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# Comparison of Casual Attribution Among Winners and Losers of National Women Soccer Players

**Dr. S.J. Basumatary**

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## **Abstract**

The present study was very much conceptualized with a specific reference to Compare Casual Attribution amongst the National level Women Soccer Players. The total 4 loser teams in the first round and the 4 semi-finalist teams of the National Women Soccer Tournament was selected to act as subjects for the study. Casual Attribution Questionnaire developed by Weiner was applied to collect the data. To statically analyse the data the t-test was used at 0.05 level of significance.

The finding of study shows that the losers and winners of National Women soccer championship significantly differ on casual elements of attribution namely ability, luck, efforts and task difficult.

## **Keywords**

Attribution, Motivation, Soccer, etc.

## **1. INTRODUCTION**

There has been so many evident that psychological preparation plays an important and very crucial role in the field of games and sports. Especially when we talk about the outcomes in the competitive sports all the physiological and physical limits have been broken by great athletes and it is becoming possible only through psychological preparation of the athlete in today's world of competitive sports which ultimately reach the sports person to their highest performance.

Attribution theory is the name given the approach to the study of human motivation. According to Heider, individual attempt to structure and control at lost part of during their action by understanding these causes is usually called casual attribution. However, it depends upon the individual own thinking ability and reasoning that to which factor they will make responsible for their performance whatever it is winning or losing.

The kind of attribution people make are based upon socialisation process. Socialisation plays an important role in the emphasis that we place an attribution. Attribution depend upon what we learn to value *i.e.* according to the environment, culture and social process which are the part of the country.

Robert (1975) stated that attribution for teams were made in a rational information processing faction. On the other hand where players attributed their own role in contributing to the same outcome, he found they were self-serving. The interpretation could be that when they are ascribing personally the players were motivated to protect and enhance their self-esteem. But when ascribing about the team there were more players that were motivated to protect and enhance their self-esteem. Further, when ascribing about the team they were more prove too logically and objectively process outcome information.

Attribution explains reasons for the performance how the individual analyse their performance i.e. winning or losing whether it is attributed to internal or external cause. Attribution is also significant in understanding motivation of the sports person. The factor which are attributed by the sports person for their performance will certainly have help the coach to have a better chances of performance enhancement then external causes.

## 2. METHODOLOGY

The purpose of the study was to compare Casual Attribution among National Women soccer players. Total four losers' teams in the first round of the National Women Soccer Tournament were randomly selected to act as losers for the study. And similarly, the four semi-finalists teams were selected to act as winners for the study. Casual Attribution Questionnaire by Weiner was applied to collect data for the study. Further to compare the winner and loser on casual attribution 't'-test was used at the 0.05 level of significance.

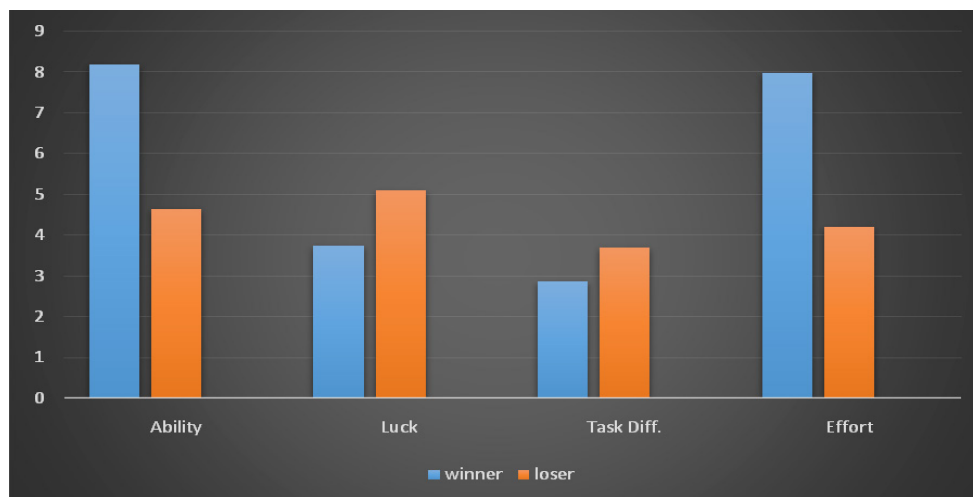
## 3. RESULTS AND DISCUSSION

Comparison of attribution with respect to all the parameters of winners and losers of women National soccer championship is presented in Table 1. Further the graphical representation is also shown in the Fig. 1.

**Table 1: Mean Comparison of Casual Attribution among Winner and Loser of National Level Women Soccer Players**

Variables	Group	Mean	SD	DM	't'
Ability	Winner	8.20	2.06	3.53	8.00*
	Loser	4.65	3.11		
Luck	Winner	3.75	3.17	1.31	2.40*
	Loser	5.09	3.40		
Task Difficulty	Winner	2.86	2.49	1.81	2.82*
	Loser	3.70	3.15		
Effort	Winner	7.98	2.38	3.75	8.24*
	Loser	4.20	3.03		

\*Significant at 0.05 level of significance



**Figure 1**

Table 1 apparently shows that the losers and winners of National Women soccer championship significantly differ on casual elements of attribution namely ability, luck, efforts and task difficult.

It is also further stated that the obtained T value of Ability, Luck, and Efforts were 8.00, 2.40, 2.82 and 8.24, respectively which are much higher than the tabulated value of 1.96 and required to be significant at 0.05 level of significance.

All above findings clearly shows that losers and winners attributed significantly differently for their performance. It was further observed that losers attributed luck mainly while winners attributed most to effort and ability for their performance. However, the attribution to task difficulty was seems to be insignificant and there was not much different among winners and losers.

Graphical representation of all the parameters in regards of Casual Attribution between Winners and Losers of Women National Soccer Championship.

#### 4. CONCLUSION

- Winners and Losers of Women National Soccer Championship has significant difference attribute as cause of their performance.
- Winners as has been seen to attributes to mainly internal factors such as (i) Own ability, (ii) Effort for more successful performance.
- Losers, however seen attributed to bad luck as a main reason of their poor performance.
- Player's skill level and effort of playing determines performance in team competition.

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# Relationship of Basketball Performance with Selected Coordinative Ability of the Inter-District Players of Anand (Gujarat)

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## Abstract

**Background:** Coordinative abilities are qualities of an organism to coordinative separate elements of action in our system to decide a concrete action task coordinative abilities help in learning faster and also to achieve high level of performance. Basketball is a combatic with great strength and coordinative ability oriented sports. Therefore, it is necessary to investigate that certain coordinative abilities are acting as basic factors of the basketball performance or not. **Aim:** The purpose of this study was to investigate the relationship between Basketball performance and selected coordinative ability of the district player. **Methodology:** For the present study fourteen male Basketball players who had participated in district basketball competition held at Anand were randomly selected for this study. Age group of the subjects was 18–27 years. To find out the relationship of Basketball performance to selected coordinative abilities namely orientation ability, diferentiation ability, reaction ability, balance ability and rhythmic ability. Product moment correlation was computed and verified at level of significance 0.05. **Result:** Findings reveals that coordinative abilities such as reaction ability and rhythmic ability were found significantly related to the basketball performance as their calculated Correlation Coefficient( $r$ ) were 0.66 and 0.54, respectively. Orientation ability, diferentiation ability and balance ability were not found significantly related to the basketball performance as their calculated Correlation Coefficient( $r$ ) was 0.05, 0.01 and 0.34, respectively.

## Keywords

Basketball Performance, Coordinative Ability and Orientation

## 1. INTRODUCTION

Modern sports, therefore have taken roots in different areas of social life with a mere pursuit only of those who take part in sports as competitors. The historical introspection of the place of sports in the social structure leads to the conclusion that a sport is an integrated component of society and its concept and role in the society has been changing with the changing time. Sports as many sided social phenomenon are an active factor in physical education, one of the basic forms of preparing a person for labour and other socially 30<sup>th</sup> necessary types of activities and alongside this one of the important means of the ethical and aesthetic education, satisfaction of the moral requirement of society, consolidation and expansion of international ties. Sports are included in the system of social relation and are conditional in its development by the social economic and related factors. Physiological parameters may be defined as those parameters which are directly linked with various physiological systems and may be voluntary, such as pulse rate, blood pressure, vital capacity, Toor (1996). Basketball 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 basketball the basic defense position are in three zones, center zone and left zone, the defense player occupying one of these zones have 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. The game of basketball requires a high level of motor fitness and neuro-muscular coordination in order to perform very complex movement of the game. Speed and endurance are the demands of the game with special reference to the other aspect of coordinative ability. Coordinative abilities are qualities of an organism to coordinative separate elements of action in our system to decide a concrete action task coordinative abilities help in learning faster and also to achieve high level of performance.

## 2. AIM

The aim of the study to investigate the relationship with basketball performance with selected coordinative ability of the district player.

## 3. METHODS

### 3.1. Selection of Sample

For the present study fourteen male Basketball players who had participated in Inter-District Basketball competition held at Anand were randomly selected for this study. Their age ranged 18–27 years. The necessary data was collected by administrating various coordinative ability tests as suggested by Peter Hertz.

## 4. CRITERIA OF MEASUREMENT OF COORDINATIVE ABILITIES

- **Orientation Ability:** It was measured by “Numbered Medicine ball run test” measured in terms of time in seconds.
- **Differentiation Ability:** It was measured by determine throw “Backward medicine ball through test” measured in terms of scores.
- **Reaction Ability:** It was measured by “Ball reaction exercise test” measured in terms of distance in meters.
- **Balance Ability:** It was measured by “Long Nose Test” measured in terms of time of seconds.
- **Rhythmic Ability:** It was measured by “Sprint at given at Rhythm Test” measured in terms of time in seconds.
- **Basketball Performance:** For evaluating the subject’s Basketball performance a panel of three judges was selected and they evaluated each player on the basis of their performance level. The average value of all the three experts was considered for the purpose of the study.
- **Statistical Analysis:** To find out the relationship of Basketball performance to selected coordinative abilities namely orientation ability, differentiation ability, reaction ability, balance ability and rhythmic ability. Product moment correlation was computed. For testing the hypothesis the level of significance was set at 0.05.

## 5. RESULTS

Findings regarding selected coordinative ability and their relationship with basketball performance are presented in the following Table.

**Table 1: Coefficient of Correlation between Dependent and Independent Variables**

Sr. No.	Dependent Variables	Independent Variables	Correlation Coefficient (r)
1.	Basketball Performance	Orientation Ability	0.66
2.	Basketball Performance	Differentiation Ability	0.54
3.	Basketball Performance	Reaction Ability	0.75*
4.	Basketball Performance	Balance Ability	0.65*
5.	Basketball Performance	Rhythmic Ability	0.59*

It was established from the Table 1 that coordinative abilities such as reaction ability, balance ability and rhythm ability were found significantly related to the basketball performance. Orientation ability and differentiation ability were not found significantly related to the basketball performance as their calculated Correlation Coefficient(r) were 0.06 and 0.03, respectively.

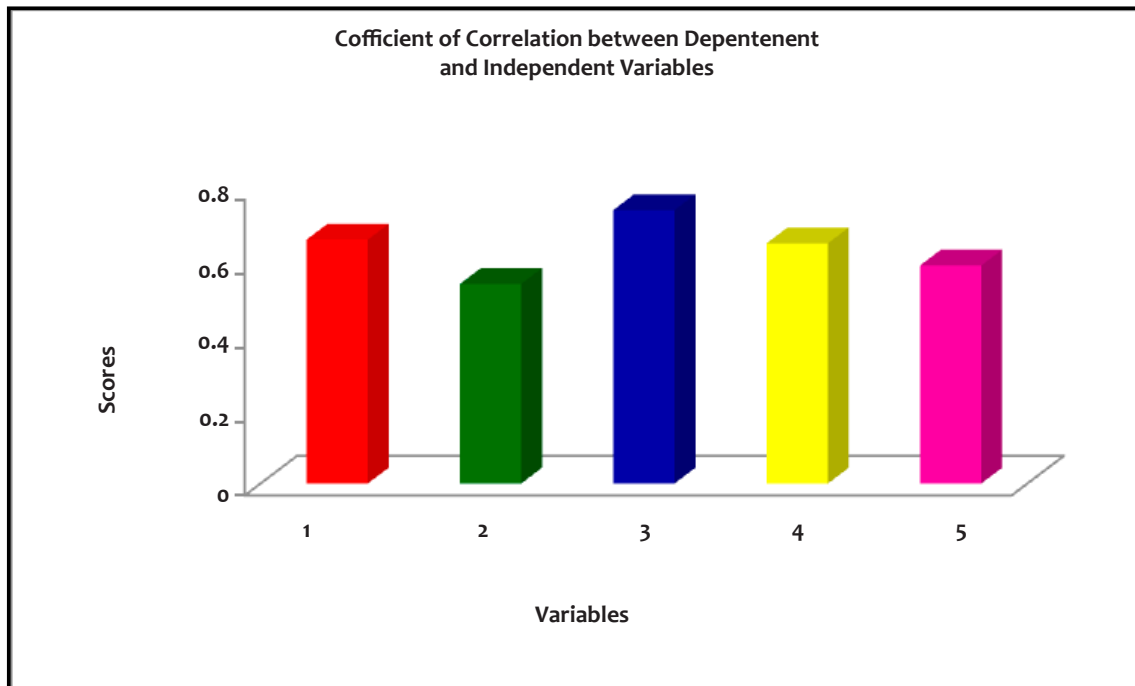


Figure 1: 1. Orientation Ability, 2. Differentiation Ability, 3. Reaction Ability, 4. Balance Ability, 5. Rhythmic Ability

## 6. DISCUSSION

The finding of present study on relationship of selected coordinative ability to basketball performance reveals that the reaction ability, balance ability and rhythm ability are significantly related to Basketball performance. The present study was supported by the findings of Westerlund and Turtle (1931) that their exist high level of correlation between reaction time and shorts distance running, as in our study the subjects has to react very quickly to cover short distance after getting kho from team mates. The obtain result in the study shows that the quality of neuro-muscular coordination (reaction ability and rhythm ability) which is the integral part of the coordinative abilities required for performance in basketball was adequately developed in the subjects. In case of Orientation ability and Differentiation ability are insignificantly related to Basketball performance. This may be attributed to the fact that the level of coordinative abilities (Orientation ability and Differentiation ability) of the subjects are still at the preliminary level as the subjects selected for the study have played up to state level.

## 7. CONCLUSION

Selected coordinative abilities such as reaction ability, balance ability and rhythmic ability are significantly related to Basketball performance.

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# Effect of Pranayam on Selected Body Composition Variables

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## Abstract

The purpose of the study was to determine the effect of Pranayam on selected body composition variables. Thirty male students of B.P.E. first year of CCS University, Meerut, were randomly selected as subjects for this study. Subjects were divided into two groups i.e. one experimental group and one control group. The quantitative measurements of each subject were taken with the help of standard equipment, before and after the treatment period of twelve weeks. The selected Body Composition Variables were Body Fat (%), Lean Body Mass (kg), Body Water Content (%) and Basal Metabolic Rate (Kcal). All the tests were administered in the Yoga Laboratory of the Institute. Paired 't' test was applied to determine the effect of Pranayam on selected Body Composition Variables. The Paired 't' test revealed that practice of Pranayam had significant effect on Body Fat Percentage ( $t = 5.47$ ), Lean Body Mass ( $t = 9.65$ ), Body Water Content ( $t = 17.24$ ) and Basal Metabolic Rate ( $t = 9.410$ ) against required tabulated value of 1.761 which showed significant effect of practice of Pranayam. On the basis of results following conclusions were drawn: 1. Significant effect was found on Body Fat Percentage. 2. Significant effect was found on Lean Body Mass. 3. Significant effect was found on Body Water Content. 4. Significant effect was found on Basal Metabolic Rate.

## 1. INTRODUCTION

Today yoga being a subject of varied interests, has gained world-wide popularity. Recent research trends have shown that it can serve as an applied science in a number of fields such as education, physical education and sports. Health and family welfare, psychology, medicine and also one of the valuable means for the development of human resources for better performance and productivity. However, there exists controversy in accepting yoga as medicine and therapy because it has generally been believed that yoga is spiritual science having emancipation as its goals and hence cannot be treated only as a therapy.

Yoga exercises are scientific means for strengthening of all living or atrophying muscle fibers and tissues. This system teaches how to awake new life pulsation in active tissues. In this context it is different from other systems of exercise in as much as it is different from other systems of exercise in as much as it teaches one how to concentrate his attention on the awakened energy which directly gives power, strength and vitality of all the parts of the body. It develops will power along with bodily strength. This aspect of yoga is technically known as "asanas" which was developed by the late hatha yogis into a well-organized system of physical culture.

Pranayama is a science of respiration. It consists of three phases: Puraka, Kumbhaka, and Rechaka. High abdominal pressure created in pranayama by the action and counter action of the different anatomical parts together with the upward pull of the crura, is responsible for wakening of Kundalini.

The word Pranayam is a compound consisting of two members: Kapal and Bhati. In Sanskrit Kapal means the skull and Bhati is derived from a Sanskrit root meaning to shine. Hence Pranayam means an exercise that makes the skull shining. Pranayam is one of the six cleansing processes, known in Hatha yoga as shat kriya, and is intended to clear the nasal passages contained in the skull, along with the remaining parts of the respiratory system. As the exercise necessarily cleanses a part of the skull, the name Kapalabhati is appropriately given to it.

The assessment of body composition is generally performed in order to determine and monitor one's health and fitness status, and to aid in planning training programs for athletes. It has been well established that a high percentage of body fat (low lean body mass) is associated with a higher risk of heart disease, diabetes, hypertension, cancer, hyperlipidemia and a variety of other health problems. On the other hand, a high percentage of lean body mass and low-fat mass is associated with athletic prowess and good health.

## 2. OBJECTIVES OF THE STUDY

- To know the effect of Pranayam on Body Fat Percentage
- To know the effect of Pranayam on Lean Body Mass
- To know the effect of Pranayam on water content
- To know the effect of Pranayam on Basal Metabolic Rate.

## 3. METHODOLOGY

### 3.1. Subjects

Thirty male students were randomly selected from B.P.E. I Year of Lakshmi Bai National Institute of Physical Education (Deemed University), Gwalior. The age group was from 17-22 years. Further two groups i.e. one experimental group and one control group (each of 15 students) were randomly selected from the selected subjects.

### 3.2. Variables

The following Body Composition Variables were chosen for the study. Body Fat Percentage, Lean Body Mass, Water Content and Basal Metabolic Rate.

### 3.3. Criterion Measures

The criterion measures chosen for testing hypothesis were: Body Fat Percentage (percentage), Lean Body Mass (Kilogram), Water Content (percentage) and Basal Metabolic Rate (Kilo calories).

### 3.4. Training of Pranayam

There were two groups i.e. control group and experimental group. Control group was not given any kind practice of pranayama however experimental group was exposed to training of Pranayam pranayama for the duration of twelve week. Both the groups were performing their regular practice of the game. For the experimental group, the duration of training session was half-an-hour and the training was conducted in the afternoon 3:00 to 3:30 pm from Monday to Friday.

### 3.5. Pranayam

It consists of active puraka and passive recheka. In every Recheka during Pranayam as much air was expelled or driven out of the lungs as a sudden and vigorous inward stroke of the front abdominal muscles. At the end of Recheka, abdominal muscles are contracted. But in puraka one had to simply withdraw his control from these muscles and they were relaxed. Relaxation of muscles is a passive act. Time duration was for first 2 weeks was 10 minutes. In Pranayam, the rest of 2 minutes was allowed after every five minutes. After 2 weeks time it was increased gradually.

### 3.6. Design of the Study

Random group design was utilized for the purpose of the study.

## 4. ADMINISTRATION OF TESTS

The tests for Body Fat Percentage, Lean Body Mass, Water Content and Basal Metabolic Rate were administered in the Yoga Research Laboratory of Lakshmibai National Institute of Physical Education, Gwalior with the help of a team of tester and research assistant under the guidance and supervision of the experts using Body Composition Analyzer with following standard procedure:

- Measure the exact height
- Step on the equipment
- Track the exact weight minus the additional weight
- Feed the built of an individual (Standard/ Athletic)
- Feed in the gender
- Feed the age of an individual
- Feed the height in cms
- Enter n wait for the process to complete
- Take out the analyses from print out.

## 5. STATISTICAL TECHNIQUE

In order to find out the effect of Pranayam on selected Body composition variables, paired 't' test was applied at 0.05 level of significance.

## 6. ANALYSIS OF DATA AND RESULT OF THE STUDY

The statistical analysis of data and results of the study are presented from Tables 1-4.

Table 1: Body Fat Percentage

Groups	$\bar{D}$	S	't' ratio
Experimental Group	3.68	2.60	5.47*
Control Group	0.007	0.0764	0.354a

\*Significant  $t_{0.05}(14) = 1.761$

Since the calculated t (5.47) is more than tabulated t (1.761) at 0.05 level of significance, thus it may concluded that the Body Fat Percentage shown the significance effect of Pranayam.

Table 1 reveals that the significance effect not shown in the control group. Calculated 't' value of control group is t (0.354) which is below the required value of 0.05 level of significance (t = 1.761). It has no effect on Body Fat Percentage of Control Group.

**Table 2: Lean Body Mass**

Groups	$\bar{D}$	S	't' ratio
Experimental Group	1.01	0.405	9.65*
Control Group	0.64	1.417	1.747

\*Significant  $t_{0.05}(14) = 1.761$

Since the calculated t (9.65) is more than tabulated t (1.761) at 0.05 level of significance, thus it may concluded that the Lean Body Mass shown the significance effect of Pranayam.

Table 2 reveals that the significance effect not shown in the control group. Calculated 't' value of control group is t (0.354) which is below the required value of 0.05 level of significance (t = 1.761). It has no effect on Lean Body Mass of Control Group.

**Table 3: Water Content**

Groups	$\bar{D}$	S	't' ratio
Experimental Group	1.25	0.287	17.24*
Control Group	0.69	1.810	1.475

\*Significant  $t_{0.05}(14) = 1.761$

Since the calculated t (17.24) is more than tabulated t (1.761) at 0.05 level of significance, thus it may concluded that the Body Water Content shown the significance effect of Pranayam.

Table 3 reveals that the significance effect not shown in the control group. Calculated 't' value of control group is t (0.354) which is below the required value of 0.05 level of significance (t = 1.761). It has no effect on Body Water Content of Control Group.

**Table 4: Basal Metabolic Rate**

Groups	$\bar{D}$	S	't' ratio
Experimental Group	139.7	57.45	9.410*
Control Group	0.533	1.45	1.422

\*Significant  $t_{0.05}(14) = 1.761$

Since the calculated t (9.410) is more than tabulated t (1.761) at 0.05 level of significance, thus it may concluded that the Basal Metabolic Rate shown the significance effect of Pranayam.

Table 1 reveals that the significance effect not shown in the control group. Calculated 't' value of control group is t (0.354) which is below the required value of 0.05 level of significance (t = 1.761). It has no effect on Basal Metabolic Rate of Control Group.

## 7. CONCLUSIONS

Within the limitations of the present study the following conclusions were drawn:

- Significant effect was found on Body Fat Percentage and no change was found in Control group.
- Significant effect was found on Lean Body Mass and no change was found in Control group.



- Significant effect was found on Body Water Content and no change was found in Control group.
- Significant effect was found on Basal Metabolic Rate and no change was found in control group.

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# A Comparative Study of Psychomotor Abilities Among Sub-Junior, Junior and Senior Level of Men Boxers

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## Abstract

The main purpose of the study was to compare psychomotor abilities among sub- junior, junior and senior level of men boxers. For the purpose of study, overall 90 boxers, 30 boxers each from sub – junior & junior and senior level boxers of Sports Authority of India (SAI) North-East State centres those who participated up to National Level were selected as the sample. The data was collected through administration of the Nelson Hand and Foot Reaction Time Test developed by Edwin Nelson (1965) to measure the reaction ability.

**Statistical Analysis:** To find out the significant difference in reaction abilities among the men boxers. The one way ANOVA test was used and level of significant was fixed at 0.05.

**Result:** The result of the study reveals that there is a significant difference among different levels of men boxers.

**Conclusion:** Result of the study indicate a low level of psychomotor abilities among sub-junior boxers with a mean value of hand 9.41 hand in reaction time and 8.83 in foot reaction time followed by a mean value of reaction time of 4.68 of hand and 4.76 of foot reaction time among junior level of boxers and with mean value of hand reaction time of 3.72 and foot reaction time of 3.7 among senior boxers.

## Keywords

Psychomotor, reaction ability, performance, competition and boxers.

## 1. INTRODUCTION

The game of boxing existed since the Ancient Greek Society most popular among slaves who usually used to fight bare fist in lieu of their freedom. The earlier competitions unlike the modern boxing competitions there was no any weight categories or number of rounds. The bout use to last until one of the boxer surrendered. The game was included as one of the game in the Ancient Olympics of 688 BC.

Boxing found place in Modern Olympic era as early as 1904 in the third edition of the Olympic Games in St. Louis. The Women event and participation was allowed only after 92 years during 2012 London Olympics to become the Olympic sports.

In the game of boxing a lot of manoeuvring has to continuously performed to punch an opponent for score as well as defensive stance to avoid being punched from the opponent which requires practice of skills. To perform high level of proficiency in boxing skills, a high degree of general motor abilities inter - correlated with co-ordination, speed

of the movement and quick reaction are required. The motor skills and abilities include hand eye co-ordination, reaction time, arm hand, steadiness, manual dexterity etc. Basic co-coordinative abilities are developed gradually with increase in age, physical abilities and level of competition. For high level of skill performance, development of motor abilities to optimum level of human capacity is necessary. Development of psychomotor abilities requires the development of the both physical as well as the cognitive abilities of the human body.

In boxing, the boxer has to react to the punches in a fraction of second requiring high level coordinated movement of limbs of the body to be able to save oneself and score against an opponent. Some of examples of psychomotor abilities in boxing are explained as here under:

- **Arm-Hand Steadiness:** The ability to keep the hand and arm steady while moving the body e.g., Guard position with foot work in boxing.
- **Control Precision:** The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions e.g., Control of one's own body weight while punching.
- **Multi-limb Coordination:** The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) e.g., Combination punches in boxing.
- **Reaction Time:** The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears i.e., React and manoeuvring of the opponent's punch.
- **Speed of Limb movement:** The ability to quickly move the arms and the legs i.e., punch with coordination of arm and foot.

## 2. METHODOLOGY

### 2.1. Selection of Subject

The study was conducted on sub-junior, junior and senior men boxers who participated up to national level. Overall 90 boxers, 30 boxers each from sub-junior, junior and senior level of boxer were selected for the study.

## 3. SELECTION OF TEST ITEM

The data was collected through the administration of the Nelson Hand Reaction Time Test and Nelson Foot Reaction Time Test (1965).

### 3.1. Procedure

Before taking the test, the examiner clearly demonstrated the test till the subjects understood the test in detail.

### 3.2. Statistical Technique

To compare psychomotor abilities, the analysis of variance was applied at.05 level of significance.

### 3.3. Results of the Study

The scores were measured by using one way ANOVA.

#### 4. FINDING

**Table 1: Analysis of variance of Nelson Hand Reaction Time Test of the different level of men boxers.**

Source of variation	SS	df	MS	F
Between Groups	252.288	2	126.144	20.247
Within Groups	542.033	87	6.230	
Total	794.322	89		

\*Significant at 0.05 level;  $F_{0.05}(2, 87) = 3.04$

Table 1 reveals that there is significant difference among senior, junior and sub-junior men boxers in relation to speed as the obtained 'F' ratio of 20.247 which was higher than the tabulated value of 3.04 required for significance at 0.05 level with (2, 27) degree of freedom.

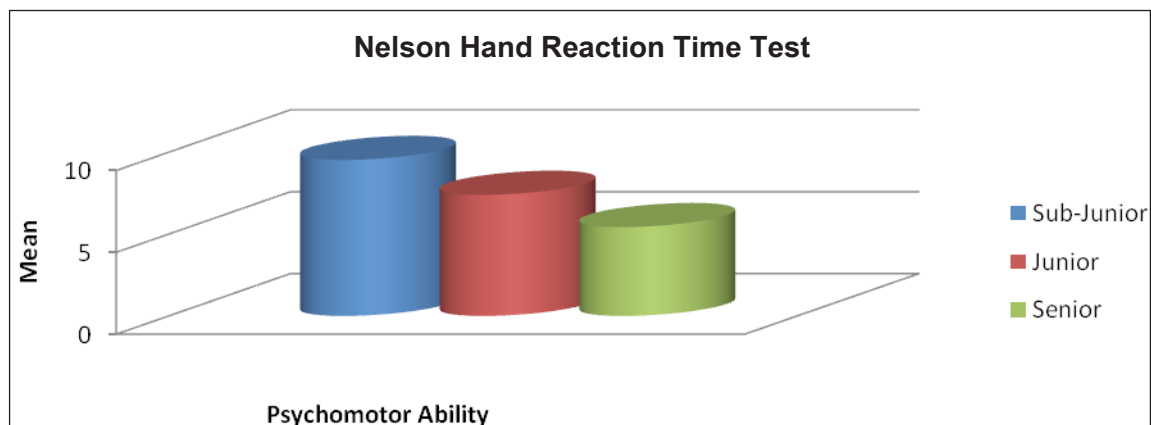
This finding implies that the Nelson hand reaction of different levels of boxers i.e. sub-junior & junior and senior men's were significantly different. Since f value was significant, the post Hoc mean test was conducted to find out the status and actual difference in the hand reaction abilities of different level of men boxers.

**Table 2: Post Hoc mean comparison of Nelson Hand Reaction abilities of the different level of men boxers**

Sub-junior	Junior	Senior	Mean Difference	Critical Difference
9.53	7.40		2.133	0.117
	7.40	5.43	0.96	
9.53		5.43	5.9	

\*Significant at 0.05

Table 2 revealed that reaction time test of the different level of boxers were significantly different as the mean value were found to be significant with 2.133 when compared with sub-junior and junior, 0.966 between junior and senior and 5.900 between sub-junior and senior respectively which is greater than the value of critical difference i.e. (0.117).



**Figure 1: Mean Comparison of Psychomotor Abilities of Hand Reaction of Men Boxers**

**Table 3: Analysis of variance of Nelson Foot Reaction Time Test of the different levels boxers.**

Source of variation	SS	df	MS	F
Between Groups	156.8	2	78.4	14.326
Within Groups	476.1	87	5.47	
Total	632.9	89		

\*Significant at 0.05 level;  $F_{0.05}(2, 87) = 3.04$

Table 3 reveals that there is significant difference among senior, junior and sub-junior men boxers in relation to speed as obtained 'F' ratio 14.32 which is higher than the tabulated value of 3.04 required for significance at 0.05 level with (2, 27) degree of freedom.

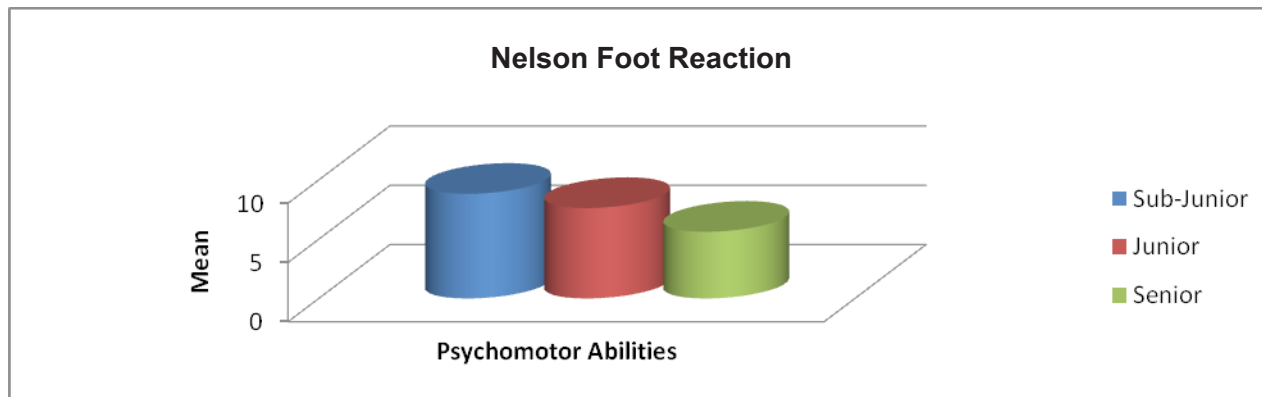
This finding implies that the Nelson foot reaction of different levels of boxers i.e. sub-juniors & juniors and senior men were significantly different. Since f value was significant, the post Hoc mean test was conducted to find out the status and actual difference in the Hand reaction abilities of different level of men boxers.

**Table 4: Post Hoc mean comparison of Nelson Foot Reaction abilities of the different levels of men boxers.**

Sub-junior	Junior	Senior	Mean Difference	Critical Difference
8.83	7.63		1.2	0.110
	7.63	5.63	2	
8.83		5.63	3.2	

\*Significant at 0.0

Table 4 revealed that Nelson foot reaction time test of the different levels men’s boxers were significantly different as the mean value were found to be significant with 1.2 when compared with sub-junior and junior, 2 between junior and senior and 3.2 between sub-junior and senior respectively which is greater than the value of critical difference i.e. (0.110).



**Figure 2: Mean Comparison of Psychomotor Abilities of Hand Reaction of Men Boxers**

### 5. DISCUSSION OF FINDINGS

On the basis of finding of the study Hand and Foot Reaction Time of different level of men’s boxers, the reaction abilities of the sub junior levels of boxers were found to be significantly low among the three groups with mean values of hand reaction time of 9.53 and foot reaction time of 8.83 followed by junior boxers with mean value of hand reaction time of 7.4 and foot reaction time of 7.63 and senior groups with the mean value of hand reaction time of 5.43 and a foot reaction time of 5.63. The trend of reaction abilities in different groups were: sub- juniors > junior > senior boxers. The reason behind this may because of the nature of participation which helps to improve the psychomotor abilities as the boxer climbs up the ladder of level of participation level of group in continuity. The sub-junior group has less experience compare to junior and senior level of boxers due to less exposure to competitions and experience. Regular practice and adaptation of hand, movement and co-ordination help to achieve high performance.

## 6. CONCLUSION

In view of the discussion of finding of study it may be concluded that Hand and Foot Reaction Time plays a major role in optimum level of performance in boxing.

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# Electromyographical Analysis of Biceps Brachii During Eccentric and Concentric Contraction at Various Intensities

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## Abstract

In the modern era every sports scientist, coaches, trainer are trying for maximum performance by trying any means and methods. In this study we tried to determine the amplitude of EMG signal during eccentric contraction and concentric contraction at various intensities. So that we are able to prescribe the exercise to enhance the power of the muscles. Five male subjects were taken from Lakshmi Bai National University of Physical Education, Gwalior as a subject and had no injury in bone and also in upper extremity. Electrodes were placed on biceps parallel to the muscle fiber following the guidelines of SENIAM. Myoelectric signal was recorded using surface electrodes with the help of the instrument Bio Thought Technology of Eight Channels. The data were recorded in micro-volt ( $\mu\text{V}$ ). The skin was prepared by shaving and cleansing to reduce impedance levels ( $\leq 10 \text{ k}\Omega$ ). Biometrics SX230 active (Ag/AgCl) bipolar pre-amplified disc electrodes (Gain x 1000; Input impedance  $> 100 \text{ M}\Omega$ ; common mode rejection ratio  $> 96 \text{ dB}$ ; noise 1–2  $\mu\text{V rms}$ ; bandwidth 20–450 Hz) with a 1 cm separation distance were adhered parallel with the muscle fibers. The data were collected of each selected muscles during maximum isometric voluntary contraction. Each subject had performed 1 RM test for maximum strength of biceps muscles to decide the various intensity. The concentric and eccentric movements were performed by each subject after placement of electrode on biceps muscles at various intensities i.e., 70% of max, 80% of max and 90% of max in the fitness center of LNIPE, Gwalior. The finding revealed that EMG signal did not showed any significant difference during eccentric and concentric contraction. Garner *et al.* (2006) also showed that muscle contraction loaded in either eccentric or concentric contraction elicits a similar amplitude of EMG signal.

## Keywords

Electromyography, Eccentric, Concentric

## 1. INTRODUCTION

Electromyography (EMG) is the study of muscle function through analysis of the electrical signals emanated during muscular contractions. Lippold and Bigland demonstrated that during a voluntary contraction, the tension is proportional to the measurable electrical activity under isometric contractions (Basmajain, 1967; Bigland and Lippold, 1954; Bigland *et al.*, 1953; Lippold. Furthermore, Bigland and Lippold (1954) reported that graded increases in contractile force are predominantly a result of an increase in the number of active motor units. Numerous studies have been conducted comparing EMG amplitude and motor unit activity during maximal and sub-maximal concentric (shortening) and eccentric (lengthening) contractions, with the bulk reporting lesser EMG amplitude and motor unit activation during eccentric contractions (Enoka, 1996; Grabiner and Owings, 2002; Grabiner

*et al.*, 1995; Kay *et al.*, 2000; Madeleine *et al.*, 2001; Moritani *et al.*, 1987; Westing *et al.*, 1991). For example, Moritani and colleagues reported greater mean motor unit activation in concentric biceps brachii contractions compared to eccentric biceps brachii muscle actions. Although numerous studies support the concept that eccentric contractions elicit lesser motor unit activation and, in turn, lower EMG amplitudes compared to concentric contractions, we are not aware of any studies that have compared different loading mechanisms for eliciting isometric contractions (i.e. concentrically loaded versus eccentrically loaded). The purposes of this study was to check the EMG contraction level during eccentric contraction and concentric contraction at various intensities.

## 2. METHODOLOGY

### 2.1. Participants and Variables

Five students of the Lakshmibai National University of Physical Education, Gwalior were selected as subjects for the study by employing purposive sampling.

The age level of the subjects ranged from eighteen to twenty four years. Players had represented inter university level and had no upper extremity injuries or any bone or joint disparities within the past years. By reviewing the literature and consultation with experts, the research scholar carried out an intensive study and selected major muscles. The Biceps Muscles were selected as a variable for this study.

## 3. PROCEDURE

The data for the selected muscle were obtained with the help of the instrument Bio Thought Technology of Eight Channels. The data were recorded in micro-volt ( $\mu\text{v}$ ). The skin was prepared by shaving and cleansing to reduce impedance levels ( $\leq 10 \text{ k}\Omega$ ). Biometrics SX230 active (Ag/AgCl) bipolar pre-amplified disc electrodes (Gain  $\times 1000$ ; Input impedance  $> 100 \text{ M}\Omega$ ; common mode rejection ratio  $> 96 \text{ dB}$ ; noise  $1\text{--}2 \mu\text{V rms}$ ; bandwidth  $20\text{--}450 \text{ Hz}$ ) with a 1 cm separation distance were adhered parallel with the muscle fibers, The data were collected of each selected muscles during maximum isometric voluntary contraction. Each subject had performed 1 RM test for maximum strength of biceps muscles to decide the various intensity. Before the actual testing, the subjects were given a complete demonstration of each test and the purpose of the test was explained in details. After the demonstration and explanation, electrodes were placed in a proper manner and then subjects were allowed to practice trials in order to get familiarized with the test. On the day of testing each subjects were oriented to the testing protocol. The protocol was sequenced as mentioned below:

- Warm-up
- Electrode placement
- Practice and familiarization
- Exercise protocol.

### 3.1. Warm-up

Proper time was given to the subjects for general warm-up as well as for specific warm-up to avoid the injury.

### 3.2. Electrode Placement

Site preparation for the electrode-interface included shaving of the area, followed by abrasion using an alcohol soaked pad, rubbing the site of electrode application vigorously. A slight abrasive pad was used. The skin



preparation elicits a slight histochemical effect. Electrodes were placed according to the guidelines of SENIAM and reference electrodes were placed around the Table.

### 3.3. Practice and Familiarization

Sufficient practices were given for the better performance, so that they can understand the concept of movement.

### 3.4. Exercise Protocol

The concentric and eccentric movements were performed by each subject after placement of electrode on biceps muscles at various intensities i.e., 70% of max, 80% of max and 90% of max in the fitness center of LNIPE, Gwalior (Figure 1).



Figure 1

## 4. FINDINGS

For the analysis of electromyographic contraction during concentric and eccentric movement descriptive statistic and paired t-test were used at 0.05 level of significance.

**Table 1: Descriptive Statistics and Paired t-test of Electrical Activity of Biceps Muscles at Various Intensities During Eccentric and Concentric Contraction**

S. No.	Intensity	Eccentric	Concentric	't'-test	'p'-value
1.	70% of Max	416.38	398.43	0.762	0.488
2.	80% of Max	513.66	508.62	0.770	0.484
3.	90% of Max	610.77	611.62	0.171	0.872

## 5. DISCUSSION OF FINDINGS

The findings of the study clearly revealed that electrical activity of biceps muscles during concentric contraction and eccentric contraction at various intensity i.e., of 60% of maximum strength, 70% of maximum strength, 90% of maximum strength did not showed any significant difference. There are two major theories regarding the origin of differences noted between concentric and eccentric muscle actions. The decreased EMG amplitude during eccentric muscle contractions is thought to be due to the greater overall musculotendinous force produced with lengthening contractions. Kossev and Christova (1998) as well as Laidlaw *et al.* (2000), both using indwelling electrodes, have shown that the number of motor units recruited is less and that the discharge rate is decreased in eccentric contractions compared to concentric contractions.

Obtaining MVIC using Eccentric methods is far more complex from an experimental perspective, and presents several more limitations than Concentric. During Concentric contractions, the MVIC value is readily obtainable due to the fact that the participant simply maximally contracts against an immovable resistance. Garner *et al.* also showed that muscle contraction loaded in either eccentric or concentric contraction elicits a similar amplitude of EMG signal.

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# Effect of Different Durations of Warm-Up of Swimming on Performance of 100 m Backstroke Swimming

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## Abstract

The purpose of the study was to find out the effect of different durations of warm-up on the performance of 100 m backstroke. Fifteen male and female swimmers from swimming match practice group were randomly selected from L.N.I.P.E., Gwalior. Their ages were between 18 to 24 years. The criterion measure adopted for this study was to see the effect of different durations of warm-up on the performance of 100 m backstroke by the stop watch for recording the timing. The data was examined by applying statistical technique within group design and the level of significance was set at 0.05. The results of the study revealed that there was no significant difference in the different durations of warm-up of swimming on the performance of 100 m backstroke. According to the findings of the study, it provided the sports professionals like the physical education teachers, trainers, coaches that their training schedule may be planned or designed with the inclusion of minimum duration of warm-up, in this case which is 15 minutes because the evidences reinforced the fact that there was no improvement or significant changes on the selected physiological variables.

## 1. INTRODUCTION

The strong emotion for new records is increasingly seen, as a result every attempt being made by the coaches and athletes to do their best during competition. The performance of an athlete during the competition is affected by many factors, i.e. technical, social, psychological and his physical condition. Another important factor affecting performance is considered to be the physical readiness of the performer just before the competition, which is obtained through proper toying up of the body muscles.

However, there is a lot of controversy whether warm-up adds to the performance or not. But there is no gain saying the fact that warming up is important before participating.

Warm-ups have been found to be important in preventing injury and muscle soreness. It appears that muscle injury can result when vigorous exercises are not preceded by a related warm-up. An effective quick warm-up can also be an effective motivator. Students who get satisfaction from an effective warm-up usually have a stronger desire to participate in the activity. By contrast; a poor warm-up can lead to fatigue and boredom, limiting the students attention and ultimately in a poor programme.

Warming up improves performance and prevent injury in athletics. Warm-ups must be organized and complete. To do a few arm swings and jumping jacks is not enough. The amount of warm-up varies with the individual; some men will warm-up for 20 minutes, while others will take an hour. The benefit of a warm-up may be lost if it is performed too early before the contest.

One common mistake that sprinters as well as other runners often make during the competition, is failing to warm-up properly for the second race. Second Race warm-up is just as important as first race warm-up and many second races are poorly run because the athlete feels that, a warm-up forty minutes earlier is sufficient.

## 2. OBJECTIVE

The purpose of the study was to investigate the effect of afferent durations of warm-up of swimming on performance of 100 m backstroke.

## 3. METHOD AND DESIGN

The data pertaining to check the effect of different durations of warm-up of swimming on performance of 100 m backstroke. The data was taken in the swimming pool after the different durations of 15 minutes, 25 minutes and 30 minutes in three different days. Prior to the actual administration of the tests and the necessary numbers of practice trails were provided to each subject to familiarize with the actual conduct of the test. After the successful completion of warm-up of each day, all the data collected was analyzed to draw a conclusion with regard to the hypothesis.

The main purpose of the study was to see the effect of different durations of warm-up of swimming on performance of 100 m backstroke. There were 15 subjects whose ages ranged between 18 to 24 years. The data was calculated separately for all the variables. To know the differences in the selected variables repeated measure ANOVA within group was used to calculate tested for 0.05 level of significance.

Table 1 shows that the Mauchly's value of test of sphericity for performance is significant so the assumption of sphericity is not fulfilled. As per Kepple's criterion F value for Greenhouse-Geisser will be considered for within subject effect.

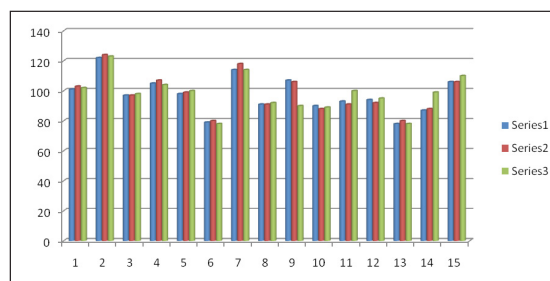
**Table 1: Mauchly's Test of Sphericity for Performance (100 m Back Stroke)**

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	Df	Sig.	Epsilon		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Factor 1	0.615	6.323	2	0.042	0.722	0.783	0.5

Table 2 reveals that F-value for Within Subject effect is insignificant at 5% level as p-value (0.215) is greater than 0.05. Thus it is evident that there is no significant difference in performance between the effects of different duration of warm-up on the swimmers.

**Table 2: Tests of Within-Subjects Effects for Performance of Different Durations of Warm-up**

Source		Type III Sum of Squares	Df	Mean Square	F	Sig.
Factor 1	Sphericity Assumed	64.311	2	32.156	1.267	0.297
	Greenhouse-Geisser	64.311	1.444	44.54	1.267	0.291
	Huynh-Feldt	64.311	1.566	41.076	1.267	0.293
	Lower-bound	64.311	1	64.311	1.267	0.279



**Figure 1**

#### 4. RESULTS

The result of performance of 100 meters Back Stroke has also been found to be insignificant, may be due to two possible reasons like different loads with different intensity and volume have been programmed in other studies which was not same like the present study and also it may be due to the difference in sample size. Studies have shown no warm-up is really optimal but it is really worth investigating whether a short warm-up might be ideal for better performance. Another very important consideration to be kept in mind is that different swimmers respond differently to the different durations of warm-up. Swimming being an individual sport, it is entirely an individual's exclusive way of responding to warm-up. Since, in this case no improvement has been recorded in the performance of the swimmer, it can be concluded that 15 minutes of warm-up is more economical to be programmed compared to the 25 minutes and 30 minutes of warm-up respectively.

#### 5. CONCLUSION

According to the findings of the study, it provided the sports professionals like the physical education teachers, trainers, coaches that their training schedule may be planned or designed with the inclusion of minimum duration of warm-up, in this case which is 15 minutes because the evidences reinforced the fact that there was no improvement or significant changes on the selected physiological variables and performance of 100 m back stroke due to longer durations of warm-up which in this case is 25 minutes and 30 minutes.

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# Comparison of Somatic Tension, Cognitive Worry and Self-confidence of Inter-University Level Athletes of Selected Track and Field Events

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## Abstract

It has been observed that somatic tension, cognitive worry and self-confidence of male and female weightlifter are not in uniform pattern. Therefore, the purpose of study was to compare somatic tension, cognitive worry and self-confidence in Throwers and jumpers from track and field athletics. The standard questionnaire comparing nine questions of each category was used for collecting the data. In each question there were for separate choice, which was numbered consecutively. In this study sixty (60), Throwers and jumpers from track and field athletics were selected who have participated in all India interuniversity competition, 2011–2012 held at Nagarjuna University. After taking the responses of sports person through the questionnaire of both the Throwers and jumpers the somatic tension, cognitive worry and self-confidence were obtained. To find out the difference between Throwers and jumpers from track and field athletics in somatic tension, cognitive worry and self-confidence 't' test was used, the level of significance was of 0.05 of confidence. The analysis of data revealed that there was significant difference in somatic tension ( $t = 3.43$ ) were Throwers and jumpers from track and field athletics. But there were no significant difference observed in case of cognitive worry ( $t = 0.72$ ) and in self-confidence ( $t = 1.97$ ).

## 1. INTRODUCTION

Anxiety is a state of mind in which a person is something that has occurred or reasons (1980) is going to react with embarrassment. Events, and the results of their events, people worry about in general are sources of concern. Psychic anxiety and somatic symptoms of anxiety gear. In simple terms, it is a kind of emotional turmoil. Such cuts selections. The upset that students self-awareness in the process of interaction with people and the environment develops in the competition with their peers also self-confidence and success or failure as a result develops a sense of adventure his efforts to compare leads.

As a negative motivator anxiety may interfere with performance as well as constructive thinking. Athlete may attempt to handle anxiety by denying there need to work habit or athletes techniques. Their often need to fatigue and inturn lack of confidence and increase anxiety. Similarly Howard k. hall illstair wikers and Julie methers conducted study high school runners in cross-country meet to examine links between par perfectionism achievement goal and temporal pattering of multidimensional state anxiety they found that fun all perfectionalism was a consistent significant predictor of cognitive predictor of confidence and ego and task goes contribute to all prediction cognitive anxiety and confidence respectively.

Jones swain and Cole conducted study university athlete and found that in case of cognitive anxiety male showed no changes across time though females showed a progressive increase the competition is near males and females

should the same patterning in somatic anxiety with increase accruing only the day of competition. self-confidence sources revealed a reduction in self-confidence scores revealed a reduction in self-confidence near in both gender but their was greater decrees in female then men.

## 2. OBJECTIVE OF STUDY

The purpose of study was to investigate and compare somatic tension, cognitive worry and self-confidence of inter varsity level athletes of selected track and field event.

## 3. PROCEDURE

### 3.1. Selection of Subjects

The subjects for the study were shot putter and discuss thrower Throwers and long jumpers and triple jumpers reached in the final of all India Inter-University athletic meet for the year 2011-2012 held at Naga Arjuna University, Guntur. In total 16 Throwers and 16 jumpers were selected as subjects .the subjects were under graduate and post graduate male students belonging to different states and union territories of India. The age group was between 18 to 25 years.

The competitive state anxiety inventory-2 (CSAI-2) by Rainer Marties selected for the study because it is sports specific anxiety test. Further it assesses competitive anxiety on the basis of three dimension anxiety i.e. cognitive worry, somatic tension and self-confidence.

## 4. PROCEDURE FOR ADMINISTRATION

The test was administered to the subjects at Inter-University competition .The subjects were assembled in different groups. Clear instructions were specifically given to the subjects that all the items in the questionnaire must be attempted.

### 4.1. Scoring

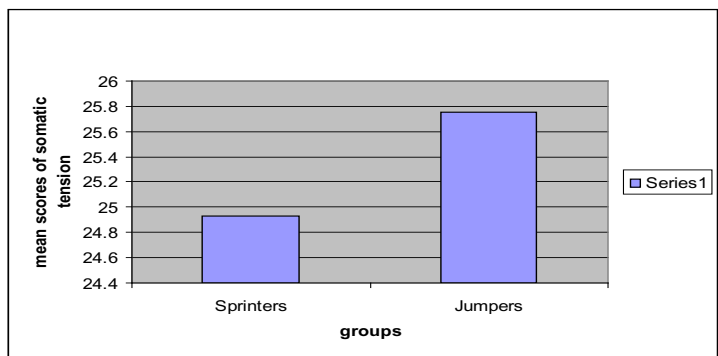


Figure 1: Somatic Tension among Sprinters and Jumpers

The CSAI-2 consists of 27 items. Each item is keyed with following response option and score

- Not at all = 4
- Some what = 3
- Moderately = 2
- Very much = 1

The CSAI-2 s scored by computing a separate total for each of the three sub scales with score ranging from a low of 9 to a high of 36. The higher the score the greater the cognitive worry or somatic tension and self-confidence. Number of total score for the inventory is computed.

The various state anxiety subscale namely somatic tension, cognitive worry and self-confidence is attained by summing up 9 scores each separately for all the sub scales. The state cognitive sub scale was scored by totalling the responses for the following 9 items 1, 4, 7, 10, 13, 16, 19, 22 and 25 adding the responses of the following items 2, 5, 8, 11, 14, 17, 20, 23, and 26 scored the scale somatic sub scale is scored.

The state of self-confidence subscale is scored by adding the following items 3, 6, 9, 12, 15, 18, 21, 24 and 27. Inventories that are missing not more than one response per subscale can still be scored but any inventory in which two or more items any one subscale are omitted should be invalidated. to obtain sub scale scores when an item has been omitted and computed the mean item score for the right answer items, multiplying this value by 9 and then round the product to the nearest whole number.

**4.2. Statistical Procedure**

In order to determine the significance of difference between select and field athlete on somatic tension. Cognitive worry and self-confidence the T-ratio was applied, the level of significance was set at 0.05 levels.

**5. RESULTS**

The data containing to somatic tension, cognitive worry and self-confidence were collected from 27 items of the questionnaire as per the standard procedure laid down in the normal sports competition anxiety test.

**6. FINDINGS**

The data presented in Table 1, clearly revealed that mean scores of somatic tension of Throwers and jumpers is not significant. This indicated that Throwers and jumpers are more or less same in the somatic tension since the obtained t-value was lesser than the value required to be significant.

**Table 1: Significance of Difference of Somatic Tension among Throwers and Jumpers**

Groups	Mean	D M	$\partial Dm$	t-ratio
Throwers	24.93	0.82	3.70	0.63
Jumpers	25.75			

$t_{0.05} (30) = 2.042$

The data presented in the Table 2 clearly reveals that the mean scores of cognitive worry of Throwers and jumpers do not differ significantly as the obtained value of t was lesser than the required value to be significant. This indicates that Throwers and jumpers were having more or less same cognitive worry.

**Table 2: Significance of Difference of Cognitive Worry among Throwers and Jumpers**

Groups	Mean	D M	$\partial Dm$	t-ratio
Throwers	24.5	1.06	4.86	0.623
Jumpers	25.56			

$t_{0.05} (30) = 2.042$

The data presented in the Table 3 clearly reveals that the mean scores of self-confidence of Throwers and jumpers do not differ significantly as the obtained value of t was lesser than the required value to be significant. This indicates that Throwers and jumpers were having more or less same self-confidence.



Table 3: Significance of Difference of Self-confidence among Throwers and Jumpers

Groups	Mean	D M	$\partial Dm$	t-ratio
Throwers	20.62	3.62	5.20	1.98
Jumpers	17			

$t_{0.05}(30) = 2.042$

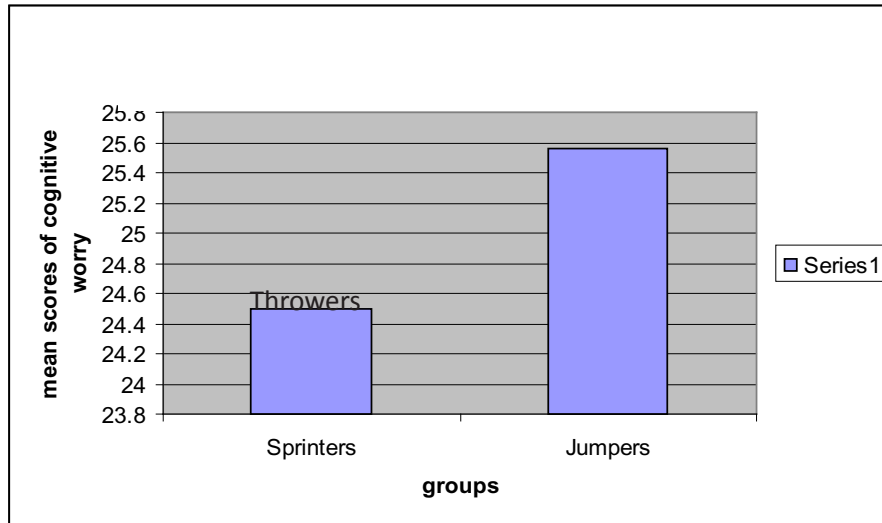


Figure 2: Cognitive Worry Among Sprinters and Jumpers

**7. DISCUSSION OF FINDINGS**

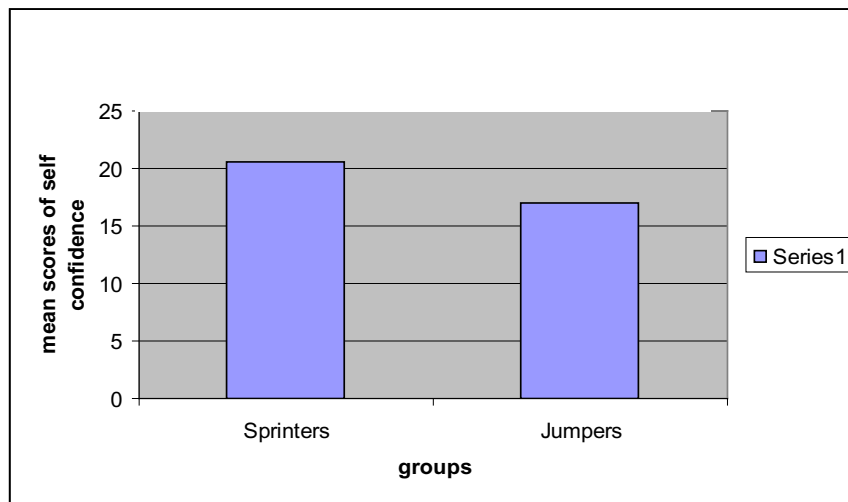


Figure 3: Self-Confidence of Sprinters and Jumpers

The findings of the study showed that the somatic component runners and jumpers competition anxiety, stress, anxiety and cognitive confidence that did not differ significantly with respect to. Runners and jumpers, which means that the state level of competition were different levels of concern but is more or less the same.

This finding out the fact that uncertainty about the possible competition concerns specific risk situation of competition is the formes, since both the sprint and jump similar incident as the short-term and limited Gale are

based can be attributed is. Unlike other long-term uncertainty and therefore the effort to come out in nature and have equality jumpers and runners evocation of pre-competition state anxiety levels were similar records may be due to the limited options.

Therefore, conclude that the form that is used to assess competition concerns. Cognitive anxiety and somatic stress Advertising specializes confidence CSAI is well justified.

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# Comparative Study of Competitive Anxiety and Self-concept Among Sprinters, Jumpers and Throwers of all India Inter-University Levels Athletes

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## Abstract

The objective of the study was to compare the competitive anxiety and self-concept among sprinters, jumpers and throwers of All India Inter-University Levels Athletes. Total 45 male athletes participating in All India Inter-University were selected as subject for this study. The age of subject ranged between 18 to 25 years. The competitive anxiety and self-concept questionnaire prepared by Reiner Martens and Raj Kumar Saraswat was used to collect data to measure the level of competitive anxiety and self-concept. One way analysis of variance was used as a statistical procedure. The comparison of competitive anxiety and self-concept between sprinters, jumpers and throwers of All India Inter-University Levels Athletes. Competitive anxiety, and self-concept were not significant at 0.05 level.

## Keywords

Self-Concept, Competitive Anxiety, Sprinters, Jumpers and Throwers

## 1. INTRODUCTION

Anxiety is a physiological response to a real or imagined threat. A certain amount of anxiety is needed for peak performance. But higher level of anxiety physically inhibits performance by causing muscular tension and disturbing coordination of the movement's therefore it is very important aspect to be handled. It highly helps a coach to prepare the athletes physically and mentally in such away that he himself is able to resist and tolerate any kind of psychological eventually, which may occur before or during the competition. Among all the various sports events present no doubt track and field has the maximum utilization of mechanical theories. Track and field get the popularity because of it's similarly with daily life doing.

In competitive sports Psychologist preparation of an athlete or a team is as much important as technique of the different skills of the game on a specific line. In modern competitive sports, the athletes and teams are prepared not only to play the game and for winning the game it is not only the proficiency in the skills, which bring victory but more important is the mental preparation. The spirit and the attitudes of the athletes with which they play and perform the best in the competition (Singh, 1992).

## 2. OBJECTIVES OF THE STUDY

The objective of the study was to compare competitive anxiety and self-concept among sprinters, jumpers and throwers of All India Inter-University Levels Athletes.

### 3. METHODOLOGY

The subjects for the study were 45 male players participating in All India Inter-University Athletics Championships 2014–15 were selected as subject for this study. The age of subject ranged between 18 to 25 years. The competitive anxiety and self-concept questionnaire prepared by Reiner Martens and Raj Kumar Saraswat was used to collect data to measure the level of competitive anxiety and self-concept. The comparison of competitive anxiety and self-concept between sprinters, jumpers and throwers.

The competitive state anxiety inventory-2 (CSAI-2) by Rainer Marties selected for the study because it is sports specific anxiety test. The test was administered to the subjects at Inter-University competition. The subjects were assembled in different groups. Clear instructions were specifically given to the subjects that all the items in the questionnaire must be attempted. The CSAI-2 s scored by computing a separate total for each of the three sub scales with score ranging from a low of 9 to a high of 36. Number of total score for the inventory is computed. The CSAI-2 consists of 27 items. Each item is keyed with following response option and score Not at all = 4, Somewhat = 3, Moderately = 2, Very much = 1. The various state anxiety subscale namely somatic tension, cognitive worry and self-confidence is attained by summing up 9 scores each separately for all the sub scales. Inventories that are missing not more than one response per sub scale can still be scored but any inventory in which two or more items any one subscale are omitted should be invalidated. to obtain sub scale scores when an item has been omitted and computed the mean item score for the right answer items, multiplying this value by 9 and then round the product to the nearest whole number.

The self-concept inventory provides six separate dimensions of self-concept, viz. physical, social, temperamental, educational, moral and intellectual self-concept. It also gives a total self-concept score. Each item was provided with five alternatives. Responses are obtained on test booklet itself. There was no time limit but generally 20 minutes were found sufficient for responding to all the items. The research scholar supervised the group and verify that they were responding in a desired way.

The respondent was provided with five alternatives to give his responses ranging most acceptable to least acceptable description of his self-concept. The alternatives or responses were arranged in such a way that the scoring system for all the items remained the same i.e. 5, 4, 3, 2, 1 whether the items were positive or negative. The summated scores of all the forty eight items provided the total self-concept of an individual. A high score on this inventory indicates a high self-concept, while a low score indicates a low self-concept. The various responses were received in terms of level of competitive anxiety and self-concept of sprinters, jumpers and thrower. ANOVA was applied to analysis the data. The level of significance will be fixed at 0.05 of confidence.

### 4. RESULTS OF THE STUDY

The data was analyzed by one way analysis of variance for the data or anxiety and self-concept between sprinters, jumpers and throwers of All India Inter-University male athletes has been shown in the Table 1.

**Table 1: Analysis of Variance for the Data of Competitive Anxiety**

Sources of Variance	Df	SS	MSS	F-ratio
Between Group	2	2.177	1.088	0.669
Among Group	42	68.266	1.625	

$F_{0.05}(2,42) = 3.22$

Since the value of the completed F-ratio for different positions (sprinters, jumpers and throwers) was lower than the tabulated F at 0.05 level as shown in table 1, therefore calculated F-ratio was significant and hypothesis for different position was rejected at 0.05 level.

**Table 2: Analysis of Variance for the Data of Self-concept**

Sources of Variance	Df	SS	MSS	F-ratio
Between Group	2	86.177	43.088	0.201
Among Group	42	90.74	214.019	

$F_{0.05}(2,42) = 3.32$

In the above Table, F-ratio for different positions (sprinters, jumpers and throwers) was lower than the tabulated F at 0.05 level there calculated F-ratio were significant. Thus hypothesis for different position was rejected at 0.105 level.

## 5. FINDINGS

Athletes are required to pay attention to perceive selective information by discriminating among cues and choose right movement pattern at right time. It is also evident from the concept of sprinters, jumpers and throwers where a athletes can move from according to the need of specific situation in the event this might be one of the reasons for a similar self-concept level in sprinters, jumpers and throwers (Bell Keith F. 1983).

This present study reveals that there is no significant difference in mean of competitive anxiety and self-concept among sprinters, jumpers and throwers.

The findings of study showed that sprinters, jumpers and throwers didn't differ significantly with respect to competition anxiety. Implying that state competition anxiety level of sprinters, jumpers and throwers were not of different level rather is of more or less same. This finding may be attributed the fact that, competition anxiety state formes situation specific apprehension about uncertainty in probable out comes of competition since both sprint, jump and throw are similar type of events as it of indivisual events, short duration and limited tempest based and hence the uncertainty of out come is may be because of limited options of attempt unlike other long duration etc. Record of the similarity in nature the evocation of pre competition state anxietyand self-concept amount sprinters, jumpers and throwers were of similar level (Silva John M. and Swinberg Robert, 1984).

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# A Comparative Study of Orientation Ability of University Female Football Players

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## **Abstract**

The purpose of the study was to find out the Comparison of Orientation ability of Female Football players of excellent of achievement among National, State and district levels. The subjects selected for the study was 90 (n = 30) female football players (i.e. National = 30, State = 30, and District = 30) of University level Completion in India. Their age range between 20–25 years. They were selected randomly, who were physically as well as skillfully strong. The test administered at different play grounds, where all the equipments are available and test can easily be conducted. The data was analyzed by using of LSD for mean comparison on Orientation among District, State, and National level of football players. The level of significance chosen for testing the hypothesis was set at 0.05 level of significance. It was assessed by using 'Numbered Medicine Ball Run Test' and was recorded 100 – 1/100<sup>th</sup> second. On the basis of results significant difference in Orientation Ability among three levels of Football players i.e. District, State and National, since the f value observed was 48.3396, which is much higher than the criterion value 3.101 required being significant. Post-hoc mean comparison reveals significant performance difference between three groups of orientation ability. The mean performance difference between various groups were found as 2.04 between District and State level, 0.78 between State and National and 2.82 between District and National level. The National level football players were best in orientation ability with the performance of 9.82. The finding showed following order of performance: National Group > State Group > District Group. Above finding clearly implies that State and National level footballers are significantly better than District level player on response time. However, State and National players were of equal level.

## **Keywords**

Response Time, District, State and National Football Players

## **1. INTRODUCTION**

Part and parcel of the case-orientation is a comparative orientation. Cases similar on many variables but with different outcomes are compared to see where the key causal differences may lie. This is based on John Stuart Mills' (1843, A system of logic: Ratiocinative and Inductive) method of differences – essentially the use of (natural) experimental design. Similarly, cases that have the same outcome are examined to see which conditions they all have in common, thereby revealing necessary causes. Physical activity provides an existing outlet for human expression which is often creative in nature. Human beings normally run, jump, throw, catch, kick, push, pull, strike and perform a multitude of basic skills. They combine the skills into pattern of unceasingly greater specificity and complexity. The application of sports sciences for preparation of athletes is continuous process. Contemporary sport scientists continue to explore the physiological and performance effects of different training interventions, recovery modalities, nutritional countermeasures and biomechanical factors on performance in order to increase

the performance of players. It is generally known that success in most of modern sports is linked to proper ability of running, jumping, pushing pulling and throwing.<sup>1</sup> Since movement is the biological necessity of every human being, but qualitative and performance oriented movements are required in sports for high level performance. This necessity can be satisfying by means of organized physical activities.<sup>2</sup> Sports are one of the most complex activities and it is based on a great diversity of movement. That's why different sports activities require different types of coordinative abilities. The coordinative abilities are the combination of seven abilities i.e. Orientation, Differentiation, Rhythm, Balance, Reaction, Coupling and Adaptation ability.<sup>3</sup> Kent<sup>4</sup> defined that orientation is the ability of a person to be aware of his or her position with respect to both time, place and circumstantial situation. All coordinative abilities are important to perform at top levels in competitive sports especially in ball games. Keeping in view the importance of orientation ability that present study focused to find out the difference with regard to orientation ability and find out the best group among basketball, football and volleyball players. McMillan K, *et al.* (2005) study the improved oxygen uptake improves soccer performance as regards distance covered, involvements with the ball, and number of sprints. Large improvements in oxygen uptake have been shown using interval running. A similar physiological load arising from interval running could be obtained using the soccer ball in training. The main aim was to study physiological adaptations to a 10 week high intensity aerobic interval training program performed by professional youth soccer players, using a soccer specific ball dribbling track. Eleven youth soccer players with a mean (SD) age of 16.9 (0.4) years performed high intensity aerobic interval training sessions twice per week for 10 weeks in addition to normal soccer training. The specific aerobic training consisted of four sets of 4 min work periods dribbling a soccer ball around a specially designed track at 90–95% of maximal heart frequency, with a 3 min recovery jog at 70% of maximal heart frequency between intervals. Mean VO<sub>2</sub>max improved significantly from 63.4 (5.6) to 69.8 (6.6) ml kg<sup>-1</sup> min<sup>-1</sup>, or 183.3 (13.2) to 201.5 (16.2) ml kg<sup>-1</sup> min<sup>-1</sup> ( $p < 0.001$ ). Squat jump and counter movement jump height increased significantly from 37.7 (6.2) to 40.3 (6.1) cm and 52.0 (4.0) to 53.4 (4.2) cm, respectively ( $p < 0.05$ ). No significant changes in body mass, running economy, rate of force development, or 10 m sprint times occurred. Performing high intensity 4 min intervals dribbling a soccer ball around a specially designed track together with regular soccer training is effective for improving the VO<sub>2</sub>max of soccer players, with no negative interference effects on strength, jumping ability, and sprinting performance.

## 2. MATERIAL AND METHODS

The study was conducted on 90 ( $n = 30$ ) Female football players age between 20–25 years, who were regularly reporting for match practice session. Subjects were selected randomly for the Study. The selection of tests had adopted according to suitability of the study. The research scholar made sincere efforts to review of related literature, and held a series of discussion with experts. All the subjects, after having been informed about the objective and protocol of the study, gave their consent and volunteered to participate in this study. They were further divided into three groups of 30 each (i.e., N1 = 30; District and N2 = 30; State and N3 = 30; National). The research scholar was select Orientation ability. It was assessed by using 'Numbered Medicine Ball Run Test' and was recorded 100–1/100<sup>th</sup> second.

Table 1: Selection of Variable

Variables	Criterion Measures	Administration of Test
Orientation Ability	Seconds	Medicine Ball Run Test

## 3. METHODOLOGY

All the medicine balls were arranged on an even and smooth piece of ground. Five medicine balls weighing three kg each were arranged in a semicircle with a distance of one and half meters in between them. The sixth medicine ball weighing 4 kg was placed 3 meters away from all these 5 medicine balls, 3 kg each. Five card-board numbered plates of one square foot size each were kept indicating numbers from 1 – 5 prominently of them.

Before the start of the test, the subject stood behind the 6<sup>th</sup> or 4<sup>th</sup> kg central medicine ball, facing towards the opposite direction i.e. with his back towards the ball. On signal, the subject touched the central ball, turned and ran towards the numbered ball and ran back to touch the central medicine ball. The subject touched the sixth medicine ball; another number was called by tester instantly. In the same way, the tester called the number of these 5 balls (3 kg each) one by one a total of three times in an indefinite sequence as decided by the tester himself and the subject performed accordingly. The time taken by the subject to complete the course (a total of three times) was recorded in seconds. Two trails were given to every one of the subjects. The better one of the two trails was considered the subjects scores.

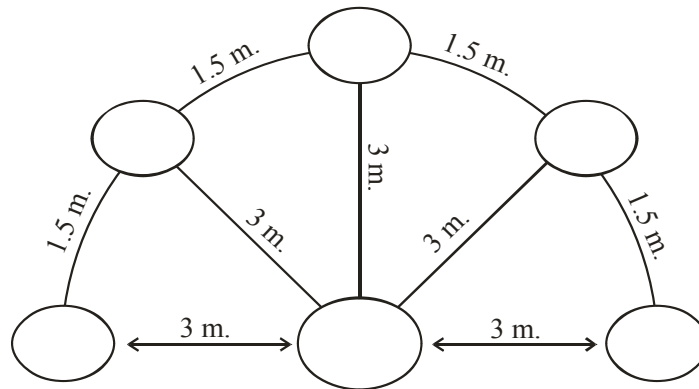


Figure 1: Orientation Ability Test

#### 4. DATA ANALYSIS

Analysis of variance (ANOVA) test was employed for independent data was used to assess the Relationship of football players of different level of achievements. The level of  $p \leq 0.05$  was considered significant.

#### 5. RESULTS

The descriptive measure in terms significant difference of football players of comparisons of Orientation Ability among District, State and National level of Football players are shown in Table 2.

Table 2: Comparison of Orientation Ability among Distract, State and National Level Football Players (N = 90)

Source of Variance	S. S.	df	MS	F
Between Groups	126.895	2	63.4476	48.3396*
Without Groups	114.191	87	1.31254	

Tab. F value = 3.101

Table 1 clearly reveals that there is significant difference in Orientation Ability among three levels of Football players i.e. District, State and National, since the f-value observed was 48.3396, which is much higher than the criterion value 3.101 required to be significant.

As f-value was found significant post hoc mean comparison was used to exactly find the difference as well as level of difference between the groups.

The post-hoc mean comparison on orientation ability presented in Table 3.



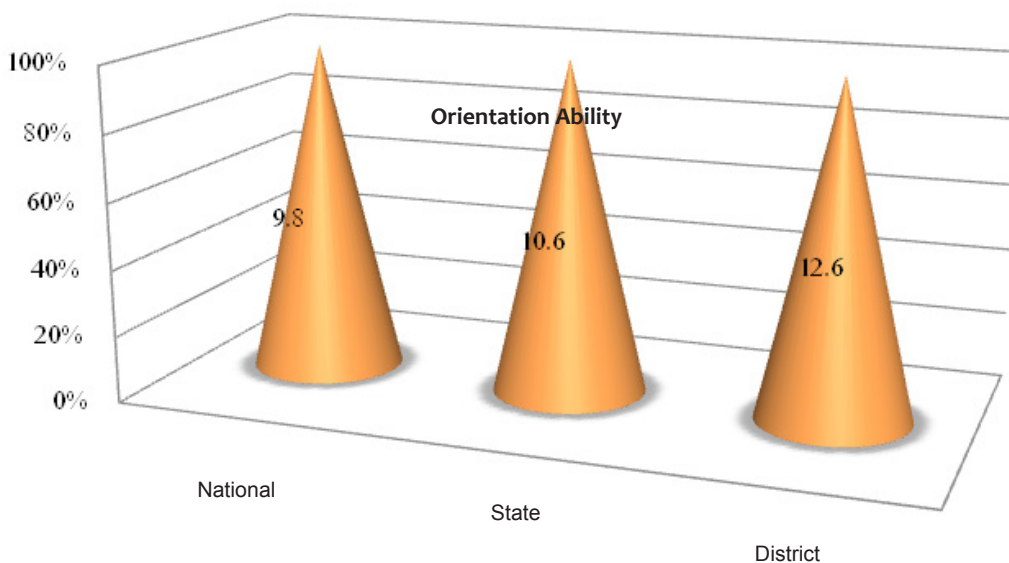
**Table 3: LSD Test for Mean Comparison on Orientation Ability among District, State and National Level Football Players (N = 90)**

District	State	National	D.F.	CD
12.64	10.6		2.04*	0.59
	10.6	9.82	0.78*	
12.64		9.82	2.82*	

Significant > C D

Post-hoc mean comparison reveals significant performance difference between three groups of orientation ability. The mean performance difference between various groups were found as 2.04 between District and State level, 0.78 between State and National and 2.82 between District and National level. The National level football players were best in orientation ability with the performance of 9.82. The finding showed following order of performance: National Group > State Group > District Group.

Above finding clearly implies that State and National level footballers are significantly better than District level player on response time. However, State and National players were of equal level.



**Figure 2: Mean Comparison of Orientation Ability among National, State and District level of Football Players**

**6. DISCUSSIONS AND CONCLUSION**

The finding of the study as reveal from various critical analyses and interpretation of data showed light on facts pertaining to select parameter among football player of different level of performance. The finding showed National level football players were better than state and district level in orientation ability. It was also observe in all above parameter, state level player were better than district level. Above findings can be attributed to the fact that these parameters are directly associated with skills, movements etc. of football. It is obvious as seen from the game of football and the way it is played.

**ACKNOWLEDGEMENT**

Authors would like to sincere thank to the subjects, coaches and physical education teachers who cooperated and whole hearted support in the completion of study.

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# Impact of Yogic Exercise on Body Fat Percentage on Middle-aged Obese People

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## Abstract

**Purpose:** The Purpose of the study was to find out the effect of yogic exercises on body fat percentage of middle aged obese people.

**Selection of Subjects:** For the present study 20 male obese people from locality of Bilaspur were selected randomly as the subjects for the study. The age of the subjects ranged between 40–50 years.

**Selection of Variables:** The variables selected for the present study were yogic training (independent variable), body fat percentage (dependent variable).

**Methodology:** For the study pre test–post test randomized group design, which consists of control group (10 subjects) and experimental group (10 subjects) were used. The data were collected through the pre test, before training and post test, after six weeks of yogic exercises training.

**Statistical Technique:** For comparing pre and post test means of experimental and control groups, descriptive analysis and Analysis of Co-Variance (ANCOVA) were used and the level of significance was set at 0.05 level of confidence.

**Result:** The result of the study showed that there was insignificant difference between pre and post test (experimental group) of body fat percentage.

## Keywords

Yogic Training, Body Fat Percentage, Middle Age, Obesity

## 1. INTRODUCTION

Yoga is a method of learning that aims to attain the unity of mind, body, and spirit through these three main Yoga structures: Exercise, Breathing, and Meditation. The exercises of Yoga are designed to put pressure on the Glandular Systems of the body, thereby increasing its efficiency and total health. The body is looked upon as the primary instrument that enables us to work and evolve in the world, a Yoga student; therefore, treats it with great care and respect. The Breathing Techniques are based on the concept that breath is the source of life in the body. Yoga students gently increase their breath control to improve the health and the function of both body and mind. These two systems prepare the body and mind for Meditation, making it easier for students to achieve a quiet mind and be free from everyday stress. Regular daily practice of all three parts of this structure of Yoga produce a clear, bright mind and a strong, capable body.

Body fat is a lipid (fat) produced in the body, and this may be influenced by diet, exercise and genetics. Body fat percentage is that percentage of body mass that is not made up of bone, muscle, connective tissue and fluids; that is, everything else. A person's total body fat percentage is the total weight of the person's fat divided by the person's weight. The resulting number reflects both essential fat and storage fat. Having high cholesterol can cause

life-threatening diseases. However, it can be controlled through diet and exercise. When there is high cholesterol, the HDL and LDL cholesterol levels are reversed making LDL level higher than HDL level. It is also important to consult a physician before starting any diet or exercise routine. He/she will monitor the progress to determine if medication will be needed to control the high cholesterol.

## 2. OBJECTIVE OF THE STUDY

To find out the effect of yogic practice on body fat percentage on middle aged obese people.

## 3. METHODOLOGY

### 3.1. Selection of Subjects

For the present study, total 20 male obese people with age ranging between 40 years and 50 years were randomly selected as subject from locality of Bilaspur.

### 3.2. Selection of Variables

Keeping the feasibility criterion in mind, the researcher selected the following variables for the present study:

- Independent variables: Yogic training
- Dependent variables: Body Fat %.

### 3.3. Criterion Measures

- The body fat % was measured by skinfold caliper by using siri's formula.

### 3.4. Experiment Design and Training Schedule

For the study pre test- post test randomized group design was used in which the pre test was taken prior to the yogic training and post test was taken after eight weeks of yogic training. Selected Yoga Asanas and Pranayam were given to subjects on 6 days i.e. (Monday to Saturday) sessions per week. Each yoga session consisted of 10 minutes of pranayamas (breath-control exercises), 10 minutes of dynamic warm-up exercises, 30 minutes of asanas (yoga postures), and 10 minutes of supine relaxation in savasana (corpse pose).

### 3.5. Statistical Procedure

The data were analyzed by applying descriptive statistical and analysis of co-variance (ANCOVA). The level of significance was set at 0.05.

## 4. RESULT AND FINDINGS OF THE STUDY

Table 1: Analysis of Variance of Comparison of Experimental and Control Group in Relation to Body Fat Percentage

	Mean	Source of Variance	Sum of Squares	df	Mean Square	F
Pre-test	33.74	Between groups	2.278	1	2.278	4.125
		Within groups	9.941	18	.552	
Post-test	32.12	Between groups	11.503	1	11.503	4.401
		Within groups	47.041	18	2.613	

Required  $F_{.05}(1,18) = 4.41$ .

In relation to pre test, Table 1 revealed that the obtained F-value (4.125) was found to be insignificant at 0.05 level since this value was found lower than the tabulated value 4.41 at 1,18 df, from which it is clear that the pre test means does not differ significantly and that the random assignment of subjects to the experimental was quite successful.

In relation to post test, insignificant difference was found between experimental group and control group pertaining to body fat percentage, since F-value (4.40) was lesser than the tabulated F-value (4.41).

**Table 2: Analysis of Covariance of Comparison of Adjusted Post Test Means of Experimental and Control Group in Relation to Body Fat Percentage**

Source of Variance	Sum of Squares	df	Mean Square	F
Contrast	10.566	1	10.566	4.15
Error	43.18	17	2.54	

Required 0.05 level,  $F_{.05}(1,17) = 4.45$ .

Table 2 revealed that the obtained F-value (4.15) was found to be insignificant at 0.05 level, since the value was found lesser than the tabulated F-value (4.45).

## 5. DISCUSSION OF THE FINDINGS

Excessive amount of adipose tissue in selected people and simple obesity in particular constitute a growing health problem throughout the world. Adverse health effects of obesity of selected people justify the need to look for efficient treatment, among the dietary treatment. In present study fat % were decreased from pre to post test but changes were not sufficient to establish statistical significance. There may be two probable reasons for such observations: (1) the yogic exercises included in this programme were not exhaustive in nature. The exhaustive exercises lead to burning of adipose tissue as increase and sustained heart rate may increase the demand of oxygen in working muscles. (2) It may possible that the six weeks yogic practices were not enough to make the changes in fat %. The long duration training programme more than 12 weeks may be cause to desirable changes. It is evident from the fact that yogic practices can't help to reduce the percentage of fat but it may help to control fat percentage in the future. However, to get significant changes in the percentage of fat, one should focus on aerobic exercise along with diet management.

## 6. CONCLUSIONS

On the basis of findings of the study, the following conclusions may be drawn:

- The results of the study indicate that the insignificant difference was found in pre and post test (experimental group) of body fat percentage
- The results of the study indicate that the insignificant difference was found in adjusted post test means of experimental and control group in relation to body fat percentage.

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# Comparision of Occupational Stress of Coaches Employed in Central and State Government in India

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## Abstract

The purpose of the study was to compare occupational stress of coaches belonging to central government and different universities of India. All subjects were selected randomly. Overall 60 coaches 30 from central government & 30 from different universities were selected for the study. Data on occupational stress were collected by using Occupational Stress Index (OSI) by A.K. Shrivastava and A.P. Singh. To compare occupational stress of coaches T-ratio was used with .05 level of Significance. Results: The analysis of data revealed that t-value of occupational stress of coaches employed in central government and different universities was 19.256 which were significant at .05 level (Tab t .05 = 2.00).

## Keywords

Occupational Stress, Central Government and University, Coaches

## 1. INTRODUCTION

Sports and games propagate the feeling of nationalism and help in creating a new generation of individual with the feelings that difference based on caste, community and religion have no meaning with a faith in love and peace in purity, in feeling of good will and brotherhood. Sports and games provide a common platform for different religions, professions, faith, languages, customs and traditions etc. In sports, people interact with each other in harmonious and congenial atmosphere thereby emerging as a homogeneous group. Occupational stress is the harmful physical and emotional response that occurs when there is a poor match between job demands and the capabilities, resources, or needs of the worker.

Occupational stress can be defined as the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker. Job stress can lead to poor health and even injury. The concept of Occupational stress is often confused with challenge, but these concepts are not the same. Challenge energizes us psychologically and physically, and it motivates us to learn new skills and master our Occupations. When a challenge is met, we feel relaxed and satisfied (NIOSH, 1999). The other view persist on occupational stress are of opinion that job stress results from the interaction of the worker and the conditions of work. Views differ on the importance of worker characteristics versus working conditions as the primary cause of job stress. The differing viewpoints suggest different ways to prevent stress at work. According to one school of thought, differences in individual characteristics such as personality and coping skills are very important in predicting whether certain job conditions will result in stress. In other words, what is stressful for one person may not be a problem for someone else? This viewpoint underlies prevention strategies that focus on workers and ways to help them cope with demanding job conditions. Although the importance of individual differences cannot be ignored, scientific evidence suggests that certain working conditions are stressful to most people. Such evidence argues for a greater emphasis on working conditions as the key source of job stress, and

for job redesign as a primary prevention strategy. Stress-related disorders encompass a broad array of conditions, including psychological disorders (e.g., depression, anxiety, post-traumatic stress disorder) and other types of emotional strain (e.g., dissatisfaction, fatigue, tension, etc.), maladaptive behaviours (e.g., aggression, substance abuse), and cognitive impairment (e.g., concentration and memory problems). In turn, these conditions may lead to poor work performance or even injury. Occupational stress is also associated with various biological reactions that may lead ultimately to compromised health, such as cardiovascular disease, or in extreme cases, death.

Hence it is obvious that occupational stress is a term used to define ongoing stress that is related to the workplace. The stress may have to do with the responsibilities associated with the work itself, or be caused by conditions that are based in the corporate culture or personality conflicts. As with other forms of tension, occupation stress can eventually affect both physical and emotional well being if not managed effectively.

When left unchecked, occupational stress can lead to emotional and physical disorders that began to impact personal as well as professional lives. The individual may develop a level of tension that interferes with sleep, making relaxing outside the workplace impossible. Over time, the stress can trigger emotional disorders such as anxiety, depression and in some cases various phobias that further inhibit the ability to enjoy any aspect of living.

## 2. METHODOLOGY

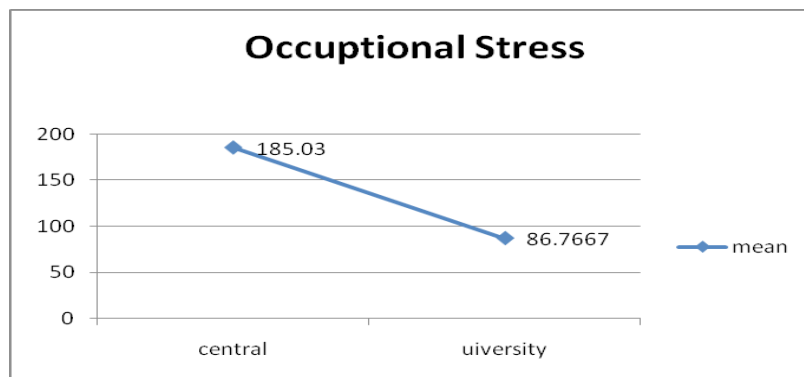
The study was conducted on coaches working under central government and state government of India. All subjects were selected randomly. Overall 60 coaches 30 from central government & 30 from different universities were selected for the study. Data on occupational stress were collected by using Occupational Stress Index (OSI) by A.K. Shrivastava and A.P. Singh (1984). A multiple methods of data collection were used so that timely and effectively information could be gathered. Depending on convenience of subjects and researcher mailed questionnaires, personal interview and telephonic questionnaire based interview were used to collect the data. Data hence collected was assorted and scored according to procedure explain in testing manual of occupational stress index. To compare occupational stress of coaches employed in central government and state government t-ratio was used at .05 level of Significance.

**Table 1: Comparison of Occupational Stress of Coaches Working Under Central Government and University**

Group	N	Mean	Std. Deviation	df	't'-test
Central	30	185.03	19.03623	58	19.256
State	30	86.7667	20.46643		

Significant at .05 levels (Tab t .05 = 2.00).

The analysis of data revealed that t-value of occupational stress of coaches employed in central government and state government was 19.256 which were significant at .05 level (Tab t .05 = 2.00).



**Figure 1: Mean and Standard Deviation of Occupational Stress of Coaches Working Under Central Government and Universities**



### 3. DISCUSSION AND CONCLUSION

It is also obvious that the central level coaches would likely to have higher occupational stress due to demand and pressure of unreasonable expectations of individual players, the team and the nation as a whole. The national coaches especially coaches from Sports Authority India are often associated with training of national teams based at SAI training centres who normally deals with training of elite sports person under sports talent promotion or sports excellence schemes. It is always expected from them to deliver successful performance. These are the reasons that can be attributed to the highest level occupational stress in national coaches in comparison to university coaches.

It may therefore be concluded that central government coaches differ significantly as far as occupational stress was concerned. The occupational stress is result of demands and expectations of the organization under whom the coaches are employed and the expectations and demands of job are hence obviously significantly higher in central government coaches.

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# A Comparative Study of Mental Toughness Between Individual Game and Team Game Players of Maharashtra

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## Abstract

The purpose of this study was to compare the Mental Toughness between Individual Game and Team Game players. For the purpose of this study a total of 120 subjects (N = 120) were chosen, Individual Game (n = 60) and Team Game (n = 60). The subjects were chosen using Quota sampling technique. Mental Toughness was measured using Dr. Alan Goldberg Questionnaire (1998) which consisted of thirty questions measuring five attributes namely Rebound ability, Pressure Handling Ability, Concentration, Confidence and Motivation. Independent sample 't' test was used to compare the Mental Toughness between Individual Game and Team Game players. The results showed that there is a significant difference between Team Game Players and Individual Game players in terms of Rebound ability, Pressure Handling and Overall Mental Toughness with Team Game players scoring higher in all three attributes. Whereas there was no significant difference in terms of Concentration, Confidence and Motivation but Team Game players scored higher in motivation and Individual Game players scored higher in concentration, whereas both groups had the same score for confidence. The higher Mental Toughness of Team Game Players compared to Individual Game players can be attributed to the team Game settings associated with team games wherein the players continuously receive support from other members of the team.

## 1. INTRODUCTION

The success and failure of an athlete is dependent on the combination of physical ability, conditioning, training, mental preparation and the ability to perform well under pressure. Competitive sports demand a high level physical ability, and at the same time, they require a sharp mental focus. In a world where many athletes are physically, technically and tactically increasingly similar, it is the mind which offers perhaps the greatest scope for a competitive advantage. The nature of sports makes an individual to behave in a certain manner. In group sports like football, basketball, handball and others the nature of these sports causes the athletes to commit many fouls during competition, as a result they experience negative emotion and show problematic behaviour. In contrast in individual sports, athletes depend on to their individual abilities. In individual sports, performance criteria is one dimensional while in group sports performance depends on the teammates performance. Team game athletes spend more time with their team mates while practicing whereas individual game players spend most of the time

alone, therefore their psychological being differs from each other. Keeping this concept in mind the researcher has selected the topic “A Comparative Study of Mental Toughness between Individual Game and Team Game Players of Maharashtra”.

## 2. METHODS AND MATERIAL

For the present study, descriptive comparative method was used. It was used to assess the mental toughness of Individual Game and Team Game players and to compare between the two groups.

For the present study, the researcher used Quota sampling technique to select the sample from the population because the entire population for the study was not known. The Quota sampling was used so as to ensure that both contact game and non contact game players are included in the study.

From the population 120 subjects were chosen for the present study. Individual Game 60 players and Team Game 60 players. The subjects were selected as given in the Table below.

Individual Game				Team Game			
Contact Game		Non-contact Game		Contact Game		Non-contact Game	
Boxing	Wrestling	Badminton	Shooting	Football	Hockey	Cricket	Volleyball
15	15	15	15	15	15	15	15

### 2.1. Tools Used for Data Collection

The mental toughness questionnaire (Dr. Allan Goldberg, 2004) was used to evaluate the mental toughness of the subjects. It consists of thirty questions. The questionnaire encompasses five subscales namely rebound ability, pressure handling, confidence, concentration and motivation each consisting of six questions. The score for this questionnaire ranges from zero to thirty. A score of 6 in any one of the five subscales indicates a special strength in that area. A score of 26–30 indicates strength in overall mental toughness. Scores of 23–25 indicates average to moderate skill in mental toughness. Scores of 22 or below mean that you need to start putting more time into the mental training area.

### 2.2. Procedure for the Study

The researcher distributed the questionnaire booklet for marking the responses. The researcher in person in a face to face relationship administered the entire questionnaire. The subjects went through the instructions, read each statement carefully and indicated their responses. All the filled in questionnaires were collected from the subjects and scoring was done according to the scoring key. Usually an individual took 5 to 10 minutes in completing the test.

The aim of this current study was to compare the Mental Toughness of Individual Game and Team Game players. For this purpose the research hypothesis was stated as, “ $H_1$ -There is a significant difference in Mental Toughness between Individual Game and Team Game players”. The null hypothesis was stated as “ $H_0$ -There is no significant difference in Mental toughness between Individual Game and Team Game players”. The null hypothesis was tested using independent sample t-test for all the attributes of Mental Toughness which are:

- Rebound ability
- Concentration
- Motivation
- Pressure handling
- Confidence
- Overall mental toughness

### 2.3. Statistical Tools

To evaluate the score of mental toughness descriptive statistics were used. The “independent sample t-test” was applied to find out the significant differences between Individual Game and Team Game players. To test the hypotheses, the level of significance was set at 0.05.

The assessment and comparison of Mental Toughness between Individual Game and Team Game players was done using SPSS (Statistical Package for Social Sciences) version 21. The statistical tool used to compare the two groups was Independent sample t-test.

## 3. RESULTS

### 3.1. Analysis of Mental Toughness

The descriptive statistics Rebound ability, Pressure Handling, Concentration, Confidence, Motivation, Overall Mental Toughness between individual and team game is given in Table 1.

**Table 1: Descriptive Statistics of Rebound Ability, Pressure Handling, Concentration, Confidence, Motivation and Mental Toughness between Individual Game and Team Game Players**

Tools	Game Type	N	Mean	Std. Deviation	Std. Error Mean
Reboundability	Individual	60	3.00	1.008	.130
	Team	60	4.05	1.111	.143
Pressure Handling	Individual	60	4.18	.965	.125
	Team	60	4.28	1.027	.133
Concentration	Individual	60	4.33	1.003	.129
	Team	60	4.12	1.075	.139
Confidence	Individual	60	4.48	.930	.120
	Team	60	4.48	1.017	.131
Motivation	Individual	60	4.57	.963	.124
	Team	60	4.98	.813	.105
Mental Toughness	Individual	60	20.57	1.798	.232
	Team	60	21.92	2.102	.271

Table 1 shows the Descriptive Statistics of Rebound ability, Pressure Handling, Concentration, Confidence, Motivation and Mental Toughness between Individual Game and Team Game Players. The descriptive statistics shows that Team Game players possess higher level of Rebound ability, pressure handling, motivation and mental toughness than Individual Game players. While individual players possess higher concentration than team game players. Both individual and Team Game players showed same amount of confidence.

Further to compare the Players Rebound ability, Pressure Handling, Concentration, Confidence, Motivation, Overall Mental Toughness between individual and team game is given in Table 2.

**Table 2: Comparison of Rebound Ability, Pressure Handling, Concentration, Confidence, Motivation and Mental Toughness between Individual Game and Team Game Players**

Tools		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Reboundability	Equal variances assumed	.636	.427	-5.420	118	.000	-1.050	.194
	Equal variances not assumed			-5.420	116.906	.000	-1.050	.194
Pressure Handling	Equal variances assumed	.321	.572	-.550	118	.584	-.100	.182
	Equal variances not assumed			-.550	117.556	.584	-.100	.182
Concentration	Equal variances assumed	.000	.996	1.142	118	.256	.217	.190
	Equal variances not assumed			1.142	117.434	.256	.217	.190
Confidence	Equal variances assumed	.830	.364	.000	118	1.000	.000	.178
	Equal variances not assumed			.000	117.066	1.000	.000	.178
Motivation	Equal variances assumed	6.269	.014	-2.561	118	.012	-.417	.163
	Equal variances not assumed			-2.561	114.759	.012	-.417	.163
Mental Toughness	Equal variances assumed	2.473	.119	-3.781	118	.000	-1.350	.357
	Equal variances not assumed			-3.781	115.240	.000	-1.350	.357

Table 2 shows the statistical analysis for reboundability, motivation and mental toughness using independent sample t-test. Since the significant value is greater than 0.05 equal variance is assumed. The calculated t-value shows that there is a significant difference in Rebound ability, pressure handling, motivation and mental toughness between Individual Game and Team Game players at 0.05 significance level ( $p = .000$ ). Hence the null hypothesis is rejected the research hypothesis is accepted.

Further Table 2 also shows the statistical analysis for pressure handling, concentration and confidence using independent sample t-test. Since the significant value is greater than 0.05 equal variance is assumed. The calculated t-value shows that there is no significant difference in Pressure handling, concentration and confidence ability between Individual Game and Team Game players at 0.05 significance level. Hence the null hypothesis failed to be rejected and research hypothesis is rejected.

#### 4. DISCUSSION

From the findings, it was observed that the Team Game players possessed better ability in Reboundability, Pressure Handling, Motivation and Overall Mental Toughness. Whereas Individual Game players possessed better Concentration ability. But for Confidence both sets of Groups showed similar ability. Although there was a difference between the groups the research hypothesis can be accepted only for Rebound ability, Motivation and Overall Mental Toughness. Hence we can say that there is a significant difference between Individual Game and Team Game players in terms of these three attributes. Whereas there is no significant difference between Individual Game and Team Game players when it comes to Pressure Handling, Concentration and Confidence.

#### 5. CONCLUSION

From the findings of the study we can conclude that there is a significant difference in Mental Toughness between Individual Game and Team Game players wherein Team Game players possess a higher level of Mental Toughness. Also there is a significant difference between Individual Game and Team Game players in terms of two attributes of mental toughness which are Rebound ability and motivation with Team Game players attaining higher scores

in both. The literature says that in Team Games athletes are involved with teammates and spend a lot of time practicing with teammates and have more interaction with one another hence the better Rebound ability, Motivation and Pressure Handling ability can be attributed to this particular fact wherein the teammates motivate each other and also help them to come out of setbacks. From literature it can also be observed that in individual sports, the outcome is either winning or losing and there isn't tie, but in team sports all three results are possible hence there is less pressure on the Team Game players so we can conclude that the better pressure handling ability of Team Game players is due to this fact. Some of individual sports athlete have more time for mental skills practice and they do so in a quiet environment while distraction and loss of concentration are part of the team sports, therefore we can conclude that higher concentration of Individual Game players because of this particular reason. Finally, we conclude by saying that as the Team Game players scored high in most of the attributes of Mental Toughness and the Team Game settings influence better Mental Toughness of individuals hence in this study we can see that the Mental Toughness of Team Game players is higher. Also as (Bull *et al.*, 2005) observed on the basis of research that there is also the potential for difference in mental toughness from one sports and event to the other we can see that in this research the researcher has found a significant difference in Mental Toughness between Individual Game and Team Game player.

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