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INVESTIGATION OF UPPER BODY STRENGTH AND ENDURANCE AMONG BOYS AND GIRLS CHILDREN OF TRIBAL REGION

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ABSTRACT

The purpose of the study was to compare and investigate the upper body strength and endurance of boys and girls school children of West Bengal five hundred sixty one and eleven boys and girls (Two hundred sixty one boys and Two hundred fifty girls) children ranging ages between 13 to seventeen years studying in middle schools, high schools and higher secondary schools of West Bengal were randomly selected for the present investigation. To find out the significance of difference among the means on push-ups component of health fitness in different age groups, The mean, SD, and F-ratio were computed. The results of the study concluded that the upper body strength and endurance improved among boys and girls with advancement of age. But the differences were found between boys and girls children of thirteen to seventeen years of age in their upper body strength and endurance, The boys were better than girls in their upper body strength and endurance in all age groups.

Key words: School, Boys, Girls, Children, Push-ups, strength, Endurance, Age groups,

1. INTRODUCTION

Physical fitness could be a dynamic construct and is continually growing in importance to standard of living and health. It is important to live fitness each as associate outcome of physical activity and as a intercessor of physical activity's impact on illness morbidity, mortality and injury. The measurement of fitness ought to become associate vital a part of police investigation systems that track physical activity and risks for illness or injury (Dishman, Washburn & Heath, 2004).

Muscular strength and endurance is the ability of a muscle or muscle group to execute continual contractions over a amount comfortable to cause muscular fatigue, or to maintain a particular percentage of the most voluntary contraction for a chronic amount (ACSM, 2005)

The push-up is more closely associated with penalization than anything. It was most favorite among education teachers and drill instructors. Though, its use in strength and conditioning regimens was in frequent. In an earlier time, the push-up was largely regarded as a live of a man's strength and fitness. In more present a lot of this name has been passed on to the bench press, but the push-up's passing misses the nice chance to master a entranceway movement to at least one of the foremost biological process progressions altogether of fitness (Glassman, 2003).

A push-up is a common calisthenics exercise performed in a very prone position by raising and lowering the body exploitation the arms. Push-ups exercise the pectoral muscles, triceps, and anterior deltoids, with ancillary advantages to the rest of the deltoids, serratus anterior, coracobrachialis and the midsection as a full. Push-ups are a basic exercise used in civilian coaching and training or education and unremarkably in military physical training. They are a typical sort of penalization employed in the military, school sport, or in some martial arts disciplines.

Push-ups promotes shoulder stability and range of motion in the joint. This position and mobility transfers to a upward and downward arm swing with a smart elbow drive. Doing pushups with the elbows flared out promoted associate unstable and internally turned shoulder position. This poor position surfaces as a stiff and inefficient forward and backward arm swing when you run, where the elbows drive across the body (Helming,2014).

The push-up mainly encourage to develop the muscles of the chest, arms, and shoulders, which required support from alternative muscles results in a wider vary of muscles integrated into the exercise (American Council on Exercise, 2011) .

Push-ups are extensively used for the development of upper body strength, power and muscular endurance in fitness settings. There are many principal exercises in fitness, which are used by strength and conditioning experts to train athletes in sports, such as baseball (Hammer,2009), boxing (Wallace and Flanagan, 1999), and martial arts (La Bounty, et.al. 2011); and they play a prominent role in the basic training programs of the United States Military (Popovich, et.al. 2000). Although, the load during a push-up is limited by an individual's body weight and anthropometry, many biomechanical variations of the exercise can be performed to change muscle activity, which may be lesser or greater to develop the muscles. These variations most often change the hand and foot positions, which impacts muscle recruitment patterns and joint stresses (Chuckpaiwong and Harnroongroj, 2009).

The push-up has long been advocated as a means to assess the muscular endurance of the upper body particularly. A variety of push-up tests are commonly employed as part of a fitness assessment. These tests have been validated across a wide range of populations (Wood and Baumgartner, 2004).

Contreras et.al., (2012) concluded that Push-ups can be an excellent exercise for improving muscle strength and endurance. It is imperative that practitioners possess adequate knowledge of push-up variations in order to optimize the challenge on the target musculature without compromising proper form and risking injury.

Vishen and Sen (2015) concluded that the effective improvement of upper body performance was observed through dynamic and plyometric push up training among male cricket players.

The purpose of the study was to compare and investigate the upper body strength and endurance of boys and girls children of West Bengal

2.METHODOLOGY

2.1 Selection of Subjects

Five hundred and eleven boys and girls (Two hundred sixty one boys and two hundred fifty girls) children ranging ages between 13 to seventeen years studying in middle schools, high schools and higher secondary schools of West Bengal were randomly selected for the present investigation. They were randomly selected. Their age records were collected from school records. and tested on push-ups within one month of their birthdays.

2.2 Testing Procedure:

Purpose -To measure higher body strength and Endurance. Equipment: Gymnasium mat and stopwatch.

Procedure: The test position varies between boys and girls. The male participant in the common place “up” position. The hands were shoulder width apart whereas the feet were unbroken along. The back was straight, with head up, with the participant using the toes as the important purpose. Female participants adopted a changed “knee push-up” position, with legs together, lower leg in contact with mat with ankles plantar flexed. The back kept straight, hands shoulder width apart and head command up. On the ‘go’ command, each participant began the push-up by bending the elbows and lowering the entire body as a unit till the higher arms were parallel to the bottom. Each participant lowered their bodies till their chins and abdomen touches the mat. The participant returned to the beginning position by raising the entire body till the arms were absolutely extended. The body remained straight and moved as a unit for the entire repetition.

Scoring: The maximal range of push-ups performed consecutively in one minute while not rest was counted as the score.

3. RESULTS

To find out the significance of difference among the means on push-ups component of health fitness in different age groups, one way mean, SD, t-ratio and one way Analysis of Variance (ANOVA) were computed and data pertaining to this has been presented in Table 1 to 6.

TABLE 1
DESCRIPTIVE STATISTICS ON PUSH-UPS COMPONENT OF PHYSICAL FITNESS OF BOYS AND GIRLS AGED THIRTEEN TO SEVENTEEN YEARS

Age (yrs)	M	SD	M	SD
13	7.77	1.71	11.63	1.52
14	13.56	2.52	10.74	2.17
15	14.94	2.77	12.70	2.77
16	16.57	3.18	14.91	2.97
17	19.31	3.77	18.03	3.52

The mean scores of push-ups component of health fitness of boys and girls children of West Bengal aged 13 to 17 years have been presented in above table.

TABLE 2

ANALYSIS OF PUSH-UPS COMPONENTS OF PHYSICAL FITNESS OF BOYS FROM THIRTEEN TO SEVENTEEN YEARS OF AGE

Sex	SOV	df	SSs	MS	F-value
Boys	**Between Groups**	**4**	**2481.32**	**620.33**	**30.54***
	Within Groups	**256**	**5199.02**	**20.31**	

*Significant at .05 level, F. .05(4,256) =2.39

It is evident from table 2, that the significant difference was found among boys of different age groups on push-ups component of physical fitness, as the obtained F-values of 104.87 was much higher than the required F.05 (4, 506)=2.39

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

TABLE 3

SIGNIFICANCE OF DIFFERENCES BETWEEN ORDERED PAIRED MEANS FOR BOYS FROM THIRTEEN TO SEVENTEEN YEARS OF AGE ON PUSH-UPS

13	14	15	16	17	MD	C.I.
7.77	13.56	-	-	-	5.79*	1.25
7.77	-	14.94	-	-	7.17*	
7.77	-	-	16.57	-	8.80*	
7.77	-	-	-	19.31	11.54*	
-	13.56	14.94	-	-	1.38*	
-	13.56	-	16.57	-	3.01*	
-	13.56	-	-	19.31	5.75*	
-	-	14.94	16.57	-	1.63*	
-	-	14.94	-	19.31	4.37*	
-	-	-	16.57	19.31	2.74*	

***Significant at .05 level**

The data in table 3 clearly reveals that mean differences between thirteen - fourteen followed by fifteen, sixteen and seventeen; between fourteen - fifteen followed by sixteen and seventeen; between fifteen - sixteen followed by seventeen; between sixteen - seventeen years of age boys were found statistically significant, as the confidence intervals were lesser than the mean differences. The data clearly indicate that shoulder strength and endurance improved with age.

TABLE 4

ANALYSIS OF PUSH-UPS COMPONENTS OF PHYSICAL FITNESS OF GIRLS FROM THIRTEEN TO SEVENTEEN YEARS OF AGE

Sex	SOV	df	SSs	MS	F-value
Girls	**Between Groups**	**4**	**3135.01**	**783.75**	**42.18***
	Within Groups	**245**	**4553.05**	**18.58**	

*Significant at .05 level, F. .05(4,245) =2.39

It is evident from table 4, that the significant difference was found among girls children of different age groups on push-ups component of physical fitness, as the obtained F-values of 42.18 much higher than the required F .05(4,495) =2.40

As the F-ratio on push-ups component of physical fitness was found to be significant, the Scheffe's Test of Post-hoc Comparison was applied to find out the significance of difference between ordered paired means of different age group and data pertaining to this, has been presented in table 5 and depicted in figure 7.

TABLE 5
SIGNIFICANCE OF DIFFERENCES BETWEEN ORDERED PAIRED MEANS FOR GIRLS FROM THIRTEEN TO SEVENTEEN YEARS OF AGE ON PUSH-UPS

13	14	15	16	17	MD	C.I.
11.63	10.74	-	-	-	0.89	1.17
11.63	-	12.70	-	-	1.07	
11.63	-	-	14.91		3.28*	
11.63	-	-	-	18.03	6.40*	
-	10.74	12.70	-	-	1.96*	
-	10.74	-	14.91		4.17*	
-	10.74	-	-	18.03	7.29*	
-	-	12.70	14.91	-	2.21*	
-	-	12.70	-	18.03	5.33*	
-	-	-	14.91	18.03	3.12*	

***Significant at .05 level**

The data in table 5 clearly indicates that mean differences between thirteen - fourteen followed by fifteen were not found statistically significant, as the confidence intervals were higher than the mean differences. The significant differences were observed among girls between fourteen – fifteen followed by sixteen and seventeen; between fifteen - sixteen followed by seventeen; between sixteen - seventeen years of age were found statistically significant, as the confidence intervals were lesser than the mean differences. The data clearly indicate that shoulder strength and endurance improved with advancement age,

4. DISCUSSION

Descriptive statistics on push-ups component of fitness of boys and girls aged 13 to seventeen years indicated that the boys in age of fourteen to seventeen years were found higher than girls. This may be attributed to the dearth of food nutrients area unit cultural beliefs regarding foods, poverty, and lack of awareness (Zwiren, 1993). But the women in age of 13 years were found to possess additional shoulder strength than boys.

The results of one way analysis of variance (ANOVA) for boys of various age teams on push-ups element of fitness expressed vital variations on higher body strength and endurance. The Scheffe's Test of Post-hoc Comparison showed that higher body strength and endurance. Improved with advancement of age. But the vital variations exhibited by the boys in their shoulder strength between 13 - fourteen followed by fifteen, sixteen and seventeen; between

fourteen - fifteen followed by sixteen and seventeen; between fifteen - sixteen followed by seventeen; between sixteen – seventeen years of age boys.

The results of one way analysis of variance (ANOVA) for girls of totally different age teams on push-ups element of fitness conjointly expressed the numerous variations on higher body strength and endurance.. The Scheffe's Test of Post-hoc Comparison showed that higher body strength and endurance. improved with advancement of age. But the vital variations exhibited by the women in their shoulder strength between 13 – fourteen followed by fifteen weren't found statistically vital. The vital variations were discovered among women between fourteen - fifteen followed by sixteen and seventeen; between fifteen - sixteen followed by seventeen; between sixteen - seventeen years more matured were found statistically significant.

5. CONCLUSIONS

1. Dissimilarity was observed among boys and girls children of different age groups on push-ups component of physical fitness.
2. Improvement was seen in their upper body strength and endurance among boys and girls with advancement of age.
3. Statistically differences were found between boys and girls children of thirteen to seventeen years of age on push-ups component of fitness,

REFERENCES

Baumgartner, T, Oh, S, Chung, H, and Hales, D. (2002). Objectivity, reliability, and validity for a revised push-up test protocol. Measurement in Physical Education and Exercise Science. 6 , 225-242.

Bret Contreras, Brad Schoenfeld, Jonathan Mike, Gul Tiryaki-Sonmez, and John Cronin(2012). The Biomechanics of the Push-Up: Implications for Resistance Training Programs Strength & Conditioning Journal. 34(5) , 41–46.

Chuckpaiwong, B, and Harnroongroj, T.(2009). Palmar pressure distribution during push-up exercise. Singapore Med. J., 50, 702-704.

Dishman,R.K.,Washburn,R.A.&Heath,G.W.(2004).Physical activity epidemiology. Champaign, Illinois: Human Kinetics.

Greg Glassman (2003). The push-up. Cross Fit Journal Article Reprint. 7, 1-5.

Hammer, C.(2009). Preseason training for college baseball. Strength Conditioning Journal. 31, 79-85.

La Bounty, P, Campbell, B, Galvan, E, Cooke, M, and Antonio, J. (2011). Strength and Conditioning Considerations for Mixed Martial Arts. Strength Conditioning Journal. 33, 56-67.

Popovich, RM, Gardner, JW, Potter, R, Knapik, JJ, and Jones, BH.(2000). Effect of rest from running on overuse injuries in army basic training. Am. J. Prev. Med., 18, 147-155.

Pankaj Kumar Singh Vishen, Siddhartha Sen (2015). Comparison of dynamic push- up training and plyometric push-up training on upper body performance test in cricket Player. International journal of Physical Education, Sports and Health. 2:1, 199-203.

Wallace, M, andFlanagan, S.(1999). Boxing: Resistance Training Considerations for Modifying Injury Risk. Strength Conditioning Journal. 21, 31-39.

Wood, H, and Baumgartner, T.(2004). Objectivity, Reliability, and Validity of the Bent-Knee PushUp for College-Age Women. Measurement in Physical Education and Exercise Science. 8, 203- 212.

Zwiren LD.(1993). The public health perspective: Implications for the elementary physical education curriculum. In: Leppo ML, editor. Healthy from the Start: New Perspectives on Childhood Fitness. Washington, DC: ERIC Clearinghouse on Teaching and Teacher Education, 25-40.

http://running.competitor.com/2014 Retrieved from Push-ups -Nate Helming.

https://acefitness.org.. American Council on Exercise Retrieved 24 March 2011.

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A STUDY OF INTELLIGENCE, OF MALE AND FEMALE FOOTBALL PLAYERS OF MADHYA PRADESH

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ABSTRACT

The objective of the present study is to assess the effect of spatial awareness and visual motor coordination on the skill ability of intercollegiate male kabaddi players. To conduct the study 100 intercollegiate male kabaddi players were selected. The average age of these subjects was 21.91 years and they represented their respective colleges in intercollegiate kabaddi tournaments organized in Chhattisgarh state. Purposive sampling was used for the selection of subjects. To assess spatial awareness in male intercollegiate kabaddi players of Chhattisgarh, a test standardized by Cesaroni (2007) was used. Reaction time in selected intercollegiate male kabaddi players was recorded with the help of Nelson's simple reaction time test. A mirror drawing test was used to assess the hand-eye coordination of male intercollegiate kabaddi players. The apparatus designed by Johnson and Nelson (1974) was used for the assessment of depth perception. The skill ability of the selected intercollegiate male kabaddi players was judged through the subjective ratings of three judges. Results reveal a significant impact of spatial awareness, reaction time, hand-eye coordination, and depth perception on the skill ability of male intercollegiate kabaddi players with all these variables accounting for 33.4% variance. Based on the results, it may be concluded that spatial awareness and visual motor coordination namely reaction time, hand-eye coordination, and depth perception plays a significant role in determining the skill ability of male kabaddi players. It may also be concluded that spatial awareness and visual motor coordination need special attention while preparing a training plan to enhance the skill ability of the male kabaddi players.

Keywords: Spatial awareness, visual and motor coordination, skill, kabaddi

1. INTRODUCTION

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).**

Cognitive and general psychological abilities such as intelligence, personality characteristics, concentration, reaction time, motivation, will power, anticipation etc. play a pre-dominant role in various sports activities. (Puni, 1980; Macgillivary, 1980; Schobet, 1981)

Intelligence is a term which is so commonly used and yet rather difficult to define in a precise and generally accepted form. This difficulty of definition is not perhaps because in recent years psychologists have gathered so much material about it by the use of intelligence tests that we find it difficult to adopt a simple and comprehensive meaning of the term. Intelligence basically should not be confused with intellect though it is related to intellect or knowledge. It is quite possible (though it may not happen often that a man with a high degree of intelligence may be poor in intellect simply for the reason he never attempted to use his intelligence and build up his intellect (Boaz,1957).

Every man is intelligent in his own usual self because his correct response to a given situation in it, self shows his basic intelligence. Again it doesn't mean that he may give a correct response to each and every situation being exposed to him. Thus we can give a statement that every individual has basic intelligence but in varying degree. This degree is what psychologists have been trying to find out, so that they can categorize certain category of people. It is very fortunate that to a great extent they have managed to do it. What we call intelligence may express itself in a number of ways. The elementary school teacher describe a youngster as bright, if he learns his lesson easily; the machine shop foreman calls an apprentice "a promising young fellow he is apt and skillful with his hands. The teacher, foreman would agree that what they are representing is efficient which is to say, intelligent behavior. Efficiency in meeting everyday situations or solving every day problems is perhaps as useful a working definition of general intelligence as a any (Garret,1961).

The term 'intelligence' comes from a Latin Word coined by Cicero to cover all cognitive processes. It was assumed that this capacity of cognition was something inherent in human nature (and possibly in animals). It was recognized that every man was born with a general cognitive capacity which was conveniently termed intelligence. Just like the concept of energy In physics, the term intelligence also is only a convenient label to designate a cognitive ability which is innate and general. Spencer regarded intelligence as a capacity of organism to adjust itself to an complex environment (Boaz,1957).

The Intelligence involves three characteristic qualities of one's behavior: (a) the tendency to take and maintain a definite direction, (b) the capacity to make adaptations for the purpose of obtaining a described goal, (c) the power of' auto criticism(Boaz,1957).

It is not necessary that one should define intelligence only within the limitations of the above categories. Most psychologists will agree that intelligence involves all the three abilities mentioned above and perhaps even something more, intelligence is some kind of ability which characterizes one's

manner of dealing with his environment and his problems. Intelligence is a useful capacity for furthering our welfare. In the civilized world, a great price is set on intelligence(Boaz,1957).

Efforts have also been made to correlate scores from standardized intelligence tests with athletic performance. Usually the results have been contaminated by the fact that athletes come from various socio-economic groups from many countries of the world; thus, previous and present educational opportunities make the interpretation of relationships between intelligence quotients and athletic performance difficult.

The field of intelligence is slowly spreading its tentacles into other fields where human interaction with the environment is more. Sports is another such field where intelligence is required to a greater extent. But unfortunately the study in this field in relation to intelligence is still raw, researcher's are still groping around in darkness. How much intelligence does a sportsman need to come out of a critical situation ? or, what level of intelligence will effect performance ? or, which game needs more intelligence ? or how much does experience effect the increase in intelligence ? or, Is there a relation between theoretical intelligence and practical intelligence ? etc., are some of the questions which need an immediate reply. In an acyclic event the players confront situations which need split second decisions, here the individual's intelligence or understanding of the game helps.

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 role of education is very much important in the society of human beings in its varied dimension to the life. The education has different aspects to carried with the educational schedule. The development and maintenance of various allied aspects to the education may prove very much important because they have their own purpose and identity to the concept of overall development of a child. Each educational system and educationists refer to the overall development of child, which may be denoted as: mental development (cognitive development), physical and physiological development (non-cognitive development), social development, intellectual development, spiritual and economical development etc.

The education means the modifications in behavior. This statement peruse to the various alteration and modification which may be conducted with the help of education, environment and teaching or training. The education may only be achieved, when the various body systems engaged and involved in a coordinative and systematic form. The educational concept of all-round development of a human being refers to various dimensions in which the physical dimension plays an important role to provide the practical shape to the education process.

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, (1992).

The purpose of the study was to assess and compare the intelligence, academic achievement and personality factors of gymnasts at different levels of their participation.

2. METHODOLOGY

2.1 Selection of Subjects

The sample of this research consists of three hundred (one hundred and fifty male and one hundred fifty female) football players studying in the 11th grade of different high schools in M.P. was chosen as the subject of this study. All samples were taken from 15 M.P. schools. The subjects were selected from male and female student -athletes competing in different sports. The random sampling design was used by the investigator to test the

2.2Selection of Variable

By determining the importance of selected Intelligence for male and female athletes, the opportunity to collect information about brain factors was chosen:

2.3 Description of Questionnaires

To determine the need and importance of intelligence in performance, Verbal Intelligence Test (V.I. T.) prepared and standardized by Ojha and Chowdhury , (2006) was selected to measure intelligence ability of Indian gymnasts at their different levels of participation. It is an objective type Intelligence test consists of 112 statements related to general mental ability. The test has been divided into 8 parts in which classification (15), Analogies (15), Synonyms (20), Number Test (12), Completion (04), Paragraph Test (10), Best Reason (19) and simple reasons (07) related questions has given. Each question carried one mark for correct answer. To determine the intelligence groups, range of total sum of raw scores of 8 category responses denote the classified intelligence groups i.e. very superior (above 107score), Superior (99-106) , Bright Normal (91-98), Normal (73-90), Dull-Normal (65-72), Borderline (57-64) , and Defective (below 56). The specimen copy of this test is given in the appendix. The scoring of the completed questionnaire was done according to the method mentioned in the Manual of Verbal Intelligence Test. The reliability of the test were 0.81 (V.I.T-1), 0.86 (V.I.T-2), 0.71 (V.I.T-3), 0.74 (V.I.T-4), 0.64 (V.I.T-5), 0.58 (V.I.T-6), 0.79 (V.I.T-7), 0.75 (V.I.T-8), 0.87 (V.l.T-over all**)** by split half method and reliability of the test were 0.89 (V.I.T-1), 0.88 (V.I.T-2), 0.73 (V.I.T-3), 0.88 (V.I.T-4), 0.68 (V.I.T-5), 0.79 (V.I.T-6), 0.81 (V.I.T-7), 0.83 (V.I.T-8), 0.91 (V.l.T-over all**)** by Kuder Richardson Formula.

2.4 Statistical Analysis

To assess the Intelligence abilities of male and female Indian Gymnasts at three different levels namely State, Interuniversity and National level, Means (Rothstein, 1985) and Standard Deviations (Clarke and Clarke, 1972) were computed for male and female gymnasts for all the levels and on each level separately.

3. FINDINGS

To assess the academic achievement, intelligence and four personality characteristics of male and female Indian gymnasts at three participation levels, means and standard deviations and multivariate analysis of variance (MANOVA) with independent factors of participation level and sex on three different dependent variables for all the subjects taken together and separately for both the sexes and each level were computed and data pertaining to this have been presented in table 1 to 8.

TABLE 1
DESCRIPTIVE STATISTICS OF INTELLIGENCE AMONG MALE AND FEMALE STUDENT-SPORTSPERSONS IN HIGHER EDUCATIONAL INSTITUTIONS ACROSS MADHYA PRADESH

		Male Sportsperson		Female Sportsperson	
S.N0.	**Variable**	**Mean**	**SD**	**Mean**	**SD**
1	Intelligence	51.14	13.83	52.92	14.97

Figures 1 depict the mean intelligence scores of both student- sportspersons enrolled in different higher secondary schools across Madhya Pradesh across various school courses. These figures provide valuable insights into the academic achievement of students in the region, shedding light on any potential gender-based variations in intelligence scores among sportspersons. Analyzing these data can help educators, policymakers, and researchers make informed decisions and develop strategies to support the academic success of students in Madhya Pradesh.

Figure 1

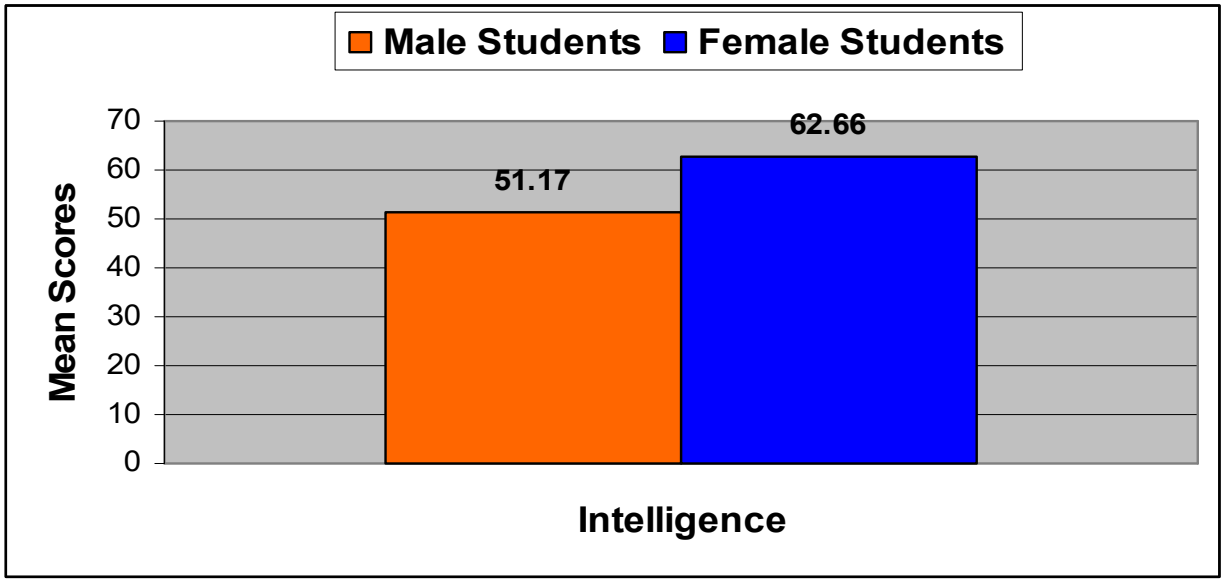

TABLE 2
GENDER-BASED DISPARITIES IN INTELLIGENCE SCORES AMONG STUDENT-ATHLETES IN DIFFERENT HIGHER EDUCATION INSTITUTIONS ACROSS MADHYA PRADESH

Variable	Sex	M	MD	σ DM	t-ratio
Intelligence	Male Female	51.88 53.31	1.43	1.48	0.966

Significant at .05 level ,
t.05 (298)=1.97.

Table 2 reveals the insignificant compelling statistical evidence to suggest a significant disparity in intelligence in between both gender sportspersons from secondary higher schools when considering the dataset as a whole. This conclusion is drawn from an analysis of the obtained t-value, which stands at 0.966, falling below the critical t.05 (298) threshold of 1.97.

4. CONCLUSION

Intelligence scores among students in Madhya Pradesh are similar, indicating that gender does not play a significant role in the intelligence gap in the dataset.

REFERENCES

Aggarwal, J. C.(1972). Education Policy in India, 1992 : Retrospect and Prospect. First Edition (Delhi : Shipra Publication , p.37.

Boaz, G.D. (1957). General Psychology (India : Thompson & Co. Pvt Ltd., p. 179.

Clarke, Harrison H. and Clarke, David H. (1972). Advance Statistics : Supplementary Research Processes in Physical Education, Recreation and Heath(Englewood Cliffs, New Jersey : Prentice Hall INC., pp. 20-25.

Garret, Henry E.(1961). General Psychology (India : Eurasia Publishing House Ltd., p. 409.

Macgillivary, W.W. (1980). Perceptual Style, Critical Viewing Time and Coaching Skills. International Journal of Sports Psychology 11(1), 22-23.

Ojha , R. K. & Chowdhury, K. Ray(2006). Manual of Verbal Intelligence Test, India : National Psychological Corporation, Agra.

Puni, A.T. (1980). Outline of Sports Psychology N. I. S Patiala.

Rothstein, Anne L. (1985). Research Design and Statistics for Physical Education (Englewood Cliffs, New Jersey : Prentice Hall INC., p. III.

Schobet, F.(11981). The Role of the Ability of Anticipate in the Athletes Action Control. International Journal of Sports Psychology. 12(2), 117-130.

Sinha. A.K.P. (1986). Psychological Dimensions of Sports : psychological Analysis of Sports Performance. Souvenir , Gwalior :L.N.C.P.E, 2.

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A COMPARISISION OF ANTHROPOMETRICAL AND PHYSIOLOGICAL PARAMETERS OF MALE AND FEMALE RUNNER

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ABSTRACT

The purpose of the study was to compare and investigate the anthropometric and physiological parameters of male and female runners in the state of Chhattisgarh. Eighty adult male (N=44) and female (N=36) runners from different districts of Chhattisgarh were selected for the purpose of study. All the male and female runners of 200m, 400m, 800m and 10,000m were the members of respective district teams participating in open state athletic competitions (M/F). To compare the male and female runner on physical and physiological parameters: means, standard deviations and t–ratios were computed. The results of study revealed that the female runners were found taller, heavier and more fatty in comparison of male counter parts. Similarity was observed between male and female runners in their body mass index (BMI. Male runners were found to have greater in amount in all physiological parameters except peak flow expiratory rate (PFIR) than their counter parts. where as female runners were found to have greater degree of peak flow expiratory rate than did male runners. Male and female runners did not differ significantly in systolic blood pressure, pulse pressure and pulse rate parameters of physiology. Where as male and female runners had variation in diastolic blood pressure, mean arterial pressure (MRP) and peak flow expiratory rate (PFIR) parameters of physiology.

Keywords: Anthropometry, physiology, sexes, Runners, Parameters.

1. INTRODUCTION

Physical activity by sportsmen has been shown to increase muscular strength, reduce body fat and increase lean body mass, thus keeping BMI within physiological limits [Phillips, 2012].

Physiology of exercise has become an increasingly important topic for research and discussion over the past few years. Exercises are being prescribed either to prevent the disease or as an adjuvant to a patient during convalescence and rehabilitation. Lack of exercise is linked to cancer, diabetes and cardiac disease causing around ten percent of death in the planet. Approximately 2 million deaths per year are attributed to physical inactivity, prompting WHO to issue a warning that a sedentary lifestyle could very well be among the leading causes of death and disability in the world **[**Prakash, 2013).

Exercise has shown to increase muscular strength, reduce body fat and increase lean body mass, potentially decrease resting systolic and diastolic blood pressure, increase maximal oxygen consumption (VO2max), improve in cardiovascular / cardio-respiratory function(heart and lungs), increase maximal cardiac output, increase blood volume and ability to carry oxygen, increase blood supply to muscles and ability to use oxygen (Doyle, 1997) .

Height and weight variable may be useful, when they are identifying future athletes for training . A strong positive relationship between the height and weight of sports athletes and moderate positive relationship between the height and BMI in athletes was observed at the Australian Institute of Sport.

Body mass index (BMI), calculated as weight (kg) divided by the square of height (m^2) is an important index which can be used as a measure of percentage fat in an individual (Ani, Nku, Nna and Nwangwa, 2014; Ode , Pivarnik , Reeves and , Knous, 2007). The formula had already been proposed by the Belgian mathematician, Adolphe Quetelet, in the nineteenth century. The index has been used until today; it was previously named after its inventor but since 1972 it has been known as the "body mass index". Underweight BMI (<18.5) indicate that that your weight maybe too low, which can decrease your body's immune system, which could lead to illness. Normal BMI (18.5 - 24.9) range possess the ideal amount of body weight, associated with living longest, the lowest incidence of serious illness, as well as being perceived as more physically attractive than people with BMI in higher or lower ranges. Overweight BMI (25 to 29.9) range are considered overweight, which increased risk for a variety of illnesses For live in healthy ways, lower their weight, through diet and exercise. Obese BMI (>30) , which is also called physically unhealthy condition. The higher your BMI, the higher your risk for certain diseases such as heart disease, high blood pressure(hypertension), type 2 diabetes (High blood glucose), High LDL cholesterol , High triglycerides , Physical inactivity, gallstones, breathing problems and certain cancers.

Exercise has been documented to increase muscular strength, reduce body fat and increase lean body mass, potentially decreasing resting systolic and diastolic blood pressure [Doyle, 1997].

Blood pressure is defined as the force of blood pushing against the artery walls as blood circulates throughout the body. Blood must circulate at an appropriate pressure in order to sustain life. A healthy adult normally has a blood pressure of less than 120/80mmHg (millimeters of mercury). The first number is the systolic pressure which represents the pressure when the heart contracts. The second number is the diastolic pressure which is the pressure when the heart is resting between beats. Even though blood pressure varies within an individual, those with a pressure of 140/90mmHg or more for a sustained period of time is said to have high blood

pressure, also known as hypertension. A person with high systolic pressure and normal diastolic pressure is classified as hypertensive and the same applies for a person with high diastolic pressure and normal systolic pressure.

Blood pressure is a vital cardiovascular variable which has been documented to have an abstract association with body mass; a relationship that is poorly understood [Stamler, 1991].

The fundamental parameters defining hypertension in both adults and children do not differ in athletes . In the adult, hypertension is defined as a systolic BP ≥140 mmHg or a diastolic BP ≥90 mmHg "based on the average of two or more properly measured, seated BP readings on each of two or more office visits.

The mean arterial pressure (MAP) is a term used in medicine to describe an average blood pressure in an individual (Zheng , Sun and Li , 2008) . It is defined as the average arterial pressure during a single cardiac cycle. It is believed that a that is greater than 70 mmHg is enough to sustain the organs of the average person. is normally between 65 and 110 mmHg(Dnurse, 2007). If the falls below this number for an appreciable time, vital organs will not get enough Oxygen perfusion and will become hypoxic (A condition called ischemia). Pulse pressure is the difference between the systolic and diastolic pressure readings. It is measured in millimeters of mercury (mmHg) (Zheng , Sun and Li , 2008).

Pulmonary functional status was assessed by recording peak expiratory flow rate (PEFR). PEFR was selected because it is widely accepted as a reliable parameter of pulmonary functions and is simple to perform as a bed-side test. Hadorn introduced PEFR in 1942 and it was accepted as a parameter of pulmonary function test (PFT) in 1949 (Jain et.al., 1983; Kaur et.al., 2013; Sembulingam et.al., 2013) .

The PEFR has been defined by the European Respiratory Society as the maximal flow which is achieved during expiration that is delivered with maximal force starting from the level of maximal lung inflation. (Ebomoyi, and Iyawe, 2015). The peak expiratory flow rate (PEFR) is a person's maximum speed of expiration. It measures the airflow through the bronchi and thus the degree of obstruction in the airways. The peak expiratory flow rate (PEFR) is a test that measures how fast a person can exhale. PEFR is affected by changes in broncho-pulmonary structure and function. (Phillips, 2012). Swaminathan et al. (1993) measured the Peak expiratory flow rate in healthy South Indian Children aged 4-15 years using the wright's Mini peak flow meter. They found lower PEFR values in Indian children which could be due to an effect of lower lung volumes due to a smaller chest size. A study by Rastogi et al. (2009) in children having recurrent respiratory tract infection found altered PEFR in 67.6 percent patients. They also observed PEFR to be the most sensitive parameter to detect alteration in lung function. Gundogdu Z, Eryilmaz N (2011) revealed that PEFR values were lower in obese children than in non-obese children. There were also significant differences between girls and boys. The association of higher BMI with lower PEFR may indicate that obesity is an important risk factor for reduced airflow or lung function in children.

The purpose of the study was to compare and investigate the anthropometric and physiological parameters of male and female runners in the state of Chhattisgarh.

2. METHODOLOGY

2.1 . Sample

Eighty adult male (N=44) and female (N=36) runners from different districts of Chhattisgarh were selected for the purpose of study. All the male and female runners of 200m, 400m, 800m and 10,000m were the members of respective district teams participating in open state athletic competitions (M/F) held at South East Central Railway (SECR) Cricket Play

Ground from 11/06/2016 to 13/06/2016 and volunteered to participate for this study. The average age of male and female runner was 22.78 ± 2.26 and 21.32±2.08 respectively.

2.2 Experimentation

All participants were contacted at the site of their competition venue as well as staying place during competition and underwent for the measurement of anthropometric variables and physiological parameters. Oral and written informed consent was taken from all the participants, coaches and managers of the respective teams before testing them.

Measurement of Weight and Height: After all outer clothing and shoes were removed, the body weight and height were measured by using digital weighing machine and height with stadiometer to the nearest 0.1 kg and 0.1 cm, respectively.

Determination of Body Mass Index (BMI): BMI of each subject was obtained mathematically using the formula: BMI = Weight (Kg)/Height (m2). where underweight was < 18.5 kg/m2, normal 18.5– 24.9 kg/m2, overweight 25.0–29.9 kg/m2 and obese ≥ 30.0kg/m2 (World Health Organization, 2006).

Measurement of Blood Pressure: Resting blood pressure (RBP) was measured three times at five minutes intervals using a digital blood pressure monitor according to standardized guidelines. The children were seated with the arm cuff and zero indicators on the monitor at the level of the examiner's eye. All the readings were taken in triplicate on the right arm. Each subjects reading was obtained thrice after which the average was used as the subject's blood pressure.

Determination of Mean Arterial Pressure and Pulse Pressure From the BP measurements, the mean arterial pressure (MAP) was derived using the formula: MAP = DBP + ⅓ (SBP – DBP). Pulse pressure (PP) was calculated as the difference between SBP and DBP (Zheng, et. al., 2008).

Measurement of Pulse Rate : The pulse rate was also taken by palpating the radial artery at the wrist for one minute using the stopwatch.

Measurement of Peak Expiratory Flow Rate : Peak expiratory flow rate was measured using the JSB peak flow meter (JSB Health Care Pvt. limited, New Delhi). The subject was asked to inhale deeply and then exhale maximally through the mouth piece of the device. The reading was taken thrice, after which the highest of the three readings was recorded as the PEFR.

2.3 Data Analysis:

Statistical analysis was done using SPSS version 16.0.Values were analyzed based on age, sex, BMI, and PEFR. The t- test was used to compare the mean for male and female at $P < 0.05$. The ANOVA was used to compare the various mean for the BMI group at $P < 0.05$.

3. RESULTS

To compare the male and female runner on physical and physiological parameters: means, standard deviations and t–ratios were computed. The level of significance was set at .05 level and data pertaining to this has been presented in Table 1 to 4.

TABLE 1

DESCRIPTIVE STATISTICS OF ANTROPOMETRIC PARAMETERS OF MALE AND FEMALE RUNNER OF CHHATTISGARH

S.No.	Variables	Sex	N	M	SD
1.	Age (yrs)	Male	22	22.78	2.26
		Female	18	21.32	2.08
2	Height (cm.)	Male	22	156.23	4.39
		Female	18	163.06	8.66
3	Weight (kg.)	Male	22	48.05	4.79
		Female	18	55.61	5.51
4	Body Mass Index	Male	22	19.00	4.79
		Female	18	20.53	2.62

The mean scores of male and female runner of Chhattisgarh state on anthropometric parameters have been depicted in figures 1 to 4.

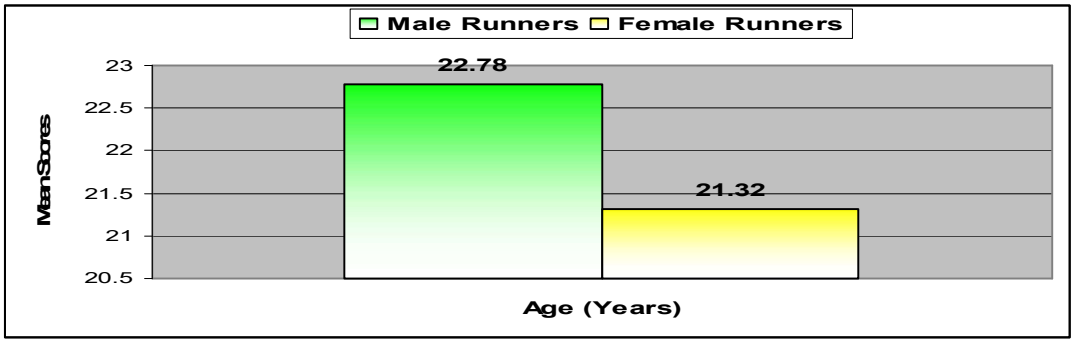

Figure:1-Mean Scores of Age of Male and Female Runners of Chhattisgarh State

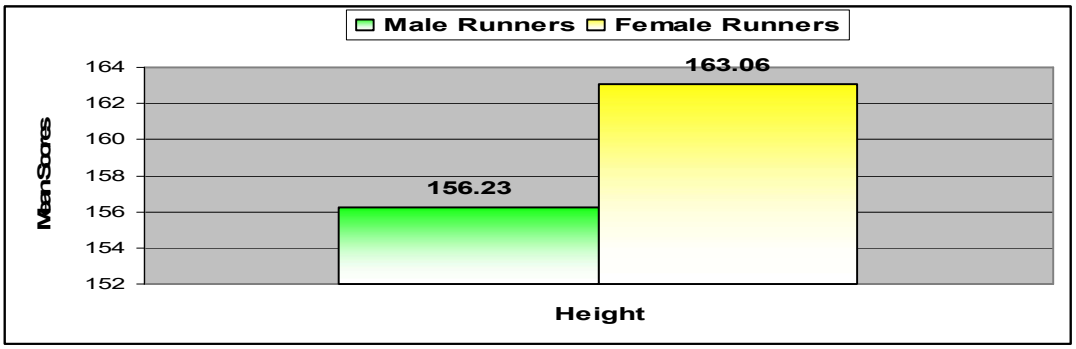

Figure:2-Mean Scores of Height of Male and Female Runners of Chhattisgarh State

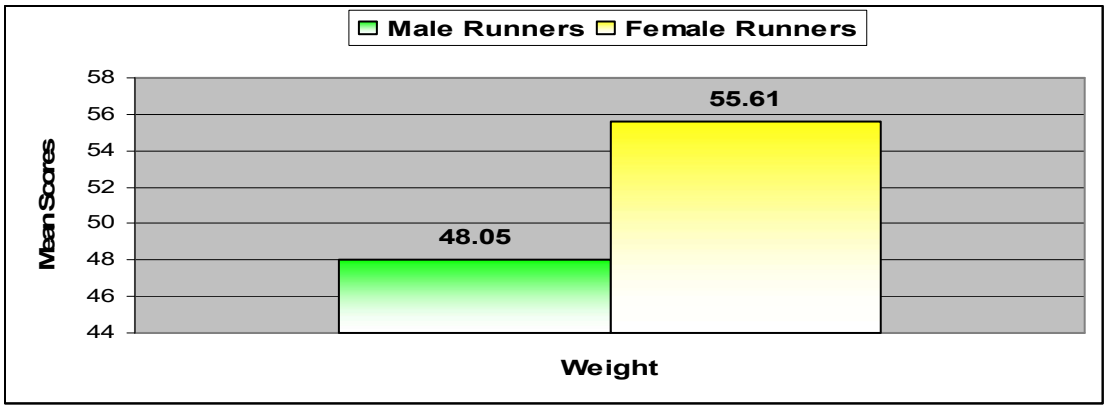

Figure:3-Mean Scores of Weight of Male and Female Runners of Chhattisgarh State

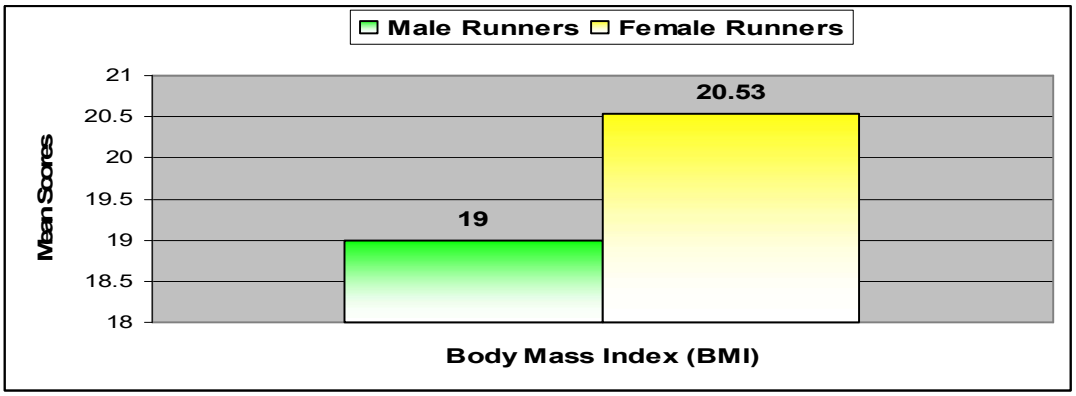

Figure:4-Mean Scores of BMI of Male and Female Runners of Chhattisgarh State

TABLE 2
SIGNIFICANCE OF DIFFERENCE BETWEEN MALE AND FEMALE RUNNERS OF CHHATISGRH ON ANTHROPOMETRIC PAPRAMETERS

S. No.	Variables	Sex	Mean	MD	σ DM	t-ratio
1.	Age (yrs)	Male Female	22.78 21.32	1.46	0.48	3.04*
1.	Height (cm.)	Male Female	156.23 163.06	6.83	2.24	3.23*
2.	Weight (kg.)	Male Female	48.05 55.61	7.56	1.62	4.65*
3.	Body Mass Index (BMI)	Male Female	19.00 20.53	1.53	.0.83	1.84

*Significant at .05 level
t.05 (38) = 2.02

It is evident from Table 2, that statistically significant differences were found between male and female runners on age, height, weight, and BMI, as the obtained t-values of 3.04, 3.23, and 4.65, respectively were higher than the required value of t.05(38)=2.02. But the significant difference was not found between male and female runners on body mass index , as the obtained t-values of 1.84 was less than the required value of t.05(38)=2.02..

TABLE 3
DESCRIPTIVE STATISTICS OF PHYSIOLOGICAL PARAMETERS OF MALE AND FEMALE RUNNER OF CHHATTISGARH

S. No.	Variables	Sex	N	M	SD
1	Systolic Blood Pressure (mmHg).	Male Female	22 18	128.00 118.11	10.18 15.99
2	Diastolic Blood Pressure (mmHg).	Male Female	22 18	78.09 69.28	7.79 12.69
3	Mean Arterial Pressure (mmHg).	Male Female	22 18	75.81 93.54	28.38 8.87
4	Pulse pressure (mmHg).	Male Female	22 18	48.83 47.91	10.67 8.19
5	Pulse Rate (Beat/Minute)	Male Female	22 18	95.23 94.39	13.81 15.08
6	PEFR (Peak Expiratory Flow Rate) –LPM	Male Female	22 18	309.95 436.00	44.59 54.28

The mean scores of male and female runner of Chhattisgarh state on physiological parameters have been depicted in figures 5 to 10.

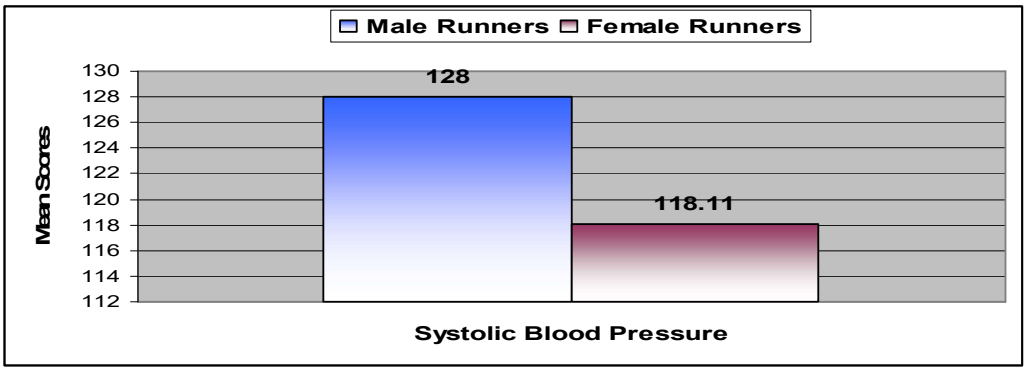

Figure:5-Mean Scores of Systolic Blood Pressureof Male and Female Runners of Chhattisgarh State

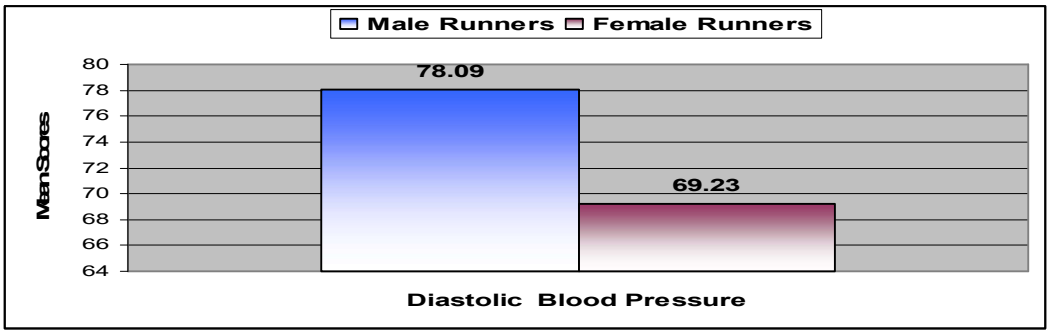

Figure:6-Mean Scores of Diastolic Blood Pressure of Male and Female Runners of Chhattisgarh State

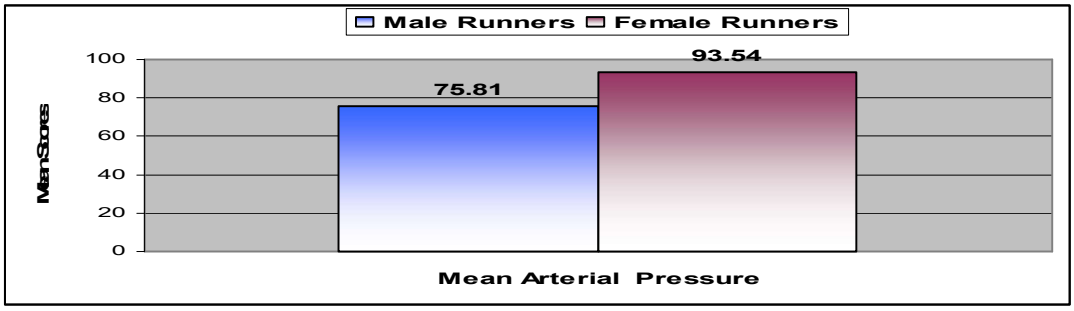

Figure:7-Mean Scores of Mean Arterial Pressure of Male and Female Runners of Chhattisgarh State

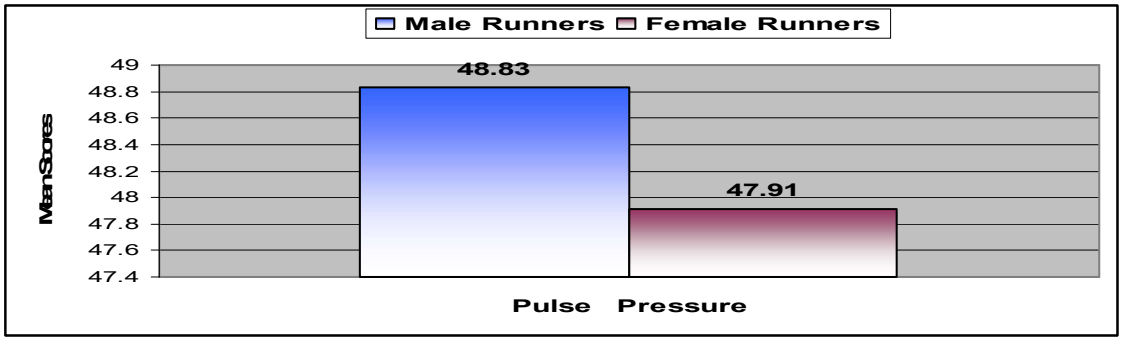

Figure:8-Mean Scores of Pulse Pressure of Male and Female Runners of Chhattisgarh State

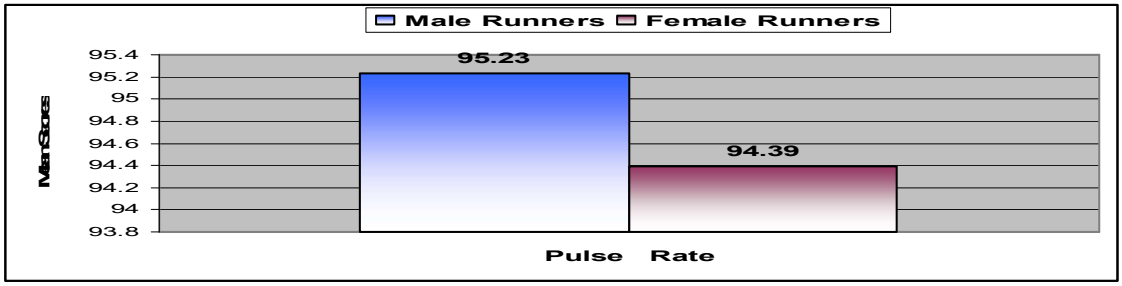

Figure: 9-Mean Scores of Pulse Rate of Male and Female Runners of Chhattisgarh State

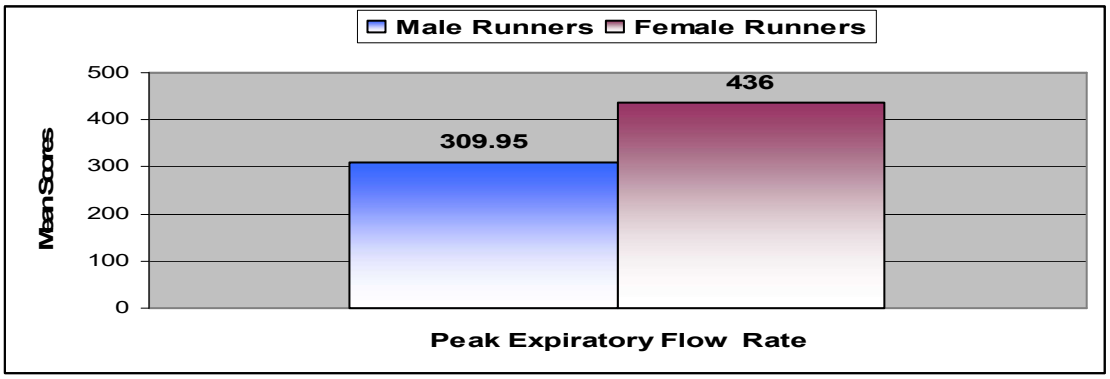

Figure: 10-Mean Scores of Peak Expiratory Flow Rate of Male and Female Runners of Chhattisgarh State

TABLE 4
SIGNIFICANCE OF DIFFERENCE BETWEEN MALE AND FEMALE RUNNERS OF CHHATISGRH ON PHYSIOLOGICAL PAPRAMETERS

S. No.	Variables	Sex	Mean	MD	σ DM	t-ratio
1	Systolic Blood Pressur (mmHg).	Male Female	128.00 118.11	9.89	4.16	1.89
2	Diastolic Blood Pressu (mmHg).	Male Female	78.09 69.28	8.81	3.27	2.69*
3	Mean Arterial Pressure (mmHg).	Male Female	75.81 93.54	17.73	5.98	2.96*
4	Pulse pressure (mmHg).	Male Female	48.83 47.91	0.92	2.98	0.31
5	Pulse Rate (Beat/Minute)	Male Female	95.23 94.39	0.84	4.57	0.18
6	PEFR	Male Female	309.95 436.00	126.05	15.62	8.07*

*Significant at .05 level
t.05 (38) = 2.02

It is evident from Table 4, that statistically significant differences were found between male and female runners on diastolic pressure, mean arterial pressure and peak expiratory flow rate, as the obtained t-values of 2.69, 2.96 and 8.07 respectively were higher than the required value of t.05(38)=2.02. But the significant differences were not found between male and female runners on systolic blood pressure, pulse pressure and pulse rate, as the obtained t-values of 1.89, 0.31 and 0.18 respectively were less than the required value of t.05(38)=2.02.

4. DISCUSSION

The descriptive statistics for anthropometric parameters i.e. age, height, weight , and body mass index (BMI values) was computed in a sample of 40 subjects from state of Chhattisgarh and presented in table-1. The mean values of age and height for the male runners were 22.78±2.26 yrs and 156.23±4.39 cm respectively while that for male runners were significantly higher ($p<0.05$) than their female counter parts. Weight mean value for male runners(48.05± 4.79 kg) was significantly lower than that for female runners 55.61± 5.51 kg making an overall mean difference in weight of 7.56. BMI kg/m^2 mean value for female runners (20.53±2.62 kg/m^2) were higher than that for male runners(19.00±4.79 kg/m^2) making an overall mean difference in BMI of 1.53 kg/m2. The male and female runners were found to have a normal BMI values. BMI is a useful measure of overweight and obesity. It is calculated from your height and weight. BMI is an estimate of body fat and a good gauge of your risk for diseases that can occur with more body fat.

To find out the significant difference between male and female runners in their anthropometric parameters, t-ratio was computed and data pertaining to this has been presented in table2. The results of the data analysis revealed the statistically significant differences between male and female runners on age, height and weight. But the significant difference was not found between male and female runners on body mass index

The descriptive statistics for physiological parameters i.e. systolic blood pressure , diastolic pressure, mean arterial pressure , pulse pressure and peak expiratory flow rate, was computed in a sample of 40 subjects from state of Chhattisgarh and presented in table-3. The mean values of diastolic pressure (78.09±7.79 mmHg) and mean arterial pressure(75.81±8.38 mmHg) for the male runners were significantly higher ($p<0.05$) than their female counter parts. But the mean value for male runners of PEFR (309.95±44.59 LPM)) was significantly lower than that for female runners (436.00± 54.28 LPM). Mean arterial pressure (MAP) is the perfusion pressure felt by organs in the body. A person has a MAP of 80. The MAP falls below 60 significantly below this number for an appreciable time, vitals organs will be under perfused and will become ischemi. The mean values of systolic blood pressure (128.00±10.18 mmHg) , pulse pressure(48.83.00±10.67 mmHg) and pulse rate (95.23±13.81 beat/minute) for the male runners were also higher, but insignificant than their female counter parts. An increased pulse pressure from 40 may occur during exercise or in individuals with atherosclerosis of the larger arteries due to increased SBP. A decreased pulse pressure may be found in cardiac failure or hypovolemia.

To find out the significant difference between male and female runners in their physiological parameters, t-ratio was computed and data pertaining to this has been presented in table4. The results of the data analysis revealed the statistically significant differences were found between male and female runners on diastolic pressure, mean arterial pressure and peak expiratory flow rate. But the significant differences were not found between male and female runners on systolic blood pressure, pulse pressure and pulse rate

5. CONCLUSIONS

1. Female runners were found taller, heavier and more fatty in comparison of male counter parts.
2. Male and female runners were found free from health hazards .
3. Significant difference was found between male and female runners on age, height, weight .

4. Insignificant difference was observed between male and female runners in their body mass index (BMI.
5. Male runners were found to have greater in amount in all physiological parameters except peak flow expiratory rate (PFIR) than their counter parts.
6. Female runners were found to have greater degree of peak flow expiratory rate than did male runners.
7. Male and female runners did not differ significantly in systolic blood pressure, pulse pressure and pulse rate parameters of physiology.
8. Male and female runners had variation in diastolic blood pressure, mean arterial pressure (MRP) and peak flow expiratory rate (PFIR) parameters of physiology

6. FUTURE DIRECTION FOR RESEARCH

1. Present investigation may be conducted on athletes of team, individual and combat games.
2. Study may be replicated on more population of runners at their participation of different levels.
3. Correlation study may be conducted between anthropometric and physiological parameters of male and female runners.

REFERENCES

Ani EJ, Nku CO, Nna VU, Nwangwa JN. Int J Sci Res 2014;3: 2028-2031.

Cohen, Deborah A and Roland Sturm, Body mass index is increasing faster among taller persons Am J Clin Nutr February 2008 vol. 87 no. 2 445-448.

Doyle JA. The Exercise and Physical Fitness Web Page: Master of Science program in Exercise Science in the Department of Kinesiology and Health at Georgia State University, 1997

Dua, Suman , Monika Bhuker, Pankhuri Sharma, Meenal Dhall, and Satwanti Kapoor Body Mass Index Relates to Blood Pressure Among Adults N Am J Med Sci. 2014 Feb; 6(2): 89–95.

Droyvold, W. B., K Midthjell, T I L Nilsen and J Holmen, Change in body mass index and its impact on blood pressure: a prospective population study International Journal of Obesity (2005) 29, 650–655. doi:10.1038/sj.ijo.0802944 Published online 5 April 2005.

Dnurse, E (May 31, 2007). "mean arterial pressure". Archived from the original *on* December 12, 2013. Retrieved 2013-12-12. impactednurse.com

Ebomoyi , MI, Iyawe V . Nig J Physiol Sci 2005;20: 85-89

Gundogdu, Z, Eryilmaz N. Correlation between peak flow and body mass index in obese and non-obese children in Kocaeli, Turkey. Prim Care Respir J. 2011 Dec;20(4):403-6. doi: 10.4104/pcrj.2011.00061.

Jain, SK, Kumar R, Sharma DA. Factors influencing peak expiratory flow rate in normal subjects. Lung India, 1983; 3: 92-97.

Kraemer, WJ, Torine JC, Silverstre R, French DN, Ratamess NA, Spiering BA, Hatfield DL, Vingren JL, & Volek JS. Body size and composition of national football league players. Journal of Strength and Conditioning Research. 2005; 19 (3): 485-489.

Kruschitz, R, Wallner-Liebmann SJ, Hamlin MJ, Moser M, Ludvik B, Schnedl WJ, & Tafeit E. Detecting body fat – a weighty problem BMI versus subcutaneous fat patterns in athletes and non-athletes. PLOS One. 2013; 8 (8): 1-9.

Kaur, Harpreet; Jagseer Singh, ManishaMakkar, Khushdeep Singh, RuchikaGarg. Variations in the Peak Expiratory Flow Rate with Various Factors in a Population of Healthy Women of the Malwa Region of Punjab.J ClinDiagn **Res., 2013; 7(6): 1000–1003**

Lambert, BS, Oliver JM, Katts GR, Green JS, Martin SE, & Crouse SF. DEXA or BMI: clinical considerations for evaluating obesity in collegiate division I-A American football athletes. Clinical journal of sport medicine: official journal of the Canadian Academy of Sport Medicine. 2012; 22(5): 436–438.

Mandel, D, Zimlichman E, Mimouni FB, Grotto I, Kreiss Y Height-related changes in body mass index: a reappraisal. J Am Coll Nutr. 2004 Feb;23(1):51-4.

Mathews EM, & Wagner DR. Prevalence of overweight and obesity in collegiate American football players, by position. Journal of American College Health. 2008; 57 (1): 33-37.

Mazic S, Djelic M, Suzic J, Suzic S, Dekleva M, Radovanovic D, Scepanovic L, & Starcevic V. Overweight in trained subjects – are we looking at wrong numbers? (Body mass index compared with body fat percentage in 36 estimating overweight in athletes.). General Physiology and Biophysics. 2009; 28: 200-204.

Nevill AM, Stewart AD, Olds T, & Holder R. Relationship between adiposity and body size reveals limitations of BMI. American Journal of Physical Anthropology. 2006; 129: 151-156.

Nevill AM, Winter EM, Ingham S, Watts A, Metsios GS, & Stewart AD. Adjusting athletes' body mass index to better reflect adiposity in epidemiological research. Journal of Sports Sciences. 2012; 28(9): 1009-1016

Martins D, Tareen N, Pan D, and Norris K. The relationship between body mass index, blood pressure and pulse rate among normotensive and hypertensive participants in the third National Health and Nutrition Examination Survey (NHANES). Cell Mol Biol (Noisy-le-grand). 2003 Dec;49(8):1305-9.

Mungreiphy, N. K. Satwanti Kapoor, and Rashmi Sinha, Association between BMI, Blood Pressure, and Age: Study among Tangkhul Naga Tribal Males of Northeast India Journal of Anthropology Volume 2011 (2011), Article ID 748147, 6 pages http://dx.doi.org/10.1155/2011/748147

National Heart, Lung And Blood Institute/National High Blood Pressure Education Program: Nhbpep Coordinating Committee (1987). Report of the second task force on blood pressure control in children. Pediatrics 1987;79:25.

Ode JJ, Pivarnik JM, Reeves MJ, Knous JL. Med Sci Sports Exerc 2007;39:403-409.

PCG Diverse , Weight-height relationships and body mass index: some observations from the Diverse Populations Collaboration. Am J Phys Anthropol. 2005 Sep;128(1):220-9.

Phillips N, Peak Expiratory Flow Rate, Medically Reviewed by George Krucik, MD Healthline, 2012.

Prakash R, Physical inactivity a leading cause of disease and disability, warns WHO, World Health Organization Media Centre,2013.

Rastogi A, Sharma P and Nigam KS, Assessment of Lung Function (Spirometry) in Children with Recurrent Upper Respiratory Tract Infection, Indian J. Allergy Asthma and Immunol., 23 (2), 2009, 83-87

Swaminathan, S et al., Peak Exploratory Flow Rate in south Indian Children, Indian Pediatrics,30, 1993.

Sembulingam, K. Prema Sembulingam, V. Poornodai, Gigi Chandran. Effect of oil pulling on peak expiratory flow rate. International Journal of Research in Health Sciences, 2013; 1(3): 136.

Sperrin, Matthew , Alan D. Marshall, Vanessa Higgins, Andrew G. Renehan, and Iain E. Buchan, Body mass index relates weight to height differently in women and older adults: serial cross-sectional surveys in England (1992–2011) *J Public Health* (2015) doi: 10.1093/pubmed/fdv067 First published online: June 1, 2015 June 2016 38 (2)

Stamler J. Ann Epidemiol 1991; 1: 347-362.

World Health Organization: BMI Classification, WHO Global Database on Body Mass (2006)

Zheng , L, Sun Z, Li J. Pulse pressure and mean arterial pressure in relation to ischemic stroke among patients with uncontrolled hypertension in rural areas of China. Stroke 2008;39:1932-7.

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IMPACT OF YOGA ASANAS ON SELECTED PSYCHOLOGICAL VARIABLES AND SKILL PERFORMANCE IN UNDERGRADUATE BALL BADMINTON PLAYERS

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ABSTRACT

The study aims to elucidate the influence and impact of yogic practices on specific psychomotor skills in Ball Badminton players. Yoga is characterized as a set of ancient Indian practices encompassing physical, mental, and spiritual dimensions, involving alterations in mental outlook, dietary habits, and the adoption of specific techniques like yoga asana (postures). Asana refer to bodily positions that promote steadiness and comfort, fostering both physical and mental well-being without exertion over a specified duration. The study focuses on yogic practices and evaluates their effects within the realm of Psychological Variables. Specifically, the research delves into the role of yoga asana in shaping selected Psychological Variables among Ball Badminton players, aiming to articulate the impacts of these practices on the psychological aspects of the players. The significance of investigating the role of Yogic practices in enhancing psychomotor skills among Ball Badminton players is evident, prompting the researcher to embark on this exploration.

Keywords: - Yoga Asana; Physical; Mental; Ball Badminton; Psychological Variables.

1. INTRODUCTION

Human body is a wonderful entity, having body, mind and soul in an astonished synchronization of all the gifts of evolution, mind is the most precious. The aim of the yoga is to attain the maximum benefits of life by lining body with mind and mind with soul. Yoga was introduced and perhaps developed by the saint Patanjali, in 2000 B.C. He had proved to be a 'Basic'. Today the whole world is looking to yoga for this, and yoga answers to various problem of the modern man, yoga develops the personality of an individual, physically, mentally and intellectually.

The present research study tried to find out the influence of sports training and yogic asana practice on Selected Psychological Variables and Skill Performance in Undergraduate Ball Badminton Playersthe research conducts the post test of skill related components to check the impact of the sports training and yogic asana practice [1]. The study was to find out the effect of skill training with yoga practice on skill performance variables [2]. The study's goal is to determine the "Effect of Yogic Practices on physical variables among rifle and pistol shooters". [3]Studying the effects of selected Yogic practices on the static balance of Badminton players [4]. Impacts of Yogic Asana Practice on Flexibility Among College-Level Football Players". [5]. Effects of Selected Yogic Exercises on Motor Fitness and Football Skill Development in Boys" [6]The Impact of the Bali Yoga Program for Athletes (BYP-A) on General Psychological Well-being: A Pilot Project [7]. Assessment of Psychological Factors in Grassroots Male and Female Badminton Players [8] Comparative Analysis of Self-Esteem in Early Adolescent Athletes and Non-Athletes.[9]study is to comparative analysisof reaction time and explosive power between badminton and tennisplayers.[10]Exploring the Relationship between Motor Ability and Judo Performance in Judo Players.[11Integration of Yoga Practice into the Training Regimen of Elite Romanian Athletes: An Investigation and Assessment [12] The purpose is to define an efficient impact of the specifically formed activities through Yoga practice on the development of flexibility among the female. [13] The study was to find out the effect of ball badminton game on the rallying ability of the badminton players at inter college level. [14] The study was to find out the effect of ball badminton game on the rallying ability of the badminton players at inter college level.[15]Enhancing Learning Effectiveness in Novice Badminton Learners: A Comprehensive Study[16]Differences in Selected Anthropometric Variables, Specifically Skinfold Measurements [17] Examining the Relationship between Motor Skills Proficiency and Physical Activity Participation[18]Optimizing Performance: High-Intensity Exercise Intervals and Recovery Patterns in Volleyball Players. [19] Impact of Combined Loop Band and Ladder Training on Performance Variables in Handball Players [20]Comparative Analysis of Agility, Muscular Strength, and Muscular Endurance Among Male College Students

1.1 Concept of Yoga

Yoga stands as a powerful avenue for self-improvement and realizing one's full potential. Through the practice of yoga, individuals strive for the union of their consciousness with the universal consciousness. Regarded as one of the oldest forms of therapeutic healing, the profound effects of yoga have captured the attention of scientists worldwide, prompting extensive studies to explore its remarkable benefits.

1.2 Yoga Asanas

Asanas represent body positions wherein individuals can maintain a steady and comfortable posture, both physically and mentally, for a specified duration without undue strain. These postures aid in muscle relaxation by enhancing circulation, alleviating accumulated tension and stress. The act of stretching contributes to muscle toning and conditioning, thereby

serving as a preventative measure against injuries.These asanas are Bhujangasana, Mayurasana, Trikonasana, Thadasana, Padhastasana, Chakrasana, Dandasana, Utkatasana, Naukasana

1.3 Benefits of Yoga on Ball Badminton Performance: -

The practice of yoga can offer various benefits to individuals engaged in ball badminton, contributing to improved performance and overall well-being. Yoga involves a range of stretching exercises that can significantly improve flexibility. Increased flexibility in joints and muscles can enhance agility and manoeuvrability on the ball badminton court. Yoga often incorporates balance poses and exercises that promote stability. This can translate to better balance and coordination during ball badminton matches, aiding players in quick and precise movements. yoga can make every form of training you do more effective and efficient.

A regular yoga practice can give you the following: Heightened Power, Enhanced Endurance, Improved Balance and Proprioception**,** Effective Injury Prevention, Enhanced Recovery and Improved Focus.**-**

Sport Psychology focuses on optimizing performance by effectively handling emotions and mitigating the psychological impact of injuries and subpar performances. Key skills emphasized in this field include goal setting, interpersonal relations, visualization, self-talk, self-awareness and control, concentration, confidence building, utilizing rituals, attribution training, and periodization.The modern sport psychologist is tasked with fulfilling three essential roles: conducting research, providing education through teaching, and offering consulting services.

Anxiety represents a comprehensive emotional state marked by an overarching sense of fear or apprehension, typically accompanied by heightened tension. This emotional condition is often linked to a fear of failure, whether actual or anticipated. Anxiety frequently revolves around interpersonal relations, social situations, and the pervasive feelings of rejection and insecurity..

Stress is the body's natural response to a situation demanding a physical, mental, or emotional adjustment. It can be triggered by various circumstances or thoughts that evoke feelings of frustration, anger, nervousness, or anxiety. The source of stress, often referred to as a "stressor," can stem from factors such as coping with a serious illness or taking care of someone who is unwell, leading to a significant amount of stress..

Motivation can be characterized as the internal impetus that propels individuals to engage in and persist with an activity. It encompasses the performer's resolute determination and enthusiasm to attain their goals, intertwined with external factors that influence them.

Emotion is described as a intricate response pattern that includes experiential, behavioral, and physiological elements. Emotions represent an individual's way of navigating matters or situations that hold personal significance to them.

"A dynamic process manifested in the group's inclination to cohesively stay united while working towards achieving instrumental objectives for the fulfilment of the members' needs.".

The study aims to investigate how the practice of asanas influences specific psychological factors and skill performance variables in undergraduate-level ball badminton students.

1.4 Significance of Study

The study will create a professional interest for coaches, physical educationists and yoga trainers and Ball Badminton students.Findings of the study will give the importance of asanas on selected psychological variables and skill performance of undergraduate level ball badminton students.The study will provide scientific base and guidance to the physical educationists, coaches and players to understand the asanas on selected psychological variables and skill

performance of undergraduate students.This study will help the future research scholars to select and identify new problems with selected asanas.

The study's discoveries could contribute to the existing body of knowledge on the impact of asanas. Ball badminton is a racket sport played with a yellow woolen ball on a standardized court. It is a team-based game where players may need to willingly sacrifice for the overall benefit of the team. The game is highly dynamic, requiring skills, rapid perception, accurate judgment, agile movement, and the ability to control the ball through precise wrist movements.

The effect of asanas will help in developing and enhancing the playing skills of the undergraduate students. The findings of the study will directly benefit the physical educators, research scholars, coaches, yoga experts and the players as they would be able to scientifically understand and assess the asanas and the psychological variables owing to Ball Badminton game.

2. METHODOLOGY

The researcher outlines the methodology involving the selection of subjects, choice of variables, data collection, and the statistical techniques used for analysis. The study is structured to investigate the impact of specific asanas and psychological variables on undergraduate students aged 17 to 21. To fulfill the study's objectives, the following procedures will be implemented.

2.1 Selection of Subjects: -

For this study 90 undergraduate ball badminton players will be selected from University. They are normal and healthy subject without any disability. They are within the age group of 17 to21 years.The selected subjects will be divided into three equal groups, each group consist of thirty subjects, Group I will be imparted training on yoga asana for 12 weeks for 5 days per week (45 minutes duration). Certain factors like food habit, life style, daily routine work, climatic conditions and environmental factors, which may have an effect on the result of this, will not be taken into consideration while interpreting the result.

2.2 Data Analysis

The analysis will be conducted using analysis of covariance (ANCOVA) and subsequently, Scheffe's post-hoc method. All statistical computations will be executed using the Statistical Package for the Social Sciences (SPSS).

2.3 Selection of Variables

- Independent variables: Bhujangasana, Mayurasana, Trikonasana, Thadasana.
- Dependent Variables:
  1. Psychological variables: Anxiety, Stress and Motivation.
  2. Skill Performance Variables: Float, Service.

2.4 Instrumentation

Variables	Test Used
Anxiety	Sports competition anxiety test(SCAT)
Stress	Ways of coping in sports (WOCS)
Motivation	Recreational exercise motivation measure(REMM)

2.5 Procedure.

A standardized questionnaire will be employed to measure the selected psychological variables. The data obtained from the three groups on these variables will undergo statistical analysis to determine if there are significant differences among the groups.

The subjects were asked to assemble on the class room. Yogic Practices were important to the student for a period of 30 minutes in the evening between 4.30 P.M to 5.13 P.M. The investigator demonstrated the Asana first and the subjects were asked to repeat them. The duration of the class is about 30 minutes.

Scoring of Stress Questionnaire: Many individuals can effectively handle different levels of pressure without experiencing stress. However, when faced with excessive pressure, often stemming from our own thought patterns and life experiences, our capacity to cope may be overextended, leading to the experience of stress.

Point or less: your or least likely to suffer from stress-related illness. Scoring between 5-13 points indicates a higher likelihood of experiencing stress-related health issues, whether mental, physical, or both. Seeking stress management counselling or advice is recommended to address and alleviate challenges identified in these areas.

14 points or more indicates a higher susceptibility to stress, showcasing numerous traits or characteristics associated with unhealthy behaviors. This heightened risk suggests an increased likelihood of experiencing stress-related illnesses, such as diabetes, irritable bowel syndrome, migraines, back and neck pain, high blood pressure, heart disease/strokes, and mental health issues (depression, anxiety, and stress). Seeking professional help or stress management counselling is strongly recommended. Consultation with your medical practitioner is advised.

Scoring of Anxiety Questionnaire: The SCAT questionnaire, along with three additional surveys, was provided to the participants one hour prior to the commencement of the assessment. Clear instructions were given to ensure subjects understood the task. The SCAT questionnaire comprises 15 items, including 5 spurious ones intentionally added to reduce any bias in responses towards the actual test items. Participants were directed to indicate their general feelings in sports competition for each item. Each statement offered three possible response options are Hardly ever-1, Sometimes-2 and Often-3.

After the completion of the questionnaire the investigator collected and checked weather there was any omission. The complete questionnaires were evaluated by the investigator according to the scoring key.

Spurious Questions were not scored as suggested by martins. The score obtained for each statement were added and it was treated as total score higher the score higher the anxiety and lower the score lower the anxiety. They were ranged between 10-30.

2.6 **Statistical Technique: -**

The study utilized various statistical procedures to assess the changes in selected psychological variables and skill performance among college-level ball badminton players. To analyze the significance difference between pre-test and post-test scores, dependent 't' ratios were calculated. The chosen level of significance for the study was set at 0.05.

The data were analysed with the computer using SPSS statistical package. The level of confident was fixed at 0.05 level of confident.

3. RESULT AND DISCUSSION

The study aimed to investigate the impact of selected psychological variables and skill performance variables on college-level ball badminton players. To fulfill this objective, a sample of fifteen students was randomly selected from BITS VIZAG College in Visakhapatnam, constituting a single group for the study. Each participant underwent testing for psychological variables such as Anxiety, Stress, Motivation, and skill performance variables, including service and float tests. The outcomes of these assessments are presented and discussed in this chapter.

The data collected were statistically analyzed using 't' ratio and 0.05 level of confidence was fixed to test the table value. The results of the present study were given below.

TABLE 1

MEAN, MEDIAN, STANDARD DEVIATION, STANDARD ERROR OF MEAN, MEAN DIFFERENCE AND 'T' VALUE OF PRE-TESTAND POST TEST OF FLOAT

S. No	Test	Mean	Mean Deviation	Standard Deviation	Standard Error of Mean	DF	T	Table value
1	Pre-Test	82.8	4.4	7.36	1.9	14	26.94	2.14
2	Post-Test	87.2		7.35	1.89			

To find out the asana on selected psychological variable and skill performance variable among college level ball badminton players only one group 't' ratio was employed and the level of significance was set at 0.05. A Float player mean value were 82.80,87.20 respectively different mean value 4.40.The obtained 't' ratio 26.94,so it was found to be significant.

Figure- I: showing the mean of pretest and post-test for float

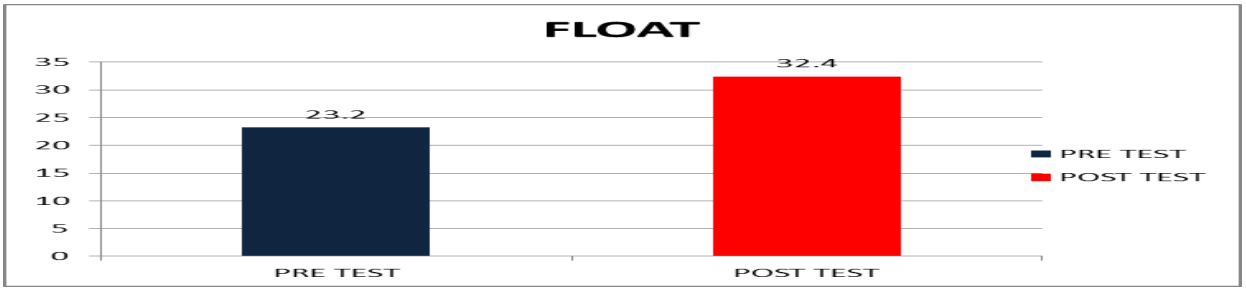
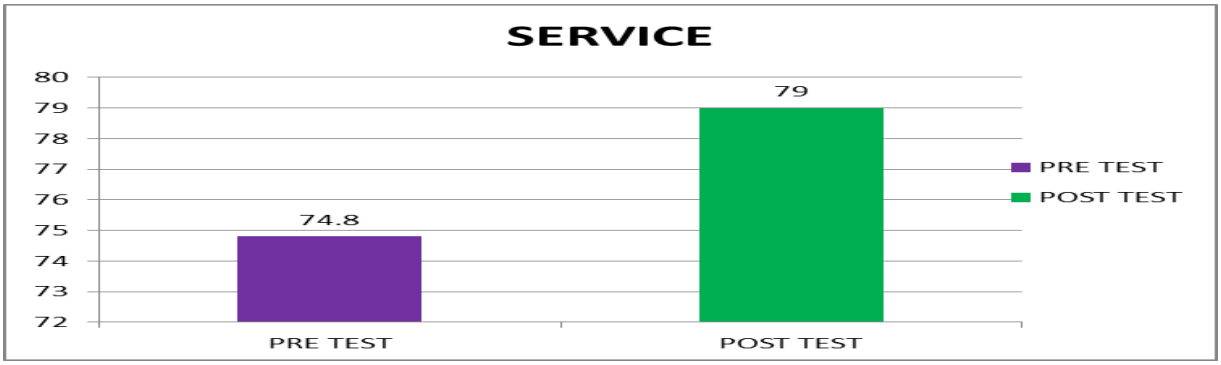


TABLE 2

: MEAN, MEDIAN, STANDARD DEVIATION, STANDARD ERROR OF MEAN, MEAN DIFFERENCE AND'T' VALUE OF PRE-TEST AND POST TEST OF SERVICE

S. No	Test	Mean	Mean Deviation	Standard Deviation	Standard Error of Mean	DF	T	Table value
1	Pre-Test	74.8	4.2	9.11	2.35	14	15.02	2.14
2	Post-Test	79		8.67	2.24			

Figure- II: Showing the Mean of Pre-Test and Post-Test for Service



To find out the asana on selected psychological variable and skill performance variable among college level ball badminton players only one group 't' ratio was employed and the level of significance was set at 0.05Float player mean value were 74.80,79.00 respectively different mean value 4.20The obtained 't' ratio 15.02so it was found to be significant.

TABLE 3
MEAN, MEDIAN, STANDARD DEVIATION, STANDARD ERROR OF MEAN, MEAN DIFFERENCE AND 'T' VALUE OF PRE-TEST AND POST TEST OF ANXIETY

S. No	Test	Mean	Mean Deviation	Standard Deviation	Standard Error of Mean	DF	T	Table value
1	Pre-Test	27.9	5.96	3.75	.97	14	19.76	2.14
2	Post-Test	33.86		3.33	.86			

To find out the asana on selected psychological variable and skill performance variable among college level ball badminton players only one group 't' ratio was employed and the level of significance was set at 0.05Float player mean value were 27.90,33.86 respectively different mean value 5.96The obtiened 't' ratio 19.76 so it was found to be significant.

Figure- III: Showing the Mean of Pre-Test and Post-Test for Anxiety

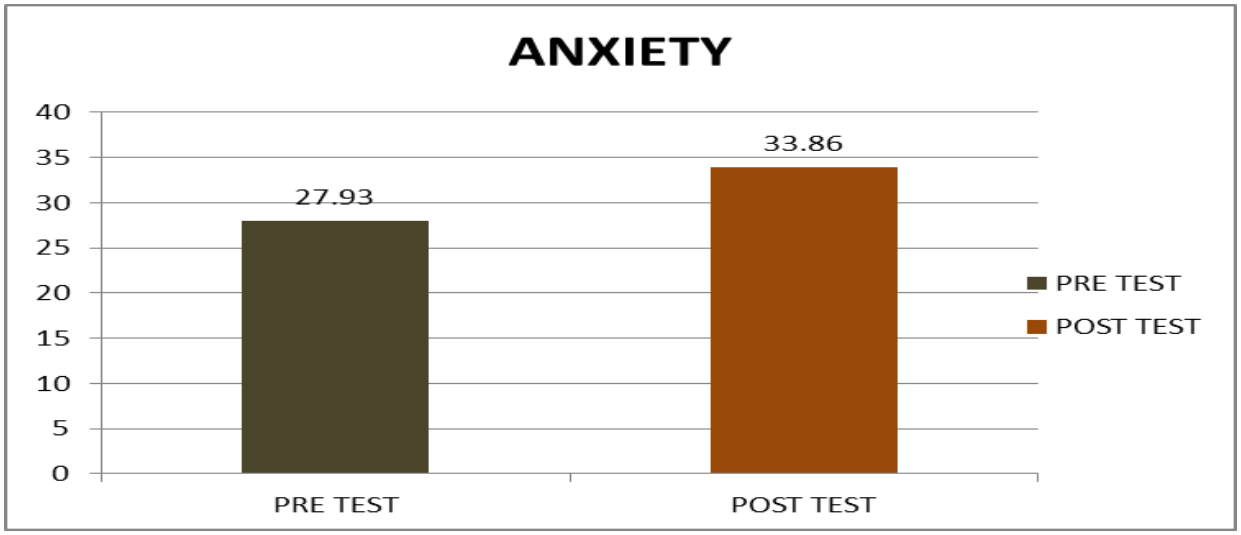


TABLE 4
MEAN, MEDIAN, STANDARD DEVIATION, STANDARD ERROR OF MEAN, MEAN DIFFERENCE AND 'T' VALUE OF PRE-TEST AND POST-TEST OF STRESS

S. No	Test	Mean	Mean Deviation	Standard Deviation	Standard Error of Mean	DF	T	Table value
1	Pre-Test	12.93	3.93	2.31	0.6	14	10.24	2.14
2	Post-Test	16.86		1.5	0.39			

To find out the asana on selected psychological variable and skill Performance variable among college level ball badminton players only one group 't' ratio was employed and the level of significance was set at 0.05Float player mean value were 12.93,16.86 respectively different mean value 3.93The obtained 't' ratio 10.24 so it was found to be significant.

TABLE 5
MEAN, MEDIAN, STANDARD DEVIATION, STANDARD ERROR OF MEAN, MEAN DIFFERENCE AND 'T' VALUE OF PRE-TEST AND POST-TEST OF MOTIVATION

S. No	Test	Mean	Mean Deviation	Standard Deviation	Standard Error of Mean	DF	T	Table value
1	Pre-Test	23.20	9.20	5.74	1.48	14	12.25	2.14
2	Post-Test	32.40		4.73	1.22			

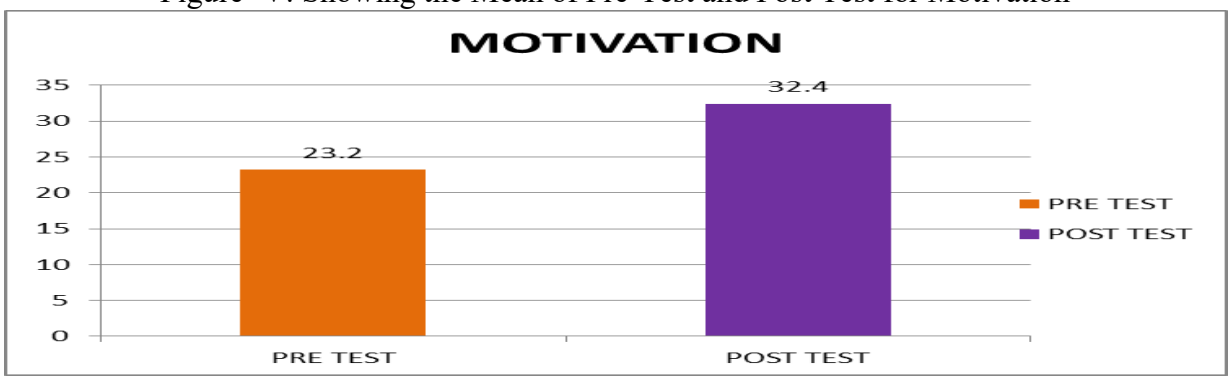
Figure- IV: Showing the Mean of Pre-Test and Post-Test for Stress

Table – V: Calculation of Mean, Median, Standard Deviation, Standard Error of Mean, Mean Difference and 'T' Value of Pre-Test and Post-Test of Motivation

S. No	Test	Mean	Mean Deviation	Standard Deviation	Standard Error of Mean	DF	T	Table value
1	Pre-Test	23.20	9.20	5.74	1.48	14	12.25	2.14
2	Post-Test	32.40		4.73	1.22			

To find out the asana on selected psychological variable and skill performance variable among college level ball badminton players only one group 't' ratio was employed and the level of significance was set at 0.05Float player mean value were 23.20,32.40 respectively different mean value 9.20The obtained 't' ratio 12.25 so it was found to be significant.

Figure- V: Showing the Mean of Pre-Test and Post Test for Motivation



4. CONCLUSIONS

The primary objective of this study was to explore the effects of specific asanas on psychological variables and skill performance among college-level ball badminton players. The

study included fifteen players from BITS VIZAG, Visakhapatnam, aged between 16 to 20 years, who were chosen as participants. These players were collectively grouped, and initial assessments were conducted on selected psychological variables, such as Anxiety, Stress, and Motivation, utilizing Questionnaire Tests. Subsequent to the pre-test, the single group of ball badminton players underwent a 6-week training program, with sessions held five days a week, lasting 45 minutes each in the evening. Following the completion of the sixth week, a post-test was administered to all ball badminton players in the group. The significance of the difference between the means of pre and post-tests for BITS VIZAG, Visakhapatnam ball badminton players was determined through the 't' ratio, with the level of significance set at 0.05. Despite the study's limitations, it was concluded that the designated group of ball badminton players exhibited significant improvement in all selected psychological variables, including Cognitive Anxiety, Stress, and Motivation.

REFERENCES

1. Sidramappa, Mr Anand, and N. G. Kannur. "Influence of Sports Training and Yogic Asana Practice on Skill Related Components of Fitness Among Hockey Players" (2023).
2. Mala, R., and P. Manju Pushpa. "Effect of specific skill training with yoga on skill performance variable of school level volleyball players" (2022).
3. Hussain, Vijay Vasant Patil Dr Nisar. "Effect of Yogic Practices on Physical Variables Among Rifle and Pistol Shooters" International journal of economic perspectives 17.4 (2023): 147-156.
4. Balo, Abhishek, Umesh Mimi, and Sambhu Prasad. "Enhancing Static Balance in Beginner Badminton Players through Yogic Practices".
5. Rajarathnam, S. R., et al. "Impacts of Yogic Asanas on Flexibility among Football Players".
6. Awati, Jyoti. "Effect of Selected Exercises in yoga on Motor Fitness and Football Skills of Boys Ages 14 to 16 Years" (2022).
7. Cadieux, Elena Grilli, Véronique Richard, and Gilles Dupuis. "Effects of bali yoga program for athletes (BYP-A) on psychological state related to performance of circus artists" Int J Yogic, Hum Mov Sports Sci 7 (2022): 23-33.
8. Kumar, Sanjay, et al. "A comparative Study on Anxiety and Self-esteem among Badminton Players" (2013).
9. Mathew, Chindu Mary, Mrs Anu Anns Pious, and Sheela Rosalyn. "Self-esteem among early adolescent athletes and non-athletes" Journal DOI (2016): 44975451.
10. Singh, MaibamNodiyachand "83 Comparison on Sports Specific Personality Traits Between Undergraduate Male and Female Physical Education Students".
11. Sharma, Chetan, and Ashok Kumar Sharma. "Study of motor fitness of judo players in relation to different level of participation" (2017).
12. Bucea-Manea-Ţoniş, Rocsana, et al. "Yoga, an Appurtenant Method to Improve the Sports Performance of Elite Romanian Athletes." Sustainability 15.5 (2023): 4264.
13. Sereda, Iryna, et al. "The impact of yoga practice on the development of flexibility among the female student's pedagogical specialities in the process of physical training of higher educational institutions" (2020).
14. Devi, Suneeta, International Journal of Engineering Sciences & Research Technology, "The Effect of Ball Badminton Game on the Rallying ability of the Badminton Players at Inter College Level".
15. Narayana, KapaVenkata. "Comparative Analysis of Psychological Behavior for Telangana Senior Cricket Players Before and after Competition." NeuroQuantology 20.15 (2022): 1087.

16. Lin, Kuo-Chin, et al. "Development of a badminton teaching system with wearable technology for improving students' badminton doubles skills." Educational Technology Research and Development 69 (2021): 945-969.
17. Singh, Hari, and Lakshmi Tara. "Comparison of Selected Skinfolds Between Tribal and Non-Tribal Male Players of Himachal Pradesh." Journal DOI (2016): 44975451.
18. Emadirad, Elnaz, "Psychological factors as mediators of the relationship between motor skills and physical activity in children". Diss. 2017.
19. Patil, Sandip S., and Tusharkanti Bera. "Experiment on yoga for skills development in elite volleyball players." (2018).
20. Murugavel, K., et al. "Loop band with ladder training: An experimental study" (2023).
21. Pandian, V., and K. Divya. "Comparison of Muscular Strength Muscular Endurance and Agility Between Men Students" Journal of Pharmaceutical Negative Results (2022): 1071-1074.

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PERFORMANCE ANALYSIS OF PHYSICAL EDUCATION MANAGEMENT AMONG SCHOLASTICALLY INTELLIGENT AND WEAK SECONDARY SCHOOL STUDENTS ON EMOTIONAL MATURITYOF J&K

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ABSTRACT

Recently, physical fitness, sports as well as recreation become more and more trending in between the secondary school students. PE is unrecognized since pupils lose encouragement as well as self-assurance in order to attend these classes. The majority of the PE syllabus in secondary schools are inefficient. Further, it cannot assure the accomplishment of educational objectives. A large number of students say that attending physical education classes cause strong negative feelings. Educators report that the educational circumstances do not offer the opportunities to attain the various objectives of PE. This issue cannot be sorted out by refining or upgrading the current school curriculum: this needs the entire replacement of the current PE framework in the secondary school education. The consequential crisis of PE in the secondary school is established in the absence of learning encouragement in students. The syllabus does not motivate the students to participate in PE classes, both during the extracurricular activities as well as within the training sessions. Planning the advanced curriculum should depend on the exceptional requirements of postmodern schoolchildren. This requires reconsidering the nature and behavior of PE in the secondary school education. This paper provides the significant research on the PE management among the secondary students of J&K on several aspects of Emotional Maturity.

Keywords: Curriculum, Emotional Maturity, Physical Education, Education, Sports& Fitness

1. INTRODUCTION

The progress of physical education (PE) in schools very much reliant up on the qualification and education level of teachers. The teachers as their realization for the importance of PE and good professionalization play the significant role in enhancing the quality of education and further students(Kostromin, Zaitsev, & Bobrov, 2019**)**. It becomes authoritative to reinforce the curriculum of PE as per the qualification of teachers in order to build a strong infrastructure for the secondary education of J&K. Meanwhile, the teachers play the significant part in the growth of any nation. It becomes irreplaceable in endorsing the physical and psychological health of secondary level students. Recently, investigators researched on several aspects of the curriculum designed by PE teachers in the effectiveness of sports. This research work provides the best possible concept to straighten the PE curriculum. We will also theoretically deliberate the construction of teaching ability about PE, framework, connotation and aspects of existing conditions in the secondary education of J&K schools(Garcia, Bojos, & Sy,2021). Thus, this research work certainly will play a crucial part in the refinement of PE curriculum in J&K schools.

Recently, initially, several issues are existed in the pre-employment, employment and post-employment stages of PE in J&K. Also, PE experiences several issues in the training of teachers, skills, quality, curriculum pattern and learning ability for schools. In several schools, the enthusiasm for sport enhances due to which many issues arise such as;

1. Lacking of efficient and actual monitoring of PE quality,
2. Lacking of uniform guiding standards,
3. Arbitrary curriculum,
4. The postemployment training is in the form,
5. Lack of efficient teaching research, ,
6. The postemployment training
7. Serious consumption of the post-service PE teachers
8. Low employment rate of PE students
9. Uneven training strength of the unit
10. High number of enrollment as compared to number of teachers
11. Threshold for enrollment reduces,

Such issues occur at the great extent resulting as the nonexistence of advancement of PE curriculum in J&K. There is only onetime final assessment of the practitioner's qualifications even if the qualification certificate for teachers is attained. There is no contribution of such examination in the sustainable development of teachers. Presently, PE research has chiefly focused on universities and colleges only.

Children's physical and psychological progress, body composition (morphology) and functions (biomechanics and physiology), as well as the development and acquisition of motor skills, necessitate specific knowledge for efficient and safe PE instruction. Teaching PE necessitates extensive expertise in pedagogy—the science and teaching art—just like teaching any other subject. Additionally, teachers of PE and the classroom should be educated about the significance of physical activity for children's current as well as future psychological and physical health due to academic performance is linked to health.

Fitzclarence and Tinning (1990) suggested in the early 1990s that three issues remained problematic/unresolved regarding the growth of examinable PE among teachers and students alike. One of these issues was the place of physical activity within an examinable academic subject. According to Macfadyen and Bailey (2002), it was anticipated that the completion of

PE-related qualifications during fundamental curriculum PE lessons by all Key Stage Four students would increase the likelihood of accreditation. A decade later, Green (2008) discovered that GCSE PE took up some or all of the curriculum PE time in some schools. As a consequence of this, there was a worry that assessment courses would, "by adjusting to the prerequisites of a recommended schedule and evaluation methodology," hinder the physical experiences of students, which, as he argued, are the primary contribution that physical education makes to the entire educational process. Because of the way that examinable PE zeros in more on hypothesis than genuine games support, youngsters would be expected to invest more energy in study halls and less time participating in active work during their examples (Green, 2008).

Regarding this, PE educators recognized the following issues with examinable PE instruction: uninteresting theory classes with too much writing that "puts the kids off," not least due to classes often closely trail textbooks to cover the necessary material and get students to sit down, shut up, and get writing (Green, 2008; Salter Examinable PE became "somewhat off-putting to practically oriented students" as a result of this decreased emphasis on practical game contribution in favor of a more theoretical concentration (Green, 2008). Carroll, on the other hand said, "There is no great explanation for why the hypothesis work ought not be shown in a viable circumstance connected with practice or actual schooling." However, the methods of assessment used in academic PE qualifications may have led to such a situation. For instance, in Key Stage Five, A-Level PE now has a theoretical component of 80 percent and a practical component of 20 percent. Similarly, GCSE PE qualifications have traditionally been evaluated through a blend of an assessment and viable games execution, with understudies taking on jobs like entertainer, pioneer, and official as of late. Currently, students receive an examination that accounts for 40% of their complete grade and a controlled evaluation that accounts for 60% of their overall grade (based on four practical sports performances) (Balga, Antala, & Argajová, 2019).

The resulting crisis in secondary school physical education is evident in the decline of schoolchildren's motivation for learning. According to Gavrilov, Komkov, & Malinin (2005), the curriculum does not encourage students to participate in extracurricular activities or PE classes. The particular requirements of postmodern students ought to serve as the foundation for the new curriculum's design. Rethinking the nature of secondary school PE is necessary for this. Based on the standard, normative approach, the traditional class-lesson method of PE no longer adequately aligns pedagogical influences with student physical development regularities; According to Bogdanov (2007), ineffective teaching activities are demonstrated by PE educators functioning within the system who organize students' practical/theoretical actions appropriately.

2. METHODOLOGY

To concentrate on the individual and social change, actual wellness, scholarly accomplishment, and sports execution of rustic and metropolitan understudies of Srinagar, Kupwara and Rajouri to analyze the individual change of provincial and metropolitan understudies of Srinagar, to think about the social change of country and metropolitan understudies of Srinagar, to look at the individual change of rustic and metropolitan young girls of Srinagar, Kupwara and Rajouri to analyze the social change of rustic and metropolitan young female of locale Srinagar, Kupwara and Rajouri, to think about the individual change of country and metropolitan young male of regions Srinagar, Kupwara and Rajouri, to think about the social change of young male of areas Srinagar, Kupwara and Rajouri, to look at the actual wellness of

understudies of area Srinagar, Kupwara and Rajouri, to look at the actual wellness of country and metropolitan young female of locale Srinagar, Kupwara and Rajouri, to analyze the actual wellness of country and metropolitan young male of locale Srinagar, Kupwara and Rajouri, to look at the scholastic accomplishment of country and metropolitan understudies of locale Srinagar, to look at the scholastic accomplishment of country females of locale Srinagar, Kupwara and Rajouri, to analyze the scholastic accomplishment of provincial and metropolitan young male of Srinagar, Kupwara and Rajouri, to analyze the games execution of these region understudies, to analyze the games execution young female of regions Srinagar, Kupwara and Rajouri and to analyze the games execution among young male of areas Srinagar, Kupwara and Rajouri.

It is fundamental with respect to the scientist to test the viability of the examination apparatuses which are being utilized for the information assortment (Brusseau & Hannon, 2015). Thus, a scientist should really take a look at the usefulness, possibility, legitimacy, and dependability of a device prior to applying it for information assortment. The scientist likewise really look at the dependability and legitimacy of the test. Extraordinary consideration was taken to choose just those things which were dependable and substantial. In this review, two self-arranged devices were utilized.

The test is made out of three subjects, Arithmetic, English, and Science. This test was ready in meeting with the teachers. Each subject has 10 inquiries of 01 imprint each, involved low, medium, and high trouble levels. These inquiries depended on information, understanding, and application. The inquiries were taken from the prospectus of the eighth and ninth principles. No regrettable stamping was applied. Understudy, as well as Schools, was surveyed through the imprints acquired by the understudies in their different subject tests viz. Math, English, and Science. .The test unwavering quality was built by the specialist with the assistance of the pre-test and post-test technique on the understudies and the pre-dependability was viewed as 0.83 on 169 Cronbach's Alpha scale by SPSS(AAHPER, 1965). This test was directed on 500 understudies. This test had 30 things. Following one month the scientist changed 10 things and the post dependability was viewed as 0.73 on Cronbach's Alpha scale through SPSS.The test has been found to group content validity as an action with the assistance of perspectives communicated by judges.

TABLE 1
DATA SAMPLE IN J&K SCHOOLS FROM THREE DIFFERENT DISTRICTS

Three Districts				
Group	Kupwara	Rajouri	Srinagar	Total
Students	125	125	250	500
Boys	72	61	125	258
Girls	59	58	125	242

Emotional Maturity Scale was utilized to quantify the profound development of offspring of Intelligent and weak auxiliary school understudies. It comprises of five elements close to home solidness, profound movement, social change, character mix and autonomy.

3. RESULTS

While characterizing the example in this review, both the understudies and educators should be thought of. The understudy populace comes from Secondary Schools of Kupwara, Rajouri and Srinagar in a metropolitan setting that reaches from Junior Kindergarten to Grade 12 (n = 500). This school exists in a rural working class city of roughly 250 000 individuals. Three secondary level classes (Grades 7, 8, and 9) partook in the review.

Seventy two educators partook in the review. Thirty two of the educators have post-secondary training in Actual Training (15 and 13 years of showing experience) and forty instructors took a Kinesiology class in secondary school yet has no further conventional preparation well defined for Actual Schooling (5 years of showing experience) beyond their general instructing capabilities. An underlying meeting was led with instructors to accumulate data connected with their showing experience, perspectives, and information connected with Actual Training as well as their evaluation practices and self-guideline draws near. Brief profiles were built for every one of the three taking an interest educators. The illustrative examination to gauge mean and standard deviation was directed to think about and research the connection among prepared and undeveloped PE educators.

TABLE 2
COMPARATIVE ANALYSIS OF SCHOLASTICALLY INTELLIGENT AND WEAK SECONDARY SCHOOL STUDENTS ON SEVERAL ASPECTS OF EMOTIONAL MATURITY

Variables	Group	N	Mean	S.D.	t-value	Level of Significant
Emotional Progression	Intelligent	250	22.66	5.45	11.18	Significant at 0.01 level
	Weak	250	18.53	3.37		
Emotional Stability	Intelligent	250	25.67	6. 24	14.98	Significant at 0.01 level
	Weak	250	18.34	3.55		
Personality Integration	Intelligent	250	22.97	5. 25	13.69	Significant at 0.01 level
	Weak	250	17.33	3.85		
Social Adjustment	Intelligent	250	24.04	8.38	7.08	Significant at 0.01 level
	Weak	250	20.03	4.75		
Independence	Intelligent	250	22.89	3.66	16.76	Significant at 0.01 level
	Weak	250	17.91	3.62		
Overall Emotional Maturity	Intelligent	250	120.83	17.04	21.79	Significant at 0.01 level
	Weak	250	95.20	12.54		

The table 2 shows the mean examination between scholastically intelligent and the weak secondary school students on different variables and composite score of Emotional Maturity. The table uncovers that scholastically intelligent and the weak secondary school students contrast altogether at 0.01 level on Independence, Personality Integration, Social adjustment, Emotional Progression and Emotional Stability and furthermore vary on composite score at 0.01 degree of profound development.

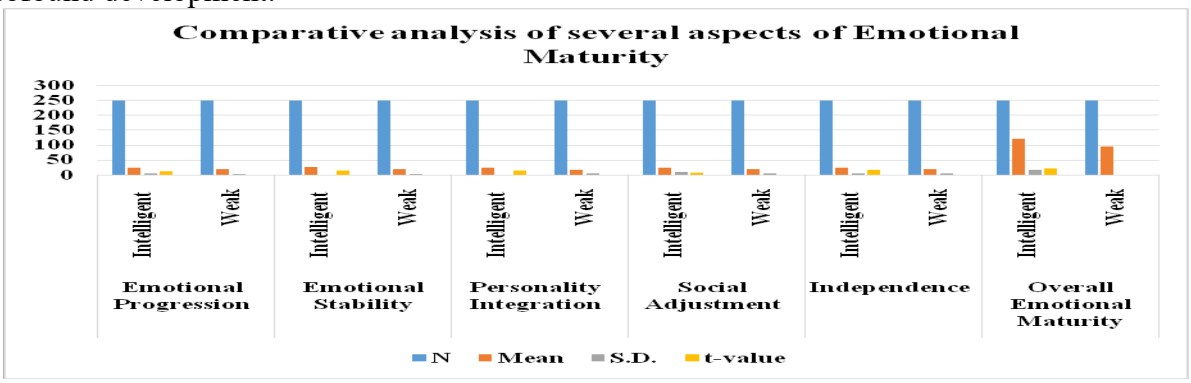

Figure-1: Comparative analysis of several aspects of Emotional Maturity among the secondary level students

This demonstrates that the scholastically intelligent understudies have been viewed as more sincerely progressive and stable, well socially changed, having dynamic intentions and inclinations, inventive and getting a charge out of independency though scholastically weak secondary school understudies have less genuinely steady, sensation of mediocrity, fretfulness, socially maladjusted and having misshaped feeling of the real world and goal interest. Consequently from the affirmation of the above table that scholastically brilliant secondary school understudies have generally speaking preferable Emotional Maturity over scholastically dull secondary school understudies. Thusly the hypothesis No.1 peruses as "Scholastically intelligent and weak secondary school understudies vary essentially on Emotional Maturity", stands acknowledged.

TABLE 3
COMPARATIVE ANALYSIS OF SCHOLASTICALLY INTELLIGENT AND WEAK (MALE) SECONDARY SCHOOL STUDENTS ON SEVERAL ASPECTS OF EMOTIONAL MATURITY

Variables	Group	N	Mean	S.D.	t-value	Level of Significant
Emotional Progression	Intelligent	128	24.69	5.58	7.96	Sig. at 0.01 level
	Weak	130	18.71	4.15		
Emotional Stability	Intelligent	128	25.42	5.96	12.12	Sig. at 0.01 level
	Weak	130	18.81	4.14		
Personality Integration	Intelligent	128	22.82	5.35	8.98	Sig. at 0.01 level
	Weak	130	18.16	3.75		
Social Adjustment	Intelligent	128	25.16	13.15	4.55	Sig. at 0.01 level
	Weak	130	18.98	4.38		
Independence	Intelligent	128	23.18	3.54	8.87	Sig. at 0.01 level
	Weak	130	19.37	3.47		
Overall Emotional Maturity	**Intelligent**	**128**	**121.78**	**18.37**	**13.53**	**Sig. at 0.01 level**
	Weak	**130**	**93.76**	**11.78**		

The table 3 shows the mean correlation between scholastically intelligent male and the weak male secondary school understudies on different variables and composite score of emotional maturity. The table uncovers that scholastically intelligent male and the weak male Secondary School understudies vary fundamentally at 0.01 level on Independence, Personality Integration, Social adjustment, Emotional Progression and Emotional Stability. The two gatherings likewise vary at 0.01 level on composite score of emotional maturity.

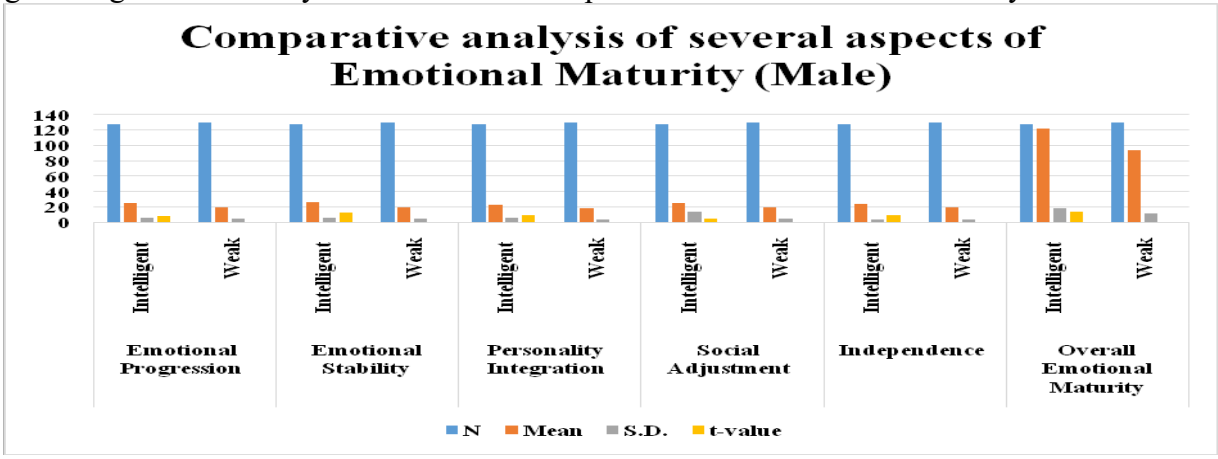

Figure-2: Comparative analysis of several aspects of Emotional Maturity among the secondary level students (Male)

This shows that the scholastically brilliant male understudies have been viewed as more emotionally stable and progressive, well socially adjusted, having dynamic motives and tendencies, creative minded and enjoying independency whereas academically dull male

secondary school students have less emotionally stable, feeling of inferiority, restlessness, socially maladjusted and having distorted sense of reality and objective interest. Consequently from the affirmation of the above table that scholastically intelligent male secondary school understudies have generally speaking preferable Emotional Maturity over scholastically weak male secondary school understudies. Consequently the hypothesis No. 2 peruses as "Scholastically intelligent male and weak male secondary school understudies vary altogether on Emotional Maturity", stands acknowledged.

TABLE 4
COMPARATIVE ANALYSIS OF SCHOLASTICALLY INTELLIGENT AND WEAK (FEMALE) SECONDARY SCHOOL STUDENTS ON SEVERAL ASPECTS OF EMOTIONAL MATURITY

Variables	Group	N	Mean	S.D.	t-value	Level of Significant
Emotional Progression	Intelligent	122	24.11	5.75	7.14	Sig. at 0.01 level
	Weak	120	19.98	3.35		
Emotional Stability	Intelligent	122	27. 25	6.66	11.91	Sig. at 0.01 level
	Weak	120	19.84	3.72		
Personality Integration	Intelligent	122	22.98	5.42	8.96	Sig. at 0.01 level
	Weak	120	19.34	3.88		
Social Adjustment	Intelligent	122	23.74	4.54	8.01	Sig. at 0.01 level
	Weak	120	19.24	4.68		
Independence	Intelligent	122	24.98	4.74	12.14	Sig. at 0.01 level
	Weak	120	18.14	3.48		
Overall Emotional Maturity	**Intelligent**	**122**	**119.88**	**14.57**	**17.14**	**Sig. at 0.01 level**
	Weak	**120**	**95.96**	**11.18**		

The table 4 presentations the mean examination between scholastically intelligent female and the weak female secondary school understudies on different elements and composite score of Emotional Maturity. The table uncovers that scholastically splendid female and the dull female Secondary School understudies contrast essentially at 0.01 level on Independence, Personality Integration, Social adjustment, Emotional Progression and Emotional Stability. The two gatherings likewise vary at 0.01 level on composite score of profound development.

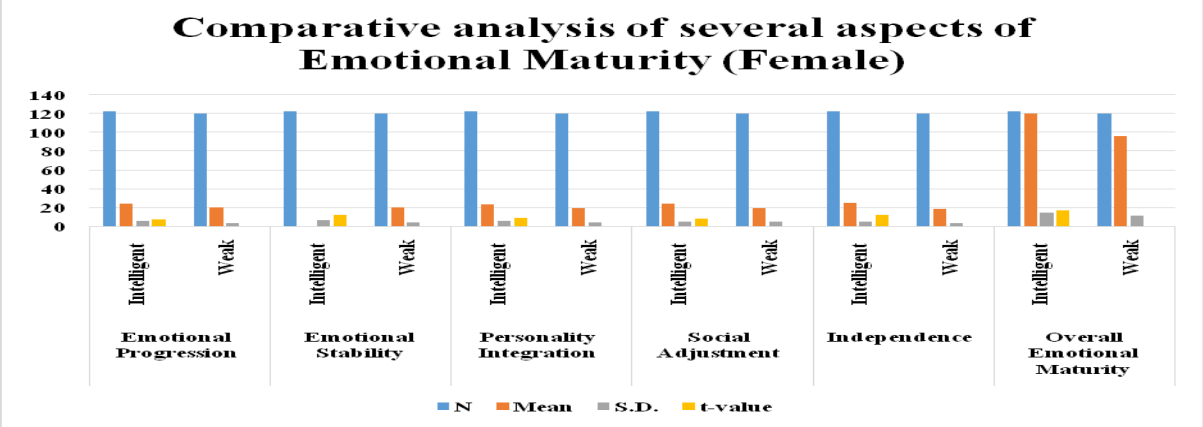

Figure-3: Comparative analysis of several aspects of Emotional Maturity among the secondary level students (Female)

4. DISCUSSION

The hypothesis is “Scholastically intelligent and weak secondary school understudies vary essentially on Emotional Maturity”.This hypothesis is recognized due to the substantial differences were described in several constituents of emotional maturity between the young students of secondary school in Kupwara, Rajouri and Srinagar.This demonstrates that the scholastically intelligent female understudies have been viewed as more emotionally stable and

progressive, well socially adjusted, having dynamic motives and tendencies, imaginative and enjoying independency while scholastically dull female secondary school understudies have less emotionally stable, feeling of inferiority, restlessness, socially maladjusted and having distorted sense of reality and objective interest. Hence from the affirmation of the above table that scholastically intelligent female secondary school understudies have generally speaking preferred Emotional Maturity over scholastically weak female secondary school understudies.

Coherent association of information and use of important factual procedure is fundamental for exact and viable examination and translation. Investigation assists the researcher with fostering an adaptable, ready and receptive outlook finish of embraced study. The whole examination of information has been introduced to understand the various goals of the review. The investigation and understanding of information is of extraordinary ramifications. Information doesn't give significant establishment to any exploration work except if it is watchfully altered efficiently, grouped classified, experimentally dissected, shrewdly and judiciously finished up.

In Information examination specialist apply measurable coherent methods by which information is changed into the ends and subsequent outcomes are broke down. Examination is constantly made by either arrangements or recurrence circulation tables, reference diagrams, pie outlines and other measurable system. The examination of information gives educational and precise solutions to the exploration questions and helps in finding the secret truth. The fundamental significance of translation is to foster congruity in research through relating the consequences of given study with those of one more and development of a few new ideas.

In the current examination, the specialist has tried to concentrate on the Close to home development, self-completion, character change and review propensities for scholastically brilliant and dull secondary school understudies by utilizing different mental apparatuses and procedures. The data was gathered from secondary school understudies chasing after their schooling in various govt secondary schools of Kashmir region and was put to reasonable factual examination to come to significant end results in the radiance of goals and speculation. To test the speculations planned for the current examination, the information gathered by utilizing Mean, S.D, t-test and connection. Because of this the two gatherings of understudies scholastically brilliant and scholastically weak secondary school understudies were looked at on close to home development, self-completion, character change, concentrate on propensities. The measurable examination in light of this method has been introduced in a plain structure.

5. CONCLUSION

Our review displays that educators' greater capabilities in arranging as well as conveying PE examples decidedly contribute generally to kids' actual wellness and a smaller amount to their body piece. The outcomes propose that expert PE educators appear to be more viable than generalist instructors in conveying of PE illustrations, regardless of whether the learning climate, offices and accessible hardware are practically the same, assuming the educational program is indistinguishable, and even with a comparative number of youngsters per educator at PE examples. Expert PE instructors appear to convey more compelling PE illustrations of apparently greater power and affect youngsters' engine improvement, however not as critical an impact on their actual turn of events. The items in the educational plan are significant in such manner, and we expect that a more adjusted educational program, remembering accentuation for wellbeing objectives connected with the reduction of kid’s corpulence, would impact the body synthesis of the semi test bunch.

In the current examination, the specialist has tried to concentrate on the Close to home development, self-completion, character change and review propensities for scholastically brilliant and dull secondary school understudies by utilizing different mental apparatuses and procedures. The data was gathered from secondary school understudies chasing after their schooling in various government secondary schools of Kashmir region and was put to reasonable factual examination to come to significant end results in the radiance of goals and speculation. To test the speculations planned for the current examination, the information gathered by utilizing Mean, S.D, t-test and connection. Because of this the two gatherings of understudies scholastically brilliant and scholastically weak secondary school understudies were looked at on close to home development, self-completion, character change, concentrate on propensities. The measurable examination in light of this method has been introduced in a plain structure.

REFERENCES

AAHPER (1965). AAHPER Youth Fitness Test Manual Revised;Washington:D.Cpublications.

Balga, T., Antala, B., & Argajová, J. (2019). Attitudes of elementary school pupils towards physical education and their differentiation from the point of view of age, sporting level and gender. Journal of Physical Education and Sport, 19(1), 552-559.

Bogdanov, A., Knudsen, L. R., Leander, G., Paar, C., Poschmann, A., Robshaw, M. J. & Vikkelsoe, C. (2007). PRESENT: An ultra-lightweight block cipher. In Cryptographic Hardware and Embedded Systems-CHES 2007: 9th International Workshop, Vienna, Austria, September 10-13, 2007. Proceedings 9 (pp. 450-466).Springer Berlin Heidelberg.

Brusseau, T. A., & Hannon, J. C. (2015). Impacting Children's Health and Academic Performance through Comprehensive School Physical Activity Programming. International Electronic Journal of Elementary Education, 7(3), 441-450.

Elumalai, G., Hashim, A., Shahril, M. I., Salimin, N., Mojilon, F. J. F., Hashim, J. M., & Razak, S. M. A. (2019). Health-Based Physical Fitness Level By Gender Among Form Six Sports Science Students In The State Of Kedah. International Journal of Physiotherapy, 211-216.

Fitzclarence, L., & Tinning, R. (1990). Challenging hegemonic physical education: Contextualizing physical education as an examinable subject. Physical education, curriculum and culture: Critical issues in thecontemporary crisis, 169-193.

Garcia, M. A., Bojos, M. T., & Sy, G. U. (2021). Potential factors in engaging physical activity beyond Physical Education class. European Journal of Physical Education and Sport Science, 6(10).

Gavrilov, D., Komkov, A., & Malinin, A. (2005). Innovative technology aimed at psychophysical diagnostic of students: methodological recommendations. St. Petersburg: NO-IFC.

Green, K. (2008). Understanding physical education. Understanding Physical Education, 1-288.

Kostromin, O. V., Zaitsev, A. V., & Bobrov, I. V. (2019). Educational and managerial provisions for sportizated physical education in academic elective physical education and sport services. Teoriya i praktika fiz. kultury, (4), 31.

Macfadyen, T., & Bailey, R. (2002). Teaching physical education 11-18: Perspectives and challenges.

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BODY DISSATISFACTION, PATHOGENIC WEIGHT CONTROL BEHAVIOUR AND PERFORMANCE AMONGELITE ATHLETES

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ABSTRACT

Body dissatisfaction and Weight control behaviour among athletes in different types of sports is becoming increasingly pervasive in developing non-Western countries such as India and impacting sport performance. However, there exist a lack of research investigating the relationship between these problems. The current study examined the relationship between body dissatisfaction and weight control behaviour, weight control behaviour and performance as well as gender difference in body dissatisfaction among elite athletes. The study followed the correlational research design. The data was collected from 92 elite athletes (46 males and 46 females) between the ages of 12-22 from India by employing self –report measures of MBSRQ-BASS, EAT-26 and ASPS. The findings of the study suggest that body dissatisfaction was negatively corelated with weight control behaviour. Our results show no corelation between weight control behaviour and decreased performance. Additionally, there was no significant difference between males and females in body dissatisfaction. Educational programs should include strategies to help athletes increase body satisfaction and apply and adopt desirable and appropriate weight control behaviour.

Keywords: body dissatisfaction, elite athletes, performance, weight control behaviour.

1. INTRODUCTION

Each sport has its own set of demands relating to body weight, shape, and size. Sports that promote muscularity, thinness, or a particular physique maybe even more at risk for disordered eating and body dissatisfaction because there may be more appearance, body, or weight-oriented demands and pressures during training and competition (Anderson et al., 2012; Thompson & Sherman, 2015). Body dissatisfaction is characterised as having a negative attitude towards one's own body as a result of a perceived discrepancy between one's actual and ideal body images (Heider et al., 2018). Female competitive swimmers in their adolescent reported much higher levels of body dissatisfaction and claimed that their trainers pushed them to slim down, build up their upper bodies, and aim to resemble a "triangle" (Howells & Grogan, 2018). In the revised sociocultural model of disordered eating, Petrie and Greenleaf (2007) hypothesised that the pressure placed on individuals to maintain a certain body image results in decreased levels of body satisfaction and/or self-reported intentions to restrict their calorie intake and diet. Athletes may become less satisfied with their body as a result of pressure to lose weight and structure their bodies to fit a sport- specific ideal from coaches, teammates, judges, and sociocultural sources. This is because the pressure highlights how inadequate their current bodies are, leading them to engage in weight control behaviour to alter their size and shape. As a result, athletes from all sports may encounter weight pressures and be vulnerable to developing body dissatisfaction and therefore engage in weight control behaviour. However, some sports present an even greater risk because of the increased emphasis placed on appearance as it relates to performance success Professional sports across a broad spectrum recognize weight control behaviour (Dosil & González-Oya, 2012). Several sports require "low body weight and/or low fat/muscle ratio" for more excellent performance (Hagmar et al., 2008). This usually results in issues with pathogenic weight control behaviour. Success and low body weight are directly correlated for many athletes across many sports disciplines, with weight regulation being a key factor (Martinsen et al., 2010). As a result (Dosil & González-Oya, 2012), categorises certain sports as "high risk in conjunction to pathogenic weight control behaviour". Slender appearance is emphasized in sports like artistic gymnastics, ice skating, dance, weight division sports, endurance and low-weight performance sports (Dosil & González-Oya, 2012; Martinsen, 2010). Weight control behaviour can be either pathogenic or non-pathogenic. Pathogenic refers to all undesirable methods of weight control and can be implemented either gradually or rapidly (Sundgot-Borgen & Larsen, 2007). It may involve self-control, selective eating, excessive sweating through sauna in plastic suits to induce dehydration, diuretics, prolonged exercise, vomiting, rubber suits during training or medication like laxatives. Nevertheless, it can spiral out of control and result in eating disorders, in conjunction with the urge to lose weight for greater athletic performance (Stice,1994; Artioli et al., 2010; Greenleaf et al., 2009; Bratland-Sanda & Sundgot-Borgen, 2013). Lean and muscular athletes, endurance athletes, strength athletes, sprinters, and athletes of all ages use weight loss techniques. Athletes have the option of losing weight quickly or gradually. Unquestionably, losing weight has a negative impact on several aspects of one's health. There is a lengthy list of both immediate and long-term health problems connected to weight loss. The employment of pathogenic weight management behaviours can cause hormone imbalance, increase in bone loss, hypohydration, high body temperature, decreased plasma volume, eating disorders, improper energy balance, acute cardiovascular problems, and undernutrition (Degoutte et al., 2006; Reljic et al., 2013; Lakicevic et al., 2020). During a 7-day period of dietary restriction, the judo athletes in the study (Filaire et al., 2001) showed a substantial decline in left arm hand grip strength, and a significant decline in leaping performance during a 30-second jump test. There is evidence that

anaerobic performance is hampered by buffering and glycogen concentration drop and aerobic performance is impaired by decreased plasma volume and glycogen concentration (Franchini et al., 2012). The prevalence of weight control behaviour is relatively high in all sports, despite the well-documented negative consequences of such behaviours. Most athletes who engage in unhealthy weight control behaviour require assistance from healthcare professionals who can guide and educate them about healthy weight control behaviour and the adverse effects of using pathogenic weight control behaviour. Theoretical Background According to the tripartite influence model, early social variables can have an impact on the emergence and maintenance of disordered eating patterns and negative body image. The three main social factors that are thought to contribute to the subsequent development of eating disorders and body image issues are parents, peers, and media (Thompson & Sherman,2007). Coaches, trainers, and teammates are taken into account as social agents in sports andexercise environments. Via direct and indirect communication, the projection of values and norms, and with the support of stereotypes and idealised body shapes, sizes, and functions, it is believed that these social actors in general promote a heightened focus on the body's appearance and/or functionality. For instance, parents may impose restrictions on nutrition and exercise to manage their child's body size, coaches may make descriptive physical comments about team members, and the media constantly promotes particular body types through text and pictures. These social agents are believed to provide conditions that encourage internalisation of the ideal physique and comparisons of physical appearance and functions. As a result, it is believed that comparisons and the internalisation of ideals are antecedents to body image issues. In Festinger's social comparison hypothesis (1954), it claims that people have an innate need to compare their looks and skills to others, this idea leads to comparisons to others. According to the social comparison hypothesis, people either compare themselves to others who are better off than they are on traits of value (upward social comparison) or to those who are worse off (downward social comparison). Furthermore, the internalisation of body ideals is regarded as a component in determining whether people have a positive or negative body image. A mismatch between a person's actual and "desired" or ideal body results when certain characteristics are neither naturally or practically achievable **Rationale** Instead of obvious eating disorders in professional athletes, this research concentrates on body dissatisfaction, weight control behaviour and performance in elite athletes. The study concentrates on the concept of body dissatisfaction for several reasons. First, it's been noticed that people's desire to alter their bodies leads to body dissatisfaction, which drives them to engage in unhealthy weight control behaviour. Athletes' strength, training, performance, and recuperation are all impacted by their weight control behaviour, which is a crucial component. These unhealthy behaviors can eventually have a severe impact on athlete's physical, emotional, and mental health. Second, it has been discovered to be a predictor for the development of eating disorders and occurs in both healthy people and people with various mental problems like social anxiety disorder. Lastly, studies on weight control behaviour, body dissatisfaction and performance are sparse in Indian context. With limited research, it has been determined that false hypothesis (type II error) have been accepted in most studies. This research aims to understand the relationship between body dissatisfaction, weight control behaviour and performance in Indian elite athletes. And contribute more to the dimension of body dissatisfaction and weight control behaviour among athletes in Indian context**. Significance** Research studies indicate that body dissatisfaction and weight control behaviour are common among athletes that require low body fat or low body weight or appearance for enhanced performance. Athletes, especially females, are at risk for engaging in weight control behaviour because of sports environment

pressures from various sources regarding weight, appearance, body size, shape and performance. It can be difficult to differentiate between athletic diet and weight control behaviour. Athletic diet is more towards improved- performance by decreasing risk of injury, disease, fatigue and helps enhance training and recover faster. Whereas, weight control behaviour are more focused on altering body weight (Sundgot-Borgen & Larsen, 2007). The present research therefore focused on the relationship between body dissatisfaction, weight control behaviour and performance. These studies have been primarily conducted in in western research centres, creating awareness, providing education and intervention to promote better living standards and lifestyle. Therefore, the findings from our study may help athletes with body dissatisfaction and weight control behaviour towards recovery and interventions. Additionally, it may help athletes acknowledge the harmful effects of pathogenic weight control behaviour and inculcate healthy weight control behaviour. It may guide athletes to create for themselves a healthy life and build a successful career.

OBJECTIVE

1. To determine whether body dissatisfaction is related with weight control behaviour.
2. To determine the relationship between weight control behaviour and performance.
3. To investigate if female athletes with weight control behaviour have higher body dissatisfaction than males

HYPOTHESES

H0: There is no significant relationship between body dissatisfaction, weight control behaviour and performance among athletes.

H1: Body dissatisfaction is related with weight control behaviour. H2: Weight control behaviour is related with decreased performance. H3: Female athletes have higher body dissatisfaction than male.

RESEARCH QUESTIONS

1. How is high body dissatisfaction related with weight control behaviour?
2. Is weight control behaviour related with performance of an athletes?
3. Do female athletes have higher body dissatisfaction than male?

RESEARCH GAP

The study on weight control behaviour like in the west have well-known and well- figured the rapid increase and use. There is a significant knowledge vaccum about body dissatisfaction, weight control behaviour and performance in elite athletes. The use of weight control behaviour in the country have been increasingly recognized in females focusing on pathogenic weight control behaviour, unhealthy weight loss strategies, its causes and consequences and weight-related motives. The term “weight control behaviour” has always been confused with weight loss. Additionally, the questions of reliance come into play as most research have focused on samples from particular sport with a relatively smaller sample size and thus, fails to be the representative of the athlete populations. Various research has also explicitly inculcated female athletes and therefore, it cannot be generalised.

2. METHOD

2.1 Research Design

The study employed the correlational research design in order to find a statistically significant relationship between body dissatisfaction and weight control behaviour, as well as between weight control behaviour and performance. This method does not establish cause- effect relationships however, it has greater generalizability of findings and help establish any relationship between variables. Sample The target population for the study was 46 men and 46

women, between the ages of 15 and 24. This study focuses on this age group for mainly two reasons; first, body dis/satisfaction is frequently shaped at this age and secondly, emerging athletes begin to participate in higher level of competitions starting this age. The study included a total of 92 participants; the forms were circulated to various clubs in India however, due to the national issue that arose during the data collection process, the athletes were abstained from filling the form. A non-probability approach of snowball sampling was used in the study. This sampling strategy was employed as the author is an athlete, which made it quicker and easier to collect samples for a study. All different kinds of elite athletes are included in the sampling, which is not limited to any particular sport. The timeline for the recruitment of participants was from May, 2023 until July, 2023

2.2 Inclusion criteria Participants should be Indian nationals. Elite athletes refer to those actively competing in inter college or inter school level competition and high Participation in competitive events should be within the past 1 year. Participants should be between the age of 15-22

2.3 Exclusion criteria for the study are: Participants with any type of clinical disorder. Participants below 18 years whose informed consent from parents hasn't been consented

2.4 Procedure

The Institutional Review Board-approved process was followed, and participants were given a Letter of Introduction detailing the study and an accompanying consent form to complete before proceeding. For the population below 18, the consent form was given to the participant's guardians. Those participants who had the consent from their guardians were included in the study. The participants were recruited using referrals. As the researcher is an athlete, a small number participants were selected from the authors contact based on their availability, who then helped the researcher to come in contact with other athletes. Data was gathered using online questionnaire (Google Forms) administered via a variety of media platforms. The instruction were included in the questionnaire for the participant to feel well- informed. The questionnaire took about 30 minutes to complete. Incomplete questionnaires were removed from the purview of the current study.

2.5 Ethical considerations

The study adhered to the ethical consideration in the course of study. Prior to the study, the participants were given a letter incorporating the authors name and highlighting the purpose of the study. The participation was completely voluntary. The respondents were notified that they have the freedom to withdraw at any point. They did not receive any payment or credit for their participation. The study involved no use of deception and no harmful psychological effects are expected. The participants with higher body dissatisfaction will be given referrals to protect their safety. Other ethical considerations that were adhered to are confidentiality, anonymity, protection from harm, informed consent, and privacy.

2.6 Tools

Multidimensional Body Self-Relation Questionnaire – Body Areas Satisfaction (MBSRQ-BAS) by Thomas Cash-The Multidimensional Body-Self Relations Questionnaire-Body Area Satisfaction (MBSRQ-BAS) is a commonly used tool for assessing body dissatisfaction. It is a 9-item self-report questionnaire that assesses how satisfied a person is with specific facets of their appearance (Cash, 2000). Use of the MSBSRQ-BAS is intended for both adults and teenagers (above 15). Using Cronbach's Alpha, the MBSRQ's internal consistency was determined(=0.781), showing the questionnaire's reliability. A 5-point scale is used to evaluate satisfaction for each item (1 "Very unhappy" to 5 "Very satisfied").

Eating Attitude Test- 26 (EAT-26) by Garner- A 26-item self-report questionnaire called the EAT-26 is used to evaluate both normal and unhealthy eating behaviour (Garner, 2009). The scale is divided into three sections: Part A (BMI), Part B (concerns about eating and weight), and Part C (behavioural question). For the current study, Part C will only be utilised. However, it does not offer a precise diagnostic for an eating disorder; rather, it is intended to assess and screen a person's risk of having eating disorders. Both clinical and non-clinical populations may use the scale. The EAT-26 scale have high correlations. The reliability (alpha = 0-90) is high. With the EAT-26, test- retest reliability ranged from.84 to.89 (Garner, 1982; Garner et al., 2000).

Athlete's Subjective Performance Scale (ASPS) by Ohad Nahum- The 6-item Athlete's Subjective Performance Scale (ASPS) (Nahum et al., 2016) measures the athlete's subjective evaluation of his or her performance on the team. The three key components of sports performance—general performance, team contribution, and personal ability—were identified by the scale. The scale's Cronbach alpha coefficient is 0.95 The response format is a 10-point Likert scale, with 1 representing not at all satisfied and 10 representing fully satisfied

2.7 Variables

The study aims to study the relationship between three variables, namely body dissatisfaction, weight control behaviour and performance among athletes. For this purpose, the variables was operationally defined as follows:

Body dissatisfaction: refers to the dissatisfaction with discrete attributes of one's appearance.\

Weight control behaviour: It refers to how frequently unhealthy weight control behaviour are used.

Performance: relates to an athlete's general performance, their personal ability and team performance.

2.8 Data analysis

The data collected was analysed using the Jamovi software. The test of normality was assessed using the Shapiro p-value. Based on the results of the normality, the hypothesis was further analysed using Spearman's correlation coefficient. Descriptive statistics was als calculated. And the gender difference was analysed using independent sample t-test.

3. RESULTS

TABLE 1

SCALE RELIABILITY ANALYSIS OF MBSRQ-BASS, EAT-26, ASPS

Scale	Cronbatch's α
MBSRQ-BASS	0.768
EAT-26	0.676
ASPS	0.951

Note. MBSRQ-BASS = Multidimensional Body Self Relations Questionnaire – Body Area Satisfaction Scale), EAT-26 (Eating Attitude Test – 26) and ASPS (Athlete Subjective Performance Scale*)*.

Table 1 shows the reliability of the scales or questionnaires MBSRQ – BASS (Multidimensional Body Self Relations Questionnaire – Body Area Satisfaction Scale), EAT-26 (Eating Attitude Test – 26) and ASPS (Athlete Subjective Performance Scale). The Cronbach's alpha for the scale MBSRQ - BASS is 0.768, which indicates that the scale is reliable. Table 2 shows the reliability of the scale or questionnaire EAT - 26. The Cronbach's alpha for the scale EAT – 26 is 0.676, which indicates that the scale is reliable. The Cronbach's alpha for the scale ASPS is 0.951, which indicates that the scale is highly reliable..

TABLE 2
DESCRIPTIVE STATISTICS FOR BODY DISSATISFACTION, WEIGHT CONTROL BEHAVIOUR AND PERFORMANCE

			Shapiro-Wilk		Skewness		Kurtosis	
Variables	**M**	**SD**	**W**	**P**	**Skewness**	**SE**	**Kurtosis**	**SE**
Body Dissatisfaction	3.00	0.591	0.925	< .001	1.036	0.251	1.166	0.498
Weight Control Behaviour	2.35	0.861	< .001	-0.585	0.251	0.253	0.498	2.53
Performance	39.66	0.936	< .001	-0.890	0.251	0.745	0.498	0.745

292 *Note. n* = 92

Table 2 shows the data distribution of Body dissatisfaction, Weight control behaviour and Performance. The mean score for Body dissatisfaction (MBSRQ – BASS), Weight control behavior (EAT - 26) and Performance (ASPS) are 3.00, 2.35 and 39.66 respectively. The Shapiro Wilk p-value obtained for Body Dissatisfaction is 0.925 ($p < .001$), weight control behaviour is 0.861 ($p < .001$) and Performance is 0.936 ($p < .001$). This indicates that the data is non-normally distributed and symmetrical based on skewness value as they lie between -1.0 and +1.0 and platykurtic, as they are less than 3.

TABLE 3
CORRELATION MATRIX FOR BODY DISSATISFACTION, WEIGHT CONTROL BEHAVIOUR AND PERFORMANCE

Note. * p < .05, ** p < .01, *** p < .001

The correlation was reviewed between body dissatisfaction, weight control behaviour and performance among elite athletes in order to explore their relationship. Table 3 outline the correlation results from the Spearman correlation between body dissatisfaction, weight control behaviour and performance. The Spearman's p value for body dissatisfaction andweight control behaviour is 0.045 which suggest that there is a significant relationship between body dissatisfaction and weight control behaviour. Therefore, the hypothesis (H1) is accepted i.e.; body dissatisfaction is related with weight control behaviour. The Spearman's p value for weight control behaviour and performance is 0.705 which suggest that there is no significant relationship between weight control behaviour and performance. Therefore, the hypothesis (H2) is rejected i.e.; weight control behaviour is related with decreased performance.

TABLE 4
INDEPENDENT SAMPLES T-TEST FOR BODY DISSATISFACTION

DV	N	M	SD	U	p	Cohen's d
Females	46	3.00	0.556			
Males	46	2.92	0.620	854	0.111	0.193

Table 4 shows the independent sample t-test results from the Mann-Whitney U for body dissatisfaction among male and females elite athletes. The independent sample t-test indicate that there is a no significant difference between males and females ($U = 854$, $p > 0.05$) in body dissatisfaction. Therefore, the hypothesis (H3) is rejected i.e.; females have higher body dissatisfaction as compared to males.

4. DISCUSSION

This study assessed the relationship between elite athletes' body dissatisfaction, weight control behaviour, and performance. The dual pathway approach can be used to examine how weight control behaviour and body dissatisfaction are related. It asserts that body dissatisfaction escalates the likelihood of inappropriate dietary restriction, raising the possibility of weight control behaviour (Stice, 1994). Following Greenleaf et al. (2009), more than half of the athletes (54.4%) were unhappy with their weight. They acknowledged fasting, following a strict diet, using laxatives, vomiting, diuretics, and taking diet pills to lose weight. According to a study (Reina et al., 2019), measuring body dissatisfaction and weight control behaviour, people scoring higher on this metric were more likely to identify as overweight, desire to be smaller, and implement weight management techniques like extreme calorie restriction to shed pounds. The athletes were more driven to exercise to alter their bodies, which was also accompanied by disordered eating. Drive for slenderness, dieting, and disordered eating practices are all linked to body dissatisfaction (Peiling & Lynne, 2005; Goldschmidt et al., 2012).

Previous studies have indicated a positive association between body dissatisfaction and weight control behaviour. However, the findings of this study suggest an intriguing finding that there is a significant negative correlation between body dissatisfaction and weight control behavior among elite athletes. The finding poses concern since it emphasizes the need for interventions that promote body acceptance and satisfaction to avert these behaviors' onset. The health care system fails to acknowledge body dissatisfaction and weight control behaviour in support of several other, more urgent issues. This could result in poor self-esteem, anxiety, sadness, and an increased risk for eating disorders among elite athletes, which is especially problematic for those with poor educational backgrounds or limited access to healthcare (Shander & Petrie, 2021).

Over the past ten years, numerous studies have indicated that elite athletes are more likely to employ weight control behaviour. Along with the typical social pressure to be slim, the idea that a particular weight offers a performance advantage is prevalent in many sports cultures, which encourages professional athletes to employ weight control behaviour. Elite swimmers' testimonies underlined the importance of regulating weight as the source of advancement and the pursuit of distinction, highlighting the impact of the "slim to win" culture on the use of weight control behaviour. Rapid weight reduction negatively impacts physical function, aerobic

capacity, and overall sporting performance (McMahon & Barker- Ruchti, 2017). Athletes who lost weight quickly and continuously had hunger, mineral loss, cramps and twitches from dehydration, physical injuries, and decreased or optimum sports performance (Franchinin et al., 2012; Turocy et al., 2011). However, our findings oppose the studies which concluded that there exists a relationship between the use of weight control behaviour and decreased performance.

Male and female athletes may have varying degrees of body dissatisfaction, which might occur in both aesthetic and non-aesthetic sports. Irrespective of the sport, female participants in the study reported higher levels of dissatisfaction, and they were more likely to identify as somewhat or severely overweight (Reina et al., 2019). Male exercisers reported lower levels of body dissatisfaction than female exercisers despite striving to develop more muscular and boost muscle volume (Melching et al., 2016). Our study found no gender differences in the level of body dissatisfaction among male athletes, despite evidence suggesting that female athletes report more dissatisfaction with their bodies than male athletes.

These could be attributed to the fact that associations between the weight control behaviour and performance and gender differences in body dissatisfaction were found in research with higher sample sizes and participants of diverse ethnic backgrounds in themajority of cases. Due to a national issue involving athletes in India, different clubs prevented the athletes from filling out the questionnaires, which made the study's sample size smaller and its ability to detect a difference insufficient. Additionally, the study's sample of athletes included a diverse range of sports specializations. Body ideals vary depending on race and culture; for instance, in Hispanic culture, the ideal body type is curvy and voluptuous (Reina et al., 2019). Second, self-report measures were used during the study, making it susceptible to errors and self-presentation biases.

Furthermore, there are significant differences in how elite athletes are defined. For instance, a study (Reale et al., 2018) defined elite athletes as those who compete in nationals. Finally, the effects of being exposed to body ideals or practicing weight control behavior are considerably different. This can be viewed as a study's limitation. As such, future researchshould focus on these challenges and investigate the association between body dissatisfaction,weight control behavior, and performance among athletes.

5. CONCLUSION

In accordance with the research, there is a negative association between body dissatisfaction and weight control behaviour among elite athletes. The fact that some of the athletes are at a risk for initiating and sustaining dangerous weight control measures should be taken seriously as it could have negative implication on an athlete’s health. Thus, special care must be taken to create more individualized and effective weight-management plans andeventually perform more effectively. Working with a supporting medical team will ensure success if an athlete needs to reduce weight.

There is a need for studies to include larger sample size, use of interviewing techniques and emphasize on a specific sports. Further studies are necessary to demonstrate the relevant factors, such as media impact, self-esteem, and perfectionism, that may be linked to body dissatisfaction and weight control behaviour in elite athletes.

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CONFLICT OF INTEREST

The authors report no conflict of interest.

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REFERENCES

Anderson , C., Petrie, T., & Neumann, C. (2012). Effects of sport pressures on female collegiate athletes: A preliminary longitudinal investigation. Sport, Exercise, and Performance Psychology, 1(2), 120–134. https://doi.org/10.1037/a0026587.

Anderson, C., & Petrie, T. (2012). Prevalence of Disordered Eating and Pathogenic Weight Control Behaviors Among NCAA Division I Female Collegiate Gymnasts and Swimmers. Research Quarterly for Exercise and Sport, 83(1), 120–124. DOI: 10.1080/02701367.2012.10599833.

Artioli , G., Franchini , E., Nicastro , H., Stanislaw , S., Solis , M., & Junior, A. (2010). The need of a weight management control program in judo: a proposal based on the successful case of wrestling. Journal of the International Society of Sports Nutrition 7,15. https://doi.org/10.1186/1550-2783-7-15.

Bratland-Sanda, S., & Sundgot-Borgen, J. (2013). Eating disorders in athletes: overview of prevalence, risk factors and recommendations for prevention and treatment. European journal of sport science, 13(5):499-508. doi: 10.1080/17461391.2012.740504.

Cash, T. F. (2000). The MBSRQ users' manual (3rd ed.). Available from the author at www.body-images.com

Degoutte, F., Jouanel, P., Bègue, R., Colombier, M., Lac, G., Pequignot, J., & Filaire, E. (2006). Food restriction, performance, biochemical, psychological, and endocrine changes in judo athletes. International journal of sports medicine, 27(1), 9–18. https://doi.org/10.1055/s-2005-8375

Dosil , J., & González-Oya, J. (2012). Eating disorders and the Athlete's environment. England : John Wiley & Sons Ltd, 41-63. DOI: 10.1002/9780470725047.ch3

Festinger, L. (1954). A theory of social comparison processes. Human Relations, 7, 117–140

Filaire, E., Maso, F., Degoutte, F., Jouanel, P., & Lac, G. (2001). Food restriction, performance, psychological state and lipid values in judo athletes. International journal of sports medicine, 22(6), 454–459. https://doi.org/10.1055/s-2001-16244.

Franchini, E., Brito, C., & Artioli, G. (2012). Weight loss in combat sports: Physiological, psychological and performance effects. Journal of the International Society of Sports Nutrition, 9(1), 52–57. doi:10.1186/1550-2783-9-52.

Garner, D., Olmsted, M. P., Bohr, Y., & Garfinkel, P. E. (1982). The Eating Attitudes Test: Psychometric features and clinical correlates. Psychological Medicine, 12(4), 871- 878.

Garner, D. (2009). EAT-26 Self-Test. Retrieved from http://www.eat-26.com/index.php

Goldschmidt, A., Wall, M., Loth, K., Grange, D., & Neumark-Sztainer, D. (2012). Which dieters are at risk for the onset of binge eating? A prospective study of adolescent and young adults. Journal of Adolescent Health, 51 (1), 86-92. doi: 10.1016/j.jadohealth.2011.11.001.

Greenleaf, C., Petrie, T., Carter, J., & Reel, J. (2009). Female Collegiate Athletes: Prevalence f Eating Disorders and Disordered Eating Behaviors. Journal of American College ealth, 57(5), 489-496. https://doi.org/10.3200/JACH.57.5.489-496.

Hagmar M, Hirschberg AL, Berglund L, Berglund B. (2008). Special attention to the weight-ontrol strategies employed by Olympic athletes striving for leanness is required.Clinical Journal of Sports and Medicine. 8(1), 5-9.doi .1097/JSM.0b013e31804c77bd.

Heider, N., Spruyt, A., & De Houwer, J. (2018). Body Dissatisfaction Revisited: On the mportance of Implicit Beliefs about Actual and Ideal Body Image. Psychological elgica, 57(4), 158–173. http://doi.org/10.5334/pb.362.

Howells, K., & Grogan, S. (2012). Body image and the female swimmer: muscularity but in oderation. Qualitative Research in Sport, Exercise and Health, 4(1), 98–116. ttps://doi.org/10.1080/2159676X.2011.653502.

Lakicevic, N., Roklicer, R., Bianco, A., Mani, D., Paoli, A., Trivic, T. Drid, P. (2020). ffects of Rapid Weight Loss on Judo Athletes: A Systematic Review. Nutrients, 2(5), 1220; https://doi.org/10.3390/nu12051220.

Martinsen M, Bratland-Sanda S, Eriksson AK, Sundgot-Borgen J. (2010). Dieting to win or o be thin? A study of dieting and disordered eating among adolescent elite athletes nd non-athlete controls. Br J Sports Med., 44(1):70-6. oi:10.1136/bjsm.2009.068668.

Melching, K., Green, M., O'Neal, E., & Renfroe, L. (2016). Body Image Dissatisfaction: esponses between Male and Female Exercisers and Non-Exercisers. International ournal of Exercise Science, 9(3): 249-257.

Mahon, J., & Barker-Ruchti, N. (2017). Assimilating to a boy's body shape for the sake of erformance: Three female athletes' body experiences in a sporting culture. Sport, ducation and Society, 22(2), 157–174. ttps://doi.org/10.1080/13573322.2015.1013463.

Nahum, O., Ben-Ami, M., Cohen, D., & Shivek, A. (2016). Athlete's Subjective Performance cale. Retrieved from https://sportperformance.wordpress.com/ ahum, O. (2020). Key Resources and Engagement among Professional Athletes (Doctoral issertation). University of Haifa, Israel

Peiling, K., & Lynne, H. (2015). The Sporting Body: Body Image and Eating Disorder ymptomatology Among Female Athletes from Leanness Focused and Nonleanness ocused Sports. The Journal of Psychology, 149(2), 141-160, DOI: 0.1080/00223980.2013.846291.

Petrie, T. A., & Greenleaf, C. (2007). Eating disorders in sport: From theory to research to ntervention. In G. Tenenbaum, & R. Eklund (Eds.), Handbook of sport psychology pp. 352–378).

Hoboken, NJ: John Wiley & Sons. eale, R., Slater, G., & Burke, L. (2018). Weight Management Practices of Australian lympic Combat Sports Athletes. International Journal of Sports Physiology an erformance, 13(4), 459–466. https://doi.org/10.1123/ijspp.2016-0553.

Reina, A., Monsma, E., Dumas, M., & Gay, J. (2019). Body image and weight management mong Hispanic American adolescents: Differences by sport type. Journal of dolescence, 74, 229-239. https://doi.org/10.1016/j.adolescence.2019.06.014.

Eljic, D., Hässler, E., Jost, J., & Friedmann-Bette, B. (2013). Rapid weight loss and the body luid balance and hemoglobin mass of elite amateur boxers. Journal of athletic raining, 48(1), 109–117.https://doi.org/10.4085/1062-6050-48.1.05.

Shander, K., & Petrie, T. (2021). Transitioning from sport: Life satisfaction, depressive ymptomatology, and body satisfaction among retired female collegiate athletes. sychology of Sport and Exercise, 57. ttps://doi.org/10.1016/j.psychsport.2021.102045.

Stice, E. (1994). A review of the evidence for a sociocultural model of bulimia nervosa and n exploration of the mechanisms of action. Clinical Psychology Review, 14, 633-661.

Sundgot-Borgen, J., & Larsen, S. (2007). Pathogenic weight-control methods and self- eported eating disorders in female elite athletes and controls. Scandinavian Journal f Medicine & Science in Sports, 3(3), 150-155. https://doi.org/10.1111/j.1600- 8.1993.tb00379.x.

Thompson, R., & Sherman , R. (2015). Eating Disorders in Sport. New York: Routledge. urocy,

P., DePalma, B., Horswill, C., Laquale, K., Martin, T., Perry, A., . Utter, A. (2011). National Athletic Trainers' Association Position Statement: Safe Weight Loss and aintenance Practices in Sport and Exercise. Journal of athletic training, 46(3), 322– 36. https://doi.org/10.4085/1062-6050-46.3.322.

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ANALYSIS OF SELECTED CHEMICAL AND PHYSICAL PARAMETERS OF SOIL OF JAMANIPALI AREA IN CHHAISGARGH

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ABSTRACT

For the purpose of investigation of selected soil parameters i.e. moisture. pH, electrical conductivity, total dissolved solid, organic carbon contents, nitrogen contents, total sulphur, the experimental method was used to detect them in each collected sample. The four sampling point were detected with 100 meter distance of every selected sample spot i.e. Jamni Pali area of Korba city. Soil samples were collected from Jamani Pali for two continuous sessions 2009. The researcher collected the soil sample from the area of Jamnipali. Taking a core or slice of the plow layer at intervals of 15-20 steps and composting them together in a bag. The site selected for sample collection should be cleared of weed growth and a 'V' shaped cut, which is plough layer deep was made. The inferential statistics was employed for the collected data. The results of study revealed the small difference in the values of selected parameters of soil I Jamnipali. It was also observed that in O.C. of soil small difference were observed with no clear seasonal variations.Nearly all the samples showed values below the essential limit as stipulated by standard agencies. Mining activities brings about serious heavy metal pollution.

Kewwords: Soil, Parameters, Physical, Chemical, poluted contents

1. INTRODUCTION

The word environment has taken from the lattine word Viron, which means circle. Environment is defined by Webster's dictionary as "The complex of climatic, edaphic and biotic factors that act upon an organism or on ecological community and ultimately determines it's from and survival." It is also defined as "The aggregate of social and cultural conditions that influence the like of an individual or community. According to the committee of Environmental health association of America environment comprises. "The Surroundings in which man lives, works and plays, it encompa the air he breathes, the water he drinks, the food he consumes and the shelter he provides for his protection against the elements. It also includes the pollutants and other detrimental environment factors which adversely affect his life and health (Jagdish, et.al. 2011).

Environment is divided into four components; these are Atmosphere, Hydrosphere, Lithosphere and Biosphere. Atmosphere contains different layers which can be defined according to air temperature. Hydrosphere is composed of all of water on the earth. Oceans, rivers ,lakes, pond sand the moisture in the air.The lithosphere contains solid and semisolid land of the crust. It is composed of soil particles Soil layer is a mixture of inorganic and organic solid matter, air water and micro-organism. The Biosphere is composed of all living organism(Kulkarni and Agrawal,2003)

Soil is a nature's most wonderful abundant and a useful component in our life. Soil plays an important role in human development and in the growths of living system; maintain the ecosystem and the water cycle. The chemical, physical and bacterial characteristics of soil determination are especially useful for irrigation. Out of the sixteen important and essential elements, thirteen elements are provided by the soil (Hendershot, et.al.1993)

Soil can be divided into three horizontal layers. The top layer consists of mostly organic matter and biological activities. The middle layer is the zone of maximum material accumulation and the bottom is mainly the parental material but slightly altered.(Mico, et.al.,2006)

Soil quality has been defined as "The capacity of a specific kind of soil to function, within natural or managed ecosystem boundaries, to sustain plant and animal productivity, maintain or enhanced water and air quality and support human health and habitation (Fernandez, etal. 2007).

Soil quality is affected by incorporation of mining materials generating changes in pH, electrical conductivity, and heavy metal concentration etc (Iavazzo, et.al. 2011)

Organic matter play an important role in the physical, chemical and biological properties of soil. In the fundamental processes of evolution mineralization allow the transformation of organic residue into inorganic compounds in the soil, Atmosphere and Hydrosphere. Soil carbon and Nitrogen contents can vary considerably Garg (2002)

2. METHODOLOGY

The four sampling point were detected with 100 meter distance of every selected sample spot i.e. Jamni Pali area of Korba city. Soil samples were collected from Jamani Pali for two continuous sessions 2009.

The researcher collected the soil sample from the area of Jamnipali. Taking a core or slice of the plow layer at intervals of 15-20 steps and composting them together in a bag.

The site selected for sample collection should be cleared of weed growth and a 'V' shaped cut, which is plough layer deep was made. Then thin slice of soil was taken from one side of the cut so that the sample size should not too large .Ten to thirty well distributed cores or slices are

composited for this sample and about 1 Kg was taken from this as representative sample. Place the sample in water resistant paper bag. Label carefully with the location and depth of soil using aluminum foil label.

For the purpose of analysis of selected soil parameters i.e. moisture. pH, electrical conductivity, total dissolved solid, organic carbon contents, nitrogen contents, total sulphur, the experimental method was used to detect them in each collected sample.

3. RESULTS & DISCUSSION

Mean, Standard Deviation, Standard Error Deviation, were carried out for all obtained data using the commercially available software i.e. SPSS 16. The data analysis has been presented in Table 1-4.

During the assessment year 2009 moisture was found to be range of 3.15 to 20.63. The minimum and maximum data for moisture were recorded. at the sampling spot SKA, NTPC the moisture was ranged between 4.9, in April and 11.32, in June. At the sampling spot -B, NTPC the moisture was ranged between 4.82, April and 10.9 in September. At the sampling spot -C, NTPC the moisture was ranged between 4.06, April and 12.05 in July. At the sampling spot-D, NTPC the moisture was ranged between 3.51, April and 18.6 in June.

During the assessment year 2009 pH was found to be range of 3.62 to 8.32. The minimum and maximum data for pH were recorded at the sampling spot -A, NTPC the pH was ranged between 4.61, in February and 5.56, in September. At the sampling spot-B, NTPC the pH was ranged between 3.89, in October and 5.96, in August. At the sampling spot-C, NTPC the pH was ranged between 4.27, in April and 5.85, in January. At the sampling spot-D, NTPC the pH was ranged between 3.69, in October and 5.89, in January.

During the assessment year 2009 Elecrical Conductivity (EC) was found to be range of 0.02 to 1.35. The minimum data for EC were recorded at the sampling spot -A, NTPC the EC was ranged between 0.09, in October and 0.82, in February. At the sampling spot-B, NTPC the EC was ranged between 0.06, in November and 0.41, in June. At the sampling spot-C, NTPC the EC was ranged between 0.04, in October and 0.36, in August. At the sampling spot-D, NTPC the EC was ranged between 0.09, in October and 0.38, in November.

During the assessment year 2009 TDS was found to be range of 300 to 1500. The minimum data for TDS were recorded at the sampling spot-A, NTPC the TDS was ranged between 1100, in April, September, October, December and 1500, in June. At the sampling spot -B, NTPC the TDS was ranged between 800, in October and 1100, in January. At the sampling spot -C, NTPC the TDS was ranged between 450, in October and 960, in June. At the sampling spot -D, NTPC the TDS was ranged between 650, in December and 1200, in March.

During the assessment year 2009 OC was found to be range of 0.04 to 2.16. The minimum and maximum data for OC were recorded at the sampling spot -A, NTPC the OC was ranged between 0.21, in June and 0.5, in October. At the sampling spot -B, NTPC the OC was ranged between 0.19, in March and 0.7, in April. At the sampling spot -C, NTPC the OC was ranged between 0.34, in July and 0.48, in January, February. At the sampling spot -D, NTPC the OC was ranged between 0.27, in December and 0.48, in July.

During the assessment year 2009 Nitrogen was found to be range of 140 to 450. The minimum and maximum data for Nitrogen were recorded at the sampling spot -A, NTPC the Nitrogen was ranged between 210, in February and 300, in December. At the sampling spot -B, NTPC the Nitrogen was ranged between 220, in March and 325, in July. At the sampling spot -C, NTPC the Nitrogen was ranged between 210, in March, April, September and 300, in

December. At the sampling spot -D, NTPC the Nitrogen was ranged between 190, in May and 250, in November.

During the assessment year 2009 Sulphur was found to be range of 25.3 to 84.5. The minimum and maximum data for Sulphur were recorded at the sampling spot -A, NTPC the Sulphur was ranged between 30.2, in March and 69.5, in July. At the sampling spot -B, NTPC the Sulphur was ranged between 35.4, in March and 48.5, in May. At the sampling spot -C, NTPC the Sulphur was ranged between 50.2, in March and 61.2, in August. At the sampling spot -D, NTPC the Sulphur was ranged between 29.8, in September and 50.8, in April

During the assessment year 2009 Magnesium was found to be range of 0.9 to 23.75. The minimum and maximum data for Magnesium were recorded at the sampling spot -A, NTPC the Magnesium was ranged between 6.89, in June and 8.42, in December. At the sampling spot -B, NTPC the Magnesium was ranged between 7.85, in July and 11.14, in April. At the sampling spot -C, NTPC the Magnesium was ranged between 6.38, in Sep and 9.01, in October. At the sampling spot -D, NTPC the Magnesium was ranged between 6.9, in July and 8.15, in October.

During the assessment year 2009 Calcium was found to be range of 0.2 to 11.05. The minimum and maximum data for Calcium were recorded at the sampling spot -A, NTPC the Calcium was ranged between 1.52, in March and 4.78, in August. At the sampling spot -B, NTPC the Calcium was ranged between 0.4, in June and 5.02, in November. At the sampling spot -C, NTPC the CALCIUM was ranged between 2.15, in December and 3.25, in June, July. At the sampling spot -D, NTPC the CALCIUM was ranged between 2.05, in March and 4.98, in July.

During the assessment year 2009 Magnejium was found to be range of 0.334 to 11.62. The minimum and maximum data for Magnesium were recorded at the sampling spot -A, NTPC the Magnesium was ranged between .98, in January and 4.501, in September. At the sampling spot -B, NTPC the Magnesium was ranged between .452, December and 11.62 in April. At the sampling spot -C, NTPC the Magnesium was ranged between 0.352 September and 3.18 in June. At the sampling spot -D, NTPC the Magnesium was ranged between .42, September and 1.785 in June.

During the assessment year 2009 Zinc was found to be range of 0.021 to 12.05 The minimum and maximum data for Zinc were recorded at the sampling spot -A, NTPC the Zinc was ranged between 0.885 in April and 2.825, in July. At the sampling spot -B, NTPC the Zinc was ranged between 0.21, November and 2.356 in September. At the sampling spot -C, NTPC the Zinc was ranged between 0.357, April and 2.046 in July. At the sampling spot -D, NTPC the Zinc was ranged between 0.372, October and 12.058 in July.

During the assessment year 2009 Copper was found to be range of 0.102 to 5.65. The minimum and maximum data for Copper were recorded at the sampling spot -A, NTPC the Copper was ranged between 0.238, in May and 1.773, in April. At the sampling spot -B, NTPC the Copper was ranged between 0.199, May and 5.657 in April. At the sampling spot -C, NTPC the Copper was ranged between 0.144, May and 3.752 in April. At the sampling spot -D, NTPC the Copper was ranged between 0.145, April and .641 in March

TABLE 1
ANALYSIS OF SOIL SAMPLE -A AT NTPC JAMNIPALI DURING 2009

Variables	Range	Min	Max	Mean	Std.Dev	% CV	Std. Error
Moisture	4.9 - 11.32	4.90	11.32	6.29	2.008	31.90%	0.580
pH	4.61 - 6.56	4.61	6.56	5.64	0.583	10.34%	0.168
EC	0.09 - 0.82	0.09	0.82	0.31	0.208	67.48%	0.060
TDS	1100 - 1500	1100.00	1500.00	1216.67	119.342	9.81%	34.451
OC	0.21 - 0.5	0.21	0.50	0.38	0.081	21.56%	0.023
Nitrogen	210 - 300	210.00	300.00	224.58	26.152	11.64%	7.549
Sulphur	30.2 - 69.5	30.20	69.50	46.33	15.126	32.65%	4.367
Magnisium	6.89 - 8.42	6.89	8.42	7.68	0.594	7.74%	0.171
Calcium	1.52 - 4.78	1.52	4.78	3.97	0.831	20.94%	0.240
Magnese	0.98 - 4.501	0.98	4.50	3.29	0.991	30.14%	0.286
Zinc	0.885 - 2.825	0.89	2.83	1.70	0.642	37.85%	0.185
Copper	0.238 - 1.773	0.24	1.77	0.57	0.424	74.05%	0.122

TABLE 2
ANALYSIS OF OF SOIL SAMPLE -B AT NTPC JAMNIPALI DURING 2009

Variables	Range	Min	Max	Mean	Std.Dev	% CV	Std. Error
Moisture	4.82 - 10.9	4.82	10.90	7.64	2.273	29.74%	0.656
pH	3.89 - 5.96	3.89	5.96	5.10	0.756	14.84%	0.218
EC	0.06 - 0.41	0.06	0.41	0.20	0.106	52.14%	0.030
TDS	800 - 1100	800.00	1100.00	954.17	86.493	9.06%	24.968
O C	0.19 - 0.7	0.19	0.70	0.47	0.215	45.27%	0.062
Nitrogen	220 - 325	220.00	325.00	290.00	33.098	11.41%	9.554
Sulphur	35.4 - 48.5	35.40	48.50	41.43	3.352	8.09%	0.968
Magnisium	7.85 - 11.14	7.85	11.14	9.60	0.968	10.08%	0.279
Calcium	0.4 - 5.02	0.40	5.02	3.22	1.303	40.53%	0.376
Magnese	0.452 11.624	0.45	11.62	3.48	4.107	118.14%	1.185
Zinc	0.021 2.356	0.02	2.36	1.02	0.678	66.29%	0.196
Copper	0.199 5.657	0.20	5.66	0.95	1.502	158.42%	0.434

TABLE 3.
ANALYSIS OF SOIL SAMPLE-C AT NTPC JAMNIPALI DURING 2009

Variables	Range	Min	Max	Mean	Std.Dev	% CV	Std. Error
Moisture	4.06 - 12.05	4.06	12.05	7.00	3.088	44.12%	0.891
pH	4.27 - 5.85	4.27	5.85	5.08	0.403	7.93%	0.116
EC	0.04 - 0.36	0.04	0.36	0.21	0.114	53.71%	0.033
TDS	450 - 960	450.00	960.00	731.25	165.860	22.68%	47.880
OC	0.34 - 0.48	0.34	0.48	0.42	0.045	10.87%	0.013
Nitrogen	210 - 300	210.00	300.00	232.08	25.536	11.00%	7.372
Sulphur	50.2 - 61.2	50.20	61.20	55.90	4.080	7.30%	1.178
Magnisium	6.38 - 9.01	6.38	9.01	8.01	0.815	10.18%	0.235
Calcium	2.15 - 3.25	2.15	3.25	2.69	0.363	13.49%	0.105
Magnese	0.352-3.181	0.35	3.18	1.14	0.845	73.80%	0.244
Zinc	0.357-2.046	0.36	2.05	1.22	0.572	46.94%	0.165
Copper	0.144-3.752	0.14	3.75	0.73	0.963	131.59%	0.278

TABLE 4.
ANALYSIS OF SOIL SAMPLE -D AT NTPC JAMNIPALI DURING 2009

Variables	Range	Min	Max	Mean	Std.Dev	% CV	Std. Error
Moisture	3.51 - 18.69	3.51	18.69	6.98	4.115	58.96%	1.188
pH	3.69 - 5.89	3.69	5.89	4.99	0.651	13.06%	0.188
EC	0.09 - 0.38	0.09	0.38	0.25	0.086	34.46%	0.025
TDS	650 – 1200	650.00	1200.00	912.50	169.391	18.56%	48.899
O C	0.27 - 0.48	0.27	0.48	0.38	0.054	14.29%	0.016
Nitrogen	190 - 250	190.00	250.00	220.83	22.139	10.03%	6.391
Sulphur	29.8 - 50.8	29.80	50.80	43.09	8.557	19.86%	2.470
Magnisium	6.9 - 8.15	6.90	8.15	7.44	0.439	5.89%	0.127
Calcium	2.05 - 4.98	2.05	4.98	3.84	0.962	25.07%	0.278
Magnese	0.42 - 1.785	0.42	1.79	0.89	0.507	56.92%	0.146
Zinc	0.372 12.058	0.37	12.06	5.19	4.554	87.69%	1.315
Copper	0.145 0.641	0.15	0.64	0.40	0.157	39.20%	0.045

4. CONLUSION

From above statistical analysis of collected data, it was observed that small differences were observed in values of Moisture , pH, electrical conductivity .(EC is directly

related to the concentration of ionized substance in soil), TDS, Sulphur, Mg, Ca, Mn, Zn, and Cu. It was also observed that in O.C. of soil small difference were observed with no clear seasonal variations.Nearly all the samples showed values below the essential limit as stipulated by standard agencies. Mining activities brings about serious heavy metal pollution.

REFERENCES

Fernandez, Refaela Ordonez, Cervera, Juan Vicete Giraldez, Vabderlinden Karl, Bojollo, Rosa Carbonell, Fernandez, Pedro Gonzalez.(2007). "Temporal and Spatial Monitoring of the pH and Heavy metals in a Soil Polluted by Mine Spill. Post Cleaning Effects", Water, Air, Soil Pollution, 178, 229-243.

Garg, S.S. (2002) "Seasonal variation of Physico-chemical Parameters of Soil Quality of Nagarpanchayat, Chitrakoot, Indian J. Env. Prot.,22(10), 1105-1112..

Hendershot, W.H., Lalande, H., and Duquette, M.(1993). Ion exchange and Exchangeable cations. In R. Carten (ed.) Soil Sampling and Methods of Analysis, Lewis, Boca Raton, FL., 167-175 .

Iavazzo, P., Adamo, P., Boni. M., Hillier, S., Zampella, M.(2011) Speciation of Lead and Zinc in Abandoned Wastes and Soils, An example from Morocco, Journal of Geochemical Exploration. Doi: 10.1016/j.gexplo. 2011.06.001.

Jagdish K. Ladha, C. Kesava Reddy, Agnes T Padre, and Chris Van, Kessel,(2011). Role of Nitro-gen Fertilization in Sustaining Organic Matter in Cultivated Soils, Journal of Environmental Quality. 40, 1756-1766 ,DOI 10.2134/jeq 2011.0064.

Kulkarni, N.P. and Agrawal, Y.K.(2003). Physico-chemical Characteristics of the Topsoil of a Hospital, Gujrat University, Department of Chemistry, School of Sciences, Ahmedabad-380009 Indian J. Environmental Protection. 23 (5), 503-507.

Mico, C., Recatala L., Peris, M., Sanchez, J.(2006). Assessing Heavy metal Sources in Agricultural soils of an European Mediterranean area by Multivariate Analysis, Chemo-sphere. 65. 863-872.

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