

# SELF-ESTEEM AND TRAIT ANXIETY IN GIRLS PRACTICING COMPETITIVE AND RECREATIONAL GYMNASTICS

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## **Abstract**

*The purpose of this study was to examine self-esteem and trait anxiety in 161 girls, 10-12 years old, practising competitive and recreational gymnastics sports. To measure self-esteem and trait anxiety, the Greek versions of Harter's Self-Perception Profile for Children (1985a) and of the State-Trait Anxiety for Children (STAIC; Spielberger, Edwards, Lushene, Montuori, & Platzek, 1973) were used respectively. A MANOVA and an independent samples t-test were performed in order to examine differences in self-esteem and trait anxiety between the two groups of gymnasts respectively. Results indicated that there was no significant difference between competitive and recreational gymnasts in self-esteem except for the subscales of scholastic competence, and social acceptance, which had lower values for the competitive girls. However, girls participating in competitive gymnastics sports had significantly higher values of trait anxiety compared to girls practising recreational gymnastics sports. Further research is required on the impact of competitive sport effect on gymnasts' psychological parameters.*

**Keywords:** *trait anxiety; self-esteem; gymnastics, girls*

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## **INTRODUCTION**

It has been reported in sports and exercise literature that the practice of a regular physical activity has potential benefit for children, psychologically, and physically (De Marco & Sidney, 1989; Sonstroem, 1984). In particular, physical training was related to increased self-esteem (Hös, 2005; Jackson & Marsh, 1986; Taylor, 1995) and to reduced anxiety level (Landers & Petruzello, 1994).

Self-esteem is the evaluative element of self-concept (Brown, 1993; Makri-Botsari, 2001) and can be defined as the degree to which individuals feel positive about themselves (Sonstroem, 1989).

According to experts, (Coopersmith, 1984; Rosenberg, 1986) self-esteem reflects the extent to which people believe themselves to be capable, significant, successful, and worthy. Self-esteem is not definitive and may vary from a situation to another, according to problems to be solved or choices to be made (Tap, Tarquinio, & Sordes-Ader, 2002).

To define anxiety, Spielberger (1966), on the basis of previous research, formulated the anxiety theory that suggests possible relationships between state and trait variables. Trait anxiety is a personality disposition that predisposes some young athletes to more often perceive an imbalance between environmental demands and their

response capabilities, which in turn causes them to respond with increased state anxiety (Scanlan & Lewthwaite, 1986).

The theoretical basis of the relationship between physical activity and self-esteem or anxiety, is initially found in other areas than sport psychology (Boyd & Hrycaiko, 1997). For instance, the theoretical models and measurement scales of these two variables were developed in education, psychology and mental health (Harter, 1982; Rosenberg, 1986). However, the applicability of these scales to other domains, like sports, has been widely tested, (Boyd & Hrycaiko, 1997).

To achieve higher self-esteem and/or lower anxiety, physical activity is often presented as an effective tool (Ekeland, Heian, & Hagen, 2005), apparently because compared to their peers, young athletes show higher self-esteem (Bissinger, Laure, & Ambard, 2006; Calfas & Taylor, 1994; Percy, Dziuban, & Martin, 1981) and lower trait anxiety, depression and stress (Tomson, Pangrazi, Friedman, & Hutchison, 2003; Trew, Scully, Kremer, & Ogle, 1999) even if the underlying mechanisms, which result this fact, remain unclear, (Duda, 1993). Indeed, in high-level, competitive sport it is reported that elite athletes when compared to non-elite, have higher level of self-confidence, mental toughness, ability to focus and block-out distractions, ability to set and achieve goals, (Crust & Azadi, 2010; Gould, Dieffenbach, & Moffat, 2002; Williams & Krane, 2001) superior anxiety control and locus of control (Mahoney, Gabriel, & Perkins, 1987). Findings from previous research in gymnastics, indicated that elite young gymnasts, show higher self-confidence (Spink, 1990), self-concept, locus of control (Porat, Lufi, & Tenenbaum, 1989), and persistence (Lufi & Tenenbaum, 1991), than non-elite.

Gymnastics sports (artistic gymnastics, rhythmic gymnastics, acrobatic, trampoline and gymnastics for all) are popular in young girls. Competitive sports are defined as those in which children compete against others formally for awards. Non-competitive (recreational) sports are

defined as those in which children practice regularly but do not compete against others, and do not participate in competitions against other teams for places and awards (Amac, Anastasio, Morwick, & Yi, 2002).

Competitive gymnastics sports have experienced rapid growth and development. The evolution of competitive gymnastics sports demands performance of elements of high difficulty, faultless technical execution, and original composition (Rhythmic Gymnastics, Code of Points 2009-12; F.I.G; Trampoline, Code of Points, 2009-12; Women's Artistic Gymnastics, Code of Points, 2009-12). The current approach of young gymnasts' evaluation during competition, is to break a new "world record", since the traditional "10" is no longer existing and the score that a gymnast can get has no upper limit. Consequently, training is starting from a very young age (5-6 years old), and is scheduled on a daily basis (20-25 hours a week) for approximately 250-300 days a year (Smolefski & Gaverdofski, 1999). By the age of 12, young gymnasts have already been competing and training for years. During this critical stage of development as children experience rapid physiological, neurologic, and psychological growth, participation in competitive gymnastics may place excessive physical and psychological load on them (Tofler, Stryer, Micheli, & Herman, 1996).

Recently, Amac, et al., (2002), reported that, conversely to what was hypothesised, the self-esteem of young girls (aged 10-13 years) practicing competitive gymnastics was significantly lower than the self-esteem of girls practicing recreational gymnastics. They mentioned several characteristics of the competitive environment that might lead to this result including the amount of pressure created by competition, the highest expectations from coaches and parents, and the urge to find a balance between school life and sport life (Amac et al., 2002). In another study, Kerr and Goss (1997) found that elite female gymnasts aged 11-17 years, reported lower self-esteem scores than the published age-

and gender-appropriate norms for children of this age, while the trait anxiety scores did not differ significantly from the norms. In their research, Tofler, Stryer, Micheli and Herman (1996), reported that elite gymnasts might be at risk for nutritional, endocrine and psychiatric disorders.

In addition, in competitive gymnastics sports there is constant pressure - particularly from adults- for the young gymnasts to be thin because small size and low weight are associated with speed and agility, it is easier for gymnasts to perform flight skills, and it is more appealing to the eye (Sample, 2000). Moreover, in competitive gymnastics, young athletes are required to execute movements on all apparatuses that defy gravity and can arouse emotions such as fear, worry, and anxiety, often related to the risk of physical injury (Cartoni, Minganti, & Zelli, 2005) Fear of failing in competition and feelings of inadequacy are also affecting young girls. These factors can create high levels of stress and less sport enjoyment (Feltz & Ewing, 1987).

Apparently, there are also family background factors affecting gymnasts' self-esteem and trait anxiety, because of the interaction within the members of the family and also of the experience that young gymnasts are acquiring from the environment (Fox, 1992; Harter, 1993). In school age, children consider as important persons in their life their parents, teachers/coaches, peers and friends (Printz, Shermis, & Webb, 1999). In the case of young athletes parents are typically the individuals who are supposed to give unconditional support to their children when a need exists, such as in a stressful situation like a competition (Roberts & Bengston, 1993; Ommundsen & Vaglum, 1991). However, in competitive sport, it is often reported that rather than supporting their child, parents are more inclined to put pressure on their talented child to spend hours of training and to perform well (Van Yperen, 1995). The role of coaches is also critical, sometimes even as a mother or as a father figure, particularly for young athletes

(Balague, 1999). High-level coaches often have exceptional knowledge and experience but are also vulnerable to the stresses of their positions. Sometimes pressure is enormous and can lead to inadequate and inappropriate coaching practices (Balague, 1999).

Numerous previous studies in the area of youth sports (Calfas & Taylor, 1994; Ekeland, Heian, & Hagen, 2005; Tomson, Pangrazi, Friedman, & Hutchison, 2003), examined the psychological characteristics of young athletes compared to non-athletes or elite athletes to non-elite. There has been little research in the area of competitive versus non-competitive (recreational) sports though it seems possible that the competitive environment in some sports may lead to less positive mental profiles among young competitive athletes when compared to their non-competitive peers. In particular, in sports like artistic gymnastics and rhythmic gymnastics, where the age of peak performance internationally is very young (16-18 years) and the training load (psychologically and physically) is extremely high, starting from a very young age and continuing for a long period, questions arise on the impact of competitive demands to young girls' psychological parameters.

Therefore, the present study was designed to examine possible differences in self-esteem and trait anxiety between female gymnasts (aged 10-12 years old), practising competitive and recreational gymnastics sports. On the basis of previous research examining youth sport competitors' trait anxiety (Gould, Wilson, Tuffey, & Lochbaum, 1993; Feltz & Ewing, 1987), it was expected that gymnasts practicing competitive gymnastics, would score higher in trait anxiety than their non-competitive peers. Because of the conflicting results concerning young gymnasts' self-esteem, no a priori hypotheses were formed, concerning *global self-esteem* (Amac et al., 2002; Gould et al., 2002; Kerr & Goss, 1997; Williams & Krane, 2001).

## METHODS

One hundred sixty one (161) female gymnasts, aged 10-12 years old, (mean age value 10.7,  $sd=0.81$ ) practising competitive and non competitive gymnastics sports, participated in this study. Gymnasts represented five gymnastics sports, (artistic gymnastics: 76 girls; rhythmic gymnastics: 32 girls; trampoline: 12 girls; gymnastics for all: 27 girls; and acrobatic: 14 girls).

This study was nationwide, subjects were drawn from two high performance training centres and 22 clubs affiliated with the Hellenic Gymnastics Federation.

*Competitive group of gymnasts:* 60 girls, (mean age value 10.8,  $sd=0.8$  years) participated in this study. The gymnasts were training for 3-5 years ( $4.0\pm 0.8$  years), in competitive gymnastics sports, (artistic gymnastics, rhythmic gymnastics, acrobatic, and trampoline), on a daily basis (5 to 6 days per week), between 20-25 hours a week ( $21\pm 2.6$  hours). They were participating in competitions 2-4 times a year (according to the calendar of the gymnastics sport that they were practising) in the official national competitions of the Hellenic Gymnastic Federation. The gymnasts were training in 10 different clubs and 2 high performance-training centres.

*Recreational group of gymnasts:* 101 girls, (mean age value 10.6,  $sd=0.7$ ) that were practising for 2-5 years ( $3.8\pm 0.7$  years) recreational gymnastics sports, (artistic gymnastics, rhythmic gymnastics, trampoline and gymnastics for all), participated in this study. The gymnasts were training 2-3 times a week, for "45-60 minutes" every time. They were practising in a training stream, which excluded taking part in any competition and moving up to the competitive program was not possible as well. These gymnasts were practising in 12 different clubs affiliated with the Hellenic Gymnastic Federation.

One important factor that might affect young athletes' trait anxiety and self-esteem was parental educational and socioeconomic level (Johnson, McGue, Iacono, 2006; Roberts, Bekgston, 1993). According to

their educational level, parents were divided in two categories: 1) *Lower level of education* (parents that had elementary and/or secondary education) and 2) *Higher level of education* (parents that had postsecondary education –University, College and/or higher degree of studies). The gymnasts in the two groups (competitive and recreational) had homogenous distributions concerning their parents' educational and socioeconomic level ( $\chi^2=0.852$ ,  $df=3$ ,  $p=0.837$ ).

The Greek version (Theodorakou, 1997) of Harter's Self-Perception Profile for Children (1985) was used to measure the self-esteem of each participant. Self-Perception Profile for Children (Harter, 1985) is widely used for assessing self-esteem in youths and was created for children aged 8-14 years old. The scale measures the children's perception of themselves across various domains of their life. It consists of six separate subscales reflecting five specific domains (*scholastic competence, social acceptance, athletic competence, physical appearance, behavioural conduct*) as well as *global self-esteem*. Each of the six subscales contains six items, resulting to a total of 36 items.

The Greek version of the instrument consists of 38 items. Two items from the subscale of physical appearance ("Some kids are happy with their height and weight" and "Some kids wish something about their face or hair looked different") were divided in two items each, resulting to 4 independent items (regarding height and weight, face and hair respectively). This division was done as, during the pilot studies these items showed inadequate validity because there were many children that answered that they were happy with their height but not with their weight or happy with their hair but not face. Participants answered on a four-point scale, where a score of 1 indicates low perceived competence and a score of 4 reflects high perceived competence. Cronbach's  $\alpha$  values for Greek population, ranged from 0.67 to 0.74 (Makri-Botsari, 2001; Theodorakou, 1997). On the first page of the inventory,

children completed the data about their parents' level of education and occupation, separately for their father and their mother.

To measure anxiety, the Greek version (Psychountaki, Zervas, Karteroliotis, & Spielberger, 2003) of the State-Trait Anxiety Inventory for Children (STAIC; Spielberger, Edwards, Lushene, Montuori, & Platzek, 1973) was used. This scale is frequently used to measure anxiety in children 9 to 12 years old. It is a "how-I-feel" questionnaire that consists of two forms (State and Trait anxiety) of 20 items each, that ask the children how they feel generally, when they respond to the T-Anxiety (Trait anxiety) scale and how they feel at a particular moment when they respond to the S-Anxiety (State anxiety) scale (Spielberger, 1983). For the purpose of this study, only the T-Anxiety scale was used. The STAIC T-Anxiety scores are 3, 2 or 1 for all items. Participants were asked to respond to each item by indicating the frequency of occurrence of the behaviour described by it. The scoring weights are assigned to very often, sometimes, and hardly ever. Cronbach's  $\alpha$  value for Greek athletic population was found to be 0.80 in previous research (Psychountaki et al., 2003).

For the young gymnasts who participated in this study written parental consent was provided. With the permission of the coaches and club administrators, researchers visited a training session and distributed questionnaires which were completed before the training. Instructions to the participants included a reminder to respond to all items and a statement that there were no correct or incorrect answers. Cover letters were also given to the parents and coaches in which were mentioned the importance of participation, purpose of this study, confidentiality and anonymity.

Data screening was used to ensure all dependent variables met the assumptions necessary for the use of parametric statistics prior to data analysis. Internal consistency of the trait anxiety and self-esteem scales was checked with Cronbach's  $\alpha$  values. In order to examine the effect of participation

in competition on gymnasts' self-esteem and trait anxiety, a multivariate analysis of variance (MANOVA) was performed. Each subscale of the Self Perception Profile for Children acted as a dependent variable, with the participation in competitive and non competitive gymnastics as independent factors. In addition, an independent *t*-test was used to test the differences in trait anxiety between gymnasts practicing competitive gymnastics sports and gymnasts practicing non-competitive gymnastics sports.

## RESULTS

Results from reliability analysis provided adequate evidence for the internal consistency of the State-Trait Anxiety Inventory for Children (STAIC; Spielberger et al., 1973); Cronbach's  $\alpha$  value for trait anxiety was 0.83. For the subscales of Harter's Self-Perception Profile for Children (SPPC; Harter, 1985) Cronbach's  $\alpha$  values ranged from 0.69 to 0.73 and were considered acceptable except for the subscale of *behavioral conduct* which demonstrated inadequate internal consistency (0.52). In particular, Cronbach's  $\alpha$  values for the rest of the subscales of self-esteem were as follows: *scholastic competence*, 0.72, *social acceptance*, 0.71, *athletic competence*, 0.70, *physical appearance*, 0.71, and *global self-esteem*, 0.69, thus being in agreement with previous research in Greek population of this age (Makri-Botsari, 2001).

With regards to the Self-Perception Profile for Children (SPPC; Harter, 1985) inventory, the MANOVA procedure showed significant differences between competitive and recreational gymnasts (Wilk's  $\Lambda=0.935$ ,  $F_{6,154}=2.98$ ,  $p<0.05$ ). Results from the follow-up univariate ANOVAs indicated that the recreational group of gymnasts had significant higher mean values than the competitive group of gymnasts in two subscales of self-esteem, *scholastic competence* and *social acceptance* ( $p<0.05$ ) and are presented in Table 1. The effect size of trait anxiety was

10.3%. All remaining values were considered small and were less than 10%, therefore the meaningfulness of these differences should be viewed with caution.

An independent *t*-test found significant differences in trait anxiety between competitive and recreational gymnasts ( $t=4.07$ ,  $df=159$ ,  $p < 0.001$ ).

Gymnasts from the competitive group were found to report significantly higher levels of trait anxiety than gymnasts from the recreational group. The means and standard deviations of the trait anxiety scale between the two groups of gymnasts are presented in Table 2.

Table 1. Mean values, *F*-values and significance of the subscales of self-esteem and trait anxiety in between groups differences produced by MANOVA.

Dependent Variables	Competitive group of gymnasts(N=101)	Recreational group of gymnasts (N=60)	$F_{1,159}$ -value	p	Partial eta squared
Scholastic competence	3.17±0.70	2.88±0.67	7.00	0.009*	4.2%
Social acceptance	3.03±0.62	2.80±0.67	4.97	0.027*	3.0%
Athletic competence	2.89±0.61	2.84±0.61	0.27	0.610	0.2%
Physical appearance	2.98±0.75	2.85±0.64	1.17	0.281	0.7%
Behavioral conduct	3.11±0.70	2.90±0.70	3.39	0.067	2.1%
Global self-esteem	3.13±0.58	2.95±0.69	3.25	0.073	2.0%

\*  $p < 0.05$  \* \* $p < 0.001$

Table 2. Differences in trait anxiety between girls practicing competitive and non-competitive gymnastics sports.

	M (SD)	T	df
Trait anxiety of gymnasts practicing competitive gymnastics sports	35.00(6.30)	4.07**	159
Trait anxiety of gymnasts practicing non-competitive gymnastics sports	30.63(6.27)		

\* \* $p < 0.001$

## DISCUSSION

The aim of this study was to examine self-esteem and trait anxiety in young female gymnasts (10-12 years old), practising competitive and recreational gymnastics sports. Results indicate that between the group of gymnasts participating in competitive and the group participating in recreational gymnastics sports, there was no difference in most of the subscales of self-esteem (*athletic competence, physical*

*appearance, behavioural conduct, and global self-esteem*), except for the subscales of *scholastic competence, and social acceptance*, which had lower values for the competitive girls. However, the two groups of young gymnasts differ significantly in trait anxiety, with gymnasts from competitive gymnastics sports scoring significantly higher than gymnasts from recreational gymnastics sports.

This study highlights an interesting finding: young gymnasts from competitive gymnastics (some girls were Greek champions of their age category) did not score higher in the subscale of *global self-esteem*, than gymnasts from recreational gymnastics, although in previous studies in youth sports, it was often reported that elite athletes had higher levels of self-esteem than non-elite (Fox, 1992; Porat, Luffi & Tenenbaum, 1989) and athletes had higher self-esteem than non-athletes (Calfas & Taylor, 1994; Ekeland, Heian, & Hagen, 2005). At school age, children engage in social comparisons with peers as well as with the standards set by adults. Therefore, judgements of self become heavily influenced by these comparisons, (Antunes & Fontaine, 1998). In particular, the meaning attributed by children to their perceived ability and achievement determines whether self-esteem is enhanced or diminished (Antunes & Fontaine, 1998). It is possible that the extreme demands of competitive environment for absolute skill standards and perfection, are negatively affecting young girls' *global self-esteem* as also suggested from previous research in competitive gymnasts of this age (Amac et al., 2002; Kerr & Goss, 1997). Nevertheless, the values of *global self-esteem* found in this research for girls practising competitive and recreational gymnastics sports is consistent with previous research in Greek female non-athletic population of this age ( $3.13 \pm 0.58$  and  $2.95 \pm 0.69$  versus  $3.14 \pm 0.62$  respectively), (Makri-Botsari, 2001).

Despite their high level of physical capacities and their thin and trained bodies, girls practicing competitive gymnastics sports did not score higher in the subscale of *physical appearance*, than girls practicing recreational gymnastics. It is reported that participation in "aesthetic" sports like artistic gymnastics, rhythmic gymnastics, figure skating, etc, that promote leanness, is associated with factors related to eating disorders including body dissatisfaction, elevated weight concerns, desire for extreme thinness, and excessive dieting (Anshell, 2004; Zucker, Womble, Williamson, &

Perrin, 1999). It is also possible that negative comments about the athlete's bodies, are merely expressions of parental and coaches' perceptions, demands, or ambitions rather than the true perception of the young gymnasts themselves (Pruett, Sataloff, Brandfonbrener, & Ledermann, 1991).

In addition, in two subscales of self-esteem, *scholastic competence* and *social acceptance*, gymnasts from competitive gymnastics sports scored lower than gymnasts from recreational gymnastics. Young gymnasts, practicing competitive gymnastics sports, have to train for 3-4 hours on a daily basis for 6 days a week. Consequently, they do not have enough time to study and prepare adequately for school and to spend with friends and peers. Indeed, some researchers underline the importance of missed educational experiences for young competitors (Toffler & Stryer, 1996). Furthermore, Harter (1985) clarifies that the subscale of *social acceptance*, mainly expresses the degree to which the child feels popular or accepted by his peers. Girls from gymnastic sports, have a certain body type, usually shorter and thinner than their peers, looking younger from their chronological age (Peltenburg, Erich, Zonderland, Bernick, & Huisveld, 1984). This is possibly one more reason why they *report* not feeling so popular among their peers. At 12 years old, some girls in their class are fully mature and dress like adult women, while young gymnasts are usually looking much younger. Research has demonstrated that an individual's physical attractiveness does affect others' reactions to him/her and especially heterosexual attraction and first impressions of peers (Dion & Berscheid, 1974).

Consistent with prior work in this area, (Balague, 1999; Nieman, 2002) young gymnasts from the competitive group, scored significantly higher in trait anxiety than gymnasts from the recreational group. The setting of high competitive standards is an integral part of elite sports, and often beneficial for the athlete's performance. However, individuals striving for attainment

of ideal standards, have been shown prone to experience heightened levels of anxiety, due to discrepancies between ideal and current self (Koivula, Hassmen, & Fallby, 2000).

There is an international concern about the physical and psychological well-being of competitive gymnasts, possibly because women's gymnastics provides a useful framework for viewing worrisome trends in other competitive youth sports (Tofler et al., 1996). Research has not been driven far enough to answer all the relative questions. It is not known whether competitive gymnasts' future well-being is affected by significant differences in their psychological parameters when compared to their non-competitive peers. Therefore, further adequately-controlled, longitudinal research is needed to examine the relation between competitive and training demands to the young gymnasts' self-esteem, to identify the sources of anxiety in every stage of the young gymnasts' development and the relative influence of significant others (parents, coaches, peers) in that development. Research in the area of youth competitive gymnastics sports can provide information to the elite gymnastics community in monitoring the future evolution of the sport, changing the judging criteria to diminish possible psychological pressures for absolute performance and thinness -especially in young age.

It should be recognized that this study has its limitations. First, data were collected by using inventories and though this is a common method, investigators do not have the possibility to check the answers (Bissinger et al., 2006). On the other hand, this technique does not seem to disrupt excessively the validity of results (Pate 1993). Another limitation comes from the fact that participants of this study were only girls. Probably, if data were collected from male gymnasts, results would have been different, especially in what concerns trait anxiety since it is known that girls have higher trait anxiety than boys (Spielberger, 1966; Psychountaki et al., 2003). A final point about the present study is that with the

current study design a link of causality between participation in competitive sports and gymnasts' trait anxiety and self-esteem cannot be established.

Despite its limitations, the strength of this study is the examination of same age gymnasts' self-esteem and trait anxiety in different athletic levels and thus could be considered as a new contribution in the area of youth sports. Moreover, it is providing useful information for coaches and specialists in charge of competitive gymnasts. Implementing workshops for beginner and advanced coaches could help protect the young gymnasts from potential excessive psychological pressure.

Apparently, the type, duration and intensity of physical activity that is necessary to achieve optimal, positive emotional and mental benefits are until now poorly defined (Bissinger, Laure, & Ambard, 2006). Examining differences between athletes performing at a range of levels, and especially in the area of youth sports will help to promote understanding of the psychological parameters underlying elite performance.

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