MJSS

Akdeniz Spor Bilimleri Dergisi

Mediterranean Journal of Sport Science

ISSN 2667-5463

Music Genre and Exercise: A Study on Motivation, Perceived Performance, and Psychological Resilience

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DOI: https://doi.org/10.38021.asbid.1849473

ORIGINAL ARTICLE

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Abstract

This study aims to investigate the effects of music genre (popular and instrumental) on motivation, perceived physical strength and performance, and psychological resilience among individuals attending fitness centers for exercise. Designed as a non-experimental comparative field research, the sample group consisted of a total of 315 voluntary participants, including 114 females and 201 males, attending fitness centers in the province of Trabzon. Data were collected using the Impact of Music in Sportive Activities Scale (IMSAS) in two separate gyms where popular music (Group A) and instrumental music (Group B) were played. Research findings demonstrated that popular music created significantly more positive effects in all sub-dimensions compared to instrumental music. The scores for motivation, physical strength and performance, and psychological resilience of individuals exposed to popular music were found to be statistically significantly higher than those in the instrumental music group. Analyses conducted within the context of the gender variable revealed that the impact of popular music was much more pronounced across all three dimensions, particularly among male participants. Among females, it was observed that popular music increased motivation and performance perception, but did not create a statistically significant difference in psychological resilience compared to instrumental music. In conclusion, it can be stated that the use of high-tempo popular music in fitness environments increases effort tolerance and supports psychological resilience by diverting athletes' attention away from feelings of fatigue. These findings highlight the importance of strategic music selection to enrich the exercise experience for coaches and gym managers.

Keywords: Music Genre, Fitness, Motivation, Performance Perception, Psychological Resilience.

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Müzik Türü ve Egzersiz: Motivasyon, Performans Algısı ve Psikolojik Sağlamlık Üzerine Bir Araştırma

Öz

Bu araştırma, fitness salonlarına egzersiz yapmak üzere giden bireylerde müzik türünün (popüler ve enstrümantal) motivasyon, fiziksel güç ve performans algısı ile psikolojik sağlamlık üzerindeki etkilerini incelemeyi amaçlamaktadır. Çalışma, deneysel olmayan karşılaştırmalı bir alan araştırması deseninde tasarlanmış; örneklem grubunu Trabzon ilinde fitness salonlarına devam eden 114 kadın ve 201 erkek olmak üzere toplam 315 gönüllü katılımcı oluşturmuştur. Veriler, "Sportif Uygulamalarda Müziğin Etkisi Ölçeği" (SUMEÖ) kullanılarak, popüler müzik (A grubu) ve enstrümantal müzik (B grubu) dinletilen iki ayrı salonda toplanmıştır. Araştırma bulguları, popüler müziğin tüm alt boyutlarda enstrümantal müziğe kıyasla anlamlı derecede daha olumlu etkiler yarattığını göstermiştir. Popüler müziğe maruz kalan bireylerin motivasyon, fiziksel güç ve performans ve psikolojik sağlamlık puanları, enstrümantal müzik grubundan istatistiksel olarak anlamlı düzeyde yüksek bulunmuştur. Cinsiyet değişkeni bağlamında yapılan analizlerde, popüler müziğin etkisinin özellikle erkek katılımcılarda her üç boyutta da çok daha belirgin olduğu tespit edilmiştir. Kadınlarda ise popüler müziğin motivasyon ve performans algısını artırdığı, ancak psikolojik sağlamlık üzerinde enstrümantal müziğe göre istatistiksel olarak anlamlı bir fark yaratmadığı görülmüştür. Sonuç olarak, fitness ortamlarında yüksek tempolu popüler müzik kullanımının, sporcuların dikkatini yorgunluk hissetmekten uzaklaştırarak efor toleransını artırdığı ve psikolojik dayanıklılığı desteklediği söylenebilir. Bu bulgular, antrenörler ve salon yöneticileri için egzersiz deneyimini zenginleştirecek stratejik müzik seçiminin önemini ortaya koymaktadır.

Anahtar kelimeler: Müzik Türü, Fitness, Motivasyon, Performans Algısı, Psikolojik Sağlamlık.

Received:
26.12.2025

Accepted:
18.02.2026

Online Publishing:
07.04.2026

Introduction

Music is one of the most significant components of human culture, predating even verbal communication (Mithen, 2005; Patel, 2008). It offers individuals the opportunity to express themselves, perform on stage, explore their identity and transcend their perceived limits. From the most primitive to the most advanced societies, music permeates daily life, accompanying celebrations, weddings, funerals, times of war, in short, every facet of human existence. Research indicates that listening to music enhances interpersonal communication, fosters cooperation and provides individuals with a sense of social identity (Cross, 2001). Undoubtedly, one of the domains most influenced by music is exercise and sport.

Exercise is one of the most frequently prescribed interventions in healthy living and disease management. A substantial body of evidence supports its efficacy in both preventing and treating various diseases (Blair et al., 1989; Macera et al., 2003; Myers et al., 2004; Warburton et al., 2006; Agarwal, 2012). Furthermore, exercise has been identified as a beneficial adjunctive treatment for improving cognitive function (Beier et al., 2014; Tian et al., 2014), enhancing happiness (Khazaee-Pool et al., 2015), alleviating depression (Kratz et al., 2014; Mura et al., 2014) and anxiety (Greenwood et al., 2012; Schoenfeld et al., 2013), mitigating neurodegenerative diseases such as Alzheimer's and Parkinson's (Mattson, 2014), and addressing substance use disorders (Lynch et al., 2013; Peterson et al., 2014).

Despite these well-documented benefits, physical inactivity remains a significant public health concern, frequently highlighted by health organisations due to its association with rising obesity rates and cardiovascular diseases. Governments and health institutions in most developed countries are increasingly concerned about these issues (Radford et al., 2018; Wanner et al., 2017). Physical inactivity is a major risk factor for non-communicable diseases, which are the leading causes of death globally (Bull and Bauman, 2011; Lee et al., 2012). Consequently, engaging individuals in physical activity is a crucial initial step in mitigating these health risks. Individuals who do not regularly exercise often encounter several barriers when initiating a programme. Prominent among these barriers alongside a general lack of motivation are the prioritisation of work and family commitments, perceived high cost of gym memberships, lack of safe open spaces in urban areas, boredom and lack of enjoyment, absence of peer support and the physical discomfort associated with sweating, breathlessness and exertion (Biddle and Mutrie, 2015).

Music offers a potential solution to overcome exercise avoidance stemming from boredom and lack of enjoyment. Listening to music during exercise is a highly effective method for reducing monotony and enhancing enjoyment. The relationship between music and sport/exercise dates back to Ayres (1911), who observed that competitors in a six-day bicycle race moved 8.5% faster when a

military band was playing. However, it was the release of 22 music-accompanied exercise videos by Hollywood actress and fitness enthusiast Jane Fonda in the 1980s, selling millions of copies worldwide that led to an exponential increase in music-based exercise classes. This period saw the proliferation of derivatives of original dance-based classes, including aqua aerobics, step aerobics, spinning, Boxercise, Zumba and BodyPump. The popularity of Fonda's videos prompted many to purchase video players. Concurrently, at the individual level, the Sony Walkman popularised listening to music while walking and running. Stadiums began using music specifically chosen to motivate athletes and energise spectators. Today, advancements in technology, through devices like the iPod and its numerous counterparts, enable exercisers and athletes to curate personalised soundtracks tailored to their musical preferences (Karageorghis, 2016). Decades of research have demonstrated that music provides various interrelated benefits in exercise and sport-related activities (Terry et al., 2020; Bektaş and Demir, 2022; Bozkurt et al., 2022). For instance, pre-exercise music has been successfully employed for both stimulative (Eliakim et al., 2007) and sedative (Karageorghis et al., 2018) purposes. When used during exercise, music can engender positive affective states (Hutchinson et al., 2018) and divert exercisers' or athletes' attention from the unpleasant sensations associated with physical exertion and fatigue (Hutchinson and Karageorghis, 2013). Music motivates exercisers to sustain their effort while simultaneously helping them dissociate from feelings of bodily strain (Karageorghis and Terry, 1997). Another benefit of music is its capacity to increase arousal (Brownley et al., 1995; Karageorghis et al., 1996). Furthermore, based on her qualitative research, Gfeller (1988) posited that music enhances effort tolerance by redirecting attention from aversive physical sensations during exercise towards various musical features (i.e., rhythm, melody, and lyrics).

A review of the national literature reveals studies conducted within the context of exercise and music in Türkiye (Koç and Koç, 2023; Güleşce et al., 2024; Çelik and Karabilgin, 2022). However, no research has specifically investigated the relationship between music genre and motivation, perceived physical strength and performance and psychological resilience among individuals attending fitness centres for exercise. Addressing this gap, the present study aims to examine the effect of music genre on these psychological variables in this specific population. The following research questions guided the investigation:

- What is the relationship between music, motivation, perceived physical strength and performance, and psychological resilience according to gender among individuals engaged in sportive practices (specifically those ettendin fitness centres for exercise)?

- Does music genre (high-tempo popular music vs. instrumental music) have a significant effect on the motivation, perceived physical strength and performance, and psychological resilience of individuals attending fitness centres for exercise?

Materials and Methods

This section presents information regarding model of the research, population and sample, data collection tools, data collection procedure, analysis of data and research ethics.

Model of the Research

This study employed a non-experimental, comparative field research design. In non-experimental comparative research, the investigator cannot manipulate the independent variable. Instead, cause and effect relationships are examined by analysing pre-existing conditions and differences across naturally formed groups (Fraenkel and Wallen, 1990; Karasar, 2007). The study compared the perceptions of music genre between individuals attending two different fitness centres: one where popular music was played (Gym A) and another where instrumental music was played (Gym B). Both groups were observed in their natural environment and data were collected using the same instrument, the Impact of Music in Sportive Activities Scale (IMSAS).

Population and Sample

Table 1

Sample Distribution by Gender and Music Genre

Group	Variable	n	%
Gender	Female	114	36.2
	Male	201	63.8
Music Genre	Popular Music	164	52.1
	Instrumental Music	151	47.9

Table 1 presents the sample distribution by gender and music genre. The study population comprised individuals regularly attending fitness centres for exercise in the province of Trabzon, Türkiye. A convenience sampling method, a type of non-probability sampling, was employed. The sample consisted of a total of 315 participants (114 females, 36.2%; 201 males, 63.8%) recruited from two different fitness centres. of these, 164 participants (52.1%) exercised while exposed to popular music (Gym A), and 151 participants (47.9%) exercised while exposed to instrumental music (Gym B). A post-hoc power analysis was conducted using the obtained data. Considering the current sample size (N=315) and the observed effect sizes (e.g., $\eta^2 = 0.36–0.42$ for music genre), the study was determined to possess adequate statistical power to detect medium to large effect sizes with parameters $\alpha = 0.05$ and power = 0.80 (Faul et al., 2007).

Inclusion criteria were defined as follows: regularly exercising at a fitness centre for at least three days per week, aged between 18 and 50 years, attending the same fitness centre for a minimum of three months and having no hearing impairment.

Data Collection Tools

The demographic information form comprised only the gender variable.

Impact of Music in Sportive Activities Scale (IMSAS)

Developed by Karayol and Turhan (2020), this scale consists of 18 items distributed across three sub-dimensions. Factor 1 (F1): Motivation (5 items). Example item: "The music playing during my workout helps me exercise for longer." Factor 2 (F2): Perceived Physical Strength and Performance (6 items). Example item: "Music makes me feel stronger when lifting weights." Factor 3 (F3): Psychological Resilience (7 items). Example item: "The music during my workout reduces my daily stress." The scale employs a 5-point Likert type format (1 = Strongly Disagree, 5 = Strongly Agree). In the present study, Cronbach's alpha internal consistency coefficients were .85 for the Motivation sub-dimension, .82 for the Perceived Physical Strength and Performance sub-dimension, and .88 for the Psychological Resilience sub-dimension. The internal consistency coefficient for the overall scale was .90.

Data Collection Procedure

Prior to commencing data collection, necessary permissions were obtained from the managers of the respective fitness centres and the research procedure was explained to them in detail. Subsequently, individuals arriving at the centres for exercise were informed about the study. Those who voluntarily agreed to participate received detailed explanations regarding the study's purpose, scope and methodology. Participants were verbally assured that the data collected would be treated anonymously and used solely for scientific purposes within the scope of this research. The scale was administered post-exercise, in the changing rooms or rest areas. The data collection process lasted approximately two weeks.

During data collection, care was taken to ensure similarity in sound levels, environment and application protocols between Gym A and Gym B. For instance, the sound volume was standardised at 70–75 dB in both gyms. Music playback was continuous throughout the session during which the scale was administered in both facilities. The music selection for Gym A (popular music) consisted of a current Top 40 playlist, while for Gym B (instrumental music), classical and instrumental pieces

were selected. Workout hours were standardised for both groups (evening hours, 18:00–20:00). Standard fitness centre conditions were maintained regarding ventilation and temperature.

Analysis of Data

In the data analysis process, descriptive statistics were first calculated to determine participants' demographic characteristics and the general distribution of the research variables, with frequency, percentage, mean and standard deviation values reported. MANOVA was employed to examine the effect of music genre (popular vs. instrumental) on motivation, perceived physical strength and performance and psychological resilience for between group comparisons. Assumptions for MANOVA, including equality of covariance matrices (Box's M test) and homogeneity of variances (Levene's test), were preliminarily assessed. Due to the relatively close group sizes and the recognised robustness of Pillai's Trace, multivariate test results were interpreted using Pillai's Trace statistic. Gender and music genre served as independent variables, while the dependent variables were the sub-dimension scores (Motivation, Perceived Physical Strength and Performance, Psychological Resilience) of the IMSAS. All statistical analyses were conducted using SPSS version 25.0 with the significance level set at $p < .05$.

Ethics of Research

Data collection commenced following approval from the Scientific Research and Publication Ethics Board of Trabzon University (Decision No: E-81614018-050.04-2400014662, dated 18 March 2024). Throughout the research process, all procedures were conducted in accordance with the "Higher Education Institutions Scientific Research and Publication Ethics Directive."

Results

Table 2

Descriptive Statistics for IMSAS Sub-dimensions

Variable	n	Min.	Max.	x̄	Sd	Skewness	Kurtosis
Motivation	315	1.00	5.00	3.47	1.32	-.854	-.523
Physical Strength and Performance	315	1.50	5.00	3.35	1.03	-.370	-.986
Psychological Resilience	315	1.40	5.00	3.76	0.84	-.520	.036

Note: *IMSAS (Impact of Music in Sportive Activities Scale)*

Table 2 presents the descriptive statistics for the sub-dimensions of the IMSAS. Psychological resilience exhibited the highest mean score (M = 3.76; SD = 0.84), with a distribution approximating

normality. Motivation demonstrated a moderate to high mean score (M = 3.47; SD = 1.32), however, the negative skewness indicates notable differentiation among participants regarding this variable. The perceived physical strength and performance sub-dimension yielded a relatively lower mean score (M = 3.35; SD = 1.03) compared to the other variables, with a slightly negative skew and pronounced kurtosis, suggesting a wide and heterogeneous distribution of scores. In summary, the sample profile can be characterised as exhibiting high and consistent levels of psychological resilience, moderate but heterogeneous levels of motivation, and comparatively lower and more variable levels of perceived physical performance.

Table 3

MANOVA Results for Music Genre according to IMSAS

Variable	Music Genre	n	$\bar{x}$	Sd	df	F	p
Motivation	Popular	164	4.03	1.14	1-313	73.31	**0.00****
	Instrumental	151	2.88	1.24			
Physical Strength and Performance	Popular	164	3.80	0.95	1-313	82.79	**0.00****
	Instrumental	151	2.86	0.88			
Psychological Resilience	Popular	164	4.01	0.71	1-313	32.84	**0.00****
	Instrumental	151	3.49	0.90			

**p< .01

Table 3 displays the MANOVA results examining whether music genre significantly differentiates scores on the IMSAS sub-dimensions. Assumptions of homogeneity of covariance matrices and equality of error variances were tested. Box's M was significant (M = 42.35; F = 6.99; $p < .001$) and Pillai's Trace was .278. Levene's test was significant for motivation (F = 9.75; $p < .01$) and psychological resilience (F = 14.27; $p < .001$), indicating violation of the homogeneity of variance assumption for these variables. The assumption was met for perceived physical strength and performance (F = 0.25; $p > .05$). Despite the violation of variance homogeneity, the results were considered interpretable due to the relatively similar sample sizes and the large effect size indicated by Pillai's Trace (.278) (Olson, 1974; Finch, 2005). The MANOVA results revealed a significant main effect of music genre on the combined IMSAS sub-dimensions, $\Lambda = 0.72$, $F(3,311) = 39.87$, $p < .01$. This finding indicates that the linear composite of motivation, perceived physical strength and performance and psychological resilience scores differs significantly according to music genre. Univariate analyses showed that participants exposed to popular music scored significantly higher on motivation (M = 4.03; SD = 1.14) compared to those exposed to instrumental music (M = 2.88; SD = 1.24), $F(1,313) = 73.31$, $p < .05$. Similarly, the popular music group reported significantly higher perceived physical strength and performance (M = 3.80; SD = 0.95) than the instrumental music

group (M = 2.86; SD = 0.88), F(1, 313) = 82.79, p < .05. Furthermore, psychological resilience scores were significantly higher for participants listening to popular music (M = 4.01; SD = 0.71) compared to those listening to instrumental music (M = 3.49; SD = 0.90), F(1,313) = 32.84, p < .05.

Table 4

MANOVA Results for Music Genre according to IMSAS by Gender

Gender	Variable	Music Genre	n	$\bar{x}$	Sd	df	F	p
Female	Motivation	Popular	33	3.33	1.46	1-112	5.450	**0.021***
		Instrumental	81	2.73	1.14			
	Physical Strength and Performance	Popular	33	3.11	1.20	1-112	4.231	**0.042***
		Instrumental	81	2.71	0.81			
	Psychological Resilience	Popular	33	3.73	1.10	1-112	3.024	0.085
		Instrumental	81	3.37	0.96			
Male	Motivation	Popular	131	4.20	0.98	1-199	49.052	**0.00****
		Instrumental	70	3.05	1.34			
	Physical Strength and Performance	Popular	131	3.97	0.78	1-199	57.646	**0.00****
		Instrumental	70	3.03	0.93			
	Psychological Resilience	Popular	131	4.08	0.56	1-199	22.189	**0.00****
		Instrumental	70	3.62	0.80			

**p<.01; *p<.05

Table 4 presents the MANOVA results concerning the effect of music genre (popular vs. instrumental) on motivation, perceived physical strength and performance and psychological resilience, analysed separately for male and female participants. For the female group, Box's M was significant (M = 14.49; p < .05), and Pillai's Trace was .09. Levene's test indicated a violation of the homogeneity of variance assumption for motivation (p < .05) and perceived physical strength and performance (p < .001), whereas the assumption was met for psychological resilience (p > .05). For the male group, Box's M was also significant (M = 44.64; p < .05), with a Pillai's Trace of .31. Levene's test revealed violations of the homogeneity of variance assumption for all three dependent variables (p < .01). Despite these violations, the results were deemed interpretable due to the relatively close group sizes and the moderate to large effect sizes indicated by Pillai's Trace (Female = .09; Male = .31) (Olson, 1974; Finch, 2005). MANOVA results for female participants indicated a significant main effect of music genre on the combined dependent variables, $\Lambda = 0.91$, F(3, 110) = 3.47, p < .05. Univariate analyses revealed significant differences favouring popular music for motivation, F(1, 112) = 5.450, p < .05 and perceived physical strength and performance, F(1, 112) = 4.231, p < .05. Female participants exposed to popular music reported higher motivation (M = 3.33; SD = 1.46) compared to those exposed to instrumental music (M = 2.73; SD = 1.14). Similarly, perceived physical strength and performance scores were higher in the popular music group (M = 3.11; SD = 1.20) than in the instrumental music group (M = 2.71; SD = 0.81). However, the difference

in psychological resilience scores between the popular (M = 3.73; SD = 1.10) and instrumental (M = 3.37; SD = 0.96) music groups was not statistically significant, $F(1, 112) = 3.024$, $p > .05$. For male participants, MANOVA revealed a significant main effect of music genre, $\Lambda = 0.68$, $F(3, 197) = 30.05$, $p < .01$. Univariate analyses demonstrated significantly higher scores in the popular music group compared to the instrumental music group across all three sub-dimensions: motivation, $F(1, 199) = 49.052$, $p < .01$; perceived physical strength and performance, $F(1, 199) = 57.646$, $p < .01$; and psychological resilience, $F(1, 199) = 22.189$, $p < .01$. Male participants exposed to popular music reported higher motivation (M = 4.20; SD = 0.98 vs. M = 3.05; SD = 1.34), higher perceived physical strength and performance (M = 3.97; SD = 0.78 vs. M = 3.03; SD = 0.93), and higher psychological resilience (M = 4.08; SD = 0.56 vs. M = 3.62; SD = 0.80) than those exposed to instrumental music. These findings indicate that the effect of music genre on the IMSAS sub-dimensions differs by gender, with popular music exerting a more pronounced positive influence on male participants.

Discussion and Conclusion, Suggestions

This study aimed to investigate the effects of music genre (popular vs. instrumental) on motivation, perceived physical strength and performance and psychological resilience among individuals attending fitness centers for exercise. The findings demonstrated that popular music yielded significantly more positive effects across all dimensions compared to instrumental music. Furthermore, these effects varied according to gender, with popular music exerting a substantially stronger positive influence on male participants.

The obtained findings align with the assertions of Karageorghis and Terry (1997), who proposed that music enhances motivation during exercise and dissociates individuals from the unpleasant sensations associated with physical exertion. Çelik and Karabilgin (2022) similarly reported positive psychological effects associated with music use during exercise. Karageorghis (2016) emphasized that music can augment mental toughness through tempo, rhythm and cultural associations. Consistently, the meta-analysis by Terry and colleagues (2020) reported that music, particularly when listened to at a fast tempo, strengthens positive affective states and exerts a supportive effect on exercise performance. Koç and Koç (2023) noted that individuals listening to high intensity music exhibited higher levels of motivation, psychological resilience, physical performance and perceived fitness compared to other listening types. The high-tempo, lyrical nature of popular music may strengthen performance perceptions by diverting attention (Gfeller, 1988) and elevating arousal levels (Brownley et al., 1995). Moreover, as suggested by Hutchinson and Karageorghis (2013), music's capacity to positively alter emotional states and thereby support psychological resilience parallels the higher psychological resilience scores observed in the popular music group of the present study.

The gender differentiated results are particularly noteworthy. The finding that popular music produced significant effects across all dimensions for male participants yet failed to yield a significant difference in psychological resilience for female participants, suggests that musical preferences and motivational responses may vary according to gender. This observation is consistent with Terry and colleagues' (2020) emphasis that the effects of music may depend on individual differences and contextual factors. Furthermore, Bektaş and Demir (2022), in their study involving Turkish athletes, similarly proposed that music genre may interact with gender. Research by Dallas and colleagues (2024) on artistic gymnasts and trampoline athletes revealed that classical music differentially affected pre-competitive performance enhancement rates among young female athletes across the two disciplines. Conversely, Laukka and Quick (2011) reported that the motivational and emotional benefits athletes derived from music were similar irrespective of gender, suggesting that gender may not be a definitive determining factor for these variables. This apparent inconsistency underscores that the effects of music on exercise cannot be explained by a unidimensional process but are likely shaped by numerous variables, including the athlete's momentary psychological state.

In conclusion, this research demonstrates that the use of popular music in fitness environments can be an effective tool for enhancing motivation, performance perception and psychological resilience, particularly among male exercisers. These findings, consistent with prior research in sport psychology and exercise physiology (Karageorghis, 2015; Hutchinson et al., 2018), offer practical implications for coaches and gym managers regarding the importance of music selection. The study reaffirms that music serves as a factor enriching the exercise experience, aiding sustained participation and supporting psychological well-being.

Based on the research findings, it is recommended that fitness centre managers and coaches incorporate high-tempo popular music playlists into training programmes to maximise exercisers' motivation and performance perceptions. Considering the differential effect of gender on music perception, creating dynamic playlists tailored to individuals' preferences or group demographics may enhance exercise efficiency. Future studies could contribute to the literature by examining the interaction of different music genres (e.g., rock, electronic) and varying exercise intensities (e.g., HIIT, cardio, resistance training) alongside popular and instrumental music, utilising larger sample groups. Additionally, longitudinal research investigating the long-term effects of music on psychological resilience would be beneficial for developing applied strategies within the field of sport psychology.

Abbreviations

IMSAS: Impact of Music in Sportive Activities Scale

Ethics Committee Permission Information

Ethics review board: Trabzon University Scientific Research and Publication Ethics Committee

Date of ethical approval document: 18.03.2024

Issue number of the ethical approval document: E-81614018-050.04-2400014662

Authors' Contributions

The entire research was conducted by the sole author of the study.

Conflicts of Interest

The author declare that there is no conflict of interest related to this study.

Funding

The authors declare that this study received no financial support.

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