the case, the batsman has a chance of being given out.

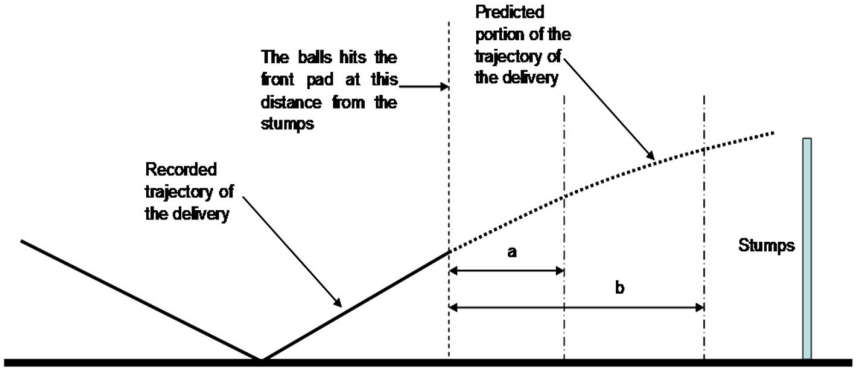

Fig 2: Cricket pitch

Wagon Wheels

The Wagon Wheel gives you an idea of the different areas where the batsman has been targeting to score singles, doubles, boundaries or sixes.

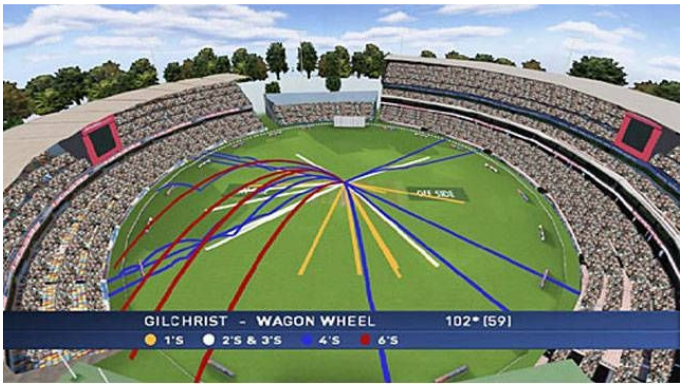

Fig 3

DeSpin

It is used to check the angle of turn or deviation of a ball after it has pitched

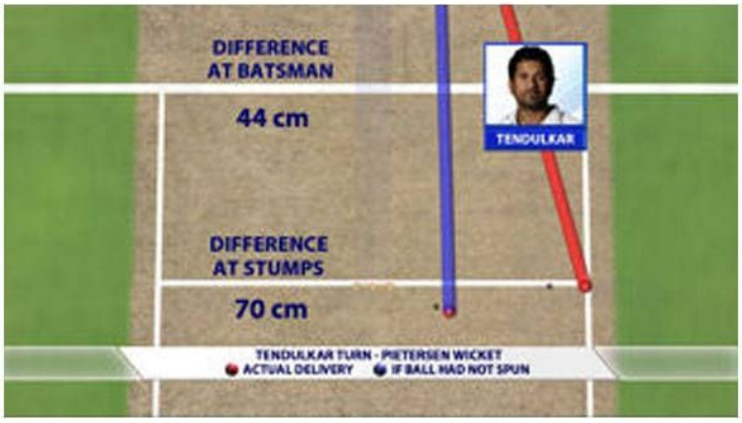

Fig 4

Pitch Maps

This consists of a virtual map of the various areas of the pitch where the bowler has bowled a delivery. It shows you how consistent a bowler is, in terms of line and length.

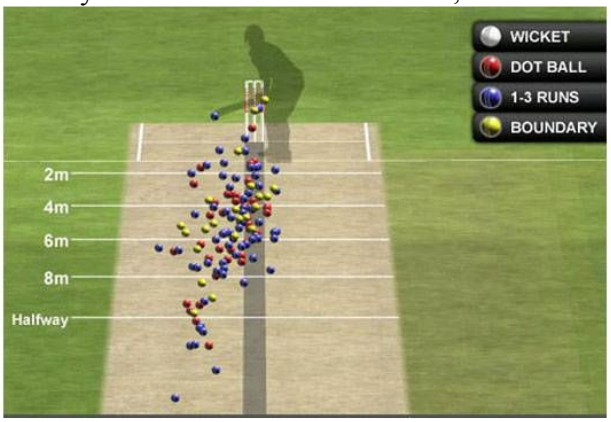

Fig 5

Ball Speeds

This is as simple as it gets. Ball Speeds lets you trace the different speeds of a ball after delivery. So one can see whether a batsman gets knocked out by a fast paced delivery, or fooled by a slower one.

Fig 6

CONCLUSION

This is one of the most advanced technology being used in sports. • It is also a great tool which can be used by players, statisticians, tacticians, coaches to analyze previous games and come up with strategies for subsequent ones.

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APPLICATION SOFTWARE USED IN PHYSICAL EDUCATION AND SPORTS

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ABSTRACT

Computer technology is contemporary education technology an important content to physical education major as the main Physical Education Department in the reform and development, must be closely combined with the development of computer technology today, and strive to high-tech computer technology used in professional courses in the past, the existing computer applications on the basis of further in-depth study and really master one or two good skill to cope with future social development needs. The main emphasis of the interdisciplinary is placed on the application and use of computer-based but also mathematical techniques in sports science, aiming in this way at the advancement of theory and practical in sports. The sport science is mainly connected with the fact that the use of data and media, the design of models, the analysis of systems etc. increasingly requires the support of suitable tools and the concepts which are developed and available in computer science.

Keywords: Computer technology, mathematical techniques, interdisciplinary, updated with new technology and result analysis

INTRODUCTION

The creation of the modern computer has changed the face of the planet. Today there are more devices fitted with a microchip than there are human beings. The word 'computer' comes from the word compute which means 'to calculate'. Computers were developed from calculators as the need arose for more complex and scientific calculations. A computer is a machine that had been designed by the people to carry out some numerical and mathematical operations. Technically, a computer is a programmable machine. This means it can execute a programmed list of instructions and respond to new instructions that it is given. A computer is an electronic device that manipulates information, or data. Is has the ability to store, retrieve and process data. Computer in physical education is an interdisciplinary discipline that has its goal in combining the theoretical as well as practical aspects. Computer –assisted instruction provides students with an alternative to classroom settings and frees the instructor from wrote process that is better handled by the computer. Students can observe and listen to the mechanics of movements in slow motion and learn effectively with the help of computer. Using the internet one can update the recent technological improvement in sports training, changes in rules, to download the rules from the internet authorities, to do research and so on. Computers have potential applications in the elementary and secondary physical education curriculum current usage is minimal when compared to other disciplines. Computers are highly useful in making wide tasks and projects including budgeting, financial statements, calculations and scheduling in physical education programs. Using computers not only enhances the quality of documentation, but also saves time and operational expenses for sport organizations.

During the last decades, computer science has become an important interdisciplinary partner for sport. This is due to the fact that the use of data and media, the design of models, the analysis of systems etc. increasingly require the support of suitable tools and concepts which are developed and available in computer science. Research activities in this field are

strongly affected by current developments in computer science. In particular, progress in hardware (processor speed, storage capacity, and communication technology), software (tools), information management concepts and methods (data bases, data mining) and media (internet, eLearning, multimedia) are of great importance.

Method

Application of computers in main area of research

- Data acquisition, Processing and analysis
- Modelling and simulation
- Data bases
- General assist
- Multimedia and Presentation

There are many research activities that cut across these areas. Most of them can be assigned to one of the following topics:

- Motion analysis
- Game and competition analysis
- Training and performance analysis
- Pattern recognition
- Complex systems
- Unconventional modelling / soft computing
- Pervasive Computing
- Instruction, training

The following applications are considered below:

- Cameras
- Mobile phone cameras
- Motion analysis software
- Film editing
- Portable media players
- Interactive whiteboards
- Voice projections systems
- Developing Functional skills through physical education
- Games consoles
- Nintendo Wii Fit
- Dance mat systems
- Pedometers
- Pupil response systems
- Archos
- The use of iPods
- Podcasting
- The Virtual Learning Environment (VLE)
- Video conferencing
- YouTube

Statistical Data Storage

Statistical data is very important for sports. Team players, Coaches, Public all want to know the past performance of team players. So computers can be used to record statistical data in different attractive ways

Storing and Watching Video

Computers are used to store and watch videos in sports. As there is a great need of videos in sports, because players watch other players playing styles from different angles to learn them through videos or they want to watch their own past performances in order remove drawbacks from them or they can watch live matches etc. So computers are very helpful in

watching and storing videos. We can store all videos in one place rather than storing them in different cassettes. Statistical Data Storage Statistical data is very important for sports. Team players, Coaches, Public all want to know the past performance of team players. So computers can be used to record statistical data in different attractive ways.

Equipment Development

Safety is an important aspect in professional sports today. News stories are often released about the study of concussions on football and hockey athletes. To help minimize those injuries equipment developers have used computers to develop safer equipment. For example, helmet company Riddell designed a new football helmet for the National Football League during the 2010 season after a number of players were injured by concussions. They used a variety of technological programs to design a helmet that would be able to absorb the constant impact and limit damage to the head and neck area. The same type of research is being done for such sports as hockey and auto racing to better improve the safety of the athletes.

Sports Media

Computers play a major role in how well media outlets cover their respective sports. Sports media outlets use computers everyday in their jobs. Writers use computer research for their subjects. They use various computer programs to make their writings attractive.

Computers in Scouting

Computers play a part in scouting players on nearly all professional teams. Since the beginning of the 21st century, new technology has been developed by which scouts use computers to put in scouting information easily and speed up the process of evaluating players. One technology used in basketball is Pocket Hoops. It allows scouts to input where a player took a shot and whether he made the shot on his Pocket PC. The Los Angeles Lakers of the NBA were the first to use this method of scouting in 2001.

Computers and Sports Training

Computers help gauge an athlete's performance during a specific training regimen. Trainers for sports teams can put a player's height, weight and body model into a computer and develop a training program that best fits her needs. Trainers can also put sensors and equipment onto a player during training, allowing the computer to register results while the player trains.

CONCLUSION

At last it is to be said that computer has become a part and parcel of entire physical education and sports environment, other than the area of broadcasting and televising sports events. Application of computers in the field of Research, Motor learning, Exercise physiology, Fitness prescription, Body composition, Bio-mechanics, Sports psychology helps the physical education teachers and sports trainers to make the teaching as well as coaching more interesting and also enhance the level of sports performance. Computer application in sports produces perfection in results and also save time. There is no chance of faulty in results of sports events as it bears fair and accurate judgment. So there is a need to learn and become familiar with computer, who is connected with sports and physical education.

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FLEXIBILITY OF PHYSICALLY ACTIVE POPULATION

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ABSTRACT

The vigorous approach to practicing the asanas is sometimes referred to as "Power Yoga". Power Yoga is a fitness-based vinyasa practice. It has many qualities and benefits, including building internal heat, increased stamina, strength, and flexibility, as well as stress reduction. To find the effect of training 40 male physically active subjects were randomly selected from SRMV Maruthi College of Physical Education. To fulfil the term 'active' the selected subjects they were participated at least one game or sports in the intercollegiate tournament for their college. The age of the subjects were ranged from 20 to 25 years. The selected subjects divided into two groups (n=20), one group underwent eight weeks (two days per week) of power yoga training (PYG) and another group was control group (CG). To find the impact of training following variables muscular strength endurance and flexibility were selected. The results show that the power yoga training would produce significant improvement on muscular strength endurance and flexibility of physically active population.

Key words: Power yoga, physically active, MSE, flexibility.

INTRODUCTION

Selection of subjects

To achieve the purpose of the study 40 male physically active subjects were randomly selected from SRMV Maruthi College of Physical Education, Coimbatore. To fulfil the term 'active' the selected subjects they were participated at least one game or sports in the intercollegiate tournament for their college. The age of the subjects were ranged from 20 to 25 years. The selected subjects divided into two groups (n=20), one group underwent eight weeks (two days per week) of power yoga training (PYG) and another group was control group (CG).

Selection of variables

To find out the impact of training the researcher selected the following variables for the present study.

- **Muscular strength endurance**- Modified sit ups
- **Flexibility**- Sit and reach test

Statistical analysis

The collected data on the selected dependent variables were statistically analyzed by paired "t" test to find out the significant improvement between pre and post tests of training and control groups at the 0.05 level of confidence.

RESULTS

TABLE-1
COMPUTATION 'T' RATIO BETWEEN PRE AND POST TEST MEANS OF POWER YOGA TRAINING GROUP AND CONTROL GROUP ON MUSCULAR STRENGTH ENDURANCE OF PHYSICALLY ACTIVE POPULATION

Groups	Test	Mean	SD	SEM	Obtained 't'
PYT	Pretest	43.55	5.15	1.15	**7.98***
	Posttest	47.30	5.29	1.18	
CG	Pretest	43.75	3.19	0.71	1.889
	Posttest	44.45	3.03	0.67	

***Significant at P<0.05 level**

The above table displays the mean values of pre and post test of power yoga training group and control group on muscular strength endurance. They were 43.55 and 77.30. Since, the obtained 't' ratio of 7.98 was greater than the required table value of 2.09, it was found to be statistically significant at 0.05 level of confidence. The results clearly indicate that the muscular strength endurance of the training group improved due to power yoga. There was no significant improvement on control group at 0.05 level of confidence.

TABLE-2

COMPUTATION 'T' RATIO BETWEEN PRE AND POST TEST MEANS OF POWER YOGA TRAINING GROUP AND CONTROL GROUP ON FLEXIBILITY OF PHYSICALLY ACTIVE POPULATION

Groups	Test	Mean	SD	SEM	Obtained 't'
PYT	Pretest	22.40	1.27	.28	**7.93***
	Posttest	24.35	0.98	.22	
CG	Pretest	22.60	1.31	.29	1.45
	Posttest	22.80	1.19	.26	

***Significant at P<0.05 level**

The above table displays the mean values of pre and post test of power yoga training group and control group on flexibility. They were 22.40 and 24.35. Since, the obtained 't' ratio of 7.93 was greater than the required table value of 2.09, it is found to be statistically significant at 0.05 level of confidence. The results clearly indicate that the flexibility of the training group improved due to power yoga. There was no significant improvement on control group at 0.05 level of confidence.

DISCUSSION

Power yoga is fast becoming an increasingly budget-friendly and viable fitness option. Due to it's up tempo and brisk nature, power yoga is essentially like an aerobic workout, where yoga poses are done faster and in continuation. Power yoga when practiced regularly and under supervision helps to achieve stability, balance, posture, flexibility, and strength **(Yoga Journal, 2018, Sophia, 2013 and Nair, 2011)**. The above statement closely associates with this present studies statistical results.

CONCLUSION

It was concluded that muscular strength endurance and flexibility of physically active population improved due to the effects of power yoga training. Further it concluded that the Power yoga is modified and vigorous form of Ashtanga yoga with vinyasas gives flexibility to the trainer to teach any poses in any order and building different atmosphere in classes. Finally, in this present era the power yoga practices began into the gyms as a way to work out of peoples.

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YOGA ASANA AND DAILY HEALTH FITNESS ON FLEXIBILITY

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ABSTRACT

Yoga is a spiritual practice that began in India around 6,000 years ago and is based on an ancient philosophy that combines several concepts and routines. These include meditation, self-reflection, breath control and the practice of physical postures that develop strength, flexibility and the ability to fully concentrate. Although yoga has mainly gained popularity in all the country because of its physical benefits, it focuses on the mind, body and soul simultaneously, whereas exercise is mainly geared toward improving the body. Yoga postures, or asanas, create lean and strong muscles caused by the bending, twisting and stretching of the body. Asanas tone the muscles while lengthening them and create muscle strength by using your own body as a weight. The increase in yoga's popularity has lead to a new counterculture in fitness. Many people who believe in the benefits of yoga become wrapped in very healthy lifestyles which include other activities such as rowing, running, cycling, and resistance training.

Keywords: Yoga, Asana, yoga and fitness, flexibility and asana

Introduction

Yoga is a spiritual practice that began in India around 6,000 years ago and is based on an ancient philosophy that combines several concepts and routines. These include meditation, self-reflection, breath control and the practice of physical postures that develop strength, flexibility and the ability to fully concentrate. Although yoga has mainly gained popularity in all the country because of its physical benefits, it focuses on the mind, body and soul simultaneously, whereas exercise is mainly geared toward improving the body. Exercise often aims to raise your heart rate, and intense yoga classes such as power yoga or Vinyasa also can easily boost your heart rate into the aerobic zone. Yoga aims to reduce stress and can eliminate pain in certain areas of the body, and it improves your internal body functions. Yoga practices create a flow between each posture that is designed to help you regain your energy and release tightness in your muscles. Combining a fluid chain of movements with full and steady breathing allows your muscles to receive plenty of oxygen and your mind to stay concentrated, resulting in full relaxation after a practice. Regular exercise makes your body stronger, but muscle growth can shorten muscles, making your body inflexible. This is especially the case with weight training, as it develops large muscle mass away from the bone, while yoga supports the skeleton because it draws muscle mass onto the bones evenly.

Asana and flexibility

Yoga postures, or asanas, create lean and strong muscles caused by the bending, twisting and stretching of the body. Asanas tone the muscles while lengthening them and create muscle strength by using your own body as a weight. Yoga provides some benefits that have no clear comparisons to exercise. The bends and twists in yoga massage and work your internal organs to aid digestion and internal functions, while several poses affect different glands in your body that activate your endocrine systems to balance hormone levels. Yoga improves the respiratory system through correct breathing practices and it reduces stress by the soothing of

the nervous system. Whereas exercise uses opposing forces to build strength, yoga provides a practice that works with your body rather than against it to reach a healthy balance between your physical, mental and spiritual systems. Exercises are aimed at building your muscles and physical strength and endurance. Exercises involve repetition of certain movements aimed at building a certain group of muscles, thereby increasing the muscle weight and improving strength of those body parts. It increases the blood supply to those parts. Most exercises increase your breath rate and heart rate. You consume more oxygen during exercises than when you are doing your daily routine activities. Yoga asanas on the other hand, work in a totally different fashion. The idea of asanas is not building muscles, but harmonizing the body, breath and mind, thereby contributing to the overall health of the individual. In the Patanjali Yoga Sutras, asana is described as "Sthiram Sukham Asanam", which means that which gives steadiness, stability and Joy is called Asana. From this definition, it is clear that unlike exercises, you cannot do asanas with strain or tension. There is no extra load on the respiratory and cardiac systems. It has to be done in a steady and calm manner and should induce peace and sense of well-being. The oxygen consumption during asanas is lesser than your daily regular activities. Asanas reduces your breath and heart rate. Yoga decreases your Basal Metabolic Rate while exercises increase it. When performing asanas, your body is learning to use much less resources and be more efficient. Yoga asana doesn't burn your calories as much as exercises. Yoga practitioners will need less food consumption than those who do exercises. Asanas help in optimal secretions of the endocrinal glands, thereby balancing the emotions and improving relationships and social interactions. In the practice of asanas, oxygen consumption is reduced whereas in physical exercise it is increased. In asanas the respiration rate falls, whereas in exercise it increases. Generally, physical exercises are done very quickly and with a lot of heavy breathing; therefore the respiratory system is forced to work much harder. In Yoga the body temperature drops whereas in exercise it tends to rise. In asanas the metabolic rate drops whereas with exercise it increases. In asanas the muscles receive minimum nutrition/ oxygen and the organs receive more, whereas in physical exercise, it is the muscles that receive the most nutrition/ oxygen at the expense of the other organs. Large muscles are developed by most types of physical exercise: these bigger muscles require greater nutrition and supply of blood; when not utilized, these muscles tend to become flabby as the muscle tissue turns to fat. In asanas, the blood pressure and heart rate decrease, whereas in exercise they increase with the result that the heart works harder. In broad terms, Yoga practitioners need less food than people practicing physical exercise. Asanas help to harmonise the endocrinal secretions, balancing the emotions and giving a positive attitude to life. Asanas stimulate the parasympathetic nervous system, whilst exercises stimulate the sympathetic nervous system. Physical exercise tends to overwork the joints and can often engender rheumatism and stiffness later in life. Yoga asana are postures that are carried out in a systematic manner so that there is development of equilibrium of the mind, body and the soul. Asana deals with the mental, spiritual and physical aspects of the body so that the person is healthy not only from outside but also within. Yoga asana involves slow steady movements that will not make you exhausted. Instead the person feels refreshed and satisfied**.**

CONCLUSION

Practicing asanas yoga may improve one's flexibility; this does not imply one is healthy. Some of our joints need to be trained for more mobility (hips for example), while others are better suited in improving stability (lumbar or lower spine). Therefore, improving the flexibility of the lumbar spine, which many yoga poses do, may actually lead to back problems. Yoga does not seem to make the distinction between which joints benefit from increased mobility and which do not. Another aspect not considered in yoga is that for a joint to be healthy, it needs to be stable in its full range of motion. This is accomplished by strengthening the muscles in their full range of motion with resistance training. The increase in

yoga's popularity has lead to a new counterculture in fitness. Many people who believe in the benefits of yoga become wrapped in very healthy lifestyles which include other activities such as rowing, running, cycling, and resistance training.

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