



Education Quarterly Reviews

Erbaş, Ü., & Çakir, Z. (2022). The Effect of Music on the Motivation of Athletes in Taekwondo and Karate Training. *Education Quarterly Reviews*, 5(3), 489-496.

ISSN 2621-5799

DOI: 10.31014/aior.1993.05.03.561

The online version of this article can be found at:
<https://www.asianinstituteofresearch.org/>

Published by:
The Asian Institute of Research

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The Effect of Music on the Motivation of Athletes in Taekwondo and Karate Training

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Abstract

This study examines the effect of music on motivation during sports activities in taekwondo and karate training. A total of 258 active athletes between the ages of 12 and 18 be engaged in taekwondo (n=159) and karate (n=99) branches participated in the study voluntarily. “The Effect of Music in Sports Activities Scale (SUMEÖ),” developed by Karayol and Turhan (2020), was used to collect data in the study. The scale consists of 18 items, has 3 sub-dimensions, and is in a 5-point Likert type. The data were collected using the Effect of Music in Sports Activities Scale and digital web technologies. Descriptive statistics were made for demographic variables in the analysis of the research data. Data obtained from the scale were analyzed using the IBM SPSS Statistics 26 program. According to the results of the analysis, it can be said that the type of music chosen by the athletes and the upbeat music has a significant effect on sports activities. In training with technical exercises step, it was determined that listening to fast-paced music chosen by the athletes themselves can increase the motivation of the exercises while listening to slow-paced music contributes to the recovery process. It can be said that music is a tool to motivate athletes by reducing the stress on athletes and that the gender variable is a factor affecting the effect of music in sports activities in different branches.

Keywords: Sports Performance, Music, Motivation, Karate, Taekwondo, The Effect of Music

1. Introduction

Pythagoras, one of the genius teachers of mathematics, explained “music as the expression of the universal harmony existing in arithmetic and astronomy.” The effects of music on the emotional state have attracted a lot of attention recently, and evidence from many sources shows that music has the ability to evoke emotion in listeners. Music creates different effects on each listener and is considered an abstract concept. The reactions of individuals with different psychologies to the same music will also be different from each other in parallel (Akkuş, 2007). Music, which has an ergogenic effect, delays fatigue, increases training capacity, and increases athletic and exercise performance. In the context of physical activity, whether warming up for jogging, in a park or a judo

competition, music seems like a relatively effortless stimulus. Many participants in martial arts use music to psychologically prepare for competition (Lane, 2015).

Music is frequently used by athletes to increase motivation and improve their aerobic-anaerobic performance (Hammad et al., 2019). Studies conducted have shown that music is a tool that helps athletes become motivated by reducing the pressure on them (Gacar, 2021). Besides, in the studies conducted in terms of the effects of music on performance, it has been suggested that the type of music, type of exercise, timing, and fitness level of the athlete may affect the performance response to music, and conflicting results have been found (Eliakim et al., 2013).

In the literature, studies such as the effect of music on anger and psychological symptoms (Sezer, 2011), The place and importance of music on human health (Akkuş, 2007), The effect of music on the cognitive functions of the brain (Ayata & Aşkin, 2008), The Place and Importance of Music in Wrestling Matches (Altınölçek, 2010), The effect of different tempo music on aerobic performance in young women (Böcekci, 2019) have been made, and studies have been carried out by considering the effect of music almost together with many fields.

Music helps athletes to be motivated and feel safe by controlling their emotional state with excitement while performing their physical activity or in competitions. However, there are studies on its effect on speed, agility, and balance ability. In a study conducted by Ferguson et al. (1994), the scores recorded in the competition environment were examined by playing negative and positive music to the karate players, while music with positive effects caused significant increases in the performance of karate players, music with negative effects caused the performance of athletes to decrease. Hutchinson et al. (2011) stated that well-chosen music encourages positive impact, even at high levels.

Various factors affect sports performance and motivation. Music has an important place among the factors that move the athlete in these factors. Studies conducted show that music is used by most athletes as a mood-adjusting strategy (Stevens & Lane, 2001). In this study, the effect of music chosen according to the athletes' own preferences and at a different tempo and played in a suitable environment on the motivation of athletes was examined.

2.Method

2.1. The Aim of the Study

This study aims to examine the effect of active taekwondo and karate athletes between the ages of 12-18 during training on different days, accompanied by dynamic and slow music of their own choice at different tempos, on the motivation of athletes.

2.2. Study Population and Sample

“The Convenience Sampling” technique was used to determine the study group. Since this sampling method adds speed and practicality to the research, the researcher chooses the situation that is easy to access (Yıldırım & Şimşek, 2006). For this study conducted, the participants in the sports clubs in Istanbul were reached. In this study, a survey model was used. In the music protocol, during the sports activity, each athlete listened to any music he/she wanted from his/her own headphones. “Rocky” soundtracks as upbeat music and Tchaikovsky’s “Swan Lake”-like music as light tempo music, which was used by Yamamoto et al. (2003) (Yamamoto et al., 2003) in their studies, were listened to.

2.3. Data Collection Tool

Personal information form and “The Effect of Music in Sports Activities Scale (SUMEÖ)” developed by Karayol and Turhan (2020) was applied to collect data in the study. The scale without negative (reverse) items is a 5-point Likert-type scale consisting of 18 items with 3 sub-dimensions: Psychological Resilience (7 items), Physical

Strength and Performance (6 items), and Motivation (5 items). In the personal information form, there are questions to learn the gender, branch, frequency of listening to the music of the athletes.

2.4. Data Analysis

While collecting the data, sports halls and training days where the athletes can express themselves comfortably were selected. All the data obtained were coded in the IBM SPSS 26 program in the computer environment. The scores obtained were scored separately with their sub-dimensions. Parametric tests were used for the analysis and interpretation of the data. Official approval for this study was obtained from the Ethics Committee of Şırnak University with the letter numbered 2021/93.

3. Results

In this part of the study, the results of the analysis of the data obtained from the total scores of “The Effect of Music in Sports Activities Scale (SUMEÖ)” applied to the participants were interpreted in terms of some variables by putting them into tables. The analysis of the attitude scores of the athletes aged 12-18 who are actively engaged in taekwondo and karate branches regarding the effect of music on the motivation of the athletes according to the variables and the findings of the relationship between them are given below.

3.1. Descriptive Attributes

Table 1: Frequency and percentage distributions of the descriptive attributes of the study group

Variables		<i>f</i>	%
Gender	Male	158	61.2
	Female	100	38.8
Sport Branch	Taekwondo	159	61.6
	Karate	99	38.4
Frequency of Listening to Music	Always	111	43.0
	Sometimes	92	35.7
	Rarely	55	21.3
	Total	258	% 100

* Significant difference with $p < 0.05$

According to Table 1, of the participants 61.2% are male (n: 158) and 38.8% are female (n: 100). Of the participants 61.6% (n: 159) are taekwondo athletes, 38.4% (n: 99) are karate athletes. As for the frequency of listening to music, 43% (n:111) always, 35.7% (n:92) and 21.3% rarely (n:55) listen to music.

3.2 Statistics and Data Analysis

The results of the t-test analysis performed to determine the statistical differences between the “The Effect of Music in Sports Activities Scale (SUMEÖ)” sub-dimensions and the demographic characteristics of taekwondo players are given in Table 2.

Table 2: Independent samples t-test results of sub-dimensions of the scale of the effect of music in sports activities according to taekwondo player demographic variables

Variables	Gender	N	X	ss	t test			
					t	sd	p	
TAEKWON DO Psychological Resilience	Music of self-choice	Female	94	3,42	.867	.488	157	.626
	Male	65	3,35	.968				
	Female	94	2,95	.786	1.320	157	.189	

Physical Strength and Performance	Fast rhythm music	Male	65	2,79	.709			
	Slow music	Female	94	3,62	.728			
		Male	65	3,61	1.003	0.74	109.108	.941
	Music of self-choice	Female	94	4,14	.651			
		Male	65	3,81	.929	2.493	106.432	.014*
	Fast rhythm music	Female	94	3,43	.911			
		Male	65	3,34	.887	.661	157	.510
	Slow music	Female	94	3,53	.817			
		Male	65	3,75	.902	-1.607	157	.110
	Music of self-choice	Female	94	3,91	.812			
		Male	65	3,43	1.017	3.148	117.247	.002*
	Motivation	Fast rhythm music	Female	94	3,36	.834		
	Male	65	3,25	.859	.757	157	.450	
	Slow music	Female	94	3,47	.870			
	Male	65	3,35	.965	.842	157	.401	

* $p < 0,05$

When the effect of music during sports activities on taekwondo players is examined according to gender, statistically significant differences were found in favor of men in the sub-dimensions of physical strength and performance and motivation according to the music parameter they chose ($p < 0.05$). According to the analysis results, men's scores of training with the music genres they chose ($x = 4.14$) in Physical Strength and Performance sub-dimension scores, and arithmetic averages in Motivation sub-dimension ($x = 3.91$) are higher than women. Accordingly, it can be said that the gender variable is a factor affecting the music genre preferred by the athletes (Table 2).

The results of the t-test analysis performed to determine the statistical differences between the "The Effect of Music in Sports Activities Scale (SUMEÖ)" sub-dimensions and the demographic characteristics of karate players are given in Table 3.

Table 3: T-test results of sub-dimensions of the scale of the effect of music in sports activities according to karate players demographic variables

Variables	Gender	N	X	ss	t test			
					t	sd	p	
Psychological Resilience	Music of self choice	Female	64	2,99	,621			
		Male	35	3,22	,787	-1,548	97	.125
	Fast rhythm music	Female	64	2,85	,756			
		Male	35	2,58	,781	1,632	97	.106
	Slow music	Female	64	3,37	,620			
		Male	35	3,40	,443	-.245	97	.807
Physical Strength and Performance	Music of self choice	Female	64	3,32	,727			
		Male	35	3,80	,657	-3.188	97	.002*
		Female	64	3,39	,928	-.144	97	.885

Motivation	Fast rhythm music	Male	35	3,42	1,137			
	Slow music	Female	64	3,41	,731	-463	97	.644
		Male	35	3,49	,732			
	Music of self choice	Female	64	3,40	,771	-471	97	.639
		Male	35	3,48	,786			
	Fast rhythm music	Female	64	3,48	,864	1.865	97	.065
		Male	35	3,12	1,021			
	Slow music	Female	64	3,47	,955	-823	97	.413
		Male	35	3,63	,906			

* $p < 0,05$

When the effect of music on the karate players according to their gender during the sports activity was examined, a statistically significant difference was found in favor of women in the sports activities scores of the athletes according to the music parameter they chose ($p < 0.05$). According to the analysis results, in the Physical Strength and Performance sub-dimension scores, the arithmetic averages of women's scores for training with the music genres of their choice ($\bar{x} = 3.80$) were higher than men's. Accordingly, it can be said that the gender variable is a factor affecting the music genre preferred by the athletes in sports activities (Table 3).

The results of the t-test analysis performed to determine the statistical differences between the "The Effect of Music in Sports Activities Scale (SUMEÖ)" sub-dimensions and branches are given in Table 4.

Table 4: T-test results of sub-dimensions of the scale of the effect of music in sports activities according to branches

Variables / Type of music		Sport branch	N	X	ss	t test		
						t	sd	p
Psychological Resilience	Music of self-choice	Taekwondo	159	3,39	,907	3,202	246,037	.002*
		Karate	99	3,07	,688			
	Fast rhythm music	Taekwondo	159	2,88	,757	1,341	256	.181
		Karate	99	2,75	,772			
	Slow music	Taekwondo	159	3,62	,848	2,691	254,998	,008*
		Karate	99	3,38	,562			
Physical Strength and Performance	Music of self-choice	Taekwondo	159	4,00	,791	5,214	256	,000*
		Karate	99	3,49	,736			
	Fast rhythm music	Taekwondo	159	3,40	,900	-,030	256	,976
		Karate	99	3,40	1,002			
	Slow music	Taekwondo	159	3,62	,857	1,697	256	,091
		Karate	99	3,44	,728			
Motivation	Music of self-choice	Taekwondo	159	3,71	,928	2,554	256	,011*
		Karate	99	3,43	,773			
	Fast rhythm music	Taekwondo	159	3,31	,843	-,356	256	,722
		Karate	99	3,35	,934			
	Slow music	Taekwondo	159	3,42	,909	-,894	256	,372
		Karate	99	3,52	,937			

* $p < 0,05$

Considering the effect of music genres according to the branch, a statistically significant difference was found in favor of taekwondo players in sports activities scores ($p < 0.05$). According to the analysis results, it has been

determined that in the psychological resilience sub-dimension scores of the scale used, the scores of the taekwondo players training with the music genres they chose ($x=3.39$) and the scores of training with the slow music genres ($x=3.62$); in physical strength and performance sub-dimension scores, the scores of taekwondo players training with the music they chose ($x=4.00$); in the motivation sub-dimension scores, the scores of the taekwondo players training with the music they chose ($x=3.71$) has higher arithmetic averages than karate players.

The results of the one-way analysis of variance (ANOVA) conducted to determine whether the frequency of listening to the music of the participants is related to the effect of music in sports activities are given in Table 5.

Table 5: The effect of music in sports activities scale one-way anova results according to frequency of listening to music and variables in quality

Type of music	Variables	N	X	Ss	Source of variation	KT	sd	KO	F	p	Anlam lilk
Music of self-choice	Rarely (1)	55	3,28	.622	Between Groups	5,218	2	2.609			
	Sometimes (2)	92	3,55	.665	Within Groups	116.437	255	.457	5.714	.004*	2-1; 3-1;
	Always (3)	111	3,66	.708	Total	121.656	257				
	Total	258	3,54	.688							
Fast rhythm music	Rarely (1)	55	2,94	.680	Between Groups	3,345	2	1,672			
	Sometimes (2)	92	3,19	.762	Within Groups	129,592	255	,508	3.291	.039*	2-1; 3-1;
	Always (3)	111	3,24	.685	Total	132,937	257				
	Total	258	3,16	.719							
Slow music	Rarely (1)	55	3,59	.636	Between Groups	.904	2	.452			
	Sometimes (2)	92	3,44	.639	Within Groups	120.291	255	.472	.959	.385	
	Always (3)	111	3,54	.746	Total	121.195	257				
	Total	258	3,51	.686							

* Significant difference with $p < 0.05$

There is a significant difference between the use of the type of music preferred by the participants ($F=5.714$; $p < 0.05$) and the type of dynamic music applied ($F=3.291$; $p < 0.05$) in sports activities and the frequency of listening to music (Table 5).

According to the results of the LSD test, which was conducted to determine that there was a difference between the music applied to the participants in sports activities and the frequency of listening to music by the athletes, it has been stated that those who always listen to music ($X=3.66$), those who listen to music occasionally ($X=3.55$); In the study conducted with moving music, those who always listen to music ($X=3.24$) and those who listen to music occasionally ($X=3.19$) has higher scores than those who rarely listen to music, and that music has a more positive effect.

4. Discussion

In this research examining the effect of music during Taekwondo and Karate training, a statistically significant difference was found in favor of men in the effect of the type of music chosen by the athletes in the sub-dimensions of Psychological Resilience, Physical Strength and Performance, Motivation in the sports activities of taekwondo players according to gender. According to the results of the analysis, it was observed that the arithmetic mean of the effect on men was higher than on women. The karate branch shows a significant difference in favor of women

in sub-dimensions of Physical Strength and Performance according to gender. In a study conducted on Elite Brazilian Taekwondo players, it has been reported that motivation levels are similar in both genders, but there are statistical differences in favor of women (Albuquerque et al., 2008; Vatansever et al., 2018). Ekiz and Atasoy (2021) in their study on physical education and sports school students. They found statistically significant differences in the effect of music in favor of men during sports activities. In another study conducted on the Effect of Music on Sports Activities on 1206 taekwondo athletes. It has been reported that there are significant differences in the sub-dimensions of the scale according to gender and the type of music listened to (Gacar, 2021). Our study is supported by the literature, and it can be said that the gender variable is a factor affecting the effect of music in sports activities.

According to the results of the analysis, it was determined that the music genres chosen by taekwondo players were effective on their resilience, physical strength and performance, and motivation, slow music genres were effective on their psychological resilience, and their arithmetic averages were higher than the karate players. Looking at the literature, studies by Kartal and Ergin (2018) reported that athletes contribute positively to their motivation when they work with the music genre of their choice. In a study conducted by Mavi (2012) on elite taekwondo players, it has been reported that taekwondo players who listen to fast tempo music before the match score in the match, the number of attacks and the number of techniques they apply increase compared to the pre-test compared to the post-test. In the studies conducted by Rouhollah et al. (2015) on non-elite taekwondo players, it has been reported that high rhythm music has isokinetic force production and motivating effect. In the study conducted by Vatansever et al. (2018) on women, it has been reported that listening to fast-paced music during maximal exercise causes the exercise time to prolong and the maximal heart rate to increase.

According to the findings obtained according to the music listening frequency values of the athletes, it has been observed that music is more motivating in athletes who frequently listen to music in their daily life. In our study, the athletes stated that they preferred upbeat music during technical training, and they preferred slow music at the end of warm-up techniques and training. Looking at the literature, studies conducted have shown that athletes routinely use music to increase their motivational status and performance (Laukka & Quick, 2013; Pain, et al.; 2011). In the study in which 252 Swedish athletes participated, it has been reported that of the participants, 66% listen to music several times a day, 71% prefer high-tempo music, and women listen to music more often than men (Laukka & Quick, 2013).

Upbeat music genres and slow tempo music genres also vary from person to person. It can be said that positive findings will be obtained by choosing the right decibel and music types such as pop, rock, remix, etc. Such activities are an important factor in reducing the anxiety levels of the athletes before the competition and during the competition and keeping their competition performance at an optimal level (Gönen & Güçlü, 2019).

Suggestions

The music factor can be used to balance the recovery level after training, which provides concentration and relaxation for the athletes in taekwondo, karate competitions, poomsae, and kata competitions and training, which requires great motivation. If the types of music to be listened to by the athletes are chosen correctly in a way that appeals to them, the athletes can be able to increase their performance and concentrate by making good use of the music. With the correct music, the effects on physiological parameters such as agility, strength, and endurance states and heart rate, body temperature can be investigated in elite sports athletes in different branches.

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