

A Study of BMI with Musculoskeletal Fitness in College Students

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Abstract

Purpose: The purpose of the study was to find out relationship of body mass index with Musculoskeletal Fitness in college boys. **Methodology:** The subjects for this study were selected from various colleges of udaipur. A total of 150 college boys were selected for the purpose of the study. The age of the subjects ranged between 18 to 20 years. Selected Variables were body mass index (BMI) and Musculoskeletal Fitness. BMI was calculated from body weight and body height (kg/m²), flexibility was measured with the help of sit and reach test, muscular strength was measured with push-ups and abdominal strength was measured through bent knee sit-up test. To find out the relationship of body mass index with Musculoskeletal Fitness, descriptive statistics and the Pearson's product moment correlation was used. **Findings:** A significant relationship was obtained between BMI flexibility ($r = -.153$, $p < .05$) muscular strength ($r = -.155$, $p < .05$) and muscular endurance ($r = -.130$, $p < .05$).

Keywords: Body Mass Index, Flexibility, Muscular Strength, Muscular Endurance.

Introduction - BMI is a proportion of an individual's weight & height. BMI is generally used to characterize weight as "sound" or "not healthy for a person" The negative impacts of fatness of body on wellbeing are a past debate. The over the top muscle to fat ratio speaks to a numerous hazard factor for a few illnesses; the most significant of which ones are type 2 diabetes, hypertension, cardiovascular infections, and osteoarthritis (Pi- Sunyer, 1991 and World Health Organization, 2000).

The greater part of these injurious impacts are more probable if the overabundance muscle versus fat is predominantly put away in the upper body area, with stomach instinctive fat being the most basic when assessing the wellbeing dangers of obesity (Pi-Sunyer, 1991, Björntorp, 1993, World Health Organization, 2000). In addition, it has been described that fatness is related through body infirmity and a weak apparent fitness (Wolk and Rössner, 1996,; Manderbacka, 1998; Doll, 2000; Ford, 2001). An increasing problem of health also associated with fatness of body (World Health Organization, 2000).

While BMI is unquestionably more normally used to characterize stoutness and firmly identified with the level of muscle and fat ratio in many settings, its restrictions can bring about an inappropriate order of specific people with increased muscle mass (Uwaifo & Arioglu, 2004). In this respects, WHO featured the requirements for different markers to supplement the assessment of BMI, to recognize

people at an expanded danger of fatness related disease because of aggregation of stomach fat.

Physical wellness is known to be another significant issue from a general wellbeing point of view, both in mature person (Mette, et al., 2002; Myers, et al., 2002) and in kids and young people (Ortega, et al., 2008). Studies concerning the connection between weight status and health related physical wellness in youth have regularly revealed a decline in wellness with an expanding BMI (Deforche, et al., 2003). Joint adaptability or scope of movement or motion is a significant segment of muscular fitness. The significance of flexibility as a part of wellbeing related wellness is identified with the counteractive action of orthopedic hindrances sometime down the road, particularly lower back agony. The adaptability of the lower back, legs, and shoulders goes about as a compelling obstacle to the danger of musculoskeletal damage (Haskeil, et al., 1985). Joint flexibility or range of motion is an important component of muscular fitness. The importance of flexibility as a component of health related fitness is related to prevention of orthopedic impairments later in life, especially lower back pain. Flexibility of the lower back, legs and shoulders acts as an effective deterrent to risk of musculoskeletal injury (Haskeil, et al., 1985).

Hence, this study aimed to determine the relationship between BMI with Musculoskeletal Fitness in Colleges students of various College of Delhi.

Objectives of the Study: To find out the Relationship of

BMI with Musculoskeletal Fitness in Colleges students.

Materials and Method:

Selection of Subjects: A total of 150 college boys were randomly selected from various College of Udaipur. The age of the subjects was ranged between 18 to 20 years.

Selection of Variables: Keeping the feasibility criterion in mind, following variables for the present study were selected.

1. Body Mass Index (BMI)
2. Musculoskeletal fitness.
 - i. Flexibility
 - ii. Muscular strength
 - iii. Muscular endurance.

Criterion Measures:

1. BMI was calculated from body weight and body height (kg/m^2), and body fatness of participants was classified according to WHO standards.
2. Flexibility was measured by administering sit and reach test.
3. Muscular endurance was measured by administering one minute sit-ups test.
4. Muscular strength was measured by administering push-ups test.

Statistical Analysis: For determining the relationships between BMI, Flexibility, muscular strength and muscular endurance, descriptive statistics and Pearson's product moment correlation was used. The data was analyzed with the help of SPSS (22.0 version) software and the level of significance was set at 0.05 level.

Result and Findings of the study:

Table 1: Descriptive Statistics of Selected Variables

Variables	Mean	Std. Deviation	N
BMI	22.1350	3.88713	273
Flexibility	35.1355	6.87011	273
Muscular Strength	25.5238	10.32987	273
Muscular Endurance	28.8681	9.01209	273

Table- 1 Indicates the descriptive statistics i.e. mean and SD of selected variables. The Mean and SD of selected variables are i.e. BMI (22.1350 ± 3.88713), Flexibility (35.1355 ± 6.87011) Muscular Strength (25.5238 ± 10.32987) and Muscular Endurance (28.8681 ± 9.01209).

Table 2: Correlation Coefficient (r) of BMI with Flexibility, Muscular Strength and Muscular Endurance in College Students of Udaipur

Variables	Correlation coefficient (r)	Sig.
Flexibility	-.153*	.011
Muscular Strength	-.155*	.010
Muscular Endurance	-.130*	.032

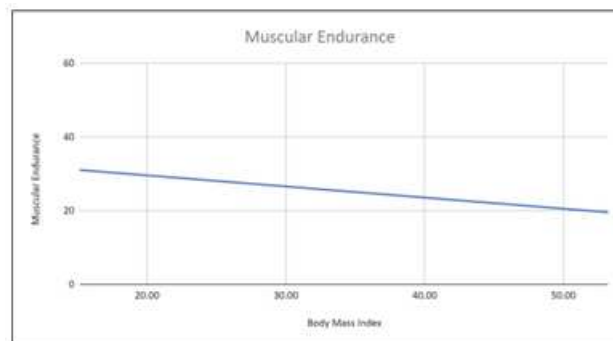
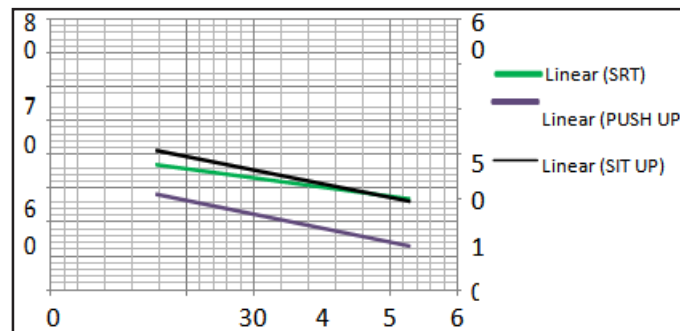
*. Correlation is significant at the 0.05 level (2-tailed).

* Statistically Significant at 0.05 level of Significance.

Table 2 clearly indicates that there exists a significant relationship of BMI with Flexibility, Muscular Strength and Muscular Endurance in College Students. The values

obtained for various musculoskeletal fitness were significant at 0.05 levels.

Figure 1: The graphical representation of Relationship of BMI with Flexibility Muscular Strength and Muscular Endurance is shown in figure 1, 2, & 3 respectively.



Discussion of the Findings: The body mass index (BMI) has been the most commonly applied clinical measure to characterize body composition in individuals. However, the BMI has been criticized as being an inaccurate measure of body fatness (Suchanek et al, 2012). We found a significant decreasing trend of performance in sit-and-reach and sit-up tests from normal weight to Grade I and Grade II/III underweight in both boys and girls. Poorer sit-and-reach results in underweight boys and girls (Artero,et al., 2010; Prista,et al., 2003),Overweight and obese college boys performed poorer in push-up, sit-up and endurance running compared with normal weight, which is consistent with previous studies (Deforche, et. al., 2003; Kim, et al., 2005; Graf, et. al., 2004). However, such differences need to be interpreted cautiously due to the higher energy cost of lifting a greater body mass by overweight subjects (Deforche, et al., 2003; Cureton, et al., 1977).

Conclusions: Within the limitation of the present study and on the basis of findings, the following conclusions have been drawn –

1. Significant relationship was observed between BMI and Flexibility.
2. Significant relationship was observed between BMI and Muscular Strength.
3. Significant relationship was observed between BMI a Muscular Endurance.

References:-

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