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## Cardiovascular fitness in relation to body mass index (BMI) and self-control of college women students: An evaluation

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### Abstract

Present study aimed at the assessment of cardiovascular fitness in relation to Body Mass Index BMI and self control level of under graduate college women. Fifty (N=50) female students studying in MCM DAV College for Women, Chandigarh were selected as subjects for the study, The age of the subjects ranged from 18 to 21 years. Cardiovascular Fitness was determined by Harved step test (short form) developed by Brouha *et al.* (1943) [3]. Body mass index (BMI) of all the subjects was determined by dividing body weight in kilogram by the square of height in meters. However, self control level of students measured by Brief self control questionnaire developed by Tangney, *et al.* (2004) [16]. To determine the relationship among cardiovascular fitness, BMI as well as self control level multiple correlations was applied. The level of significance was set at 0.01 and 0.05. Results revealed that cardiovascular fitness had statistically insignificant correlation with BMI as the coefficient of correlation value was higher than 0.01 level. However, cardiovascular fitness had demonstrated significant positive relationship with self control.

**Keywords:** Cardiovascular fitness, body mass index (BMI), Self Control

### Introduction

Genetic variations, body built and physical activity determine the overall fitness levels of an individual. Sedentary behaviours have become commonplace. This drastic rise in obesity also in adults is mainly due to nutritional transition, physical inactivity, shift toward diet rich in saturated fat, sugar and genetic factors. In our country, we are getting acquainted with the modern amenities at a very fast rate. We are neglecting the natural physical activities. Motorized vehicles are more popular now among youngsters for quicker transport instead of walking or cycling. There has been a great covenant of apprehension in recent years about the levels of physical fitness of young people. Determination of Physical Fitness Index (PFI) is one of the important criteria to assess the cardiopulmonary efficiency of today's youth. Physical fitness and health are reciprocal to each other and examining adiposity is an important parameter to assess physical fitness (Brouha, 1943) [3]. Machines, communication devices, computers, video games and other electronic conveniences have greatly diminished health enhancing levels of physical activity from our lives. Many children are not developing fitness habits nor do they value physically active and emotionally sound as well as stress free lifestyle. Clarke (1971) [6] Physical fitness is defined as ability to carry out daily tasks with vigour and alertness without undue fatigue with ample energy to enjoy leisure time pursuits, to meet unusual situations and unforeseen emergencies. The key concept in testing physical fitness is that of a person's pulse rate and, in particular, how quickly this returns to normal after exercise (Barry & Nelson, 1986) [3]. It is important that the pulse rate returns to normal after exercise, otherwise the heart is put under continuous stress. Body mass index (BMI) is one way to screen for weight related health issues in both children and adults, because it provides an indication of body fatness. High BMI in children and adolescents are linked to hyperlipidemia, high blood pressure, and elevated insulin levels and other diseases in adulthood (Freedman *et al.*, 1999) [9]. Other more invasive and expensive measures, such as underwater weighing and dual energy x-ray absorptiometry, are not feasible to use in many situations. Body mass index Measurements are widely used are less expensive and less invasive than other more direct measures, such as skin fold testing.

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Despite the overweight and obesity epidemic, as of 2006, less Health-enhancing physical fitness of young children is negatively affected by overweight and obesity, and intervention strategies are recommended to improve the quality of life of such children but also to prevent early mortality during adulthood. Joshi *et al.* (2011) <sup>[12]</sup> Recent research shows that the worldwide occurrence of obesity in children (an increase in body weight above that of skeletal and physical standards as a result of over accumulation of body fat is worryingly high. WHO has emphasized on urgent need of understanding the prevalence trend, factors contributing and developing strategies for effective intervention Deoke *et al.* (2012) <sup>[8]</sup>. Self-control is a central function of the self and an important key to success in life. Self-control refers to one's "ability to control or override one's thoughts, emotions, urges, and behaviour" (Gailliot *et al.* 2007) <sup>[10]</sup>. Self-control is an important key to success in life. It is a central function of the self and the exertion of self-control appears to depend on a limited resource. The acts of self-control cause short-term impairments (ego depletion) in subsequent self-control, just as a muscle gets tired from exertion. Motivational or framing factors can temporarily block the effects of being in a state of ego depletion. Research has supported the strength model in the domains of eating, drinking, spending, sexuality, intelligent thought, making choices and interpersonal behaviour (Baumeister and Heatherton 1996) <sup>[13]</sup>. Research clearly supports the idea that self-control is a personality trait that remains fairly constant over one's lifetime (Mischel *et al.* 1989) <sup>[15]</sup>. Other studies also demonstrate that self-control is susceptible to temporary variations based on the situation. According to the strength model, this occurs this happens because self-control works like a muscle, self-regulatory resources can be consumed as a result of closely sequenced acts of self-control) like a muscle becomes fatigued after physical exertion. Yet self-control like a muscle can be strengthened over time through repeated self-

control exercises. Studies by Oaten and Cheng provided additional support to hypothesis that repeated self-control exercises improve self-control over time. The studies provided by Oaten and Cheng focused on two outcome measures (a measure of sustained attention), and a collection of self-regulatory behaviour (smoking, alcohol consumption, dietary habits, physical activity, and consumer behavior). Success of self-control is essential for several important aspects of life, from personal concerns like losing weight and saving money or societal concerns such as reducing drug abuse etc. (Vohs & Schmeichel, 2003) <sup>[17]</sup>. Hence, cardiovascular fitness, mental toughness and stress coping level govern the life pattern of present day younger's and also play a crucial role in present scenario; therefore, the present investigation is an attempt to the assessment of cardiovascular fitness in relation to Body Mass Index BMI and self control level of under graduate college women.

### Methodology

Fifty (N=50) female students studying in MCM DAV College for Women, Chandigarh were selected as subjects for the study. The age of the subjects ranged from 18 to 21 years. Cardiovascular Fitness was determined by Harved step test (short form) developed by Brouha *et al.* (1943) <sup>[3]</sup>. Body mass index (BMI) of all the subjects was determined by dividing body weight in kilogram by the square of height in meters. However, self control level of students measured by Brief self control questionnaire developed by Tangney, *et al.* (2004) <sup>[16]</sup>. To determine the relationship among cardiovascular fitness, BMI as well as self control level multiple correlations was applied. The level of significance was set at 0.01 and 0.05.

### Results

The results with regard to the variables cardiovascular fitness in relation to Body Mass Index BMI and self control level of under graduate college women are presented in table-1 below.

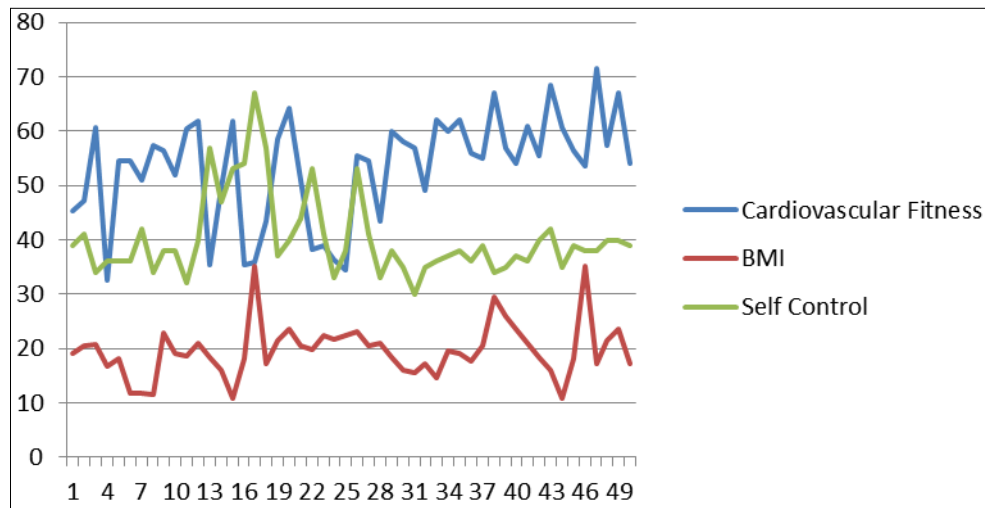
**Table 1:** BMI and self-control level of under graduate college women

		Cardiovascular Fitness	BMI	Self Control
Cardiovascular Fitness	Pearson Correlation	1	-.128	.415**
	Sig. (2-tailed)		.377	.003
	N	50	50	50
BMI	Pearson Correlation	-.128	1	.164
	Sig. (2-tailed)	.377		.255
	N	50	50	50
Self Control	Pearson Correlation	.415**	.164	1
	Sig. (2-tailed)	.003	.255	
	N	50	50	50

\*\*Correlation is significant at the 0.01 level (2-tailed)

The results in table 1 depicted that there were statistically insignificant relationship was observed between cardiovascular fitness and Body Mass Index (BMI) as the coefficient of correlation value was .377 which was higher than 0.01 level. but Cardiovascular fitness had negative relation with BMI. However, cardiovascular fitness had statistically significant positive relationship with self control

as the coefficient of correlation value was .003 which was lower than 0.01 level. Whereas, Body Mass Index had statistically insignificant relationship with Self Control as the coefficient of correlation value was .255 which was higher than 0.01 level. But BMI had positive relationship with self control.



**Fig 1:** The graphical presentation of cardiovascular fitness in relation to Body Mass Index BMI and self control level of under graduate college women

### Discussion

It is noticed from the above findings that there were insignificant relationships observed between cardiovascular fitness and Body Mass Index (BMI) as the obtained coefficient of correlation value was higher than 0.01 level. But cardiovascular fitness had negative relation with BMI. However, cardiovascular fitness had statistically significant positive relationship with self control. Whereas, Body Mass Index had statistically insignificant relationship with self control. But BMI had positive relationship with self control. The outcome of the study might be due to the fact that undergraduate's women students were all very much self obsessed and conscious about their body image. Self-control has been associated with multiple benefits such as prediction of success and a healthier lifestyle. Self-control is responsible for the discipline to stay on task despite distractions or temptations. Chatterjee, *et al.* (2005) [5] also corroborated negative relationship between Body mass index and cardiovascular fitness of obese children's. Chaddock, Erickson & Prakash (2010) [4] Fitness and self-control show positive correlations. Similar results were found by Junger and Van Kampen (2010) who examined whether self-control mediates the relationship between cognitive ability and health behaviour.

### Conclusion

It is concluded that cardiovascular fitness had statistically insignificant correlation with BMI as the coefficient of correlation value was higher than 0.01 level. However, cardiovascular fitness had demonstrated significant relationship with self control.

### Future recommendations

1. Similar study can be conducted by using longitudinal design for comparing male and female on all variables used in present study.
2. Cross-cultural research can be conducted on all the variables used in present study.
3. Factors like daily routine, home environment, family background, and socio-economic status which could not be controlled in the present study may be controlled.
4. Similar study may be undertaken with other variable namely, psychological, anthropometric and physiological etc in addition to the variables chosen in the present study.

5. To arrive at more comprehensive results, the study may be repeated on large sample.
6. It is recommended that the present study may be repeated by selecting subjects belonging to urban and rural area.

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