

**A Comparative and Correlational Study of the Body-image
In Active and Inactive adults and with Body composition and
Somatotype**

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Abstract

Regular physical activities can produce physical as well as psychological benefits. While its physical effects have been acknowledged, the psychological benefits of regular physical need to be assessed through careful and systematic investigations. Psychological benefits including well being, positive mood enhancement, stress reduction, and self-efficacy, and self-concept improvement are among some of the most important results of engaging in regular physical activities.

Self-concept is generally defined as one's knowledge about his/her characteristics and personal limitations and a way in which one looks at such characteristics as different from or similar to others. It is one of the important aspects of social development that is formed through social experiences and interpersonal relationships.

Scales have been purposed to assess self-concept PSDQ has been successfully used to study self-concept. The purpose of the present investigation was to examine the effect of participation physical activity in regular on body - image in the adult population. The subjects for this study included 120 adults (60 males 60 females) between 25-65 years who were randomly selected and then divided into two active and inactive groups through the Median Split Technique based on the Physical Activity Index scores. 2 x 2 MANCOVA (gender x group) with covariates of body for percent and BMI was used to analysis the data. The result on somatotype showed that, inactive group has higher score on endomorphy and mesomorphy but lower score on ectomorphy than active group.

Key words: self-concept, regular physical activities

Introduction

Regular physical activities have many benefits for both sexes of all ages. But it is most beneficial when it needs some essential needs of human. However, regular physical activity can produces physical benefits such as functional improvement in body systems (29) and psychological benefits such as well-being positive mood enhancement, stress reduction (12), and self-efficacy (4) and self-concept improvement (19, 38, 34).

Self-concept that is generally defined as one's knowledge about his/her characteristics and personal limitations and a way in which one looks at such characteristics as different from or similar to others, is one of the important aspects of social development that is formed through social experiences and interpersonal relationships (19). Such attitudes towards self-concept represented that positive self-concept could be develop through successful involvement in cognitive and social activities (34).

In general, self-concept maybe divided into two dimensions, academic and non-academic. Academic self-concept is related to cognitive and intellectual domains, but non-academic self-concept includes emotional, social and physical domain (27). Physical-concept is defined as one's subjective attitude toward his/her body (appearance and ability). Marsh et al attempted to study self-concept structures and by developing PSDQ demonstrated that self-concept has various dimensions and each of them are health and skill related. Fitness, sport competency, body composition and appearance (28).

Regular physical activities and exercise as a social event can increase positive self-concept self-concept in individuals, specially adults (38). Numerous findings have revealed that active groups have benefited tram participation in these kinds of habits and have better physical concept or body image than sedentary groups (17, 41, 16, 24, 39, 11, 21, 42, 22, 10, 31, 2, 3). Such research findings have to be examined in the developed countries where little is known about the effect of regular physical activity on body image or physical-concept, particularly in the Iranian population with its Islamic culture. Thus one of the purposes of the present investigation was to examine the effect of participation physical activity in regular on body - image in the adult population.

There are same physiologically, physically and psychologically (44) differences between males and females also, there are some sex differences regarding the sex role expectancy, social and occupational activities (12). Enhancing appearance-attraction along with health promotion is one of the important reasons for women for participating in ever size weight

reduction programs. The society put the stress on women to have attractive physique (20). Research findings have generally showed that women had more negative attitude toward body than men (32, 35, 2, 7, 18, 33). In developed countries, fashion plays an important role in women's life and consequently it can cause anxiety for (12). In contrast, in Iranian nation Hijab plays an important role in women's life and it can serve as a protection for them against experiencing that kind of anxiety. Thus, another important purpose of the present investigation was to determine the effect of gender differences on physical-concept.

According to some theoretical model it seems that physical-concept has several dimensions and these dimensions increase with aging (27). The final purpose of this investigation was to assess physical-concept, body composition, and somatotype as important determinants of physical-concept.

Methods

Subjects

The subjects for this study included 120 adults (60 males 60 females) between 25-65 years who were randomly selected and then divided into two active and inactive groups through the Median Split Technique based on the Physical Activity Index scores.

Instruments

Physical Activity Index Questionnaire was used to measure the physical activity level. Physical Self-Description Questionnaire (PSDQ) was used to measure physical-concept. This questionnaire has eleven sub-scales and for the purpose of the present investigation three sub-scales were selected. This questionnaire was applied to the same population for determining the reliability and an alpha Cronbach equal to 0.90 was computed.

Body composition included percent body fat and body mass index. Jackson and Pollock equation and Brozok equation were used to measure body density and body fat, respectively.

BMI is the ratio to square of height (m^2). Somatotype included BMI which is the ratio of body weight (kg) to height (m) squared and endomorphy, ectomorphy and mesomorphy assessed by Health-Carter method (13).

Procedure

Physical Self-Description Questionnaire (PSDQ) was completed before any physical measurements to prevent subjects bias. All measurements were performed to one for males and the other for females.

Statistical Analysis

2*2 MANCOVA (gender * group) with covariates of body for percent and BMI was used to analysis the data. If a significant difference was found then follow-up univariate analysis of variance was used. Pearson correlation coefficient was used to measure the association between physical-concept sub-scales and body composition and somatotype. The significant level was setup $\alpha = 0.05$.

Results

Descriptive statistics related to subject's demographic measurements, body composition, somatotype and body-image sub-scales are shown in table 1 according to gender and group. The results revealed that mean age, weight and height are larger in males than females. In addition, females have higher body fat percent (%32.88) than males (%22.95) but lower BMI (22.65) than males (25.87).

Somatotype measures show that females have higher score on endomorphy (7.23 vs. 5.49) mesomorphy (5.62 vs 4.49) and ectomorphy (1.48 vs. 1.44) than males.

Also, active group had higher means age, body fat percent, height but lower weight than inactive group and the same BMI. The result on somatotype showed that, inactive group has higher score on endomorphy and mesomorphy but lower score on ectomorphy than active group.

Table 2 presents the results of MANCOVA on the effect of gender and group on the body - image with covariates for body percent fat and BMI. The results showed that there was a significant interaction ($F_{3, 112} = 3.55, P < 0.017$) on body - image. Follow - up univariate ANOVA showed that there was a significant interaction between body sub-scale ($F_{3, 114} = 4.46, P < 0.007$) global physical ($F_{3, 114} = 5.12, P < 0.025$) and appearance sub-scale ($F_{3, 114} = 4.69, P < 0.032$). In addition, there was a significant main effect for group ($F_{3, 112} = 2.7, P < 0.049$) in body fat sub-scale ($F_{3, 114} = 4.54, P < 0.035$) and appearance ($F_{3, 114} = 5.49, P < 0.021$) but not for global physical ($P < 0.05$). There was no significant main effect for gender, either.

Table 3 shows the correlation coefficient between body-image sub-scales and body composition and somatotype. The results showed there was a significant inverse association between body fat percent with body fat sub-scale ($r = -0.63, P < 0.000$) and global physical ($r = -0.37, P < 0.000$). Also, there was a significant inverse association ($r = -0.61, P < 0.000$) between BMI and body fat sub-scale. There were significant inverse association between

endomorphism with body fat sub-scale ($r = -0.52, P < 0.000$), global physical sub-scale ($r = -0.31, P < 0.000$) and mesomorphism with body fat sub-scale ($r = -0.51, P < 0.000$) and global physical sub-scale ($r = -0.21, P < 0.018$). In addition, there were significant relation between ectomorphy with body fat sub-scale ($r = 0.61, P < 0.000$) and global physical sub-scale ($r = 0.21, P < 0.021$). There were no significant relation between appearance sub-scale with body measures.

Discussion and Conclusion

The purpose of the present investigation was to compare body image between active and inactive males and females and their association with body composition and somatotype. The results relate to body-image comparison between two group and males and females showed that, active males has better attitude toward his body than others. In addition, active adults had more positive body-image than inactive adults, but there were no significant differences between males and females. These findings are in agreements with the findings Franzoi (17) Davis (9) Arms (2), Davis & Fox (10), Daley & Parfitt (8) and Huddy & Cash (24) also showed that active adults had more positive body-image than inactive adults.

It seems that participating in physical activity can increase physical abilities and fitness and changes one's estimation from his/her capabilities. This, in turn, results in self-esteem improvement and positive attitude toward body. Sonstroem (37) in his Exercise and Self-esteem model (EXEM) proposed that the objective evaluation from physical capabilities maybe increased by exercise. This evaluation can improve self-acceptance or self-worth without considering perceived competency. Fox and Corbin (15) in the development of Physical Self-Perception Profile (PSPP) showed that there are strong association between efficacy and physical fitness. Sonstroem (38) also proposed that self-esteem improvement following participation in physical activity can be attributed to physical fitness improvement, meeting one's personal goals, competency improvement, health behavior promotion such as sufficient sleep and nutrition and confront with new social experiences as a result of activity with others. These factors can enhance one's self-satisfaction.

The results of the present investigation revealed that is no significant differences between males and females in what? This finding but supports what was reported by Netz (31) is contrary to Cash (6), Bruch on – Schweitzer (5) and Arms (2), who in their studies showed that the males had better body-image than females Netz (31). It seems that gender differences is related to physiological and anatomical differences (44) as well as sex role and society expectancy about that special roles of males and females. For example, male's expectancy from females is about her sliminess and good shape that its manifestation is differs in

different societies. For instance, body image can be influenced by mass media propagations on standard and sexual attractiveness or what fashion dictates (12). It was propose that the lack of gender difference in our study is due to our cultural and social value. Since, his isn't the focus of this as mentioned above and Moslem females seldom participate in the fashion competition in society, thus they feel less social physique anxiety and their body-image don't deteriorate.

In regard to the body-image and body composition relation the present findings revealed that there are significant inverse correlation between body-image with body fat percent and BMI. These findings are in agreement with the findings of Cash (6) Hart, Leary (23) Sullivan (40), Kaufman (26) Eklund, Crawford (14) Judish-berg (25) and Riely (32). In addition, there are significant inverse correlation between body image with endomorphy and mesomorphy and direct correlation with ectomorphy. These findings show that adult's attitude toward body may emanate from their body size and type. That is, one with less body fat percent has better body image and vice versa. One of the interesting finding of the present study might be the inverse correlation between body-image with mesomorphy. One reason for such finding maybe attributed the body changes due to aging which in turn affect somatotype (29). Another reason can be attributed to the method of somatotype assessment in this study. In the Health-Carter method, the classification criterion for dominant body type is. 5 difference between three kinds of

Somatotype, thus it seems that it isn't possible to separate mesomorph person with endomorph in these subjects.

In conclusion, these findings revealed that adults who participate in physical activity can benefit from its physical, physiological and psychological effects such as physical-concept. Also, the findings showed that one's body size can influence his/her body-image and thus physical fitness and shape up are associated with positive physical-concept formation and self-esteem development in the social setting and personal life.

Table 3 – The correlation results between body-image sub-scales and body composition and somatotype

Body-image	Fat sub-scale	Global physical sub-scale	Appearance sub-scale
Body measures			
% fat	- 0.63 **	- 0.37 **	- 0.04
BMI	- 0.61 **	- 0.17	0.08
Endomorphy	- 0.52 **	- 0.36 **	- 0.10
Mesomorphy	- 0.51 **	- 0.21 *	-0.09
Ectomorphy	0.61 **	0.21 *	- 0.01

* P < 0.05

** P < 0.01

Table 1 – Means and standard deviations for demographic measures, body composition, somatotype and body-image sub scales in gender and physical activity group.

	Male		Female		Active		Inactive	
	M	SD	M	SD	M	SD	M	SD
Age	44.9	11.82	38	11.39	42.81	11.33	40.37	12.67
Weight	76.08	10.29	64.45	9.38	69.89	10.75	70.66	12.13
Height	171.48	7.32	161.21	6.62	167.20	8.88	167.20	8.39
% fat	22.95	6.51	32.88	6.96	28.55	9.02	27.52	8.52
BMI	25.87	6	24.65	4.14	25	3.14	25.52	4.13
Ectomorphy	1.44	1.14	1.48	1.11	1.52	1.15	1.39	1.09
Mesomorphy	5.49	1.20	5.62	1.86	5.50	1.6	5.62	1.53
Endomorphy	5.49	1.76	7.23	1.85	6.20	2.05	6.52	1.94
Fat sub-scale	5.11	7.52	21.66	8.38	24.42	7.48	22.32	8.66
Global-physical sub-scale	26.70	6.46	22.51	7.55	25.37	7.3	23.81	7.29
Appearance sub-scale	26.06	5.44	25.25	5.32	26.75	5.04	24.52	5.51

Table 2 – MANCOVA results for the effects of gender and group on body-image

		MANCOVA			ANCOVA	
		F	P		F	P
Gender	Fat	0.99	0.342	0.79	0.22	0.63
	Global				1.01	0.31
	Appearance				0.23	0.62
Group	Fat	0.93	2.70	0.049	4.54	0.035
	Global				2.41	0.12
	Appearance				5.49	0.021
Gender by group	Fat	0.91	2.55	0.017	7.46	0.007
	Global				5.12	0.025
	Appearance				4.69	0.032
% fat (c)		0.88	4.68	0.004		
BMI (c)		0.86	5.77	0.001		

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