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Association of selected health related physical fitness variables on mental health and academic achievement of tribal school boys

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Abstract

The present study focuses on the Association of Selected Health Related Physical Fitness Variables on Mental Health and Academic Achievement of Tribal schoolboys. Here, 600 tribal school boys of age 13 to 15 years are selected from the 15 Government schools of Rajanna Sirilla District, Telangana. Further to collect the data simple random sampling technique has been adapted for data collection. The present study consists of two dependent variables, namely Mental Health and Academic Achievement, and five independent variables, namely Muscular Strength, Muscular Endurance, Cardio Respiratory Endurance, Flexibility, and Body mass index (BMI). The data collected from the tribal school boys is analyzed with the help of suitable statistical techniques, such as descriptive statistics of mean and standard deviation. The data collected from the tribal school boys is analyzed with the help of suitable statistical techniques, such as descriptive statistics of mean and standard deviation. To examine the interrelationship among the selected health-related physical fitness variables with mental health and academic achievement, Pearson's correlation coefficient is considered. Selected health related physical fitness variables significantly correlated with mental health and academic achievement of the tribal school boys.

Keywords: Muscular strength, muscular endurance flexibility, cardiorespiratory endurance body Mass Index (BMI), mental health, academic achievement and tribal school boys

Introduction

Sport and physical activity are important factors for the health and general well-being of people. Daily exercise involves relative physical fitness, which allows people to perform bodily functions efficiently and Constant exercise involves relative physical fitness, which allows people to perform bodily functions efficiently and retain some energy for their leisure time. Physical education is an instructional method that uses physical exercise as a potential to assist a person to gather fitness, attitudes, skills, and knowledge that makes contributions to the development of body and mind. Physical education helps to improve the general and motor skills. We have „womb to tomb“ accountability for the development of physical exercise for all members of society through their lifetime (Ziegler, 1997) ^[1]. Physical Fitness refers to a person's organic ability to energetically perform a daily task. It includes the level of physical fitness required to maintain one's life with reserved energy and fuel because the chemical energy is converted into mechanical energy while the individuals are performing strenuous physical activities (Bucher, 1958) ^[2]. The World Health Organization (2010) recommends that the developing school-age population engage in moderate to vigorous exercise every day for 60 minutes or more in a fun, multitasking, and age-appropriate manner. Most of the exercises are recommended as aerobics. However, this should be done with exercises that strengthen bones and muscles, at least 3 times a week. Health-related physical fitness often called general fitness is a generalized term referring to ability of a person to participate in the activities of life without undue fatigue, with enough energy to enjoy outdoor activities, and to respond to unforeseen needs and emergencies. Fitness is generally classified as performance related and health related fitness to distinguish general fitness from specific fitness. Health-related fitness may be defined as that state of wellbeing in which every individual would: seek protection against disease Tackle problems of being obese manage muscle and joint disorders, strive to be mentally balanced and socially well-adjusted.

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Health-related physical fitness components are Flexibility, Muscular Endurance, Body Composition, Muscular Strength, and Cardiorespiratory Endurance (Kamlesh, 2015) ^[3].

Muscular Strength is considered a primary component in the performance of physical skills, in physical fitness. Defined of the Strength is to be contractile power of muscles attained by a single maximum effort. This definition reinforces the importance of strength in physical activities.

Muscular endurance can be defined as the ability of the muscles to sustain work by holding a maximal contraction for a given length of time or by continuing to move a submaximal load. This muscle ability continues to perform isometric or isotonic work is of obvious importance in many everyday life activities as well as in the majority of competitive sports and physical activities. (Phillips, 1979) ^[3].

Cardiorespiratory endurance is the ability of the body's circulatory and respiratory systems to deliver energy during prolonged exercise. The functional capacities of the cardiorespiratory system, heart, lungs and blood vessels characterize the aerobic capacities of a person. This is a function of both cardiorespiratory activity and the maximum ability to remove and utilize oxygen from the circulating blood. (Shamal Kaloy, 2007) ^[4].

Flexibility is important for athletic performance and also in physical medicine such as rehabilitation, general health and fitness, Flexibility exercises to relieve dysmenorrhea, general neuromuscular tension and back pain (Baechle, 1994) ^[5] the lack of flexibility leads to errors in the execution of actions. Due to its influence on methods, it is necessary for technical skills. The optimal level of elasticity, elongation and flexibility of muscles and ligaments helps with resistance to shocks and external forces that can be affected. (Singh, 1991) ^[6]

Body mass index (BMI) is a statistical measure that compares a person's weight and height. While it doesn't actually measure body fat percentage, it is used to estimate a healthy body weight based on a person's height. Because of its ease of measurement and calculation, it is the most widely used diagnostic tool to identify weight problems in a population, usually regardless of whether people are underweight or not, overweight or obese. (Garabed 2008) ^[7].

Mental health has become universally important simply because all persons, regardless of age, work experience, social and economic situation; suffer in one way or another from mental suffering. Students at School have to bear the brunt of school work elders are kept on tenterhooks by economic factors, professional jealousies, social idiosyncrasies, cultural pride, and prejudices. Physical activity is a means by which you can support the body in good athletic condition. Gu, *et al.*, 2016 ^[8] shown that physical fitness is an important element of academic achievement because physical fitness has a positive effect on cognitive function and attention efficiency or by its effects on mental health including depression, stress, and quality of life.

Academic achievements are the presentation of performance results that indicate the level of achievement of students in relation to a particular learning objective. Rao (1990) ^[9] Academic achievement evaluation is largely limited to evaluating information, knowledge, and understanding. In general, it is assumed that the collection of actual data is not an end in itself, but that a person who has been trained must demonstrate that they understand the subject and the relation to the situation of life. For obvious reasons, the essay type of test and examinations are largely confined to the measurement of the amount of information, which students have acquired.

"The term 'Scheduled Tribes' first appeared in the Constitution of India. Article 366 (25) defined Scheduled Tribes as such tribes or tribal communities or parts of or groups within such tribes or tribal communities as are deemed under Article 342 to be Scheduled Tribes for the purposes of this constitution" The majority of the tribes lived in scattered dwellings in remote, inaccessible mountainous and forested areas. As a consequence, most of the tribal children confront with the communication problem right from the day of schooling. Due to their unique and distinctive cultural identity and complex social way of life, they feel aloof from others which create adjustment problems among the boys. This has a negative influence on self-esteem which has direct effect on their academics. In the process of education, academic achievement plays a significant role.

Statement of the problem

The present investigation examines the association of selected health related physical fitness variables on Mental Health Academic Achievement of tribal school boys of Rajanna Sircilla District of Telangana State.

Objective of the study

1. To measure selected health related physical fitness variable of tribal school boys.
2. To measure the degree of relationship of selected health related physical fitness variables mental health and academic achievement of tribal school boys.

Methodology

The present study focuses on the Association of Selected Health Related Physical Fitness Variables on Mental Health and Academic Achievement of Tribal schoolboys. Here, 600 tribal school boys of age 13 to 15 years are selected from the 15 Government schools of Rajanna Sircilla District, Telangana. Further to collect the data simple random sampling technique has been adapted for data collection. The present study consists of two dependent variables, namely Mental Health and Academic Achievement, and five independent variables, namely Muscular Strength, Muscular Endurance, Cardio Respiratory Endurance, Flexibility, and Body mass index (BMI). For assessment of health related physical fitness variables of tribal school boys i.e. muscular strength measured by Push-Ups, muscular endurance measured by Bent Knee Sit-Ups, flexibility measured by Sit & reach, cardiorespiratory endurance measured by Cooper 12 min, Run/walk test and body mass index (BMI) measured by the Height and weight of the students. Assessment of Mental health, Peter Becker mental health questionnaire is administrated, a half-yearly examination mark statement was collected from their respective schools to assess the academic achievement of the students.

In order to ensure full co-operation from the subjects, the scholar had a brief meeting with the respective heads of the institutions, subject, and physical education teachers. The importance of the study is explained to all the subjects in the presence of their physical education teachers and all subjects voluntarily agreed to undergo the prescribed tests.

Results and interpretation

Descriptive statistics such as minimum, maximum, standard deviation and variance are calculated to understand the overview and pattern of data. Interrelationships among the selected health related physical fitness variables with academic achievement are computed by using Pearson's

correlation coefficient. To study, these interrelations among the considered selected variables have been considered and analyzed using SPSS. The level of significance of the study

for the statistical techniques is considered at 0.05 level of significance to achieve the conclusion concerning the defined objectives of the study.

Table 1: Descriptive Statistics on Selected Variables of Tribal School Boys (N=600)

	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
Muscular Strength	600	5	30	14.23	.188	4.606
Muscular Endurance	600	4	35	19.56	.244	5.989
Flexibility	600	11	51	29.27	.252	6.181
Cardio Respiratory Endurance	600	1015	2600	1977.63	10.346	253.425
Body Mass Index (BMI)	600	12.82	25.65	17.5456	.09026	2.21096
Mental Health	600	35	68	54.45	.262	6.427
Academic achievement	600	160	556	318.65	3.226	79.012
Valid N	600					

The above Table 1 explains the descriptive statistics for the considered variables namely Muscular Strength, Muscular Endurance, Flexibility, Cardiorespiratory Endurance, BMI, Mental Health, and Academic Achievement, under different components like Health related Physical Fitness Variables, Mental Health and Academic Achievement. Table 1 shows the descriptive statistics of mean, standard error and standard

deviation of the variable considered in the study. From Table 1, it is observed that the average BMI of the individuals is observed to be 17.54 with standard error 0.09. Further, it is evident that the average Academic Achievement of the individuals is 318.65 with 3.226 of standard error of mean. The average Mental Health of the students is found to be 54.45 with standard error of mean is 0.262 (Table 1).

Table 2: Inter – Correlation of Selected Health Related Physical Fitness Variables with the Mental Health and Academic Achievement of Tribal School Boys

	Muscular Strength	Muscular Endurance	Flexibility	Cardio Respiratory Endurance	Body Mass Index (BMI)	Mental Health	Academic Achievement
Muscular Strength	1						
Muscular Endurance	.383** (.000)	1					
Flexibility	.243** (.000)	.192** (.000)	1				
Cardio Respiratory Endurance	.274** (.000)	.325** (.000)	.380** (.000)	1			
Body Mass Index (BMI)	.019 ^{NS} (.323)	.045 ^{NS} (.136)	.043 ^{NS} (.146)	.078* (.055)	1		
Mental Health	.175** (.000)	.224** (.000)	.138** (.000)	.286** (.000)	-.063 ^{NS} (.062)	1	
Academic Achievement	.225** (.000)	.285** (.000)	.152** (.000)	.344** (.000)	-.057 ^{NS} (.083)	.596** (.000)	1

“**” and “*” represent the Pearson’s Correlation is significant at 0.05 level of significance.

“NS” represent Pearson’s Correlation is not significant at 0.05 level of significance

Table 2 shows the association (correlations) among various combinations of the considered variables along with their corresponding significance level at 0.05. From Table 2, it is noticed that there is a significant relationship between various combinations of the variables, i.e., almost many of the combinations of variables have a statistical correlation between them. From the table muscular strength, it is evident (Table 2) that the variables muscular endurance (0.383 with $p = 0.000^{**}$), flexibility (0.243 with $p = 0.000^{**}$), cardiorespiratory endurance (0.274 with $p = 0.000^{**}$), Mental health (0.175 with $p = 0.000^{**}$), and academic achievement (0.225 with $p = 0.000^{**}$) have the statistical correlation with the muscular strength. Further, muscular endurance have the high correlation with the variables called flexibility (0.192 with $p = 0.000^{**}$), cardiorespiratory endurance (0.325 with $p = 0.000^{**}$), mental health (0.224 with $p = 0.000^{**}$) and academic achievement (0.285 with $p = 0.000^{**}$). From Table 2, it is also clearly visible that the Flexibility is correlated with cardio Respiratory Endurance (0.380 with $p = 0.000^{**}$), mental health (0.138 with $p = 0.001^{**}$), and academic achievement (0.152 with $p = 0.000^{**}$). Further, the cardiorespiratory endurance is found to have a statistically

significant correlation with mental health (0.286 with $p = 0.000^{**}$) and academic achievement (0.344 with $p = 0.000^{**}$). The interesting fact is noticed with the BMI is that the BMI has a significant statistical correlation with the variable called cardiorespiratory endurance (0.078 with $p = 0.055^{*}$). Table 2 clear that BMI does not correlate with muscular strength, muscular endurance, flexibility, mental health, and academic achievement. Further, mental health is found to have a statistical Significance with academic achievement (0.596 with $p = 0.000^{**}$). From Table 2, one interesting fact is observed that mental health and academic achievement is correlated with all of the variables except the BMI. This means that the BMI may not have impact on mental health and academic achievement vice versa.

Conclusion

The result revealed that an Inter relationship exists significantly between the health related physical fitness variables and mental health among tribal school boys of Rajanna Sircilla District.

The result revealed that an Inter-relationship exists significantly between the health related physical fitness

variables and academic achievement of tribal school boys of Rajanna Sircilla District.

The result revealed that an Inter-relationship exists significantly between the mental health and academic achievement of tribal school boys.

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