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The Effect of a Gymnastic Exercise Program on the Boy's Self-Concept

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ABSTRACT

The aim of this study was to investigate the effect of a gymnastic practice program on the self-concept of children aged 8 to 11 years. In this research, 40 subjects were divided into two equal groups of control and training group. After completing the procedure, the participants of the training group performed the gymnastics training program for 12 weeks, and the control group did not do any work. The data gathering tool was a demographic questionnaire and Piers-Harris self-concept scale. The Kolmogorov-Smirnov test was used to test the normal distribution of samples. The results of the study showed that in the training group, the dimensions of self-concept and general self-concept of children before and after gymnastics exercises increased significantly. The results also showed that the dimensions of happiness and satisfaction of children, both in the control group and in the training group, were significantly different. From the findings of the research, it is concluded that a training program in the field of gymnastics training significantly increased the level of self-concept of children.

Keywords: Self-concept, Gymnastic practice program, Children boys

INTRODUCTION

Participating in physical activities, in addition to having a positive impact on physical characteristics, also affects mental qualities, and it is self-evident that physical activity also has physiological and psychological benefits [1]. Compared with traditional interventions such as psychotherapy, psychological, social and pharmaceutical interventions, physical activity has a few side effects that are relatively cost-effective [2]. Furthermore, physical activity may have beneficial effects in cardiovascular disease, diabetes, high blood pressure, cancer, osteoporosis and obesity. Research in this field shows that physical activity can improve mental health [3,4]. Nolis states that physical image (physical self-concept) includes the person's feelings, behaviors and values towards him or herself, and how to consider the appearance and all the internal emotions of an individual forms their physical image [5-7]. Many factors such as the rate and quality of communication between the child and the parents, inspiration and encouragement of the family members, specially the parents [8,9], social interactions such as the reactions of others, age, sex and sports activities, affects the self-concept. A person having a strong and positive self-concept, compared to a person with poor self-concept, has a completely different perspective on the world [10-17]. Self-concept makes the person more sensitive to its own information, and makes it easier to encode and retrieve. The reason for this is that the information about the individual is analysed more deeply and carefully, and also the information of the most self-organized information networks is in the memory of individuals, and the more regular the information, the more powerful the reminding [18]. Physical self-concept is a branch of self-concept that signifies the awareness and self-assessment toward their own body. This factor and how to view it can have significant effects on the individual and social lives of people. The stages involved in the evolution of the consciousness of the body depend on sensory-motor stages involved in the evolution of the physical schema, and they are the prerequisite for the cognitive conception of the body [19]. Many studies have shown that there is a positive and significant relationship between sport activity and self-concept. Wells and colleagues in a research entitled: 'The effect of a 12-week resistance exercise program on

strength, body composition and self-concept', showed that resistance exercises had a positive effect on people's self-concept [20-24].

Also, following studies on the multidimensional nature of physical self-concept and making tools and examining their validity, this time in another study to identify and determine the constituent factors of self-concept, they introduced and tested their "physical self-descriptive questionnaire". In this study, with the presence of two samples of 315 and 395 high school students, it was showed that the considered tool, including the subscales related to strength, body fat, physical activity, endurance, sports merit, coordination, health, body appearance, flexibility, general body self-concept and self-esteem, had enough validity to identify self-concept factors of body, and the presented model on the body self-concept had a multidimensional nature. The external validity of this tool was also investigated in another study, and it was showed that its subscales had a significant correlation with physical fitness items [25].

During the pre-school period, parents have their most influence in their evolution trend. The richness of this relationship determines the quality and quantity of nurturing, attachment and interaction of the effect. Confirmation, approval and encouragement of the family members, specially the parents, affirms the positive self-concept in the child. One of the significant factors in the growth of self-concept is the "replication" with the patterns; it means that the child replicates with the important people in his or her life and chooses them as models or patterns of behaviour. Replication causes your image to be changed; meaning the person feels that he has become like his own model. An important part of self is determined by the child's replication but with his or her same sex [26-28].

Generally, the stability of self-concept depends more on the coherence between the initial self-concept that is acquired early in life, particularly in the home environment, and the secondary self-concept that is formed later [29]. Except for the stability of the general self-concept, the coherence between types of self-concepts is also very important for the person's mental health. In Roger's theory, one of the main concepts is the harmony between basic self-concept and ideal self-concept; the more distance between these self-concepts, the greater the conflict between real abilities and the ideal wishes of the individual [30]. Under such conditions, person can adapt himself to the environment and enjoy life satisfaction. Such a person has an incoherent or negative self-concept. Conversely, if the interval between self-concepts is low and some kind of coherence exists between different self-concepts of the individual, person will have more peace and mental health [31]. A study, entitled; "The comparison of self-concept of athletic and non-athletic students", was done. The subjects of this study were 200 students aged between 16- 19 who were randomly divided into two 100-people groups of athletes and non-athletes. To assess the amount of self-concept in the subjects, California's personality test was used [32]. The results of t-test for two independent groups showed that there is a significant difference between self-concept of athletic students and the non-athletes, that is, athletes have a higher and more stable self-concept. However, there are studies that show a lack of significant effect of exercise activity on the self-concept [33]. For example, in a study that examined the effect of swimming program and movement on water navigation skills and children's self-concept, the results showed that there was a significant effect on the children's navigation, but no significant effect was seen on their self-concept [34]. A study, entitled: "Determining the correlation between physical self-concept and a selection of physical fitness factors and the physical activity of the students", was done. The subjects of this research were 100 female students of Isfahan University with the age range of 19-25. The tool used to gather information on the standard variable of physical self-concept [35] was the physical self-descriptive questionnaire contained 24 questions consisted of four subscales of strength, endurance, coordination and flexibility. The tool for measuring the variable "physical fitness and physical activity level" was respectively four tests of fisting strength, aerobic balance, coordination, sitting and hand reaching; and the questionnaire was the indicator of physical activity [36]. In order to clarify the influence of the sports activities, especially gymnastics, on the self-concept, the researcher sought to answer the question of whether a gymnastic course affects the self-concept and its subscales affecting the children aged 8 to 11.

METHODS

The research method is semi-experimental and research plan is pre-test/ post-test with the control group. In this research, the dependent variable, self-concept, was measured in the participants before and after applying the independent variable (gymnastic exercise program). The statistical population of this study was all the boys aged 8 to 11, registered in the gymnastics house of Fajr Sports Complex in Tehran during the years 1394- 1395 in which 214 people were registered. The sampling method was simple random sampling that 50 people were selected in the initial stage, and finally 10 people were excluded from the research for various reasons such as unwillingness and lack of cooperation as well as past sports records in other fields of sports, and 40 people were selected as the final sample. The individual characteristics of the subjects are presented in Table 2. All of the selected subjects had no

cardiovascular disease, diabetes, etc. and a letter of consent was taken from their parents, and the children were asked if they would like to participate in the research. Also, their demographic questionnaire, i.e. sports records and personal information, as well as physical health request were completed. The participants were randomly divided into two groups of training and control with 20 individuals for each. At first, the subjects of both groups filled out the questionnaires of demographic and Pier-Harris self-concept scale. The demographic questionnaire included the general information of the participants and their parents, such as age, sports activity records, gender, family economic status and the education level of the parents. The validity and reliability of this scale have been performed to a random sample of 1060 people. The test-retest method and bisecting method have also been applied as a validity computation index. The coefficients of this calculation are reported as 0.83 [26,27]. Also, the validity of the self-concept scale was determined like the following ways:

The content validity of the self-concept scale was determined by a translation-retranslation method, and it was found that all of the questions represented the very same thoughts that were reflected on the original scale, and this tool has a high a level of formal and content validity. To ensure the simultaneous validity of the self-concept scale, the correlation of the scores for each subscale was obtained together, which was found that all correlations were significant at a level of 0.01 [28]. According to Saatchi et al., this tool, especially as a tool related to children, has robust retest reliability with a coefficient of 0.73 for school children with duration of more than 4 months [29]. While this tool is less stable for the third-grade students, with the coefficient of 0.66, relative to the sixth grade, with the coefficient of 0.87, with the same time period. Also, this tool has a good concurrent validity which has been proved by its significant correlation with the Pierson-Harris's self-concept scale for children.

RESEARCH FINDINGS

12 weeks of gymnastic training practice were assigned to the participants of the training group. The practice program is presented in Table 1.

Table 1: The practice program of the training group.

Row	Type of activity	Activity duration
1	General body warming up: Stretching movements Limbering up movements	10 minutes
2	Expert body warming up Power movements using Swedish ladder, stretching from the horizontal bar climbing up and down the ropes	5 minutes 5 minutes 10 minutes
3	Training program: Front rolling, back rolling, next-to-wall balance, carousel, jump and land, moving position in the ring, walking on the balance wood, jumping from the balance wood	30 minutes
4	Cooling down, Gentle walking and stretching exercises	10 minutes

According to table 1, the control group did not do any exercise during this period. The duration of each training session for training group was 45 minutes for 12 weeks. The time of doing exercises was 6 to 7 p.m. The program was conducted under the supervision of a gymnastic instructor. After completing the training period (12 weeks), again both training and control groups completed the demographic questionnaires and Piers-Harris self-concept scale. After answering the questions. The questionnaires were collected by the researcher for statistical operations. Descriptive statistics were used to study the central tendency and distribution of the data. Also, Kolmogorov-Smirnov test was used to study the natural distribution of the data. Correlated test was applied to examine the significant difference of the means of the pre-test and post-test measured variables. In addition, independent t-test was used to examine the significant difference between the two groups of training and control. In order to show the significance level of $\alpha=0.05$ was considered. All statistical calculations were performed using SPSS software.

The subjects' characteristics are showed as mean \pm standard deviation in Table 2.

Table 2: Individual characteristics of the subjects in the training and control groups.

Groups/characteristics	Control group	Training group
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Age (year)	9.70 ± 0.979	9.75 ± 1.070
Height (cm)	138.4 ± 2.15	139.1 ± 1.96
Weight (kg)	32.12 ± 3.05	31.25 ± 2.87

Table 2 shows the individual characteristics of the training and control groups that are divided into three parts of age, height and weight. The results of Table 2 indicate that the age of both groups of subjects has the same difference, and this applies to the height of the subjects. Also, the weight in both groups is similar and the same.

Table 3 shows the total values of self-concept as mean ± standard deviation in two stages of measurement.

Table 3: Total values of pre-test and post-test self-concept in training and control groups.

Statistical index Groups	Groups	Mean ± standard deviation
Training	Pre-test	4.62 ± 2.984
	Post-test	58.6 ± 2.962
Control	Pre-test	45.7 ± 3.113
	Post-test	43.65 ± 2.777

According to the Table 3 and chart 1, the means of the total scale of self-concept in the control group decreased in the post-test, compared to the pre-test, while in the training group, the means of the total self-concept scale in the post-test increased, compared to the pre-test.

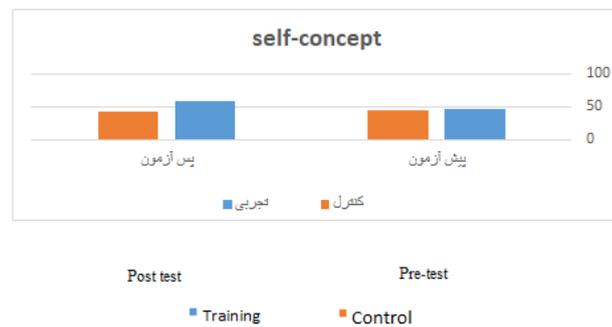


Chart 1: Total values of pre-test/ post-test self-concept in the control and training groups.

Chart 1 clearly shows the fact that the means of total scale of self-concept in control and training groups in pre-test and post-test have a significant difference in both groups so that the level of difference in the post-test of the training group is much more than the pretest group.

Table 4 shows the values of self-concept dimensions as mean ± standard deviation in the two stages of measurement.

Table 4: Mean values of self-concept dimensions in the training and control groups.

Dimensions	Groups	Pretest mean ± standard deviation	Post-test mean ± standard deviation
Behavior dimension	Training	6.5 ± 0.946	12.35 ± 0.988
	Control	5.5 ± 1.147	5.2 ± 1.056
Rational and educational situation dimension	Training	11.20 ± 1.473	14.80 ± 1.152
	Control	11.20 ± 1.473	11.80 ± 1.281
physical appearance and perception	Training	8.45 ± 0.826	13.65 ± 0.875
	Control	8.30 ± 1.031	8.05 ± 1.050
Anxiety dimension	Training	12.15 ± 1.089	5.75 ± 1.209

	Control	12.05 ± 1.486	11.90 ± 1.410
Popularity dimension	Training	3.5 ± 0.827	5.30 ± 1.031
	Control	3.80 ± 0.834	3.30 ± 0.923
Happiness and satisfaction dimension	Training	4.40 ± 0.883	6.75 ± 1.682
	Control	4.15 ± 0.875	3.30 ± 0.923

As the results of table 4 show, in the training group, the amount of all dimensions of self-concept in the post-test was significantly increased compared to the pre-test. However, according to the results of the statistical test, in the control group, the mean value of all dimensions of self-concept, with the exception of happiness and satisfaction, was not significantly increased in the post-test compared to the pre-test.

DISCUSSION

In the present study, the effect of a gymnastic exercise program on the male children's self-concept was investigated. The results of the study showed that the training gymnastics exercises had a statistically significant influence on all aspects of the children's self-concept. In other words, the mean of self-concept in post-test is significantly increased in comparison with the pre-test, which can be attributed to the use of an independent variable, i.e. gymnastic exercises because the gymnastics practice program develops the infrastructural factors of self-concept including strength, endurance, coordination and flexibility. The effects of different exercises and training programs, including aerobic and anaerobic exercises and general health programs, on the increase of self-concept and body image in various studies, confirm the results of each other in most cases and all support the improvement of self-concept through physical activity. Psychologists believe that if exercise is performed in a healthy environment, it can improve the natural morale of the person and eliminate self-deprivation and facilitate communication with other people in the society and to live with them more easily.

Physical activity and exercise when performed by the same age groups causes some of the hidden talents if individuals, not concurring with individual activities, to flourish in sports environments. Also, the research results showed that there is significant difference between the effect of a gymnastic exercise program on the overall self-concept of the male children in pre-test and post-test, which is in line with the results of many studies [4,29,35,36]. The present study examined the effects of physical activity, karate and aerobic activities and used a different exercise program with varying intensity and duration. However, they all showed a positive and significant correlation between physical activity and the body image. Jays and colleagues examined the influence of physical activity on the self-concept [21]. In this research, the group, performing physical activity, i.e. aerobic activity, jogging and gymnastics, was compared with the proof group, performing easy games, painting, singing and walking, and the other proof group, having no physical activity or recreation. They found that there was a significant difference between the aerobic activity group and the proof group in terms of self-concept. The results clearly showed the preference and the effect of aerobic activity on the growth and development of self-concept in comparison with other physical education and non-physical education programs. According to the research result, there is a significant difference between the effects of a gymnastic training program on the behaviour of male children in the pre-test and the post-test. Theoretical foundations also confirm the impact of exercise on the behavioural dimension, for example Deforch states that the people's desire to exercise is one of the most important factors in determining behaviour. Therefore, in order to examine exercise, individual and social factors, related to doing exercise, should be considered. Also, the theory of the planned behaviour is useful in understanding and explaining the athletic behaviour, and it shows that attitude toward exercise, subjective norms about the exercise and the perceived behaviour control about sports have a correlation with the tendency to doing exercise. Also, the tendency to exercise and to control the perceived behavior about the exercise have a correlation with doing exercise [19]. Pronk noted that intense exercise could have many benefits on the mood and behaviour, and it is related to stress, tension and increased self-confidence [33]. According to the research results, there is a significant difference between the effects of a gymnastic training program on the rational and educational status of male children in pre-test compared to the post-test. According to researchers, the intelligence and memory of people who run slowly is more than the others, and this amount is reduced by stopping the exercises. According to researches, doing exercise, in addition to strengthening the muscles, also improves brain function, due to the increasing oxygen production and improving blood flow. Some researchers have argued that self-concept is not an intrinsic trait, but it is shaped by the physical and social environment in time and in relation to school, friends and family, and plays a collaborative role in increasing self-esteem and concept of the children early in childhood. Self-concept is closely related to some factors such as education achievement, sport performance,

quality of communication with peers as well as acquirement of coping skills [26]. According to the results of the research, there is significant difference between the effects of a gymnastic practice program on physical appearance and attitude of male children in pre-test and the post-test. The results of this study contradicted the results of the study [9], which is probably due to the inconsistency of the statistical population that in Ghadiri's study it had been worked on the physical study of the boys aged 13 to 18 with cerebral palsy, but in the present study, healthy children aged 8 to 12 have been studied. According to the results of the research, there is a significant difference between the effects of a gymnastic practice program on the male children's anxiety level in the pre-test and the post-test. Doing exercise reduces anxiety level. In the researches on the effect of exercise on the mental health of the children, it was found that physical activity played an important role in the health of sick children [16]. Also, it was found that doing exercise improves mood and mental health and increases self-esteem and self-confidence. On the other hand, exercising has a great influence on calming elderly patients, hospitalized and non-hospitalized, in terms of the symptoms of anxiety, depression, mood as well as reactions resulted from psychological pressures [32]. In another study, it was perceived that by means of intense exercises, severe changes in behaviour such as anxiety, tension, depression and self-esteem increase in individuals happen, and aerobic exercises may improve self-esteem and reduce depression [28]. According to the research results, there is a significant difference between the effects of gymnastics training program on the popularity dimension of the children in pre-test and the post-test. One of the broadest beliefs about getting to exercise is that sports benefit the athlete in many ways. Such impacts may be temporary or permanent and may be accurate for all segments of the society. One of the benefits that possibly results from sports participation is the positive effect on the self-concept development. One the privileges that sports and games can afford to a person is to open the door to the social relationships and demonstrate its capabilities and competencies. Peaceful coexistence with others increases physical capacity, and self-confidence of the person causes social acceptance. Also, participation in sports activities provides opportunities for the person to evaluate himself in comparison with the counterparts. In addition, participation in such activities is a good benchmark for many of the behaviours of individuals based on their social acceptability. Once a person can accept himself, he will be able to influence others with help and assistance. Such behaviour occurs when a person thinks that his perception and acceptance toward himself is a sound and logical concept. All of these benefits seem to indicate the potential effects of exercising in the formation of the self-concept [2]. According to the results of the research, there is a significant difference between the effect of a gymnastic practice program on the happiness and satisfaction of the male children in pre-test and the post-test [14]. The study of the effect and role of physical activity on the quality of the life of adults showed that regular physical exercises improve health, mental health, especially in such areas as personality, life satisfaction and happiness, self-efficacy, self-concept and body image. Although many people participate in aerobics classes and get tired, but this fatigue is pleasant to them, and they look happy after graduation. Many people have also found that once they are active, they can do many things without getting tired. Being active is considered to be a scenic perspective in the human life by some people. Others say that they feel well after doing exercise, gain more self-confidence and face with the life's problems more flexibly. They have found that they should be deepened in the exercising activities spirited.

Physiologically, people participating in the non-competitive aerobic exercises, such as running, cycling and swimming, produce a chemical substance in their bodies like morphine that makes them feel happy and excited. From the psychological point of view, those people participating in the gymnastics field improve self-confidence in themselves and increase mental health [10].

CONCLUSION

The final conclusion is the gymnastics practice program will definitely have a positive effect on the self-concept of the male children aged 8 to 11. On the whole, the findings showed that 12 weeks of gymnastics training program has a significant and extraordinary effect on the general self-concept and all of the dimensions of self-concept in the children.

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