



RESEARCH ARTICLE

Does Gender, Sports Age, Type of Listening Music Affect Pre-Competition Anxiety in Adolescent Athletes?

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Abstract

Athletes listen to music during training and competitions, in order to have fun, gain motivation and increase performance. The aim of this study is to examine the effect of gender, sports age and type of listening music to pre-competition anxiety level in adolescent athletes. Cross-sectional research method, one of the quantitative research design was used. The population of the study consists of athletes between the ages of 14-18 who have a good training level and participate to competitions. The sample consists of a total of 140 adolescent athletes (age: 16.55±4.67) who are engaged in individual and team sports from different branches. Data were collected with the "Revised Competition State Anxiety Inventory-2 (CSAI-2R)". "T-test" and "ANOVA" test were used in the analysis of the data. No significant difference between the groups in cognitive anxiety (CA) and somatic anxiety (SA) scores according to type of listening music ($p>0.05$), but a significant difference in self-confidence (SC) scores in favor of those who listening to arabesque music ($p<0.05$). While there was a significant difference in CA and SC scores according to gender ($p<0.05$); no significant difference in SA scores ($p>0.05$). According to two variables; sports age and place of residence that may affect the type of listening music in adolescent, no significant difference between the groups on CA, SC and SA scores ($p>0.05$). As a result, it can be said that listening to arabesque music before the competition increases the level of self-confidence of adolescent athletes and accordingly reduces the level of anxiety.

Keywords

Adolescent Athlete, Competition Anxiety, Gender, Sports Age, Type Of Music

INTRODUCTION

Adolescence is a period in which an individual's interest in sports and sports skills increase and he/she focuses on a certain branch. In this period, it is very important to guide and train the individual for the development of his/her psychomotor and sports skills (Dilekçi, 2023). Since the transition from basic sports training to a specific branch training in the adolescence period, the individual's strengths and weaknesses are analyzed and directed to the selection of the branch. For this reason, during this period, adolescent individuals may experience more intense feelings of stress and anxiety, both

physically and psychologically, than individuals of other ages, in situations that they cannot overcome within the scope of their strengths and weaknesses.

Nowadays, anxiety has become an emotion that people frequently encounter in their daily lives. Anxiety can be defined as a state of uneasiness or irrational fear that occurs as a result of any danger; an anxious person feels uncomfortable as if he is afraid of something and experiences a delusional mood (Manav, 2011). Anxiety can also negatively impact athletes' ability to make decisions in their behavior; as the level of anxiety increases, the athlete may lose their ability to make decisions and perform (Başaran et al., 2009). The athlete experiences state anxiety

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before, during or after the competition (Civan et al., 2010). The ability to cope with competitive anxiety is considered an integral part of sports from a psychological perspective (Burton and Naylor, 2008). In this regard, relaxation methods such as advanced relaxation, meditation, biofeedback, breathing control and autogenic training are recommended for athletes to relieve anxiety symptoms. However, although these methods are recommended and supported, the fact that athletes have to spend effort and time to master these techniques (Payne and Donaghy, 2010), the relaxation process takes a long time and methods such as biofeedback require special equipment (Patel, 2013) are the factors that make their use difficult. Due to such limitations, it is thought that athletes cannot easily adopt these methods. With this in mind, it can be said that listening to music is one of the best methods for athletes to relax and gain motivation before training or competition.

Music is an aesthetic whole consisting of sounds assimilated and combined according to a certain perception of beauty (Çelik, 2023). It is widely accepted that music encountered in every aspect of life has an impact on emotional state. Being a social being, human beings have perceived, analyzed and evaluated the sounds they have heard since the beginning of their existence and transformed them into expressions over time. The name of this type of vocal expression art is "music" (Ekiz and Atasoy, 2021). Nowadays, it can be observed that almost every athlete listens to music, especially before the competition, during training, while warming up and even during the competition. It is known that music not only entertains individuals, but also increases exercise performance, strength and endurance, and delays fatigue (Thakare et al., 2017). In studies conducted on this subject, it has been reported that athletes prefer listening to music instead of methods with limitations in order to relieve their anxiety and worry and gain motivation. Çelik and Karabilgin (2022) said that one of the newest ideas in the field of sports is the idea of utilizing musical memory in performance enhancement and relaxation. As an example of research on athletes, Laukka and Quick (2011) in their study titled "Emotional and motivational uses of music in sports and exercise: A survey study among athletes", in the survey applied to Swedish athletes, asked the athletes about when, in what situations and why they listen

to music and there were various questions. In the survey results, athletes reported that their most common goals for listening to music were to increase positive emotions, motivation, performance level and experience flow. Athletes also stated that they experienced mostly positive affective states such as happiness, alertness, confidence, and relaxation while listening to music (Laukka and Quick, 2011). Although some research does not support (Nilsson, 2008; Pelletier, 2004); there is evidence that music has the potential to aid relaxation.

The fact that there are studies with high limitations and criteria that have not yet been taken into account on this subject, which affects both athletes and coaches physically, and psychologically, makes the contribution of the study to science even more important. For this reason, the research aims to examine the effects of the type of listening music, gender and sports age on the pre-competition anxiety level of adolescent athletes.

MATERIALS AND METHODS

Procedure

In this study, "random sampling method" was used because the sample selection was taken from a relevant part of the universe and from any club (Kılıç, 2013). Volunteer athletes were identified among the participants eligible for the study, and the scale forms were sent to all participants online and their answers were received. Before the study, athletes and their parents were informed online and consent was obtained from all athletes' parents in accordance with the Declaration of Helsinki. Athletes were asked for their competition calendars, and through their club coaches, the athletes were asked to fill out the scales and forms 60 minutes before the competition. The procedure and purpose were briefly explained to all participants, and the application was made 60 minutes before the competition, allowed the participants to prepare individually for the competition. Ethics committee approval for the study was received from Çanakkale Onsekiz Mart University Schools of Graduate Studies Ethics Committee with decision number 11/53 dated 08/09/2023.

Participants

The population of the research consists of adolescent athletes who have good training level sample size was calculated using the "G-power" analysis program, with a medium effect size and a 95% confidence interval, with a total of at least 111 athletes for the t-test and at least 130 people in total for the ANOVA test. In this regard, the research sample consists of a total of 140 athletes (age: 16.55±4.67), including 56 women

between the ages of 14-18, who do sports and participate in competitions. In the study, the and 84 men who participate competitions regularly. Criteria for participants to be included in the research; being between the ages of 14-18 and volunteer, doing sports regularly, participating national or international competitions for at least one year.

Table 1. Descriptive statistics of the physical characteristics of the participants

Variables	N	Min	Max	Mean	Sd
Height (cm)	140	153.00	193.00	173.54	9.18
Body mass (kg)	140	42.00	115.00	64.94	12.96
BMI (kg/m ²)	140	16.53	37.55	21.45	3.29
Age (year)	140	14.00	18.00	16.55	4.67

BMI: Body Mass Index, Min: Minimum, Max: Maksimum, Sd: Standart deviaton

Data collection tools

As data collection tools in the study, the "Personal Information Form" developed by the researchers to collect information about the demographic characteristics of the athletes and "Revised Competition State Anxiety Inventory-2 (CSAI-2R)", developed by Cox et al. (2003) and validated in Turkish by Akgönül et al. (2021) was used.

Personal Information Form (PIF)

PIF was developed by researchers to collect athlete-specific information such as age, height, body weight, gender, sports age, economic level, type of listening music, and consists of 10 questions.

Revised Competition State Anxiety Inventory-2 (CSAI-2R)

The Revised Competition State Anxiety Inventory-2 consists of 14 items and 3 subscales. Sub-dimensions; cognitive anxiety (CA) (1,3,8,11), somatic anxiety (SA) (4,6,9,12,14) and self-confidence (SC) (2,5,7,10,13). The inventory has a 4-point Likert scale: not at all (1), a little (2), quite a bit (3) and a lot (4). In evaluating the scores obtained by the participants from the inventory, the scores obtained from the items are summed. Higher scores indicate higher levels of somatic and cognitive anxiety or self-confidence (Akgönül et al., 2021). However, three sub-dimensions of the scale, cognitive and somatic anxiety, reveal the athlete's anxiety level; self-confidence sub-dimension is related to the athlete's sense of self-confidence and consists of positive expressions.

The total score of the scale does not reveal the level of anxiety; therefore the evaluation was made at the level of sub-dimensions. The score range in the scale sub-dimensions is 4-20 points; for CA subscale range is 4-16 points; for SA and SC subscales range is 5-20 points. Accordingly, for CA; (0-4.0) point is low, (4.1-8.0) point is medium, (8.1-12.0) point is high, (12.1-16.0) point is very high; for SA and SC; it was evaluated as (0-5.0) point is low, (5.1-10.0) point is medium, (10.1-15.0) point is high, (15.1-20.0) point is very high.

Analysis of Data

The data obtained in the study were analyzed in the SPSS 25 statistical analysis program. Normality analyzes of the data were tested with "Skewness-Kurtosis" values. We found Skewness between (-398 and 1110) and Kurtosis between (-526 and 1195). According to these results, it was determined that the data had a normal distribution because the Skewness-Kurtosis values were between -1.5/+1.5 (Tabachnick and Fidel, 2013). Accordingly, in the analysis of the data, frequency distribution was used for descriptive statistics and "Independent group t-test" was used for the mean difference between independent groups. The difference between competition anxiety scores according to variables such as sports age, economic level and type of listening music was evaluated with the "ANOVA" test. Post-hoc tests such as LSD and Bonferonni tests were used to determine which group caused the difference. The statistical significance level was accepted as 0.05.

It is known that ($\alpha = 0.70 \leq$) is sufficient for internal consistency reliability (Büyüköztürk, 2011). In this regard, the validity and reliability level of the alpha coefficient for the sub-finding it between ($\alpha = 0.70-0.87$) (Büyüköztürk, 2002; Özüdoğru and Aydın, 2016).

dimensions of CSAI-2R is between ($\alpha = 0.71-0.80$) in the current research group, it was determined that the inventory was a reliable measurement tool by

RESULTS

Table 1. Descriptive statistics of the physical characteristics of the participants

Variables	Gruplar	N	%
Gender	Female	56	40,0
	Male	84	60,0
Sports age (year)	0-1	20	14,3
	2-3	33	23,6
	≥ 4	87	62,1
Type of Music	Hip/Hop	72	51,4
	Rap/Rock	59	42,1
	Arabesque	9	6,4
Club type	Private	84	60,0
	YSPD	11	7,9
	Municipality	12	8,6
	College Team	33	23,6
Economic level	Almost good	85	60,7
	Good	47	33,6
	Very good	8	5,7

YSPD: Youth Sports Provincial Directorate

According to the data in Table 2, 60% of the athletes are male, 62.1% have a sports history of four years or more, 60.7% have almost good economic level, 60% do sports in a private club and it is seen that before the races, 51.4% of the

participants listening to Hip/Hop music, 42.1% listening to Rap/Rock music and 6.4% listening to arabesque music. Descriptive statistics of the participants' subscale scores are presented in Table 3.

Table 3. Descriptive statistics of participants' subscale scores

Variable	N	Min	Max	Mean	Sd
CA	140	4.00	16.00	8.66	2.85
SC	140	8.00	20.00	15.24	2.92
SA	140	5.00	20.00	8.57	3.21

CA: Cognitive Anxiety, SC: Self Confidence, SA: Somatic Anxiety, Min: Minimum, Max: Maksimum, Sd: Standart deviation

In line with the data in Table 3, it was determined that adolescent athletes had high levels of CA, very high levels of SC, and moderate levels

of SA before the competition. The difference in CSAI-2R subscale scores of the participants according to gender is presented in Table 4.

Table 4. Difference statistics of CSAI-2R subscale scores according to gender

Variables		N	Mean	Sd	t	p
CA	Female	56	9.63	3.07	3.266	0.001*
	Male	84	8.01	2.50		
SC	Female	56	14.45	3.02	-2.698	0.008*
	Male	84	15.77	2.74		
SA	Female	56	9.11	3.77	1.522	0.131
	Male	84	8.21	2.75		

*p<0.05, CA: Cognitive Anxiety, SC: Self Confidence, SA: Somatic Anxiety, Sd: Standart deviation

According to the results in Table 4, a significant difference in CA and SC subscale scores of CSAI-2R according to gender ($p < 0.05$); however, although SA subscale score was higher in female, it was determined that there was no significant difference ($p > 0.05$). Among the sub-

dimensions with significant differences according to gender, CA scores were found to be higher in female and SC sub-dimension scores were higher in male. CSAI-2R subscale score differences of the participants according to sports age are presented in Table 5.

Table 5. Difference statistics of CSAI-2R subscale scores according to sports age

Variables (year)		N	Mean	Sd	F	p
CA	0-1	20	9.25	2.59	2.090	0.128
	2-3	33	9.30	3.05		
	≥4	87	8.28	2.79		
SC	0-1	20	14.20	3.22	1.539	0.218
	2-3	33	15.30	2.87		
	≥4	87	15.46	2.84		
SA	0-1	20	9.45	3.21	2.169	0.118
	2-3	33	9.18	3.09		
	≥4	87	8.14	3.22		

*p<0,05, CA: Cognitive Anxiety, SC: Self Confidence, SA: Somatic Anxiety, Sd: Standart deviation

In line with the results in Table 5, the level of CA and SA in adolescent athletes before the competition is lower than in experienced athletes with a sports age of four years or more; accordingly, it was determined that the level of SC was higher. However, it was determined that there

was no significant difference between the athletes' pre-competition CA, SC and SA subscale scores according to sports age ($p > 0.05$). The difference in participants' CSAI-2R subscale scores according to the type of listening music is presented in Table 6.

Table 6. Difference statistics of CSAI-2R subscale scores according to type of listening music

Variables	Type of music	N	Mean	Sd	F	p
CA	Hip/Hop	72	8.64	3.06	0.205	0.815
	Rap/Rock	59	8.76	2.58		
	Arabesque	9	8.11	3.02		
SC	Hip/Hop	72	15.50	2.94	3.186	0.044*
	Rap/Rock	59	14.66	2.92		
	Arabesque	9	17.00	1.58		
SA	Hip/Hop	72	8.26	3.13	0.779	0.461
	Rap/Rock	59	8.97	3.37		
	Arabesque	9	8.44	2.92		

*p<0,05, CA: Cognitive Anxiety, SC: Self Confidence, SA: Somatic Anxiety, Sd: Standart deviation

No significant difference between the groups in CA and SA subscale scores of adolescent athletes according to type of listening music before the competition ($p > 0.05$). Although no significant

difference between the groups, it was determined that the level of CA and SA in adolescent athletes before the competition was higher in athletes who listening rap/rock music than in those who

listening hip/hop or arabesque music. Despite these findings, there was a significant difference in SC subscale scores in favor of those who listening

arabesque music ($p < 0.05$). The difference in participants' CSAI-2R subscale scores according to place of residence is presented in Table 7.

Table 7. Difference statistics of CSAI-2R subscale scores according to place of residence

Variables		N	Mean	Sd	t	p
CA	City	105	8.63	2.94	-0.205	0.838
	Village	35	8.74	2.59		
SC	City	105	15.41	2.74	1.055	0.297
	Village	35	14.74	3.39		
SA	City	105	8.50	3.17	-0.424	0.131
	Village	35	8.77	3.39		

* $p < 0,05$, CA: Cognitive Anxiety, SC: Self Confidence, SA: Somatic Anxiety, Sd: Standart deviation

line with the results in Table 7, it was determined that there was no significant difference in CA, SC and SA sub-dimension scores of CSAI-2R according to place of residence ($p < 0.05$). Although there is no significant difference between scores based on place of residence, adolescent athletes living in small places such as village have higher levels of CA and SA; lower levels SC before the competition than athletes living in large places such as city.

DISCUSSION

Research aims to examine the effects of the type of listening music, gender and sports age on the pre-competition anxiety level of adolescent athletes. According to the results of the study, it was determined that adolescent athletes had high levels of cognitive anxiety, very high levels of self-confidence, and moderate levels of somatic anxiety before the competition. Branches of the athletes participating in the study; football (40%), volleyball (36%), basketball (12%), handball, bocce, fitness etc. from other branches (12%). Since the participants are mostly involved in team sports, it is expected that their self-confidence levels are very high. Pluhar et al (2019) found that anxiety and depression among young athletes are more common in individual athletes than team athletes; Zamani and Moradi (2009) suggested that competitive anxiety for young participants is higher in individual sports than in team sports. Anxiety in team sports is lower than in individual sports; this can be attributed to the fact that the outcome during and after the competition concerns the whole team, that negative actions can be corrected with the support of other athletes in the

team, that the rate of any athlete being held solely responsible in case of defeat is lower, and that the rate of a single athlete being held responsible for negative results is lower (Civan et al., 2010).

As a matter of fact, in team sports, the level of anxiety before the competition may be higher in coaches than in athletes. Because the role of the coach is great in achieving success in team sports the anxiety experienced by coaches can negatively affect the performance of athletes. Coaches may have a major and influential role in young athletes experiencing pre-competition anxiety (Sedarati, 2007). Regarding the subject, Mottaghi et al. (2013) study examined the relationship between anxiety and race performance of coaches and adolescent athletes, they reported that there was a positive significant relationship between the coaches' anxiety level and the athletes' sports competition anxiety level, and a negative significant relationship between the coaches' anxiety level and the athletes' performance levels. Since the role of the coach is to maintain the team culture that supports the athlete's mental health and to encourage the athlete (Bisset et al., 2020), the role of the coach in individual sports is often greater in the period before the competition and during the training. Since success in the competition is mostly related to the athlete him/herself, the pre-competition anxiety level of athletes involved in individual sports may be high depending on the coach and communication with. At this point, the participants' anxiety levels of this research being medium-high may also be related to the coach. It is thought that pre-competition anxiety or self-confidence in team athletes is directly related to the competence of the coach and coach's communication with the athletes.

According to the results of the research, the high cognitive anxiety levels of athletes may be due to the coach not exchanging information or communicating with the athletes. Since technical tactics are very involved in team sports, it is important that the coach guides the athletes and the athlete's cognitive readiness for the competition according to these directions. On the other hand, the expectations of the managers and the desire to win the match may cause the coach to worry, and an anxious coach will not be able to make the right decision and direct the team (Mottaghi et al., 2013). As a result, the entire team may become anxious and depressed and may not be able to achieve the goal.

The moderate level of somatic anxiety of the participants may be related to the high motivation of athletes to participate in training or races. The training level of athletes who train with motivation improves, and accordingly, athletes who do not skip their training feel physically ready for the competition, which may reduce their level of somatic anxiety. It has been reported that competition anxiety will increase with poor performance and decreased enjoyment and motivation from participation in both adults and children (Grossbard et al., 2009). At this point, it is thought that this study should be conducted separately, considering that the results may vary among individual athletes and that the sports branch of the participants is individual.

In the current study, it was determined that there was a significant difference in favor of men in the cognitive anxiety and self-confidence subscale scores according to gender, but although the somatic anxiety subscale score was higher in women, there was no significant difference. It was determined that the pre-competition cognitive anxiety level was higher and the self-confidence level was lower in adolescent female athletes than in men. In Correia and Rosado's (2019) study, which investigated anxiety in athletes according to gender and sport type, they explained that female athletes had higher anxiety scores than male athletes, and reported that the results were in line with previous studies (Martens et al., 1990; Clifton and Gill, 1994). On the other hand, Bařaran et al. (2009) reported that men's state anxiety levels are higher than women. In a study examining the effect of university athletes' favorite music on pre-competition cognitive and somatic state anxiety and self-confidence; it has been reported that

music and gender have an impact on the intensity of situational self-confidence, and that an individual music session that includes the participants' favorite music significantly increases the sense of self-confidence in college athletes (Lanzillo, 2000). In a study conducted by Grossboard et al. (2009) on differentiating anxiety, somatic anxiety and concentration disorders in young athletes between the ages of 9-14, it was found that anxiety about performing poorly was at the highest level in female athletes and older athletes; they reported that male athletes had higher levels of concentration impairment in competitive situations than females. These results show the importance of considering the intensity of competitive anxiety in men and women. It is thought that these differences in pre-competition anxiety and self-confidence levels between male and female athletes may be related to other variables such as performance, enjoyment level or sports commitment, which were not evaluated in the current study.

It was found that there was no significant difference in the anxiety and self-confidence levels of adolescent athletes according to sports age. In their study with young football players, Karabulut et al. (2013) reported that there was no significant difference in state and trait anxiety levels according to the year of playing sports. On the other hand, Tellioglu and Karadenizli (2018) reported that there was a significant difference in the anxiety levels of athletes with sports ages of 3-7 and 8-12 years. Anxiety and other psychological emotion levels are thought to be related to the development of individuals. In this regard, the fact that the participants in the current study were close to adulthood may support the high level of anxiety. Thus In the study of Grossboard et al. (2009), 12-14 year old athletes reported more worry and total anxiety than younger athletes. They reported that this is consistent with previous research (e.g., Muris et al., 2002) showing that levels of worry elaboration in children are positively related to levels of cognitive development. On the other hand, it can be said that as age increases, the level of anxiety may increase as the pressure to win increases, and as the age-sport age increases, the level of anxiety may increase as the athlete moves towards adulthood. It is seen that the literature findings and the current research results are different from each other. Therefore, it is thought that the effect of sports age on anxiety may vary

depending on the individuals' starting sports and competition status. In this context, the anxiety or self-confidence level of athletes should be experience, the results may vary depending on the branch. As a result, sports experience has positive effects on competition and training; It can be said that as athletes develop and gain experience, they may have the ability to control negative emotional states such as anxiety, worry and fear and they will decrease.

Although there was no significant difference between the groups in the pre-competition, cognitive and somatic anxiety subscale scores of adolescent athletes according to the type of listening music before the competition; it was determined that the cognitive and somatic anxiety scores of athletes listening to rap/rock music were slightly higher than those of athletes listening to arabesque or hip/hop. Kurul (2020), stated that the stress levels of individuals who listen to rock music after stressful situations do not decrease, on the contrary, rock music increases the stress level. In light of this information, in the current study, the stress levels of athletes who preferred rap/rock music before the competition may have increased, triggering an increase in their cognitive and somatic anxiety levels. On the other hand, it was found that there was a significant difference between the self-confidence scores of adolescent athletes who listening to arabesque music before the competition and those who listening to hip/hop and rap/rock music; it has been determined that athletes who prefer arabesque music have more self-confidence. Erdal (2015) suggested that arabesque music does not only evoke negative emotions such as sadness, grief and tension, but also more complex and positive emotions such as sensitivity, strength, calmness and admiration, especially nostalgia. On the other hand, there are also studies arguing that young individuals who prefer to listen to arabesque music in daily life are more angry and aggressive (Sezer, 2011; Uluçay, 2018). In light of all these results, it can be deduced that arabesque music evokes emotions such as a feeling of power, anger, and aggression in the individual and makes athletes feel more self-confident before the competitions.

Although the anxiety levels of athletes living in a small place such as a town/village are

investigated as well as the age of competing as a variable of sports age. On the other hand, since an adolescent athlete may not have much competition higher than the athletes living in a city and the self-confidence of athletes living in districts/villages was lower than athletes living in the province according to the place of residence, it was found that there was no significant difference between the groups. Despite these findings, there are also studies showing that the anxiety levels of athletes living in cities are higher than athletes living in small places such as villages or towns (Öz and Öztürk, 2018; Saxena and Sathe, 2016). Reasons such as athletes living in provinces participating in more tournaments than athletes living in districts/villages, pressure for success in big teams, high expectations of family and social circle, and anxiety about the future may have caused the anxiety scores of athletes living in provinces to be higher.

As a result, adolescent athletes have high levels of cognitive and somatic anxiety and very high levels of self-confidence before the competition. Compared to adolescent male athletes, female athletes have higher pre-competition cognitive anxiety levels and lower self-confidence levels. Pre-competition anxiety and self-confidence levels do not change depending on sports age and place of residence. Listening to arabesque music before the competition increases the self-confidence level of adolescent athletes.

Conflict of Interest

No conflict of interest is declared by the authors. In addition, no financial support was received.

Author Contributions

Study Design, EKA; Data Collection, CG; Statistical Analysis, EKA; Data Interpretation, EKA; Manuscript Preparation, EKA, CG; Literature Search, EKA, CG. All authors have read and agreed to the published version of the manuscript

Ethics Committee

Ethics committee approval for the study was received from Çanakkale Onsekiz Mart University Schools of Graduate Studies Ethics Committee with decision number 11/53 dated 08/09/2023.

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