



## The effect of aerobic exercise on the level of anxiety among Tehran 6-year-old pre-school girls

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Received: 08 November 2012

Revised: 16 December 2012

Accepted: 18 December 2012

**Keywords:** Aerobic training, anxiety, sport.

### Abstract

The aim of this study was to investigate the effects of aerobic exercise as a non-competitive sport in children 6 years of preschool anxiety. Experts believe that due to the non-competitive nature of the sport, the child does not produce anxiety. Because many competitive sports and competition lies in it can be a source of anxiety. Quasi-experimental methods and the form field. 198 pre-school girls in Tehran were randomly selected and screened CAT test. Pearson statistical research data, T-test depends on the level of  $0/05 > P$  analysis is aerobic exercises, the 97 child remaining in the twelve-week exercise training based on the 30 minutes of three meetings a week, participated in the study. They provide anxiety levels before and after exercise were compared in order to test the research hypotheses. Results showed significant differences in anxiety in children before and after aerobic training has occurred. Overall results showed that aerobic exercises to overcome anxiety in children and increase their accuracy and also has a very many positive physiological and psychological benefits for children.

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## **Introduction**

Anxiety is an emotion representing a natural response to a threat and once this emotion is unreasonable and extreme and lingering, it is considered pathologically (Salmon, 2001). In recent years topics in child psychology have been paid great deal of attention, because children are subject to various stressful factors with numerous negative outcomes and these outcomes entail a spectrum of adverse physiologic, mental to cognitive effects (Telch *et al.*, 1993).

Physical therapy is suggested as an affordable and non-pharmaceutical method for prevention, treatment and reduction of children's mental problems (Salmon, 2001). One physical therapy procedure involves regular exercise which, compared with pharmaceutical methods, is void of side effects and can be performed both individually and collectively and being non-competitive it does not bring about anxiety. (Abu-Omar *et al.*, 2004; Goodwin, 2003).

Although children appear to be untiring and inexhaustible energy reserves, like adults they often face mental and physical challenges, including stress, anxiety, depression, feelings of tire and ... (Lampinen *et al.*, 2000). Haarasilta and colleagues maintain a distinction between two aspects of anxiety: Somatic anxiety; that has to do with physiological changes during anxiety such as increased heart rate, increased peristalsis of stomach and rapid breathing (Haarasilta *et al.*, 2004).

Cognitive anxiety that is usually associated with somatic anxiety and anxiety-related thoughts including worry, self-doubt, perceived failure and humiliation. In view of the adverse effects of stress on children's physiological, psychological, physical and educational functions, it is essential to offer a perfect solution for it. The results of numerous research studies are suggestive of reduced stress as a result of Yoga breathing exercises yet few studies have examined the effects of aerobic exercise on anxiety particularly in children. This study aims to

evaluate the effect of regular aerobic physical activity on anxiety in preschool children.

## **Materials and methods**

The research methodology adopted for this study is semi-experimental and the data is collected in the field. Different tests were used to measure the research variables; to study anxiety (CAT) test was used and the test results were scored using the Revised Children's Manifest Anxiety Scale (RCMAS).

### *Research population*

Population included all children of Tehran pre-school centers and kindergartens among which a sample of size 97 was chosen.

### *Sampling method*

Having developed a sampling framework a list was prepared of names and addresses of the kindergartens in Tehran in the twenty-two municipal districts. Using cluster sampling four districts in Tehran (21, 5, 9 and 11) and five nurseries in each district were selected by random draw. In the early stage all of the children (198) were given anxious test for screening purposes. 97 of them who suffered from anxiety were included in the sample. Aerobic training was provided to them and over time the sample size was reduced to 95.

After the screening test, children without anxiety were excluded from the sample and to reduce the interference of confounding variables and integration of training and the implementation of aerobic exercise, one teacher from each kindergarten was selected based on individual interest and ability for aerobic exercise training and received ten one-hour training sessions under supervision of an expert trainer. After this stage children with anxiety were subject to twelve weeks of training three sessions per week for 30 minutes.

The results of anxiety test were extracted and recorded based on standard tables for each child at this stage and at the end of the last training session, the children were again given anxiety test, and the

results were extracted and recorded likewise. To test the hypothesis, the results of both phases of the study were compared with each other.

*Exercise protocol*

Aerobic exercise in each session included 5 minutes warm up, 10 minutes running and walking, in different directions and in a winding manner 10 minutes dancing and 5 minutes cool-off.

*Data analysis*

To analyze the collected data in addition to descriptive statistical indicators, inferential statistical indicators such as test T Dependent correlation coefficient were used.

**Results**

In the chart number one children's anxiety levels were compared in both pre-and post-test stages and the descriptive results indicated reduced anxiety in children after aerobic exercise. To provide more descriptive information the measured anxiety scores of participants in the two phases were classified in three categories in Table 1. Comparison of frequency percentage in each class showed a decrease in anxiety at post-test. To analyze the data and determine how aerobic exercise affects children's anxiety using dependent T test children's anxiety scores were compared before and after the test. Significance of pre and post test anxiety scores can be seen to be (0.0001= P, t=25). Aerobic exercise is indicated to have been able to reduce the anxiety score in preschoolers (Table 2).

**Table 1.** Compare descriptive statistics anxiety before and after aerobic exercise.

Level	Anxiety	
	Pre-test	Post-test
Low	30.3	52.3
Average	32	28.8
High	37.7	18.9
Total	100	100

**Table 2.** Comparison of anxiety before and after aerobic exercise.

Variable		Mean	SD	Dependent T-test		
				p	d.f	t
Anxiety	Pre	27.7	2.63	0.0001	96	25
	Post	22.8	2.75			

**Discussion**

The review and analysis of the test results of the research hypotheses can be concluded that twelve weeks of aerobic exercise would positively impact preschool children anxiety and that aerobic exercise can reduce their anxiety. Reduced anxiety observed in this study is consistent with the results of the study of (Moody, 1990; Craig *et al.*, 2003; Stro "hle *et al.*, 2006) all that have somehow studied the effect of physical exercise on anxiety.

Roland showed that a twelve-week exercise training program cause's stability of aerobic fitness in adults and this exercise program can have similar results in children (Strawbridge *et al.*, 2002). A recent study demonstrated that exercise can increase self-esteem (Dunn *et al.*, 2005). The authors of another study points out that there is a negative relationship between cognitive anxiety and performance and once cognitive anxiety increases, performance drops. Some studies have been reported that high-intensity aerobic exercise and long-term factor in increasing anxiety (Motl *et al.*, 2004; Lampinen *et al.*, 2000).

The data of another study reported that exercise is effective in reducing anxiety (Schmidt *et al.*, 2007). Christine McQuist (2010) noted that children with cancer experience symptoms of stress, including anxiety (Lawlor *et al.*, 2001). Motl and colleagues studied the effect of light exercise, moderate, and heavy exercise on anxiety in 90 individuals with the highest scores of anxiety (Motl *et al.*, 2004). They indicated that there are significant differences in anxiety of subjects in heavy workout group than those in light and medium training groups. According to researches conducted as well as this study, we can say that aerobic exercise training can be effective on the mental health of children and particularly in reducing their anxiety.

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