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Impact of health related physical fitness variables on mental health of tribal school boys

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Abstract

The purpose of the study was to find out the Impact of Health Related Physical Fitness Variables on Mental Health of Tribal School Boys. To achieve this purpose of the study 600 tribal school boys were selected at random from Rajanna Sircilla District in Telangana State. Their age ranged between 13 to 15 years. In this study, Mental Health assessed with health related physical fitness variables. The present study consists of one dependent variable namely Mental Health and five independent variables (Health related Physical Fitness Variables) such as muscular strength, muscular endurance, flexibility, cardio-respiratory endurance and body composition (BMI). The Trier Personality inventory was devised by Peter Becker (1989) and it was used to assess mental health of the subjects. Assessment of health related physical fitness variables Muscular Strength (Push-Ups Test), Muscular Endurance (Sit-ups Test), Flexibility (Sit and Reach Test), Cardio Respiratory Endurance (12 Min run or walk test) Body composition (BMI). Data were collected and analyzed by using descriptive statistic and the inter-relationship among health related physical fitness variables with mental health were computed by using pearson's product-moment correlation co-efficient. The computation of stepwise multiple liner regression also used in this study. The result revealed that an Inter-relationship exists significantly between the health related physical fitness variables on mental health in tribal school boys of Rajanna Sircilla District. The Result revealed that cardio respiratory endurance muscular endurance and body composition (BMI) become the common characteristic which can predict the mental health in tribal school boys.

Keywords: Muscular strength, muscular endurance, flexibility, cardio respiratory endurance, body mass index and mental health

Introduction

Life is characterized by movement and it is imperative that all parts of the body should be exercised daily. Exercise (vigorous) is a sort of foot to the body. Predominance of the scientific evidence indicates that daily exercise stimulates the processes of growth that exercise improved muscular strength, speed, agility, flexibility, muscular power and muscular endurance due to regular input and output of healthy impulses (Brink 1980) [2].

Nowadays, regular physical activity and a healthy diet contribute to some of the national health goals that generally encourage a country to participate in programs that enhance survival and quality of life and benefit from the benefits that flow from it (Lotf abadi hamid. 1999) [14].

Sports and recreational activities increase physical and mental health, efficiency and productivity, prevent many diseases and reduce health care costs while reducing production costs, reducing or reducing personnel in operations Manufacturing, in all countries of the world is very important (Mir Mohammad. 2006) [12].

Health and Fitness

Fitness is a term which is often used as synonymous to health in a limited manner. Fitness denotes different facts of health. The term fitness is capacity of the individual to live and function effectively, purposely and just fully, and to meet confidently the problems as crisis which is among life's expectations (Reubn 1971) [16].

Proper physical fitness practices lead to a healthy lifestyle. In general, physical stamina and healthy lifestyle are necessary to meet the vigorous demands of daily living.

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The benefits of physical fitness are well documented in the literature and are no different for persons with mental retardation than the general population (Eichstaedt and Lavay 1992)^[7].

Health Related Physical fitness Variables

Muscular Strength

According to Mathews (1973)^[6] "Muscular strength is defined as the force that a muscle or a group of muscle can exert against at resistance in one effort".

Muscular Endurance

Muscular endurance or endurance allows an individual to perform work supported by a particular muscle group over a period of time. Muscular endurance is the ability of the muscle to maintain a certain level of tension or to repeat same movements are pressures over the maximal period of time with one's maximal effort (Kansal 1996)^[11].

Flexibility

Flexibility is the range of motion around a joint as determined by the elasticity of muscles, tendons and ligaments associated with the joint under consideration. The flexibility components of physical fitness enable the person to have free body movements, better coordinated movements requiring lesser work and to handle greater stress with lesser chances of injury (Kansal 1996)^[11].

Flexibility is the functional capacity of the joint to move through a full range of movement (Mathews 1973)^[6].

Cardio Respiratory Endurance

A health related physical fitness components relates to the ability of the circulatory and respiratory system to supply oxygen during sustained physical activity (Corbin and Lindsey 1994)^[3].

Body Composition (BMI)

According to Corbin and Lindsey 1997^[4] Body composition refers to relative percentage of muscles, fat bone and other tissue of which the body is composed of primary concerned because of its association with various health problems is body fatness. Being over fat or under fat can result in health concerns.

Body mass index is defined as individual's body weight divided by the square of their height. The formula universally used in medicine produce a unit of measure of kg/m². Body mass index mass index accurately calculated using the formula is BMI= Mass (Kg)/height in m² (Corbin and Lindsey 1994)^[3].

Mental Health

According to Talawar and Anindita Das, 2014^[17], mental health can be considered as one of the important factor. A healthy individual is not only physically healthy, but also mentally healthy. It includes a sound efficient mind and controlled emotions. Mental health is the ability to adjust satisfactorily to the various strains of the environment, which today is recognized as an important aspect of one's total health status.

Mental disorders are very important for public health. It has been argued that regular physical activity has beneficial effects on mental health in both clinical and non-clinical populations. Evidence also recommends that physical activity and exercise can be complementary to adjunct for alcoholism and substance abuse programs; Increase self-image, social

skills and cognitive functions; Reduce anxiety symptoms and to change aspects of coronary susceptibility (type A) and the physiological response to stressors (Taylor 1985)^[18].

Tribal communities have their own languages different from the spoken language in the state they are in. 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 mental health. In the process of education, mental health plays a significant role. (Talawar and Anindita Das, 2014)^[17] previous studies reported that there was a significant correlation between physical fitness with mental health (Labrie *et al.*, 2010)^[13]. Physical fitness factors positively effect on mental health of university students (Bog Ja Jeoung *et al.*, 2013)^[10]. Regular physical activity and sports participating increase self-esteem and reduce anxiety and depression (Bolognini *et al.*, 1996)^[11]. Physical fitness is significantly correlated with mental health (Choi, 2008; Hussian *et al.*, 2013)^[5, 8].

A systematic review of health benefits from physical activity and physical fitness among students has had a positive impact on risk factors for NCD and mental health (Janssen 2010)^[9].

Statement of the Problem

The present investigation examines the impact of Health Related Physical Fitness Variables on Mental health of Tribal School Boys of Rajanna Sirircilla District of Telangana State.

Objective of the Study

The main objectives of the study is to

- 1) To measure Health Related Physical Fitness Variable of Tribal School Boys.
- 2) To measure degree of relationship of Health Related Physical Fitness Variable such as Muscular Strength, Muscular Endurance, Flexibility and Cardio-respiratory Endurance and Body composition (BMI) with Mental health.
- 3) To examine the Impact of Health Related Physical Fitness Variable on Mental health of Tribal School Boys.

Methodology

The purpose of the present study was to find out the Impact of Health Related Physical Fitness variables on Mental Health of Tribal school boys. To achieve the purpose of the study, 600 tribal school boys were selected at random from Rajanna Sirircilla District of Telangana state, India. Their age ranged between 13 to 15 years. The present study consisted of one dependent variable, namely mental health and five independent variables, namely muscular strength, muscular endurance, flexibility, cardio respiratory endurance and body composition (BMI). In this study mental health was assessed using The Trier Personality inventory questionnaire was devised by Peter Becker (1989)^[15]. Assessment of health related physical fitness variables Muscular Strength (Push-Ups Test), Muscular Endurance (Sit-ups Test), Flexibility (Sit and Reach Test), Cardio respiratory Endurance (12 Min run and walk test), Body composition (BMI).

Statistical Analysis

The following statistical procedures were used to analyze the obtained data. Data were analyzed by using descriptive

statistic and the inter- relationship among health related physical fitness variables with mental health were computed by using pearson’s product-moment correlation co-efficient. The computation of stepwise multiple liner regression also used in this study.

Table 1: Descriptive statistics of Health Related Physical Fitness Variables and Mental health of Tribal School Boys

	N	Mean	Std. Deviation
Muscular Strength	600	14.23	4.606
Muscular Endurance	600	19.56	5.989
Flexibility	600	29.27	6.181
Cardio Respiratory Endurance	600	1977.63	253.425
Body composition (BMI)	600	17.5456	2.21096
Mental Health	600	54.45	6.427

Table 1 shows the Descriptive Statistics for the health related physical fitness variables along with the mental health of

tribal school boys. From the Table 1, it is clearly visible that the average mental health of the students is found to be 54.45 with respect to the health related physical fitness variables. Therefore, on an average every student who has the above kind of average fitness will get the 54.45 ± 6.427 (i.e., minimum of 48.023 and maximum of marks 60.877).

Inter – Correlation of Health Related Physical Fitness Variables with the Mental Health of Tribal School Boys

Further, the Pearson’s Correlation Coefficient along with their significance has been computed for the entire variables which are available under three different major components called Health related Physical Fitness variables, Mental Health and Academic Achievement. The significance of the correlation between variable have been tested at 0.05 level of significance and the corresponding p-values have been given in the bracket along with the Pearson’s correlation (Table 2).

Table 2: Pearson’s Correlations with Statistical Significance (P-Value)

	MS	ME	F	CRE	BMI	MH
MS	1					
ME	.383** (.000)	1				
F	.243** (.000)	.192** (.000)	1			
CRE	.274** (.000)	.325** (.000)	.380** (.000)	1		
BMI	019 ^{NS} (.323)	045 ^{NS} (.136)	.043 ^{NS} (.146)	.078* (.028)	1	
MH	175** (.000)	.224** (.000)	.138** (.000)	286** (.000)	-.063 ^{NS} (.062)	1

MS= Muscular Strength, ME= Muscular Endurance, CRE= Cardio Respiratory Endurance, BMI= Body Mass Index, MH= Mental Health.

From Table - 2, it is revealed that there is a significance relationship between various combinations of the variables, i.e., almost many of the combinations of variables have statistical correlation between them. Further Table - 2 reveals the fact that there is a significant relationship between health

related physical fitness variables with mental health of tribal school boys. There is no significant relationship between Body compositions (BMI) with mental health of tribal school boys.

Table 3: Analysis of variance for the impact of Health Related Physical Fitness Variables on Mental health of Tribal School Boys

	Model	Sum of Squares	d.f.	Mean Square	F	Sig.
1	Regression	2025.905	1	2025.905	53.326	.000
	Residual	22718.788	598	37.991		
	Total	24744.693	599			
2	Regression	2499.122	2	1249.561	33.534	.000
	Residual	22245.571	597	37.262		
	Total	24744.693	599			
3	Regression	2692.900	3	897.633	24.261	.000
	Residual	22051.793	596	37.000		
	Total	24744.693	599			

Table 3 displays the information about the analysis of variance for the constructed stepwise multiple regression models, i.e., the analysis of variance gives the significance of the constructed models of regression analysis. From Table 3, it is clear that all the three models have significant result

($p < 0.05$) with respect to the health related physical fitness variables on the mental health. Also, noticed that the model 3 has the more significant factors (F value = 24.261 and $p < 0.05$) than the other extracted models.

Table 4: Stepwise multiple regression between Mental Health and Health Related Physical Fitness Variables of Tribal School Boys

Model	Variables Entered	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	Cardio respiratory endurance	.286	.082	.080	6.164
2	Muscular Endurance	.318	.101	.098	6.104
3	Body composition (BMI)	.330	.109	.104	6.083

Further, the Stepwise Multiple Linear Regression is conducted to know the significant factors of health related physical fitness variables which have the great impact on the mental health. From Table -4, it is observed that there are three different models have been identified and the corresponding R² and adjusted R² values are reported, which

gives the information about the strength of the fitted models in each and every step. From model 1 to model 3 shows the variables list which are included from the analysis. From Table - 4, it is noticed that the model 3 has the R² value about 0.104 and model 1 has the R² value about 0.080 only.

Table 5: Regression Coefficients for Mental Health with respect to Health Related Physical Fitness Variables of Tribal School Boys

	Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	40.102	1.981		20.240	.000
	Cardio-Respiratory Endurance	.007	.001	.286	7.302	.000
2	(Constant)	39.418	1.972		19.993	.000
	Cardio-Respiratory Endurance	.006	.001	.239	5.813	.000
	Muscular Endurance	.157	.044	.146	3.564	.000
3	(Constant)	43.589	2.680		16.265	.000
	Cardio-Respiratory Endurance	.006	.001	.245	5.974	.000
	Muscular Endurance	.159	.044	.148	3.623	.000
	Body-Composition BMI	-.258	.113	-.089	-2.289	.022
Dependent Variable: Mental Health						

From Table - 5, it is observed that the unstandardized regression coefficient have been extracted in each and every model for the mental health with respect to the health related physical fitness variables. In initial step (model 1), there is only one significant factor Cardio Respiratory Endurance (t Value = 7.302 and $p < 0.05$) along with constant (t Value = 20.240 and $p < 0.05$) whereas the in the second step, the there are two significant factors Cardio Respiratory Endurance (t Value = 5.813 and $p < 0.05$) and Muscular Endurance (t Value = 3.564 and $p < 0.05$) along with the regression constant (t Value = 19.993 and $p < 0.05$). Further, in the last step (model 3), there are three significant factors which have the impact on mental health like Cardio Respiratory Endurance (t Value = 5.974 and $p < 0.05$), Muscular Endurance (t Value = 3.623 and $p < 0.05$), Body composition (BMI). (t Value = -2.289 and $p < 0.05$) along with the regression constant (t Value = 16.265 and $p < 0.05$). From Table - 5, it also noticed that the stepwise multiple linear regression line is fitted as Mental Health = 43.589 + 0.006* Cardio respiratory endurance + 0.159* Muscular Endurance -.258* Body composition (BMI).

Conclusions

1. The result revealed that an Inter- relationship exists significantly between health-related physical fitness variables on mental health of tribal school boys.
2. The result revealed that cardio respiratory endurance muscular endurance and Body composition (BMI) become the common characteristic which can predict the mental health in tribal school boys.

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