EAI Endorsed Transactions
on e-Learning

Research Article EAI.EU

Teaching Physical Exercise with Music – Pedometric Evaluation

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Abstract

In everyday life and culture, music can be encountered and experienced in a variety of forms, and it plays a role in mood swings. Numerous studies have shown that listening to music while exercising increases both the amount of time spent exercising as well as the interest level in the activity. It is hypothesised that instructing pupils in physical activities through the medium of music would have a beneficial effect on them. Fifty-five students from the Faculty of Physical Education were chosen to serve as study subjects in order to investigate the impact that music has on the process of learning and doing the activity. This study was carried out over the course of two days, and the data was gathered by counting the number of footsteps that participants made throughout a period of 20 minutes of instruction with or without music. The exercises were demonstrated to the participants over the course of two days; on the first day, they were demonstrated with music, and on the second day, they were demonstrated without music. According to the findings of this study, there is a discernible contrast between instructing activities with and without the use of music. The topic revealed a tremendous amount of interest and vitality when it was practised with music. The pedometric measure improved with musical training, and males did much better than girls in this regard.

Keywords: Music, Pedometer, Teaching, Physical Exercise.

Received on 24 February 2023, accepted on 21 March 2023, published on 06 April 2023

doi: 10.4108/eetel.v8i2.3073

1. Introduction

A significant number of academics are devoting a great deal of their attention right now to the process of determining the effect that music has on the process of studying a wide range of topics. In the course of this research, an effort is made to lead physical activities while music is playing in the background. This is done with the hopes that the participants will be motivated to take part in the activities and will remain engaged for a longer amount of time. The participants' natural inquisitiveness is stimulated, and the music's energising effect becomes more pronounced. During the rhythmic activity, the use of synchronous music, in which the exerciser moves in time with the beat of the music, has been shown to have beneficial psychological as well as ergogenic effects. For instance, the use of motivational synchronous music during instructional exercises such as Bharathiyam and freehand exercises will increase the amount of time it takes for the participant to become exhausted by 15% compared to a control condition in which there was no music [5]. This is because the participant will be more focused on the task at hand and will not be distracted by the music [2].

Research has shown that listening to music can successfully disrupt connections between different parts of the brain, which in turn can lessen sensations of exertion and fatigue by as much as 12 percent. It has been established that a more pleasant psychological environment can be created through the utilisation of music in educational, sports, and other physical activity settings (an increase in the quality of motivation [3]). There have been a number of studies that

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have demonstrated that exercising to music not only improves the quality of a workout but also decreases feelings of boredom [6]. It has been proved that listening to music that motivates you or that is timed to your workout can have an influence not just on your body but also on your mind. [7]. If a song has a strong and consistent beat, for instance, you may pedal or run to the beat of the music, which not only makes you feel good but also may motivate you to exercise more. During your exercise routine, the lyrics of motivating music or the appealing beat of that music might encourage you to exercise for longer or more vigorously. This can be accomplished by listening to music.

It is entirely conceivable for one to experience a range of emotions, including pleasure and displeasure, have their thought processes affected, and be impacted by music. Alterations in the levels of specific hormones can be seen as a direct result of this psychological influence, and these changes can be observed and observed directly. Participants in a study who listened to music that was classified as "pleasant" had higher levels of the hormone serotonin, which is also known as the "feel-good" hormone. This was found to be the case when the participants were asked to describe the music. According to the findings of this study [1], the happy experience of listening to music might boost serotonin levels, placing you in a better mood so that you can get more out of your workout. According to the findings of this study, it is not impossible to demonstrate the impacts, despite the fact that doing so is challenging. [12] Neuronal plasticity, or the capacity of the nervous system to change in response to experiences of deprivation, can be enhanced by listening to music.

When we exercise, our brain goes through a process similar to that which occurs in our muscles when we do so; namely, it becomes more powerful. Studies [11] have shown that being exposed to music can boost an individual's capacity for learning. As a result of the strong integration of the auditory system with the other sensory systems, music is able to reach a wide variety of regions throughout the brain. Do you remember when you used to sing songs when you were at school? When we need to remember the location of a certain letter in the alphabet, many of us still sing the alphabet song. Just in case you don't believe us, what letter follows after the letter "M" after four other letters have been counted? We would appreciate it if you could reassure us that, while you were searching for the answer, you did not mentally sing the alphabet song to yourself. We are better able to remember lists, stories, and procedures when we listen to music with melodies and rhythms that are performed in a repetitive manner.

2. Method

2.1 Participants and Backgrounds

The research was conducted on 55 students from the Faculty of Physical Education who volunteered to participate. This study was carried out over the course of two days, and the amount of data collected was based on the number of footsteps movements that occurred within the first twenty minutes of instruction with or without music.

The lesson that was taught falls under the category of general lesson plans that were framed for the purpose of this research. This plan includes a five-minute warm-up, a ten-minute fitness segment that focuses on physical and physiological components, a five-minute segment that emphasises the acquisition of skills, and a five-minute segment that emphasises relaxation or warm-down activities. Aerobic exercise is what was decided to be the best option for this investigation.

2.2 Training Protocol

The teaching and the test both took place over the course of two days. Table-1 outlines the plan for the training and instructing routine that will take place on day one without music as well as the alternative day without music.

2.3 Instrument Used

A pedometer was used to count each subject's steps in order to determine the extent to which music and other factors influenced their behaviour. [16] It was discovered that the pedometer is an instrument that is dependable and valid for use in teaching physical education lessons. [10] A pedometer is a gadget that should be used to collect data on the step count and amount of time that subjects spend inactive [17-18].

3. Procedure and Data Collection

On the first day of the experiment, subjects exhibited a 20-minute physical exercises lesson with music, and on the second day, they demonstrated the same lesson without music [19]. This was done so that the researchers could compare the effects of music on learning physical exercise. The participants were given instructions on how to use a pedometer [20]. The pedometer was started before the class began, and it was stopped, and the unit recorded when the session was over [21-23]. This process was repeated when the class resumed after the break (The time and the number of footsteps count recorded were registered). On both the first and second days of the trip, data from pedometers were obtained [24-27]. Figure 1 depicts students working through the practice while listening to music.

Figure 1. Performing Exercise with Music

Table 1. Training Protocol

Type of Phase	Exercises Practiced	Duration	Type of Phase	Exercises Practiced	Duration
Day-1	**With Music**		**Day-2**	**Without Music**	
Warm-up	March on the spot Heel digs Knee lifts Shoulder rolls Knee bends	5 Minutes	Warm-up	March on the spot Heel digs Knee lifts Shoulder rolls Knee bends	5 Minutes
Fitness Part	V. Step Turn step Grapevine Charleston	10 Minutes	Fitness Part	V. Step Turn step Grapevine Charleston	10 Minutes
Warm Down Phase	Swing slowly at first and then pick up the tempo	5 Minutes	Warm Down Phase	Swing slowly at first and then pick up the tempo	5 Minutes

4. Analysis of Data

The data that were obtained were compared in physical training courses that included music and those that did not include music, as well as the three secessions of the warming up fitness part and warming down phase [28]. The independent variable in this study was believed to be the music, and the dependent variable was the step count obtained using pedometric analysis [29]. A T-test is carried out in order to identify the significant difference, and an ANOVA repeated measures test is carried out in order to ascertain whether or not a disparity exists between the populations being compared [30]. Table 2 contains the average number of steps taken, the standard deviation for those counts, the participant's gender, and the total number of steps taken during the exercise session's general warming up, fitness practise, and warm-down [31-33]. The total gender effect was also investigated using one-way ANOVA [34].

5. Result

Table 2 shows the mean step count during warm-up with music secession of the male is 606.20 with an SD of 2.47 and female is 59.74 with an SD of 1.93, indicating that there is a difference between gender in their level of performance. Males were more active than females, and the value of t (27.277) for the <.000 indicates a significant difference in performance between males and females. Figure 2 shows the visual clarity in comparing teaching physical exercise with music and without music between male and female students [35].

Table 2. Results and Findings Comparison of Pedometer Measures of Warm-up with Music Between Male and Female

Group	Mean	SD	MD	df	t	Sig.
Male	606.20	2.47	14.457	68	27.277	.000*
Female	591.74	1.93				

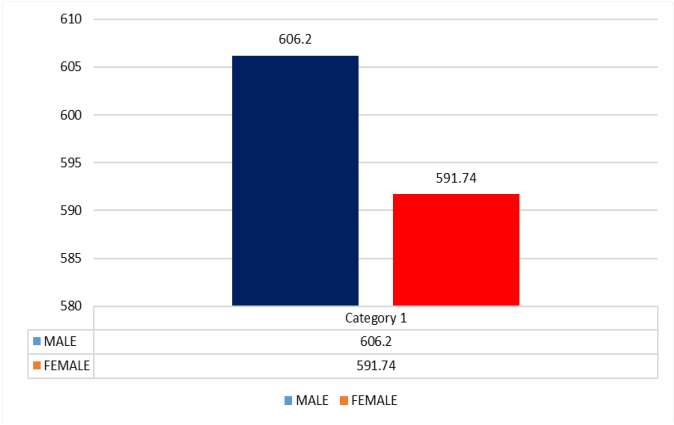

Figure 2. The Comparison of Pedometer Measures of Warm-up with Music Between Male and Female

It can be seen in table 3 that the average number of steps taken by males during fitness teaching with music secession is 1907.11 with a standard deviation of 9.75, while the average number of steps taken by females is 1852.37 with a standard deviation of 2.37. This shows that there is a difference in performance based on gender. The value of t (32.265) is less than.000, which indicates that a significant difference existed in the performance of males and females. Since the male footstep count was higher when compared to that of the female students, this demonstrates that males were more active than females when music was played [36]. Figure 3 presents a comparison between males and girls based on pedometer measurements of fitness instruction with music [37-39].

Table 3. Comparison of Pedometer Measures of Fitness with Music Between Male and Female

Group	Mean	SD	MD	df	t	Sig.
Male	1907.11	9.75	54.743	68	32.265	.000*
Female	1852.37	2.37				

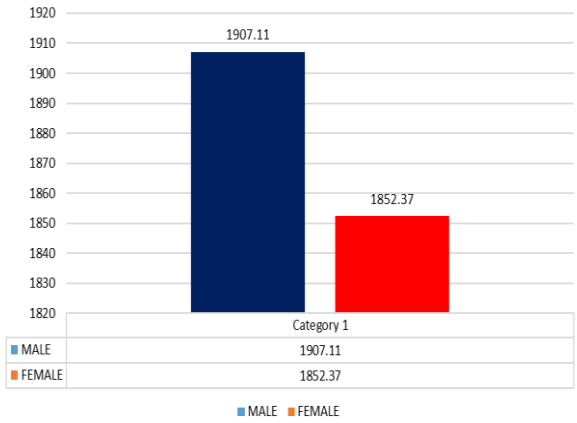

Figure 3. Comparison of Pedometer Measures of Fitness with Music Between Male and Female

Table 4 shows that the Mean step count during warm down with music secession males is 590.31, with an SD of 2.47, and for females is 579.94, with an SD of 2.77, indicating that there is a difference between gender in their performance. Males were more active than females, and the value of t (23.315) is <.000, indicating a significant difference in performance between males and females. Figure 4 Compares pedometer measures of fitness teaching with music between males and females.

Table 4. Comparison of Pedometer Measures of Warm Down with Music Between Male and Female

Group	Mean	SD	MD	df	t	Sig.
Male	590.31	2.47	14.657	68	23.315	.000*
Female	579.94	2.77				

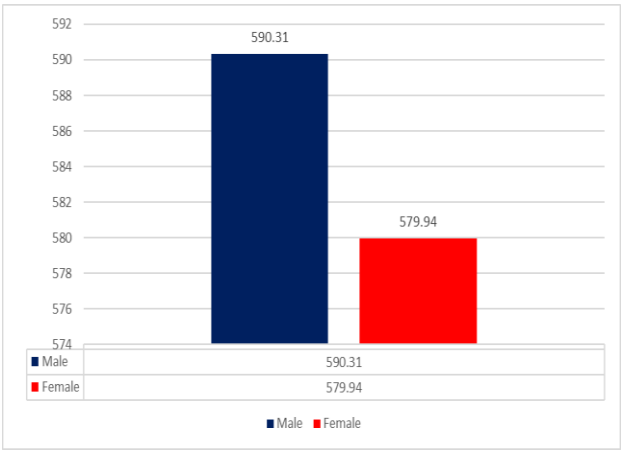

Figure 4. Comparison of Pedometer Measures of Warm Down with Music Between Male and Female

Subsequently, there are six mean data of teaching with music and without music for the male student; found repeated measures were applied to see the significant difference among the six. Table 5 shows the f-ratio value of 1.381 is greater than the required table value of 170, and 5 is 1.88 for the pedometer measurements of teaching warm-up with music, warm-up without music, fitness with music and without music, warm-down with music and warm-down without music the result shows that there was a significant difference existed in all between teaching through music and without music [40-43]. Figure-5 shows descriptive statistics of the male pedometer measures of warm-up with music, warm-up without music, fitness with music, fitness without music, warm-down with music, and warm-down without music [44].

Table 5. Descriptive Statistics and ANOVA of Male Pedometer Measures of Warm-up with Music, Warm-up Without Music, Fitness with Music, Fitness without Music, Warm Down with Music, Warm Down without Music

VARIABLE			MEAN	SD	
Warm-up with Music			606.20	2.47	
Warm-up without Music			555.43	2.60	
Fitness with Music			1907.10	9.75	
Fitness without Music			1602.60	1.49	
Warm-up with Music			590.31	10.945	
Warm-up without Music			551.21	4.54	
Source	Sum of Squares	df	Sum of Mean Square	F	Sig.
Pedometer	62250000	5	12450000	1.381	.000
Error (Pedometer)	15326.47	170	90.151		

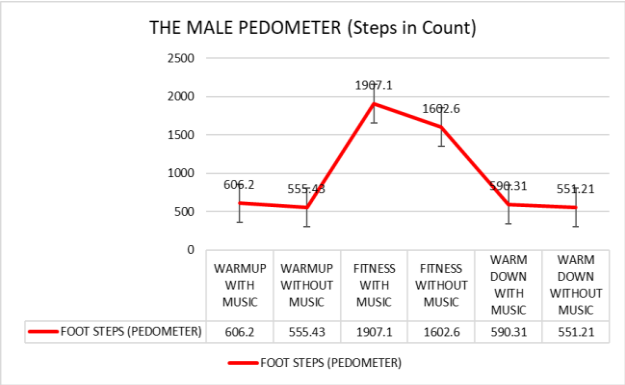

Figure 5. Descriptive Statistics of the Male Pedometer Measures of Warm-up with Music, Warm-up without Music, Fitness with Music, Fitness without Music, Warm Down with Music, Warm Down without Music

Because table 6 there are six mean data of teaching with music and without music for female students, repeated measures are applied to determine whether or not there is a significant difference among the six showing the f-ratio value of 1.381 is greater than the required table value of 170, and 5 is 1.88 for the pedometer measurements of teaching warm up with music, warm up without music, fitness with music and without music, and warm down with music and warm down without music for female the result shows that there is a significant difference between the six-figure 6 provides descriptive statistics of the male pedometer readings for fitness with music, fitness without music, warm down with music, and warm down without music for females [45].

Table 6. Female Pedometer Measures of Warm-up with Music, Warm-up without Music, Fitness with Music, Fitness without Music, Warm Down with Music, Warm Down without Music.

VARIABLE			MEAN	SD	
Warm-up with Music			591.54	2.77	
Warm-up without Music			546.06	4.44	
Fitness with Music			1852.40	2.37	
Fitness without Music			1569.30	21.67	
Warm-up with Music			579.94	6.64	
Warm-up without Music			560.06	3.46	
Source	Sum of Squares	df	Sum of Mean Square	F	Sig.
Pedometer	66580000	5	13332000	3.148	.000*
Error (Pedometer)	7189.810	170	42.293		

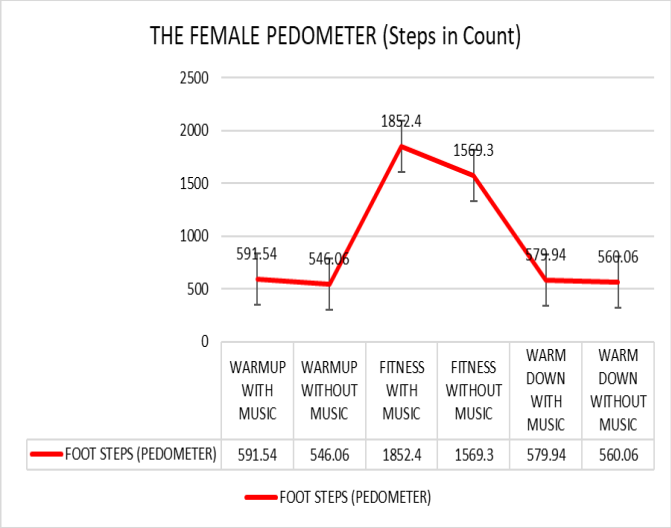

Figure 6. Descriptive Statistics of the Male Pedometer Measures of Warm-up with Music, Warm-up without Music, Fitness with Music, Fitness without Music, Warm Down with Music, Warm Down without Music

6. Discussion

The purpose of this study was to investigate the impact that music has on the way that university students learn about and participate in physical activity. Specifically, the researchers were interested in determining whether or not music influences how students learn about and participate in physical activity [46]. According to the findings of the pedometric study, being exposed to training that does not contain music is less motivating than being exposed to training that does involve music [47]. The outcomes of this study suggest that student's interest in learning about subjects related to physical education could be stimulated by listening to music; this conclusion is supported by the findings of the study. These findings are in line with those that were found in [4],[9] regarding the use of music as a motivator for physical exercise in the context of a school setting. It was discovered that using music as a motivating tool enhanced the rate at which persons of both genders showed an interest in learning and participated in the activity.

The findings of the study showed that when music was playing, participants of both sexes took more steps than they normally would have. It has been shown over and again that music may both inspire and stimulate physical activity, and this link between the two has been proved repeatedly. The data indicate that as the students heard music, their levels of focus and concentration dramatically increased. This occurred as soon as they heard the music. [9] He discovered that the same result could be achieved by using a treadmill while simultaneously listening to music. When it comes to the gender effect, this research discovered that guys were noticeably more atheistic and active than girls in the classroom when music was employed as a teaching tool. This was the case regardless of the subject being discussed. [14] The outcomes of this research [15] lead one to the conclusion that trust is an essential component in interpersonal relationships. Motivators are able to awaken the children so that they can expend more energy because the songs may have affirmations embedded within their lyrics [9]. Because of the beat and tempo of the music, the students are urged to dance, which ultimately leads to an increase in enjoyment [8],[13].

7. Conclusions

The use of music in the instruction of physically demanding tasks was found to be significantly associated with the observed improvement. Music makes it easier for students to participate in activities with interest and excitement, as well as to perform at a higher level overall. This is one of the many ways that music helps students improve their academic performance. Consequently, a rise in the step count in physical activities will occur if any physical activities are organised with music serving as the background. The fact that the total number of steps taken has gone up reflects the growing number of people who are participating in the activities. The kids will not have time to become disinterested or allow their level of passion for diminishing. It is possible to conduct additional research on the impact of altering the level of music played while people are being instructed on how to work out.

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