



## **A COMPARATIVE STUDY OF PERSONALITY DIFFERENCES BETWEEN MALE AND FEMALE SOFTBALL PLAYERS**

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### **ABSTRACT**

The purpose of the study was to study and investigate the personality differences of rural and urban Softball players of Chhattisgarh. For this purpose, two hundred (one hundred males and one hundred females) softball players of state and national level belonging to rural area of Jajgir district and urban area of Bilaspur district were randomly selected to serve as the subjects for this study. The Introversion-Extroversion Inventory prepared by P. F. Aziz was used to measure the personality pattern of male and female softball players of rural and urban area. To assess the types of personality characteristics of male and female softball players, means and standard deviations and Analysis of variance (ANOVA) were computed. The results of the study revealed that male and female softball players of urban area as well as rural area exhibited similarity in their personality pattern. It was also concluded that female softball players residing in urban and rural area were have better personality than their male counter parts.

Key words: Introvert, Extrovert, Ambivert, Personality pattern, softball players

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## 1. INTRODUCTION

Sport Psychology is a term used to refer to the psychological aspects of sport, physical recreation, physical education, exercise, health, and related physical activities. The International Society of Sport Psychology (ISSP) is dedicated to the development and professionalism in the field of sport psychology from a global perspective. The following ethical principles are guidelines that regulate ISSP professionals in sport psychology to act responsibly and ethically in the provision of services to insure the dignity and welfare of individuals, athletes, professionals, volunteers, administrators, teams, and the general public. These ethical standards are expressed in general terms in order that they can be applied to sport psychologists engaged in varied roles. The application of the ethical standards may vary depending upon the context (i.e., country and organization). The ethical standards outlined in this statement are not exhaustive, and the fact that a conduct is not addressed by these principles does not indicate that ISSP endorses it as either ethical or unethical. It is the individual responsibility of each sport psychologist to aspire to the highest possible standards of conduct. It is expected that each sport psychologist will act in accordance, and not violate, the values and rules described in the ethical principles, as well as the values and norms of one's culture.

The personality of the athlete has been a key research focus of sport psychologists (Wann, 1997). For many sport psychologists, the relationship between personality and behaviour is best understood through the interaction approach, i.e. in order to understand the person more fully, one must consider the person, the situation, and the interaction between the person and the situation. Although differing aspects of personality have been disclosed, as yet a complete trait profile has not been determined. While this may take years of research and enquiry, sport psychologists are obliged to maintain a scientific standard through the pursuit of academic enquiry into indefinite domains.

In the modern sports world the psychological, makeup of a sport person is as much important as physiological variables, teaching and tactics. Psychology has become the backbone of high performances especially in achieving peak performances, both training and competition. Sports Psychology, though still in infancy in the developing countries, has made a definite impact on sports performance, during training and competition (Seaton, 1956).

Most of the coaches agree that the physical characteristics, skills and training of the players and extremely important but they also indicate the good mental preparation for competitions is necessary component of success. In western countries like Russia, G.D.R. Bulgaria and Czechoslovakia (East European countries), much stress has been given on the mental preparation of their national teams as well as on the psychological conditioning of their players and sportsman. This include developing not only the physical attributes but also his' attitudinal, motivational and psychological traits (Singh, 1987).

Relationship between personality and performance in athletic or Sport skill are often discussed in the pages of professional Journals and by individuals on the playing fields. People placed in situation which call for action usually several more of themselves than is exposed in

less dynamic situations. Some have speculated that movement characteristics /who may be or the traits of the total personality complex (Cratley, 1989).

The personality was generally been acknowledged 'as an important part of physical activity. Some investigators are of the opinion that there are some personality traits which are directly responsible for success and failure of a sport person. Kroll and Carlson stated that there was direct relation between personality traits and level of performance.

The personality make-up of an individual plays a vital role in his achievements in every field of life. "Human personality refers to the unique expression of the characteristics of an individual and it must be studied with in the social context in which it develops. It is not an isolated phenomenon, separate from the environment. Although it is often perceived in such a way.

The participation in Sports contributes to building up self confidence, enhance intellectual level, personality development and outgoing tendency or extraversion as such proficiency leads to enhanced success in sports activities which is highly valued in one's group. Human life is a complex of physical, intellectual, emotional and social development patterns sports and physical activities are integral parts of these patterns. People compete in sports because of the opportunity provided to evaluate their competence in interacting with one's environment. Competition provides people of all levels of ability .with the opportunity to seek out there enforcements attractive to them and gain certain measures of self- evaluation (Sinha, 1986).

Sports and physical education are an integral part of the learning process and will be included in the evaluation of performance. A nation wide infrastructure for physical education, sports and games will be built into the education edifice". The infrastructure will consist of play fields, equipment, coaches and teacher of physical education as part of the school improvement program. Efforts will be made to establish sports institutions and hostel where specialized attention will be given to sports activities and sports - related studies along with normal education (Aggarwal, 1972).

Personality can have a profound effect on the positive or negative experience of sports for those involved. Such effects can either help or hinder the athlete, depending on the emotion that the athlete chooses to express and the situation in which he or she choose to express that emotion. There are several factors that can come into play in the emotional situations and conflicts that arise during athletic participation. Such factors include the level at which an athlete participates.

Relationship between personality and athletics from the viewpoint that, not only can personality play an important role in athletic participation, but athletics may have an important influence on personality and the emotions that can mode an individual's personality (Bailey, Moulton, and Moulton,1999 ).

Only psychological factors such as personality can not be used to make a prediction about athletic performance, but the two (personality and performance) actually work hand in hand

(Raglin,2001) Most motivation factor among athlete was simply enjoyment of physical activity and exercise (Reiss, Sherman, and Wiltz’s, 2001).

Bhusan(1978) indicated that the high achiever scored significantly higher than low achiever on dominance and urgency Ranu(1981) concluded that sportsman differ from non-sportsman in personality characteristics. .Bawa and Randhawa(2003) revealed that sportsmen of individual sports disciplines were significantly were more reserved, humble, sober and relaxed when compared with the sportsmen of combative sports ,discipline. Sharma(1999) revealed that mostly of .all the male & female players were of Extrovert in nature in various sports and games. The results also revealed that personality pattern of sports parson does not affected by the game differences.

The purpose of the study was to study and investigate the personality differences of rural and urban Softball players of Chhattisgarh .It was hypothesized that Male and female softball players of urban area and rural area would not differ in their personality pattern.

## 2. MTEHODS AND MATERIALS

### 2.1Selection of Subjects

The population of the sample consisted of male and female Softball players of Bilaspur and Janjgir districts were drawn from players belong to school’s student. Initially, 120 males and 120 females softball players agreed to participate, however, the surveys from twenty were never received, resulting in an 83.33 % return. A purposive sampling technique was used in selecting players for obtaining subjects. The basis for players selection was two-fold: (a) National level male and female softball players residing in urban area (b) National level male and female softball players residing in rural area. The mean age and SD of the male players of urban and rural area were  $18.56 \pm 0.76$  and  $18.26 \pm 0.66$  respectively and mean age and SD of the female players of urban and rural area were  $18.44 \pm 0.86$  and  $18.52 \pm 0.65$  respectively. and Please refer to Table I &2 for a summary of subjects and summary of the respondents.

**TABLE 1**  
**SUMMARY OF SUBJECTS**

S.NO.	Areas	Male players	Female Players	Total
1.	Urban	60	60	120
2.	Rural	60	60	120
	Total	120	120	240

**TABLE 2**  
**SUMMARY OF RESPONDANTS**

S.NO.	Areas	Questionnaire Provided sample	Response	% for Original return
1.	Urban	120	100	83.33%
2.	Rural	120	100	83.33%

**2.2 Measure:**

The Introversion Extroversion inventory which was prepared and developed by P.F. Aziz and Rekha Gupta. was used. The preliminary form of the inventory consisted of 70 items of "Yes" - "No". The inventory has 60 items - 30 pertaining to an introvert's characteristics and 30 to an extrovert's characteristics. The reliability and validity of the inventory were 0.95 and 0.91 respectively. All items have to be answered either in the positive or in the negative in 'Yes' or 'No' and that no statement must be skipped. Scoring system is very easy Extrovert responses are considered to be correct. One mark is awarded for each correct response.

It is a self administering inventory. Though it may be administered on groups of reasonable sizes, it can also be used individually. There is no fixed time limit. Ordinarily an individual takes 10 to 15 minutes. It should be duly emphasized that al items have to be answered either in the positive or in the negative in 'Yes' or 'No' and that no statement must be skipped.

**3. RESULTS OF STUDY**

To assess the types of personality characteristics of male and female softball players of urban area of Bilaspur district and rural area of Janjgir district, means and standard deviations and Analysis of variance (ANOVA) were computed and data pertaining to the observational and statistical analysis have been presented in table 1 to 9.

**TABLE 3**

**PERCENTAGE OF PERSONALITTY PATTERN OF MALE AND FEMALE SOFTBALL PLAYERS OF URBAN AREA AND RURAL AREA**

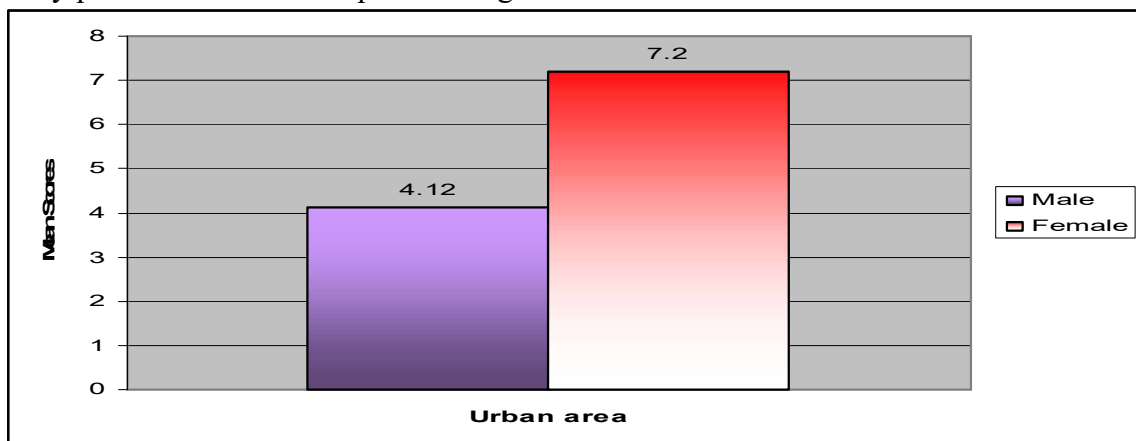
Sex.	Area	Extrovert		Ambivert		Introvert	
		Scores	%tage	Scores	%tage	Scores	%tage
Male	Urban	08	16%	44	88%	01	02%
	Rural	05	10%	41	82%	01	02%
	<b>Total</b>	<b>13</b>	<b>13%</b>	<b>85</b>	<b>85%</b>	<b>02</b>	<b>02%</b>
Female	Urban	09	18%	41	82%	00	00%
	Rural	05	10%	45	90%	00	00%
	<b>Total</b>	<b>27</b>	<b>27%</b>	<b>171</b>	<b>73%</b>	<b>00</b>	<b>00%</b>

Table 3 reveals that the male softball players of 13% , 85% and 02% were found extrovert, ambivert and introvert in nature as a whole respectively. Whereas, the female softball players of 27% , 73% and 00% were found extrovert, ambivert and introvert in nature as a whole respectively. These data have not required any other statistically verification. This indicates that personality pattern of female softball players as a whole of both area were found more extrovert in nature than their male counter parts and just reverse in case of ambivert and introvert personality pattern.

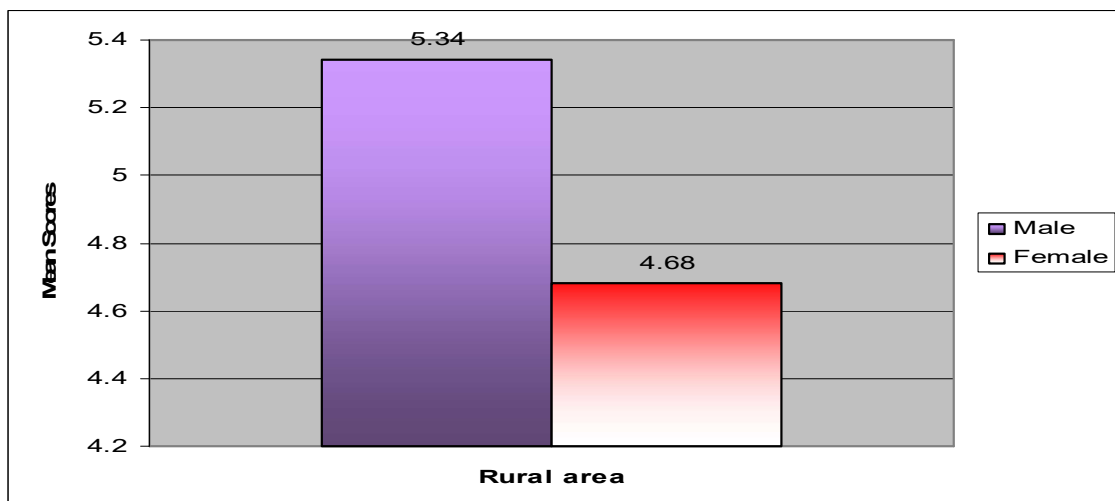
**TABELE 4**  
**DESCRIPTIVE STATISTICS OF PERSONALITY PATTERN OF MALE AND FEMALE SOFTBALL PLAYERS OF URBAN AREA AND RURAL AREA**

Location	Males (N=50)		Female (N=50)	
	Mean	SD	Mean	SD
Urban area	04.12	08.14	07.20	10.18
Rural area	05.34	09.95	04.68	07.59

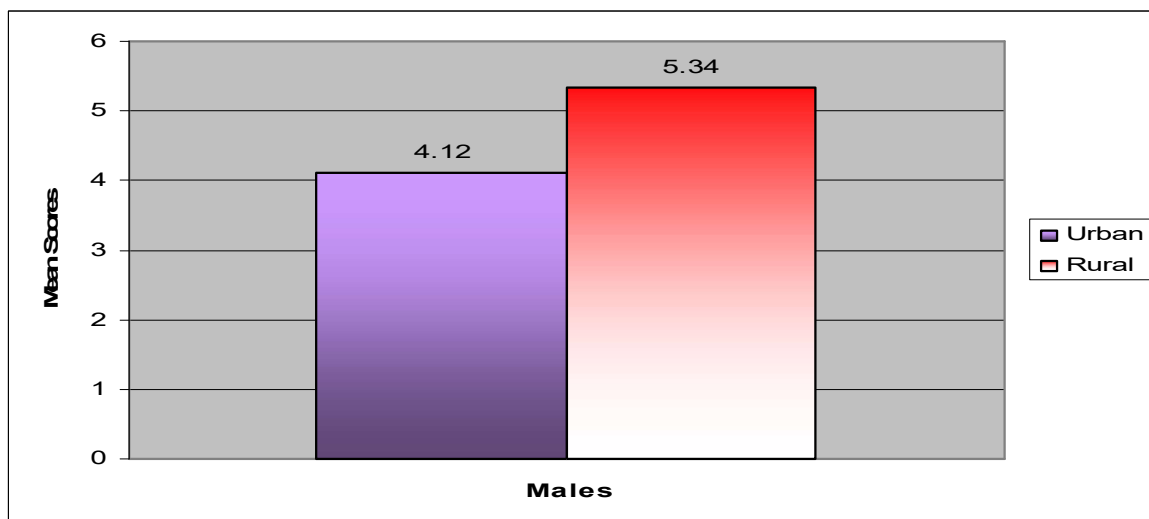
The mean scores of male and female softball players of urban and rural area in their personality pattern have been depicted in figures 1 to 4.



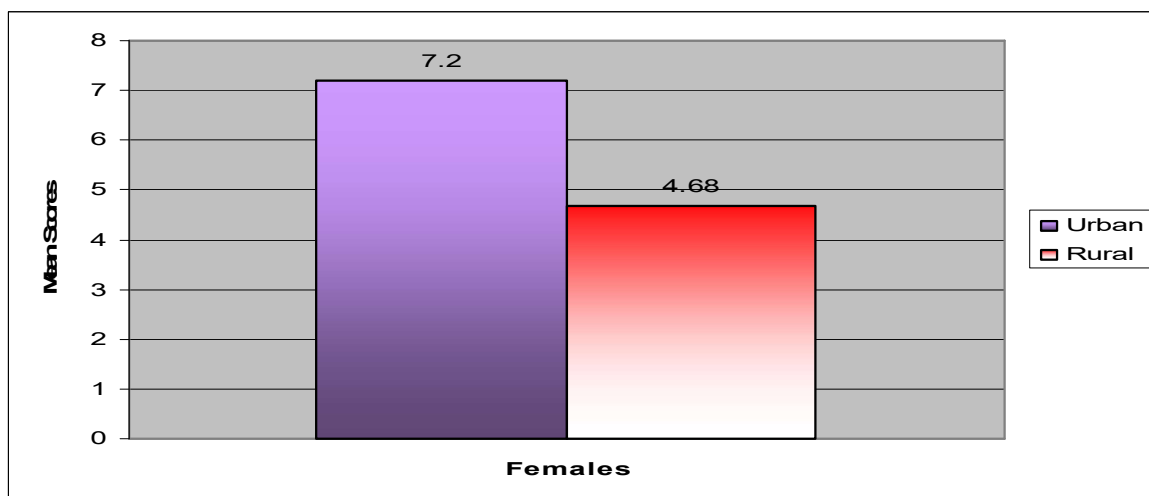
**Fig. 1. Mean Scores of Male and Female Softball Players of Urban Area in their Personality Pattern.**



**Fig. 2. Mean Scores of Male and Female Softball Players of Rural Area in their Personality Pattern.**



**Fig. 3. Mean Scores of Male Softball Players of Urban and Rural Area in their Personality Pattern.**



**Fig. 4. Mean Scores of Female Softball Players of Urban and Rural Area in their Personality Pattern.**

**TABLE 5**

**SIGNIFICANCE OF DIFFERENCE BETWEEN MEAN SCORES OF MALE AND FEMALE SOFTBALL PLAYERS OF URBAN AREA IN THEIR PERSONALITY PATTERN**

Location/Area	Sex	Mean	M.D.	$\sigma$ DM.	t-value
Urban	Male	4.12	3.08	1.84	1.67
	Female	7.20			

Insignificant level at 0.05.,  
 $t_{.05(98)} = 1.98$

It is evident from Table 5, that there was no statistically significant difference between the mean scores male and female softball players of urban area in their personality pattern, as

the obtained t-value of 1.67 was less than the required t-value of  $t_{.05(98)}=1.98$ . This implies that both the groups of urban area are homogeneous with respect to their personality pattern

**TABLE 6**  
SIGNIFICANCE OF DIFFERENCE BETWEEN MEAN SCORES OF MALE AND FEMALE SOFTBALL PLAYERS OF RURAL AREA IN THEIR PERSONALITY PATTERN

Location/Area	Sex	Mean	M.D.	DM.	t-value
Rural	Male	5.34	0.66	1.77	0.37
	Female	4.68			

Insignificant level at 0.05.,  
 $t_{.05(98)} = 1.98$

It is evident from Table 6, that there was no statistically significant difference between the mean scores male and female softball players of rural area in their personality pattern, as the obtained t-value of 0.37 was less than the required t-value of  $t_{.05(98)}=1.98$ . This implies that both the groups of rural area are homogeneous with respect to their personality pattern

**TABLE 7**  
SIGNIFICANCE OF DIFFERENCE BETWEEN MEAN SCORES OF MALE SOFTBALL PLAYERS OF URBAN AND RURAL AREA IN THEIR PERSONALITY PATTERN

Sex	Location/Area	Mean	M.D.	DM.	t-value
Male	Urban	4.12	1.22	1.81	0.67
	Rural	5.34			

Insignificant level at 0.05.,  
 $t_{.05(98)} = 1.98$

It is evident from Table 7, that there was no statistically significant difference between the mean scores male softball players of urban and rural area in their personality pattern, as the obtained t-value of 0.67 was less than the required t-value of  $t_{.05(98)}=1.98$ . This implies that male softball players of both area are homogeneous with respect to their personality pattern.

**TABLE 8**  
SIGNIFICANCE OF DIFFERENCE BETWEEN MEAN SCORES OF FEMALE SOFTBALL PLAYERS OF URBAN AND RURAL AREA IN THEIR PERSONALITY PATTERN

Sex	Location/Area	Mean	M.D.	DM.	t-value
Female	Urban	7.20	2.52	1.79	1.40
	Rural	4.68			

Insignificant level at 0.05, .  
 $t_{.05(98)} = 1.98$

It is evident from Table 8, that there was no statistically significant difference between the mean scores female softball players of urban and rural area in their personality pattern, as



the obtained t-value of 1.40 was less than the required t-value of  $t_{.05(98)}=1.98$ . This implies that female softball players of both area are homogeneous with respect to their personality pattern.

**TABLE 9**  
SIGNIFICANCE OF DIFFERENCE BETWEEN MEAN SCORES OF URBAN MALE AND RURAL FEMALE SOFTBALL PLAYERS IN THEIR PERSONALITY PATTERN

Area-wise Sex	Mean	M.D.	$\sigma$ DM.	t-value
Urban male	4.12			
Rural female	4.68	0.56	1.57	0.35

Insignificant level at 0.05.,  
 $t_{.05(98)} = 1.98$

It is evident from Table 9 that there was no statistically significant difference between the mean scores of urban male and rural female softball players in their personality pattern, as the obtained t-value of 0.35 was less than the required t-value of  $t_{.05(98)}=1.98$ . This implies that urban male and rural female softball players are homogeneous with respect to their personality pattern.

**TABLE 10**  
SIGNIFICANCE OF DIFFERENCE BETWEEN MEAN SCORES OF URBAN FEMALE AND RURAL MALE SOFTBALL PLAYERS IN THEIR PERSONALITY PATTERN

Area-wise Sex	Mean	M.D.	$\sigma$ DM.	t-value
Urban female	7.20			
Rural male	5.34	1.86	2.01	0.92

Insignificant level at 0.05.,  $t_{.05(98)} = 1.98$

It is evident from Table 10, that there was no statistically significant difference between the mean scores of urban female and rural male softball players in their personality pattern, as the obtained t-value of 0.92 was less than the required t-value of  $t_{.05(98)}=1.98$ . This implies that urban female and rural male softball players are homogeneous with respect to their personality pattern.

**TABLE 11**  
SIGNIFICANCE OF DIFFERENCE BETWEEN MEAN SCORES OF MALE AND FEMALE SOFTBALL PLAYERS AS A WHOLE IN THEIR PERSONALITY PATTERN

Sex	Mean	M.D.	$\sigma$ DM.	t-value
Male	4.73			
Female	5.94	1.21	1.20	0.94

Insignificant level at 0.05,  $t_{.05(198)} = 1.97$

It is evident from Table 11, that there was no statistically significant difference between the mean scores of male and female softball players as a whole in their personality pattern, as the obtained t-value of 0.94 was less than the required t-value of  $t_{.05(198)}=1.97$ . This implies that male and female softball players as a whole are homogeneous with respect to their personality pattern.

#### **4. DISCUSSION**

Findings of the observational analysis of male and female softball players of urban and rural area on personality pattern indicated that personality pattern of female softball players as a whole of both area were found more extrovert in nature than their male counter parts and just reverse in case of ambivert and introvert personality pattern.

Findings of the descriptive statistics of male and female softball players of urban and rural area on personality pattern indicated that the female softball players of urban area were found more better than their male counter parts. Whereas, the male softball players of rural area were have better personality than their female counter parts. But the female softball players as a whole were have better personality than male softball players

When the male and female softball players of urban and rural area were compared separately and as a whole, they had no significant differences in their personality pattern, which showed that male and female softball players of urban as well as rural area separately and as a whole are homogeneous with respect to their personality pattern. This may be attribute to the similarity in age group, level of competition, cognitive aspect of one' behaviour, playing ability, motivational characteristics, inter-personal relationship and interaction between coach and players

There would be no significant difference among male and female softball players of urban area and rural area would not differ in their personality pattern is accepted, as there was minute mean differences in their personality scores of male and female softball players of urban area and rural area.

#### **5. CONCLUSIONS**

1. Male and female softball players of urban area as well as rural area exhibited similarity in their personality pattern .
2. Female softball players residing in urban and rural area were have better personality than their male counter parts.

3. Male and female softball players of national level belong to different schools as a whole had similar personality pattern.

## 6. RECOMMENDATION

It is recommended that coaches may modify their coaching program according to personality pattern of softball players. This study may be conducted on more population to find out the differences in male and female softball players at their different level of participation. Similar study may be replicated on different individual and team game players of different levels with their competitive performance relationship.

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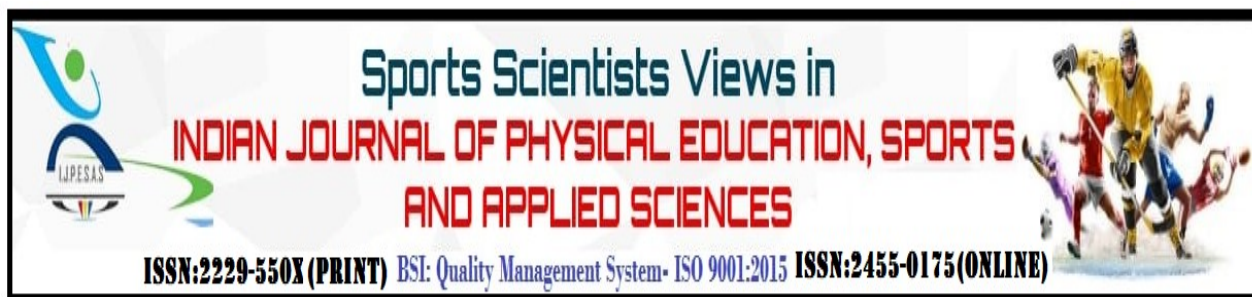
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## EFFECT OF AQUA AEROBIC TRAINING AND YOGIC PRACTICES ON PHYSICAL PHYSIOLOGICAL AND PSYCHOLOGICAL VARIABLES AMONG HOCKEY PLAYERS

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### ABSTRACT

To achieve the purpose of the study, the investigator randomly selected 90 women hockey players from different colleges in Tirupati Chittoor District. The age of subjects for the study was between 17 to 21 years. The selected subjects were divided into three groups, experimental group I, experimental group II and control group consisting of 30 Hockey players in each group. Experimental group I was assigned as Aqua Aerobics exercises group, Experimental group II was assigned as Yogic Intervention group and control group was not given any special treatment and were under strict supervision of the investigator. Prior to experimental treatment, all the subjects were measured of their Physical Physiological and Psychological components such as Speed, RHR and Sports Achievement Motivation. This formed pre-test scores. After 8 weeks experiments to the experimental groups on respective training, all the three groups were tested on criterion variables selected, which formed post test scores. The difference between pre and post test scores was considered as the effect of varied respective experimental treatments. Analysis of Covariance (ANCOVA) was used to find out the significant differences if any, among the groups for each variable separately. It was concluded that eight weeks of Aqua Aerobic exercises and Yogic Practices weresignificantly improved the Physical Physiological and Psychological variables of women hockey Players compared to control group.

**Keywords:** Aqua Aerobics, Yogic practices, Speed

## 1. INTRODUCTION

The large range of postures offers training capable of developing a vigour body, healthy internal organs, and an alert mind. The yoga asana penetrates and impact every single cell and tissue, bringing them to life. The human body is seen by yoga as a tool for the path to perfection. Yoga practice not only strengthens the body but also expands the mind. Additionally, yoga develops control over the automatic muscles in several organs. Yoga activities resist violent muscular movements because they build huge amounts of lactic acid in the muscle fibres, which leads to exhaustion, as opposed to regular physical training, which emphasises the violent motions of the muscles. In the yogic system, all movements are slow and gradual with proper breathing and relaxation.

The beauty of water exercise is that it can accommodate the fitness needs of every one, it's generally considered safe for people with arthritis and musculoskeletal problems. Water exercise is not just land exercise programme water fitness benefits range from helping to control blood sugar levels to improving aerobic fitness (Karl). Water adds magic to any workout the magic lies in water's support for the body (buoyancy) water's resistance to body movement, and water's wonderful freshness.

Water aerobics can also be known as aqua fit or aquatic fitness and it simply involves doing aerobic activity in the water. Water Aerobic is generally done in fairly shallow water, usually no deeper than your hips, but sometimes the water can be up to your chest or even your neck, depending on how hard you plan on going. Things like knee lifts, running in the water, jumping jacks, and lunges are all great examples of water aerobics exercises

## 2. METHODS

To achieve the purpose of the study, the investigator randomly selected 90 women hockey players from different colleges in Tirupati Chittoor District. The age of subjects for the study was between 17 to 21 years.

The selected subjects were divided into three groups, experimental group I, experimental group II and control group consisting of 30 Hockey players in each group. Experimental group I was assigned as Aqua Aerobics exercises group, Experimental group II was assigned as Yogic Intervention group and control group was not given any special treatment and were under strict supervision of the investigator.

Prior to experimental treatment, all the subjects were measured of their Physical Physiological and Psychological components such as Speed, RHR and Sports Achievement Motivation. This formed pre-test scores. After 8 weeks of experiments to the experimental groups on the respective training, all three groups were tested on criterion variables selected, which formed post test scores. The difference between pre and post-test scores was considered as the effect of varied respective experimental treatments.

Analysis of Covariance (ANCOVA) was used to find out the significant differences if any, among the groups for each variable separately.

### 3. RESULTS

**TABLE I**  
**COMPUTATION OF ANALYSIS OF COVARIANCE OF PRE – TEST AND POST-TEST ON SPEED SCORES OF AQUA AEROBIC EXERCISES AND YOGIC PRACTICES AND CONTROL GROUPS**

Test Mean	Aqua Aerobic Exercises	Yoga Practice	Control Group	SOV	SSs	df	MS	F-Value
Pre-test	10.75	10.93	10.90	Between Groups	0.57	2	0.28	0.36
				Within Groups	68.21	87	0.78	
Post-test	9.49	9.88	10.86	Between Groups	29.92	2	14.96	29.71*
				Within Groups	43.81	87	0.50	
Adjusted Post-test	9.55	9.84	10.84	Between Groups	27.38	2	13.69	48.05*
				Within Groups	24.50	86	0.28	
MD	1.25	1.05	0.03					

Table value required for significant at 0.05 levels with 2 and 87 (df) = 3.10, 2 and 86 (df) 3.10  
\*Significant

Pre –Test, The obtained pre test means on Speed on Aqua Aerobic exercises group was 10.75, Yogic Practices group was 10.93 and control group was 10.90. The obtained pre test F value was 0.36 and the required table F value was 3.10, which proved that there was no significant difference among initial scores of the subjects.

Post – Test the obtained post-test means on Speed on Aqua Aerobic exercises group was 9.49, Yogic Practices group was 9.88 and Control group was 10.86. The obtained post test F value was 29.71\* and the required table F value was 3.10, which proved that there was significant difference among post test scores of the subjects.

Adjusted Post–test taking into consideration of the pre test means and post-test means adjusted post-test means were determined and analysis of covariance was done and the obtained F value 48.05\* was greater than the required value of 3.10 and hence it was accepted that there were significant differences among the treated groups.

**TABLE 2**  
**COMPUTATION OF ANALYSIS OF COVARIANCE OF PRE – TEST AND POST TEST**  
**ON RHR SCORES OF AQUA AEROBIC EXERCISES AND YOGIC PRACTICES**  
**AND CONTROL GROUPS**

Test Mean	Aqua Aerobic Exercises	Yoga Practice	Control Group	SOV	SSs	df	MS	F-Value
Pre-test	73.27	73.30	73.63	Between Groups Within Groups	2.47 421.13	2 87	1.23 4.84	0.25
Post-test	68.90	69.10	73.47	Between Groups Within Groups	399.62 862.87	2 87	199.811 9.92	20.15*
Adjusted Post-test	68.98	69.16	73.47	Between Groups Within Groups	362.55 726.05	2 86	181.27 8.84	21.47*
MD	4.37	4.20	0.17					

Table value required for significant at 0.05 levels with 2 and 87 (df) = 3.10, 2 and 86 (df) 3.10  
 \*Significant

Pre –Test, The obtained pre test means on RHR on Aqua Aerobic exercises group was 73.27, Yogic Practices group was 73.30 and control group was 73.63. The obtained pre test F value was 0.25 and the required table F value was 3.10, which proved that there was no significant difference among initial scores of the subjects.

Post – Test The obtained post test means on RHR on Aqua Aerobic exercises group was 68.90 Yogic Practices group was 69.10 and Control group was 73.47. The obtained post test F value was 20.15\* and the required table F value was 3.10, which proved that there was significant difference among post test scores of the subjects.

Adjusted Post – test taking into consideration of the pre test means and post test means adjusted post test means were determined and analysis of covariance was done and the obtained F value 21.47\* was greater than the required value of 3.10 and hence it was accepted that there was significant differences among the treated groups.

**TABLE 3**  
**COMPUTATION OF ANALYSIS OF COVARIANCE OF PRE – TEST AND POST TEST**  
**ON SPORTS ACHIEVEMENTMOTIVATION OF AQUA AEROBIC EXERCISES**  
**AND YOGIC PRACTICES AND CONTROL GROUPS**

Test Mean	Aqua Aerobic Exercises	Yoga Practice	Control Group	SOV	SSs	df	MS	F-Value
Pre-test	26.80	26.47	26.27	Between Groups Within Groups	4.36 1322.13	2 87	2.18 15.20	0.14
Post-test	31.20	31.03	26.73	Between Groups Within Groups	384.69 1349.63	2 87	192.344 15.51	12.40*
Adjusted Post-test	31.05	31.06	26.86	Between Groups Within Groups	350.70 988.63	2 86	175.35 11.50	153.25*
MD	4.40	4.57	0.47					

Table value required for significant at 0.05 levels with 2 and 87 (df) = 3.10, 2 and 86 (df) 3.10  
 \*Significant



Pre –Test, The obtained pre-test means on Sports Achievement Motivation on Aqua Aerobic exercises group was 26.80, Yogic Practices group was 26.47 and control group was 26.27. The obtained pre-test F value was 0.14 and the required table F value was 3.10, which proved that there was no significant difference among initial scores of the subjects.

Post–TestThe obtained post-test means on Sports Achievement Motivation on Aqua Aerobic exercises group was 31.20, Yogic Practices group was 31.03 and Control group was 26.73. The obtained post-test F value was 12.40\* and the required table F value was 3.10, which proved that there was significant difference among post-test scores of the subjects.

Adjusted Post–testtaking into consideration of the pre-test means and post-test means adjusted post-test means were determined and analysis of covariance was done and the obtained F value 15.25 was greater than the required value of 3.10 and hence it was accepted that there was significant differences among the treated groups.

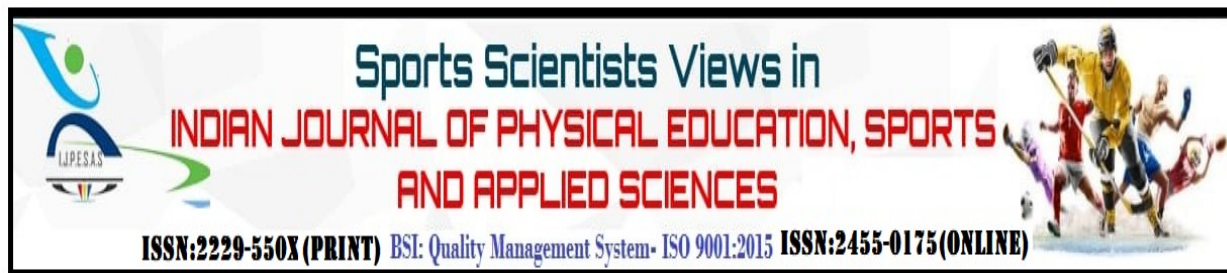
## 5. CONCLUSIONS

The conclusion was that eight weeks of Aqua Aerobic exercises and Yogic Performs significantly enhanced the Physical Physiological and Psychological variables of female hockey players in comparison to the control group. It was also discovered that Aqua Aerobic exercises altered the physical physiological and psychological variables of female hockey players significantly more than did Yogic practices. .

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## MAXIMISING ATHLETIC PERFORMANCE: ENHANCING STRESS TOLERANCE WITH THE CONCENTRATION GRID

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### ABSTRACT

The influence of stress on athletic performance is well-acknowledged in sports psychology (Jones et al., 2020). Stress is a critical determinant of athletic performance, and it varies in interpretation and management among athletes, especially in individual sports (Hill et al., 2020). This study aimed to investigate the potential of a mobile-based application intervention, specifically the Autumn Arcade (2022) concentration grid-based mobile application, in enhancing the reactive stress tolerance (RST) of table tennis players. 8 national-level table tennis players (4 males and 4 females) aged 18-20 years were selected using a convenience sampling method. Participants were divided into experimental and control groups. The experimental group engaged with the mobile application for 25 days, while the control group continued their regular training. RST was measured using the Vienna Test System's determination test (S1). Post-intervention, the experimental group demonstrated significant improvements in RST. In contrast, the control group showed no significant changes. Effect sizes for the experimental group were substantial, indicating the practical relevance of the intervention. The study underscores the potential of technology in enhancing athletes' stress tolerance, especially in individual sports. While promising, the findings should be interpreted with caution due to the limited sample size and convenience sampling method. The integration of technology in sports training, as evidenced by the positive impact of the Autumn Arcade (2022) mobile application, suggests that mobile-based application interventions could be pivotal in achieving athletic excellence.

**Keywords:** Application, Concentration, Grid, Intervention, Psychology, Sport, Stress, Testing, Vienna

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## 1. INTRODUCTION

**"It's not stress that kills us, it's our reaction to it" (Seyle, 1974).**

Athletes' mental resilience is their adaptive functioning in a stressful situation and can often be the determining factor between success and failure, so, stress tolerance would be an attribute of mental resilience, and both would have a reciprocal influence on each other (Baumeister, 1984). Stress tolerance has been defined as the ability of an individual to handle stressors without succumbing to their effects (Bland et al., 2012). Mental resilience stands for one's capacity to recover from extremes of trauma and stress, and it reflects a union of factors that encourage positive adaptation despite exposure to adverse life experiences. (Lantman et al., 2017). The theory of behavioral resilience states that a stressful experience can enhance the resilience of the individual to a subsequent stressor (Lewitus & Schwartz, 2009). Stress, an ever-present element in competitive sports, can serve as both a motivator and a barrier to optimal performance and the intricacies of stress in sports that arise from various sources, both external (e.g., competitive demands, expectations, and environmental conditions) and internal (e.g., personal performance goals, self-doubt, and mental fatigue), could lead athletes to sometimes falter under pressure (Baumeister, 1984; Panatier, 2022).

A study by Anshel et al (2001) underscores the significance of individual perceptions and interpretations of stressors and also mentions that two athletes, when faced with the same challenge, might exhibit different reactions based on their personal evaluations and coping strategies. The personal evaluations could be subjective assessments that each athlete would make about the nature and severity of a stressor, which could be influenced by their personal experiences, beliefs, attitudes, and psychological traits (Anshel et al., 2001). For example, one athlete might view a high-stakes competition as an exciting challenge and an opportunity to excel, while another might see the same event as an overwhelming pressure and a potential for failure. Individual sports, devoid of the team support system, can intensify this stress experience (Mamassis & Doganis, 2004; Highlen & Bennett, 1983).

Reactive stress tolerance (RST) assesses an individual's ability to maintain focus and respond appropriately when placed in a stressful situation where stress is induced (Ong 2017). The notion of RST offers a comprehensive gauge of an athlete's capacity to sustain performance amidst immediate stressors (Ong, 2017). It has also been studied that athletes performing at a higher level in combat and non-combat sports have higher levels of RST, which could signify a positive relation between performance and RST and/or skill level and RST (Ferreira et al., 2020). Racket sports, characterized by their rapid tempo, underscore the significance of RST in determining outcomes (Pahan & Singh, 2022; Bhabhor et al., 2013). RST refers to an athlete's ability to effectively respond to stressors in real-time, particularly under high-pressure situations. Research by Pahan & Singh (2022) and Bhabhor et al. (2013) supports this, showing that in sports like tennis or badminton, where players must rapidly adapt to unpredictable and stressful situations, a high level of RST can be a critical determinant of success. These studies suggest that athletes with better RST are more adept at managing the intense, immediate stressors typical in racket sports, leading to improved performance. Nevertheless, there is very limited research within this area of racket sports, therefore this study investigates RST in elite table tennis players following an intervention.

There was a lack of interventions in increasing the reactive stress tolerance (RST) of an athlete, in the current literature pool. On the other hand, the available research only discussed the use of the concentration grid as a testing method, and no interventions are presently available. Taking all of this into consideration, trying to make the intervention easy to follow was another concern, and the idea of being able to conduct the intervention using a convenient, and more method was considered. The mobile-based concentration grid application by Autumn Arcade (2022) was eventually confirmed after rigorous testing and research (Greenlees et al., 2006).

As technology advances, there's growing potential for mobile application-driven strategies in sports psychology to bolster RST and other mental aspects (Stenzel et al., 2021; Schack et al., 2014). While existing research vouches for the effectiveness of mobile-based application interventions, there is a noticeable gap in the literature exploring their real-world application, especially concerning RST in adolescent individual sports athletes (Kittler et al., 2021; Morrison et al., 2017). At present, the research concerning RST and its effectiveness in sports is also limited. New research would be needed to understand the real-world implications of improved RST.

Consequently, this research aims to fill this gap, focusing on table tennis players. The objective is to delve into the potential advantages of a mobile-based application concentration grid intervention on RST on table tennis players. The concentration grid mobile application used in this research was developed by Autumn Arcade (2022), after coming across the major downsides of using the pen-paper concentration grid to train athletes, some of which included being able to recognize when a number is marked by the pen/pencil, athletes being sweaty and trying to fill the paper sheet eventually rendering the paper unusable and the 10x10 grid being too cumbersome to fill during training (Greenlees et al., 2006). Recognizing the pivotal role of RST and the promise of mobile-based application interventions, this study seeks to pioneer insights into enhancing RST among elite table tennis players, aspiring to influence the trajectory of sports psychology and athlete training (Bhabhor et al., 2013; Wilson et al., 2006; Fox et al., 2000).

This study hypothesizes that the use of the mobile-based application intervention, Concentration Grid, will significantly increase Reactive Stress Tolerance (RST) in elite table tennis players.

## **2. METHOD**

### **2.1 Participants and Design**

After obtaining ethical clearance, eight national-level table tennis players (4 males and 4 females) aged 18-20 years ( $M=19.12$ ;  $SD=0.85$ ) participated in the study. These participants, training at an elite level for the past 5 years, competing nationally for at least 12 months, and ranked inside the top 20, were selected using a convenience sampling method due to challenges in accessing this specific athlete cohort (Brown et al., 2017; Manna, 2014). Convenience sampling is a non-probability sampling technique where participants are selected based on their availability and willingness to take part in the research, as well as their proximity to the researcher. It was used because the accessibility of participants was not possible. This method is considered convenient for the researcher but may not always represent the larger population accurately (Brown et al. 2017; Manna 2014).

A pilot intervention design was employed to investigate the impact of the Autumn Arcade (2022) mobile-based application on a concentration grid, specifically the concentration grid component, on the reactive stress tolerance of table tennis players. Participants were randomly assigned blindly to either an experimental group or a control group, ensuring an equal gender distribution with 2 males and 2 females in each group.

## **2.2 Procedure**

After a thorough briefing, participants provided informed consent. Baseline measurements of reactive stress tolerance were taken using the determination test (S1). Participants then went through the intervention which consisted of completing the concentration grid 5 times one after the other, every day in a single session. Every 5 days, the difficulty increased by either increasing the time or the size of the grid. Performance metrics for the experimental group, including scores, time taken, and errors, were recorded daily during the intervention. Data from the concentration grid was not analyzed for this research. Post-intervention, all participants were re-tested using the determination test (S1).

## **2.3 Reactive Stress Tolerance**

The adaptive short form (S1) from the Vienna Test System's determination test was used (Renz et al., 2021; Neuwirth & Benesch, 2012). The Determination Test (DT) is a test is a valid measure of reactive stress tolerance and the associated ability to react (Ong, 2017). The respondent is presented with color stimuli (red, blue, yellow, green), acoustic signals, and left/right foot stimuli. He/she reacts by pressing the appropriate buttons on the response panels (Schuhfried, 1980). This test, significant in measuring reactive stress tolerance, evaluates athletes' overall Reactive Stress Tolerance, Missed Reactions, Total Reactions, and Median Reaction Time. The overall reactive stress tolerance is a proprietary formula from Schuhfried (1980) which includes the respondent's total amount of reactions, missed reactions, and their median reaction time. These subfactors help explain how the athlete would respond to a stressful situation (Ong, 2017).

## **2.4 Intervention**

For 25 days, the experimental group engaged with the Autumn Arcade (2022) mobile application in a controlled, distraction-free lab environment (Turner et al., 1996). Athletes completed the concentration grid task five times every session, which took approximately 10 minutes in total (Monsma et al., 2017; Gutner et al., 2016; Moran, 2004). The concentration grid, as the name suggests, is a grid of randomized numbers with varying - 5x5, 6x6, and 7x7. To complete the athlete would need to start by selecting the first number which is 0, and then continue in ascending order till all the numbers have been selected. Making any mistake will end the test abruptly. Once finished, the score is shown on the screen which is the time taken to finish the test. The difficulty can be changed by altering the size as mentioned above or restricting the time in which the athlete needs to complete the test - 30, 60, 90, and 120 seconds. Difficulty levels increased every five days. As seen in multiple studies, increasing the difficulty multiple times through the duration of an intervention can significantly increase adherence and develop interest in performing well (Röthlin & Birrer, 2020; Curry et al., 2010; Greenless et al., 2006). According to research, computer and application-based interventions have been shown to be very efficient and useful in

training athletes (Kittler et al., 2021; Mead & Drasgow, 1993). The control group continued their standard training regimen.

Time Table for Intervention

Week 1: 5x5 Grid, 60 seconds.

Week 2: 5x5 Grid, 30 seconds.

Week 3: 6x6 Grid, 90 seconds.

Week 4: 6x6 Grid, 60 seconds.

Week 5: 7x7 Grid, 120 seconds.

### 2.5 Data Analysis

Data was analyzed using IBM SPSS Statistics (Version 29). Descriptive statistics were generated, and after confirming normal distribution, parametric tests were applied. A Mixed MANOVA was conducted to assess changes for all dependent variables, and to assess RST between and within groups. Supplementary dependent t-tests for both the control and experimental groups were assessed to for changes from pre-to-post scores for each group and RST variable. For each T-test, Cohen’s d, a measure of effect size was calculated (Cohen, 1992).

## 3. RESULTS

### 3.1. Descriptives

Descriptive statistics as observed in Table 1 were computed for variables measuring reactive stress tolerance, missed Descriptive reaction, and median reaction time before and after the intervention.

**TABLE 1**  
**DESCRIPTIVE STATISTICS OF GROUPS, TIMES, AND VARIABLES**

Variables	Descriptives							
	Control Group				Experimental Group			
	Pre		Post		Pre		Post	
	M	SD	M	SD	M	SD	M	SD
Reactive Stress Tolerance	207.25	40.9	205.5	43.73	205	40	249.5	26.6
No. of Missed Reactions	26.5	17.55	28.25	17.68	20.25	9.74	17.5	8.1
No. of Total Reactions	252.5	55.52	211.5	12.79	256.5	25.21	274.25	28.99
Median Reaction Time	0.81	0.05	0.88	0.01	0.84	0.11	0.75	0.08

The normality of data distributions was examined using the Shapiro-Wilk tests for each variable before and after the intervention. The Shapiro-Wilk test indicated that the data for all variables before and after the intervention did not significantly deviate from a normal distribution (all  $p > .05$ ). These findings suggest that the data can be considered approximately normally distributed for subsequent analyses.

**3.2. Pre-to-post comparison**

A dependent samples t-test was conducted to assess the significance of differences between the pre and post-intervention measures for reactive stress tolerance, number of missed reactions, number of reactions, and median reaction time.

For the control group as observed in Table 2, the dependent samples t-tests revealed that the differences between pre and post-intervention measures were not statistically significant for all factors, as the p-values values of all variables are higher than .05 i.e.  $p > .05$ .

Effect sizes were calculated for dependent sample comparisons of pre and post-intervention measures. Cohen's d was used as a standardized measure of effect size. Cohen's d suggested a substantial effect on reactive stress tolerance ( $t(3) = 1.09, p = 0.35, d = 0.55$ ), a moderate effect on the number of missed reactions ( $t(3) = -2.04, p = 1.71, d = -1.03$ ), a large effect on the total number of reactions ( $t(3) = 1.66, p = 0.19, d = 0.83$ ), and a small effect on the median reaction time ( $t(3) = 0.61, p = 0.58, d = 0.31$ ).

**TABLE 2  
PRE-TO-POST OF CONTROL AND EXPERIMENTAL GROUP**

Variables	Control Group				Experimental Group			
	Paired Differences			Significance	Paired Differences			Significance
	M	SD	t	p	M	SD	t	p
Pre Reactive Stress Tolerance - Post Reactive Stress Tolerance	1.75	3.20	1.09	0.35	-44.50	21.49	-4.14	0.03
Pre Number of missed reactions - Post Number of missed reactions	-1.75	1.71	-2.04	0.13	2.75	8.54	0.64	0.57
Pre Number of Total Reactions - Post Number of Total Reactions	41.00	49.30	1.66	0.19	-17.75	30.09	-1.18	0.32
Pre Median Reaction Time - Post Median Reaction Time	0.01	0.49	0.61	0.58	0.09	0.67	2.82	0.07

For the experimental group as observed in Table 2, The dependent samples t-tests indicated that there were statistically significant differences in reactive stress tolerance and median reaction time with  $p < .05$  between pre and post-intervention measures, which indicated scores for reactive stress tolerance significantly increased and scores for median reaction time significantly decreased after the intervention.



However, no statistically significant differences were observed for the number of missed reactions and the total number of reactions, with  $p > .05$ .

Effect sizes were calculated for dependent sample comparisons of pre and post-intervention measures. Cohen's  $d$  was used as a standardized measure of effect size. Cohen's  $d$  suggested a large effect for reactive stress tolerance ( $t(3) = -4.14, p = .03, d = -2.07$ ) and the total number of reactions ( $t(3) = -1.18, p = 0.32, d = 0.32$ ), it also signified moderate and small effects for the number of missed reactions ( $t(3) = 0.64, p = 0.57, d = -0.59$ ) and median reaction time ( $t(3) = 2.82, p = .07, d = 1.41$ ) respectively.

These effect sizes provide insights into the magnitude of changes between pre and post-intervention measures, thereby aiding in the interpretation of the practical significance of the observed differences.

### 3.3. Mixed MANOVA

#### 3.3.1 Multivariate tests

Multivariate tests as were conducted to examine the effects of the intervention on the dependent variables which are reactive stress tolerance, the total number of missed reactions, the total number of reactions, and median reaction time. Wilks' Lambda was used as a multivariate measure of effect.

These multivariate tests assessed the impact of the intervention on the dependent variables which are reactive stress tolerance, total number of missed reactions, total number of reactions, and median reaction time. The results indicate a significant overall effect of the interaction results here, while the "group" ( $p = .283, p > .05$ ) and "Time" ( $p = .157, p > .05$ ) factors alone did not yield significant effects. However, the interaction between "Time" and "group" ( $p = .045, p < .05$ ) showed a statistically significant combined effect on the variables (reactive stress tolerance, total number of missed reactions, total number of reactions, and median reaction time).

The results revealed that the overall impact of the intervention was significant, as indicated by the interaction effects. Although the factors of "group" and "Time" individually did not show significant effects, the combined interaction between these two factors demonstrated a statistically significant influence on all measured variables. This finding underscores the importance of considering both the timing and group dynamics in assessing the effectiveness of the intervention on these specific aspects of performance.

#### 3.3.2 Univariate Tests

Univariate tests were employed to evaluate the impact of intervention factors, namely "Time" and "Group", on key dependent variables such as reactive stress tolerance, number of missed reactions, the total number of reactions, and median reaction time.

"Time" Effect on Reactive Stress Tolerance: The analysis revealed a significant effect of the "Time" factor on reactive stress tolerance, with an  $F$ -value of 15.491. This significance ( $p = .008$ ) and a high partial eta squared value (.721) indicate that about 72.1% of the variance in reactive stress tolerance can be attributed to the passage of time, signifying its critical role in influencing this variable.

"Time" Effect on Missed Reactions and Total Reactions: For the number of missed reactions and total number of reactions, the "Time" factor did not demonstrate a significant effect, with  $p$ -values of .826

and .451, respectively. This suggests that over time, these aspects of performance did not undergo statistically significant changes.

"Time" Effect on Median Reaction Time: The "Time" factor also significantly affected median reaction time, as indicated by an F-value of 6.96 and a partial eta squared value of .537. This implies that approximately 53.7% of the variation in median reaction time was due to the factor of time, marking it as a significant determinant in this context.

Interaction Effect of "Time" and "Group": The interaction between "Time" and "group" had a significant impact on reactive stress tolerance, with an F-value of 18.131 and a partial eta squared value of .751. This significant interaction ( $p = .005$ ) highlights that about 75.1% of the variance in reactive stress tolerance can be explained by the combined effects of time and group factors.

Interaction Effect on Other Variables: However, for the number of missed reactions, the total number of reactions, and median reaction time, the interaction between "Time" and "Group" did not show a significant effect ( $p$ -values of .341, .088, and .104, respectively). This indicates that the combined influence of these factors did not significantly alter these specific performance metrics.

These results collectively underscore the nuanced and variable impact of time and group factors on different aspects of performance, with certain variables being more sensitive to these factors than others. This has implications for understanding the effectiveness of the intervention and guiding future research and practice in this area.

### 3.3.3 Tests of Between-Subjects Effects

This analysis as seen in Table 3, was used to examine the effects of different factors on the transformed variable "Average." This variable represents the average values of the measured variables across subjects. The Bonferroni adjustment for multiple comparisons was applied to control the familywise error rate.

The results of the study for the "Intercept" effect demonstrate a highly significant impact on all measured dependent variables: "Reactive stress tolerance," "number of missed reactions," "total number of reactions," and "median reaction time," with  $p$ -values less than .001 in most cases. The partial eta squared values being .978, .793, .989, and .994 respectively indicate that a major portion of the variance in these variables can be attributed to the intercept effect. This suggests that the baseline levels of these variables, before considering other factors like the "Group" effect, are already exerting a strong influence.

In contrast, the "Group" effect did not show a significant impact on these variables, with  $p$ -values of .462, .412, .173, and .789, respectively. This implies that the differences between the groups in the study did not significantly alter the outcomes for "Relative stress tolerance," "number of missed reactions," "total number of reactions," and "median reaction time." The error terms calculated for the between-subjects effects and their corresponding degrees of freedom and mean square values provide further statistical detail, but the lack of significant group differences suggests that the intervention's impact might not differ significantly between groups.

These findings highlight the importance of baseline characteristics in influencing these psychological and performance measures and suggest that the group-based intervention may not have had the anticipated differentiated impact across the study's cohorts.

**TABLE 3**  
**TESTS OF WITHIN-SUBJECT CONTRASTS**

Source	Measure	F	Sig	Partial ETA Squared
Time	Reactivestresstolerance	15.49	0.01	0.72
	missedreaction	0.05	0.83	0.10
	noofreaction	0.65	0.45	0.10
	medianreactiontime	6.96	0.04	0.54
Time*Group	Reactivestresstolerance	18.13	0.01	0.75
	missedreaction	1.07	0.34	0.15
	noofreaction	4.14	0.09	0.41
	medianreactiontime	3.68	0.10	0.38

#### 4. DISCUSSION

The present study aimed to explore the potential benefits of mobile-based application interventions, specifically the Autumn Arcade (2022) mobile application, on the reactive stress tolerance (RST) of table tennis players (Kittler et al., 2021; Mead & Drasgow, 1993). The findings provide a nuanced understanding of the role of technology in enhancing athletes' mental resilience, which is an individual's adaptive functioning in a stressful situation, particularly in the context of individual sports (Baumeister, 1984).

Consistent with prior research, stress remains a pivotal factor in athletic performance, with its interpretation and management playing a decisive role in outcomes (Baumeister, 1984; Anshel et al., 2001). The current study's findings underscore the significance of individualized stress perceptions, reaffirming that athletes' reactions to stressors can vary widely based on personal evaluations and coping mechanisms. In a study, it is mentioned that individual sports athletes often experience heightened stress due to the absence of team support, placing greater emphasis on their personal coping mechanisms to manage the solitary pressures of competition. (Highlen & Bennett, 1983).

The mobile-application-based concentration grid by Autumn Arcade (2022) was developed to improve the efficiency and efficacy of the generally used pen-paper concentration grid test (Greenlees et al., 2006). The introduction of the Autumn Arcade (2022) mobile application as an intervention revealed significant improvements in RST for the experimental group. This aligns with Schack et al. (2014), who emphasized the potential of mobile application-driven strategies in sports psychology. The observed enhancements in RST among the experimental group post-intervention provide support for the integration of technology in athlete training, especially in sports demanding high levels of concentration like table tennis (Bhabhor et al., 2013).

It is worth noting that while the control group did not exhibit statistically significant changes in their pre and post-intervention measures, the experimental group showed significant improvements in the reactive stress tolerance. This suggests that the mobile-based concentration grid application intervention may have had a direct influence on enhancing certain aspects of RST, a proposition that warrants further exploration. This could also be due to the low sample size in which different athletes improved on different aspects of the determination test S5.

The effect sizes for the experimental group were substantial, indicating a statistical significance, although the practical (real-world) relevance is yet to be shown through future studies. Such findings could be pivotal for sports psychologists and trainers, as they could offer a quantifiable measure of the potential benefits of a mobile-based concentration grid application intervention.

While the study provides valuable insights, it is not without limitations. The sample size was relatively small, and the convenience sampling method, although justified, may introduce selection bias (Brown et al., 2017; Manna, 2014). Future research could benefit from larger, more diverse samples and perhaps a more extended intervention period to assess long-term effects. Future studies could also introduce the mobile-based concentration grid application intervention to different sports or groups of sports like, static and dynamic sports, racket sports, team and individual sports, etc. Additionally, removing or controlling additional effects like training, nutrition, hydration, sleep, recovery, training/living environment and life stressors could be helpful in understanding the total impact of the intervention in improving both RST and its real-world impact.

The present study contributes to the growing body of literature emphasizing the role of technology in sports psychology. The positive outcomes associated with the Autumn Arcade (2022) mobile application suggest that such interventions can be pivotal in enhancing athletes' mental resilience, potentially influencing the trajectory of sports psychology and athlete training (Bhabhor et al., 2013; Fox et al., 2000). As technology continues to advance, its integration into sports training regimens could be the key to unlocking unprecedented levels of athletic performance and mental well-being.

## **5. CONCLUSION**

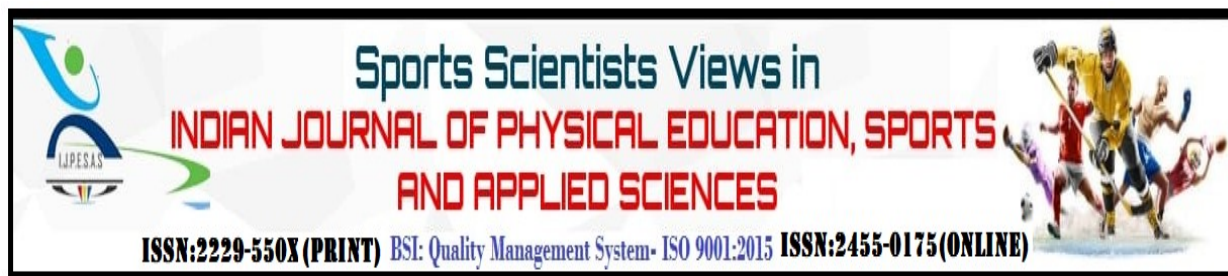
The conclusion of this study highlights the effectiveness of the mobile-based concentration grid application by Autumn Arcade (2022) in enhancing reactive stress tolerance (RST) in table tennis players, supporting the growing evidence in sports psychology about the benefits of technology-based interventions. This research aligns with previous studies, underscoring the importance of individual stress perceptions and the role of technology in improving athletes' mental resilience. The significant improvements observed in the experimental group, in contrast to the control group, suggest a direct positive impact of the mobile-based intervention on RST. These findings indicate a promising direction for the integration of technology in athlete training and stress management, although further research with larger and more diverse samples is needed to confirm these results and explore their practical relevance in the real world.

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## THE LIKELIHOOD OF EXTROVERTED INDIVIDUALS EXPERIENCING ANXIETY

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### ABSTRACT

The current study aims to correlate the subscales of neuroticism with extraversion and understand the thought processes of extroverts, along with the occurrence of anxiety while participating in social engagements, if any. To assess the following, data on 43 adolescents was collected and recorded with the assistance of Eyesenk Personality Profiler version 6 (EPP6) on the Vienna Test System (VTS), which has 200 items and 3 dimensions (extroversion, neuroticism, and psychoticism). We filtered the subscale and focused our results and further discussion on extraversion and anxiety (subscale of neuroticism). The study followed a Purposive sampling technique, followed by a sample size of 43 individuals (13 females and 30 males) between the ages of 13-19 years, from Delhi Sports University. The data was assessed using the statistical method of the correlation test in the SPSS tool. The results of the data suggested that there was a significant difference between people who experienced extraversion and their lack of familiarity with anxiety. In conclusion, our findings support a negative correlation between extraversion and anxiety among adolescents; that is, extroverted individuals experience and display minimal symptoms of anxiety or neuroticism.

**Keywords:** Neuroticism, Extraversion, Eyesenk Personality Profiler version 6, Anxiety, Correlation



## 1. INTRODUCTION

People differ in major aspects, especially in terms of their emotional regulation, thought processes, desires and drives, and values. Such traits are uniquely linked and tend to form a relationship that is codependent and closely associated with each other, which in turn shapes the personality of a person. These personality traits are essential components that shape human behaviour and cognition.

Eysenck Personality Profiler divides the most prominent aspects of personality into extraversion, emotionality (neuroticism), and adventure (psychoticism). Eysenck classifies brain systems into two models: reticulo-cortical and reticulo-limbic circuits. The reticulo-cortical circuit controls cortical arousal, while the reticulo-limbic circuit responds to emotional stimuli. Extraversion-introversion (E) relates to arousal. Extraversion studies reveal individual differences in strategies for seeking or avoiding stimulation. Neuroticism-stability (N) is linked to limbic circuit activation, due to arousal or action caused primarily in emotional contexts. Eysenck's third dimension of Psychoticism (P) is inversely related to serotonergic function and dopamine release (Eysenck, 1997).

Extraversion and neuroticism (or emotionality) are two profound dimensions of the Eysenck Personality Theory that comprise multiple factors within themselves, and the contrasting nature of these traits accurately measures and determines the nature of a person. The consistent

versatility of these major domains offers easier estimation and interpretation of an individual's scores. Extraversion consists of subscales such as activity, socioability, expressiveness, assertiveness, ambition, dogmatism, and aggression. And emotionality consists of subscales such as inferiority, unhappiness, anxiety, dependence, hypochondria, guilt, and obsessiveness.

### 1.1 Extraversion and Neuroticism among adolescents

There has been extensive research that aims to understand the relationship between E and N through various lines of studies and approaches; its consistency across the lifespan has been subjected to widespread attention from researchers, and therefore, three commonly used lines of research stood out from the rest: Rank-order consistency, which talks about the changes or lack thereof in personality traits starting as early as childhood and the manifestation of primitive behaviours and habits manifesting in different forms and taking shape of personality traits (Roberts and Del Vecchio, 2000),

Rank-order stability, which differentiates between personality traits amongst genders and measures the likeliness of each gender to demonstrate certain behaviours (McCrae and Costa, 1990), or Differential continuity that links positive affect and negative affect with the symptoms displayed (Caspi, 1998).

This study aims to understand the correlation between the two personality traits, extraversion and neuroticism, among adults by examining previously done research in the three lines of study. It has been pointed out and recorded that these traits tend to have an inversely proportional relationship, that is,

positive feelings are expressed freely while suppressing negative urges and impulses, and vice versa (Ben-Ze'ev,2000, p.. 224).

According to Friedman (1979), there is a link between some personality traits, like extraversion and neuroticism, and the capacity to articulate emotions. Thus, first, we try to understand the correlation of emotional expressiveness/ articulation with the two personality types: E and N. It has been recorded that people high on the extraversion factor are more likely to express their emotions freely and are often quick to react (Borkenau & Lieber, 1992; Kenny, Horner, Kashy, & Chu, 1992). Whereas, people who measure highly on Neuroticism are known to internalize and suppress emotions and tend to avoid being overly expressive or predictable (Eysenck & Eysenck, 1968), which leads to irregular spontaneous outbursts of emotions.

### **1.2 Comparing coping strategies adopted by people high on Extraversion and Neuroticism**

Coping strategies are unique to every individual, especially those that are assumed to be at the opposite ends of a spectrum, such as people displaying traits of Extraversion and Neuroticism respectively.

We now know that individuals ranking high on E showcase emotions, especially positive emotions outwardly and significantly, whereas individuals ranking high on Neuroticism barely acknowledge their emotions, let alone display them publicly, which leads to the internalized storage of overwhelming negative emotions, and gradually every experienced emotion, regardless of its nature, is seen in a negative light. Therefore, people high on N tend to experience more stressful and negative events, whereas people high on E experience both positive and negative events (Bolger & Schilling, 1991; Fergusson & Horwood, 1987; Magnus, Diener, Fujita & Pavot, 1993; Suls, Green & Hillis, 1998).

E individuals practice relatively healthier and commonly adopted coping strategies such as seeking social support and help, whereas N individuals adopt maladaptive and destructive coping strategies (Amirkhan, Risinger & Swicker, 1995; Costa, Somerfield & McCrae, 1996; McCrae &

Costa, 1986; Parkes, 1986; Rim, 1987; Vollrath, Torgersen & Aln ns, 1995; Watson & Hubbard, 1996). In conclusion, Extraversion is hence linked with subjective well-being of a person which displays positive and favourable behaviours whereas Neuroticism showcases neglect and lack of concern for the mental well-being of oneself.

### **1.3 Interaction of Extraversion with the subscales of Neuroticism (Anxiety)**

The preferred coping strategies and advantageous aspects of extraversion have garnered significant attention, and the lack of negative influences surrounding this personality type sets it as a precedent for healthy habits and positive mental well-being. However, it is essential to study the interaction and effect of neurotic personality traits on extroverted and mentally healthy individuals who have efficient coping skills.

The introversion-extraversion dimension can be divided into four categories based on neuroticism predisposition, according to Eysenck's theory of the biological bases of personality traits (1967): stable extroverts (low arousal), unstable/neurotic extroverts, stable introverts (both moderate arousal), and unstable/neurotic introverts (high arousal). These dimensions give way to the possibility of an interactional approach towards personality traits and exploring different neurotic traits found in extroverted people and vice versa.

## **2. METHODOLOGY**

### **2.1 Participants:**

The study followed a Purposive sampling technique, followed by a sample size of 43 individuals (13 females and 30 males) between the ages of 13 and 19 from Delhi Sports University.

#### 2.1.1 Inclusion criteria:

- Female and Male subjects
- Participants should be between the ages of 13 and 19
- Participants without any mental disorder or problems

#### 2.1.2 Exclusion criteria:

- Participants below 13 years of age and over 19 years of age
- Participants going through any kind of psychological therapy

### **2.2 Hypothesis:**

Null Hypothesis (H<sub>0</sub>): extroverted individuals do not display traits of Neuroticism (Anxiety)

Alternative Hypothesis (H<sub>1</sub>): extroverted individuals experience neurotic symptoms (Anxiety)

### **2.3 Selection of Variables:**

2.3.1 Independent variable: Extraversion

2.3.2 Dependent variable: Neuroticism (Anxiety)

### **2.4 Measures:**

This study was conducted through the EPP6 (Eysenck Personality Profiler version 6) on the Vienna Testing System. The Vienna Testing System, or VTS, is a state of the art, user friendly extensive psychological testing system that simplifies complicated test conduction and interpretation to a great level. By employing the latest technology in computerized testing, VTS provides a range of software and hardware-based tests, spanning across the fields of neuro, clinical, traffic, aviation, personnel, sports, and research psychology.

EPP6 – Derived from H. J. Eysenck's personality profiler, the EPP6 is a multi-dimensional personality scale judging three main aspects of Eysenck's personality theory extraversion, emotionality (neuroticism), and adventure (psychoticism). These 3 dimensions consist of 7 subscales, each giving a holistic, versatile, and well-rounded overview of personality. Additionally, the test also includes an honesty or openness scale. There are two forms – long (S1) and short (S2), each with reliability.

**2.5 Procedure**

After the selection of participants, informed consent was obtained from each and every one. The test was administered in batches of 40-50 individuals, consecutively. A detailed introduction to the test and proper instructions were shared with all the participants before the administration of the test.

All the participants were made familiar with the computer testing module with a brief demo test session. No mandatory prior computer knowledge was necessary to carry out the test. The participants were guided through each step thoroughly, and consent was obtained for the test. A quiet, isolated, and noise-free environment was maintained during the administration. Furthermore, it was duly checked that all participants were comfortable and physically well enough to take the test. Administrative guides were present during the test in case of any difficulties. However, no such situation occurred.

**3. RESULTS**

<b>CORRELATIONS EXTRAVERSION/S NEUROTICISM</b>			
		<b>Var0001</b>	<b>Var0002</b>
<b>Var0001(E)</b>	<b>Pearsson Correlation Sig.(2-Tailed N (43)</b>	<b>1.00</b>	<b>.30 .048</b>
<b>Var0002(N)</b>	<b>Correlation Sig.(2-Tailed N (43)</b>	<b>.30 .048</b>	

The results display a negative correlation of -0.30 which means an inverse relationship between extraversion and anxiety. Therefore, people experiencing high levels of anxiety are less likely to be extroverted, and people who are extroverted experience a minimum level of anxiety.

**4. DISCUSSION**

The results demonstrate highly contrasting differences between neuroticism and extraversion, and no signs of anxiety are experienced by moderate to highly extroverted individuals. These results bode well with the sociable, interactive, and outspoken behavior usually showcased by extroverts since people with anxiety are known to stay closed off and keep their social interaction and engagement to a minimum, which prevents them from matching the easygoing attitudes of personality type E.

Moreover, as per the study conducted by Daniela Fadda, and L. Francesca Scalas on “Neuroticism as a Moderator of Direct and Mediated Relationships Between Introversion-Extraversion and Well-Being” the conclusions supported the belief that extraversion is more likely to be associated with subjective well-being and that cheerfulness, an easygoing mindset, and high self-esteem are indicators of a healthy mind and its satisfaction with life. The degree of life satisfaction differs from person to person; however, from a holistic point of view, pleasant emotions are related to experiencing life fulfillment, and negative emotions are associated with the opposite. That is not to say that introverts are unhappy and are more likely to experience negative emotions. Hills and Argyle (2001a) found that a substantial number of subjects can be classified as “happy introverts,” that is, finding comfort and experiencing pleasant

emotions in solitude and a close-knit group instead of being outspoken at every event and engaging with a larger crowd frequently by choice instead of circumstances.

Neuroticism or anxiety, on the other hand, are symbols of unpleasant or uncomfortable emotions, and a reduction in life satisfaction or fulfillment is experienced. This research studied the possibility and likelihood of anxiety induced individuals participating in social engagements as a coping strategy and a medium to deal with and overcome their anxiety, and whether highly extroverted individuals viewed it that way, which is why they tend to be more outspoken about their opinions. However, the results contradicted this belief, and the results demonstrated a significantly negative correlation between the two. The reason behind this could be the various other factors that mold the behaviours of individuals who experience anxiety. Such as overthinking their words and actions, which goes against the quick-witted and charming persona of extroverts, and the inability to step in the limelight or hesitation to take charge, which prevents them from being the centre of attention and approachable at social events. Since this study was conducted on adolescents, who are also athletes and participate in team sports, they are naturally more outspoken, deal well with a group of people, and peacefully coexist among other individuals, and they are less likely to encounter emotions like fear and anxiety since their mind is wired to take quick action at any given moment and take charge if need be.

## 5. CONCLUSION

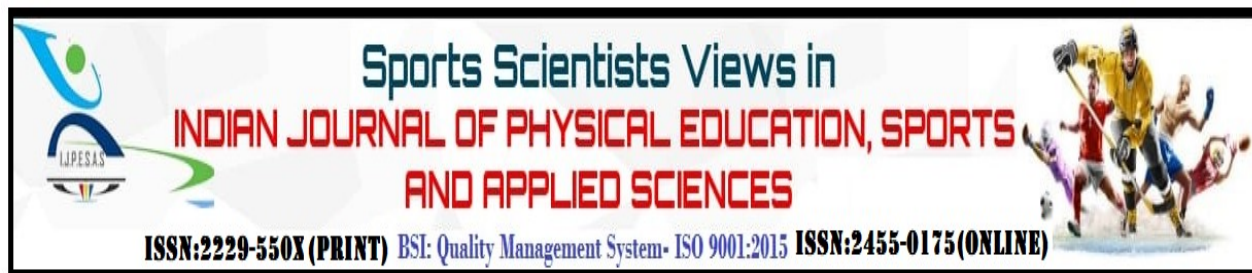
The results demonstrate highly contrasting differences between neuroticism and extraversion, and no signs of anxiety are experienced by moderate to highly extroverted individuals.

The results of the data suggested that there was a significant difference between people who experienced extraversion and their lack of familiarity with anxiety. In conclusion, our findings support a negative correlation between extraversion and anxiety among adolescents; that is, extroverted individuals experience and display minimal symptoms of anxiety or neuroticism.

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## TEST ANXIETY, STUDY HABIT AND INTELLIGENCE OF HIGHER SECONDARY SCHOOLS MALE AND FEMALE SPORTSPERSONS

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### ABSTRACT

The aim of the present investigation was to establish the relationship between test anxiety and academic performance of male and female sportspersons. One hundred and Ten (Males=55, Females=55) sportspersons studying in 11<sup>th</sup> grade in different secondary schools of Bilaspur region were randomly selected to serve as the subjects for this study. The Test .Anxiety Inventory (TAI) (Spielberger et al., 1980), a tool that measures individual differences in test anxiety, was used to measure Test anxiety. Academic achievement was based upon the previous achievement of each level male and female sportspersons in the form of total marks obtained in five subjects and its percentage at 10<sup>th</sup> level examination. The results of the study concluded that Male and female sportspersons had significant differences test anxiety psychological variable. Male and female sportspersons did not differ in yjewir psychological variables i.e. intelligence and study habit. Female sportspersons had high test anxiety, study habit and intelligence than male respondents.

**Keywords:** Sportsperson, Anxiety, Intelligence, Study habit, male and female, Schools.

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## 1. INTRODUCTION

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

The participation in Sports contributes to building up self confidence, enhance intellectual level, personality development and outgoing tendency or extraversion as such proficiency leads to enhanced success in sports activities which is highly valued in one's group.

Academic achievement and mental health be improved in school settings with support strategies such as educational guidance, counseling and psychotherapy or other psycho-educational program such as teaching life skill.

Test anxiety is one of the factors which are responsible for students' under achievement and low performance but it can be managed by appropriate training of students in dealing with factors causing test anxiety (Rana & Mahmood, 2010). Test anxiety is indirectly proportional to the academic achievement. Age has also no effect on test anxiety in the students (Eubank,1993). Test anxiety and study habits were associated positively with academic success and there was no association with achievement motivation (Ergene, 2011).

Bhagat, Patial & Sharma (2012) indicated insignificant difference regarding test anxiety between sportsmen and non-sportsmen. Hall, (1990) found a significant difference between the grade point averages of athletes and non-athletes, male and female students, male and female athletes, non-athletes at different grade levels, and among the varsity sports. Yousefi et. al.(2010) investigated the significant correlation between test anxiety and academic achievement among adolescents. significant difference of academic achievement was also found between male and female adolescents, whereby female score higher in their academic achievement.

Females consistently reported higher levels of test anxiety than males. The need for school interventions to reduce test anxiety among females and to assist students in developing the thought processes that give them a sense of control over the events in their life, in particular, their academic performance (Moore,2006).

Gender differences in cognitive test anxiety were documented, but those differences were not related to performance on the course exams. Examination of the relation between the emotionality component of test anxiety and performance revealed that moderate levels of physiological arousal generally were associated with higher exam performance (Cassady and Johnson, 2002).

Major causal factor involved in the gender-related differences in test anxiety among students was a greater role expectation conflict among females than among males (Spielberger, et.al, 1980). Despite research reports from different countries and cultures that female differ significantly from male on test anxiety (Sharma & Sud, 1990; Spielberger, et.al.,1980). In the current study, some researchers reported insignificant differences in anxiety scores between males and females(El-Zahhar,& Hocevar, 1991; Latas, Pantic, & Obradovic, 2010; Szafranski, Barrera, & Norton, 2012).

The aim of the present investigation was to find out the significant differences between male and female sportspersons in their test anxiety, study habits, and intelligence.



## 2. METHODOLOGY

### 2.1 Selection of Subjects:

One hundred and Ten (Males=55, Females=55) sportspersons studying in 11<sup>th</sup> grade in different secondary schools of Bilaspur region were randomly selected to serve as the subjects for this study. The subjects were selected from amongst the male and female sportspersons who had already taken part in different sports competitions.

### 2.2 Instrumentation

The Test Anxiety Inventory [11], a tool that measures individual differences in test anxiety, was used to measure Test anxiety. The TAI is a 20-item paper and pencil test that takes 5-10 minutes to administer and measures two major components of test anxiety: worry and emotionality. The tool requires participants to report how frequently they experience specific anxiety symptoms in test-taking situations. Each item on the tool has a possible score of one (least anxious) to four (most anxious).

### 2.3 Statistical Analysis

Mean and SD, and t- test were computed for the collected data from the male and female respondents by using SPSS 16.0 software.

## 3.RESULTS

To assess the test anxiety, study habits, and intelligence of male and female sportsperson, means, standard deviations and t-ratios were computed. and data pertaining to this has been presented in Table 1 to 3

**TABLE 1  
DESCRIPTIVE STATISTICS OF TEST ANXIETY, STUDY HABIT, AND  
INTELLIGENCE OF MALE AND FEMALE SPORTSPERSONS**

S.NO.	School Courses	Male Sportsperson		Female Sportsperson	
		Mean	SD	Mean	SD
1.	Test anxiety	40.80	9.36	43.35	11.07
2.	Study Habit	166.68	17.17	166.92	22.87
3.	Intelligence	50.79	12.87	51.31	12.07

The mean scores of test anxiety, study habit, and intelligence of male and female sportspersons studying in different higher secondary schools of chhattisgarh have been depicted in figures 1 and 3.

**TABLE 2  
SIGNIFICANCE OF DIFFERENCE BETWEEN MEAN SCORES OF MALE AND  
FEMALE SPORTSPERSONS ON TEST ANXIETY, STUDY HABIT AND  
INTELLEGENCE**

Psychological Variables	Sex	M	MD	$\sigma$ DM	t-ratio
Test Anxiety	Male	40.80	2.55	0.90	2.83*
	Female	43.35			
Study Habit	Male	166.68	0.24	1.78	0.13
	Female	166.92			
Intelligence	Male	50.79	0.52	1.09	0.48
	Female	51.31			

\*Significant at .05 level, t.05 (498)=1.96.

It is quite obvious from Table 2, that statistically significant difference was found between male and female sportspersons on test anxiety, as the obtained t-value of 2.83 was

high than the required  $t_{.05}(498)=1.96$ . But They did not differ on study habit and intelligence variables, as the obtained t-values of 0.13 and 0.48 respectively were lesser than the required  $t_{.05}(498)=1.96$ .

#### 4. DISCUSSION

Mean and SD, and t- test were computed for the collected data from the male and female respondents by using SPSS 16.0 software. The means and standard deviations of collected data on test anxiety, study habits, and intelligence of male and female sportsperson as well as significance of difference in mean scores of selected psychological variables between both sex sportspersons were established.

Descriptive statistics revealed that the female sportspersons with high test anxiety, study habit and intelligence than their counter parts. Male sportspersons with low test anxiety, study habit and intelligence than their counter parts.

When the male and female sportspersons were compared together on selected psychological variables i.e. test anxiety, study habit and intelligence, they had no significant difference in study habit and intelligence. But the significant difference was observed in test anxiety, which may be due to lack of preparation and reading, variations in mental and intellectual ability, variation in class attendance, fear of failure, less study habit, teacher feedback, parental support, peer influence and extracurricular activities etc.

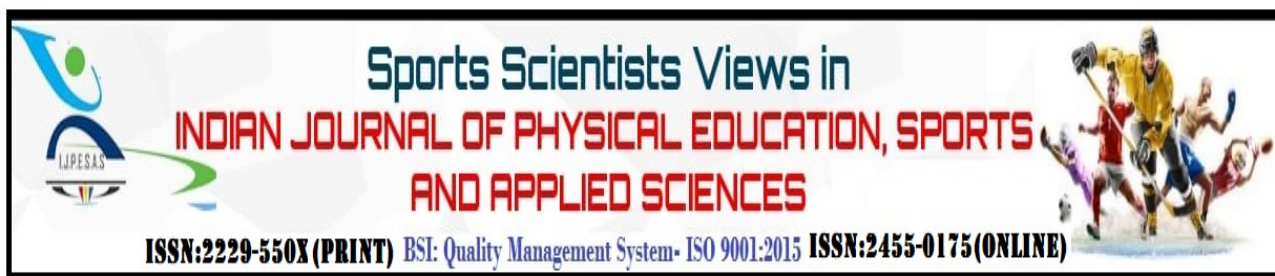
#### 5. CONCLUSIONS

1. Male and female sportspersons had significant differences test anxiety psychological variable.
2. Male and female sportspersons did not differ in yjewir psychological variables i.e. intelligence and study habit.
3. Female sportspersons had high test anxiety, study habit and intelligence than male respondents.

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## IS IT RIGHT OR WRONG ABOUT SECOND TEST BETWEEN AUSTRALIA AND ENGLAND AT LORDS?

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### ABSTRACT

The case is an explanation of the dilemma between ethics and team winning the game. The date was July Second, 2023, and the time was morning 10 am. The play was about to begin. Pat Cummins was thinking how to take the rest of six wickets and Ben Stokes, England Captain, was thinking about scoring 257 runs more to make the test series 1-1. Then an incident happened which changed the course of the match and series.

**Keywords:** Cricket, Ethics, Win

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## 1. INTRODUCTION

The incident happened during second test of Ashes 2023 between Australia and England at Lords . The first day was 28<sup>th</sup> June. The incident happened on the 5<sup>th</sup> day. Ben Duckett, the opening batsman and Ben Stokes, the England Captain, were in the crease. Ben Duckett was deemed not out the previous day as Mitchell Starc, the Australian Pace bowler had touched the ground while in motion after taking the catch and according to the rulebook it was not out. Australian team was not very happy with the decision.

Josh Hazlewood, Australian pace bowler removed Ben Duckett after a very good knock of 83 . England wicketkeeper-batsman, Jonny Bairstow came to the wicket and started scoring right away. They still needed 178 more runs to win and when they were about to take attack to the opposition, an incident happened which is now threatening to take away the peaceful nature of the ashes series. Last ball of Cameron Green's(Australian all-rounder) over was a bouncer and Bairstow ducked under that, and Australian wicketkeeper Carey collected the ball and threw the stumps down. Wicketkeepers generally try to throw at the stumps, and he was no different. Australian players found out that Bairstow comes out of the crease regularly. Unfortunately for Bairstow he casually came out of the crease without checking whether it was the last ball of the over and since he was out of the crease Australians appealed for run out. The decision was referred to the third umpire and he gave out\*. Bairstow did not like the decision and even Ben Stokes who was at the non-strikers' end was unhappy. The decision was correct as Bairstow was out of the crease but the argument from Stokes was that Cummins could have withdrawn the appeal as it was against spirit of the game. This was a turning point of the game as the only recognised batsman was Stokes though Broad was good with the bat.

The spectators were also not happy. Australian players were abused, and Khawaja and Warner were targeted specifically along with Alex Carey, the wicketkeeper. Broad then mimicked getting back to the crease after every ball. He told Carey that this incident will be the one for whom he will be remembered for in future. Broad also told Cummins that he will get boos from crowd for his decision not to call Bairstow back. Even Marylebone Cricket Club members based at Lord's Cricket Ground abused the players and were later some of them were suspended. Khawaja in his press conference openly spoke about the abuses. The whole country was angry and even the spokesperson of prime minister told the press that Mr Rishi Sunak himself was not happy with the lack of spirit of game shown by the Australians. In the post-match press conference Ben Stokes openly said that he would not have done that and maybe could have withdrawn the appeal. He said that England would not like to win a test match like this. It is important to note that the coach of England Brendon McCullum had done the same thing when he was a player in the year 2006 and ran out Muralitharan, SriLankan player but in this case, he was also not happy with the decision of Australia.

This decision provoked Ben Stokes to change gears and started the Australians bowlers. He and Stuart Broad, the English fast bowler started building a partnership. Stokes attacked all bowlers and English fans believed that he may bring an unlikely victory to the team like in Headingley in 2019 where he singlehandedly won the match for them against the same team. He hit 155 with nine fours and nine sixes and Australians were panicking. A change in strategy in bowling with no space offered in leg side forced Stokes to haul out to Carey with 70 runs to be scored still. This was one of the best innings seen in test cricket and though all stood in awe , this was not enough to save the test match as they were bowled out for 327 and lost the match by 43 runs.

This kind of controversy was not new. Ian bell was run out by Dhoni in similar manner in 2011, the only difference being Bell was recalled to the crease. McCullum had run out Muralitharan in 2006 in similar manner. But this is ashes and so the incident of Bairstow and his dismissal brought out a lot of debates in the world of cricket. English fans and news channels remarked this incident as cheating by Australians. The question they posed was whether Cummins could have asked Bairstow to come back. There were other comments which are given below.

## DISCUSSION

Former England opener Mark Butcher is confused by the uproar over Jonny Bairstow's dismissal in the second Ashes Test, saying that "it's just as plain as day out" and the chatter in cricketing circles is "nonsense". Similarly, it seems that Carey was within the rules. Speaking about the crucial dismissal in the post-match presentation, Stokes was sceptical about the whole incident and clarified that he wouldn't have wanted to "win a game in that manner".

Pat Cummins, on the other hand, offered an entirely contrasting view to his England counterpart. "I think (Alex) Carey saw it happen a few balls previous," Cummins said in the post-match presentation. "There was no pause. Catch it, straight away, have a throw at the stumps. I thought it was totally fair play. That's how the rule is. I know some people might disagree. Just like the catch yesterday, the rule is there. That's how I saw it."

Former England captain Michael Vaughan was enraged at Jonny Bairstow's dismissal in the twentieth over. Vaughan, who was on air for BBC's Test Match Special at the moment, ultimately stated: 'I am sorry, that is dumb. That is pathetic!'

Former Australia international Brad Hogg has branded Jonny Bairstow's controversial stumping at Lord's a "cheap" move and insisted England were "hard done by".

India Today report on Ashes 2023: UK Prime Minister Rishi Sunak backs Ben Stokes over Jonny Bairstow dismissal in Lord's Test

Ravichandran Ashwin, Indian off spinner, had a different take on this whole episode. He believed Carey and Australians must have seen a pattern of Bairstow and must have planned for this dismissal which is within the rules.



As per the MCC's dead ball law, law 20.1.1.1 states "The ball becomes dead when it is finally settled in the hands of the wicketkeeper or of the bowler." Law 20.1.2 also states that "The ball shall be considered to be dead when it is clear to the bowler's end umpire that the fielding side and both batters at the wicket have ceased to regard it as in play."

So, in this case the ball was not dead and so the decision of the umpires to run out Bairstow was valid. But the biggest question is that whether Australians should have appealed and even after the decision of out came whether they could have recalled Bairstow back. Recalling

batsman in similar case happened in 2011 when Mahendra Singh Dhoni, the then Indian Captain, recalled Ian Bell after he was declared out. This issue has now become so serious that it will have repercussions for the next 3 tests. England coach has warned that the friendly nature of the series is now gone, and this is seen in the way fans are reacting also. It remains to be seen how the series will pan out now and whether England can win the next 3 tests(as Stokes has warned) to win the urn back.

The case discusses the question of ethics and whether this is important or winning the match. The case takes us back to ashes 2023 and pertains to the incident of Johnny Bairstow and whether his run out was correct or not.

#### **REFERENCE**

**India Today report on Ashes 2023:** UK Prime Minister Rishi Sunak backs Ben Stokes over Jonny Bairstow dismissal in Lord's Test  
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