



## The effect of 8-Week Aerobic Exercise upon Self-concept on 16 -17 years old Nonathletic Students

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**ABSTRACT:** This study intends to evaluate whether an 8-week aerobic exercise impacts upon self-concept of nonathletic students aged 16-17 years old. This semi-experimental research includes pretest, posttest, treatment group, and control group. The population consisted of 16-17 years old nonathletic students in high schools of Tehran's fifth district, of which we selected 40 participants randomly. These participants did not perform regular physical exercise inside and outside of their schools, had general health, and did not suffer from any disease. Their parents expressed their satisfaction with their children's participation in this study. The data were extracted from physical self-description questionnaire (Marsh, 1994). This questionnaire contained 70 items for 11 components including health, harmony, physical exercise, body fat, sports competence, whole body, face, power, flexibility, strength, and self-esteem. Its calculated reliability, according to a preliminary study and results of test-retest, was 0.94. Cronbach's alpha was 0.73. The treatment group and control group completed self-concept questionnaire. Then, the treatment group performed an aerobic exercise during 8 weeks. In this period, the control group did not perform any regular physical exercise. The treatment group exercise was designed on the basis of Sports Medicine College strategies (1986) focusing on cardiorespiratory fitness. This exercise was performed within 45 to 65 minutes per session and thrice a week. This period covers warm-up, main exercise, and cooling-down. The findings highlighted significant impact of an 8-week aerobic exercise upon harmony, physical exercise, sports competence, whole body, face, strength, and self-esteem.

**Keywords:** Aerobic exercise, self-concept, students.

### INTRODUCTION

Self-concept is a dynamic system which is interrelated with values, talents, and capabilities of individuals. This parameter is a determinant of life stages. Self-concept is an individual's general evaluation of self. This evaluation is a mental analysis of his/her own traits and characteristics. A positive self-concept suggests that individuals consider themselves as persons with strength and weakness and therefore boosts their self-confidence in social relations. A negative self-concept, conversely, is an indication of failure, incompetence, and incapability (Bong *et al.*, 2003). Physical exercise improves feelings in most humans and brings comfort for them. One of most crucial mental aspects which are affected by physical exercise is self-concept. Self-concept forms core of physiological function evaluation and includes self-acceptance, safety, comfort, and impression of self (Dodd *et al.*, 2003). Experienced teachers have discovered a highly significant relationship between a student's understanding of self and his/her school performance. They believe that students feeling satisfied with themselves and their capabilities more likely achieve success. Conversely, students having negative attitudes towards themselves

and their abilities cannot ensure their success (Jedmi and Sadeghian 2002).

Self-concept has three main components including perceptual component, attitudinal component, and imagery component. Perceptual component is an image of an individual's own appearance, others' impressions about his appearance and harmony between different parts of his body, and impact of his appearance upon their viewpoints. Perceptual component is often called physical self-concept. Imagery component often called mental self-concept is an individual's understanding of his characteristics and traits, capabilities, dimensions, origin, and future. It contains adaptive traits such as honesty, self-confidence, reasoning, courage, and negative traits. Attitudinal component is related to beliefs, opinions, ideals, values, desires and commitments, which create philosophy of life (Schultz and Sidney 1998).

A large number of studies have investigated physical self-concept. Arazi and Rastegar (2013) examine self-concept between sports students and other students. Their findings reveal that sports students gain higher scores in physical activities, overall sports performance, flexibility, and strength as compared with other students.

Gilian and Gorgan (2006) evaluate effect of 6-week aerobic dance intervention on body image and physical self-perception in adolescent girls. In this research, one group did an ordinary physical exercise and the other group performed an aerobic dance. The data were extracted from a questionnaire of attitude towards body. As their findings suggest, the aerobic dance group was very satisfied with their body image and experienced higher degree of physical perception. Also, Cooper and Schneider (2008) examine physical exercise and physical self-concept in young women, by distributing physical self-concept questionnaire including subscales of physical health, physical appearance, and strength. Their findings reveal a relationship between the maximum oxygen consumption and self-concept and a negative relationship between body fat and self-concept.

Jeffrey, Maryin, and Laurel (2012) evaluate self-concept and physical exercise among physically disabled athletes. In this research, 50 physically-disabled adolescent and adult athletes completed the physical self-description questionnaire. The findings revealed participants' positive understanding of physical self-concept. These scholars, also, suggest weight lifting and physical exercise to the ordinary people and physically disabled persons for improving self-concept. Gadbois and Bowker (2007) study differences in the relationships between extracurricular activities participation, self-description, and domain-specific and general self-esteem. 54 male students and 80 female students completed a general self-esteem questionnaire, a physical exercise questionnaire, a general self-description questionnaire, and a questionnaire of extracurricular activities. There was not a significant difference in general self-esteem between boys and girls. On the other hand, boys were more satisfied and reported a positive physical self-perception as compared with girls. Mohamadi *et al.* (2011) assessed impact of an eight-week aerobic exercise upon self-concept of guidance school girls of Ahvaz. As they point out, this exercise exerts a significantly positive impact upon physical self-concept and all of its subcomponents. Most sports psychologists put emphasis on significant impact of regular physical exercise upon physical self-concept. Physical exercise involves both aerobic performance and nonaerobic performance. According to principles of physical exercise, aerobic activities increase cardiorespiratory fitness and exert marginal impact upon muscles and muscular mass. Here, a question arises: Does aerobic exercise increase the physical self-concept?

Therefore, this study intends to evaluate whether an 8-week aerobic exercise impacts upon self-concept of nonathletic students aged 16-17 years old.

## METHODOLOGY

This study is a semi-experimental research including pretest, posttest, treatment group, and control group. The population consisted of 16-and-17-years-old nonathletic students in high schools of Tehran's fifth district, of which we selected 40 participants randomly. These participants did not perform regular physical exercise inside and outside of their schools, had general health, and did not suffer from any disease. Their parents expressed their satisfaction with their children's participation in this study. The data were extracted from physical self-description questionnaire (Marsh, 1994). This questionnaire contained 70 items for 11 components including health, harmony, physical exercise, body fat, sports competence, whole body, face, power, flexibility, strength, and self-esteem. Its calculated reliability, according to a preliminary study and results of test-retest, was 0.94. Cronbach's alpha was 0.73.

The treatment group and control group completed self-concept questionnaire. Then, the treatment group performed an aerobic exercise during 8 weeks. In this period, the control group did not perform any regular physical exercise.

The treatment group exercise was designed on the basis of sports medicine college strategies (1986) focusing on cardiorespiratory fitness. This exercise was performed within 45 to 65 minutes per session and thrice a week. This period covers warm-up, main exercise, and cooling-down.

As regards descriptive statistics, we used mean and standard deviation for describing personal characteristics of participants and the study variables. For inferential statistics, we performed covariance test in order to control pretest and to make a comparison between treatment group and control group.

## FINDINGS

The mean age of treatment group and the mean age of control group were 16.34 and 16.56 years old respectively. The mean heights of treatment group and control group were 168.21 and 166.43 cm respectively (Table 1). Physical self-concept means of control group in pretest and posttest were 327.43 and 329.12 respectively. Physical self-concept means of control group in pretest and posttest were 326.65 and 359.26 respectively (Table 2). Covariance analysis showed significant impact of aerobic exercise upon self-esteem in the treatment group (Table 3). Additionally, aerobic exercise significantly impacted upon general scores of physical self-concept in the treatment group (Table 4).

**Table 1: Mean Age, Height & Weight in Treatment Group and Control Group.**

	Age	height	Weight
<b>Treatment Group</b>	16.34	168.21	65.34
<b>Control Group</b>	16.56	166.43	64.95

**Table 2: A Comparison of Self-concept & Self-Esteem between Treatment Group & Control Group.**

Group	Control Group		Treatment group	
	Pretest	Posttest	Pretest	Posttest
General Physical Self-concept	65.23±327.43	66.74±329.85	69.15±326.65	72.32±359.26
Self-esteem	9.34±47.17	10.58±46.36	9.93±49.23	11.54±56.82

**Table 3: Mean Self-esteem of Treatment Group & Control Group (Covariance Test Results).**

source	Sum of square	df	Min if square	F	sig
Corrected model	346.97 <sup>a</sup>	2	186.56	69.34	.000
Intercept	27.21	1	26.28	9.18	.000
Pre- test groups	4.24	1	3.63	2.04	.318
error	334.51	1	326.75	121.35	.000
total	87.48	37	3.02		
	43453.18	40			

**Table 4: Mean Physical Self-concept of Treatment Group & Control Group (Covariance Test Results).**

sig	F	Min of square	df	Sum of square	source
.000	1092.31	3229.73	2	6459.47 <sup>a</sup>	Corrected model
.000	20.71	61.25	1	61.25	Intercept
.775	.08	.24	1	.24	Pre- test groups
.000	1949.67	5764.73	1	5764.73	error
		2.95	37	109.40	total
			40	4638528.29	

**Table 5: Mean Physical Self-concept of Treatment Group & Control Group (Covariance Test Results).**

source	Sum of square	df	Min of square	F	sig
Corrected model	6459.47 <sup>a</sup>	2	3229.73	1092.31	.000
Intercept	61.25	1	61.25	20.71	.000
Pre- test groups	.24	1	.24	.08	.775
error	5764.73	1	5764.73	1949.67	.000
total	109.40	37	2.95		
	4638528.29	40			

**DISCUSSION AND CONCLUSION**

Our findings revealed that an 8-week aerobic exercise impacted upon self-esteem of 16-and-17-years-old nonathletic students. These findings are consistent with Gadbois and Bowker (2007), Arazi and Rastegari (2013), Eftekhari (2007), and Pashabadi *et al.* (2010). Conversely, they conflict with study of Saadat Mehr (2014) perhaps because it examined women and nurses i.e. gender and job typology affected its findings. Studies show that physical exercise impacts upon personal efficiency and self-esteem by promoting health. Self-esteem is often described as our feelings about ourselves and our self-respect. Aerobic exercise improves physical health and changes attitudes to ourselves. In this study, an 8-week aerobic exercise positively affected self-esteem of students.

This study demonstrated significant impact of 8-week aerobic exercise upon general scores of physical self-concept among 16-and-17-years old nonathletic students. This finding is consistent with most studies regarding impact of physical exercise upon physical self-concept such as Gilian (2006), Annison (2003), Planinsec (2005), Jeffrey (2012), Asadian (2011).

Conversely, our finding is not in agreement with Eftekhari (2007) perhaps because of difference in exercise typology, its level, and duration. As these studies highlight impact of physical exercise upon physiologic, physical, and mental parameters and as the present study shows significant effect of physical exercise upon self-concept, we can conclude that level, duration, and quality of selected activities was desirable for the studied non-athletic students and therefore positively affected their general physical self-concept. As Sports Medicine College points out, aerobic exercise should be performed at least 3-5 sessions per week in order to bring about the desired effect. Accordingly, in the present study, aerobic exercise was performed 3 sessions per week in order to alter psychological traits and attitudes of students including their physical self-concept. Since the students gained higher scores in physical self-concept and self-esteem after performing aerobic exercise, sports teachers are suggested to schedule regular aerobic exercise in schools.

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