

## The Effect of a Twelve -Week Aerobic Exercise Program on Self-Concept among 8 to 10 Years Old Physically and Mentally Disabilities Children

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**Abstract:** Purpose: The purpose of this study was to examine the effectiveness of an aerobic training on physical self concept, heart rate and body fat in 8-10 years old children with mental and physical disabilities. Methodology: 40 children were selected to participate in this study and were assigned to experimental and control groups (n=20). They fulfilled perceived physical fitness scale (Abadie, 1988) in pretest. The experimenter, also, were measured heart rate and body fat as pretest. Then they were exposed to a 12 week aerobic training including simple skills in aerobic which were presented using a professional coach. The subjects were completed this scale and their heart rate and body fat scores measured again in the end of training period (post test). Data were analyzed using ANOVA and Tokay tests ( $p < 0.05$ ). Result: The analysis of data showed that there was no significant difference between experimental and control groups in pretest in all variables, this finding, however shows that participants were in an equal level of physical self concept perception in the beginning of the study. Also, there was a significant difference between pretest and post test scores in physical self concept scale and its subscales only in experimental groups ( $p < 0.05$ ). No significant differences have been found between experiment and control groups in heart rate and body fat variables. These results indicate that an aerobic training could positively affect the physical self concept perception, and not physiological variables. Discussion: These results are discussed in the term of positive effectiveness of sport programs on the psychological components in children with mental and physical disabilities . It suggests that future research consider the other psychological and physiological variables related to exercise in children with mental and physical disabilities.

**Key words:** Physical self concept, Heart rate, Body fat, Children with mental and physical disabilities.

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### INTRODUCTION

Self-concept is a very important concept in psychology and theorists of this field of study have specified it and studied its effect on human behavior. Individuals with negative self-concept always live their lives with dubiety, uncertainty and tension and all of these states inhibit their abilities and consequently hinder or prevent their success. If the individual has a positive self-concept and they are confident of their "self", their self-actualization and success are realized and they achieve independence in their function and behavior, leading to satisfaction and effective employment of individual potentials (Pour Hossein R ,2004).

Researchers and interpreters in the area of sports have come to the conclusion that competitive sports and activities have physical, psychological and social benefits and can help develop spiritual and moral values. Moreover, sports and exercises have the potential to affect self-perception, especially physical self-perception, and most participants have reported an increase in physical ability after performing exercises and this feeling conveys itself to other aspects of their lives. Physical condition is more related to individual's self-image; therefore one of the roots of our relations with others and the feeling we have of ourselves stems from our body posture and physical fitness (Akbari H; Khalaji H; Shafizadeh M, 2006).

Furthermore, researches in this area have revealed that physical fitness and physical exercise drastically affect self-concept. Considering the physical and mental difficulties of exceptional children and considering the fact that from childhood they are looked upon as handicapped or disabled, these children may have a lower self-concept in comparison with healthy children. Shields *et al.* illustrated this subject in their research (Shields *et al.*, 2006). They found that in comparison with normal children, exceptional children have a lower level of mental abilities and self-concept. This result approves of the need and necessity for an increased attention to psychological problems of this specific group of children.

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Exceptional children are a part of human society. These children, due to some differences, require specific facilities and special attention in contrast to normal people. Mental handicap can be explained as insufficient development of mental abilities. One of the physical characteristics of mentally handicapped children which must be taken into consideration is their poor physical condition. These children require an improvement in physical fitness and motor ability. The important problem is that these children may be able to perform skills, but their failure may be due to not understanding that motor skill. Sports and physical education may be able to encourage these children to participate in motor programs. In a research dealing with the relationship between physical fitness and physical self-concept, Tucker showed that factors of physical fitness are acceptable measures for predicting body-image (Tucker, L.A, 1983).

In a research, Moreno-Murcia *et al.* studied the differences between self-concept of Spanish children due to age, gender, and level and type of exercise. The results of this research showed that children who engaged in sport exercises outside the house and those who spent longer hours exercising reported a better self-description profile than those who did not exercise or spent less hours exercising. This profile included physical self-perception, self-confidence and self-esteem (Moreno Murcia JA *et al*, 2007).

Murphy *et al.* emphasized the importance of participation of children with physical disorders in physical activities. They mentioned that physical activity has positive effects on these children such as enabling them to be more sociable, improving their physical and mental health and so forth (Murphy NA *et al*, 2008).

Schneider and Dunton studied the effect of a physical exercise session on self-concept of schoolchildren. The results of this research showed that physical exercise has a positive effect on various components of children's self-concept. The results also revealed that physical exercise has a positive effect on the physical fitness of children. The researchers argued that the positive effect of physical exercise on children's physical fitness improves their perception of self and consequently their self-concept (Schneider M ; Dunton F, 2008).

There are few research studies in the literature on exceptional children that deal with the effect of sports and physical education on psychosomatic components in the mentally handicapped. Thus in the present research, the researcher aims to find the answer to the question whether physical exercise enhances self-concept of exceptional children.

#### **Research Methodology:**

The present research is semi-empirical using a research design which involved pretest-posttest measurements in order to collect data.

#### **Statistical Population and Sample:**

The statistical population of this research includes all 8 to 10 years old schoolchildren present in exceptional schools of Gorgan Province; 40 children were randomly selected and divided into two groups of 20 subjects, including an experimental group and a control group.

#### **Measurement Material:**

Perceived physical fitness questionnaire (Abadie, 1988) was used in order to measure physical self-concept. This questionnaire included 12 questions that assess the four subscales of physical condition, muscle flexibility, muscle condition and body composition and this questionnaire was normalized in Iran by Farsi *et al.* (2008). The Cronbach's alpha coefficient for determining the internal consistency of this questionnaire was reported as follows: 0.88 for physical condition; 0.88 for muscle flexibility; 0.82 for muscle condition; 0.80 for body composition, and 0.84 for body fitness. The reliability of this questionnaire was reported as follows: 0.84 for physical condition; 0.80 for muscle flexibility; 0.80 for muscle condition, 0.78 for body composition, and 0.80 for perceived physical fitness (Abadie BR, 1988; Farsi AR *et al*, 2008).

#### **Test Procedure:**

In the pretest session, children filled out the questionnaires with the aid of their teachers. Then the exercise protocol was performed. This protocol involved twelve weeks of aerobic exercise. Each week included three exercise sessions, each of which lasting one hour. The aerobic exercise program of this research consisted of smooth and normal aerobic movements, performed in the schoolyard with the help of a professional aerobic trainer as well as children's teachers. At the end of the eighth week of aerobic exercise program, the foresaid questionnaire was redistributed among children as posttest and they filled them out with the help of their teachers.

#### **Statistical Tests:**

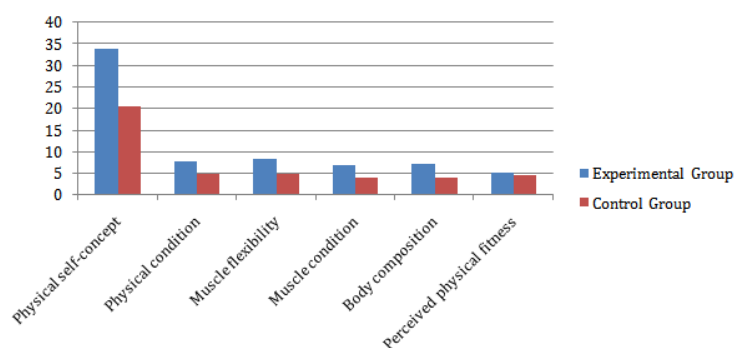
In this research, descriptive statistics is used which includes mean and standard deviation for describing research variables; also independent and dependent t-tests have been conducted in order to compare the results of the pretest and the posttest of groups and to compare the groups with one another.

### Results and Findings:

Mean and standard deviation of the subjects' scores in the self-concept test and its subscales in the pretest and the posttest are presented in Table 1 and Graph 1. Comparing the scores of the experimental and the control groups, it was revealed that there was no significant difference between subjects of the two groups at the beginning of the research ( $t=0.057$ ,  $t=0.019$ ,  $t=0.84$ ,  $t=0.14$ ,  $t=0.72$  and  $t=0.31$  respectively belong to total self-concept, physical condition, muscle flexibility, muscle condition, body composition and perceived physical fitness) ( $p<0.05$ ). Moreover, comparing the pretest and the posttest of groups revealed that an aerobic exercise program had a significant effect on physical self-concept variable and its subscales (excluding perceived physical fitness) ( $t=3.12$ ,  $t=1.76$ ,  $t=2.91$ ,  $t=1.07$ ,  $t=2.70$  and  $t=0.55$  respectively belong to total self-concept, physical condition, muscle flexibility, muscle condition, body composition and perceived physical fitness for the experimental group;  $t=0.16$ ,  $t=0.51$ ,  $t=0.47$ ,  $t=0.70$ ,  $t=0.48$  and  $t=0.10$  respectively belong to total self-concept, physical conditions, muscle flexibility, muscle conditions, body composition and perceived physical fitness for the control group) ( $p<0.05$ ). Considering the obtained results, a physical exercise program has had a significant effect on physical self-concept and its subscales, except perceived physical fitness, in physically and mentally handicapped children and has improved their self-concept (see Table 1 and Graph 1).

**Table 1:** Mean and standard deviation of pretest and posttest scores of physical self-concept variable in the two groups

		Physical Self-concept	Physical Condition	Muscle Flexibility	Muscle Condition	Body Composition	Perceived Physical Fitness
Experimental Group	Pretest	20.25±2.7	4.81±0.7	5.01±1.1	4.54±0.8	3.19±1.0	4.50±0.9
	Posttest	33.72±4.5	7.86±2.1	8.17±1.9	6.91±2.9	7.04±2.3	4.97±0.8
Control Group	Pretest	19.20±2.4	4.33±0.7	4.78±0.8	4.10±1.1	3.67±1.6	4.27±1.4
	posttest	20.47±3.2	4.37±1.3	4.95±0.6	3.97±1.6	4.08±1.2	4.45±1.0



**Graph 1:** Average scores of subjects in the posttest.

### Discussion and Conclusion:

Research studies carried out on intervention exercise programs for individuals with physical and mental disorders are very few. Thus, it is imperative to provide proper exercise and sport programs for physically and mentally handicapped individuals. The objective of the present research was to study the effect of conducting an aerobic exercise program on self-concept and its components among mentally and physically handicapped children. As the results of the research revealed, aerobic exercises led to a significant increase in the physical self-concept of the experimental group, while no significant change was observed in the pretest and the posttest of the control group. Fragala-Pinkham *et al.* and Chastain and Shapiro showed that exercise programs can improve psychological and physiological abilities in individuals with physical disabilities and the results of the present research is consistent with their finding (Fragala Pinkham MA *et al.*, 2005; and Chastain PB ; Shapiro GE,1987). Moreover, the findings of our research are in line with the results of Murphy *et al.* and Schneider *et al.* (Murphy NA *et al.*, 2008 and Schneider M & Dunton F, 2008).

There are various factors influencing psychological and physical development of which we can mention the effect of special physical activities and sports on these skills. As children realize the concepts of activity, movement and the ability to perform tasks when engaging in exercises or sports, they often experience an enhancement in their self-assessment and general emotional development. In the present research too children with mental and physical handicap reacted positively to sports and physical exercises and their perception of self was improved in the form of physical self-concept. Considering the fact that many disabled or retarded schoolchildren are such due to structural factors and that these children have difficulty in perceptual-motor skills and cognitive skills, it is recommended that studies be carried out to deal with the effect of sports and physical exercises on perceptual-motor functions as well as physiological indices of these individuals.

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