Relationship between Motor Fitness Components and Body Mass Index of Kargill Boys

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Abstract

Introduction: The purpose of the present study is to find out the relationship between motor fitness components and body mass index of Kargill boys.
Methods: The total 200 subjects (100 rural and 100 urban) belonging to high altitude area in state were selected by using systematic random sampling. The age of the boys ranged between 12-18yrs. The data was collected by administering the test in their schools in free time. Keeping the feasibility in mind, Explosive Strength, Muscular Endurance, Cardio Vascular Endurance, Muscular Power, Speed, Agility, Reaction time and Flexibility were selected as motor fitness components and B.M.I. was calculated by using their body weight and standing height. Descriptive statistics and Pearson's product moment Correlation were used for statistical treatment. The level of significance was set at 0.05 levels.
Conclusions: - The results of the study showed that there is no significant relationship between selected motor fitness variables and the Body Mass Index of boys of urban and rural society in high altitude area of kargill.
KEYWORDS: - High Altitude, Rural area, Urban area, Motor Components & Body Mass Index.

1. Introduction

Physical Fitness is an essential quality for learning motor skills beside the influences of growth and maturation. A child can learn a specific motor activity only when he has attained the actual physical growth required to accomplish that movement. In addition to having achieved the necessary physical growth, the child must be 'ready' to learn a motor skill in other ways, i.e. he must have reached certain level of motor, emotional and social development. Maintenance of an adequate amount of physical fitness is essential for anyone wishing to make the most of himself and his life and many advantages result from achieving and maintaining an adequate level of physical fitness.

The importance of motor fitness for the proper growth and development of an individual can never be questioned. The organic system of a totally fit person functions well. Motor fitness permits greater freedom of body movement and is helpful for the maintenance of working capacity for longer time. It helps in preventing injuries and in increasing co-ordination of movement and shortening the pace for acquiring and perfecting movement, it constitutes to the formation of concepts and ideas and development of confidence.

Motor Fitness according to **Barrow (1968)** is "a readiness or preparedness with special regard for big muscle activity without undue fatigue". Although it's a single term, but to understand it and to work out, we need to concentrate on its components - Muscular Strength, Muscular Endurance, Muscular Power, Cardio-Vascular Endurance, Flexibility, Speed, Agility, Reaction Time.

All these components can be realized by different body actions. In this manner the physique of a person especially Height and Body Weight plays very important role in his motor fitness status. The puberty phase of human life is found to be most

productive one for developing base for different motor abilities. It is believed that motor fitness is trainable factor but the influence of one's physique and body composition seem to play a great role in its determination as achievement of high level performance is only possible in an individual with adequate genetic predisposition and under optimal environment condition. India is vast country with unique cultural, social, geographical, ethnic and climatic differences. The motor fitness of Indian male varies according to regional variations of the country. The B.M.I. also varies from one region to another which ultimately affects growth and development. **Sodhi, Padhmanathan** and **Prakash (2007)** have reported that the regional variation of morphological characteristics of Indian children occur due to socio-economic, climatic and genetic variations.

In the light of all above mentioned background research scholar generally felt the research needed to be conducted to objectively find out the relationship between selected motor fitness components and Body Mass Index in kargill boys.

Methods and Material

In this section, the selection of subjects, criterion measures, reliability of data, administration of test, collection of data and statistical techniques employed for the analysis of the data have been presented.

For the purpose of the study whole kargill area was divided under Urban and Rural region by making basic amenities like Health, Education, Entertainment, Transport facilities and Socio-economic set-up of the region as reference points. Again boys of these two regions were further divided under high altitude area and low altitude area. Finally there were four groups – High Altitude Rural area and High Altitude Urban area . The Motor fitness variables comprising of agility, reaction time, muscular endurance, cardio-vascular endurance, muscular power, flexibility, speed and explosive strength have been included after thorough discussion and going through the related researches done in this area. Similarly the tests namely (4x10) meter shuttle run, stick drop test, bent knee sit ups, 600 meter run, sit & reach test, 30meter sprint, Both arm medicine ball throw and standing broad jump have been included due to their practical feasibility and utility according to geographical situation of different schools used for the study and Body mass index was calculated by using following formula –

[Body Mass Index = Weight in kilogram.) / (Height in meter.)2

2.1**Statistical Procedure: -** The descriptive statistics such as the mean, standard deviation, standard error and range were computed and Pearson's Product moment Correlation was used to find out the relationship between Body Mass Index and Selected Motor Fitness Components of different groups. The level of Significance was set at 0.05 level.

2.2 RESULTS

The statistical analysis of data collected on 200 subjects belonging to two groups – High Altitude Urban area and High Altitude Rural area have been presented in this section.

The findings and discussion of findings with regard to the present study have been presented in two sections. Section-I deals with the descriptive statistics of all the Variables. Section -II covers correlation analysis between selected motor fitness components and Body Mass Index of the subjects.

Section –I :- In this section, various descriptive measures like mean, standard deviation, range of the selected motor fitness variables and body mass index of kargill boys were calculated and presented in Table 1 & 2

Table -1
DESCRIPTIVE ANALYSIS FOR MOTOR FITNESS COMPONENTS AND BODY MASS INDEX OF URBAN HIGH ALTITUDE BOYS

Variables	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
Muscular Power	7.34	0.67	0.07	5.00	8.47	3.47
Explosive strength	1.75	0.21	0.02	1.20	2.13	0.93
Strength Endurance	18.87	6.43	.64	0.00	30.00	30.00
Cardiovascular Endurance	2.40	0.41	0.04	1.20	3.50	2.30
Speed	6.92	1.40	0.14	5.37	14.00	8.63
Agility	20.53	3.13	0.31	11.46	32.24	20.78
Flexibility	5.85	2.88	0.29	1.00	12.00	11.00
Reaction Time	0.11	0.03	0.00	0.06	0.20	0.14
Body Mass Index	20.88	2.98	0.30	1.81	28.95	27.14

Table-1 shows the mean and standard deviation of Urban High Altitude Boys pertaining to selected variables i.e. Muscular Power, Explosive strength, Strength endurance, Cardio vascular endurance, Speed, Agility, Flexibility, Reaction time and Body Mass Index.

The mean and standard deviation for Muscular Power is 7.34±0.67; for Explosive strength, 1.75± 0.21; for Strength endurance, 18.87±6.43; for Cardio vascular endurance, 2.40±0.41; for Speed, 6.92±1.40; for Agility, 20.53±3.13; for Flexibility, 5.85±2.88; for Reaction time, 0.11±0.03; for Body Mass Index mean and standard deviation is 20.88±2.98.

Table -2
DESCRIPTIVE ANALYSIS FOR MOTOR COMPONENTS AND BODY MASS INDEX OF RURAL HIGH ALTITUDE BOYS

Variables	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
Muscular Power	9.53	1.70	0.17	4.75	16.30	11.55
Explosive strength	1.81	0.20	0.02	1.42	2.20	0.78
Strength Endurance	26.71	4.59	0.46	15.00	37.00	22.00
Cardiovascular Endurance	2.60	0.29	0.03	1.90	2.97	1.07
Speed	6.13	0.94	0.09	4.50	8.30	3.80
Agility	12.02	1.22	0.12	10.00	16.20	6.20
Flexibility	8.19	3.90	0.39	0.00	20.00	20.00
Reaction Time	0.11	0.03	0.03	0.06	0.16	0.10
Body Mass Index	20.66	1.86	0.19	16.44	24.62	8.18

Table-2 shows the mean and standard deviation of Rural High Altitude Boys pertaining to selected variables i.e. Muscular Power, Explosive strength, Strength endurance, Cardio vascular endurance, Speed, Agility, Flexibility, Reaction time and Body Mass Index.

The mean and standard deviation for Muscular Power is 9.53±1.70; for Explosive strength, 1.81± 0.20; for Strength endurance, 26.71±4.59; for Cardio vascular endurance, 2.60±0.29; for Speed, 6.13±0.94; for Agility, 12.02±1.22; for Flexibility, 8.19±3.90; for Reaction time, 0.11±0.03; for Body Mass Index mean and standard deviation is 20.66±1.86.

Table-03:
Correlations for Urban high altitude boys

S.NO.	Variables	Co-efficient of correlation
1.	Muscular Power	-0.02
2.	Explosive strength	0.09
3.	Strength Endurance	-0.03
4.	Cardiovascular Endurance	0.002
5.	Speed	0.17
6.	Agility	0.19
7.	Flexibility	-0.19
8.	Reaction Time	0.003

*Significant at 0.05 level Tab r0.05 (98) = 0.195
The Table -03 shows that the co- efficient of correlation of selected motor fitness variables i.e. muscular power (-0.02),explosive strength (0.09), strength endurance (-0.03), cardiovascular endurance (0.002),speed (0.17),agility (0.19),flexibility (-0.19),reaction time (0.003) with Body Mass Index are not significant at 0.05 level as the values are lesser than the tabulated value r = 0.195, df = 98. This indicates that there is no significant relationship of selected motor fitness variable with the Body Mass Index of urban high altitude boys of kargill.

Table-04
Correlations for Rural High altitude boys

S.NO.	Variables	Co-efficient of correlation
1.	Muscular Power	-0.08
2.	Explosive strength	0.03
3.	Strength Endurance	0.03
4.	Cardiovascular Endurance	-0.07
5.	Speed	0.12
6.	Agility	-0.03
7.	Flexibility	0.002
8.	Reaction Time	-0.01

*Significant at 0.05 level Tab r0.05 (98) = 0.195
The Table -04 shows that the co- efficient of correlation of selected motor fitness variables i.e. muscular power (-0.08), explosive strength (0.03), strength endurance (0.03), cardio vascular endurance (-0.07), speed (0.12), agility (-0.03), flexibility (0.002), reaction time (-0.01) are not significant at 0.05 level as the values are lesser than the tabulated value r = 0.195, df = 98. This indicates that there is no significant relationship of selected motor fitness variable with the Body Mass Index of rural high altitude boys of kargill.

3. Discussion on Findings

The statistical findings showed that the co- efficient of correlation of selected motor fitness variables i.e. muscular power, explosive strength, strength endurance, cardiovascular endurance, speed, agility, flexibility and reaction time with Body Mass Index are not significant. This indicates that there is no significant relationship of selected motor fitness variable with the Body Mass Index of urban high altitude boys of kargill. In other study, **Kumar Sachin, Tiwari Sandhya & Sandeep Tiwari (2011)** found significant relationship between B.M.I. and WHR in 9 years boys whereas, no significant relationship were obtained in 6years, 7years and 8 years age group boys of west Delhi. Whereas, **Huang,Y.C. and Malino M. (2007)** conducted a cross sectional study of relationship between BMI and a Physical Fitness Index(PFI) in Taiwanese youth. Relationships between BMI and PFI were nonlinear and vary with age from late childhood through adolescence. With increasing age during adolescence, the relationship becomes parabolic, and the peaks of the parabola are sharper in adolescent boys than girls.

The statistical findings also showed that the co- efficient of correlation of selected motor fitness variables i.e. muscular power, explosive strength, strength endurance, cardiovascular endurance, speed, flexibility, Agility and reaction time with Body Mass Index are not significant. **Singh, S. Singh, J. Singh, H. (2002)** also found significant but negative relationship between body mass index and Cardio Vascular Endurance in age group of 10 to 13 years and agility shown a significant relationship with body mass index in 10 and 13 years age group.

References

Hashemi Mazid & Brar G.S., Motor fitness and Body Mass Index among Indian and Iranian students , **Indian Journal of Physical Education, Sports Medicine & Exercise Science 10(1); 95-104,jan-june 2010.**

Huang Ching-Yi & Malina M.Robert."BMI and Health –Related Physical Fitness in Taiwanees Youth 9-18 Years." **Medi.Sci. Sports Exerc., July2007;**Vol. 39 No.4 pp**., 701-708.**

Jeenet Clair W. “An Investigation of Tests of Agility.” **Completed Research in Health, Physical Education and Recreation** 2 (1960): 44.

Kapri B.C., “Effect of strength training on selected motor abilities of the subjects belonging to different body composition groups”, **Published research work of Doctor of Philosophy**, Jiwaji University, Gwalior (MP) Dec.1995. Jeenet Clair W. “An Investigation of Tests of Agility.” **Completed Research in Health, Physical Education and Recreation** 2 (1960): 44.

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