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ORIGINAL

Rhythmic resonance: unveiling the power of music in enhancing student fitness

Resonancia rítmica: desvelar el poder de la música para mejorar la forma física de los alumnos

Stephen A. Fadare[1], Revin O. Insisto[2], Jerome N. De La Peña[2], Argin A. Gulanes[2], Abdulrahman D. Imam[3], Johaina I. Mangotara[3]

[1]CSPEAR, Mindanao State University (Main) Marawi. Philippines.
[2]PE Faculty, University of Science and Technology of Southern Philippines-Claveria. Philippines.
[3]Research Fellow, CSPEAR, Mindanao State University (Main). Marawi, Philippines.

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ABSTRACT

Introduction: aerobic dancing, a popular form of physical activity, is a popular way for students to maintain fitness and well-being.
Objectives: this study aims is to investigates the influence of music listening habits on exercise performance, explores the psychological effects of music on physical fitness, analyzes individual differences in music preferences, and determines the physical fitness outcomes of incorporating music into exercise routines among selected students.
Methods: this study applied the mixed-methods approach using an embedded research design. The researcher specifically used questionnaires, interview guide questions, and observations and purposefully selected participants. The participants were 27 fourth- and third-year major students from Mindanao State University's College of Sports, Physical Education, and Recreation, enrolled in PPE 137 (Strength Training and Conditioning). Researchers processed the data using frequency counts and percentages from the questionnaire and derived themes from the interview guide questions.
Results. the results showed that most respondents were females (65,00 %), aged 22 to 23 years (60,00 %), and that listening to music during physical activity was sometimes (50,00 %). The type of music listened to during physical activity was "fast-paced/energetic" (60,00 %), and that listening to music enhanced exercise performance (40,00 %). The importance of music as a motivational tool for physical fitness routine (40,00 %) was found to be extremely important (40,00 %), and that the type of music that impacts physical fitness was "yes" (100 %). While the theme generated from the participants was Creating Engaging Experiences, with sub-themes including energizing, exciting, mood-setting, improving accessibility, and supporting the creation and planning of workout routines through music integration.
Conclusion. the study concludes that music is a vital source of encouragement for physical fitness regimens, promoting consistent workout routines.

Keywords: Student Fitness; Power of Music; Strength Training; Conditioning.

RESUMEN

Introducción: el baile aeróbico, una forma popular de actividad física, es una forma popular para que los estudiantes mantengan la forma física y el bienestar.
Objetivos: el objetivo de este estudio es investigar la influencia de los hábitos de escucha de música en el rendimiento del ejercicio, explorar los efectos psicológicos de la música en la forma física, analizar las diferencias individuales en las preferencias musicales y determinar los resultados en la forma física de la incorporación de la música en las rutinas de ejercicio entre los estudiantes seleccionados.

Métodos: este estudio aplicó el enfoque de métodos mixtos utilizando un diseño de investigación integrado. El investigador utilizó específicamente cuestionarios, preguntas guía para entrevistas y observaciones, y seleccionó a los participantes de forma intencionada. Los participantes fueron 27 estudiantes de cuarto y tercer año de la Facultad de Deportes, Educación Física y Recreación de la Universidad Estatal de Mindanao, matriculados en PPE 137 (Entrenamiento de fuerza y acondicionamiento). Los investigadores procesaron los datos utilizando recuentos de frecuencia y porcentajes del cuestionario y derivaron temas de las preguntas de la guía de la entrevista.
Resultados: los resultados mostraron que la mayoría de los encuestados eran mujeres (65,00 %), con edades comprendidas entre 22 y 23 años (60,00 %), y que escuchar música durante la actividad física era a veces (50,00 %). El tipo de música escuchada durante la actividad física era “de ritmo rápido/energética” (60,00 %), y que escuchar música mejoraba el rendimiento del ejercicio (40,00 %). La importancia de la música como herramienta de motivación para la rutina de ejercicio físico (40,00 %) resultó ser extremadamente importante (40,00 %), y que el tipo de música que repercute en el ejercicio físico era “sí” (100 %). Mientras queel tema generado a partir de los participantes fue Crear experiencias atractivas, con subtemas que incluyen energizar, excitar, crear estado de ánimo, mejorar la accesibilidad y apoyar la creación y planificación de rutinas de entrenamiento a través de la integración de la música.
Conclusiones: el estudio concluye que la música es una fuente vital de estímulo para los regímenes de ejercicio físico, promoviendo rutinas de entrenamiento consistentes.

Palabras clave: Condición Física del Estudiante; Poder de la Música; Entrenamiento de Fuerza; Acondicionamiento.

INTRODUCTION

The popularity of aerobic dancing as a physical activity with rhythmic movements set to music, has grown significantly among students who want to maintain their physical fitness and well-being. Physical activity provides positive health benefits and also influences social connectivity in a favorable way.[1] This combination of cardio-exercise and dance enhances physical health and offers a forum for socialization and self-expression. But music is a fundamental component of aerobic dancing that takes the experience from being just exercise to fun and excitement.[2,3,4]

There is a deep and complex link between aerobic dancing and music. The movements are rhythmic and driven by music, setting the tone and speed of the workout.[5,6] Apart from its practical use, music has the ability to arouse feelings, improve motivation, and increase the level of enjoyment derived from the action.[7] Knowing how music affects aerobic dancing becomes crucial when discussing student engagement since it has a big impact on participation rates, exercise regimen adherence, and, eventually, health results.[8]

Aerobic dancing with music has a unique power to affect mood, feelings, and thought processes. The melodic structures and rhythmic patterns of music may evoke good emotions like empowerment, pleasure, and enthusiasm when they are blended into aerobic dance routines.[9,10] Research has shown that individual who exercise to music report feeling more satisfied with their workouts and sticking to their fitness plans.[11] Additionally, it has been shown that music can divert people's attention from their emotions of discomfort and exhaustion, enabling them to expend more energy during aerobic dancing sessions[12] music acts as a strong psychological stimulant, improving students' entire aerobic dancing experience.

On a physiological level, movement synchronization, heart rate, and breathing rate are all directly impacted by the pace, rhythm, and intensity of music. Listening to fast-paced music might encourage faster and more intense movements, which can enhance calorie expenditure and have positive cardiovascular effects.[13,14] Furthermore, the phenomenon of rhythmic entrainment clarifies how dancing in time with music may maximize energy use and coordination, thereby improving the effectiveness of aerobic dance routines. Students who use music to enhance their aerobic workout efforts might get higher physiological returns.[15,16]

Social group settings are common for aerobic dancing, which encourages social connections and a sense of community among participants. Students benefit from the shared experience that music creates, which fosters collaboration and togetherness.[17] Coordinated movements to music foster collaboration and support among participants, improving social dynamics in aerobic dance programs. Additionally, music choices may accommodate a wide range of student and foster inclusion by catering to varied cultural backgrounds and interests. Students develop deep social bonds and lifelong friendships while also improving their physical health through group participation in music-infused aerobic dancing.[18]

This study addresses the physiological, psychological, and socio-cultural aspects of music's influence on students' aerobic dancing in subsequent of this study. The objective is to determine the influnce of music on the aerobic dance of students and the consequences for their health and well-being, covering physical

psychological and sociocultural aspects.

There is presently a dearth of research on the link between music and students' physical fitness, and few studies have examined the possible impacts of music on motivation, exercise performance, and general physical well-being. In order to fully understand the effects of music on students' physical health, the researchers will examine a subset of students at Mindanao State University (Main), Marawi, Lanao del Sur, as well as the College of Sports, Physical Education, and Recreation in the Philippines. It will also look into the effects of music listening habits on exercise performance, the psychological effects of music on physical fitness, and individual differences in music preferences and physical fitness outcomes of incorporating music into exercise routines.

METHODS

Type of research

The current study employed a mixed methods approach to gather data from participants via a survey questionnaire. Subsequently, a focus group discussion was conducted using an interview guide, lasting 30 minutes as a result of the researchers' observations and clarifications.

Populations

Fourth- and third-year major students from the College of Sports, Physical Education, and Recreation at Mindanao State University (Main) Marawi, participated in this study. Participants were students who enrolled in PPE 101 (Aerobic Dancing Course), and they were the adequate informants included in the research. There are a total of 27 students, including males and females, in the class.

Inclusion criteria

According to information obtained from the college's chairman and dean, (i) male and female students who are enrolled in the subject lawfully and who fall within the current class range, and (ii) completion of a self-administered questionnaire and interview guide questions at the time of distribution. However, because they were study participants and could provide the necessary information regarding the study, 20 students provided their agreement to be included in the study.

Exclusion Criteria

Those students were absent during the class activities.

Those students who are not enrolled in PPE 137.

Students who do not want to be part of it from the same class.

The study was approved, and it used both English and Tagalog for the respondents' convenience. The program chairman and dean were asked for their approval. It is important to note that, in compliance with study ethical requirements, the respondents were not compelled or forced to complete the questionnaire or to be interviewed.

Study Organization

The respondents completed a questionnaire consisting of 12 questions separated into 5 sections in order to be eligible to participate in this study. They also responded to 5 interview guiding questions. The first section discusses listening habits to music. It entailed selecting the kind of music to listen to and listening to it while engaging in physical exercise. Exercise performance is covered in the second section. It has to do with music that improves exercise performance, music that motivates people to exercise, and adjustments to exercise intensity or endurance when exercising to music. Psychological impacts, which include music listening while exercising, make up the third section. You'll love working out more when you listen to music. I become less tired after working out when I listen to music. Perceptions and preferences are the main topics of the fourth section. It includes believing in the kinds of music that have an influence on physical fitness, exercising frequently, listening to music while working out, and appreciating the value of music as a motivating tool for your physical fitness.[19] Additionally, five interview guiding questions were integrated within it.[20]

Statistical analysis and Application

The study employed frequency count and percentage to respond to the questionnaire, which included embedded design interview guide questions. As seen in the table below, frequency count distribution and percentage (%) were prepared as methods for the representation of the information for its better understanding, as well as adding the software used for this purpose. This study aims to investigate the influence of music listening habits on exercise performance, explore the psychological effects of music on physical fitness, analyze individual differences in music preferences, and determine the physical fitness outcomes of incorporating music into exercise routines among selected students among fourth- and third-year major students from Mindanao State University's College of Sports, Physical Education, and Recreation, enrolled in PPE 137 (Strength Training

and Conditioning) during the school year 2023-2024. The study was limited only to selected participants.

RESULTS

Table 1. Demographic data of the respondent

Indicators	Frequency (f)	Percentage
Gender		
Male	7	35,00
Female	13	65,00
Age		
20 - 21	3	15,00
22 - 23	12	60,00
24 - 25	5	25,00
Class level		
3rd Year	9	45,00
4th Year	11	55,00
Total	20	34,25

In the above table, the results revealed that most respondents were female (65,00 %), aged 22-23 (60,00 %), and belonged to fourth-year students who were enrolled in PPE 137 subjects.

Music Listening Habits

Table 2. Listen to Music during Physical Activity and Type of Music listen to during activity

How often do you listen to music during physical activity	Frequency (f)	Percentage
Rarely	0	00,00
Occasionally	2	10,00
Sometimes	10	50,00
Often	2	10,00
Always	6	30,00
What type of music do you prefer to listen to during physical activity?		
Fast-paced/Energetic	12	60,00
Slow and calming	6	30,00
Instrument	2	10,00
Specific genre	0	0,00

Based on the table 2 results on listening habits, the majority of respondents (50 %) occasionally listen to music during physical activity, while 30 % always listen to music while engaging in physical exercise. Sixty (60 %) percent of respondents like fast-paced or energetic music when working out.

Exercise Performance

In the table 3 results, it was revealed that music enhances exercise performance, while the majority strongly agree (40 %) and agree with (40 %), respectively. Meanwhile, to be motivated to exercise had results of agree with (30 %) and strongly agree with (30 %), respectively.

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Table 3. Music Enhances Exercise Performance and Motivation to Exercise when listening to Music

Do you feel that listening to music enhances your exercise performance?	Frequency (f)	Percentage (%)
Strongly disagree	1	5,00
Disagree	0	00,00
Neutral	3	15,00
Agree	8	40,00
Strongly Agree	8	40,00
Do you perceive yourself as more motivated to exercise when listening to music?		
Strongly disagree	1	5,00
Disagree	0	14,38
Neutral	7	35,00
Agree	6	30,00
Strongly Agree	6	30,00

Psychological Effects

Table 4. Listening to music during physical activity, Enjoy Exercise, and Music help feel less fatique

How does listening to music during physical activity affect your mood?	Frequency (f)	Percentage (%)
Improved mood	19	95,00
No change in mood	1	5,00
Worsened mood	0	00,00
Does music help you enjoy your exercise sessions more?		
Yes	20	100,00
No	0	00,00
Not sure	0	00,00
Does music help you feel less fatigued during exercise?		
Yes	20	100,00
No	0	00,00
Not sure	0	00,00

The table 4 results indicate the psychological effects of the participants by revealing that the majority were preferences and perceptions of listening to music during physical activity (95 %), while music helps you enjoy your exercise (100 %) of the respondents. Then music helps feel less fatique, which also has 100 % results.

In the table 5, results revealed that music is important as a motivational tool during workouts, which was 40 %, followed by moderately and very important (25 %), respectively. In terms of exercise frequency, the results revealed (50 %), while the type of music you listen to impacts your physical fitness (100 %), indicating yes.

The second part is the qualitative portion, which was incorporated into the design and consisted of the following: a created topic, sub-themes, and five interview guide questions that were asked during the focus group discussion (FGD): The overarching topic was " Creating Engaging Experiences," with the following sub-themes: Q1. Invigorate and stimulate; Q2. Catchy and upbeat: Q3. Setting the mood; Q4. Making things accessible; and Q5. Planning and designing.

Researchers observed that they were unable to get any new data from the subjects. This suggests that the study has reached saturation and that the chosen sample size is adequate to accomplish its objectives. This is similar to the concept of the saturation point. According to[21] theoretical saturation is the point at which additional analyses of the data yield no novel insights into the category being studied. This implies that the data don't offer any fresh insights.

Table 5. Importance of Music as a Motivational, Music during Workouts

Rate the importance of music as a motivational tool for your physical fitness routine	Frequency (f)	Percentage (%)
Not Important	0	00,00
Somewhat Important	2	10,00
Moderately important	5	25,00
Very important	5	25,00
Extremely important	8	40,00
How likely are you to continue exercising regularly if you can listen to music during your workouts?		
Not likely	0	00,00
Slightly likely	0	00,00
Moderately likely	7	35,00
Very likely	10	50,00
Extremely likely	3	15,00
Do you believe that the type or genre of music affects its impact on your physical fitness?		
Yes	20	100,00
No	0	00,00
Not sure	0	00,00

Table 6. Interview guide response

Interview Guide Questions	Response /Sub-Themes	Theme
How do you incorporate music into your aerobics/ exercise?	-depends on the Exercise -If the Exercise is slow or fast -energizing music	Invigoration and Stimulation
What type/Kind of Music	-Jolly music, happy music, energetic music, modern music (example. Girl in the mirror) -fast music: pop music	Catchy and upbeat
What are the impact of the music to you?	- Makes you happy, energize -motivates to dance and perform well -create nice feeling when you dance to sweat -allow more focus and concentration, coordination to perform well	Mood setting
What are the challenges faced?	-Environment: no adequate and proper venue -Time: no enough time its short for such exercise Valuable items: Property should be kept safe and secure for only students. Safe and quality facilities	Accessibility
What are additional recommendations	-proper equipment -proper room /Venue should be provided -select a music that motivate the students' interest in exercised: instructor	Designing and planning

DISCUSSION

This study used mixed methods approach investigates the influence of music listening habits on exercise performance, explores the psychological effects of music on physical fitness, analyzes individual differences in music preferences, and determines the physical fitness outcomes of incorporating music into exercise routines among selected students. The study includes a sample of 20 respondents, with a higher percentage of females (65 %) compared to males (35 %). Most respondents are in the age range of 22-23 (60 %) and predominantly in the 4th year of their class level (55 %). The research by[22] reinforces the consistent results of this study regarding the connection between academic performance and gender among college students. Additionally, the study by[23] supports the correlation found in this research between students' career objectives and their age.[24] found similar results to the current study, suggesting higher levels of engagement among students at

higher class levels when investigating how class level affected students' participation in higher education. In terms of study habits,[25] found correlations between demographic factors (such as gender) and study habits, which can be used to support the findings of the current study on demographic factors and study habits among college students. Similarly, [26] discovered gender disparities in motivation levels, providing further support for the current study's findings on gender differences in music preferences and exercise performance. Overall, the research contributes to understanding the relationship between music listening habits, psychological effects, individual differences, and physical fitness outcomes in selected college students. It also aligns with previous studies in various areas, reinforcing the validity of the findings.

Based on listening habits to music, the majority of respondents (50 %) occasionally and (30 %) always listen to music while engaging in physical exercise. Sixty (60 %) percent of respondents said they like fast-paced or exciting music when working out. There is a wealth of research on the effects of music on exercise performance, mood, and intensity. Exercise performance and mood are greatly enhanced by lively, fast-paced music[27,28] Regular gym users reported feeling less tired and increasing the intensity of their workouts. While working exercise, listening to fast-paced music boosts power generation and lowers perceived effort[20] Music boosts motivation, effort, and enjoyment during high-intensity interval training (HIIT)[29,30] Fast-paced, energetic music greatly boosted the duration and intensity of physical activity among college students, suggesting that it had a favorable impact on their exercise habits. According to[15] these studies demonstrate the substantial influence of music on a number of physical activity-related factors, such as mood, exercise intensity, and activity levels. Music significantly enhances motivation and enjoyment during physical activity, according to various studies. A study by[31] found that listening to music during exercise increased motivation, enjoyment, and overall engagement.[32] found that music significantly increased motivation and enjoyment during exercise, leading to increased engagement[33] found that music also positively impacted motivation, stimulation, and overall engagement in older adults, particularly in the context of physical activity. Overall, music plays a crucial role in enhancing physical activity participation and enjoyment.

On the other hands, exercise performance results revealed eighty percent of those surveyed said they strongly or agree that listening to music improves their ability to work out.

In a similar, listening to music increases the motivation of 60 % of respondents to work out. This conclusion was found in both the FGD and the questionnaire, where most participants reported feeling energized and stimulated as sub-themes. According to the results, music may enliven individuals, enhancing their physical performance and resulting in a more engaging workout[34] Participants appeared to be stimulated by listening to upbeat, fast-paced music, which boosted their workout intensity and endurance[20] These studies provide insights into the positive effects of music on exercise performance, motivation, endurance, and mood. They support the idea that music can have a significant impact on individuals' workout experience and, consequently, improve physical performance.

Similarly, 95 % of respondents reported that the psychological benefits of listening to music while exercising improved their mood. Additionally, all respondents (100 %) concur that listening to music during exercise increases their enjoyment of the activity and reduces their sense of exhaustion. This was further highlighted by the sub-themes derived from the participants' preference for lively, appealing music, which implies that it can enhance both the overall experience and performance of exercise. As stated by[15,35] these studies show that listening to music while exercising has favorable psychological impacts, such as elevating mood, increasing pleasure, and reducing weariness. They also emphasize how good, catchy music may be to improve both the workout itself and the experience of it. It implies that enjoying music while exercising might have psychological benefits such as elevating mood, boosting delight, and lessening tiredness. Exercise performance as well as the overall experience have been demonstrated to be improved by catchy and energetic music.

Finally, a sizable percentage (85 %) of respondents reported changes in exercise intensity or endurance while using music as an incentive, according to their preferences and views of the medium. As a motivating element for their physical exercise regimen, music is rated as extremely essential (40 %) or very significant (25 %) by the majority of respondents. The same sub-themes emerged from the participants when it was discovered that music was a potent mood enhancer and that a sizable portion of them felt happier and less exhausted after working out. It also provided inspiration to work even harder when engaging in activities.

The study found that music may influence participants' emotional states and create a more positive training environment by setting the right mood[36] These studies offer proof for the conclusions that music may serve as a motivator for physical activity and improve exercise intensity and endurance. The studies also demonstrate how music may elevate mood, lessen feelings of exhaustion, and motivate exercisers to exert more effort. Additionally, research indicates that music can have a major emotional influence on participants, resulting in a more upbeat workout environment.[37]

The results above point to a significant relationship between music and exercise experience, demonstrating the advantages of integrating music into workout regimens. The aforementioned results allowed for the establishment of the sub-theme "Areas of Accessibility," wherein participants stressed the value of music as a

motivator for physical fitness regimens and the accessibility of music for sustaining regular exercise schedules. The degree to which students believe that music is accessible when exercising highlights, the importance of music in encouraging and sustaining physical activity.[15]

This research demonstrated the importance of music as a motivational element for physical fitness regimens and the ease with which it may be included into routines for regular exercise. The sub-theme Areas of Designing and Planning, which offers chances to create and organize physically demanding activities that suit participants' tastes, improve their workout experience, and include music into fitness regimens, is also covered by researchers. Acknowledging personal differences in taste in music makes it easier to design and manage exercise programs that accommodate a variety of tastes, promoting regular participation and improved physical fitness outcomes.[38,39]

Recognizing individual variations in musical interests facilitates the creation and organization of fitness regimens that suit a range of preferences, encouraging consistent engagement and better physical fitness results.

CONCLUSIONS

Exercise performance is significantly improved by music; participants report feeling more motivated, enjoying their workouts, and feeling less exhausted. People mostly favored upbeat, fast-paced music when exercising, indicating that music selection affects how an exercise session goes. When exercising to music, participants reported improvements in their level of intensity and endurance, suggesting a possible link between musical taste and athletic ability. Most students felt that music was a vital source of encouragement for their physical fitness regimen, highlighting the significance of music in maintaining consistent workout routines. With sub-themes including energizing, exciting, mood-setting, improving accessibility, and supporting the creation and planning of workout routines through music integration, the topic "Engages" developed as a key component. Overall, the study demonstrates the psychological and performance advantages of using music in workout routines, highlighting its potential to enhance students' physical fitness results and general well-being.

This study's concentration on third- and fourth-year students who were enrolled in the course at the time of the research at CSPEAR, MSU (Main) is one of its drawbacks; generally speaking, this does not reflect the full student body. In this context, new respondents from other classes and levels may be included by future researchers in order to finalize additional knowledge, and alternative research methods may be used to determine the outcome of future studies.

In addition, respondents from other universities could be included in future related studies. Therefore, future researchers would be interested in conducting in-depth research by examining additional elements that contribute to students' positive and upbeat classroom attitudes. Further studies could delve into the specific mechanisms behind these effects and explore individual preferences in more detail.

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AUTHORSHIP CONTRIBUTION

Conceptualization: Fadare, A. Stephen, Revin O. Insisto, Jerome N. De La Peña, Mariell C. Mata Abdulrahman D. Imam, Johaina I. Mangotara.

Data curation: Fadare, A. Stephen, Abdulrahman D. Imam, Johaina I. Mangotara.

Formal analysis: Fadare, A. Stephen.
Acquisition of funds: Fadare, A. Stephen, Revin O. Insisto, Jerome N. De La Peña, Mariell C. Mata.
Methodology: Fadare, A. Stephen, Abdulrahman D. Imam, Johaina I. Mangotara.
Resources: Fadare, A. Stephen, Revin O. Insisto, Jerome N. De La Peña, Mariell C. Mata.
Supervision: Fadare, A. Stephen, Revin O. Insisto, Abdulrahman D. Imam, Johaina I. Mangotara.
Display: Fadare, A. Stephen, Jerome N. De La Peña, Mariell C. Mata.
Drafting - original draft: Fadare, A. Stephen, Jerome N. De La Peña, Mariell C. Mata Abdulrahman D. Imam.
Writing - proofreading and editing: Revin O. Insisto, Jerome N. De La Peña, Mariell C. Mata, Johaina I. Mangotara.

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