



INFLUENCE OF EFFICACY OF MOTOR IMAGERY OF TABLE TENNIS PLAYERS AMONG COLLEGE STUDENTS IN PHYSICAL FATIGUE

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ABSTRACT

In table tennis, numerous studies have been conducted to assess aerobic and anaerobic capacities during an ecological exercise. The aim of the study is to evaluate the influence of motor imagery contributes to improved motor performance. Recent work showed that motor imagery might provide additional benefits by comparing both in pre test (Experiment 1) post test (Experiment 2). However the efficacy of motor imagery in different states of physical fatigue remains largely unknown, especially as mental imagery accuracy may be in a reduced amount by the physical fatigue. Stroke parameters are speed and accuracy of the ball as well as feelings of fatigue and force production capacity of the elbow flexors, knee extensors both in a fatigued state and non-fatigued state. Statically when comparing more than two sets of numerical data, a multiple group comparison test such as one-way analysis of variance (ANOVA) is used. Ball speed, ball placement and speed-ball placement index showed satisfactory reliability. The validity analyses fatigued players had higher scores of ball speed, ball placement, speed- ball placement index as well as made fewer errors than non-fatigued players. The decrease in accuracy was associated with an increased ball speed in the non fatigue condition and a decreased ball speed in the fatigue condition. These findings significantly influence table tennis performance and therefore coaches should take into account both the physical and mental state of table tennis players to optimize performance.

Key Words: Efficacy, Motor Imagery, Table tennis, Speed, Accuracy, Physical & Mental State.

1. INTRODUCTION

Table tennis is a complex and technically difficult game because the player must act quickly, accurately in changing conditions (Pluta, et.al. 2020). Table tennis is characterized by highly developed motor skills such as agility (Zemkova & Hamar, 2015), reaction speed time (Ak & Koçak, 2010 & Bhabhor, et.al., 2013) explosive power (Zagatto, et.al. 2017) and strength, eye movement and coordination (Faber, et.al. 2014). Table tennis game skills include such traits as grip, attitude or playing position, types of punches and leg movements (Bandi, 2004).

In physiological terms, table tennis belongs to endurance and speed-based disciplines with changing modes of effort and intensity (Bencke, et.al. 2002 & Chatterjee, Goswami, & Bandyopadhyay, 2016). Performance in racket sports is multi-factorial and involves technical, tactical, psychological, and physiological skills. Thus, a lot of specific field tests have been proposed to evaluate these skills. No gold-standard test exists in table tennis to evaluate some technical parameters during a simple and ecological table tennis task. Both speed and accuracy of the ball were measured to evaluate the absolute sensitivity and reliability of the specific test. Both parameters are crucial in table tennis since the distance between players and the reaction time are short (Pluta, et.al. 2020).

Psychological assessment involves any systematic attempt at the measurement of psychological aspects related to players. Four major areas exist in psychological assessment clinical (assessments of an individual performance-related mental skill) special assessment topics (selection testing, polygraph testing and psycho-physiological assessment). Motor imagery is the mental representation of an action without physical execution of the corresponding movement. Experimental data provides ample evidence that motor imagery contributes to enhanced motor performance in both sporting and everyday life motor skills. Motor imagery further positively affects psychological factors involved in high-level sport performance like motivation and focus.

Imagery can be defined as a process by which sensory experiences are stored in the memory and internally recalled and performed without external stimuli (Murphy, 1994). There are two types of imaginary perspective: internal imaginary and external imaginary. Internal imagery requires an approximation of the real life phenomenology so that athletes actually imagine begin inside their bodies and experiencing those sensations that might be expected in the actual situation. The influence of imagery perspective may be more powerful in performance than in other areas because of the importance of kinesthetic awareness to sports performance. Thoughts, images and mental pattern act as the control mechanism that directs the body. Positive mental practice was a more effective learning procedure than negative mental practice. Negative thought is particularly effective for destroying skilled performance.

2. METHODOLOGY

2.1 Participants

Twelve professional male table tennis players age of 18 – 20 with training experience volunteered to participate in this test. All the subjects were members of the table tennis team at college level. All participants were right-handed. Motor imagery as a learning method employed throughout the training in fatigued state. All the participants learnt to concentrate clearly on the action and to imagine the same before accomplishing.

2.2 Instrumentation:

Motor imagery (MI) the mental simulation of an action without its actual execution is a promising technique to boost motor learning via physical practice in rehabilitation, sport and

educational fields. Motor imagery might promote the development of this ability since it helps people to concentrate on complex tasks.

2.3 Procedure

The test emphasis both speed and accuracy includes ball speed, ball placement and speed-ball placement. The experimental process includes two target zones with large boxes on them at each side of the table. Participant stands at the middle line of the table to begin. They are to place as many alternate (side-to-side) marks in the boxes as they can in 30 seconds. Count the rally for assessing speed and the number of dots in each box for assessing accuracy. A Bland–Altman plot is a useful display of the relationship between two paired variables using the same scale. It allows you to perceive a phenomenon but does not test it, that is does not give you a probability of error on a decision about the variables as would a test.

3. RESULTS

The statistical analysis the better performance outcome from Pre to Post test was performed by means of ANACOVA. By comparing speed & accuracy both in pre test count the number of dots in 30 seconds with post test count the number of dots in 30 seconds under fatigue and non fatigue state on speed ball.

TABLE 1
ANALYSIS OF COVARIANCE OF SPEED & ACCURACY ON MOTOR IMAGERY OF PROFESSIONAL MALE TABLE TENNIS PLAYERS

Test	Non Fatigue State Speed (Mean)	Fatigue State Accuracy (Mean)	Sum of Squares	df	Mean Square	F-ratio
Pre Test	49.82	50.03	9.62	2	48.11	0.20
Post Test	53.23	52.87	151.36	2	72.54	3.51*

*F ratio at 0.05 level of confidence for 2 (df) =3.1

As shown in table 1 obtained value on the scores of pre test means was 0.20. The analysis of post test means was 3.51 on mental imagery. The obtained F value 3.51 was greater than required value of 3.1 to be significant at 0.05 level. Hence it is accepted that motor imagery positively optimizes high-level performance in fatigue state.

4. DISCUSSION

Table tennis performance itself is influenced by individual differences in growth, maturation, training experiences, competition, participation, and environmental factors. The application of motor imagery by this stage become widespread in psychology scientific literature which show an improved motor performance after training based. Imagined movement duration was significantly longer than that of real movement. Motor imagery technique is often used by elite athletes. They use MI for improving their performance (Hall et.al 1990, Jones and Stuth, 1997) who mastered the technical skills of their sport. The findings significantly influence table tennis performance and therefore coaches should take into account both the physical and mental state of table tennis players to optimize high level in fatigue state performance.

5. CONCLUSION

The findings of the study influence of efficacy of motor imagery of table tennis players significantly influenced table tennis performance. Student assessment covered different kinds of evaluations, all of them conducted by the experimenter. The training period on motor imagery technique lasted 8 weeks. Coaches, trainers & physical education experts should take into account both the physical and mental state of table tennis players to optimize high level performance in fatigue state.

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**THE RELATIONSHIP BETWEEN EYE - FOOT COORDINATION,
AGILITY AND SPEED WITH BALL DRIBBLING SKILLS
IN COACHING EDUCATION DEPARTMENT
STUDENTS OF FIK UNIMA
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ABSTRACT

In this study, what is meant by population is all male students of the Department of Coaching Education, FIK UNIMA, semester IV (4 classes), totaling 103 students. The research sample is a portion of the population taken as a representative source of all population data. In determining the research sample, researchers used a selective sampling approach, by students who can play football. To make it easier, the researchers limited the sample size to 30 students (soccer players). In this study the data collection using the measurement method, namely: To measure ankle coordination using a soccer wall volley. The reliability value is 0.61 and the validity is assumed with *face validity*, To measure agility with the "zigzag running test" reliability level of 0.93 and validity of 0.. To measure speed with the "30 meter running speed test". To measure dribbling skills with the "Dribbling test" with a reliability of 0.99 and a validity of 0.92. Research conclusions Based on data analysis and discussion, it can be concluded that there is a significant relationship between eye-foot coordination, agility and speed on the ability to dribble in the fourth semester students of the FIK UNIMA Coaching Education Department.

Keywords: Eye-foot coordination, Agility and Speed, Dribbling kills.

1. INTRODUCTION

Football is a sport that is very popular with all levels of society in Indonesia, both in cities and in villages. Even now football is favored and played by women. In promoting sports and exercising the community, football is one of the prioritized sports to be fostered, so to improve and achieve achievements, it would be nice if from an early age you have received sports education and especially football in a correct, orderly and directed manner. Today, the game of football is not just entertainment or leisure time, but it is required to achieve the highest.

Realizing this need, various efforts have been and are being carried out in order to achieve the desired achievements, including creating or growing football clubs at an early age, or football schools which are now known as Lembaga Pendidikan Sepakbola (LPSB), which aims to introduce various techniques, tactics in the game of football from an early age, given that the abilities of children are different from adults, **Soekatamsi (1988)** argues that, "because children are still experiencing physical growth and spiritual development, there is a need for age grouping". This division of age groups is important so that each group is a self-study team or a training team alone, and also influences the determination of the training load (intensity).

Physical and technical training is a basic training program in football training. In this case **Muchtar (1992)** argues that, "apart from technical proficiency, physical quality which consists of various elements is an absolute requirement in football". This means that physical and technical abilities are interrelated and inseparable components in the game of football. So far, the physical and technical abilities have been maximally trained and improved. The components of the physical conditions that support the mastery of basic football techniques are trained systematically and continuously. In the game of football, when observed, dribbling is a movement that is often done by football players, so that these players stand out. According to **Sarumpaet (1992)** states that "dribbling is a technique in an effort to move the ball from one area to another during the game. While the objectives of dribbling are: 1) to move the game, 2) to get past the opponent, 3) to lure the opponent, 4) to slow down the game".

According to **Sajoto (1988)** "In addition to mastering the correct basic techniques, a football player must also have a good physical condition, the components of physical conditions that are needed include: strength, endurance, explosive power, accuracy, flexibility, balance, coordination, agility, accuracy and reaction". So dribbling does not only bring the ball along the ground and straight ahead but faces an opponent who is quite close and tight.

Agility is the ability to change direction and position according to the situation at hand quickly, precisely as the body moves from one place to another. Agility relates to reaction time after an action from outside or from within a person so that it will get good results and in accordance with one's expectations. With the agility possessed, it allows a player to be able to make movements in changing directions according to the situation at hand effectively and efficiently. The game of football requires agility to move suddenly which aims to outwit opponents either with the ball or without the ball.

Another very important element of physical condition is speed. Physiologically according to **Jonath and Krempel in Harsono (1988)**, speed can be interpreted as; "Ability based on flexibility (flexibility), nervous system processes and muscle tools to perform movements in a certain unit of time." Meanwhile, according to **Syafuddin (1992)** physically, speed can be interpreted as: Distance divided by time, and the result of the influence of force on a moving body where strength can accelerate body movements. This is an interesting phenomenon to study, is it true that students have good eye-foot coordination, good agility, running speed, and good

dribbling skills too. Therefore, the authors took a study entitled "The relationship between eye-foot coordination, agility and speed with dribbling skills in Semester IV FIK UNIMA students.

This study aims to determine whether there is a relationship between eye-foot coordination and dribbling skills, whether there is a relationship between agility and dribbling skills, whether there is a relationship between speed and dribbling skills and whether there is a relationship between eye-foot coordination and agility and speed together with dribbling skills.

2. METHODOLOGY

The research method used is a survey method using correlational techniques. According to **Sugiyono (2009)** the survey method is used to obtain data from certain natural (not artificial) places, but researchers treat data collection by distributing questionnaires, tests, structured and planned interviews and so on. To obtain data in this study, researchers conducted tests or measurements on the variables studied.

The correlation technique in question is to see the pattern of the relationship between one variable and another.

Rianto (1996) explains that "correlational research is research that looks at the relationship between variables or other variables". In this study the research used a quantitative approach.

The measurement site to obtain the data needed for problem solving was held at the UNIMA Stadium. The time needed for the implementation of this research, starting from the preparation, data collection, data processing and analysis to the preparation of a report on the implementation of this research, was for three months.

In this study, what is meant by population is all male students of the Department of Coaching Education, FIK UNIMA semester II (4 classes) and semester IV (4 classes), totaling 103 students.

1. To measure eye coordination using a soccer wall volley. The reliability value is 0.61 and the validity is assumed with face validity
2. To measure agility with the "sig-zag running test" reliability level of 0.93 and validity of 0.82.
3. To measure speed with the "40 meter running speed test" (**Lubis & Wardoyo, 2014**).
4. To measure the skill of dribbling with the "Dribbling test" with a reliability of 0.99 and a validity of 0.92 (**Nurhasan, 2007**).

The analysis technique to test the hypothesis uses "Product Moment Correlation Analysis" (**Husaini 2001**). To start the hypothesis testing, it is preceded by a number of test analysis requirements to determine the feasibility of the data, namely the normality test and linearity test.

3. RESULTS

1.1 . Normality Test

The calculation of the data normality test is intended to determine whether the variables in the study have the distribution of data used to come from a normal distribution or not. In this study, to test the normality of the data used a technique using SPSS Statistics 21 with the Kolmogorov-Smirnov formula.

**TABLE 1
NORMALITY TEST**

Correlation	Significance Level (p)	Information
X ₁ With Y	0,283	Normal Distribution
X ₂ With Y	0,136	Normal Distribution
X ₃ dengan Y	0,839	Normal Distribution

Based on the results of the normality test, it can be seen that the data from all variables have a p value (Sig.) > 0.05, so all variables are normally distributed and the analysis can be continued.

3.2. Linearity Test

Linearity test is used to determine whether the relationship between the independent variable and the dependent variable is linear (the relationship graph forms a straight line). Linearity testing can be done using the help of SPSS Statistics 21.

**TABLE 2
LINEARITY TEST**

Correlation	FCount	Significance (p)	Information
X ₁ dengan Y	1,328	0,519	Linier
X ₂ dengan Y	1,390	0,504	Linier
X ₃ dengan Y	1,328	0,519	Linear

Based on the results of the linearity test, it can be strengthened by the value of p (Sig.) > 0.05 so that all variables X₁, X₂, X₃ have a linear relationship with Y. Thus, all prerequisite analyzes are met and can be continued.

3.3. Hypothesis Test

**TABLE 3
HYPOTHESIS TESTING WITH MULTIPLE REGRESSION**

Fregression	Significance (p)	Contribution Regression	Equation
7,069	0,001	Y = 341,753+7,612 X ₁ +0,778 X ₂ +0,445 X ₃	44,9%

Based on the table, the significance of 0.03 < 0.05, so that H₀ is rejected and H_a is accepted. This means that the three independent variables (eye-foot coordination, agility and speed) together have a significant relationship with the ability to dribble. The regression equation formed is $Y = 341,753 + 7,612 X_1 + 0,778 X_2 + 0,445 X_3$. The correlation coefficient between the Y criterion and the three predictors (X₁, X₂, X₃) is 0.670. The significance or significance of multiple correlation coefficients is carried out using the F price. From the multiple correlation analysis, it is obtained that Fcount is 7.069, then Ftable is consulted. It turns out that the price of Fcount > Ftable, meaning that the double correlation is significant. The coefficient of determination (R²) in the multiple regression analysis of the three predictors is 0.449. That is, it has a 44.9% relationship with the ability to dribble and 55.1% is influenced by other factors not examined.

4. DISCUSSION

The results of the research that have been done show that students who have good coordination can dribble well and smoothly, but on the other hand, poor ankle coordination also

affects the ability to dribble the ball not smoothly. Students who have good agility can dribble well and smoothly, but on the other hand, bad agility also affects the ability to dribble the ball to be not smooth and the lack of agility will have an impact on dribbling speed. Students who have good agility can dribble well and smoothly, but on the other hand, bad agility also affects the ability to dribble the ball to be not smooth and the lack of agility will have an impact on dribbling speed. The coefficient of determination in the multiple regression analysis is 44.9% with the ability to dribble and 55.1% is influenced by other factors that are not examined, such as field conditions, training intensity, flexibility, endurance, balance. Thus the results of this study also show that agility is important to be owned and improved by every student to improve the ability to dribble the fourth semester students of the FIK UNIMA Coaching Education Department.

5. CONCLUSION

There is a significant relationship between eye-foot coordination, agility, speed and the ability to dribble the fourth semester students of the FIK UNIMA Coaching Education Department.

6. RECOMMENDATIONS

From the results of this study, those who provide course material should pay attention to other factors besides eye-foot coordination, agility and speed and for the next researcher, it is hoped that they can conduct research on the ability to dribble by considering other factors besides ankle coordination and endurance.

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**EFFECT OF CIRCUIT TRAINING ON GRASS, GRAVEL AND
SYNTHETIC FIELD ON MOTOR FITNESS AND
PERFORMANCE VARIABLES OF COLLEGE
MEN HOCKEY PLAYERS**

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ABSTRACT

The purpose of this study was to find out the effect of circuit training on grass, gravel and synthetic field on motor fitness and performance variables among college hockey players. To achieve the purpose of the study 80 male hockey players from different arts and science and engineering colleges in Tamil Nadu were selected as subjects and their age group of 18 -25 years. The study was formulated as a true random group design consisting of a pre-test and post test. The subjects (N=80) were randomly assigned to four equal groups of twenty subjects in each group. Namely, Experimental group I was circuit training on grass field (DSEC, Trichy), experimental group II was circuit training on gravel field (SRM college of Engg, Trichy), experimental group III was circuit training on synthetic field (JJ College of Engg, Trichy) and the control group was not given any experiment. Pre tests were conducted for all the subjects on selected motor fitness variables such as speed and Cardio Vascular endurance and Performance variables of dribbling. The training programme alternate days of twelve weeks. The post tests were conducted on the above said dependent variables after the experimental period of twelve weeks for all the three groups. It is concluded that three experimental groups have achieved significant improvement as compared to control group towards improving motor fitness variables and performance variables. The significance difference between the circuit training on grass is better than circuit training on gravel. Circuit training on gravel is better than compared with circuit training on synthetic fields. Circuits training on synthetic field have shown statistically better for motor fitness variables and performance variables.

Key words: Speed, Endurance, Hockey and Dribbling.

1. 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. Sports training therefore directly and indirectly aim at improving the personality of the sportsman. No wonder, therefore sports training is an educational process (Singh, 1991). Motor fitness means to share responsibility without undue stress, fatigue and help in the quality of health and wellbeing. So that the players should have motor fitness such as speed, agility, power and flexibility. Apart from that player should be sound in technique at the time of play no player speed and movement of the ball and change their technique and fundamental skill in order to execute the movement successfully and it also for the defensive arts skill. Different people have different points of view regarding physical fitness. For a common man a good physique is symbol of physical fitness. In fact physical fitness of a person means the capacity to do the routine work without any fatigue or exertion and after doing his work he has a power to do some more work and recovery is quicker Physical fitness having health plus the capacity to do one's everyday task to engage in recreational pursuits and to meet emergencies when they arise. Physical fitness is used in two close meanings - general fitness and specific fitness based on the ability to perform specific aspects of sports or occupations (Deason, 1991).

1.1 Justification of Study

The 'circuit' is split into different exercises, which are known as 'workstations'. 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 the next circuit. It is felt that the plight of Indian hockey is inconsistent. Because the ignorance of latest techniques for our team to play on the synthetic field for which the game is now played. For coaches and also for players ignorant of the new techniques that have to be mastered before they can overwhelm in International outfits. Artificial turf has completely revolutionized the style and system of play. Our players however learned to play hockey on grass and gravel grounds.

1.2 Statement of the Problem

The purpose of the study was find out the effect of circuit training on grass, gravel and synthetic field on motor fitness and performance variables of college Men hockey players.

1.3 Objectives

- 1.3.1 To find out the effectiveness of circuit Training on grass, gravel and synthetic field on selected motor fitness variables (speed and endurance) of college Men hockey players.
- 1.3.2 To find out the effectiveness of circuit Training on grass, gravel and synthetic field on selected performance variable (Dribbling) of college Men hockey players.
- 1.3.3 To find out the superiority effectiveness of circuit Training on grass, gravel and synthetic field on selected motor fitness variables (speed and endurance) and performance variable (Dribbling) of college Men hockey players.

2. METHODOLOGY

2.1 Selection of the Subjects

To achieve the purpose of this study was Effect of Circuit Training on Grass, Gravel and Synthetic Field on Motor Fitness and Performance Variables of College Men Hockey Players. The 80 subjects were randomly selected from 20 subjects grass field in Dhanalakshmi srinivasan of Engineering in Trichy, 20 subjects gravel field in SRM college of Engineering ,Trichy and 20 subjects synthetic turf field in J J college of Engineering, Trichy, tamil nadu, during the academic year 2019 - 2020. The subject's age ranged between 17-24 years only. They were randomly divided into four equal groups. Circuit training group in different fields such as Grass, Gravel and Synthetic Fields

and the other group was control group. All the subjects were healthy and physically fit. The nature and importance of the study was explained to the subjects and subjects expressed their willingness to serve as subjects in this study. The study was formulated as pre and post test random group design.

2.2 Selection of Variables

2.2.1 Dependent Variables

Fitness Variables- Speed and Cardiovascular Endurance

Performance Variable- Dribbling

2.2.2 Independent Variables

Experimental group I - Circuit training on grass field

Experimental Group II - Circuit training on gravel field

Experimental Group III - Circuit training on synthetic field

Group IV -Control Group.

2.3 Research Design

The study was formulated as a true random group design, consisting of a pre test and post test. The subjects (n=80) were randomly assigned to three equal groups of twenty college men hockey players for each. The groups were assigned as three Experimental Groups respectively the Experimental group I underwent circuit training on grass field whereas experimental group II underwent circuit training on gravel field and experimental group III underwent circuit training on synthetic field. The different stations for both experimental group I, experimental group II and experimental group III were similar and the duration of exercises also was the same, only thing which differentiated both was the different fields. The training was carried out only on week days. Group III was the control group which did not participate in any training except their daily routines. Pre tests were conducted for all the subjects on selected motor fitness variables such as speed and Cardio Vascular endurance and Performance variable of dribbling. The experimental groups participated in their respective circuit training in different fields like that grass, gravel and synthetic field. The training programme alternate days of twelve weeks. The post tests were conducted on the above said dependent variables after the experimental period of twelve weeks for all the three groups. The training programme was scheduled at 6.30 to 7.30 a.m. on week days excluding Sundays.

TABLE 1
NAMES OF VARIABLES, TESTS/ TOOLS ADMINISTERED AND THE UNIT MEASUREMENT

SL. No	Criterion Variables	Test Items	Unit of measurements
1.	Speed	50 mts run	In seconds
2.	Cardio vascular Endurance	Harvard step test	Pulse counted
3.	Dribbling	“W” form dribbling test	In seconds

2.4 Training Programme

TABLE 2
LAYOUT OF THE STUDY DESIGN

1	Treatments	Circuit training exercise
2	Frequency	3 days/week
3	Total duration	12 weeks
4	Duration /session	40 minutes
5	Intensity	45-60%HRmax
6	Exercise days	Alternate days
7	Time of training	Morning (6:20-7.20:00 am)

2.5 Training Schedule

TABLE 3
EXPERIMENTAL GROUP OF CIRCUIT TRAINING ON GRASS, GRAVEL AND SYNTHATIC FIELDS

Period	Exercise	Duration (Seconds)	Intensity	Repetition	Set	Recovery Period
1-3	Sit ups, Half squats, Stick jumps, Burpees Body squats, Pushups, Mountain climber and Two legged low hops on spot.	40	45%	3	3	3 Minutes
4-6	Sit ups, Half squats, Stick jumps, Burpees Body squats, Pushups, Mountain climber and Two legged low hops on spot.	45	50%	3	3	3 Minutes
7-9	Sit ups, Half squats, Stick jumps, Burpees Body squats, Pushups, Mountain climber and Two legged low hops on spot.	50	55%	3	3	3 Minutes
10-12	Sit ups, Half squats, Stick jumps, Burpees Body squats, Pushups, Mountain climber and Two legged low hops on spot.	55	60%	3	3	3 Minutes

2.6 Statistical Techniques

The initial and the final readings derived from the experimental and the control group underwent a procedure of statistical analysis using ANCOVA i.e. The SPSS Package version 24.00. The level of significance chosen was at 0.05 level. To find out the significant differences Scheffe's post hoc test was used as suggested by Clarke and Clarke.

3. RESULTS

TABLE 4
ANALYSIS OF COVARIANCE ON SPEED

	Control Group	Grass field	Gravel field	Synthetic field	SOV	SS	df	MS	F Ratio
Pre test mean	7.70	7.74	7.73	7.69	B	0.026	3	0.009	0.244
					W	2.691	76	0.035	
Post test mean	7.71	7.31	6.88	6.54	B	15.542	3	5.181	99.78*
					W	3.946	76	0.052	
Adjust post test mean	7.71	7.30	6.87	6.55	B	15.305	3	5.102	113.5*
					W	3.371	75	0.045	
Mean difference	0.01	0.43	0.85	1.15					

* Significant at .05 level

(The table values required for significance at 0.05 level of confidence for 3 and 76 and 3 and 75 are 2.73 and 2.72 respectively).

An examination of Table 4 indicates that the speed scores of pre test means of control, grass, gravel and synthetic groups were 7.70, 7.74, 7.73 and 7.69 respectively. The obtained F-ratio of was 0.244. Since, the 'F' value was less than the required table value of 2.73 for the degrees of freedom 3 and 76, it was found to be statistically insignificant at 0.05 level of confidence.

The post-test means of the control, grass, gravel and synthetic groups were 7.71, 7.31, 6.88 and 6.54 respectively. The obtained F-ratio of was 99.78. Since, the 'F' value was higher

than the required table value of 2.73 for the degrees of freedom 3 and 76, and it was found to be statistically significant at 0.05 level of confidence.

The adjusted post-test means of the control, grass, gravel and synthetic groups were 7.71, 7.30, 6.87 and 6.55 respectively. The obtained F-ratio of was 113.51. Since, the ‘F’ value was higher than the required table value of 2.72 for the degrees of freedom 3 and 75, it was found to be statistically significant at 0.05 level of confidence.

TABLE 5
SIGNIFICANCE OF DIFFERENCES BETWEEN ORDERED PAIRED MEANS OF POST-TEST ON SPEED OF CONTROL GROUP AND EXPERIMENTAL GROUPS

Control Group	Means			Mean Difference	C I value
	Grass field	Gravel field	Synthetic field		
7.71	7.30			0.41*	0.19
7.71		6.87		0.84*	
7.71			6.55	1.16*	
	7.30	6.87		0.43*	
	7.30		6.55	0.75*	
		6.87	6.55	0.32*	

* Significant at 0.05 level

Table 5 reveals the Speed mean differences between the paired adjusted post test means of all. The mean difference between control group and grass field, control group and gravel field, control group and synthetic field, grass field and gravel field, grass field and synthetic field, gravel field and synthetic field were 0.41, 0.84, 1.16, 0.43, 0.75 and 0.32 respectively. Since, the values of mean difference were higher than the confidential interval value of 0.19, it was found to be statistically significant at 0.05 level of confidence. From these results, it was inferred that synthetic field produced better improvement on than the other training groups of gravel, grass and control group.

TABLE 6
ANALYSIS ON CARDIO VASCULAR ENDURANCE COMPUTATION OF ANALYSIS OF COVARIANCE ON CARDIO VASCULAR ENDURANCE

	Control Group	Grass field	Gravel field	Synthetic field	SOV	SS	df	MS	F Ratio
Pre test mean	78.49	77.77	77.73	77.55	B	10.293	3	3.431	2.621
					W	99.485	76	1.309	
Post test mean	78.40	82.15	86.21	92.53	B	2192.89	3	730.936	178.86*
					W	310.581	76	4.087	
Adjust post test mean	78.02	82.22	86.31	92.73	B	2192.25	3	730.762	201.51*
					W	271.973	75	3.626	
Mean difference	0.09	4.38	8.48	14.98					

* Significant at .05 level (The table values required for significance at 0.05 level of confidence for 3 and 76 and 3 and 75 are 2.73 and 2.72 respectively).

The Table 6 indicated that the Cardio Vascular Endurance scores of pre test means of control, grass, gravel and synthetic groups were 78.49, 77.77, 77.73 and 77.55 respectively. The obtained F-ratio of was 2.62. Since, the ‘F’ value was less than the required table value of 2.73

for the degrees of freedom 3 and 76, it was found to be statistically insignificant at 0.05 level of confidence.

The post-test means of the control, grass, gravel and synthetic groups were 78.40, 82.15, 86.21 and 92.53 respectively. The obtained F-ratio of was 178.86. Since, the 'F' value was higher than the required table value of 2.73 for the degrees of freedom 3 and 76, and it was found to be statistically significant at 0.05 level of confidence.

The adjusted post-test means of the control, grass, gravel and synthetic groups were 78.02, 82.22, 86.31 and 92.73 respectively. The obtained F-ratio of was 201.51. Since, the 'F' value was higher than the required table value of 2.72 for the degrees of freedom 3 and 75, it was found to be statistically significant at 0.05 level of confidence.

TABLE 7
SIGNIFICANCE OF DIFFERENCES BETWEEN ORDERED PAIRED MEANS OF POST -TEST ON CARDIO VASCULAR ENDURANCE OF CONTROL GROUP AND EXPERIMENTAL GROUPS

Means				Mean Difference	C I value
Control Group	Grass field	Gravel field	Synthetic field		
78.02	82.22			4.2*	1.71
78.02		86.31		8.2*	
78.02			92.73	14.7*	
	78.02	86.31		4.09*	
	78.02		92.73	10.5*	
		86.31	92.73	6.4*	

* Significant at 0.05 level

Table 7 reveals cardio vascular endurance mean differences between the paired adjusted post test means of all groups. The mean difference between control group and grass field, control group and gravel field, control group and synthetic field, grass field and gravel field, grass field and synthetic field, gravel field and synthetic field were 4.2, 8.2, 14.7, 4.09, 10.5 and 6.4 respectively. Since, the values of mean difference were higher than the confidential interval value of 1.71, it was found to be statistically significant at 0.05 level of confidence. From these results, it was inferred that synthetic field produced better improvement on than the other training groups of gravel, grass and control group.

TABLE 8
ANALYSIS ON DRIBBLING COMPUTATION OF ANALYSIS OF COVARIANCE ON DRIBBLING

	Control Group	Grass field	Gravel field	Synthetic field	SOV	SS	df	MS	F Ratio
Pre test mean	15.51	15.45	15.46	15.47	B	0.038	3	0.013	2.00
					W	0.480	76	0.006	
Post test mean	15.50	15.23	15.07	14.87	B	4.149	3	1.383	120.04*
					W	0.876	76	0.012	
Adjust post test mean	15.48	15.23	15.07	14.87	B	3.956	3	1.319	117.34*
					W	0.843	75	0.011	
Mean difference	0.01	0.22	0.39	0.60					

* Significant at .05 level

(The table values required for significance at 0.05 level of confidence for 3 and 76 and 3 and 75 are 2.73 and 2.72 respectively).

The Table 8 indicated that the Dribbling scores of pre test means of control, grass, gravel and synthetic groups were 15.51, 15.45, 15.46 and 15.47 respectively. The obtained F-ratio of was 2.00. Since, the 'F' value was less than the required table value of 2.73 for the degrees of freedom 3 and 76, it was found to be statistically insignificant at 0.05 level of confidence.

The post-test means of the control, grass, gravel and synthetic groups were 15.50, 15.23, 15.07 and 14.87 respectively. The obtained F-ratio of was 120.04. Since, the 'F' value was higher than the required table value of 2.73 for the degrees of freedom 3 and 76, and it was found to be statistically significant at 0.05 level of confidence.

The adjusted post-test means of the control, grass, gravel and synthetic groups were 15.48, 15.23, 15.07 and 14.87 respectively. The obtained F-ratio of was 117.34. Since, the 'F' value was higher than the required table value of 2.72 for the degrees of freedom 3 and 75, it was found to be statistically significant at 0.05 level of confidence.

TABLE 9
SCHEFFE'S POST TEST FOR THE DIFFERENCE BETWEEN THE ADJUSTED POST-TEST PAIRED MEANS OF DRIBBLING (SCORES IN SECONDS)

Control Group	Means			Mean Difference	CI value
	Grass field	Gravel field	Synthetic field		
15.48	15.23			0.25*	0.09
15.48		15.07		0.41*	
15.48			14.87	0.61*	
	15.23	15.07		0.16*	
	15.23		14.87	0.36*	
		15.07	14.87	0.20*	

* Significant at 0.05 level

Table 9 reveals the dribbling mean differences between the paired adjusted post test means of all groups. The mean difference between control group and grass field, control group and gravel field, control group and synthetic field, grass field and gravel field, grass field and synthetic field, gravel field and synthetic field were 0.25, 0.41, 0.61, 0.16, 0.36 and 0.20 respectively. Since, the values of mean difference were higher than the confidential interval value of 0.09, it was found to be statistically significant at 0.05 level of confidence. From these results, it was inferred that synthetic field produced better improvement on than the other training groups of gravel, grass and control group.

4. DISCUSSION

Hockey is very powerful, intermittent sport. The typical player performs for to twenty min to sixty minutes game. This high-intensity bursts with quick changes in velocity and duration a wide variety of motor skills and a high level of fitness to complete successfully at an elite level. As any coach or physical educator knows, one of the primary objectives of a training program is to obtain the greatest possible work load with the smallest physiological strain.

4.1 Speed

Speed of movement is a praised quality in hockey. Speed differs from individual to individual and also between the different playfields like that grass, gravel and synthetics. **Yadav (2017)** supported that the effects of circuit training and fartlek training on selected physical fitness variables (speed and endurance) of the male school children's the physical fitness

variables significant improvement of circuit training, The speed no significant proved of between experimental groups. **Ucan (2015)** investigates the effects of national-level field hockey on physical fitness and body-composition parameters in Turkish females. Results suggest that regular participation to hockey training programs improves the speed. **Meethal and Najeeb (2013)** suggested three groups namely mud circuit training group, concrete circuit training group and control group. The result of the study clearly indicated that the mud circuit training group had improved the speed to a greater than concrete circuit training group. In this study among the circuit training on grass is better than circuit training on gravel. Circuit training on gravel is better than compared with circuit training on synthetic field. However no significant improvement was observed in speed between control groups. Circuits training on synthetic field have shown statistically better speed.

4.2 Cardiovascular Endurance

Hockey is a game in which endurance is of prime importance. Hence endurance occupies an important place in the game of hockey. Taking into consideration of the above facts endurance was selected as motor variable for this study. **Deepender and Pal (2017)** the purpose of the current study was to determine the effect of circuit training on the cardiovascular endurance (**Sonchan, Mougme, Sootmongkol, 2017**). This study aimed to examine the effects of a circuit training program on cardiovascular endurance. The circuit training program improved cardiovascular endurance of the study subjects. **Mayorga-Vega (2013)** investigated that the effects of a circuit training program was effective to increase and maintain cardiovascular endurance among school children. In this study among the circuit training on grass is better than circuit training on gravel. Circuit training on gravel is better than compared with circuit training on synthetic field. However no significant improvement was observed in speed between control groups. Circuits training on synthetic field have shown statistically better on cardio vascular endurance.

4.3 Dribbling

Dribbling in hockey is an important aspect of individual tactics. The results are in conformity with the following findings of **Bose (1999)** had conducted An Analytical Study of Physical and Performance Variables of University and State men Hockey players, playing at different playing surfaces. The dribbling variables of university men hockey players were found better in the artificial surface and gravel surface. In this study among the circuit training on grass is better than circuit training on gravel. Circuit training on gravel is better than compared with circuit training on synthetic field. However no significant improvement was observed in speed between control groups. Circuits training on synthetic field have shown statistically better on dribbling.

5. CONCLUSIONS

It is concluded that three experimental groups namely Circuit training on grass fields, Circuit training on gravel fields and Circuit training on synthetic fields group have achieved significant improvement as compared to control group towards improving motor fitness variables such as speed and cardio vascular endurance. Circuit training on grass fields, gravel fields and synthetic fields there was significant difference on speed and cardio vascular endurance. The motor fitness variables of speed and cardio vascular endurance were better in the synthetic field with compare of grass and gravel fields.

It is concluded that three experimental groups namely Circuit training on grass fields, gravel fields and synthetic fields group have achieved significant improvement as compared to control group towards improving performance variable such as dribbling for hockey. Circuit

training on grass fields, gravel fields and synthetic fields group there was significant difference of dribbling for hockey. The performance variable of dribbling shows performed in the synthetic field was better than the grass and gravel fields.

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THE STUDY OF MENTAL IMAGERY DIMENSIONS AND THEIR RELATIONSHIP TO PERFORM DIVE ON FLOOR EXERCISE IN GYMNASTICS

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ABSTRACT

The Main Purpose of the current study was to Study of Mental Imagery Dimensions and their Relationship to Perform Dive Roll on Floor Exercise in Gymnastics as well as the level of mental imagery for the study sample .Sport Imagery Questionnaire was applied to measure the imagery ability of the athletes' skill performance, a s well as the test of dive-roll for (35) undergraduate male students, chosen from the second year of college of physical education and sports science, students at salahddin university Erbil.(n=35, age19±1.44 years). descriptive research method used as it suits the nature of the research problem. There searcher used the following statistical means (the mean, standard deviation, person correlation coefficient). There results indicated that the overall level of Mental Imagery was moderate as well as a significant relationship between the study variables. The researcher recommended paying more attention to the mental imagery along with preparing the learning and training schedules.

Keynotes: Mental imagery, gymnastics, male students, Floor exercise, skill, performance

1. INTRODUCTION

Gymnastic for college students is a relatively difficult sport compared to other activities and games since this sport requires flexibility and coordination that help performers to apply the skills safely. Many gymnastic skills involve large weight-bearing powers in the hands and other parts of the body; as well as the requirement of a good mental preparation. (Gabel, 1998). Dive roll is one of the skills in gymnastics that requires a good timing between the takeoffs and extends the arms before landing. To perform a well shown skill in sports not only, physical training is sufficient to reach high performance but psychological skills required as well. Most athletes have relatively close physical abilities, which makes the difference in completions is the psychological preparation. According to Driskell et.al (1994) imagery use has a sensible and significant impact on motor skill performance. Further more imagery can improve emotional control, goal setting and concentration which appear solidly as a crucial part of success in sports (Heuzé and Lévèque (1998).

The word imagery came from the Latin imago (imitate), imagery contains creating a mental picture of experience clearly and as close as to the real situation. It is an influential mental technique that has been used widely among researchers, sport psychology consultants, as well as trainers and athletes (Taylor & Wilson, 2005). Athletes can employ imagery techniques for more determinations such as: learning and practice of skills; and stress management (Strachan & Munroe-Chandler, 2006).

Mental training also helps in establishing a positive thinking of one hand and turns the negative thoughts into positive, on the other hand (Malik &Yadav, 2015). There is evidence that also used to enhance skill acquisition (Hall et al, 1998).

The current study explores the study of mental imagery dimensions and their relationship to dive roll on floor exercise, and the purpose of the study is to find out:

1. The level of mental imagery for the study sample.
- 2- The relationship between mental imagery dimensions and Dive-Roll skill on floor exercise. Field of the study:
 1. Human scope: (35) undergraduate Male students, chosen from the second year of college of physical education and sports science, students at Dalahaddin university –Erbil.
 - 2- Time scope: from 22/01/2020 until 29/01/2020
 - 3- Spatial scope: Dr. Shakhwan gymnastic Hall.

2. METHODOLOGY

2.1 Participants

35 undergraduate 2nd year Male students were chosen from the college of physical education and sports science, at Salahddin University, Erbil (Iraq).

2.2 Selection of Variables

The dive roll skill in gymnastics and four dimension of mental imagery i.e. Visual, Auditory, Kinesthetic and mood were selected for the purpose of present investigation.

2.3 Instrumentation

In order to collect data for the study, the Sport imagery questionnaire was used to evaluate the four dimension of mental imagery. Dive-roll in gymnastics was performed on Floor arena and recorded by Sony Handycam recoder-CX440

2.3.1 Evaluation of Mental imagery

The researcher used sport imagery questionnaire, which developed by Rainier Martens author and pioneer in sport psychology and was designed to help athletes to determine how they experience .The questionnaire contented four specific areas (sight, sound, feeling and mood) of

an image, and in four different situations (practicing alone, practicing with other, watching teammate and competing).

After the preparation of finished the questionnaire of sport imagery on the sample after a week of Dive –roll skill evaluation in order to measure the imagery of the student about the skill, they had to perform the Dive first after the skill recorded the week. After the questionnaire of sport imagery had applied, the data was extracted.

2.3.2 Evaluation of Dive- Roll skill

The researcher filmed the participants each individual by Sony camera, which was stabilized in 4 meters of place of perfumed dive roll. Afterward, the film showed to (4) gymnastic lecturer send judges in order to score the skill. The score was out of 5; the 2 highest and lowest was removed, and the other two score was averaged.

2. 4. Pilot study

Before conducting the present investigation, pilot Study on 10 participants of the same community by taking different sample of the second- year undergraduate male students belong to college of physical education and sport science. The purpose of conducting the pilot study was to find out the following:

1. Familiarization to the sport imagery questionnaire.
2. Reducing of the testing hurdles.
3. Knowing the total time of the answering questions.

2. 5. Final Study

After the preparation of finished the questionnaire of sport imagery on the sample after a week of Dive –roll skill evaluation in order to measure the imagery of the student about the skill, they had to perform the Dive first after the skill recorded the week. After the questionnaire of sport imagery had applied, the data was extracted.

2.6 Statistical Analysis

The researcher used SPSS software for the statistical treatment of the collected data. The mean, standard deviation and Pearson Moment correlation coefficient were calculated.

3. RESULTS AND DISCUSSION

To find out the relationship between dive-roll and four dimensions of mental imagery, mean, Sd, and Product Moment Correlation Coefficient were computed and data ertaining to this, has been presented in table 1 to 5.

TABLE 1
MEAN AND STANDARD DEVIATION OF DIVE- ROLL AND VISUAL AUDITORY, KINESTHETIC AND MOOD DIMENSIONS OF MENTAL IMAGERY

S.NO.	Variables	Mean	SD
1	Dive Roll	3.98	3.12
2	Visual imagery	16.33	2.19
3	Auditory imagery	15.42	2.31
4	Kinesthetic imagery	17.67	2.03
5.	The mood imagery	14.87	2.23

TABLES 2
CORRELATION VALUE BETWEEN DIVE -ROLL AND VISUAL DIMENSION OF MENTAL IMAGERY

Variables	Correlation Coefficient	Required Value
Dive Roll V/S Visual imagery	0.876*	0.325

The (R) level of signification (0.05) and df (35-2) = 0.325

Table 2 shows that the positive significant correlation was found between dive-roll and visual dimension of imagery of college male students of physical education of Salahddin University, Erbil (Iraq), as the obtained r-value of 0.876 was higher than the required $r_{.05(33)}=0.325$. The researcher attributed that the visual imagery is an important for skill perfection. Therefore, the learner imaging the skill in his mind before occurrence the real performance of physical education students. The obtained result is compatible with (Elliott &Khan, 2010, p97).

TABLES 3
CORRELATION VALUE BETWEEN DIVE -ROLL AND AUDITORY DIMENSION OF MENTAL IMAGERY

Variables	Correlation Coefficient	Required Value
Dive Roll and V/S Auditory imagery	0.771 *	0.325

The (R) level of signification (0.05) and $df(35-2) = 0.325$

Table 3 shows that the positive significant correlation was found between dive-roll and auditory dimension of imagery variables of college male students of physical education of Salahddin University, Erbil (Iraq), as the obtained r-value of 0.771 was higher than the required $r_{.05(33)}=0.325$. The researcher described the close relationship between the visual and auditory, when the trainer wants to correct the skill performance of the player uses the auditory information as a feedback during movement execution. The neuromuscular compatibility has a great role in directing the motor response and raised the value of the correlation coefficient. Therefore, the compatibility between the nervous and muscular systems is important in the success of any response or skill (Thanoon, 1987, p42).

TABLES 4
CORRELATION VALUE BETWEEN DIVE -ROLL AND KINESTHETIC DIMENSION OF MENTAL IMAGERY

Variables	Correlation Coefficient	Required Value
Dive Roll and Kinesthetic imagery	0.892*	0.325

(R) level of signification (0.05) and $DF(35-2) = 0.325$

Table 4 shows that the positive significant correlation was found between dive-roll and kinesthetic dimension of imagery of college male students of physical education of Salahddin University, Erbil (Iraq), as the obtained r-value of 0.892 was higher than the required $r_{.05(33)}=0.325$. The researcher accredited to nature of gymnastics since the gymnast can not see his performance, and in order to perform a good control oo the skill, he requires a very good sense of his body during the performance as well as a good coordination between muscular system and central nervous system. The obtained result is compatible with (Collet et. al., 2004,p195).

TABLES 5
CORRELATION VALUE BETWEEN DIVE -ROLL AND MOOD DIMENSION OF MENTAL IMAGERY

Variables	Correlation Coefficient	Required Value
Dive Roll and mood dimension	0.721*	0.325

(R) level of signification (0.05) and $DF(35-2) = 0.325$

Table 5 shows that the positive significant correlation was found between dive-roll and mood dimension of imagery of college male students of physical education of Salahddin

University, Erbil (Iraq), as the obtained r-value of 0.721 was higher than the required $r_{0.05(33)}=0.325$. The researcher accredited that to nature of gymnastic. Since gymnast is an individual game the gymnast does not need to think about the other performers can not see his performance, as well as and in order to perform a good control of the skill he requires; the fact that the more the central nervous system is under-excited, the fine motor control and the greater the accuracy, which makes the students able to control and isolate their emotions, as the idea stresses the mood and generates behavior in a valid sense of his body during the performance. The finding is compatible with (Terry,2003,p5-10).

4. CONCLUSIONS

1. The positive significant correlation was found between dive-roll and visual dimension of mental imagery followed by auditory dimension, kinesthetic dimension and mood dimension of imagery of college male students of physical education.
2. Mental imagery is highly beneficial for the better skill performance of male physical education students in gymnastics. So in order to perform a better skill in gymnastics, mental imagery skill is valid and accurate.

5. RECOMMENDATION

1. Researcher recommends that physical educationists and gymnastic coaches should make use of this research results via setting and formulating training session by increasing the attention on the mental imagery along with preparing the learning and training schedules.
2. Encouraging the students of using mental training during the lectures as well as after them.
3. The necessity of establishing a good relationship between the sport psychologist, and the team manager during all the preparation periods.

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**COMPARATIVE STUDY OF PHYSIOTHERAPY AND
CORTICOSTEROID INJECTION OR BOTH
SIMULTANEOUSLY IN GOLFER'S
ELBOW OF ATHLETES**

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ABSTRACT

Present study was done to find out the difference in treatment of Golfer's elbow in athletes and their effect on them. Fifty athletes, both male and female were selected from different sports. Their age range was between 20 years to 35 years. 6 athletes were lost in follow-up. The diagnosis was done by history, physical examination, radiography, ultrasound and EMG/NCS. They were categorized as mild, moderate and severe types of disabilities. 15 of them were selected for intralesional corticosteroid injections, 15 for physiotherapy and 14 for combined therapy. In 4 weeks improvement was noted with corticosteroid injection group, less with physiotherapy, but good improvement with combined group. In 12 weeks deterioration were noted in only injection group, more improvement was noted with physiotherapy group but significant improvement was noted with combined group. At 26 weeks more deterioration with only injection group but excellent improvement was noted with combined group. Even physiotherapy alone group showed better results.

Key Words – Physiotherapy, Intralesional Corticosteroid injections, Categorized

1. INTRODUCTION

Golfer's Elbow or Medial Epicondylitis is a condition in which inner part of the elbow becomes painful and tender. In athletes it develops due to training error, improper technique and faulty equipment's or functional risk factors including lack of strength, endurance or flexibility (Planchar, Halbrecht, & Lourie, 1996). Pain is less common in medial epicondylitis than lateral epicondylitis. (Kamien, 1988). Golfer's and Tennis players often develops this condition because of the repetitive stress placed on the medial elbow soft tissues (Field & Savoie, 1998). Active contraction with forearm pronation and wrist palmar flexion, combined with extension at the elbow in motion progressed from the acceleration phase to the release phase results in an eccentric load to the flexor – pronator mass. The additional valgus stress in the throwing mechanism accelerates this mechanical tendency to overload the flexor-pronator mass (Gabelet, 2001).

In athletes repetitive microtrauma in the elbow occurs from chronic use (Planchar, Halbrecht, & Lourie, 1996). New studies show all muscles of common flexor tendon (CFT) affected except Palmaris Longus (Ahmed, 2017). Although the diagnosis is often made clinically, imaging is helpful in evaluating overuse injuries in the elbow as tendons, ligaments & nerves can be evaluated (Kijowski, Tuite and Sanford 2005). In acute stage most effective treatment is rest combined with application of Ice and NSAIDS including ultrasound. Alteration of equipment as change of racquet, use of grip band, reduction of load on elbow, strengthening of flexor muscles and coaching from professional trainers (Kamien, 1988) etc. can help to protect from golfer's elbow. Use of brace, elastic strap also helps for pain free grip. Physical therapy and mobilisation technique are the primary management for medial epicondylitis (Ann Rehabil Med, 2012). Local corticosteroid injections are widely administered for the treatment of medial epicondylitis (Stahl & Kaufman 1997).

Multiple modalities may provide relief inclusive of dry needling (Gattie, Cleland, & Snodgrass, 2017), Extracorporeal shock wave therapy (Soakl et.al., 2012), Iontophoresis (Nirschl, et.al., 2003), Phonophoresis (Skaun et. al., 1984). Elbow tapping may also be useful (INT J SPORTS MED 2013). Platelet rich plasma injections have been shown to reduce pain and improve functions (Foster, et.al. 2009). Low dose electromyography guided Botulinum toxins (BTX) injection have been studied in refractory cases (Alexandra Creuze et.al., 2018). Prolotherapy may also provide relief in refractory cases (Hause, Holland & Hemwal, 2009). Ultrasound guided autologous blood injection also tried (Suresh, Ali and Connell, 2006). Surgical management is indicated in refractory cases, but it usually not needed. Surgical management includes the release of the common flexor tendons at the epicondyle and debridement of the pathologic tissues.

2. METHODOLOGY

The study was conducted to compare between corticosteroid injection and physiotherapy or both simultaneously applied in the treatment of Golfer's elbow or medial epicondylitis. It was carried out in Jagannath Gupta Medical College and Hospital; Budge budge; Kolkata 700137. Golfer's elbow patients were diagnosed by clinicians at Orthopaedic

O.P.D. and Specialist Clinic of same hospital and the study period was approximately three years (December, 2016 to November, 2019). 46 athletes, both male and female were selected for study. Among them 2 athletes were lost in follow up. They were divided randomly into 3 groups. 15 of them were selected for Corticosteroid

injections only, 15 for Physiotherapy alone and 14 athletes for both Corticosteroid injections and Physiotherapy combined group. Immense care was taken before Injection pushing, specially on sterility. Physiotherapy was done under the guidance of experienced Physiotherapist.

3. RESULTS

Table 1 indicates in Corticosteroid injection group, there were 15 athletes. Three had mild symptoms, 5 with moderate symptoms and 7 with severe symptoms. It was found that at 4 weeks, 3 from mild group (100%), 4 from moderate group (80%) and 4 from severe group (57.14%) were relieved from symptoms. At 12 weeks 2 from mild group (66.6%), 2 from moderate group (40%) and 2 from severe group (28.5%) were benefitted. At 26 weeks, 1 from mild group, 1 from moderate group and none from severe group relieved from symptoms (13.33%). Taking all in consideration it was observed that 11 athletes were relieved from symptoms (73.33%) at 4 weeks. At 12 weeks total 6 athletes were relieved (40%) and in 26 weeks 2 athletes (13.33%) got benefit from intralesional corticosteroid injection. **Table 2** indicates in physiotherapy alone group, among 15 athletes, 5 was with mild symptoms, 5 moderate and 5 with severe symptoms. At 4 weeks 3 from mild group (100%), 2 from moderate group (40%) and 1 from severe group (20%) were benefitted from physiotherapy. Taking all the groups in consideration 6 (40%) were relieved in 4 weeks. In 12 weeks 4 (80%) from mild group 3 (60%) from moderate group and 2 (40%) from severe group, total 9 athletes (60%) were benefitted. At 26 weeks 5 (100%) from mild group, 4 (80%) from moderate group and 2 (40%) from severe group, total 9 athletes (73.35%) were benefitted. **Table 3** reveals that in 4 weeks follow-up, there was a significant effect noted with the athletes receiving both physiotherapy and intralesional corticosteroid injections. Among the 14 athletes selected for both intralesional injection as well as physiotherapy, 3 of them had mild symptoms, 5 with moderate symptoms and 6 with severe symptoms. At 4 weeks, 3 (100%) of mild group, 4 (80%) of moderate group and 4 (66.66%) of severe group consisting of total 11 (82.2%) were relieved. At 12 weeks it was 3 (100%), 4 (80%) and 5 (83.33%) respectively, total 12 athletes (87.8%) were relieved. At 26 weeks, in mild group 3 (100%), in moderate group 5 (100%) and 5 (83.33%) in severe group, total consisting of 13 out of 14 athletes (92.85%) were benefitted with both intralesional corticosteroid injection and physiotherapy.

It was observed in this study that intralesional corticosteroid injection alone has no long term beneficial effect, even less than physiotherapy. So the result of this study shows that there will be more beneficial effect, when both corticosteroid injection as well as physiotherapy were given side by side or simultaneously.

TABLE 1
IMPROVEMENT OF PATIENTS ON 4 WEEKS, 12 WEEKS AND 26 WEEKS, FOLLOWING INTRALIESIONAL CORTICOSTEROID INJECTION

Grading according to symptoms	Number of Athletes	4 Weeks	12 Weeks	26 Weeks
MILD	3	3 (100%)	2 (66.66%)	1 (33.33%)
MODERATE	5	4 (80%)	2 (40%)	1 (20%)
SEVERE	7	4 (57.14%)	2 (28.5%)	0 (0%)
TOTAL	15	11 (73.33%)	6 (40%)	2 (13.33%)

TABLE 2
IMPROVEMENT OF PATIENTS ON 4 WEEKS, 12 WEEKS AND 26 WEEKS ,
FOLLOWING PHYSIOTHERAPY

Grading according to symptoms	Number of Athletes	4 Weeks	12 Weeks	26 Weeks
MILD	5	3 (100 %)	4 (80 %)	5 (100 %]
MODERATE	5	2 (40 %)	3 (60 %)	4 (80 %)
SEVERE	5	1 (20 %)	2 (40 %)	2 (40 %)
TOTAL	15	6 (40 %)	9 (60 %)	11 (73.33 %)

4. DISCUSSION

Golfer's elbow is a condition that causes pain in the medial side of the elbow where the tendons of the flexor muscles of wrist and forearm attach to the medial epicondyle of the elbow. This pain frequently radiates to forearm and wrist. It is not only limited to Golfer's only but athletes who repeatedly use their wrist or clinch their fingers as in tennis, hand ball, racquet sports, archery, bowling, weight lifting and javelin throwing are also affected. The symptoms are usually pain on the inner side of the forearm and wrist. There may be stiffness in the elbow joint, weakness of the hands and wrist and tingling and numbness of the fingers. Golfer's elbow pain may appear suddenly or gradually. Pain might worsen while swinging a golf club or racquet, squeezing or pitching a ball, shaking hands, lifting weight, picking up something with palm down and flexing the wrist. The problems generally occurs while same activity is done regularly for long time without rest. In athletes repetitive microtrauma in the elbow occurs from chronic use. If left untreated, they may develop chronic elbow pain , restricting range of motion and fixed flexion contracture of the elbow.

TABLE 3
INTRALESIONAL CORTICOSTEROID INJECTION WITH PHYSIOTHERAPY
COMBINED GROUP

Grading according to symptoms	Number of Athletes	4 Weeks	12 Weeks	26 Weeks
MILD	3	3 (100%)	3 (100 %)	3 (100 %)
MODERATE	5	4 (80 %)	4 (80 %)	5 (100 %)
SEVERE	6	4 (66.66 %)	5 (83.33 %)	5 (83.33 %)
TOTAL	14	11 (82.22 %)	12 (85.71 %)	13 (92.85 %)

The site of pathology is the interface between pronator teres and flexor carpi radialis origin. Pressure on the affected area will elicit pain. Golfer's elbow test was performed by pronation and palmar flexion of the wrist against resistance while elbow will be extended. Pain will be felt over the attachment of the wrist flexor muscles on the medial aspect of the elbow. Radiography can help to rule out other causes of elbow pain such as fracture or arthritis. Sclerosis of medial border of the medial epicondyle normally can be seen in most of the cases. Strengthening and stretching exercises of forearm muscles should be done before sports activity. Sportsman should be educated by the trainers. There are various methods of treatments as rest, ice, analgesics, brace,

physiotherapy as strengthening of flexor muscles, reduction of load on the elbow etc. Intralesional corticosteroid injections are occasionally used. Surgery is seldom necessary and used only when conservative treatment fails. Newer treatment with platelet rich plasma was tried. Lontophoresis was proved to be effective technique for reducing pain and improve strength and function of the elbow. Other new treatments are dry needling, phonophoresis, prolotherapy, Ultrasound guided autologous blood injection etc. This study was done to compare the treatment with intralesional corticosteroid injections, physiotherapy or both together in Golfer's elbow of athletes.

5. CONCLUSION

Golfer's elbow is a soft tissue disorder causes pain at the insertion of flexor muscles of the wrist and forearm in medial epicondyle of the elbow. Intralesional corticosteroid injection will not give significant relief, specially in long run. Physiotherapy alone is better than intralesional corticosteroid injection. Best result will be achieved if intralesional corticosteroid injection and physiotherapy both are given simultaneously.

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**A COMPARATIVE STUDY OF PHYSICAL FITNESS COMPONENTS
AMONG ATHLETES OF DIFFERENT TRACK AND
FIELD EVENTS**

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ABSTRACT

The purpose of the present study is to compare the physical fitness components among athletes of different Track and Field Events. For the purpose of this study, three groups were made namely Sprinters, Middle Distance and Long Distance Runners. A total of 45 subjects (15 in each group) were randomly selected from LNUPE, Gwalior, who have represented LNUPE, Gwalior at All-India Inter-University level. All the subjects were tested on the cinder track of LNUPE Gwalior. Investigators conducted the physical fitness test by use of AAHPER Physical Fitness Test which possess of 6 items (1) Pull-ups (2) Sit ups (3) 10 yard Shuttle run, (4) Standing broad pump (5) 50 yard dash and (6) 600 yard run/walk. These 6 items test the arm strength, abdomen muscles strength, agility, leg strength, speed and endurance of the athletes. Six stations were marked with required equipment. While conducting the test the investigator personally motivated the subjects. The obtained data was analyzed by applying One Way MANOVA (multi-variate analysis of variance). The MANOVA table was found significant for all the variables at level of significance 0.05.

Keyword: Physical Fitness, Athletes, Track and Field Events

1. INTRODUCTION

The physical demands differ greatly between the track and field disciplines; thus the suitable assessments for each discipline and for particular athletes will vary to a great extent. The number of children and adolescents participating in organized athletic activities worldwide is increasing. However, physical fitness levels among youth are lower today than in previous decades, (Cordelia W Carter, Lyle J Micheli, 2011).

In many sports, training for successful competition has become virtually a year-round Endeavour. To assist in better preparation, a competitor's year may be divided into phases such as off-season and in-season, indicating reduced or increased competition commitments, respectively. A number of studies have described the effects of seasons or periods of competition, training, detraining and reduced training on aspects of physical fitness, (Koutedakis Y., 1995) Due to the increased interest in physical fitness and to the fact that athletes start their training at younger ages the risk for injuries to the growing individual has increased. (Sward L, 1992).

Physiological assessments are generally used to assess the overall fitness level of the athletes and to set guiding principle for individualized training program. (Little, 1991, McArdle 2003).

2. MATERIALS AND METHODS

2.1 Selection of subjects

A total 45 subjects (15 in each group) were randomly selected from LNUPE, Gwalior. The subjects were Sprinters, Middle Distance and Long Distance Runners who have represented LNUPE, Gwalior at All-India Inter-University level.

2.2 Selection of variables

Through both the critical and allied literature pertaining to the problem under consideration the following physical variables were selected-

1. Pull ups
2. Sit ups
3. 10 yard Shuttle run
4. Standing broad jump
5. 50 yard dash
6. 600 yard Run/ walk

The selections of these variables were also based on the feasibility criteria and the equipment available as well as the investigator's own experience in conducting the test and measurement to these variables.

2.3 Administration of the test

All the subjects were tested at cinder track of LNUPE Gwalior. Researcher conducted the physical fitness test by use of AAHPER Physical Fitness Test, which possess 6 items (1) Pull-ups (2) Sit ups (3) 10 yard Shuttle run, (4) Standing broad pump (5) 50 yard dash and (6) 600 yard run/walk. These 6 items test the arm strength, abdomen muscles strength, agility, leg strength, speed and endurance of the athletes. Six stations were marked with required equipment. The subjects were properly guided and motivated during test. Proper instructions regarding the objectives of the study and detail procedure were debrief to the subjects.

3. RESULTS

To assess the selected six components pf physical fitness of Sprinters, Middle Distance and Long Distance Runners, mean, standard deviation and ANOVA were computed with the help of SPSS 16.0 and data pertaining to this have been presented in Table 1 to 3.

TABLE 1
DESCRIPTIVE STATISTICS OF SELECTED PHYSICAL VARIABLES OF
SPRINTERS, MIDDLE DISTANCE AND LONG DISTANCE
RUNNERS.

Physical Fitness Components	Groups	N	M	SD
Pull-ups	Sprinters	15	24.86	2.42
	Middle Distance Runners	15	23.00	2.24
	Long Distance Runners	15	15.80	3.03
Sit-ups	Sprinters	15	47.46	4.12
	Middle Distance Runners	15	39.40	2.69
	Long Distance Runners	15	35.40	2.67
Shuttle-run	Sprinters	15	10.40	0.63
	Middle Distance Runners	15	11.82	0.37
	Long Distance Runners	15	11.93	0.62
SBJ	Sprinters	15	2.66	0.16
	Middle Distance Runners	15	2.28	0.09
	Long Distance Runners	15	2.27	0.10
50yrd Dash	Sprinters	15	6.33	0.29
	Middle Distance Runners	15	6.89	0.32
	Long Distance Runners	15	7.08	0.28
600yd Run/walk	Sprinters	15	1.49	0.17
	Middle Distance Runners	15	1.35	31.92
	Long Distance Runners	15	1.35	0.08

The mean scores of Sprinters, Middle Distance and Long distance Runners on selected physical variables have been depicted in figures 1 to 6

TABLE 2
ANALYSIS OF VARIANCE OF ON SELECTED PHYSICAL VARIABLES OF MALE
SPRINTERS, MIDDLE DISTANCE AND LONG DISTANCE RUNNERS

Physical Variables	Source of Variance	df	Sum of squares	Mean Square	F-Value
Pull-ups	Between Groups	2	687.64	343.82	51.55*
	Within Groups	42	280.13	6.67	
Sit-ups	Between Groups	2	1133.38	566.69	54.22*
	Within Groups	42	438.93	10.45	
Shuttle Run	Between Groups	2	21.95	10.98	36.21*
	Within Groups	42	12.73	0.303	
SBJ	Between Groups	2	1.48	0.740	48.41*
	Within Groups	42	0.64	0.015	
50 Yard Dash	Between Groups	2	4.59	2.293	25.51*
	Within Groups	42	3.78	0.090	
600 Yard Run/Walk	Between Groups	2	0.19	0.099	7.76*
	Within Groups	42	0.53	0.013	

*Significant at .05 level, $F_{.05}(2, 42)=3.21$

It is evident from Table 2 that there were significant differences found among sprinters , middle distance and long distance runner on Pull-ups, Sit ups, 10 yard Shuttle run, Standing

broad jump, 50 yard dash and 600 yard Run/ walk components physical fitness, as the obtained F-values of 51.55, 54.22, 36.21, 48.41, 25.51 and 7.76 respectively were higher than $F_{.05}(2, 42) = 3.21$.

As the F-ratios for Pull ups, Sit ups, 10 yard Shuttle run, Standing broad jump, 50 yard dash and 600 yard Run/ walk were found to be significant, LSD Post Hoc Test was applied to find out the significance of differences between the ordered paired means and the data pertaining to this is presented in Table 3.

TABLE 3
SIGNIFICANCE OF DIFFERENCES BETWEEN ORDERED PAIRED MEANS OF
PHYSICAL VARIABLES OF SPRINTERS, MIDDLE DISTANCE
AND LONG DISTANCE RUNNERS

Variables	Sprinters	Middle Distance Runners	Long Distance Runners	Paired Mean Difference	Confidence Interval
Pull-ups	24.86	23.00	-	1.86	2.38
	24.86	-	15.80	9.06*	
	-	23.00	15.80	7.20*	
Sit-ups	47.46	39.40	-	8.06*	2.98
	47.46	-	35.40	12.06*	
	-	39.40	35.40	04.00*	
Shuttle Run	10.40	11.82	-	1.42*	0.51
	10.40	-	11.93	1.53*	
	-	11.82	11.93	0.11	
SBJ	2.66	2.28	-	0.38*	0.11
	2.66	-	2.27	0.38*	
	-	2.28	2.27	0.01	
50 Yard Dash	6.33	6.89	-	0.56*	0.28
	6.33	-	7.08	0.75*	
	-	6.89	7.08	0.18	
600 Yard Run/Walk	1.49	1.35	-	0.14*	0.10
	1.49	-	1.35	0.14*	
	-	1.35	1.35	0.00	

*Significant at .05 level

Table 3 reveals that the Post hoc test (LSD) for the critical difference between the means of the selected variables shows that there was a significant difference in pull-ups of Sprinters and Long Distance Runners and a significant difference was found between Middle Distance and Long Distance Runners. But there was no significant difference found in pull ups of sprinters and Middle Distance Runners. In case of Sit-ups also post hoc test (LSD) shows that there was a significant difference in Sit-ups between the sprinters, Middle Distance and Long distance Runners. In case of Shuttle Run, Standing Broad Jump, 50 yard dash and 600 yard run/walk post hoc test (LSD) shows that there was a significant difference found between the Sprinters and Middle Distance but there was no significant difference found in shuttle run of Middle Distance and Long Distance Runners.

TABLE 4
BOX'S M TEST OF EQUALITY OF COVARIANCE MATRICES

Box's M	66.066
F	1.243
df1	42
df2	5236.942
Sig.	.136

Table 4 reveals the equality of variance and covariance matrices, and it also shows that the Box's M test is insignificant.

TABLE 5
MANOVA TABLE FOR THE DATA ON SELECTED PHYSICAL VARIABLES OF SPRINTERS, MIDDLE DISTANCE AND LONG DISTANCE RUNNERS

	Value	F	Hypothesis df	Error df	Sig.
Pillai's trace	1.411	15.157	12.000	76.000	.000
Wilks' lambda	.053	20.611 ^a	12.000	74.000	.000
Hotelling's trace	9.114	27.341	12.000	72.000	.000
Roy's largest root	8.024	50.819 ^b	6.000	38.000	.000

*Significant at 0.05 level

The table 5 reveals that the Wilks'lambda test was significant in all selected physical variables at level of significance 0.05. table of that is shown below.

4. DISCUSSION

The purpose of the study is to compare the physical fitness of the athletes of different Track and Field Events. The physical fitness component of the sprinters were found to be higher than Middle Distance and Long Distance Runners in the tested items, the sprinters performed significantly better than Middle Distance and Long Distance Runners in the selected test items because it may be possible that the selected test items were well suited accordingly to the characteristics of sprinters. Similar study was also conducted by **Maruo, Y., Murphy, T. I., & Masaki, H. (2018)** and found the similar results. Further **Surinder Kaur, Dolly and Rajesh Kumar (2016)** also conducted similar study and found similar results. The training for the sprinters is focused at developing ATP-CP Energy system and many of the test items such as pull ups, Sit ups, 10 yard Shuttle Run, Standing broad jump, 50 yard dash also include the contribution of their energy system. At the same time the Middle Distance also have a greater anaerobic component and ability to perform better, a test items requiring the explosive strength. The test items in the fitness test battery were also suited to the physiological characteristics of the sprinters as they have higher proportion to white blood cell as compared to the Middle Distance and Long Distance Runners researchers conducted study and found the similar results **Mujika et. al. (2002)**. The Sprinters performs various Plyometrics exercises, which enhances their stretch reflex mechanism. Sprinters also perform various movements in response to the variety of stimulus which could have enabled them to perform better than Long Distance and Middle Distance Runners in the test items like shuttle run similar findings also found by **Bushnell T,**

Hunter I. (2007). Standing broad jump, 50 yard dash etc ,sprinters also tend to perform a variety of strength exercises which helps them to attain higher score when performing strength related test, Middle Distance also performed better than the Long Distance Runners due to a greater component in their training program comprises of the strength related test items.

5. CONCLUSIONS

1. Significant differences were observed among sprinters , middle distance and long distance runner on Pull-ups, Sit ups, 10 yard Shuttle run, Standing broad jump, 50 yard dash and 600 yard Run/ walk components physical fitness,
2. Significant difference were found in pull-ups between of Sprinters and Long Distance Runners and between Middle Distance and Long Distance Runners. But sprinters and Middle Distance Runners did not differ significantly in pull ups.
3. Significant difference was seen in Sit-ups between the sprinters, Middle Distance and Long distance Runners.
4. Shuttle Run, Standing Broad Jump, 50 yard dash and 600 yard run/walk showed the significant difference between the Sprinters and Middle Distance but significant difference was not found in shuttle run between of Middle Distance and Long Distance Runners.

6. FUTURE DIRECTIONS

Similar may be conducted for school going students also. Similar may be conducted on female athletes also. Elite athletes can be picked as sample for the study. Study may be conducted on various psychological and biomechanical variables also. Study may be conducted on different running events also.

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A COMPARISON OF SELECTED ANTHROPOMETRIC MEASURES BETWEEN STATE AND NATIONAL LEVEL MALE VOLLEYBALL PLAYERS

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ABSTRACT

Human bodies are widely divergent in their size shape and compositional characteristics. It would therefore seem that the full anthropometric description of human physique would require –the assessment of a great number of body, bodily dimensions. The purpose of study was to compare and investigate the selected anthropometric measures of state and national level male volleyball players. Forty three state and national levels (State level = 22, national level =21) male volleyball players who represented their respective district and state teams in respective competitions, Male players ranging between 19 to 25 years of age, All the participants were tested on selected six parameters of anthropometric measures i.e. Waist Circumference, Hip Circumference, Middle Upper arm Circumference, waist to hip ratio, waist to height ratio and Body composition. To assess the anthropometric parameters of state and national levels male volleyball players, means and standard deviations t-ratios were computed. To check t- Ratio, level of significant was set at .05 level. The results of study revealed the dissimilarity existed between state and national level male volleyball players in their waist circumference, middle upper arm circumference, WHR and WHtR and \Similarity in hip circumference and body composition It was also concluded that selected anthropometric characteristics had positive impact on the competition levels of the male volleyball players.

Key Words: Male, Volleyball players, state level, national level, anthropometric measures

1. INTRODUCTION

Games and sports are as old as human society and have achieved on universal following in the modern times. These have become integral part of educational process. Millions of people take part in sports activities for either recreational purpose or for health, strength and fitness and for displaying superiority over others in competition sports. Some competitive games and sports are taking shape of a profession with high skills, and with ample financial benefits linked with high degree of popularity. The study of sports sciences has become imperative to attain excellence in sports. All training and coaching programme today are scientific in nature. The sports scientists almost all over the world are exploring new methods and technique in various sports disciplines to accomplish what appears to be impossible.

Human bodies are widely divergent in their size shape and compositional characteristics. It would therefore seem that the full anthropometric description of human physique would require –the assessment of a great number of body, bodily dimensions. This interface is clearly seem to be supported in regard to part anthropometry practice many length, breadth, girths and skin fold widths of different types have been measured in order to describe the anthropometry orifices of human bodies.

In the order of human values conquest in field of sports hold a unique plane. It is the combination of success. victory, triumph and domination of mover other team mates and friends. The sublimity of competition is in the loser's acclaim for the winners. which along with the friends and shake acknowledge both defeat and triumph (**Rieckehoff, 1977**)

Anthropometry is the measurement of body size and proportions. The measurements include body weight, height, circumference, skin fold thickness and bony widths and lengths (**Heyward, 2006**). Anthropometric measurements are widely used to assess and predict performance in various sports. Anthropometric measurements and morphological characteristics play an important role in determining the success of a sportsperson (**Wilmore & Costill, 1999; Keogh, 1999**). Volleyball belongs to sport activities in which anthropometric characteristics of its participants influence the level of sport performance. It was established that volleyball players compared to most other athletes have distinctive anthrop-morphological characteristics (**Ercolessi, 1999; Jankovic et al., 1995; Ugarkovic, 2004**).

Sidhu, Grewal and Verma (1984) showed that players disagree in physique and body composition consistent with the field positions, within which the players specialize. **Ozkan (1984)** discovered a mean height and weight for male high school football game players. **Dey and Dey (1987)** complete that defensive players in soccer have considerably higher leg length, thigh girth, height, weight and limb Index than those at offensive players. **Amusa (1979)** complete that the expertise is that the best single predictor of playing ability. Weight and height are thought of sensible predictor's of playing- ability. **Hebbelink (1985)** found that male Olympic athletes in seven sports winners were heavier and taller and had bigger sitting height leg length, shoulder and hip breadth and forearm and thigh girths than most different sportsmen. **Adhikari (1986)** indicated that anthropometrical variables particularly weight, standing height, sitting height, foot length, fore leg length, leg length, calf girth, trunk length, have distinct potential for achieving higher level of skills in football game. **Bhatnagar(1986)** determined that athletes and volleyball players of province area unit heavier and taller than the athletes and volleyball players of Madhya Pradesh. **Bose & Banerjee (1987)** indicated the important distinction between national champions and faculty footballers in their morphological profile.

important variations were additionally determined in morphological profile among the champion teams.

Anthropometrics measurements were central considerations of the first section of the scientific era of measurements, that are began within the 1860's current interest in anthropometrics measurements focus in 3 areas, girth measures, physique and body composition. The assess of such measures embody classification, prediction of growth patterns and prediction of success in motor activities similarly as assessment of ability (Philips and Harnok, 1979)

Today, sports became a vicinity and parcel of our culture. it's being influenced and will influence all our social establishments together with education, economics, art, politics, law, mass-communication and even international diplomacy (Lay revivalist and Kenyon, 1978).

3. METHODOLOGY

3.1 Sample:

Forty three state and national levels (State level = 22, national level =21) male volleyball players who represented their respective district and state teams in respective competitions , Male players ranging between 19 to 25 years of age,

3.2 Administration of Tests:

All the participants were tested on selected six parameters of anthropometric measures i.e. Waist Circumference, Hip Circumference, Middle Upper arm Circumference, waist to hip ratio, waist to height ratio and Body composition. The testing implements are mentioned as below:

3.2. 1. Anthropometric Parameters

S.No.	Selected variables	Measurement tools/Formulas
1	Waist Circumference (Cm.)	Measuring Tape
2	Hip Circumference (Cm.)	Measuring Tape
3	Mid-Upper Arm Circumference(Cm)	Measuring Tape
4	Waist to Hip Ratio (WHR)	Measuring Tape, Waist girth/ Hip girth
5	Waist to Height Ratio (WHtR)	Waist girth/ Height.
6	Body composition	Sum of Triceps and Sub-scapular Skin-folds

3.3 Statistical Techniques:

In order to evaluate the selected anthropometric measures of state and national levels male volleyball players, means and standard deviations t-ratios were computed. To check t-Ratio, level of significant was set at .05 level. The Statistical Package of Social Science (SPSS-16.0) was used for the purpose of analysis of collected data.

3. RESULTS

To assess the selected anthropometric measures of state and national levels male volleyball players,, means and standard deviations were computed and data pertaining to this has been presented in Table 1.

TABLE 1
DESCRIPTIVE STATISTICS OF ANTHROPOMETRIC MEASURES OF STATE AND NATIONAL LEVEL MALE VOLLEYBALL PLAYERS

S. N0.	Anthropometric Parameters	Descriptive Statistics	State level (N=22)	National Level (N=21)
1	Waist Circumference (Cm.)	M	78.14	67.29
		SD	11.83	19.02
2	Hip Circumference (Cm.)	M	175.05	75.95
		SD	131.03	20.12
3	Middle Upper Arm Circumference (Cm.)	M	23.73	20.38
		SD	3.60	5.46
4	Waist to Hip Ratio (WHR)	M	0.85	1.09
		SD	0.16	0.52
5	Waist to Height Ratio (WHtR)	M	0.42	0.48
		SD	0.09	0.05
6	Body Composition	M	26.41	26.86
		SD	7.99	7.67

Mean score of anthropometric measures of state and national level male volleyball players has been depicted in figure 1 to 6.

Figure 1

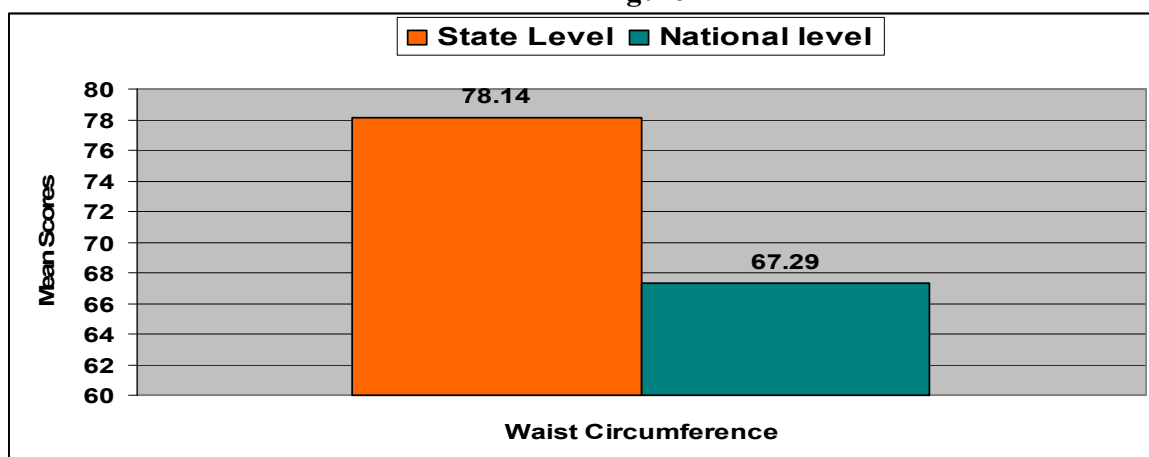


Figure 2

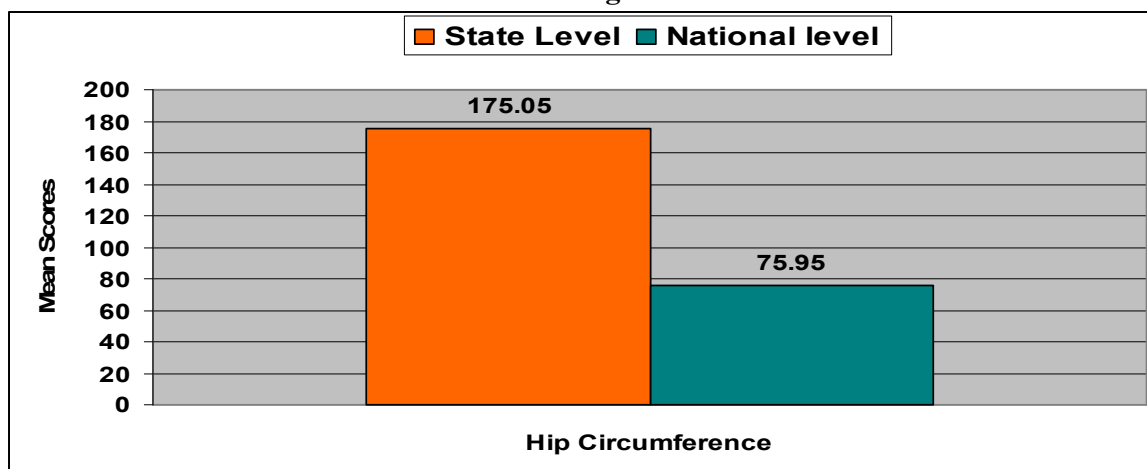


Figure 3

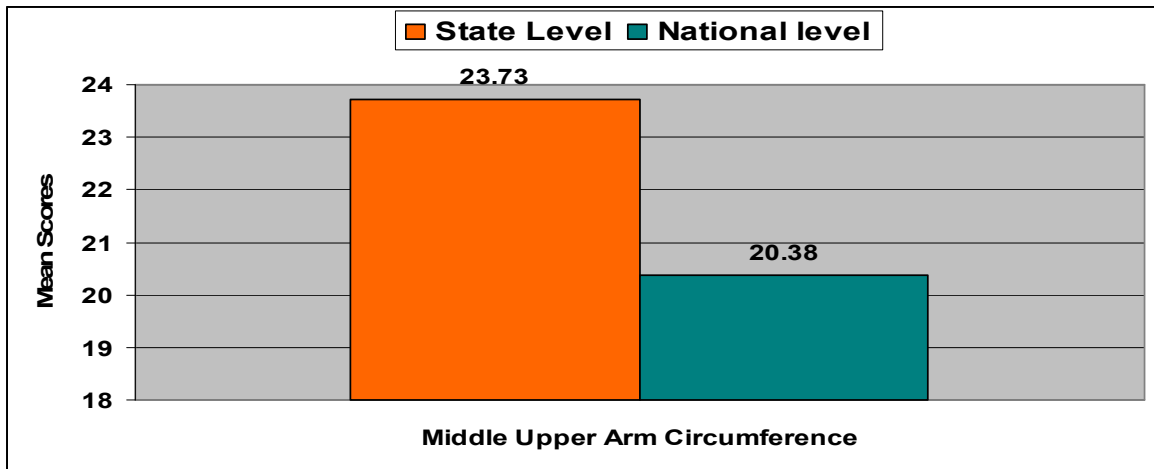


Figure 4

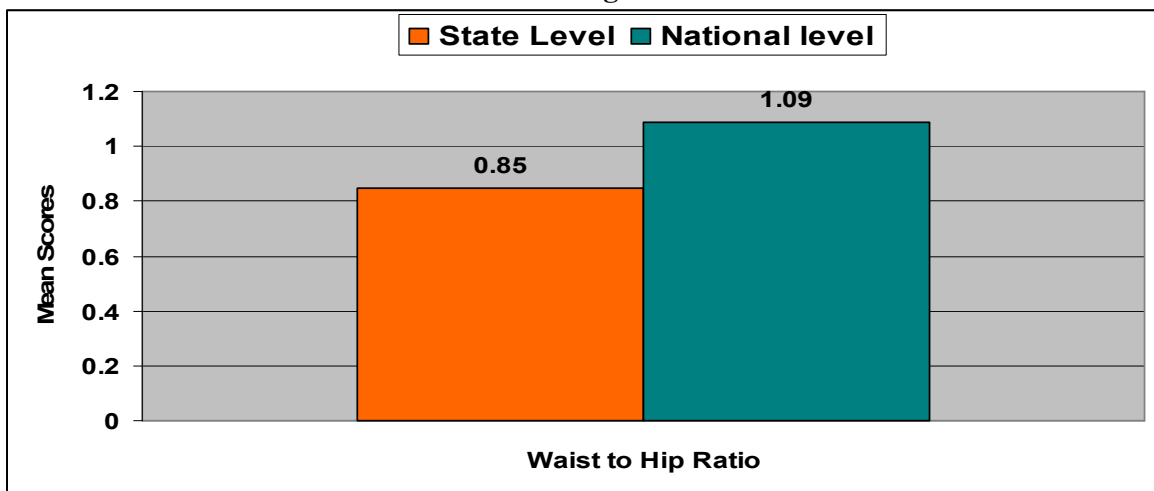


Figure 5

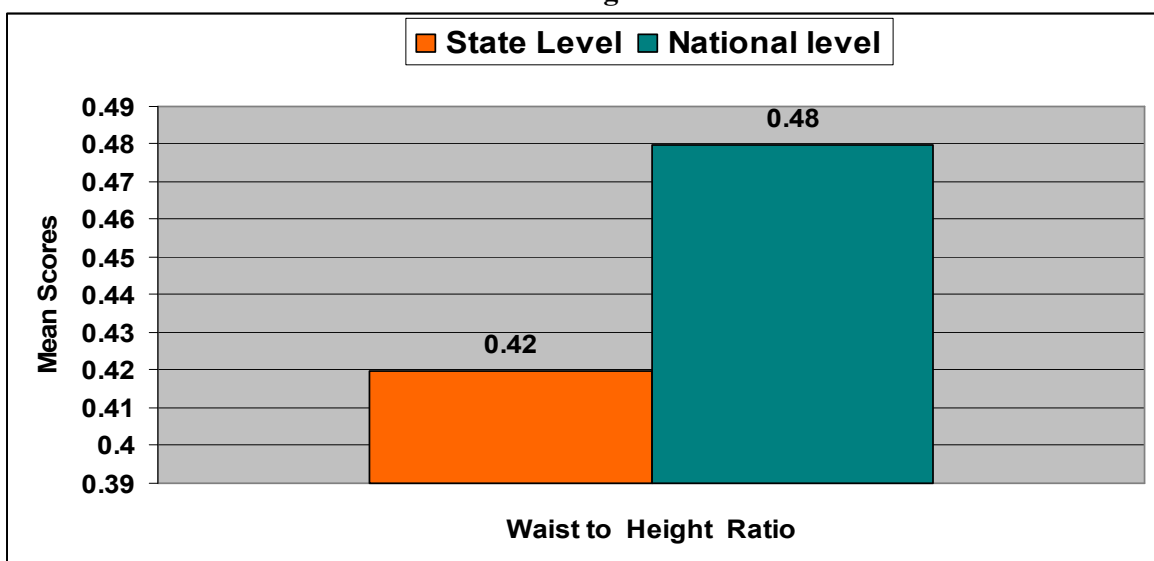


Figure 6

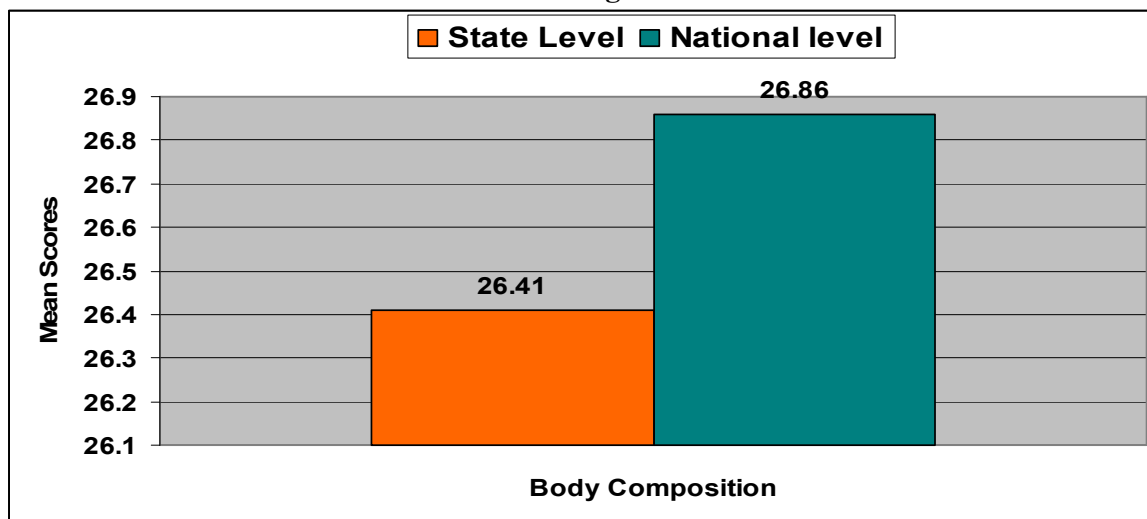


TABLE 2

SIGNIFICANCE OF DIFFERENCE BETWEEN STATE AND NATIONAL LEVEL MALE VOLLEYBALL PLAYERS IN THEIR MEAN SCORES ON ANTHROPOMETRIC MEASURES

S. No.	Anthropometric Measures	Levels	N	Mean	M.D.	σ D.M.	t-ratio
1	Waist Circumference (Cm.)	State	22	78.14	10.85	4.81	2.26*
		National	21	67.29			
2	Hip Circumference (Cm.)	State	22	117.05	41.09	28.93	1.42
		National	21	75.95			
3	Middle Upper Arm Circumference (Cm.)	State	22	23.73	3.34	1.40	2.38*
		National	21	20.38			
4	Waist to Hip Ratio (WHR)	State	22	0.85	0.25	0.12	2.12*
		National	21	1.09			
5	Waist to Height Ratio (WHtR)	State	22	0.41	0.07	0.02	2.99*
		National	21	0.48			
6	Body Composition	State	22	26.41	0.45	2.39	0.19
		National	21	26.86			

*Significant at .05 level

t.05 (41) = 2.02

Table 2 indicates that the statistically significance of difference were found between state and national level male volleyball players in their waist circumference, middle upper arm circumference, WHR and WHtR, as the obtained t-values of 2.26, 2.38, 2.12 and 2.99 respectively were higher than the required value of t.05 (41) = 2.02. But the significant

differences were not observed between state and national level male volleyball players in their hip circumference and body composition, as the obtained t -values of 1.42 and 0.19 respectively were lesser than the required value of $t_{.05(41)} = 2.02$.

4. DISCUSSION

In the present study the anthropometric measures of the volleyball players have been evaluated of state and national level male volleyball players. The investigation indicated the significant differences between state and national level male volleyball players in anthropometric measures i.e. waist circumference, middle upper arm circumference, WHR and WHtR . But state and national level male volleyball players did not differ in hip circumference and body composition. The state level male volleyball players had significantly greater amount of waist circumference, hip circumference and middle upper arm circumference than national level male volleyball players. Where as national level male volleyball players had greater amount of waist to hip ratio, waist to height ration and body composition than their counter parts. The findings of the present study are in partially supported by **Gaurav and Singh (2014)**. It is concluded that various anthropometric characteristics had clear impact on the competition level of the volleyball players

5. CONCLUSIONS

1. Dissimilarity existed between state and national level male volleyball players in their waist circumference, middle upper arm circumference, WHR and WHtR.
2. Similarity was observed between state and national level male volleyball players in their hip circumference and body composition
3. Various anthropometric characteristics had positive impact on the competition levels of the male volleyball players

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A COMPARATIVE ANALYSIS OF SELECTED PHYSICAL FITNESS AND ANTHROPOMETRIC VARIABLES OF OF MALE VOLLEYBALL PLAYERS AGED FOURTEEN TO SIXTEEN YEARS

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ABSTRACT

Participation in sports is one among the common traits of human character and it starts to develop from the terribly starting of childhood. The main objective of study was to analyse and compare the selected physical fitness and anthropometric variables of male volleyball players of different age groups. A total of forty five male volleyball players belonging to Dr. A. V. N. High School, Davangere, Bengaluru, (Karnatka) ranging between fourteen to sixteen years were selected for the study. The physical fitness variables i.e. Cardio-respiratory endurance, Agility, flexibility and anthropometric variable i.e. weight, height, body were chosen for the study. Nine-minute run For Cardio-respiratory endurance, Sit and reach for Low back/hamstring flexibility, Bent knee sit-ups in one minute for Abdominal muscle strength/endurance and Triceps and sub-scapular skin-folds for body Composition were administered. To assess the selected physical fitness and anthropometric variables of male Volleyball players ranging between 14 to 16 years of age means, standard deviations and F-ratio were computed. The results of the study indicated the significant differences among the different age groups of male volleyball players on modified sit-ups and 8 minutes run/walk,. Significant difference was not seen among male volleyball players from fourteen to sixteen years of age on sit and body composition, The abdominal strength and endurance had significantly improved with advancement of age. The cardio-respiratory endurance of male volleyball players did not improve significantly with advancement of age

Key Words: Physical fitness, Anthropometric, male, volleyball players, Body composition

1. INTRODUCTION

Participation in sports is one among the common traits of human character and it starts to develop from the terribly starting of childhood. But, with the event aged, some individuals participate in recreational sports or amateur sports whereas only a few individual dedicate themselves to become true sportspersons by regular apply and coaching that alter them to enhance their psychological adjustments towards their goal. The characteristics of associate athlete primarily depend on physical fitness, having components like flexibility, speed, power, agility, balance, muscular strength and endurance, cardio-respiratory endurance etc. But, these elements, could terribly in athletes involving completely different sports activities.

The physique and body composition including the size, shape and form are responsible for the performance of sportsmen (Sodhi & Sidhu, 1984). The performance of a sportsman in any games or event also depends on speed, strength, endurance, agility, flexibility and co-ordination. Along with these Psycho-physiological components and physical variables also play an important role in the execution of the performance.

Taleja. (1986) resulted insignificant difference in the physical fitness between rural and urban high school students, and have no significant difference in physical fitness between rural and urban high school students.

Physical fitness is the combination of three basic components i.e. muscular endurance, muscular strength and cardio-respiratory endurance. Whereas the motor fitness includes the more four parts i.e. muscular power, agility, flexibility and speed (Clarke, 1971).

Interventions to promote health-related physical fitness should not only consider gender and age of schoolchildren, but also selected sociodemographic and behavioral factors, especially socioeconomic class and leisure activities (Guedes et al., 2012). Dutt (2005) indicated the improper development of muscular strength endurance in boys which may be due to their habitual life style for an attractive physical appearance. Down fall of body fat percent was observed among boys in 8 to 13 years of age groups and Sharpe rise in body fat% was exhibited after the age of 14 years to 17 years of age. Worldwide health planners have been reported the importance of the contribution of health Education and physical Fitness in the development of total fitness among children. (Knuttgen, 1961; Campbell & Pohndof, 1961; Sloan, 1966; Ruskin, 1978 and Ishiko, 1978). Many researchers have been conducted studies on Health-related physical fitness which refers to cardio-respiratory fitness, muscular strength, speed-agility and body composition components of boys and girls in different age groups (Benhnke & Wilmore, 1974; Nelson and dorociak, 1982; Haywood, Clarke & Mayhew, 1986; AAHPER, 1987; Shephard, Berridge & Montelpare, 1990; Muhammad, 1998; Kumar and Sathe, 1999).

Physical fitness is the capacity to carry out reasonably well various forms of physical activities without being unduly tired and includes qualities important to the individual's health and wellbeing. Fitness may be described as a set of attributes that an individual has or has acquired which help in their ability to perform physical activity. Physical fitness can be divided into two district categories the heath related physical fitness and skill-related physical fitness. Health related physical fitness components are cardio-respiratory fitness, body composition, abdominal strength, muscle endurance and flexibility. Skill related physical fitness includes components important to play sports well, such as speed, strength, endurance, agility, flexibility, balance, power, co-ordination etc. Both type of physical fitness are important for all the sportsmen in order to achieve better performance (**Kaur, 2015**).

2. METHODOLOGY

2.1 Selection of Subjects

A total of forty five male volleyball players belonging to Dr. A. V. N. High School , Davangere, Bengaluru, Karnatka ranging between fourteen to sixteen years were selected for the study. Their age records were collected from school records and the subjects were tested within one month of their birthdays.

2.2 Selection of Variables

The physical fitness variables i.e. Cardio-respiratory endurance, Agility, flexibility and anthropometric variable i.e. weight, height, body composition (Triceps skin-fold and sub-scapular skin-fold were chosen for the study.

2.3 Test used

Nine-minute run For Cardio-respiratory endurance, Sit and reach for Low back/hamstring flexibility, Bent knee sit-ups in one minute for Abdominal muscle strength/endurance and Triceps and sub-scapular skin-folds for body Composition were administered.

2.4 Statistical Analysis:

To assess the selected physical fitness and anthropometric variables of male Volleyball players ranging between 14 years to 16 years studying in Dr. A. V. N. High School , Davangere, Bengaluru, (Karnatka), means, standard deviations and F-ratio were computed.

3. RESULTS

To assess the selected physical fitness and anthropometric variables of male volleyball players ranging 14 to 16 years of age, mean and standard deviation were computed and data pertaining to this, has been presented in Table 1.

TABLE 1
MEAN AND SD ON PHYSICAL FITNESS AND ANTHROPOMETRIC VARIABLES OF MALE VOLLEYBALL PLAYERS AGED FOURTEEN TO SIXTEEN YEARS

S.NO.	Variables	Age	Mean	SD
1	Weight	14	48.39	1.32
		15	52.60	1.65
		16	55.11	1.28
2	Height	14	157.80	2.81
		15	160.85	2.93
		16	163.88	1.92
3	Modified sit-ups	14	21.00	4.53
		15	24.67	4.03
		16	26.40	5.17
4	9 minute Run/Walk	14	13.32	1.91
		15	11.70	0.40
		16	12.07	0.62
5	Sit and Reach	14	29.30	5.21
		15	25.83	3.28
		16	27.01	3.80
6.	Body Composition	14	9.94	2.25
		15	10.32	1.56
		16	11.22	1.38

The mean scores of selected physical fitness and anthropometric variables of male volleyball players ranging 14 to 16 years of age have been depicted in figure 1 to 6.

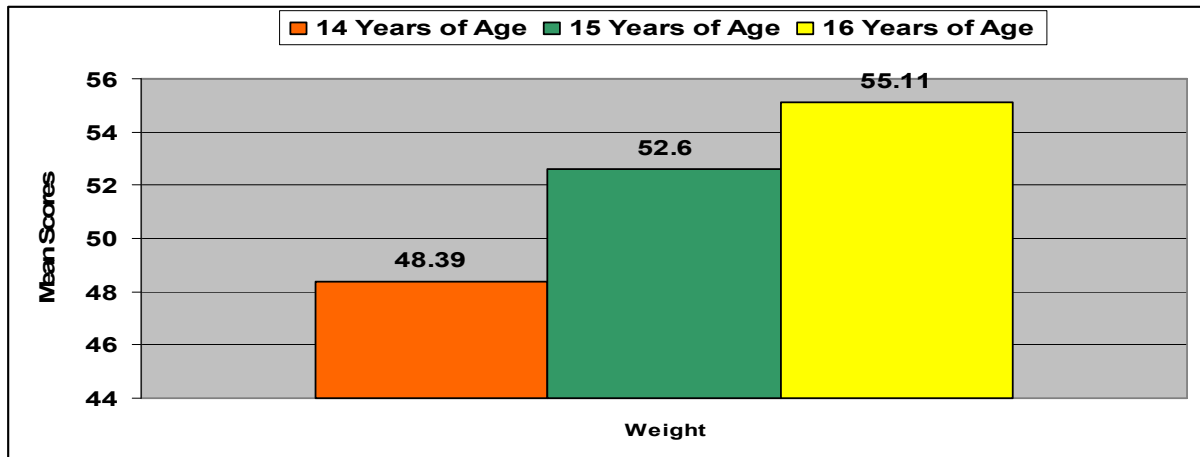


Figure. 1: Mean Scores of Weight of Male volleyball Players in Fourteen to Sixteen years of age.

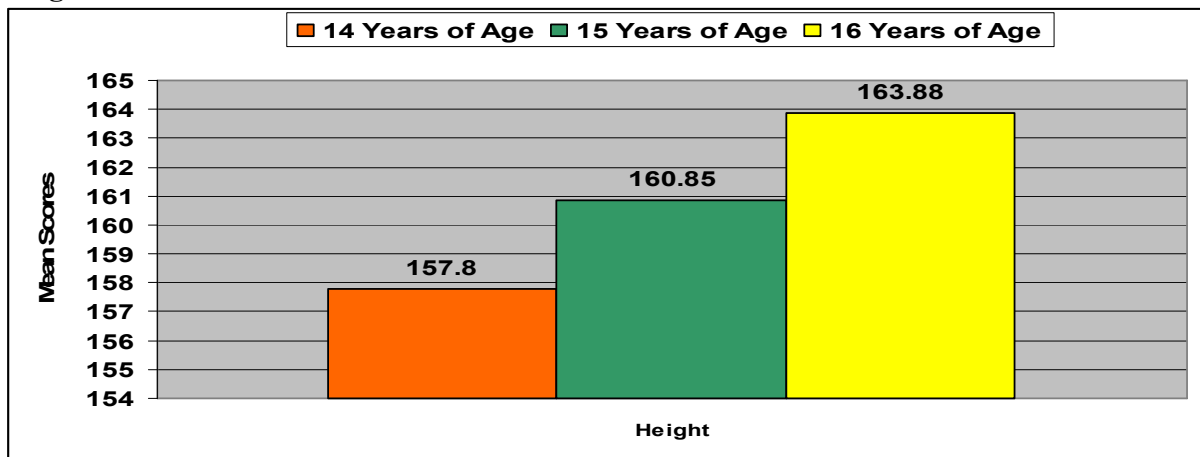


Figure. 2: Mean Scores of Height of Male volleyball Players in Fourteen to Sixteen years of age.

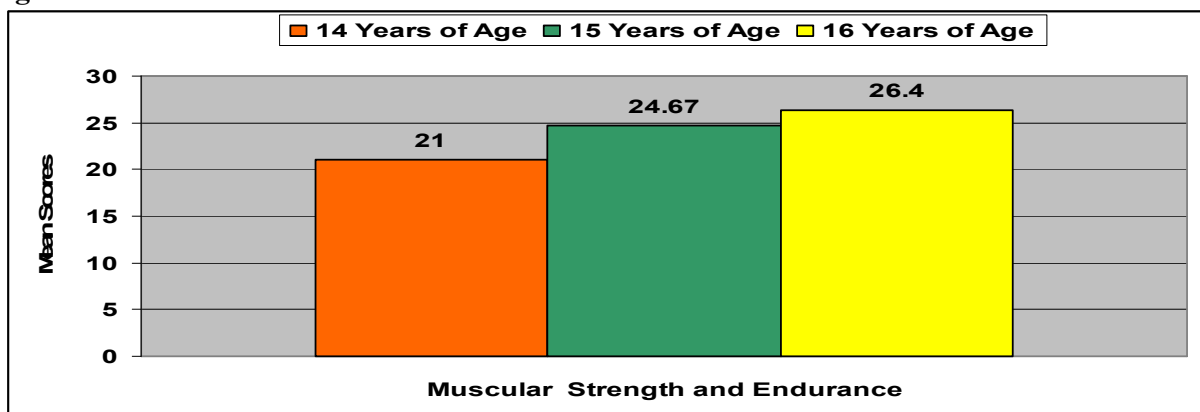


Figure. 3: Mean Scores of Muscular Strength and Endurance of Male volleyball Players in Fourteen to Sixteen years of age.

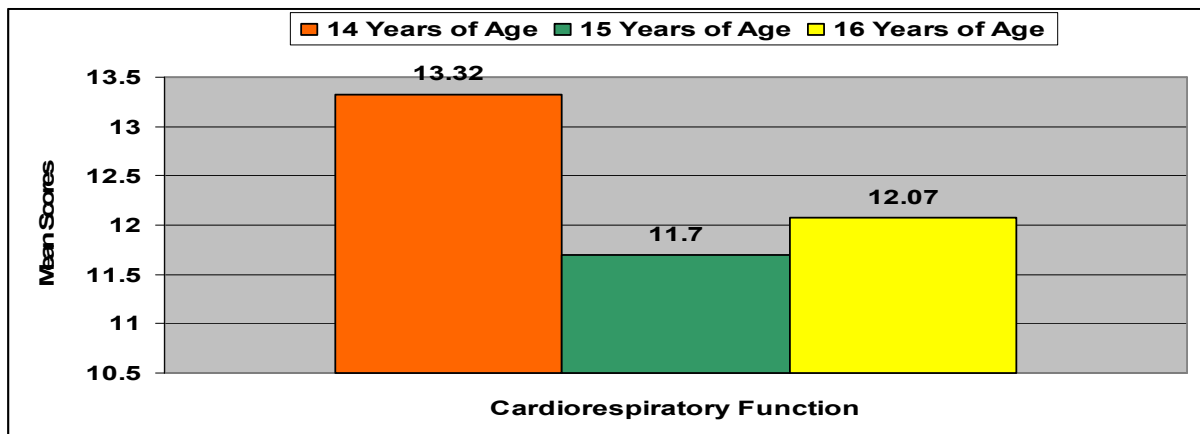


Figure. 4: Mean Scores of Cardio-respiratory Function of Male volleyball Players in Fourteen to Sixteen years of age.

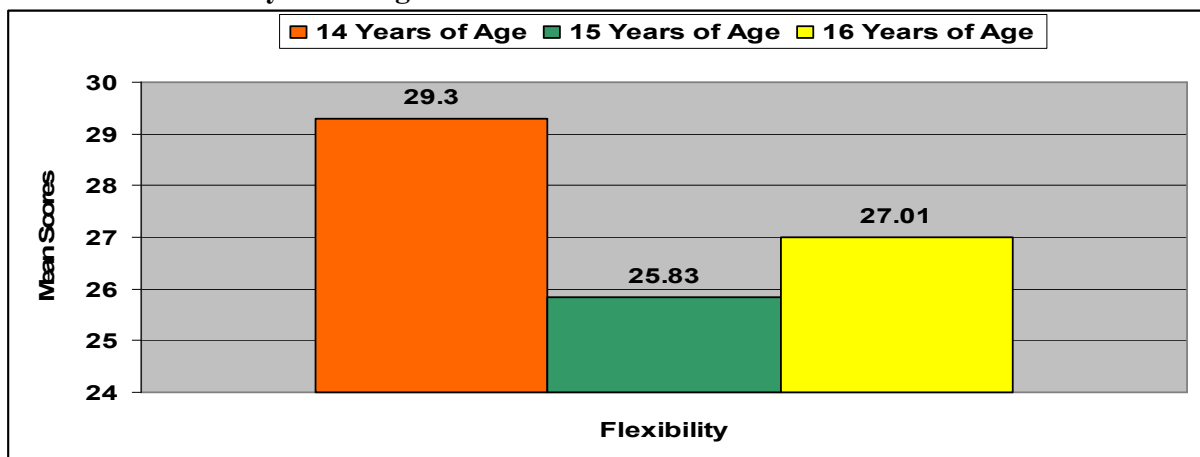


Figure. 5: Mean Scores of Flexibility (Sit and Reach) of Male volleyball Players in Fourteen to Sixteen years of age.

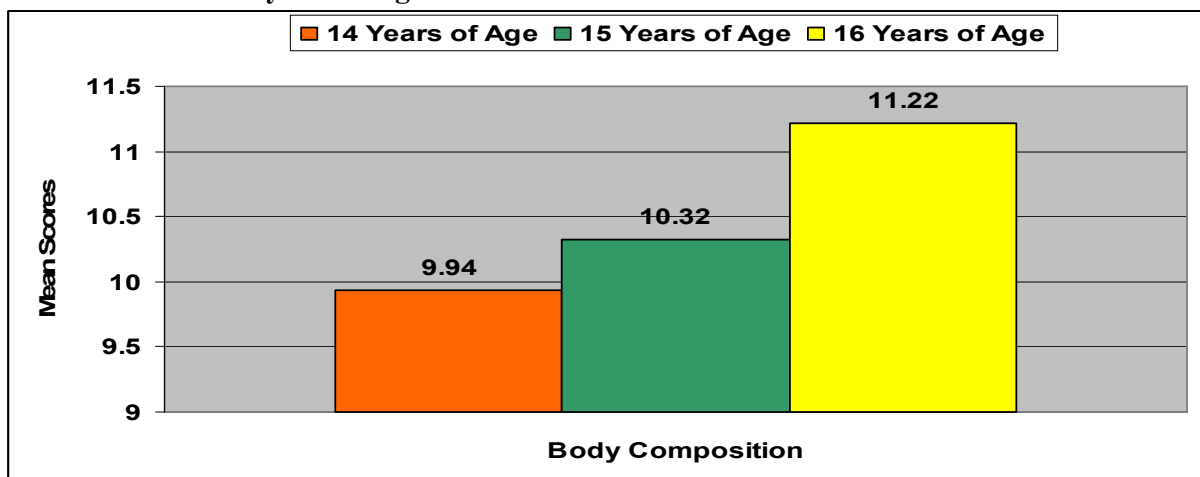


Figure. 6: Mean Scores of Body Composition of Male volleyball Players in Fourteen to Sixteen years of age.

To determine the significance of difference among mean scores of male volleyball players of 14 to 16 years of age on selected physical fitness and anthropometric variables , One Way Analysis of Variance (ANOVA) was computed and data pertaining to this has been presented in table 2 .

TABLE 2
ANALYSIS OF VARIANCE ON SELECTED PHYSICAL FITNESS AND ANTHROPOMETRIC VARIABLE OF MALE VOLLEYBALL FROM FOURTEEN TO SIXTEEN YEARS OF AGE

S. NO.	Component	Source of variance	df	Sum of Squares	Mean of Square	F-value
1	Modified Sit-ups	Between groups	2	228.04	114.02	5.39*
		Within group	42	888.93	21.17	
2	9 minute Run/Walk	Between groups	2	21.37	10.68	7.63*
		Within group	42	58.80	1.40	
3	Sit and reach	Between groups	2	91.50	45.75	2.62
		Within group	42	733.15	17.46	
4	Body composition	Between groups	2	12.96	6.48	2.07
		Within group	42	131.78	3.14	

*Significant at .05 level,
F .05(2, 42) =3.23

It is clearly evident from table 2, that there were significant differences among the different age groups of male volleyball players on modified sit-ups and 8 minutes run/walk, as the obtained F-values of 5.39 and 7.63 respectively were higher than the require value of F.05 (2,42)=3.23. But significant difference was not observed among male volleyball players from fourteen to sixteen years of age on sit and body composition, as the obtained F-value of 2.62 and 2.07 respectively were less than the required F.05 (2,42)=3.23.

As the F-ratio on different components of physical fitness was found to be significant, Scheffe’s Test of Post-hoc Comparison was applied to find out the significance of difference between ordered paired means of different age group and data pertaining to this, has been presented in table 3 and 4.

TABLE 3
SIGNIFICANCE OF DIFFERENCES BETWEEN ORDERED PAIRED MEANS FOR MALE VOLLEYBALL PLAYERS FROM FOURTEEN TO SIXTEEN YEARS OF AGE ON MODIFIED SIT-UPS

14 Year	15 Year	16 Year	MD	C.I.
21.00	24.67	-	3.67	4.26
21.00	-	26.40	5.40*	
-	24.67	26.40	1.73	

*Significant at .05 level

The data in table 3 clearly reveals that mean differences between fourteen-sixteen and between fifteen and sixteen years of age male volleyball players were not found statistically significant, as the confidence intervals were higher than the mean differences. The significant difference was observed among male volleyball players between fourteen -sixteen years age group, as the confidence interval was higher than the mean difference. The data clearly indicate that abdominal strength and endurance improved with advancement of age.

TABLE 4
SIGNIFICANCE OF DIFFERENCES BETWEEN ORDERED PAIRED MEANS FOR
MALE VOLLEYBALL PLAYERS FROM FOURTEEN TO SIXTEEN YEARS
OF AGE ON 9 MINUTE RUN/WALK

14 Year	15 Year	16 Year	MD	C.I.
13.32	11.70	-	1.62*	1.09
13.32	-	12.07	1.25*	
	11.70	12.07	0.37	

*Significant at .05 level

The data in table 4 clearly reveals that mean differences between fourteen- fifteen followed by sixteen were found statistically significant, as the confidence intervals were higher than the mean differences. But the mean differences between fifteen-sixteen was not found statistically significant, as the confidence intervals were high than the mean differences. The data clearly indicate that cardio-respiratory endurance of male volleyball players did not improve significantly with advancement of age.

4. DISCUSSION

Findings of descriptive data of male volleyball players on physical fitness and anthropometric variables indicated the increasing trend in abdominal strength and endurance, cardio-respiratory function, flexibility and fat accumulation. than their female counter part. The findings were supported by **Toriola and Monyeke (2012)** This was also supported by **Amusal, Goon, Amey and Toriola (2011)**.

When the male volleyball players were compared on different age groups for selected physical fitness and anthropometric variables, the statistically significant distinction was discovered among male volleyball players between 14 to 16 years of age in cardio-respiratory function and abdominal strength and endurance. But similarity was observed in flexibility and body composition of male volleyball players. This was partially supported by **Vinod (2001) and Tyagi (1993)**.

The Scheffe's Test of Post-hoc Comparison showed the important distinction among male volleyball players in their mean scores between 14- 16 years of age on abdominal strength and endurance and insignificant variations in their mean scores between 14 - 15 and 15-16 years of age. The significant variations were also discovered among male volleyball players in their mean scores between 14 -16 followed by sixteen years of age on cardio-respiratory function.

5. CONCLUSIONS

1. Significant differences were found among the different age groups of male volleyball players on modified sit-ups and 8 minutes run/walk,.
2. Significant difference was not observed among male volleyball players from fourteen to sixteen years of age on sit and body composition.
3. The abdominal strength and endurance had significantly improved with advancement of age.
4. The cardio-respiratory endurance of male volleyball players did not improve significantly with advancement of age.

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EFFECT OF WARM-UP ON 100M SWIM PERFORMANCE – A PILOT STUDY

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ABSTRACT

Warm-up has always been an integral part before any physical activity. Although there is a lack of scientific evidence based on the enhancement of performance, the use of warm-up is very prominent among the coaches and athletes. The study was undertaken to investigate the effect of warm-up on 100m swim performance. Ten male swimmers age ranging between 18-21 years with 5 years of minimum experience in competitive swimming (National Level) were randomly selected for the present study from L.N.I.P.E., NERC, Guwahati. Each swimmer performed 100m freestyle at their maximum effort as an individual time trial in two different days with the use (UWP) or no use (NUWP) of warm-up which was counter-balanced by a gap of 24 hours between the experiments. The t-score of 100m Swim Performance was significant as the p-value (.009) is < 0.05 level of significance. Faster time was observed in UWP condition which suggests that the usual warm-up procedures followed before a performance is beneficial for the swimmers. But, the result showed to be insignificant in blood lactate accumulation in either of the conditions. The performance of the participants also depends on the individual variability of the participants.

Key words: Males, warm-up, Freestyle, swimming, performance, blood lactate

1. INTRODUCTION

Warm-up has always been an integral part before any physical activity. Although there is a lack of scientific evidence based on the enhancement of performance, the use of warm-up is very prominent among the coaches and athletes. A lot many physiological changes could be observed when different exercises are performed during warming-up, which are believed to be beneficial for better performance. Warm-up is generalized to result in muscle dynamics, reduce the risk of injury and prepare the athlete for the main task (Woods, 2007). The hyperthermia resulting from physical activity increases muscle blood flow, stimulating increased aerobic energy contribution during a particular task. Besides, it increases the muscle glycogenolysis, glycolysis and high energy phosphate degradation during exercise.

The literature also claims that warming up via physical activity might have effects added to the increase in temperature, particularly an elevation of the baseline of oxygen consumption (VO₂) and the amplitude of the primary VO₂ response in the subsequent exercise. Nevertheless, although these metabolic responses appear to indicate a positive effect of warm-up on athletic performance, current evidence is still inconclusive

Specifically, in swimming, different physiological changes and conflicting benefits to performance have been reported. Houmard (1991) described increments in distance per stroke (DPS) during an intensely paced 368.5-m swim and decreased post-exercise blood lactate concentration with the warm-up. On the contrary, others found that warm-up procedures did not change performance and led to higher blood lactate after a 2-minute high-intensity swimming trial. Studies regarding shorter distance performance have shown that proper warm-up was effective in reducing 100-yd time trial compared with performance without prior warm-up, but (Bobo, 1999)is study failed to find significant differences in 100-yd performance between 3 conditions (warm-up exercises in water and on dry land and without warm-up). Research has focused on even shorter distances (50 yds and 50 m), but results are inconclusive; no favourable effects of warm-up on 50-m front-crawl performance, either in the lactic acid [La⁻] or perceived exertion (RPE), were observed and reported better performances on 50-yd freestyle after a warm-up, although no effects on RPE and stroke frequency (SF) were detected (Neiva, et.al., 2012 & Balilionis, et.al., 2012).

As no conclusive shreds of evidence are present to determine the influence of warm-up on swim performance, the optimal structure and its specificity to the sport, the present study is undertaken to verify if warm-up has any significant effect on 100m swim performance.

2. METHODOLOGY

2.1 Sample

Ten male swimmers age ranging between 18-21 years with 5 years of minimum experience in competitive swimming at National Level were randomly selected for the present study from L.N.I.P.E., NERC, Guwahati, on their consent. All tests procedures were performed in a 25m swimming pool of LNIPE, NERC.

2.2 Testing Protocol

Upon arrival at the pool, the participants were acquainted with the testing protocols. The experiments took place at the peak of their practice sessions. Each swimmer performed 100m freestyle at their maximum effort as an individual time trial in two different days with the use (UWP) or no use (NUWP) of warm-up which was counter-balanced by a gap of 24 hours between the experiments. In the UWP condition, the swimmers perform their usual pre-competition warm-up (total- 1200m volume) comprising of swim, drills, pull, kick and few max-repeats. After 10 minutes of rest the swimmers the 100m time trial. In NUWP condition, no

exercises were recommended to the swimmers before the 100m time trial. Standard starts were used. The times clocked by the swimmers were taken and recorded by two experienced coaches using standard digital stopwatches (Casio). Capillary blood samples were collected from the fingertip utilizing lactate analyser (Stat-Strip Xpress Lactate Meter, lancing needles and Lactate Strips manufactured by Nova Biomedical) after each maximal effort (within 1st 2 mins of recovery) to access the appropriate value of blood lactate.

2.3 Statistical Analysis

The normality of the distributions was determined by the Shapiro-Wilk test. To find out the significant difference among male swimmers, Mean, Sd and t-ratio were computed and data pertaining to this has been presented in Table 1 to 3.

3. RESULTS

To compare the data obtained in the two trials Student's Paired t-test was employed. The level of significance was set at 0.05. The statistical analyses were performed using SPSS version 20.

**TABLE 1
TEST FOR NORMALITY**

	Shapiro-Wilk		
	Statistic	df	Sig.
Difference	.942	10	.580

The score presented in Table 1 shows that the p value (.580) > 0.05, which depicts that the data collected were normal.

**TABLE 2
PAIRED SAMPLES TEST**

Part	Contents	N	Mean	SD	Std Error Mean	Paired Difference	df	t-ratio
1	100m swim performance without warm-up	10	65.43	3.12	0.99	1.35	9	3.28
	100m swim performance after warm-up	10	64.63	3.22	1.02			
2.	Blood Lactate Without warm-up	10	9.54	1.60	0.51	0.56	9	0.55
	Blood Lactate after Warm-up	10	9.72	1.37	0.43			

Table 2 displays the descriptive statistics (Mean, SD and Std. Err of mean) of the 100m swim performance (Pair 1) and blood lactate (Pair 2) of the both the selected conditions (NUWP and UWP) respectively.

Table 2 also displays the t-score of 100m Swim Performance to be significant as the p-value (.009) is < 0.05 level of significance. This determines that there is a significant difference in 100m Swim Performance in both the conditions of NUWP and UWP. But, the result showed to be insignificant in blood lactate accumulation in either of the conditions.

4. DISCUSSION

The study was conducted to investigate the effect of warm on 100m swim performance. Faster time was observed in UWP condition which suggests that the usual warm-up procedures followed before a performance is beneficial for the swimmers. Although, 3 participants in NUWP condition clocked faster time than in UWP condition which determines the

individualistic approach of a particular swimmer. Warming-up led to significant improvement but the physiological variable did not seem to be very effective.

Warm-up has always been an integral part in swimming, the positive effect of it was first presented by (De Vries, 1959). On the other hand, studies conducted by Huston (1993); Bobo (1999); & Neiva, (2012). They did not find positive effect of warm-up on performance. However, it should be noted that in actual competition scenario, a time lapse between the in water warm-up and the performance is experienced by the swimmers which negotiates the positive effect of warm-up on performance, yet, the swimmers perform at their paramount effort. Although, psychological changes might also add to improved performance of the participants (Woods, 2007). Researches done earlier have shown that warm-up increases preparedness and provides time to concentrate before the race (Balilionis, 2012). In parallel, some participants might be discouraged and have lack of motivation to race with no warm-up or a short warm-up (Balilionis, 2012).

Limited studies are available that examined swimming performances using different warm-up protocols. The results of the present study supports (Romney, 1993) who found a significantly faster 100-yard swim time after 15 minutes of swimming warm-up compared to no warm-up and also supports (Balilionis, 2012) who found faster 50m mean time after regular warm as compared to no warm-up and short warm-up. King (1979) instead found no significant difference in 50m swim time between a 400m swim warm-up and no warm-up. This might be due large age variability of the participants and a 400m warm-up might not be sufficient enough to raise the muscle and core temperature. Bobo (1999) found no significant differences in 100-yard swim time between 800-yards swim warm-up and no warm-up. Also, Mitchell, et al. (1993) found no significant difference in 183-meter (200-yard) swim time between no-, low-intensity (365 meters), and high-intensity (365 meters) warm-ups. Low-intensity, 365-meter (400-yard) warm-up may not be sufficient to raise muscle and core temperature, thus resulting in no significant difference between no- and 365-meter warm-up protocols

Although regular warm-up regulates to get better performance, there is a need to observe the individual performance of the swimmers to know the individual variability. Not every individual respond similar to the warm-up protocols. Some might perform better after a regular warm-up while some might not require a warm-up or a short warm-up might be beneficial for that individual. In the present study 3 out of the 10 participants performed better in no warm-up condition which determines the individuality of the participants.

5. CONCLUSION

From the present study it can be concluded that swimmers gave faster times after a regular warm-up in comparison to the no warm-up condition. However, the blood lactate showed to have no difference in both the conditions. The performance of the participants also depends on the individual variability of the participants. Moreover, it is recommended that swimmers and coaches should experiment to determine each individual's optimal warm-up to maximize swim performance.

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**ANALYZING THE IMPACT OF COVID PANDEMIC ON STUDENTS
MENTAL HEALTH ILLNESS IN DISTANCE E-LEARNING:
REMEDIAL STRATEGIES AND FUTURE COURSE
OF ACTION
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ABSTRACT

The main objective of the present study is to investigate the effect of COVID-19 on the student's mental health illness and to identify the factors causing mental health problems among the students originated in COVID-19 pandemic era. Efforts have been also made to identify the role of academic institution in controlling and managing the stress among students and to offer recommendations as future course of action to combat mental health problems. Moreover, remedial measure and strategies, role of yoga and meditation to address mental health illness resulting due to conduct of online classes and e-learning is also presented.

Undoubtedly, life is full of challenges, uncertainties, multidimensional and moves through different swing and phases during its entire journey and span. The outbreak of COVID-19 pandemic has affected trade and commerce, health sector, country wide education network, employment and socio economic development across nation. It has also affected the functioning of all section of society and changed the face and pace of life globally. It is obvious that outbreak of corona virus and lockdown as anti epidemic measure resulted in impediment of students from traditional face to face teaching learning and conduct of traditional class. Online education is only viable solution to continue and impart teaching, learning in COVID-19 era as result of forced closure of educational institution. In response to COVID-19 situation, students face several issues, challenges, threats and experience different barriers viz. technological, individuals, domestic, community and institutional in distance e-learning resulting in mental health problems. Keeping in view the same, therefore, it is imperative to understand the sources and impact of mental health problems among students in order to derive adequate and efficient intervention strategies.

Keywords: Corona Virus, COVID-19, Education, Technology, E-learning, Mental Health, Yoga, Meditation, Life-Style.

1. INTRODUCTION

The outbreak of corona virus in the beginning of 2020 has changed the face and pace of life globally. Isolation and quarantine, physical distancing, community containment and lockdown are widely followed anti epidemic measure to curb the spread of the disease. Lockdown is an intervention applied for separation of people to an entire community/city/region to prevent the person to-person spread of disease by interrupt transmission [1-3]. The closure of educational institutions due to COVID-19 pandemic disrupted education nationwide and has forced all educational institutions viz. pre-primary/primary/secondary schools, college or university-level education to switch from traditional face to face learning to distance e-learning mode resulting in affecting student's life and their studies. No doubt, closure of educational institutions not only impacted students, teachers, and families, but also has far-reaching economic and societal consequences. It forced to conduct various students centered activities through virtual world using Information and Communication Technology. Almost 60.2 million instructors from educational institution are far from traditional face to face classroom teaching and conducting classes in online mode through different learning platform. Distance e-learning online classes are conducted by the instructor using different online platform as an alternative to traditional face to face classes. Instructor imparting content delivery in online classes through these online video-conferencing platforms is required to set up their accounts to engage with students. These tools enable us to conduct online classes, web conferences, webinars, video chat and live interactive meeting. Certainly, the COVID-19 pandemic results in evolution of new era of online e-learning, instructional delivery and brings a new culture of remote working. The unexpected and undesired changes and inability to cope with realistic situations arise due to distance e-learning results in mental health problems. It is a threat to students mental, physical, emotional and spiritual well being resulting due to reaction to short lived situation. Mental health problems result biochemical, physiological behavioral and psychological changes among students, and may also damage student's physical health [4-12].

Keeping in view the safety of students, teacher and their family the educational institutions are still continuing teaching and learning in online remote e-learning mode to ensure physical distancing and to prevent person to-person spread of disease.

1.1 PANDEMIC INDUCED CONSEQUENCE: CORE PROBLEM OF MENTAL ILLNESS

Online education is only viable solution to continue and impart teaching, learning in COVID-19 era as result of forced closure of educational institution. Conduct of several hours online classes; interaction through virtual environment; long time sitting on screen; meeting of academic demands and assignments from homes through online mode; conduct of online examination; online assessment; preparation and submission of midterm paper, independent study; uncertainty of academic and professional career; study of new subjects through new digital learning platform; change in environment and life style due to whole time stay at homes; long hours lack of social contact with nearer, dearer and far from peer group; least participation in group sports and physical activities; exposure to social media; lack of e-resource and connectivity; financial constraint results in mental health problems of students. Besides these factors, economic uncertainty in family on one side and relational family conflict on the other side; fear of losing job by parents and issues of unemployment of family members; change in life style are also the major challenge which further cause the fear, insecurity for future and mental illness.

In response to COVID situation, transition from traditional face to face learning to online distance e-learning results in online fatigue, weariness and monotony due to attending multiple long hour class's every day, long hours sitting on digital device and continuous looking on screens for studies as well as for recreational activities and for preparation of power point presentation, assignments and worksheet. Resultantly, students face difficulty in concentrating, physical exhaustion, anxiety, irritability, headache and eye strain. The increase in screen time, combined with prolonged sitting and screen exposure; lack of physical activity is vital cause of mental illness. The pandemic induced remote e-learning results in major concern of mental health problems due to conduct of all students centered activities in online mode. It results into a range of behavioral issues and gives rise to unexpected and undesired stress and anxiety [13-26].

No doubt, ICT play a vital role in digital and global era but long time online content delivery through online mode results in mental illness in student's certainly. Keeping in view the unexpected circumstance of corona virus pandemic, the present study is planned to access and identify the various factors causing mental health illness and academic stress among students. The various strategies and remedial measure, role of yoga and meditation, due course of action need to be initiated as roadmap in future by academic institution to address, cope and overcome with mental health illness among students is also presented.

2. LITERATURE REVIEW AND RELATED WORK

Although there is a vast scientific literature in context of outbreak of corona virus, pandemic and its consequence on education and health sector, impact of distance e-learning in different course of studies in different educational domains and professional course. But in this study, a concise review of literature in context of analyzing the impact of COVID-19 pandemic on student's mental health illness resulting due distance e-learning, remedial measures and role of yoga and meditation to address the same is presented. Table 1 depicts the literature in context of the present study.

Table 1: Literature Review and Related Work

S.No	Domain	Authors
1	Online and remote learning in educational institutions during COVID-9 pandemic and Educational Challenges	Shivangi Dhawan, 2020; Parvat Kumar Jena, 2020; Ramakanta Mohalik and Sonali Suparna Sahoo, 2020; Chrysi Rapanta <i>et al</i> , 2020; Wahab Ali, 2020; Petar Jandrić <i>et al</i> , 2020; Pratima Khandelwal <i>et al</i> , 2020; Jyoti Bawane, 2020.
2	Impact of COVID-19 on students mental illness due to online and remote e-learning	Ruba Abdelmatloub Moawad, 2020; Sai Saliesh Kumar Goothy <i>et al</i> , 2020; Utsav Raj, 2020, Kshipra Moghe <i>et al</i> , 2020; Nicholas Grubic <i>et al</i> 2020, Pardeep Sahu, 2020; Leilei Liang <i>et al</i> 2020; Shweta Singh <i>et al</i> 2020, S Subedi <i>et al</i> , 2020; Sanasam Pauline Devi, 2020; R.Radh <i>et al</i> , 2020; Sanasam Pauline Devi, 2020; Dangi Ravi Rai <i>et al</i> , 2020; Adrija Roy <i>et al</i> , 2020, Anuradha Khattar <i>et al</i> , 2020; Dangi Ravi Rai <i>et al</i> , 2020; Barnali Bhattacharjee and Tathagata Acharya, 2020.
3	Role of yoga and meditation to combat students mental health illness	Gopal Krushna Pal <i>et al</i> , 2020; R Nagarathna <i>et al</i> , 2020; Raju Roy and Malay Kumar Mukhopadhyay; 2020, Ananda Balayogi Bhavanani, 2020, Kanupriya Sharma, 2020; Nishitha Jasti, 2020.

The main objective of the present study was to investigate the effect of COVID-19 on the student's mental health and to identify the factors causing mental health problems among the students originated in COVID pandemic era. To identify the role of academic institution in controlling and managing the stress among students and to offer recommendations as future

roadmap and course of action to combat mental health problems. To explore the various strategies and technique, remedial measure to combat, prevent and to find out possible measures that would reduce the stress level. Keeping in view the objectives, the present study is planned and organized in the forthcoming sections.

3. METHODOLOGY

The present investigation is planned and based on secondary information that is based on narrative study, interview, views and observation from faculty, student's perception and view point, review of literature of related work on the previous studies conducted, published and unpublished reports in this domain. The succeeding section describes the cause and consequence of mental health problems among students.

3.1 Identification of Cause of Mental Health Illness

Life is complex, complicated, dynamic, realistic & full of uncertainties and far from imagination of each and every one. Each student's irrespective of gender, age, medium of study, course of study, socio economic status, residing in rural or urban area experience mental health problems differently in COVID-19 era. Indeed, it is obvious that in dynamic, competitive and global digital era, youth already by themselves are aware and exposed to Information and Communication Technology, all kinds of digital resources; device and electronic gadgets that already develop mental stress and health problems. It is true that students enjoy social media and digital life. In fact, it is a matter of great concern that youth is already making excessive use of digital technology and face difficulty in managing their own schedule, activity and life.

Indeed, transition from traditional face to face learning to online distance e-learning forced youth to primarily switch and conduct their students centered activities using Information and Communication Technology, digital device and electronic gadgets. Moreover, the usage of the same differs from individuals to individuals as per course of study and instructional delivery. The excessive use of digital technology affects student's body, mind, and behavior in many ways. No doubt, each student move through a developmental stage in which they experience many waves of success and failures. Resultantly, when individual's students are unable to manage and cope the waves of life changes and when the same is not handled properly it brings mental health issues. There are numerous cause of mental health illness among students resulting due to various uncontrolled internal/ external factors associated with students life changes. It is a matter of great concern that students mental illness has increased in this era of pandemic and digital revolution. Infact, mental health illness is the negative outcome of digital and modern lifestyle varied from individual students to students and as a result of various external factors, life style, expectation from success/failure of individuals etc to name only a few.

The probable reasons of mental health problems originated in COVID-19 pandemic and the factors that can contribute to stress among students are identified as below:

- Financial and economic uncertainty;
- Major dependence on ICT and increased screen time;
- Delay in online scheduling of examination;
- Lack of ICT & e-resource;
- Excessive use of social media;
- Unhealthy and excessive eating;
- Change in environment and lack of interaction with peers;
- Imbalance between studies, sports and physical activity;
- Imbalance in course of studies and competitive examination preparation;
- Inadequate coping skills and conflict;

- Relational conflict;
- Individual personality factors;

One of the major concerns of increase in mental illness in COVID-19 pandemic era is major dependence on use of ICT, e-resource, electronic gadget in remote e-learning. Majorly, all students centered activities related to their studies are conducted in online mode and continue even after unlock phase in digital online mode. Students are almost sitting 4 to 8 hours every day in online mode leading to increase in screen time. Since much of routine activities either online classes or entertainment of students are dependent on the use of ICT and e-resource. It results in behavioral and emotional disorders due to spending long screen hours. The long hour's classes and dead line to meet online e-assignments, projects, independent study, power point presentation, and conduct of laboratory virtually further also increase the screen time. Academic pressure such as completion of curriculum and fear of online examination; work pressure and demanding deadlines of meeting academic e-assignments, worksheet further aggravated the situation [13-26].

Besides the above stated factor, the individual personality factors such as physical illness, late night sleep, self indiscipline and faulty time management, inadequate rest, inadequate exercises, faulty lifestyle, inadequate leisure time, faulty dietary habits also results in mental health problems. Moreover, association with negative mind set, change in life style and day to day routine due to forced closure of educational institutions and restriction of outdoor recreational activities, isolation from nearer, dearer and peer friends, fear of transmission of disease from other results in mental health illness.

In light of the above discussion, it is obvious that above stated factors play a significant role in developing mental health illness and affecting student's academic performance. Resultantly, it has a dramatic impact on student's life and therefore it is the need of hour to take vital steps to combat and to bring balance in physical health, mental, emotional, and spiritual dimension to the students.

3.2. Mental Health Problems

Mental health problems in students have been on the rise since COVID-19. Commonly, identified mental health issues originated in response to COVID-19 pandemic situation resulting in digestive symptoms, emotional negative effect, physical impact are listed below:

- Irritability and mood swings;
- Anxiety and low mood;
- Anger, outbursts, isolating self and video fatigue;
- Depressive thoughts and recurrent suicidal thoughts because of social isolation;
- Feeling of distrust due to not being able to physically meet with friends and other peers;
- Eye strain, eye infection and other related issues caused by long term sitting for online study and recreational activities and long hours looking at a screen.
- Various kind of disorder and issues such as panic, phobic, sleep disorders, eating disorders etc

Mental health problems originated due online learning may lead to various health issues such as headaches, nervous stomach, change in appetite, rapid breathing, rapid heart rate, sweaty palms, irritability, anxiety, fatigue, insomnia, dissatisfaction, anger, depression, inability to concentrate, emotional problems tiredness all the time neck pain, back pain, migraine headache. Moreover, prolonged exposure to usage of e-resource in remote e-learning mode results in mental illness, increase wear and tear of the body and mind which in turns leads to mental disorder etc.

3.3 Strategies for Coping with Mental Health Illness

The optimal usage of digital e-resource and taking frequent break from screen time is an effective step in managing mental health problems resulting due to remote e-learning. The various strategies for addressing and coping with mental health illness is depicted in figure 1.

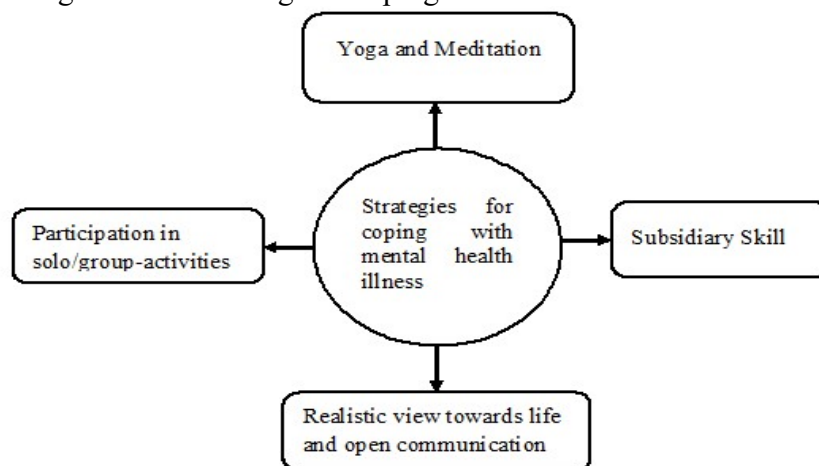


Figure 1: Strategies for Coping with Mental Health Problems

3.4 Emphasis on Participation in Solo/Group-Activities

The involvement of students in various activities such as reading, writing, photography, art, listening music and playing a musical instrument, cycling, gardening, dancing, running, participation in disposal of routine work at home play an indispensable role. Moreover, participation in various activities by maintaining proper physical distances such as student's welfare activities, indoor/outdoor sports, virtual field visit, participation in societal activities play a vital role. Supportive exercise/ physical exercise and workout routine such as jumping jacks; wall sit; pushups; crunches; step-ups; squats; lunges are vital to boost mood [27].

3.5 Realistic View towards Life

A realistic expectation of students from parents, teachers, nearer and dearer, friends, society and open communication with parents and teachers is an effective solution in this direction.

3.6 Subsidiary Skill

It involves planning, setting and managing of day to day routine activities by youth at their own level such as establishing priorities of everyday as per need, regulating and managing time for sports, studies and physical activity, recreational activities; time management and avoiding wastage of time, self care, discipline and management etc to name only a few.

3.7 Yoga and Meditation: Need of Hour

It is evident from vast scientific literature, reports and other studies that yoga is one of the oldest sciences with a holistic approach studied extensively from ancient past. There are numerous benefit of yoga, meditation and practicing it regularly stabilizes the mental health and led positive energy. Yoga practice ideally includes the complete package of asanas (body postures), pranayamas (breathing techniques), meditation and the ancient yoga philosophy. Undoubtedly, it is obvious from various studies conducted in COVID-19 era that yoga plays a vital role to keep physically, mentally fit and to cope with various mental health issues. Yoga and meditation is a vital tool that play an indispensable role in preventing, combating stress, anxiety and depression in students. The various benefits of yoga and meditation to address mental health issues is depicted in figure 2.

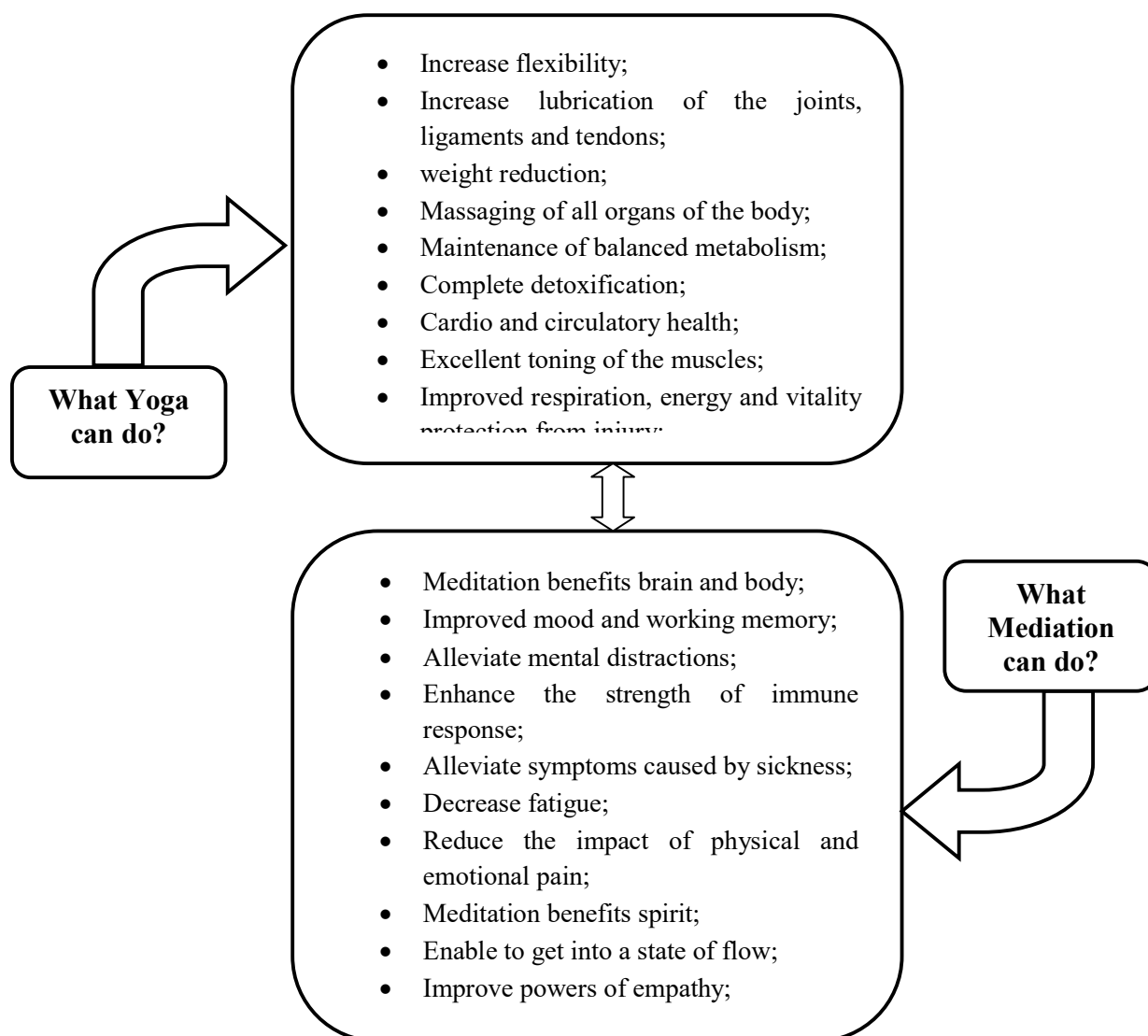


Figure 2: Yoga and Meditation Effectiveness for Coping with Stress

3.7.1 Pranayama

Undoubtedly, it is obvious from existing vast scientific literature that breathing right with pranayama play a vital role in controlling negative thought and free the mind with unnecessary clutter of thoughts that breed mental health problems. KapalBhati Pranayama (Skull-Shining Breathing technique); Bhastrika Pranayama; NadiShodhan Pranayam (Alternate Nostril Breathing); Bhramari Pranayama (Bee Breath) are commonly practiced breathing technique to reduce mental health illness. Yoga through meditation works remarkably to achieve this harmony and helps the mind work in synchronization with the body.

3.7.2 Yoga Module: Brief Outlook

It is the need of hour that each and every student may follow and adapt yoga module of almost 30 minutes to 1 hour regularly in their daily life routine to address various health issues. Regular practices of yoga module begins/involves starting with prayer of Gayatri mantra, Guru vandana; three to five round of Surya Namkasar and other simple asana; Shavasana; Nadi Shodhan Pranayam, Mediation followed by ending prayer Shantee Path.

No doubt, practicing yoga and meditation play an indispensable role to reduce stress levels; relieve anxiety; manage depression; decrease lower back pain; improve quality of life; stimulate brain function; prevent heart disease; improve sleeping pattern; reduces muscle tension, strain, and inflammation, sharpens attention and concentration, calms and centers the nervous system; treatment of chronic health conditions, controlling and focusing thoughts and lead more productive outcome to name only a few [28].

3.8 Future Road Map

In this section, the role of instructors as well as educational institutions, future road map, new initiatives and some of the concert steps essentials to address academic stress and mental health problems and due course of action plan is described.

3.9 Instructor Role in Management of Mental Illness

The author is of view that instructor in educational institution play a pivotal role in combating and reducing mental health problems and academic stress. Adoption of student centered active learning approach is the need of hour. Assimilation of student centered bidirectional innovative teaching pedagogy, problems and project based learning approach, brainstorming, role playing & inclusion of case studies in content delivery, encouraging hands on learning and learning by doing, connecting course content with real life situation & social relevance, encouraging autonomous learning; offering mentor classes & remedial classes, encouraging participation in extracurricular activities, offering guidance on career counseling, planning and mapping; developing emphasis on promoting entrepreneurship and start up skill to keep away from fear of unemployment; encouraging social participation and societal interconnection. Therefore, it is essentials to nurture innovation talents among young to cope with real life challenge and to keep far away from academic stress. Besides theses, guiding and counseling on effective time management; encouraging participation in physical exercise and indoor/outdoor sports activities; participation in family routine activities/work; participation in leisure activities, social support activities, spiritual strategies is also vital. Moreover, guiding, motivating and encouraging students to share problems with parents, teacher, counselor and friends and guiding to reframing problems as per demand and situation, changing situation, reaction, response and positive attitude is also essential to address the mental illness.

In light of the above discussion, it is evident that teacher play vital role in academic stress management by guiding, motivating and mentoring the students.

3.10 Educational Institutions: Future Course of Action

Primarily, in author opinion majority of instructor realize that stress, depression and anxiety among students is a serious concern resulting from COVID-19 pandemic. In response to COVID-19 situation, before fully functioning and opening of educational institutions, it is essential to take vital steps by the educational institution as future roadmap to combat mental stress. In this direction, future course of action, recommendation and some of the concert steps, initiatives essentials for academic institution in due course of action plan are as follows:

- Inclusion of yoga breaks in time table and academic curriculum;
- Sensitization of students towards life style modification evolved in digital and global era;
- Creation of students centered activities and support centre;
- Sensitization towards use of social media;
- Establishment of nutrition and wellness centre in educational institution;
- Sensitize students towards self care and self discipline and self management;
- Establishing yoga and rejuvenation therapy centre;
- Inter personal skill development;

- Constitution of health monitoring committee;
- Organizing open parent teacher interaction meeting and assessing feedback;
- Engaging students in recreational activities and indoor/outdoor sports;
- Guidance and counseling on career planning and mapping;
- Regulating screen time and use of digital resources;
- Avoid cognitive overloading of students

In summary, mental health problems among students can be addressed by practicing and adopting the above suggestion in routine life of students. Further, engagement in unnat bhart abhiyan, community work and social interaction; connectivity with nature; participation in sports and physical exercise; strengthening real life and analytical problem solving skill; self assessment and organization; setting realistic life goal; intermittent connectivity with virtual world and social media; sharing and helping parents in day to routine activities play a significant role in mental health illness management. No doubt, students counseling centers, student health committee and mentor mentee programme and assimilation of above recommendation plays a significant role to enlighten the bright future of young ones and to keep away from stress, anxiety and depression. No doubt, sensitization of students through on campus counseling and organizing various seminar/conference/workshop/webinar on the above issues plays a vital role in this direction.

4 CONCLUSION, IMPLICATIONS AND FINDING OF STUDY

Each and every student in this world is unique and proceeds through life's journey in different ways and face different technological, individuals, domestic, community and institutional barriers in COVID-19 pandemic. Social isolation and prevalent use of digital device is one of vital concern of digital era in building mental stress and depression. Every individual experiences requires unique solution and no doubt, yoga and mediation is an effective and vital tool in this direction. Indeed, commonly discussed strategies in this investigation are preliminary solution to address the mental health problems of students. Remedial measure, strategies and future course of actions need to be initiated by educational institution before fully functioning of institution play a significant role in combating stress, anxiety and depression.

- The finding of this study reveals that assimilation of discussed remedial measure, strategies and adoption of above suggestion, recommendation and regular practice of yoga mediation play a significant role in reducing mental health problems.
- It is also true that almost two third of Indian population reside in rural and majorly depends on agriculture, dairy farming, agro based activities, self-employment, services, construction sector, etc to name only a few. It is true that students residing in rural areas mainly prefer government institution for study due financial constraint, other issues and challenges. Nationwide digital learning is practically impossible in government institutions mainly in schools in era of COVID-19 pandemic due lack of power supply, interruption in power supply, poor digital knowledge and skills, internet connectivity issues, lack of e-library and technological barriers. Therefore, it is evident that the impact of distance e-learning was more severe for disadvantaged children due to lack of e-resource availability. Lack of ICT support and internet connectivity problem; affordability of e-resource and lack of family support due to financial constraint is a major hindrance in delivery of online education especially in rural India. It results in digital divide in rural India.
- The study also reveals that mental health illness is the negative outcome of digital and modern life style as well as excessive pressure resulting due to simultaneous preparation

of course of studies and competitive examination by students through online mode. It is therefore essentials to optimally balance the use of ICT technology and digital resource with other routine activities that promote relationships, creativity and over development of youth. Undoubtedly, excessive use of e-resource and technology can negatively impact the physical, mental, emotional and social development of youth.

- The study also reveals that long hours online classes results into late night sleep, irregular sleep cycle and insomnia due to the sudden increased usage of screen time and reduced physical activity. Therefore, online classes had increased the mental stress in the students.
- It is also obvious that not only online classes but financial uncertainty and inter & intra family conflict also result into mental health illness. The inter & intra family conflict needs to be understand and managed by students as well as parents.
- The study also reveals that it is the need of hour to introduce mental wellness program into undergraduate curriculum and moreover to create and start mental health cell in educational institutions for offering solution in this direction.
- It is also the need of hour to assess existing technological resource and barriers in educational institutions; future technical requirement and devising a road map to meet the future requirements and finalizing the same for sustaining online education.
- Essentially, there is need to learn a lesson from the COVID-19 era and efforts should be made to create skilled digital workforce having sound digital knowledge. Moreover, efforts should be made to impart training to the staff and faculty on online content creation, management and delivery for sustaining online education, curriculum in future. Therefore, it is the need of hour to invest in improvement of instructor skills in digital knowledge and skills, cyber safety awareness, e-study material development.
- Institute level initiatives need to be taken for student's welfare by offering tuition fee waivers, scholarship to economically deprived students to address the financial problems of students originated as a result of pandemic economic impact.

To summarize, adoption of yoga and meditation certainly play an indispensable role to reduce stress levels; relieve anxiety; manage depression; in controlling lower back pain; improve quality of life; stimulate brain function; prevent heart disease; improve sleeping pattern to name only a few.

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**A STUDY ON ANXIETY REGULATION OF MALE
CRICKETERS USING JACOBSON DEEP
RELAXATION METHOD**

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ABSTRACT

Sport in general has the potential for high levels of stress and anxiety . Cricket is a game of very complex actions .Performance of a cricketer is crucial to his own career and also for his team's success. Preparation is crucial in both the physical and mental arena. Anxiety is one mental factor which affects the performance of cricketers. If the perception of a cricketer about the challenge is greater than the perceived skill, it makes him feel anxious or worried that he may not be able to complete the task without pain or embarrassment, or possibly not complete the task at all. Practicing and employing a range of psychological strategies can be beneficial in anxiety management. To reduce the anxiety level of cricketers, the author used Jacobson Deep relaxation method .This paper discusses impact of Jacobson deep relaxation had on the regulation of anxiety Levels

Keywords: Cricket, Anxiety , Jacobson Deep relaxation, Progressive relaxation technique

1. INTRODUCTION

Anxiety is emotional experience (state-like, trait-like and meta-experience) and a component of psychological, biological and social state which can be described along five basic dimensions: form, content, intensity, context and time.

The cognitive state of anxiety is defined as an emotional response characterized by a subjective feeling of tension, apprehension, nervousness and worry associated with an arousal of the autonomic nervous system (**Spielberger, 1979b**). A temporary anxiety condition would then comprise two components: a mental (cognitive) (**Martens, Vealey, & Burton, 1990**); and heart rate, which is a physiological component corresponding to raised heart rate, shortness of breath, sweaty hands etc. Top-level cricketers need to be ready for constant change and change management. Coping with anxiety is the process of adapting with change. Potential gain and loss are behind all stress-induced emotional experiences (**Lazarus, 2000**).

Cricket is a game of complexity and the situations of a game keep changing now and then thereby affecting the performance. Basically it is found that at elite levels the difference between the margin to win and to lose a game is very thin and those who are able to hold their nerves, have clinched the game in their teams favour. On the contrary those cricketers who are affected by anxiety fail to finish the game and the need to study this phenomenon has generated lot of interest for researchers to do extensive research. Theories like “multidimensional anxiety theory of performance, “catastrophe model of anxiety and performance, and “individual zones of optimal functioning—IZOF,” Cognitive Mental Emotions Somatic Physical Symptoms have stipulated the relationship between anxiety and performance. Regarding anxiety management, the best known are relaxation techniques which can be defined as through which individuals are able to reduce their muscle and psychological tension voluntarily.

We will discuss in this article the effect of Jacobson Progressive relaxation -a body scan starting at the head and finishing at the feet to detect localized muscle tensions

Jacobson Progressive Relaxations: The technique named “progressive relaxation” was developed by Edmund Jacobson, a Chicago physician, who first introduced it in his book **Progressive Relaxation, in 1929**. It is mental relaxation that causes body relaxation. The leading representative of this second group is “autogenic training.” According to this method, mental relaxation results from body relaxation. This happens progressively, going from one muscle group to the next. The objective of the tightening and relaxing phases is to increase the individual’s awareness of the difference between the presence and absence of muscle tension. Once the individual has developed his/her self observation capacity through practice, he or she will be able to eliminate unwanted tensions in the muscle groups, without having to tighten them beforehand. This is a technique that uses muscle contraction and relaxation to make you feel calmer. What is the purpose of the technique? Relaxation can help to relieve the symptoms of anxiety. Although the cause of the anxiety will not disappear, you will probably feel more able to deal with it once you have released the tension in your body and cleared your thoughts. Don't worry if you find it difficult to relax at first. It is a skill that needs to be learned and it will come with practice. Once you have mastered it you will be able to use it throughout your life, for example when driving a car, sitting in your office or standing in a supermarket queue. The improvement of relaxation skills allows athletes to reduce or increase their level of anxiety efficiently, in a shorter period of time, and without the need for a special site to facilitate the execution of the techniques.

The relaxation response, as well as the state of anxiety, can be evaluated through a questionnaire Two examples of scientifically validated questionnaires are the Revised

Competitive State Anxiety Inventory–2 (CSAI-2R), which measures cognitive anxiety, somatic anxiety and self confidence (Janelle & Naugle, 2012).

Mental health of the sportsperson is more influencing their performance. (Sahni, 2017). Mind and body are always well connected. The performance of a cricketer depends on both cognitive and physical factors. The intervention of some physical exercises or treatment also impact the mental behaviour. In this regard, the study is attempting to identify whether Jacobson deep muscle treatment has any influence over cricketers anxiety level. Main Objective of the study was to examine the impact of Jacobson progressive relaxation techniques on anxiety levels of cricketers.

2. METHODOLOGY

2.1 Selection of Subject

Two groups of each 8 cricketers were selected randomly and one group was assigned as the control group and the other group was assigned as the treatment group. The cricketers in the control group had received no treatment. They just proceeded as usual, whereas the treatment group were subjected to Jacobson Progressive Relaxation Technique for a period of 30 days.

The cricketers were initially classified into two groups namely control groups and treatment groups. Each group consists of eight members. The players in the treatment group received the Jacobson deep muscle relaxation treatment. The anxiety level of both the groups were measured before and after the treatment

2.2 Instrument

The research was conducted with a well structured questionnaire which consists of 5 point Likert scale questions.

3. RESULTS & DISCUSSION

The cricketers were initially classified into two groups namely control groups and treatment groups. Each group consists of eight members. The players in the treatment group received the Jacobson deep muscle relaxation treatment. The anxiety levels of both the groups were measured before and after the treatment.

TABLE 1
DESCRIPTIVE STATISTICS OF PRE-TEST AND POST-TEST OF CRICKETERS OF EXPERIMENT AND CONTROL GROUP

Test	Groups	N	M	SD
Pre-test	Experimental	8	20.8750	4.99821
	Control	8	20.6250	5.68048
	Total	16	20.7500	5.17043
Post-test	Experimental	8	16.0000	4.30946
	Control	8	21.5000	5.42481
	Total	16	18.7500	5.51966

From table 1 reveals that the mean value of anxiety level pre-treatment is 20.75 and the mean value of anxiety for both the control group and treatment group has no major difference as the mean values are 20.625 and 20.875 for control group and treatment group respectively. But when we look at the average level of anxiety between the two groups after treatment, we can find a major difference in the average anxiety level between the two groups. The average anxiety level of the control group is 21.5 which does not show a major difference. But the anxiety level of the treatment group shows a major difference in post treatment as the anxiety level drops to a 4.875 point from 20.875 to 16.00. The standard deviation value for all the items are low and it

indicates that the anxiety level of players in both the groups before and after treatment is concentrated around the mean.

TABLE 2
BOX'S TEST OF EQUALITY OF COVARIANCE MATRICES

Box's M	.421
F	.119
df1	3
df2	35280.000
Sig.	.949

Table 2 indicates that there is a difference in the average value of anxiety after the Jacobson deep muscle treatment given to the treatment group, it is mandatory to check whether there is any covariance that exists between the groups under study. The significance value of 0.949 from Box test of equality indicates that the null hypothesis is accepted. This ensures that the results of these models are highly acceptable and trustworthy as the groups under study have no co-variances.

TABLE 3
MULTIVARIATE TESTS

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Time	Pillai's Trace	.294	5.828 ^a	1.0	14.0	.030	.294
	Wilks' Lambda	.706	5.828 ^a	1.0	14.0	.030	.294
	Hotelling's Trace	.416	5.828 ^a	1.0	14.0	.030	.294
	Roy's Largest Root	.416	5.828 ^a	1.0	14.0	.030	.294
Time x Group	Pillai's Trace	.462	12.042 ^a	1.0	14.0	.004	.462
	Wilks' Lambda	.538	12.042 ^a	1.0	14.0	.004	.462
	Hotelling's Trace	.860	12.042 ^a	1.0	14.0	.004	.462
	Roy's Largest Root	.860	12.042 ^a	1.0	14.0	.004	.462

From Table 3, it is observed that, wilk's lambda in the second row where the results of groups are obtained after comparing the post and pre-treatment. The significance value of Wilks' Lambda in the multivariate analysis is 0.04 which is less than 0.05 which leads to the rejection of the null hypothesis. This indicates that anxiety level of players in the control group shows a notable difference before and after the Jacobson deep muscle treatment

TABLE 4
MAUCHLY'S TEST OF SPHERICITY ^b

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon ^a		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Time	1.000	.000	0		1.000	1.000	1.000

Though the wilks' lambda showed that there exists a notable difference in the anxiety level of the groups, it is mandatory to check the variances between the groups. Hence, in Table 4, Mauchly's test of sphericity is conducted to know whether the rule of sphericity is followed or not when selecting the groups. As per our result, the significance value which is less than 0.05

indicates that the sphericity is violated. This indicates that the variances between all combinations of groups are not equal.

TABLE 5
TESTS OF WITHIN-SUBJECTS EFFECTS

Source		Sum of Squares	df	Mean Square	F	Sig.
Time	Sphericity Assumed	32.000	1	32.000	5.828	.030
	Greenhouse-Geisser	32.000	1.000	32.000	5.828	.030
	Huynh-Feldt	32.000	1.000	32.000	5.828	.030
	Lower-bound	32.000	1.000	32.000	5.828	.030
Time x Group	Sphericity Assumed	66.125	1	66.125	12.042	.004
	Greenhouse-Geisser	66.125	1.000	66.125	12.042	.004
	Huynh-Feldt	66.125	1.000	66.125	12.042	.004
	Lower-bound	66.125	1.000	66.125	12.042	.004
Error	Sphericity Assumed	76.875	14	5.491		
	Greenhouse-Geisser	76.875	14.000	5.491		
	Huynh-Feldt	76.875	14.000	5.491		
	Lower-bound	76.875	14.000	5.491		

It is clear from Table 5 that the significance value of 0.04(<0.05) across sphericity assumed in the second row of the below table indicates that the previous assumption about sphericity is invalid. It is because the significance level indicates that the means between groups is perfectly equal. Variance cannot be found if the means are perfectly equal.

TABLE 6
TESTS OF WITHIN-SUBJECTS CONTRASTS

Source	Time	Sum of Squares	df	Mean Square	F	Sig.
Time	Linear	32.000	1	32.000	5.828	.030
Time x Group	Linear	66.125	1	66.125	12.042	.004
Error(Time)	Linear	76.875	14	5.491		

The p-value in the Test of within subject's contrasts is 0.04 which indicates a significant difference in the level of anxiety between the groups after the Jacobson deep muscle treatment. The partial eta squared value for time is 0.294 and results after Jacobson deep muscle treatment is .462, which is twice as the previous one. This indicates that Jacobson deep muscle treatment decreases the anxiety level of the players. 66% of the change in anxiety level of the players is due to the Jacobson deep muscle treatment.

4. CONCLUSION

The anxiety level of cricketers being an important factor affecting their performance is influenced by many factors. Most important among them are the physical health and mental state. The anxiety level of cricketers is connected to physical health. The results of this study proved that the intervention of Jacobson deep muscle treatment decreases the anxiety level of players. Hence, the cricketers should be given proper physical treatment to improve their cognition level which in turn leads to better performance.

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SCIENTIFIC BENEFITS AND EFFECT OF YOGA ON HUMAN LIFE

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ABSTRACT

The main purpose of yoga has to keep good health and positively in human life. Since Ancient times yoga have played major role in human society. The practice of yoga in believed to have started with the vary down of civilization yoga on a long history of human culture and has been preserved for thousands of years. Today, yoga in practiced worldwide by millions of people in many forms and variations. Yoga prefaces a complete system of physical. Mental, social and spiritual development and improves strength, balance and flexibility. It also helps in keeping our mental and physical health and maintained good relation with nature. Every should be take benefits form yoga for in peace of mind.

Keywords: - Human, Society, Mental, Health, Yoga, Benefits

1. INTRODUCTION

Man is social animal he cannot live without society; he has to develop by living in society. Good health is essential for living a good life and yoga is very important for achieving that. The mind is always wondering and being rebellious never focusing on the moment stress builds up in our daily lives, endangering our health and it affects your health as well as your family. **(Gharote, 2008)**. The art of practicing yoga helps in controlling an individual's mind, body and soul; It helps manage stress and anxiety and keeps you relaxing. Yoga is not a religion, it's you relaxing. Yoga is not a religion its way to life that purpose towards a healthy mind and a healthy body.

1.1 History of Yoga:

Yoga is a five thousand year old style of knowledge in India. It is mentioned in the Rig-Veda and still used today by people for their mental and physical health. In origin of the word yoga is found in Sanskrit word. The word yoga was first mentioned in the oldest sacred text, the **revved (Singh, 2010)**. Mahatma Patanjali, who developed yoga, is said to be the father of yoga. In modern times, yoga has gained a lot of importance and is accepted globally. If a person wants to have a mental and physical well being and a stress free life. He has no choice but to practice yoga **(Burley, 2000)**.

1.2 Scientific Benefits of Yoga:

The scientific of yoga is a psychology of a philosophical nature. The very introduction of the system of yoga by Patanjali in by way of an insurrection that the mind has to be controlled yoga has child vation niordhan. **(Singh SP. Healthy 2010)**. Yoga is an experimental science. The most important benefit of yoga is it balances our physical and mental conditions. The aim of yoga has facilitating the development and integration of body, mind and breath to produce structural, physiological and psychological effects. The science of yoga in the scientific basis of modern yoga as exercise in human sciences such as anatomy, physiology, and psychology yoga's effects are to some extent shared other form of exercise **(Shrivastav & Chavan 2009)**. Yoga has been studied scientifically since 19th century physiology experiments of N.C Paul. Yoga helps to maintain bone strength, joint mobility, and joint stability to improve posture muscle strength coordination and confidence in turn reducing the risk of injury and bone fracture.

Now in modern times yoga is also used directly as therapy especially for psychological conditions such as post traumatic stress disorder, but the evidence for their remains weak early in the 20th century, two pioneers of yoga an exercise in India, Yogendra and Kuvalayahanda, worked to make healthy yoga acceptable, seeking scientific evidence for the health benefits of yoga postures (asanas) and yoga breathing (Pranayama). **(Galore, 2003)** Yoga is a great scientific gift to human society & everyone should take advantage of it.

2. EFFECT OF YOGA ON HUMAN BODY:

Yoga has been very important in human society since ancient times today yoga has a special place in the world and has been accepted at the scientific level. Yoga's incorporation of meditation and breathing can help improve a person's mental well being. Every day yoga practice creates mental clarity and calmness, increases body awareness, relaxes the mind and sharpens concentration **(Yogeshwar, 2004)**. The goal of yoga is unity of the body, mind and spirit with the focus on body posture, breathing and meditation. Several forms of yoga exist to meet the needs of varying lifestyle and personalities each yoga style emphasized there or believes. Doing yoga offer many benefits for the body and spirit and overall wellbeing.

2.1 Yoga for all:

Yoga is useful for everyone. Yoga children adults Old people sick people can all benefit from it and can led a batter life everyone should take advantage of this (Bhatt Krishna 2008).

2.2 Yoga Promotes mental Health:-

Yoga practices suggest they can reduce the impact of exaggerated stress sponges and may be helpful for both anxiety and depression in their respect yoga functions life other self soothing technique, such as meditation relaxation exercise or exam so ionizing with friends there, in turn, decreases physiological carousal for example segueing the heart rate, lowering blood pressure, and easing respiration (Sechdva IP. 1978).

2.3 Health benefits of Yoga:-

Doing yoga everyday helps a pension of stay healthy and lives a stress free life without and mental or physical problems. Today, globally many people in our daily lives suffer from versionailments like diabetes, high blood pressure etc. yoga can helps improve flexibility and strength yoga stretchy your muscles and stand up straighter many pons in yoga can strengthen the core muscle in your stomach and back (Blind Mice. 1969).

2.4 Improve Heart Health;-

For pumping blood throughout the body to supplying issued with importantnutrients, the health of your heart in an essential component of overall health. High blood pressure is one of the major causes of heart problems, such as heart attacks and stroke. Lowering your Blood pressure can Helps reduce the risk of these problems (Disgusts SN 1974)

2.5 Improves Duality of tube:-

Yoga Bring peace to a person and at the same time he does everything well and improves his way of life. He creates a different place in society. Yoga in becoming increasingly common as an adjust therapy to improve quality of life for many in individuals practicing yoga significantly improved quality of life (Pandy Raj Kumar 2008).

3. CONCLUSION

Since the ancient time, Yoga has been physiological or psychosocial variable that has a key impact on health or quality of life. In modern times man has been orbited with many diseases has which has made it difficult for him to live he has no choice but to do yoga to get rid to all these stress and live a drug free life.

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**COMPARATIVE STUDY ON PHYSICAL FITNESS
COMPONENTS BETWEEN BENGALI AND
RAJBANGSI COLLEGE STUDENTS**

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ABSTRACT

In the present study, an attempt has been made to compare physical fitness components namely speed, strength, endurance, agility, flexibility and sit-ups. The main purpose of the study was to measure the motor fitness levels of physical education students and measure the difference of the students to find out the status of physical education students in the district of Cooch-Bihar under West-Bengal. Present study was conducted to observe the Physical fitness status Rajbanshi and Bengali college students. The subjects of the present study were taken from Cooch-Bihar College, Dinhatra college and Tufangang college Physical Education students. Total seventy students were selected as subject (both male and female) for the present study. Age were ranged between 18 to 22 years. The subjects were principally of two categories i.e. general Bengali students and Rajbanshi students. AAHPER Youth Fitness Test (AYFT) was taken for the measuring physical fitness components like speed, agility, explosive leg strength, hand and shoulder strength, abdominal muscle strength, cardio vascular endurance etc. To collect information for the present study following tools are used as measuring tape, cone and marker for field marking, pull up or chin up bar for hand and shoulder strength, whistle for signal, stopwatch for time, score sheet for data collection. The tests were tested to the AAHPERD youth physical test manual. He concluded that the urban school boys had better performance in Pull-ups and Bent knee sit-ups than rural school boys. He also observed that in case 50 meter dash for speed and SBJ for explosive and strength straddle chin is quite better than General students. In the case of 10x4 meter shuttle run, pull up, sit up for Bengali students is better than Rajbanshi students.

Key Words: Physical Fitness. Rajbanshi. Bengali. AYFT.

1. INTRODUCTION

Concept of physical fitness is as old as humankind. Through out the history of mankind physical fitness has been considered an essential element of every day life. The ancient people were mainly dependent upon their individual strength, vigor and vitality for physical survival. This involved mastery of some basic skill like strength, speed, endurance, agility for running, jumping, climbing and other skills employed in hunting for their livings. Overall the physical illness and the tendency to deteriorate have in increased all ages, casts, and racial/ethnic groups especially adults (**Ichinohe et al. 2004**). The negative effects of degraded physical fitness on both the individual and society are serious and multi-dimensional. It can cause many risk factors to health including coronary heart disease, certain forms of cancer, diabetes, hypertension, stroke, gall bladder diseases, osteoarthritis, respiratory problems, gout and is associated with increases in all cause mortality (**Cataldo 1999**). In adults, relationship among physical activity, health related fitness, and health are fairly well established (**Boucherd and Shepherd 1994**). Low levels of physical activity and cardio-respiratory fitness are both associated with higher risk of all cause and disease specific mortality (**Thune et al. 1998**).

Physical fitness is a state of health and well-being and, more specifically, the ability to perform aspects of sports, occupations and daily activities. Physical fitness is generally achieved through proper nutrition, moderate-vigorous physical exercise, and sufficient rest. The expert committee of the World Health Organization (1981) described physical fitness as “the ability to undertake muscular work satisfactorily.” Physical fitness is the capacity to early out, reasonably well, various forms of physical activities, without being unduly tired and includes qualities important to the individual’s health and well-being (**Baskar & Pavithra 2017**)

The purpose of this study was to compare the Rajbanshi and Bengali college going students and to find out which of these two categories is more physically fit in response to tests administered so as one can improve the standard and level of physical fitness in Rajbanshi and Bengali college going students in the district of Cooch-Bihar (West-Bengal).

The significant of the study to identify the status of physical education students of Cooch-Bihar and identify the motor fitness levels of physical education students and to identify the difference of the students.

2. METHODOLOGY

2.1 Selection of Subject

The subjects of the present study were taken from Cooch-Bihar College, Dinhata college and Tufangang college Physical Education students. Total seventy students were selected as subject (male =47 and female=23) for the present study. Age were ranged between 18 to 22 years. The subjects were principally of two categories i.e. general Bengali students and Rajbanshi students. Simple random samples have been taken to do this study.

2.2 Test Used

AAHPERD test was taken for the measuring physical fitness components like speed, agility, explosive leg strength, hand and shoulder strength, abdominal muscle strength, cardio vascular endurance etc.

2.3 Collection of Data

To collect information for the present study following tools are used as measuring tape, cone and marker for field marking, pull up or chin up bar for hand and shoulder strength, whistle for signal, stopwatch for time, score sheet for data collection. The tests was tested to the AAHPERD youth physical test manual (1976).

2.4 Measured Components of Physical Fitness

AAHPERD test was taken for the measuring physical fitness components like speed, agility, explosive leg strength, hand and shoulder strength, abdominal muscle strength, cardio vascular endurance etc. To collect information for the present study following tools are used as measuring tape, cone and marker for field marking, pull up or chin up bar for hand and shoulder strength, whistle for signal, stopwatch for time, score sheet for data collection. The tests were tested to the AAHPERD youth physical test manual.

2.5 Statistical Analysis

The arithmetic mean, standard Deviation, and t-Test of each variable were calculated for statistical calculations. Excel Spreadsheets of windows version 7 was used.

3. RESULT AND DISCUSSION

TABLE 1
NUMBER OF SUBJECTS COLLECTED FROM DIFFERENT COLLEGES

Sl no	Name of the colleges	Number of students		Total
1	Cooch Behar College	Male	17	26
		Female	9	
2	Dinhata College	Male	18	28
		Female	10	
3	Tufanganj College	Male	12	16
		Female	4	
Total numbers of students				70

TABLE 2
T-TEST OF AAHPER YOUTH FITNESS COMPONENTS BETWEEN RAJBANSHI AND BENGALI MALE STUDENTS.

Component	Mean ± SD		t- value	Level of significance
	Rajbanshi	Bengali		
Speed	7.50±.88	7.38±.69	.69	Not significant
Agility	10.6±.86	10.45±.63	.51	Not significant
Explosive strength	2.12±.21	2.20±.22	.22	Not significant
Shoulder strength	11.93±4.46	10.18±3.86	1.63	Not significant
Abdominal strength	32.83±7.94	32±7.55	7.09	Significant*
Cardiovascular endurance	1.924±.36	1.93±.45	.98	Not significant

* Significant at 0.05 level

Table 2 shows the mean + SD value of the respective fitness components amongst Bengali male and Rajbanshi male Physical Education students. It was observed that in case 50 meter dash for speed and SBJ for explosive strength is quite better than Rajbanshi students. The t value was found to be .62 and .22 is not significant at .05 level.

In this study we observed that the mean performance of Rajbanshi male students in all fitness aspects was better than Bengali speaking students but the differences were not significant at 0.05 level. and significant difference found only in abdominal strength. In a study conducted by Chan Basha, S. & Reddy, P. C. (2003) it was concluded that the rural school boys showed better performance in 50 yards dash, shuttle run, standing broad jump and 600 yard run than urban school boys. They also clearly concluded that the urban school boys had better performance in Pull-ups and Bent knee sit-ups than rural school boys. The result of our study is partially similar to the above study.

In the case of 10x4 meter shuttle run, pull up, sit up Bengali students is better than Rajbanshi students The t value was found to be .51 and .22 is not significant at .05 level

TABLE 3
T-TEST OF AAHPERD YOUTH FITNESS COMPONENTS BETWEEN RAJBANSHI AND BENGALI FEMALE STUDENTS.

Component	Mean ± SD		t- value	Level of significance
	Rajbanshi	Bengali		
Speed	9.0±1.18	9.23±.90	.54	Not significant
Agility	12.52±1.25	12.3±1.23	.93	Not significant
Explosive strength	1.68±.20	1.54±.22	.15	Not significant
Shoulder strength	14.41±4.15	10.08±4.96	.68	Not significant
Abdominal strength	20.58±9.92	24.1±6.84	.01	Not significant
Cardiovascular endurance	2.53± .57	3.12± 0.76	.06	Not significant

Insignificant at 0.05 level

Table 3 shows the mean ± SD value of the respective fitness components amongst Bengali males and Rajbanshi male Physical Education students. It was observed that in case 50 meter dash for speed and SBJ for explosive and strength straddle chin is quite better than General students. In the case of 10x4 meter shuttle run, pull up, sit up for Bengali students is better than Rajbanshi students.

In present study Bengali and Rajbanshi female students showed more or less same performance so far as testing of fitness components were concerned. No significant differences found between the two categories of subjects while performing AYFT.

Deb, P. and Dhara, S.C. (2020) concluded that Tribal students are the most vulnerable section in our society, they receives less nutrition, due to their forest dwelling practices and other daily earning activities, they are facing hard livelihood, moreover they had poor access to different state and central government facilities that are announced time to time. Non-tribal populations of rural areas are also facing the same problems. Poor socioeconomic status and illiteracy are the contributing factors for under nutrition and poor health status. In a study conducted on physical fitness of tribal and non-tribal high school students it was found that the tribal students were superior in terms of explosive strength than the non-tribal boys and girls; better flexibility was reported in non-tribal boys and girls; tribal boys showed better dynamic flexibility than non-tribal boys; better endurance was found in non-tribal boys than the tribal boys; non-tribal girls showed lower endurance and speed in comparison to tribal girls (**Devi, 2000**). In another study conducted by **Dhara et al (1995)** showed that tribal boys had significantly higher physical efficiency compared to non-tribal students of 14 to 17 years. Our study is very much relevant to this findings.

4. CONCLUSION

The ethnically one, Rajbanshi group, one of the most tolerant indigenous people of strategically located areas in whole of North Bengal(barring its hilly terrains); in a sizable portion of Assam; western part of Meghalaya; Purnia, Kishanganj districts and eastern part of Katihar district of Bihar; Jhapa, Morang and Sunsari districts of Nepal; Rangpur, East Dinajpur districts and some parts of north west Mymensingh, northern Rajshahi and Bogra districts of Bangladesh and lower parts of Bhutan where these indigenous people ordinarily reside from time immemorial.They are victims of identity crisis, domination by mainstream people and division of their homelands. Today they form majority population in rural areas as they have been displaced

from urban areas. Since their mother tongue is officially not recognized, on record they have been identified by the mainstream language of the state.

In North Bengal, majority of Rajbanshi people like to remain as Shatriya and they have a great respect to the great social reformer Roy Saheb Thakur Panchanan Barma. Since, these people were majority in population i.e. almost 70% to 80% prior to gaining Independence in 1947 and still in majority in rural North Bengal, they should be given a share in state governance. Acute poverty and lack of education are the drawbacks to these hapless people.

It was observed from the results that abdominal strength has only shows significant variations in case of Bengali male and Rajbangsi male. However AAPHERD youth fitness components is dependent on the motor fitness components. May be the subjects of all the group i.e. Bengali and Rajbansi community were of physical education students so as per the curriculum schedule and nature of activity they engaged therefore most of the parameters give insignificant results. However study on large scale involving more subjects can open up a new area of status of fitness components which can be recorded as demographical and ethnical value.

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A REVIEW OF THE EFFECT OF PSYCHOLOGICAL FACTORS ON SOCCER PLAYER'S PERFORMANCE

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ABSTRACT

Soccer is a popular sport with a large number of players all over the world. Alongside, its considerable economic and social effects it also has a remarkable impact on health and recreation. It is necessary to find out the factors which influence soccer players' performance. Most researches have assessed physical, physiological, and biomechanical factors but nowadays psychological factors such as confidence, motivation, goal setting, self-talk, relaxation, imagery, attention, and anxiety control are introduced as important items responsible for each individual soccer player as well as the team success. Thus, the leaders and coaches of soccer teams should increase their knowledge in this field and learn new methods to elevate the players' and coaches' psychological skills to be able to compete with professional components and reduce the negative impacts of stress, anxiety, depression, and exhaustion on their players. The main goal of the present study is to review how psychological factors affect the performance of soccer players.

Keywords: Soccer, Performance, confidence, motivation, goal, self-talk, relaxation, imagery, attention, anxiety

1. INTRODUCTION

Soccer is likely the most popular sport worldwide, with developing attention and an elevating number of players. It is a competitive game which requires various skills with distinct intensities including physical skills, various techniques and tactics, as well as psychological skills for optimal performance (1). Soccer is one of the most investigated sports fields in the scientific literature. Although, most of the studies were centralized on physical and biomechanical features.

Nowadays, numerous professional soccer teams have noticed the importance of psychological features in soccer to improve performance. It was proposed that psychological skills including confidence, anxiety control, motivation, and attention have a remarkable role in the development of soccer players' performance. Considering psychological skills, athletes who are sociable, confident, and inherently motivated, have been displayed to surpass from other teammates or opponents (2).

Regarding the theory of differentiated model of gift and talent (3) to work concurrently with personality attributes, obtained skills and psychology demands for the sports competitions, it has been inspected that the psychological condition is one of the elements that have been strictly appended to this analysis. Psychological skills strongly influence the player's competitive success and performance. In this regard, it has revealed that physiological features were responsible for 45-48% of the sport performance, but when the psychological variables were integrated, the proportion developed around 79-85% in particular sports (4).

The aim of this review is to introduce and reinforce the potential and beneficial effect of psychological training on the performance of soccer players.

2. METHODOLOGY

The data were gathered by searching the English articles in Google Scholar, Web of Science, Scopus, and PubMed. The keywords used as search terms were 'soccer players', 'psychological factors', 'confidence', 'motivation', 'anxiety control', 'goal setting', 'self-talk', 'imagery', 'attention', and 'relaxation'. All kinds of related articles, abstracts and books were included. No time limitation was considered in this review.

3. EFFECT OF PSYCHOLOGICAL FACTORS ON SOCCER PLAYER'S PERFORMANCE

3.1. Confidence

Confidence is a character seen in numerous aspects of life and society. Accordingly, confidence is not unfamiliar to the sport since it can be linked up with conditions such as stability, strength, belief, mental toughness, and courage. The world of sport admits the valuable influence of confidence on success (5).

Joe Paterno who is an American soccer coach elucidated: "When a team outgrows individual performance and learns team confidence, excellence becomes a reality" (6). Having confidence in the competency and potency of the team, particularly when encountering problems has been seen to be a remarkable factor in the prosperity of sports teams. Mainly in difficult games, when the condition is hard and the mental pressure tops out, team confidence can make the team win or lose.

Two kinds of team confidence have been determined. The first type is called collective efficacy and was initially outlined by Bandura as a team's common notion in its conjoint ability to arrange and perform the action needed to produce essential levels of achievement (7). Therefore, this kind of team confidence captures players' confidence in the team's capabilities to

fulfill the desired processes successfully including encouraging each other and communicating well following the tactical game plan. The second kind of team confidence is defined team outcome confidence or comparative efficacy which grabs players' confidence in the team's qualifications to acquire a goal or to win a game (8). It has been reported that athletes who are more confident in the potency of their team define more stimulating goals for themselves, apply more effort, and indicate more flexibility when facing distress. Furthermore, a definite relevance between the intensity of team confidence and performance was also shown (9). In short, there is no conflict that team confidence may be believed as a principal factor for the team's ideal performance and, as a result, for the success of the team.

Bandura pointed out four major sources for situation-specific self-confidence such as self-efficacy: 1. past performance including previous success improves self-efficacy, while former failure weaken it, 2. vicarious experiences, for example, observing similar people success or failure following continuous attempts might intensify or spoil people's self-efficacy, 3. social persuasion, for instance, verbal encouragement by other people that one has the required qualifications to accomplish a task, and 4. physiological and emotional states for example arousal or stress may affect the confidence in one's own capabilities (7). Additional factors of athletes' self-confidence have also been suggested, including coaches' leadership, tactical awareness, the received social support, and superiority to the opponent (10).

The progress and advancements of the leaders and coaches of any team depend on their ability to motivate and inspire the players they lead. Athlete leaders and the coaches are the chief ones who can provoke an increase or decrease in team confidence, thereby influencing all the players (11). It seems that coaches who convey the feeling of confidence might over take the ones who elevate fear and uncertainty (12). Thus, it could be suggested that a coach's confidence in the abilities of the team has a linear effect on the players' confidence and improve their performance. In addition, some experimental documents propose that leaders' confidence can be effective in a better future. A study done by Norman and colleagues showed that leaders' optimism can lead to followers' hopefulness(13). In line with the previous study, in another investigation, it was illustrated that leader certainty could improve follower's positivity (14). This research reinforces the previous studies that examined the influence of leaders' confidence in their team on the players' confidence and efficiency. In another recent document, it was observed that leaders' confidence can boost members' confidence and performance by promoting members' adjustment with the team(15). To sum up, it seems that by expressing that "we will win", leaders are able to inspire the players to carve out a way to success. Leaders can do this by enhancing confidence in their own leadership and also by affecting the team members.

3.2. Motivation

An athlete's motivation is believed to be one of the chief factors for success and promotion in sports (16). In sports practice, motivation is supposed to depend on the interaction of situational and personal factors (17). Motivation is also considered as an important item for stability during sports activities, and being determinant to the athlete's behavior, since it activates and regulates performance-oriented behavior(18). Hence, it is acceptable to concede that an athlete's ability to be motivated in soccer, in spite of the situational pressure and professional difficulties, might contribute to his/her professionalism.

The self-determination theory has been employed to interpret the sporting behavior of athletes(19). Based on this theory, one's behavior is based on motivational sequences differentiated by self-determination levels which might range from the least self-determined to the most and leads to three distinct kinds of motivation including de-motivation, intrinsic

motivation, and extrinsic motivation. De-motivation is expressed by a state in which the person prefers not to act and fetch up giving herself /himself into the process. Intrinsic motivation refers to doing an entertaining and pleasant task and extrinsic motivation involves doing something provoked by external items(20).

In soccer, motivation is associated with various psychological concepts such as mental resistance, commitment, coping, perfectionism, burnout, and factors of tactical and technical performance as well (21, 22).

It was observed that Australian soccer players with high degrees of mental resistance had a high amount of intrinsic motivation, and extrinsic motivation (23). Another study assessed the relation between forms of passion and burnout in professional soccer players, investigating a mediating function of self-determined motivation, which demonstrated to be a protective impact to inhibit the burnout syndrome(24). By comparing the motivation amount of soccer players with long playtime and short playtime in competitions, it was disclosed that long play time players in official games obtained higher scores in intrinsic motivation and self-determination levels. While, those with short playtime in official matches showed a higher level of de-motivation in comparison with the former group (25). These findings emphasize the importance of controlling and tracking the activity time of players in official matches since it appears that play time influences the players' motivation levels in the final formation phase.

There has been another document studying the effect of perfectionist features on the self-determined motivation of junior and elite soccer players, detecting that adaptive perfectionism orientations-standards of personal accomplishment and arrangement have a positive effect on professional players' intrinsic motivation (26). Furthermore, a positive relevance has been seen between motivation and tactical and technical performance in young soccer players(27).

Another group of researchers investigated how motivation, imagery skills, and anxiety contribute to soccer experience among five different groups: professional, semi-professional, intermediate, pre-intermediate, and beginner soccer players. They reported that professional players are more intrinsically motivated to go through stimulation and to learn new methods and strategies to improve their sports performance (28). Hence, the development of the indicated features that belong to professional players in comparison with the less experienced soccer players might be due to the psychological preparation in soccer.

Accordant with the psychobiological paradigm of endurance performance, the greatest amount of attempt that people are willing to dedicate is controlled by motivation(29). When motivation level is higher, it is expected that people endure higher amounts of perceived attempt and, therefore improve their performance despite being exhausted. It might be proposed that strengthening athletes' motivation might impede performance decline under fatigue. Indeed, it has already been shown that a high level of motivation promotes endurance performance (30). Since higher levels of motivation might help individuals' bear a particular workload for a longer time, soccer players are able to uphold a definite speed of motion or keep correct movement control while passing or shooting a ball, when they are exhausted. A recent research approved that in professional soccer players; high task motivation was relevant to less self-perceived performance reduction in different soccer skills when fatigued (31). In another study done by Barte et al. the effect of motivation on fatigue-induced reduction in soccer performance was investigated experimentally. Their results revealed that motivation has an important role in performance under fatigue, and fatigue-induced decline in soccer passing capacity can be compensated by high amounts of motivation(32). Although, future studies might consider the extents of this counteracting property and out stretch in tuitions to other related performance

aspects. Totally, these documents reinforce the concept that performance reduction under fatigue might be seen as a kind of task fallback rather than restricted physiological status. It is essential to find different motivational strategies to help players maintain pivotal features of their performance when it is necessary. It would be useful if future studies focus more on the differences between different kinds of motivation, the restrictions of this counteracting impact of motivation, and the probable negative effects on future performance and recovery.

In a study done by Garcia-Mas and colleagues, the relation between enjoyment, commitment and motivation were studied. Their findings revealed an obvious pattern between them and defined the positive role of intrinsic and extrinsic motivation to enjoyment and commitment. They also suggested that extrinsic motivation contributes mainly to enjoyment whilst intrinsic motivation contributes to commitment more (33). In brief, if a team is interested to improve the level of intrinsic motivation in soccer players, the leaders and coaches should not focus on external control strategies, which are related directly with performance, instead they should concentrate on providing situations that are intrinsically challenging and interesting, and then be interpersonally encouraging and supportive towards the players in different situations.

Motivation also has striking implications on the identification and promotion of young, skilled soccer players. In this regard, a survey was designed to assess Iranian elite male soccer players' motivational characteristics. The data were classified considering players age and primary position played. It was observed that the motivation to gain success and evade failure of these professional players was high and low, respectively. In addition, senior national team soccer players and midfielders had more competitive motivation than other players(34). Thus, leader and coaches can evaluate players' psychological characteristics to determine their current performance and predict future success.

3.3. Anxiety control

Success and defeat in sports and competitive matches depend on emotions. Players might feel stressed, tensed, worried, before or within a competition. Being uncertain might lead to anxiety in soccer players. The importance and level of the competition and the crowd can play a part in a player's anxiety(35). Normal anxiety is motivational and has an adaptive function. It motivates planning, caution, and deliberation, and impedes repeated vulnerability to tense or painful conditions. This type of anxiety can be controlled, but pathological anxiety happens beyond threatening and hazardous situations, and usually remains a long time after the stressful or dangerous incidence, intervenes in person's performance and can negatively alter one's way of thinking and acting. This kind of anxiety cannot be controlled. Defined anxiety is a negative emotional status that is elucidated by restlessness, discomfort, fear, nervousness, and uncertainty and is accompanied by stimulation or activation of the body. Anxiety is unleashed by stressful stimuli and reveals itself in one's lack of compatibility on behavioral, cognitive, and physiological characteristics. Thus, it offends the players' performance (36).

In this regard, the likelihood of attentional control theory in a sporting environment was studied. Fourteen professional soccer players took penalty kicks under low- and high-threat counterbalanced situations whilst using a gaze registration system. Fixations to target positions for instance goalkeeper and goal are diagnosed by using frame-by-frame analysis. When soccer players were anxious, they made faster first fixations and fixated for remarkably longer in the direction of the goalkeeper. This deviation in gaze behavior caused serious decrements in shooting precision, with shots becoming obviously centralized and within the bounds of the goalkeeper's reach(37). The findings of Horikawa and Yagi confirmed the data of previous research. This group examined how the level of anxiety affects the penalty shoot-out

performance under pressure. They reported that a higher level of anxiety interferes with goal performance(38). These findings might suggest a mechanistic interpretation as to why penalty kicks are missed under pressure conditions.

Competitive anxiety is the propensity to find out antagonistic conditions and consequently act with stress, nervousness, and pressure. The competitive anxiety immediately increases just before the match and instantly decreases after it(39). In general, competitive anxiety is an outcome of one's tension, failure, and stress. It is accompanied by acute agitation of the automatic nervous system. This incident usually happens within the day before a game and is defined as pre-competitive anxiety (40).

The home and away competition schedule is believed to affect the relation between sports confidence and competitive anxiety via alterations in environmental factors. An investigation focused on the relationship between competitive anxiety and confidence of soccer players. The results showed that competitive anxiety had a notably more extensive impact on self-confidence in the away group than in the home group(41). Hence, efficient handling of stress in players in away games could probably a meliorate their confidence and as a result, improves their performances. The results also reinforce the necessity for the application and improvement of impressive and principled methods to control or wipe out the factors inducing anxiety in competing soccer players.

A research was carried out to deal with competitive anxiety and concentration level of soccer players from the first and second league. The results unfolded a negative relevance between concentration and self-confidence(42). Another group of researchers checked out the correlation between self-confidence, pre-competitive state anxiety, and success in Croatian soccer players of the first and second league. The results of the direction of anxiety, and self-confidence, strikingly vary between the players of distinct levels of competition. The ambiguity of a competition result affects the elevation of anxiety level, although it is not inevitably reflected negatively on the soccer players' concentration and success (43). Additional studies should track state anxiety in more than one paradigm, such as matches within the entire competition season. Besides, future investigations should assess the relation between anxiety level and different playing positions in the team.

3.4. Goal setting

Goal setting has attracted plenty of attention and its use has been confirmed well-known fitness magazines and personal trainers. It was claimed in an old study that determining goals is more effectual than not defining them, short-term goals such as goals to be performed today or in the early future) are more impressive than longer-term ones, and self-set or instructor goals are identically helpful. They also reported that goal setting is fortified when the goals are made publicly(44).

Coaches must learn goal-setting to be prosperous and effective in working with athletes and players (Sports Coach UK 2000). Sports Coach UK, sports psychologists, and textbooks admit the SMART acronym as an instruction to remind coaches of the five main features of well-stated goals. Goals must be specific, measured, action-oriented, realistic, and timely (16). Coaches should write the goals down and track their progress regularly, set short-range goals to help to achieve the longer-range goals and to assure the goals are interiorize by the players (45). Coaches should appoint in a two-way including interactive and ongoing dialogue with players, take their own and the players' motivational needs into account and the environment within which they work as well, in order to boost the efficacy of goal-setting as a strategy, and also their potency as a coach (46). The data from these studies suggest the social-cognitive motivational

requirements of the players, and although it is implied that the coach has identically reflected motivational requirements in the goal-setting procedure, further investigation is essential to provide evidence and to test the pattern completely.

It was represented that goal setting influences performance by conducting attention, organizing effort, boosting persistence, and stimulating strategy development(47). Some more studies also supported this principle(48, 49). Goals attract athletes like a magnet to higher levels and novel horizons. Moreover, a group of researchers claimed that both emotional and motivational components were major mediators in enhancing the impression of goal setting in endurance sports(50).Concurrently, sports psychologists believed that there is a close correlation between goal setting and imagery during competitions and practice times (51, 52).

Furthermore, applying goal setting has been observed to ameliorate self-confidence and performance and reduce competitive anxiety, arousing a paradigm to assume a positive correlation between goal setting and intrinsic sources of enjoyments(53). Although competitive excitement might be generated in different ways, a principal feature of setting an appropriate goal complexity level is not to set goals too high that they cause stress, but high enough to create positive motive to develop consistently(52).It can be concluded that once a soccer player has a specific goal the direct mechanisms work almost spontaneously to invigorate action, as well as providing the amount of effort required to achieve the goal and persuading persistence over time.

3.5.Self-talk

One of the psychological traits that have attracted researches in the mental training field is self-talk. Self-talk occurs anytime an individual think about something. It is also characterized as a. statements and verbalizations directed to the self; b. having explanatory items accompanied by the subjects of statements used; c. multidimensional in nature; d. is partly dynamic; and has at least two roles, motivational and instructional for the athletes (54).It was revealed that self-talk improves skills and performance and skills in soccer players (55). In addition, self-talk is also advantageous for using tactics, reinforcing effort and emotion, attention focusing, relaxation and chilling out, conserving self-assessment and self-confidence. Mainly, positive self-talk helps improving self-esteem, concentration, motivation, and performance. On the contrary, negative self-talk is known to be self-demeaning and has a negative impact on performance by increasing self-doubt and anxiety (17).

A research team used a single-subject multiple baseline design to assess the potency of a self-talk intervention procedure on female soccer players, evaluating performance level in the low drive shot over a three-month study. The results showed that shooting performance amended in two of the three soccer players, whilst the three players reported improved self-confidence in comparison to the baseline. Researchers also reported that soccer player used more positive self-talk throughout a competition and more negative in the course of injury(55).Another document evaluated the influence of self-talk among some Iranian elite soccer players. The data analysis illustrated that soccer players perceived self-talk affects their performance positively and negatively. The perceived impacts could be classified into two categories, mental and behavioral. Most notable positive influences of self-talk at mental level contain cognitive advantages including improving focus and attention, boosting decision making abilities and attenuating reaction time. Besides, mental level profits consist of emotional effects of self-talk, for instance, stimulating players to intensify efforts, handling with complicated situations, and reducing anxiety. Emotional effects might have some negative consequence, too. Self-criticism can debilitate confidence, and increase stress. At the behavioral level, self-talk can improve the execution of tasks by elevating concentration and providing a consciousness of the negative

impacts of determined behaviors and as a result strengthening the entire performance of the soccer players (56). These findings suggest team managers as well as soccer players to be aware of self-talk as a psychological skill which can improve players' proficiency and also work on players' self-talk skills to achieve favorable results. Daftari et al., that self-talk training will progress energy management, motivation, stress management, attention, goal setting, and self-confidence(57). Altogether these findings demonstrated that self-talk is used during competition by athletes including soccer players. But with insight, these findings shed light on the noteworthiness of self-talk for soccer players and addressed more of psychological training in their athletic life.

The combined impact of goal setting and self-talk in performance of shooting skill was investigated. Both self-talk and goal setting was observed to be effective in improving performance, some of the observed advantages might probably derive from a combined intervention(58). It is believed that self-talk and goal setting is effectual methods to augment players' performance when employed in isolation, but it is worthy to recommend the combination of these techniques into one intervention. However, more research should be designed by using larger samples, and by expanding the study period over a longer time. Another research determined the effect of motivational self- talk on learning of soccer shot in beginner players were intervened by anxiety. The results proposed that self-talk might affect players' performance and motor learning(59). Although, it should be noted that the motivational self-talk might also have different impacts on motor skills learning and performance.

3.6. Imagery

Another psychological skill that researchers in the sports field have recently been attracted to is imagery. Imaging a sport technique is identical to conducting the skill, but athletes encounter the technique in their mind. Likewise, imagery is exerted as the process in which one feels himself/herself through his/her minds. The imagery skill can make the performance easier as it is one of the individual's skills. Several investigations revealed the effect of mental imagery on the improvement of athletic performance, learning tactical strategies, motor performance, and skills (60, 61). According to these documents, imagery can be a great help on the successfulness of athletes and extend physical performance particularly throughout a competition.

The effect of imagery skill in soccer players' perception of anxiety during penalty kicks was investigated. The soccer players practiced imagery skill for 10 weeks and 4 times each week. It was observed that imagery practice reduced anxiety level and imagery practice with kick training had a more beneficial effect on attenuating anxiety compared to just kick practice during the penalty kick (62). A study was designed to assess the relation between young soccer players' imagery use and the level of their innovation, and efficacy. It was observed that players with a higher level of imagination are more prone to employ imagery skill in their practice. Their finding also pointed out that mental-imagery training might lead to improved performance among young soccer players. It was indicated that soccer players employ both motivational and cognitive images. The authors reported that beginner soccer players use motivational images more often, but later they integrate them with the cognitive kind of images(63). In this regard, it can be suggested that higher levels of imagination supply a substructure for imagery application in young soccer players' performance improvement. In line with the previous study, the influence of an ecological imagery program on the elite soccer players' performance (in four age classifications including U16, U19, U21 and over 21) was investigated. The analysis indicated that the prosperous pass rate elevated remarkably in the intervention group in comparison with the control group. Further analysis showed that the results are just statistically significant in U16

and U21 groups but not others. They deduced that effective soccer passing during competitions as a multidimensional open skill might be elevated by an ecologically precise procedure of mental imagery (64). Hence, it could be proposed that merging two kinds of cognitive imagery instructions has a positive effect on soccer performance throughout real competitions.

In a study designed by Adegbesan, imagery skill was used as a predictor of soccer players' confidence. The results indicated a striking relevance of imagery use and sport confidence. Regarding the social cognitive theory, the recognition of the features of confidence particularly with the supplementary influence of imagery use leads to a better estimation of the soccer players' performance confidence and the general assessment of the sport experience(65). In the mentioned study, soccer players' confidence can be prefigured by their imagery capability. It is recommended to investigate the mediatory impact of imagery use in soccer with other social cognitive elements, and considering the player's post as well. Furthermore, mental imagery training can be applied for managing anxiety level in soccer players but it was reported that more workout is necessary if players want to benefit more from this skill which subsequently leads to improved performance (66). Additionally, motivation, anxiety and imagery levels of soccer players from different leagues were compared by a research team. The obtained results showed that anxiety and motivation levels vary regarding the league level of elite soccer players(67). Thus, it was illustrated that professional soccer players did not significantly impress their self-confidence even with their sub dimensions that construct imagery skills, motivation, cognitive and somatic anxiety levels. Since the improvement of soccer is relevant to the development of the soccer players, it is necessary to boost the motivation amounts to reduce the anxiety level that negatively influences the athletic performance and to place imagery training sessions in the training schedule for the promotion of the modern soccer.

The specificity of imagery used by young soccer players and the potency of an imagery training program on their performance were investigated. The achieved data indicated that soccer players with an elevated level of imagination are more willing to employ mental imagery in their practice. Besides, age differences in kinds of imagery usage were observed. Beginners (younger teens) use motivational images more often and only later they integrate them with the cognitive images. Their data also reinforced that mental imagery training can lead to improved performance on young soccer players (63). Thus, it can be proposed that the use of imagery training sessions designed according to the specific use of various kinds of images by soccer players' results in appreciable progress of sports performance.

An investigation assessed the imagery skill in Portuguese soccer goalkeepers, and also examined the probable differences of imagery usage among soccer players in different ages. The results showed that imagery was more used during competitions than in training sessions. Besides, soccer players used imagery skill for cognitive and motivational purposes, although, the motivational function was used a bit more and with more clear images. After competition and when injured, under-21 soccer players used imagery remarkably less than older players(68). The results of this study display an effective start to the examining of imagery usage by soccer goalkeepers; but, there are some study limitations that is essential to be mentioned, including the sample size which does not permit to generalize the results. Extending the samples to other World soccer leagues would be advantageous for more precise analysis. In addition, it was not clear if goalkeepers really had known how to use imagery skill. Managing these fundamental variables are important for further future research.

3.7.Attention

Attention is one of the most important topics for athletic performance. Soccer players' capabilities are not just the techniques they know; focusing attention is the most fundamental factor for decreasing anxiety about performance, about what other people might think, and to re-concentrate after a doing mistake. Attention is a mental process that targets an individual's consciousness as some information appears to the senses(69). Learning what stimuli to pay attention to, how to switch attention when required, and how to determine one's attention are indispensable skills for effective performance.

Attention has been analyzed in different ways which have useful implications for athletes. It is believed that people give general (passive) or close (active) attention to stimuli or situations. General attention is typically a less alert condition so responses are made at a slow pace. On the other hand, close attention is associated with arousal and responses are quicker and mainly more expedient. Close attention needs more energy compared to general attention. In sports close attention is required for prolonged activities; talented athletes might have an intrinsic ability or maybe learned to shift their attention from general to close attention when it is essential. For example, a soccer player has to take a look at the whole field at first and after that kick a pass to a selected teammate (70). Some soccer players can rapidly monitor the entire field to detect the open player waiting for the pass, but others might not be able to see even one meter beyond the ball (71). Since soccer is a rapid-moving game, it needs visual flexibility. Hence, it is crucial that soccer players be able to shift their attention immediately from one stimulus to another. Players have to concentrate their vision when they trap or shoot a ball and focus their vision for the other probable offensive conditions. It can be suggested that attentional control training helps athletes to learn different kinds of attentional focus and to administer each type at the appropriate situation. However, it might be more useful if athletes practice this skill in game-like training sessions.

The effect of an attentional shift training procedure on the performance of skills during soccer drills was evaluated. Following training sessions, the precision of the experimental soccer drill enhanced (72). Furthermore, the efficacy of an attentional focus training program on the development of attention of young soccer players was studied before and after training procedure. It was illustrated that the attentional focus training program was effectual in developing positive attentional traits and reducing negative attentional traits (73). These results mean that training procedures helped soccer players learn to sustain a more restricted, task-relevant focus.

The attentional focus has appeared as a leading mediator of performance and also helps to learn a large number of motor skills. An athlete can concentrate internally on his/her body movements and the movement process or focus externally on the influence of the movements on the environment or the movement outcome. Accordingly, it was proposed that the internal focus compels the motor system by intervening to automatic motor control procedure that would typically modulate the movement, while an external focus grants the motor system to self-organize (74). In this regard, two experiments were designed to evaluate the impact of attentional focus on 10-meter sprint time and start kinetics in a group of soccer players and experienced sprinters. During the first experiment, the soccer players were asked to accomplish 10-meter sprints under an internal focus state, external focus situation, and a control condition. The results of the 10- meter sprint time illustrated that both the control and external focus situations led to notably faster sprint times compared with the internal focus state. In the second, the experienced sprinters executed the same 10-meter sprint exercise employing the same instructions as the first

experiment. For the 10-meter sprint time and kinetic factors, there were not any remarkable differences across the mentioned conditions. These findings prepare new clues that experience level mediates the effect of attentional focus on sprint performance (75). The obtained data in experiment one also provide further evidence for the advantages of an external focus rather than an internal focus in practical conditions that need instructions. Thus, the instructions should direct the players' attention to the movement outcome (external) more than to the movement procedure (internal).

3.8. Relaxation

Relaxation is a state of feeling compromise, peace and the absence of tension in the mind and body which is often associated with attenuated neurological arousal. Since the stressors which are generally existing in a sport mostly cause physical tension, physical relaxation might be effective to help athletes control the level of their physical energy to permit them to perform well. In the same way, it was declared that relaxation can reduce unfavorable muscular tension, decrease excessive activation of the sympathetic nervous system, and calm the mind (52). It was also claimed that successful athletes frequently apply relaxation skill to control their physical energy (76). Moreover, some other researchers suggested that relaxation techniques can improve performance (77). Coaches must recognize the importance of relaxation in competitive conditions. It is essential to encourage athletes to relax or psych up in order to be more successful.

Different relaxation methods are available and can be classified as mental relaxation or physical relaxation including autogenic relaxation and progressive muscle relaxation respectively. Each relaxation method induces distinct relaxation responses. For instance, techniques with cognitive modules such as autogenic relaxation probably provoke particular cognitive effects like attenuating anxiety level and improving positive mood. On the contrary, progressive muscle relaxation which emphasizes on skeletal muscle has been observed to influence muscular components. Progressive muscle relaxation or active relaxation is a technique that helps an individual feel calm increasingly by contracting and loosening particular muscle groups effectively (78). It was clearly observed that progressive muscle relaxation eliminated the competitive sport anxiety among the Algerian elite soccer players and the effectiveness of this method continued even after the training period (79). Thus, it can be suggested that muscle relaxation process leads to positive results in players' mental state and consequently their performance. However, it is recommended to use a larger sample size to allow generalizing the observed results.

Another study compared the progressive muscle relaxation and autogenic relaxation on young soccer players' moods. Both of these methods induce corresponding mood responses and might be employed to modulate young soccer players' mood states (80). Hence, both methods may be beneficial for players' mood states. Besides, enjoyment of the training sessions should be appointed to be effective enough and also, minimize a probable negative feeling towards the training sessions.

4. CONCLUSION

Being successful in soccer requires appropriate mental skills as well as physical techniques. It should be taken into account that the psychological aspect in sports prepares the required psychological care for the soccer players before the competitions to lower anxiety, stress, and depression, relaxes their mind and body and regulates mood states which ultimately improves the performance. Consequently, persuading soccer players to exert various mental skills such as confidence, anxiety control, self-talk, motivation, goal setting, imagery, attention

and relaxation would seem to be a beneficial approach. With respect to future research, the potency of the incorporate effect of psychological skills in soccer players' performance should be examined. Sports psychologists should advice soccer players to use psychological skills to help them integrate the skills into training sessions and competition settings. In addition, it is essential that team managers and coaches who are responsible for the soccer players' preparation notice the advantages of psychological skills training since they are in the best position to provoke soccer players to apply psychological skills in training and competition environments.

Conflict of Interest

The authors declare that they have no conflicts of interest.

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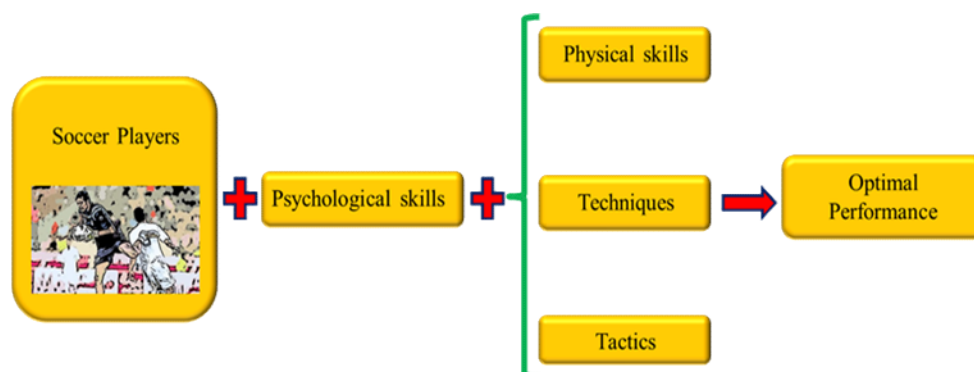
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Graphical Abstract





IMPACT OF YOGA ON MENTAL AND PHYSICAL HEALTH

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ABSTRACT

Yoga is a way of better living. It ensures great efficiency in work and a better control over mind and emotions. Through Yoga one can achieve both physical and Mental health. Health is the greatest blessing to us by GOD. Health is not just the absence of disease. To enable the individuals to lead a life of complete physical, mental and social well-being and not merely the absence of disease. Yoga and Physical education may provide the right direction and needed actions to improve our physical & Mental Health. Educate and schools are looking to include yoga as a cost effective, evidence based component of urgently needed wellness programs for their students. Lastly we can say that yoga is basically the most important ancient art that aims towards the building up of a healthy mind in a healthy body.

Key words: Yoga, Health, Fitness, Psychology Factors, Physical Education, Sports

1. INTRODUCTION

The word 'Yoga' is derived from the Sanskrit root 'Yuj', meaning 'to join' or 'to yoke' or 'to unite'. As per Yogic scriptures the practice of Yoga leads to the union of individual consciousness with that of the Universal Consciousness, indicating a perfect harmony between the mind and body, Man & Nature (**Basavaraddi (2015)**).

Yoga, originating from India, is an ancient contemplative practice dating back over 3,500 years, which aims at one thing to alleviate suffering and promote optional physical and mental thriving. In Western contemporary settings, yoga tends to be synonymous with yoga postures, breathing, and some, mediation practices. Historically, however, the practice of yoga was understood to be much broader and more comprehensive, including wider range of techniques to promote well being and balance among mind brain body functions, intellectual discernment, and mediation, and each offered practices to mitigate suffering and produce higher levels of consciousness (**Basavaraddi (2015)**). There are many components of yoga that have developed historically. We are giving some of them as following :

1.1 Postures

Yoga Sutras in Patanjali, the limb of asana is defined as steady and comfortable posture. Physically challenging postures are further described to be sustained through the fluctuations of the mind. Postures are one of the most commonly utilized Yoga practices in modern interpretations. Historically, postures were used to physically control the body in preparation for controlling the mind in meditation for emended periods of time. A common premise behind modern yoga classes is that practicing various postures any help to reduce physical and emotional stress. A physical yoga class will include a series of postures regarding different part of the body. for example a class sight include forward and backward bends, twists, seeding papers, and balancing poses. Modern and historic yoga practice manuals often suggest a attractions between emotional states, physical health, and posture. Although this link has not scientifically been established yet for any particular poses specifically, there is evidence linking posture, emotion, and mental health.

1.2 Breath Regulation

Pranayama is the fourth of the eight limbs of Yoga and has a deeply settling influence on the mind helping the subject be in the present, i.e., "mindful". It is, therefore, widely employed as a preparation for mediation. The Sanskrit word pranayama is composed of the word prana, which translates to breath as a life-sustaining force, and the word ayama which translates to freedom or release.

Pranayamas are a series of specific techniques to control the breath in order to allow the breath and life force to flow freely. Traditionally, two benefits of pranayama are described to help the practitioner down-regulate arousal and increase awareness of the interaction between the body and the mind. Similar to asana as preparation of the body for meditation pranayama is meant to prepare the mind for meditation. Pranayamas differ from normal breathing on a number of dimensions, including the duration of the in breath, the out breath, the holding of the breath, and the ratio of these.

All pranayamas involve diaphragmatic breathing, mostly deep and slow in quality through the nose. Popular pranayama techniques include deep, even, three-part inhales and exhales, alternate nostril breathing, forceful expulsion of breath using the diaphragm and abdominal muscles, and slow diaphragmatic breathing with partial closure of the glottis creating an audible sound of rushing air described "like an ocean". Its settling influence has been confirmed by such observations as test anxiety reduction, improved test performance and

perceived stress reduction and improvement in cardiovascular parameters. It also reduce aggression. These results suggest that application of pranayama methods to decrease effects of stress in society might prove valuable. Teaching them in schools would make a highly beneficial life-long skill available just as mindfulness-based interventions are seen as achieving. Hence, so many studies, have been published on various pranayama programmes that its effects may be considered quite well standardized. It can be used as a comparison for another method requiring assessment for comparative effects. In this context, pranayama represents a recognized way of managing mild levels of stress, and so improving emotion regulation and decreasing tendencies to aggression. In particular, pranayama practice usually involves focusing on the breathing process bringing the mind to the present moment. Improving that ability will clearly be of value when taking tests and exams.

The pranayama doing people improved more in mindfulness than the people which are not doing and alone decreased highly significantly in aggression and significantly on negative emotion regulation. Several studies have reported increases in emotional regulation resulting from mindfulness training. For one group to both increase in a measure of mindfulness and decrease in aggression and negative emotion is consistent with these results. In support of this, Yoga, including nadishodana pranayama has been found to be very effective in changing the levels of key endocrine molecules associated with stress such as epinephrine and nor epinephrine. For more details one can see (2, 3) and references therein.

2. YOGA AND MENTAL HEALTH

Yoga is an ancient yet contemporary practice with growing popularity among all ages, and it focuses on the mind, body and spirit. Yoga can improve students' balance, strength and flexibility, which are important for child motor development as well as general fitness. Whether used as a physical activity break or a project portion of a module, practicing yoga to promote math literacy can provide an outlet for developing health related fitness components such as flexibility, muscular endurance, muscular strength and cardio respiratory endurance, while uniting the mind, body and soul. Using yoga as a way to promote interdisciplinary lessons that can improve student's understanding of math concepts, as well as their achievement of lifelong physical activity. Students can benefit from the enjoyment of yoga and from participating in yoga with friends and family outside of physical education.

Pilkington, et.al.(2005) & Uebelacker, et.al.(2010) found four relevant publications, including two reviews on the effects of yoga on depression. **Pilkington, et.al.,2005 & Uebelacker, et.al.(2010)** studied on yogic breathing. **Brown and Gerbarg, (2005)** for depression, and for depressive and anxiety disorders. (**Saeed. Antonacci, and Bloch, 2010**). yoga was no better than Mindfulness-based Stress Reduction at reducing anxiety in patients with cardiovascular diseases. (**Ospina, Bond, and Karkhaneh et al.,2007**). yoga may reduce perceived stress as effective as other active control interventions such as relaxation, cognitive behavioural therapy, or dance (**Chong, et.al., 2011**)

Pilkington, et.al. (2005) indicated the results on mathematics anxiety through Super Brain Yoga. In this technique Alpha waves in the brain and Synchronization of left and right brain hemispheres are heightened. It is a Alpha waves in the brain indicates that the body has brain hemispheres integrates the brain. Students having integrated brain are efficient in solving Mathematical problems by using resources or both left and right hemisphere (**Taneja, 2014**). **Ussing, et.al. (2012)** indicated beneficial effects of yoga for pain-associated disability and mental health. Yoga may well be effective as a supportive adjunct to mitigate some medical conditions, but not yet a proven stand-alone, curative treatment.

3. YOGA AND PHYSICAL HEALTH :

Roland, Jakobi, and Jones, (2011) evaluated whether yoga can engender fitness in older adults. Ten studies with 544 participants were included; 5 of these studies were RCTs, and 5 studies had a single-arm pre/post-design. With respect to physical fitness and function, the studies reported moderate effect sizes for gait, balance, body flexibility, body strength, and weight loss. A reduction of systolic and/or diastolic pressure. However, there were several noted potential biases in the studies reviewed (i.e., confounding by lifestyle or other factors) and limitations in several of the studies which makes it “difficult\ to detect an effect specific to yoga (**Innes, Bourguignon, and Taylor, 2005**). The practice of yoga may be associate with improvement in cardio respiratory fitness. A study of evaluated heart rate for standing yoga postures found low heart rates and higher rates of perceived exertion for the yoga postures, as compared to treadmill walking (**Uebelacker, 2010**).

Mental stress, diabetes, hypertension, and cardiovascular disease are fast growing epidemics consequent to changing lifestyles accompanying globalization and modernization. In the past few decades it has been the subject of research as a therapeutic measure as mental stress, obesity, diabetes, hypertension, coronary heart disease, and chronic obstructive pulmonary disease. Overweight and obesity are strong risk factors for diabetes hypertension, and ischemic heart disease. Yoga has been found to be helpful in the management of obesity. Training of yoga asanas and pranayama for three continuous months, one hour every day in the morning by a yoga expert resulted in decrease in body weight, body mass index (BMI), and waist hip ratio.

The practice of yoga asanas and pranayama helps in control of type II diabetes mellitus and can serve as an adjunct to medical therapy. Training of yoga asanas and pranayama for three continuous months, one hour every day in the morning by a yoga expert resulted in decrease in fasting as well as postprandial blood glucose levels and acetylated hemoglobin.

In another study from India, yoga asanas and pranayama after 40 days of practice brought down fasting as well as postprandial blood glucose levels and acetylated hemoglobin in patients of non-insulin-dependent diabetes mellitus. They developed a sense of well-being within 10 days and there was a lowering of anti-diabetic drugs.

Patients with angiographically proven coronary artery disease who practiced yoga exercise for a period of 1 year showed a decrease in the number of anginal episode per week, improved exercise capacity, and decrease in body weight. Revascularization procedures were required less frequently in the yoga group (**Uebelacker, 2010**).

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COMPARISON OF INTELLIGENCE OF MALE AND FEMALE SPORTSPERSONS OF DIFFERENT BLOOD GROUPS

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ABSTRACT

The purpose of the study was to compare and investigate the intelligence of male and female sportspersons of A, B, AB and O blood groups. Two hundred and eighty six sportspersons were selected from Eleventh grade students of English Medium Schools recognized by C.B.S.E., New Delhi situated in Bilaspur (Chhattisgarh) ranging between 16 to 18 years of age. In the present study, Group Test of General Mental ability (Rev.) by Dr. S. Jalota (1972) was used to measure the intelligence of the subjects. This test was selected for use because of its reported characteristic, popularity and suitability. To investigate the intelligence of male and female sportsperson of different blood groups, means, standard deviations and t-ratio were computed. The results of the study revealed that Female sportspersons of A+ blood group were found to have greater amount of intelligence than their counter parts Male sportspersons of B+, AB+ and O+ blood group were found to have greater amount of intelligence than females. Male and female sportspersons of A+, B+ and AB+ blood groups did not differ significantly in their intelligence. Male and female sportspersons of O+ blood group had significant difference in their intelligence.

Keywords: Male, Female, Sportspersons, Blood groups, Intelligence, C.B.S.E School.

1. INTRODUCTION

In the present days, every individual feels the importance of educational values in their life. In the process of education, many people follow the concept of education. They think that literacy and theoretical knowledge is the only channel of education, where as, education includes the mental, physical, social, spiritual, intellectual and economical etc., dimension to the process of learning the education

In 1900, Landsteiner, K showed that people could be divided into three groups(now called A, B, and O) on the basis of whether their red cells clumped when mixed with separated sera from people. A fourth group (AB) was soon found. This is the origin of the term 'blood group'. A blood group could be defined as, 'An inherited character of the red cell surface, detected by a specific alloantibody **(Daniels & Bromilow, 2013)**.

Karl Landsteiner discovered human blood groups in 1900 and laid the foundation for the modern medical practice of blood transfusion. The ABO blood groups have a role in physiology beyond their importance for blood transfusion. In the past few years, red cell antigens (A and B carbohydrate structures) have been found on a variety of cells, tissues and proteins, indicating that these antigens might be involved in different physiological processes **(Landsteiner, 1900)**.

Landsteiner discovered the ABO blood group system by mixing the red cells and serum of each of his staff. He demonstrated that the serum of some people agglutinated the red cells of other. From these early experiments, he identified three types, called A, B and C (C was later to be re-named O for the German "Ohne", meaning "without", or "Zero", "null" in English). The fourth less frequent blood group AB, was discovered a year later. In 1930, Landsteiner received the Nobel Prize in physiology and medicine for his work **(Dariush & Yeganeh 2013)**.

The primary function of blood is to supply oxygen and nutrients as well as constitutional elements to tissues and to remove waste products. The hormones and other substances to be transported between tissues and organs are enabled by the blood. The main function of blood is maintaining homeostasis by acting as a medium for transferring heat to the skin and by acting as a buffer system for bodily pH. The blood is circulated through the lungs and body by the pumping action of the heart. The blood is pressurized by the right ventricle to send it through the capillaries of the lungs, while the left ventricle repressurizes the blood to send it throughout the body. Pressure is essentially lost in the capillaries, hence gravity and especially the actions of skeletal muscles are needed to return the blood to the heart **(Borah, et.al., 2013)**

The frequency of ABO blood groups in different Iranian ethnic groups was released (Walter, et.al., 1991). The frequency of blood groups, serum proteins and red cells enzymes in various Iranian populations were reported **(Amirshahi, et. al., 1992)**.

Intelligence is a very general mental capability that, among other things, involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly and learn from experience. It is not merely book learning, a narrow academic skill, or test-taking smarts. Rather it reflects a broader and deeper capability for comprehending our surroundings—"catching on," "making sense" of things, or "figuring out" what to do. **(Gottfredson, 2004)**.

This definition emphasizes that intelligence represents the ability to solve problems (including problems of comprehension) by thinking. Intelligence is widely considered to occupy the apex of a hierarchy of more specific abilities that are all related to each other **(Carroll, 1993)**.

Males with blood group O show high IQ level. These are intellectually superior. The average and below average individuals are found to be having predominantly with blood group B

and females of rural areas with high IQ are found to be having blood group O. The females with average IQ are found to be having blood group B. In urban areas, males with high IQ are found to be having blood group O. Average and below average males are found to be having blood group O followed by blood group B. Females of urban area, the individuals with high and low IQ level are found to be having blood group B. **(Kohli & Sharma, 2016)**

A question of some interest to Indian sport psychologists has been the relationship of intelligence to athletic performance **(Kamlesh, 1986; Punia & Mann, 1986; Sandhu, 1984; Sharma & Kamlesh, 1983)**.

Sport affect intelligence in some general way, either favorably or unfavorably, and second, is there a factor of "sport intelligence"? Sport psychologists have debated this issue, some arguing against the intelligence scales used and questioning the objectives of some of the studies as well as whether the factor of sport intelligence is a valid one. However, as is the case elsewhere, general intelligence does correlate with athletic success. But more research is needed to discriminate between general intelligence and sport intelligence. Yet to be addressed is the technology to measure intelligence, especially sport intelligence-if this concept is a valid one-and the relationship of intelligence to skill acquisition **(Kamlesh and Mohan, 1987)**. Anwara and Cobbach in 1989 viewed that students do badly academically on account of things other than low intellectual ability **(Butcher, 1968)**.

Intelligence could be a term that is thus normally used and however rather difficult to to define in an exceedingly precise and usually accepted form. This problem of definition maybe as a result of in recent years psychologists have gathered most material concerning it by use of intelligence tests that we discover it difficult to adopt an easy and comprehensive which means of the term. Intelligence primarily should not be confused with intellect though, it is concerning intellect or knowledge. It is quite possible that it should not happen usually that a person with a high degree of intelligence could also be poor in intellect merely for the rationale he never tried to use his intelligence and build up his intellect. He involves three main characteristic qualities of one's behavior: (a) the tendency to require and maintain a certain direction, (b) the capability to create variations for the aim of getting a delineated goal, (c) the facility of power of self criticism **(Boaz, 1957)**.

Gupta (1973) found that intelligence seemed to be the predictor of academic success. Socio-economic status was independent of academic achievement.

Atoom (2014). found that the blood group (AB) received the highest average in the Intelligence Quotient(IQ) test which is also the highest in the GPA. And that the blood type (B) was the lowest in the GPA and in test results. The researcher recommended to expand the circle of the research to include all Jordanian universities, other universities and schools in a longer periods of time. Intelligence is a measure of general cognitive functioning capturing a wide variety of different cognitive functions **(Marsman, et.al., 2017)**. It is a theoretical ability that affects all sorts of mental activities, no matter what are the subject of the activity and its shape **(Atoom, 2016)**.

Intelligence is a construct generally associated with the capacity to learn. Intelligence is the best individual predictor of academic achievement **(Erath, et. al., 2016)**. O blood group is more prevalent in both the sexes (25% in males and 14.5% in females) than A, B and AB. Clotting time is found to be more in O and AB blood groups in females, whereas bleeding time in different blood groups did not show any change in both the sexes **(Yasmeen, Ali and Shaikh, 2014)**.

2.METHODOLOGY

2.1 Selection of Subjects

Two hundred and eighty six (Males=142, Females=144) sportspersons were selected for the purpose of present investigation. All the male and female sportspersons belonging to Eleventh grade students of English Medium Schools recognized by C.B.S.E., New Delhi and situated in Bilaspur District (Chhattisgarh) ranging between 16 to 18 years of age .

2.2 Selection of Variables

The intelligence and A, B, AB and O blood groups were taken into consideration for the present investigation.

2.3 Instrument

In the present study, Group Test of General Mental ability (Rev.) by Dr. S. Jalota (1972) was used to measure the intelligence of the subjects. This test was selected for use because of its reported characteristic, popularity and suitability. It is a verbal group of general mental ability prepared in different language including Hindi. Hindi version was considered appropriate for the schools of chhattisgarh, where the present study was conducted. There are one hundred items in this test. They are of seven types: similar, opposites, analogies, numerical series, best answers, classificatory and reasoning.

The scoring of Group Test of General Mental Ability is done with the help of stencil keys following the procedure laid down in respective manual. The Maximum score for the test is 100. Blood groups were taken from school record.

2.4 Statistical Analysis

To investigate the intelligence of male and female sportsperson, means and standard deviations were computed. To find out the significance of difference between male and female sportsperson in the intelligence of different blood groups Eleventh grade students of English Medium Schools recognized by C.B.S.E., New Delhi and situated in Bilaspur District (Chhattisgarh), t-ratios were computed.

3. RESULTS

To assess the intelligence of male and female sportspersons belong to different blood groups mean, standard deviation, and t-ratio) were computed. and data pertaining to this, has been presented in table 1 to 5

TABLE 1
DESCRIPTIVE STATISTICS OF INTELLIGENCE OF MALE AND FEMALE
SPORTSPERSONS OF DIFFERENT BLOOD GROUPS

S.NO.	Blood Groups	Sex	N	Mean	SD
1	A+	Male	24	49.46	12.65
		Female	25	53.00	10.21
2	B+	Male	34	66.71	14.44
		Female	38	63.39	12.08
3	AB+	Male	19	55.11	15.26
		Female	21	52.38	14.46
4	O+	Male	65	62.82	12.08
		Female	60	58.53	11.85

The mean scores of intelligence of male and female sportspersons belong to different blood groups studying in higher secondary schools of Bilaspur districts have been depicted in figures 1 and 4.

FIGURE 1

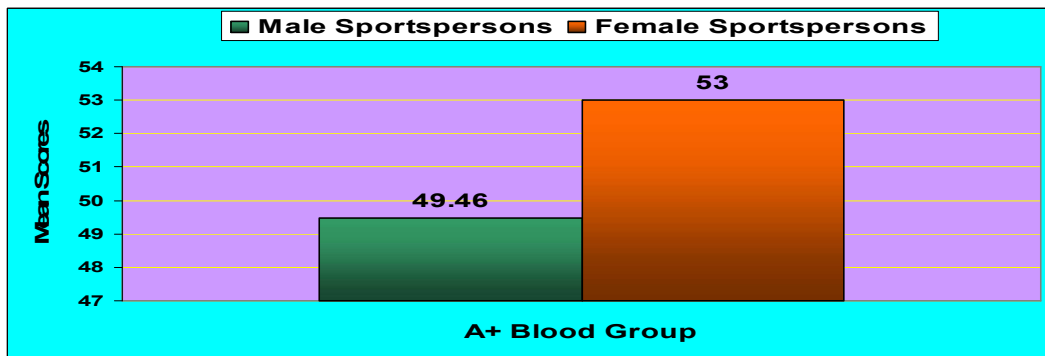


FIGURE 2

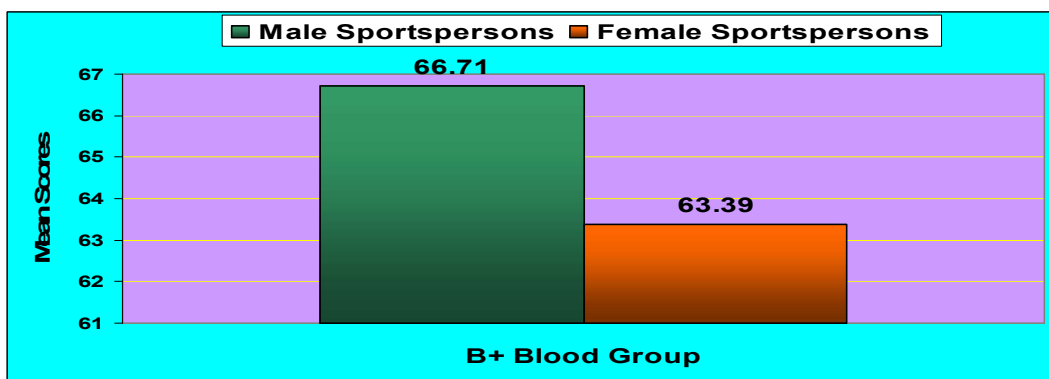


FIGURE 3

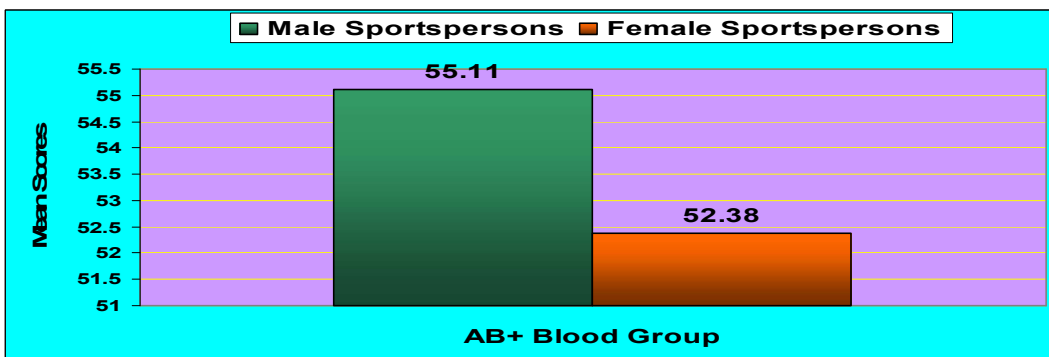


FIGURE 4

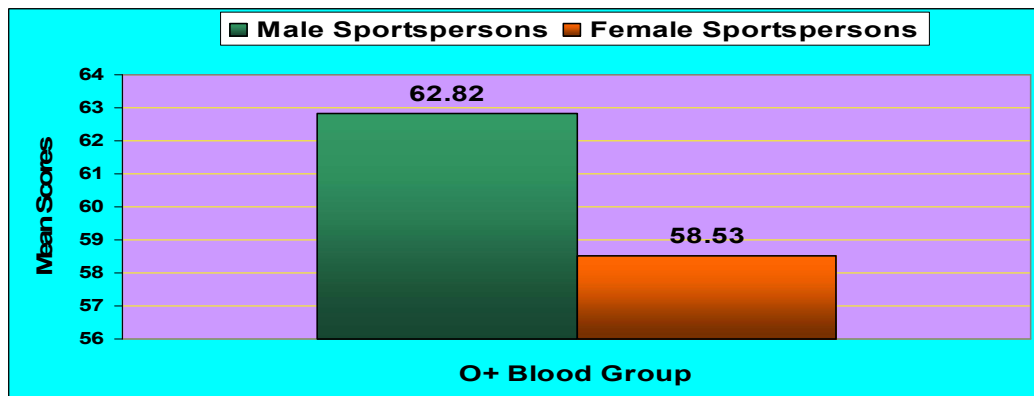


TABLE 2
SIGNIFICANCE OF DIFFERENCE BETWEEN MEAN SCORES ON INTELLIGENCE
OF A+ BLOOD GROUPS OF MALE AND FEMALE SPORTSPERSONS

Blood Group	Sex	N	Mean	Mean	MD	σ DM	t-ratio
A+	Male	24	49.46	49.46	3.54	3.27	1.08
	Female	25	53.00	53.00			

Significant at .05 level. $t_{.05} (47) = 2.01$

It is evident from Table 2 that the statistically significant difference was not found between male and female sportspersons of A+ blood group in their intelligence, as the obtained t-value of 1.08 was less than the required $t_{.05} (47) = 2.01$.

TABLE 3
SIGNIFICANCE OF DIFFERENCE BETWEEN MEAN SCORES ON INTELLIGENCE
OF B+ BLOOD GROUPS OF MALE AND FEMALE SPORTSPERSONS

Blood Group	Sex	N	Mean	Mean	MD	σ DM	t-ratio
B+	Male	34	66.71	66.71	3.32	3.13	1.06
	Female	38	63.39	63.39			

Significant at .05 level, $t_{.05} (70) = 2.00$

Table 3 shows that the statistically insignificant difference was found between male and female sportspersons of B+ blood group in their intelligence, as the obtained t-value of 1.08 was less than the required $t_{.05} (70) = 2.00$.

TABLE 4
SIGNIFICANCE OF DIFFERENCE BETWEEN MEAN SCORES ON INTELLIGENCE
OF AB* BLOOD GROUPS OF MALE AND FEMALE SPORTSPERSONS

Blood Group	Sex	N	Mean	Mean	MD	σ DM	t-ratio
AB+	Male	19	55.11	55.11	2.73	4.70	0.58
	Female	21	52.38	52.38			

Significant at .05 level. $t_{.05} (38) = 2.02$

Table 4 shows that the statistically insignificant difference was found between male and female sportspersons of AB+ blood group in their intelligence, as the obtained t-value of 1.08 was less than the required $t_{.05} (38) = 2.02$.

TABLE 5
SIGNIFICANCE OF DIFFERENCE BETWEEN MEAN SCORES ON INTELLIGENCE
OF O+ BLOOD GROUPS OF MALE AND FEMALE SPORTSPERSONS

Blood Group	Sex	N	Mean	Mean	MD	σ DM	t-ratio
O+	Male	65	62.82	62.82	4.29	2.14	1.99*
	Female	60	58.53	58.53			

Significant at .05 level, $t_{.05} (123) = 1.98$

It is clearly evident from Table 5 that the statistically significant difference was found between male and female sportspersons of O+ blood group in their intelligence, as the obtained t-value of 1.99 was high than the required $t_{.05} (123) = 1.98$.

4. DISCUSSION

Descriptive statistics of intelligence of male and female sportspersons of different blood groups indicated the difference in their mean scores, as the Female sportspersons of A+ blood group were found to have greater amount of intelligence than their counter parts. In case of Male sportspersons of B+, AB+ and O+ blood group, they were found to have greater amount of intelligence than females. The result of t-ratio indicated the insignificant between mean scores on intelligence of male and female sportsperson in A+, B+, and AB* blood group. But they had exhibited the the significant difference in their intelligence. A blood group female sportspersons were more intelligent than their counter parts. Where as male sportspersons of B+, AB+ and O+ were found more intelligence.

5. CONCLUSIONS

1. Female sportspersons of A+ blood group were found to have greater amount of intelligence than their counter parts
2. Male sportspersons of B+, AB+ and O+ blood group were found to have greater amount of intelligence than females.
3. Male and female sportspersons of A+, B+ and AB+ blood groups did not differ significantly in their intelligence.
4. Male and female sportspersons of O+ blood group had significant difference in their intelligence.

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A COMPARATIVE STUDY OF PERSONALITY TRAITS OF MALE KABADDI PLAYERS OF DIFFERENT LEVELS

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ABSTRACT

The purpose of the study was to assess and investigate the personality characteristics of male Male Kabaddi Players at different levels of their participation. The sample consisted of one hundred and fifty (Intercollegiate level=50, State level=50, Inter-university level=50) male Kabaddi players from universities and colleges running in Chhattisgarh state, who have taken part in intercollegiate, state and inter-university level Kabaddi tournament. Propulsive research design was used for the purpose of study. Eysenck's Personality Questionnaire-R (E.P.Q.-R) prepared by Eysenck and Eysenck [16] was selected to measure the four dimensions of personality of national level Gymnasts of India. The Eysenck's Personality Questionnaire- R (E. P. Q.-R) is a valid and reliable instrument. In order to find out the significant difference among male Kabaddi Players of different levels, mean, SD and F-ratio were computed, level of significant was set at .05 level. The results of analysis indicated that the Neuroticism, psychoticism and social desirability temperaments were found high in state level kabaddi players than their counter parts. where as, Extroversion temperament was high in Intercollegiate level kabaddi players than their counter parts. F-ratio resulted significant difference among male kabaddi players of three different levels of participation in their neuroticism temperament. But they did not differ significantly in their rest of the temperament of personality.

Keywords: Male, Kabaddi, Personality Factors, State, Intercollegiate and Inter-university levels

1. INTRODUCTION

Kabaddi is an Indian game. It was included in Asian games in 1990 and since then India has been continuously winning gold medal for Kabaddi in Asian games. Growing enthusiasm of the international viewers as well as the growing media attention the winner country gets has enhanced the prestige attached to any international sports event.

Kabaddi is a team game of speed, stamina, endurance, strength and skill. Although it is a team event, individual fitness plays a vital role in the success of the team. Many a times, it is a missing link of the team. Kabaddi has gained fame all over the world. Kabaddi is an attacking and defensive game. Especially of the attack is an individual effort while defence is a combined effort. Kabaddi players are less extrovert and more psychotic than Kho-Kho players (**Karad & Wahid, 2011**)

Kabaddi is a combative team game, 'played with absolutely no equipment, in a rectangular court, either outdoors or indoors with seven players on each side of the ground. Each side takes alternate chances for offence and defense. The basic idea of the game is to score points by entering into opponents 'court and touching as many defense players as possible without getting caught in a single breath. In kabaddi the basic defense positions are in three zones, center zone and left zone, the defense player occupying one of these zones has specific functions to perform. In co-ordination with his counterparts in the other defense zones, for maintaining the defensive strong hold. The player is identified by the position he occupies irrespective of the varying number of offense and defense players (**Kumari. and Sudhakara, 2019**).

Kabaddi is the game of "attack" and "defence". Attack is also known as "raid" and the attacker is called the "raider". The peculiarity of the game is that attack is an individual effort while defence is a combined effort. Offence in Kabaddi is a sum total of raiding technique and tactics in which footwork of the raider plays a crucial role. Raid is the main tool for scoring points against the opponent team. A Raider can score a number of points in a single raid with his individual skill. To score point, a raider has to maintain his cant. The raider has to withhold his breath during the entire course of the raid and keep up a continuous (**Rao, 2002**)

The kabaddi players require various qualities physical and mental. Kabaddi being a combative team game is also called the game of agility, good lung capacity, muscular coordination, presence of mind and quick reaction ability and various psychological parameters. (**Jaipal and Kumar, 2013**)

Hein (1954) found team sports participants to be more extraverted than those participating in individual sports. He also found that participants on individual and dual sports possessed less amount of self assurance. **Slusher (1964)** using MMPI found that personality differences existed even among athletes who participated in different sports. **Singh and Singh (1986)** found that neuroticism tendency was significantly higher in the non sports groups of Kabaddi and Kho-Kho Players whereas. **Peter et al. (1995)** showed the sports participants to be more extraverted and vigorous and less anxious, neurotic, depressed and confused. Elite athlete was found to have significantly greater positive mental health than non-athletes. Positive mental health is characterized by less tension, depression, anger and confusion. **Balchard (1946)** concluded that desirable character and personality traits are affected by participation in physical education activities.

Many researchers (**Kane,1990;Vanek,2000; Cratty et al, 2000**) have proved that certain personality traits are dominant and are special characteristics of certain specific sports activities.

Many researchers compared the personality differences between athletes and non-athletes in their investigations (**Booth, 1958; Hunt, 1969; Dureha, 1987, Frank H (1984; Malumphy,**

1970; Shankar, 1986; Mohan, , 1979; Davis and Mogk, 1994; Singh and Singh, 1986; Mohit and Mohan, 2016; Shariati & Bakhtiari, 2011; McKelvie, et. al., 2003; Smojver, et. al., 2001; Shariati & Bakhtiari, 2011) by administering different personality scales. Comparison between male and female players (Singh and Bar, 1987; Rushall, 1967; Kamlesh, 1986; Karad, 2010 and Kuravatti and Malipatil, 2017) as well as comparison between individual and team game players (Singh and Debnath, 1989; Kirkcaldy, 1982; Hein, 1954; Kirkcaldy & Furnham, 1991) were also performed in their personality traits. Some of researchers had find out the significant differences between Kabaddi and Kh-Kho players (Singh and Singh, 1986); between kabaddi and volleyball players (Josh & Vakani, 2011); between male and female Kabaddi players (Karad, 2010).

Many researchers studied the personality traits among male and female players in different sports and games (Slusher, 1964; Kane, 1970; Clark, 1973 ; Bhushan and Agarwal, 1978; Joan, 1981; Bawa and Debnath, 1989; Shergill, 1991;)

In general, most of the researchers from abroad reviewed the personality literature (Eysenck, 1947; Eysenck, 1952; Cattell, 1965; Rushall and Ellison and Freischlog, 1968; Eysenck, 1990; Jaipall and Siwach Rajesh Kumar, 2013).

Sahadev (2017). compared the personality differences of 1st and 4th position holder kabaddi male team players of North Zone. Jaipall and Siwach Rajesh Kumar,(2013). focused to establish relationship between the various Personality characteristics and performance of school level Young Kabaddi players.

Majority of the investigator have indicated that male Kabaddi players differ from female Kabaddi players on a number of personality traits and several investigator have tried to find personality differences between male and female Kabaddi players, but not many studies have been made about personality characteristics of inter collegiate male and female with regards to psychoticism, neuroticism and extroversion which influenced by sports performance with addition to many other personality variables(Singh & Singh, 2012).

Most of the research in the field of personality of male kabaddi players appears to be limited. So the attempt has been made to conduct the study regarding personality traits of male Kabaddi players at different level of participation i.e. Inter-collegiate, state and interuniversity levels.

2. METHODOLOGY

2.1 Selection of Subject

The sample consisted of one hundred and fifty (Intercollegiate level=50, State level=50, Inter-university level=50) male Kabaddi players from universities and colleges running in Chhattisgarh state, who have taken part in intercollegiate, state and inter-university level Kabaddi tournament, were selected as the subjects of the study. The age of the subjects was between eighteen to 25 years..

2.2 Research Design

Propulsive research design was used for the purpose of study. Sample of the study was equal for three different levels Male Kabaddi Plyers for the investigation of personality traits

2.3 Description of Questionnaire

Eysenck's Personality Questionnaire-R (E.P.Q.-R) prepared by Eysenck and. Eysenck (1975) was selected to measure the four dimensions of personality of national level Gymnasts of India.

The Eysenck's Personality Questionnaire- R (E. P. Q.-R) is a valid and reliable instrument. The Questionnaire consists of 90 items to measure the personality traits of the

players and 90 items representing three dimensions of personality i.e. Extraversion (21), Psychoticism (25), Neuroticism (23) and Social Desirability (21) on which there was no right or wrong answer in the responses. The responses are given in the form of Yes/ No. The scoring of the completed questionnaire was done according to the method mentioned in the Manual of E.P.Q-R (Personality Questionnaire with the help of scoring key).

The Questionnaire had test-retest reliability 0.83 for Psychoticism, 0.90 for Extraversion, 0.89 for Neuroticism, and 0.86 for Social Desirability in case of males. In case of female Questionnaire had had test-retest reliability 0.71 Psychoticism, 0.87 for Extraversion, 0.80 for Neuroticism, and 0.86 for Social Desirability. The overall test-retest reliability with age and sex were .78 for Psychoticism, .89 for Extraversion, .86 for Neuroticism and .84 Social Desirability.

2.4 Statistical analysis

To assess the male Kabaddi players of different levels in four factors of personality, the mean, standard deviation, and Analysis of Variance (ANOVA) were computed. Level of significant was set at .05 level

3. RESULTS

To find out the significant differences among male Kabaddi players of different levels in four factors of personality, the mean, standard deviation, and Analysis of Variance (ANOVA) were computed. As the F-ratio on personality of male Kabaddi players of different levels was found to be significant, Scheffe's Test of Post-hoc Comparison was applied to find out the least significance of difference between ordered paired means on personality of male Kabaddi players of different levels and data pertaining to this, has been presented in table 1-3.

TABLE 1
DESCRIPTIVE STATISTICS OF PERSONALITY OF MALE KABADDI PLAYERS
OF DIFFERENT LEVELS

Personality Factors	Intercollegiate level (N=50) Mean±SD	State Level (N=50) Mean±SD	Inter-university level (N=50) Mean±SD
Psychoticism	7.58±2.95	7.60±2.94	6.62±2.75
Extraversion	10.56±3.22	10.14±3.78	11.04±3.29
Neuroticism	7.90±2.64	10.30±2.76	9.76±2.65
Social Desirability	7.40±2.63	8.32±2.85	7.94±2.38

The mean scores of four dimensions of personality of male Kabaddi players belong to different levels groups have been depicted in figures 1 and 4.

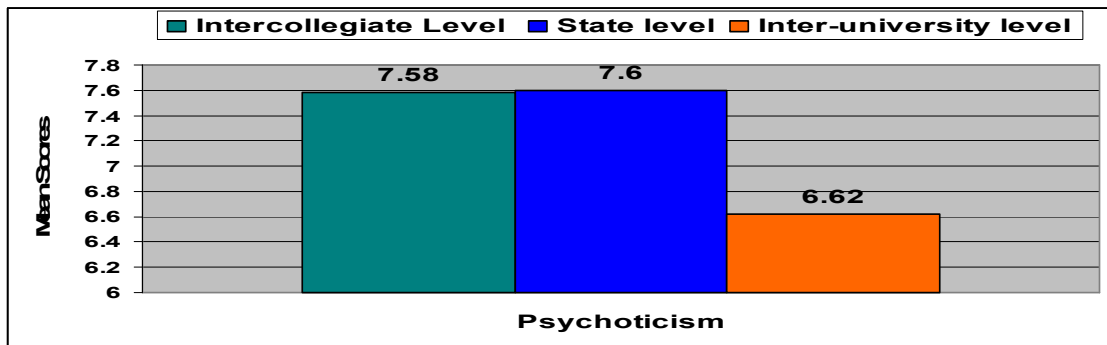


Fig.1: Mean Scores on Psychoticism Dimension of Personality of male Kabaddi Players of Different Levels

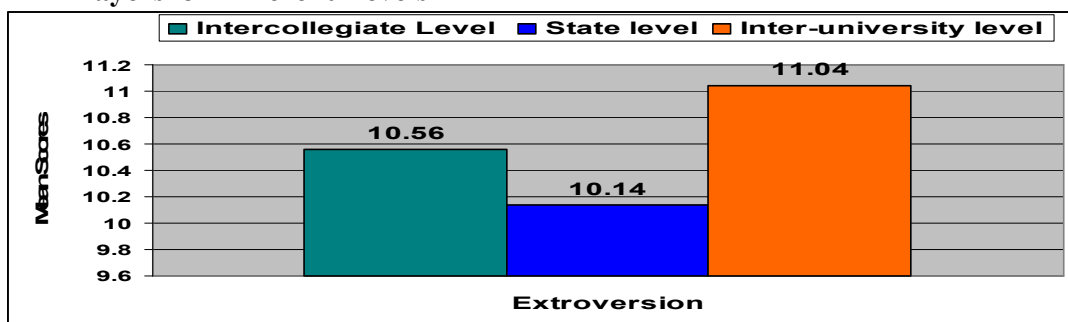


Fig.2: Mean Scores on Extroversion Dimension of Personality of male Kabaddi Players of Different Levels

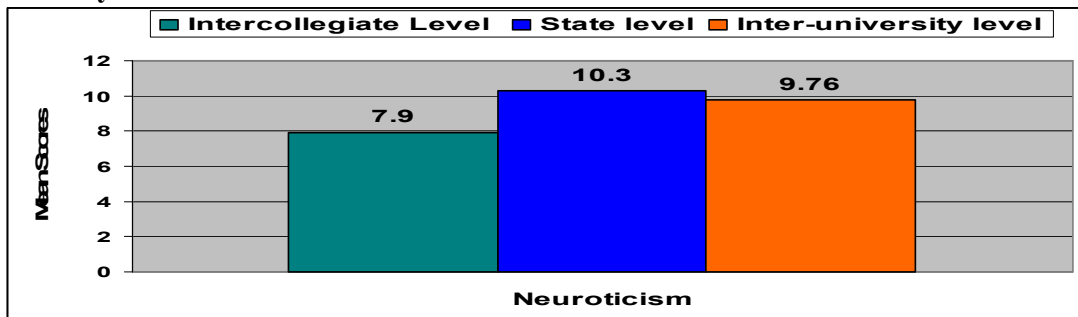


Fig.3: Mean Scores on Neuroticism Dimension of Personality of male Kabaddi Players of Different Levels

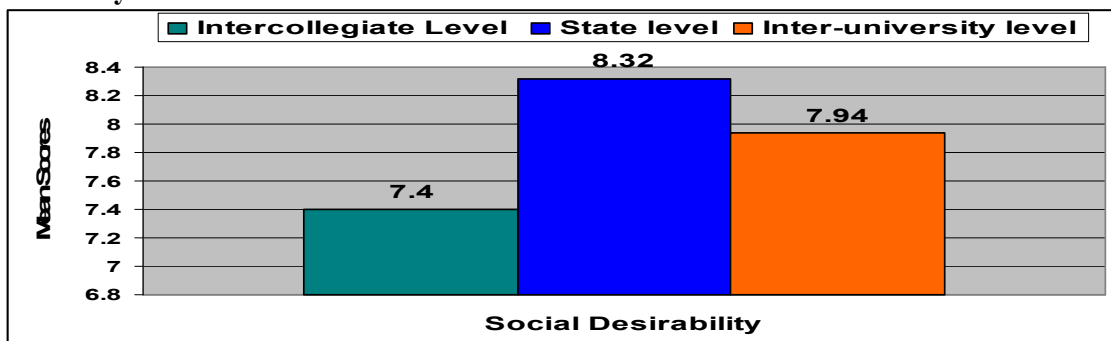


Fig.4: Mean Scores on Social Desirability Dimension of Personality of male Kabaddi Players of Different Levels

TABLE 2
ANALYSIS OF VARIANCE ON PERSONALITY OF MALE KABADDI PLAYERS OF DIFFERENT LEVELS

S. NO.	Personality Factors	Source of variance	df	Sum of Squares	Mean of Square	F-value
1	Psychoticism	Between groups	2	31.37	15.69	1.89
		Within group	147	1219.96	8.29	
2	Extraversion	Between groups	2	20.28	10.14	0.94
		Within group	147	1594.26	10.84	
3	Neuroticism	Between groups	2	158.52	79.26	10.99
		Within group	147	1060.12	7.21	
4	Social Desirability	Between groups	2	21.37	10.69	1.55
		Within group	147	1015.70	6.91	

Insignificant at .05 level

F. .05(3,147) = 3.06

It is clearly evident from Table 2, that the significant difference exhibited among the male Kabaddi players of intercollegiate, state and Inter-university levels in their neuroticism dimension of personality, as the obtained F-value of 10.99 was high r than the required value of F.05 (2, 147)=3.06. But they had statistically insignificant differences in psychoticism, Extroversion and social desirability dimensions of personality, as the obtained F-values of 1.89, 0.94 and 1.55 were lesser than the required value to be significant.

TABLE 3
SIGNIFICANCE OF DIFFERENCES BETWEEN ORDERED PAIRED MEANS FOR MALE SPORTSPERSONS OF DIFFERENT LEVELS ON NEUROTICISM DEMENSION OF PERSONALITY

Intercollegiate Level	State Level	Inter-university Level	MD	C.I.
7.90	10.30	-	2.40*	1.64
7.90	-	9.76	1.86*	
-	10.30	9.76	0.54	

*Significant at .05 level

The data in table 3 clearly reveals that mean differences between intercollegiate-state level male Kabaddi players followed by Inter-university level male Kabaddi players found statistically significant in their neurotic tendency, as the obtained confidence intervals of 1.64 was less than the mean differences of 2.40 and 1.86 respectively . The significant difference was not observed among male kabaddi players between state level - Inter-university level male kabaddi players in their neurotic tendency, as the obtained confidence intervals of 1.64 was high than the mean difference of .54.

4. CONCLUSIONS

1. Neurotic temperament was found high in state level male Kabaddi players followed by Inter-university and Intercollegiate levels male Kabaddi players.
2. Extrovert temperament was found high in Intercollegiate levels male Kabaddi players followed by state level and Inter-university levels male Kabaddi players..
3. Psychotic temperament was found high in state level male Kabaddi players followed by Intercollegiate followed by Inter-university levels male Kabaddi players..

4. Social desirability temperament was found high in state level male Kabaddi players followed by Inter-university and Intercollegiate levels male Kabaddi players..
5. Significant difference existed among the male Kabaddi players of intercollegiate, state and Inter-university levels in their neuroticism dimension of personality,
6. Male Kabaddi players of three different levels did not differ statistically significant in psychoticism, Extroversion and social desirability dimensions of personality.
7. Significant differences were observed between intercollegiate-state level male Kabaddi players followed by Inter-university level male Kabaddi players in their neurotic tendency
8. Significant difference was not observed among male kabaddi players between state level - Inter-university level male kabaddi players in neurotic tendency .

5. DISCUSSION

Personality refer to more or less stable internal factors that make one person's; behaviour consistent from one time to another and different from the behaviour other people that would of manifest in comparable situations (**Borgatta and Lambert, 1968**) Personality is the overall pattern of psychological characteristics that makes person a unique individuals. It is well known fact that players, of one game differ from the players of other games in their personality traits (**Carron, 1980**). The temperament of athletes in numerous sports is one among the problems that have invariably been of interest of behavioural soul. participation in individual or athletics activities an illustration of temperament of athletes (**Sharma, 2016**) . Personality can be influenced by some factors such as environment (family, sports, community, school, nature of sports, etc.), heredity and gender (**Deva, 2000**).

To assess the four temperament characteristics i.e. Psychoticism, extroversion, neuroticism and Social Desirability of male kabaddi players of three different levels i.e. intercollegiate, state and inter-university level, means and standard deviation were computed. To find out the distinction among male kabaddi players at different levels of participation, f- ratios were computed. level of significance was set at .05 level.

The descriptive analysis of knowledge indicated that the Neurotic temperament was found high in state level male Kabaddi players than their counter parts. Extroversion temperament was found high in Intercollegiate levels male Kabaddi players than their counter parts. Psychotic temperament was found high in state level male Kabaddi players than their counter parts. Where as social desirability temperament was found high in state level male Kabaddi players followed by Inter-university and Intercollegiate levels male Kabaddi players. These results clearly indicates the Male Kabaddi players. had variations in the means of four temperaments of personality i.e. psychoticism, extroversion, neuroticism and social desirability.

Whether or not Male Kabaddi players at different levels of participation have variations in their four temperament dimensions, F-ratio resulted significant difference among male kabaddi players of three different levels of participation in their neuroticism temperament. This variation could be attributed to the attainable variations in behaviour pattern, emotionality, excitability of autonomic nervous system, irritability, anger, sadness, anxiety, worry, hostility, self-consciousness, and vulnerability of male kabaddi players at different levels of participation.(**Singh & Singh, 2012 ; Brinkman, 2013; .Costa & McCrae, 1992a and Goldberg, 1993**). But they did not differ significantly in their rest of the temperament of personality.

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**A COMPARISON OF SPORTS ACHIEVEMENT MOTIVATION
BETWEEN MALE AND FEMALE ATHLETES OF BHOJPUR
DISTRICT, BIHAR**

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ABSTRACT

The aim of the present study was to compare level of sports achievement motivation among Men and female athletes belonging to different games from Bhojpur District. 40 male athletes and 40 female athletes who participated in district level tournament were identified and selected as subjects with an age ranging from 18-25 years. To determine the level of Sports Achievement Motivation of subjects, a questionnaire for Motivation prepared by M. L. Kamlesh was used. To find out the difference in sports achievement motivation between male and female athletes, the t test was applied at 0.05 level of significance. The result showed significant difference in the level of sports achievement motivation between male and female athletes. It was concluded that the male athletes were higher than female athletes in their sports achievement motivation.

Keywords: Male, Female, Athletes, sports, achievement motivation,

1. INTRODUCTION

Motivation is one of human personality's most important components. It helps form and guides the behavior of an individual to be considered a person who is more or less complex. Certain psychological factors and capabilities offer little incentive to success where there is no desire to achieve.

The motives for achievement are based on a hope for achievement and inspiration for a target. Motivation is the underlying driving force behind all our actions. Motivation concerns the dynamics of our conduct that includes our life's wants, wishes and goals. The drive to achieve success is based on fulfilling all of our life goals. Achieving targets can determine how an individual performs a task and the ability to display competence. (Harackiewicz, et.al. 1997).

People who normally work with a task for motive achievement may be considered the fact that one acts in the spirit of the motivation for achievement. When a person knows that he or she is tested and judged, and that leads to a sense of confidence and achievement. Therefore, achievement is viewed as an approach to performance or as an opportunity to take pride in success in one task or another (Showun, 1999).

Motivation to achieve success is the motivating factor in a person who promotes success through the goal-oriented success or failure phase. Motivation to succeed is an important enthusiasm that allows a person to undertake a performance-orientated task that is cognitive and psychologically satisfactory. Motivation helps a person to aspire for something special and different. Motivation is an organism's psychophysical state that increases the capacity of an organism to conquer the challenges and work harder to achieve itself. The determination of the success standards is determined by psychological and physiological aspects of games and sport (Reuben, 1983). Many experiments have shown how athletic success can be affected by psychological influences (Crespo, 2002). The inspiration of a pyramids for sport success has been treated by Taylor (1994). Many experiments have been carried out about the motivation for success and its impact on results. The most important performance forecaster and necessary for competing (Carey et al., 2000) is the impetus for progress studies. The purpose of the study was to determine the difference between Men and Women athletes of Bhojpur District of U.P.

2. METHODOLOGY

2.1 Selection of Subjects

Eighty athletes (M=40, Females=40) were selected as the subjects for the study, who participated in district level competition in their respective games from affiliated colleges of Bhojpur (Bihar). The age ranged from 18-28 year

2.2 Tool Used

To assess the level of sports achievement motivation, the sport achievement motivation questionnaire, (SAM), developed by Kamlesh (1990) was used

2.3 Statistical Technique

To find out the difference between the groups of male and female athletes, mean, SD, and t-ratio were computed. Level of significance was set at 0.05.

3. RESULTS

TABLE 1
DESCRIPTIVE STATISTICS OF SPORTS ACHIEVEMENT MOTIVATION OF MALE AND FEMALE ATHLETES

Teams	N	Mean	SD	SEM
Male Athlete	40	27.05	2.66	0.70
Female Athlete	40	25.48	3.45	0.58

The mean scores on sports achievement motivation of male and female athletes of Bhojpur District, has been depicted in Below Figure .

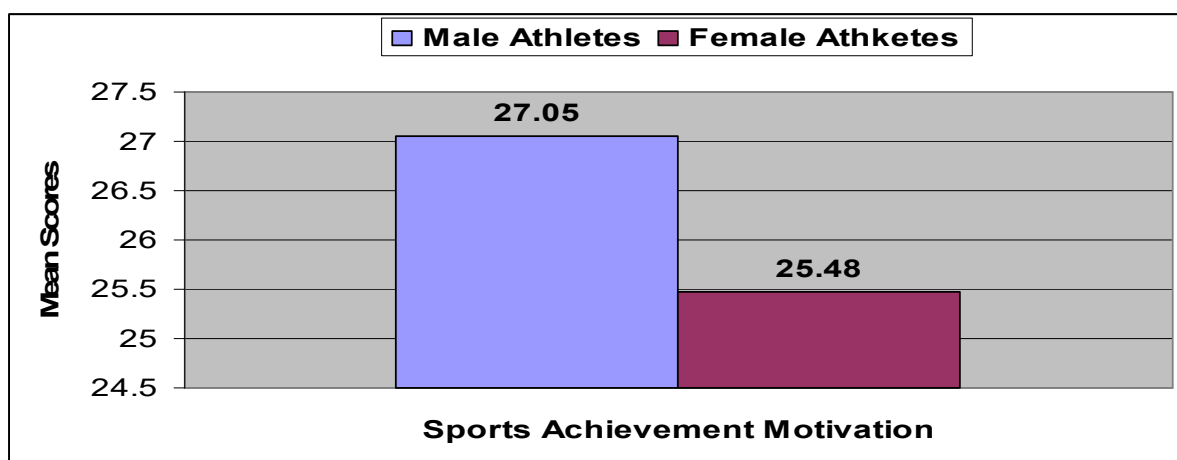


TABLE 2
SIGNIFICANCE OF DIFFERENCE BETWEEN MALE AND FEMALE ATHLETES ON SPORTS ACHIEVEMENT MOTIVATION

Sex	N	Mean	MD	σ_{DM}	t-ratio	p-value
Male	40	27.05	1.57		2.04	0.04
Female	40	25.48				

*Significant at 0.05 level
t.05 (78)=1.99.

Table 2 reveals that a significant difference was found between male and female athletes on sports achievement motivation, as the t-value of 2.04 was high than the required t.05 (78)=1.99.

4. DISCUSSION

The study was carried on 80 undergraduate students athletes of Bhojpur district of U.P. 40 males and 40 females (ages 18-23 years) selected by purposive sampling method. t- test was used for deriving the results. The present study was carried out with the objectives to investigate the gender related differences and differences in achievement motivation among college athletes. Significant difference was found between the achievement motivation among male and female college students. The differences indicate significant role of gender and academic majors in achievement motivation of college students athletes. Findings of the present study is in line with

the study by **Shekhar & Devi (2012)** states Achievement motivation is considered a prerequisite for success in sports performance.

5. CONCLUSIONS

1. Significant difference was found in sports achievement motivation of male and female athletes of Bhojpur district. .
2. The male athletes were highly motivated in comparison of female athletes.

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