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## ORIGINAL

# THE IMPACT OF FOLK MUSIC RHYTHMS ON THE QUALITY OF DANCE FITNESS MOVEMENTS

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## ABSTRACT

This study explores the impact of folk music rhythms on dance fitness movement quality through rhythm enhancement training. A 12-week experimental program was conducted with participants divided into an experimental group and a control group. The experimental group received rhythm-focused training integrated with Tibetan Xianzi Dance and Dai Peacock Dance, while the control group followed a traditional dance curriculum. Results revealed significant improvements in the experimental group across six core indicators: fluency, coordination, expressiveness, rhythm synchronization, amplitude, and stability. The most notable advancements were observed in rhythm synchronization and expressiveness, confirming the pivotal role of rhythm in enhancing movement quality. These findings demonstrate the potential of rhythm training to enrich technical and artistic dimensions of dance, providing new approaches to modern fitness education. Moreover, the integration of folk music rhythms into fitness instruction promotes cultural preservation and innovation. Future research is recommended to broaden the diversity of participants, explore various rhythmic styles, and examine long-term training effects.

**KEYWORDS:** Folk Music Rhythms, Rhythm Enhancement Training, Dance Fitness, Movement Quality, Fitness Education

## 1. INTRODUCTION

Folk music rhythms, as an integral component of ethnic culture, encapsulate a community's history, way of life, emotional expression, and artistic creation (Gong et al., 2024). They serve as a vital marker of ethnic

identity and cultural recognition. In China, a country with a long history and diverse ethnic groups, rich and varied forms of music and dance have emerged over centuries. These rhythms, characterized by distinct regional and ethnic features, are a defining element of cultural expression. The differences in melody, tempo, and beat across various regions have given rise to unique artistic styles (Thaut et al., 2014). For instance, the intense rhythm of Tibetan tap dance reflects the enthusiasm and vigor of highland herders, while the soft rhythms of Dai peacock dance convey the elegance and delicacy of river communities. Similarly, the lively beats of Northeast Yangko dance express joy and celebration, embodying a festive spirit (Guocheng & Sensai, 2022). Music rhythm is not only the core element of music but also the soul of dance expression. It provides the temporal and dynamic framework for dance movements, making them more precise, coherent, and expressive (Chapple & Davis, 1988). Research indicates that rhythm enhances dancers' control over their movements, improves coordination and fluidity, and elevates the overall performance. For instance, in sports dance, the synchronization and consistency between movement and music are foundational for high-quality performance. In folk dance, the close integration of music rhythm and movement highlights the stylistic features of ethnic dance while enhancing its artistic appeal and audience engagement (Kassing, 2007). In recent years, the role of rhythm has gradually gained attention in fitness training and instruction, particularly in areas like aerobics and square dance, which are closely tied to music. However, existing research has predominantly focused on technical movements and physical training, often overlooking the impact of rhythm on movement quality. This lack of emphasis on rhythm training has limited students' ability to perform movements with precision, coherence, and expressiveness, thereby undermining the guiding role of rhythm in improving movement quality (Goodridge, 1999). Teachers in practice often focus on imparting technical skills while neglecting the cultivation of rhythm perception and the integration of music with movements. Studying the impact of folk music rhythms on dance fitness movement quality can provide valuable insights into the relationship between rhythm and movement performance (Zachopoulou et al., 2004). Incorporating rhythm training into fitness teaching can enhance learners' rhythm perception, enabling them to synchronize their movements with music more accurately while improving coordination and expressiveness. This is particularly relevant in the integration of folk dance and modern fitness practices, where analyzing the role of rhythm can enrich fitness teaching theories and improve instructional effectiveness and learner experience. Moreover, exploring the influence of rhythm on fitness movement quality contributes to the preservation and development of folk culture. As a significant carrier of ethnic culture, folk music rhythm has the potential to yield dual benefits of cultural preservation and health promotion when applied in modern fitness contexts (Grant, 2014). This integration not only facilitates the dissemination of folk music and dance but also fosters interest and recognition

in traditional culture, thereby supporting its transmission and promotion. Folk music rhythms exhibit diversity and uniqueness due to their regional and cultural backgrounds, serving as a critical characteristic of ethnic culture (Campbell, 2017). Studies show that rhythms from different regions and ethnicities vary significantly in melody, tempo, and beat, playing a vital role in the emotional expression and rhythmic comprehension of dance movements. For instance, the steady yet profound rhythm of Tibetan Xianzi dance reflects the resilience and grace of highland communities, while the light and lively rhythm of Dai dance embodies the elegance and dynamism of riverine cultures. The vibrant and energetic rhythm of Northeast Yangko dance, on the other hand, conveys joy and festive spirit. Rhythm is an indispensable core element in the transmission of folk dance, infusing vitality into artistic expression and encapsulating cultural emotions and historical memories through its variations (Zhang & Pu, 2024). Investigating these rhythm characteristics systematically not only enables a deeper understanding of their underlying patterns but also provides scientific support for dance teaching and cultural preservation. As the soul of dance movements, rhythm forms the foundation of movement coherence and coordination (Wang, 2024). In dance instruction and performance, music rhythm provides a temporal and dynamic framework that aids dancers in mastering precision and fluidity, thereby enhancing their expressive power. Recent studies have gradually acknowledged the importance of rhythm training in improving dance movement quality. For example, in sports dance, cultivating rhythm perception and synchronization between music and movements enhances artistic appeal. However, the specific mechanisms through which rhythm influences movement quality remain underexplored. While existing research highlights the positive impact of rhythm training on movement performance, limited attention has been given to the differential effects of diverse rhythm types on movement quality (Douka et al., 2019). In fitness activities such as aerobics and sports dance, the integration of music and movement is a critical factor influencing movement quality. Rhythm serves as a guiding force that helps participants perform movements with greater coordination and aesthetic appeal. Its role is particularly evident in complex movement sequences where rhythm provides essential cues (García, 2024). However, traditional teaching models tend to prioritize technical and physical training over systematic rhythm cultivation, which can lead to fragmented and less expressive movement performances. Recent experimental studies have demonstrated that rhythm training significantly improves movement fluency and coordination. Despite these findings, research on the influence of diverse rhythm types on fitness movement quality remains limited, underscoring the need for more comprehensive and systematic studies in this area (Zachopoulou et al., 2004). This study aims to explore the specific impacts of folk music rhythms on dance fitness movement quality and to establish a theoretical framework linking rhythm training with movement quality. By analyzing the characteristics of different types of folk music rhythms and

their influence on dance movements, the study seeks to uncover the central role of rhythm in movement performance. Furthermore, the study employs experimental methods to validate the effectiveness of rhythm training in enhancing movement performance, such as fluency, coordination, and expressiveness, thereby providing a scientific foundation for fitness instruction. Specific objectives include:

- Revealing the characteristics of folk music rhythms: Systematically summarizing the primary features of folk music rhythms, analyzing their differences in beat, melody, and tempo, and investigating how these features influence emotional expression and rhythmic comprehension in dance movements.
- Analyzing the relationship between rhythm and movement quality: Examining how different rhythm types affect coordination, fluency, and expressiveness, and developing a theoretical model of rhythm's impact on movement quality.
- Validating the effectiveness of rhythm training: Conducting experiments to investigate the role of rhythm training in improving movement quality, providing data-driven insights for rhythm cultivation and teaching practices.
- Promoting the integration of music and fitness instruction: Proposing improvements to fitness instruction based on rhythm integration, enhancing instructional outcomes and learner experiences while fostering the application and preservation of folk music rhythms in modern fitness.

This study represents the first systematic exploration of the intersection between folk music rhythms and fitness movement quality, highlighting the application value of traditional music culture in contemporary fitness contexts. By bridging the fields of dance research and fitness training, the study offers a novel perspective on their integration, enriching academic foundations in music, dance, and fitness education (Eyigor et al., 2009).

## **2. Research Methodology**

### **2.1 Experimental Design and Implementation**

This study involved 73 second-year students majoring in early childhood education at a university. All participants had basic training in music and dance but lacked formal rhythm enhancement training. They were physically healthy and capable of completing the experimental curriculum as scheduled. The experiment was conducted within the framework of regular dance courses, using Tibetan Xianzi Dance and Dai Peacock Dance as core instructional content. These dances were selected for their distinctive rhythmic

characteristics, representing steady and graceful rhythmic styles, respectively. This choice facilitated the exploration of how rhythmic features influence the quality of dance movements (Table 1).

**Table 1:** Teaching Content and Schedule

<b>GROUP</b>	<b>COURSE MODULE</b>	<b>TEACHING CONTENT</b>	<b>TIME ALLOCATION</b>
<b>EXPERIMENTAL GROUP</b>	Warm-Up Phase	Basic body stretches, joint movements, and rhythm awareness activities (e.g., clapping and foot-tapping to the beat).	15 minutes
	Rhythm Enhancement Training	1. Rhythm Perception and Recognition: Listening to Tibetan "Xianzi Dance" and Dai "Peacock Dance" music to practice identifying beats and tempo changes. <hr/> 2. Rhythm and Movement Matching: Performing basic dance movements (e.g., steps and turns) synchronized with music rhythms. <hr/> 3. Complex Rhythm Adaptation: Adjusting movement amplitude and speed to cope with rapidly changing rhythms in the music, enhancing coordination.	45 minutes
	Movement Performance Training	Integrating music and movements by practicing complete dance segments to improve fluency and expressiveness.	20 minutes
	Cool-Down and Summary	Body relaxation and stretching, student feedback on the session, and teacher's explanation of training highlights.	10 minutes
	<b>CONTROL GROUP</b>	Warm-Up Phase	Basic body stretches and joint movements.
Conventional Technique Training		1. Basic Movement Practice: Learning foundational movements of Tibetan "Xianzi Dance" and Dai "Peacock Dance" (e.g., arm motions and footwork). <hr/> 2. Movement Combination Practice: Combining multiple movements for repetitive drills, emphasizing precision and standardization.	45 minutes
Movement Performance Training		Practicing complete dance segments with a focus on technical precision and consistency.	20 minutes
Cool-Down and Summary		Body relaxation and stretching, student feedback on the session, and teacher's summary of training content.	10 minutes

The experiment spanned 12 weeks, with two 90-minute sessions conducted weekly, totaling 24 sessions. Each session was divided into three phases: warm-up, training, and cool-down. The curriculum was specifically tailored to the needs of the experimental and control groups. Experimental Group Curriculum: Building on conventional dance instruction, the experimental group incorporated rhythm enhancement training. This specialized training consisted of three key modules:

- **Rhythm Perception and Recognition:** Students practiced identifying beats and tempo changes in Tibetan Xianzi Dance and Dai Peacock Dance music.
- **Movement and Rhythm Synchronization:** Students focused on aligning their movements with the steady rhythm of Tibetan Xianzi Dance, emphasizing stability, and matching the graceful, quick tempo of Dai Peacock Dance, enhancing fluidity and rhythmic adaptation.
- **Complex Rhythm Adaptation:** Advanced exercises required students to adjust movement speed and amplitude to cope with variations in rhythm, improving their coordination and expressiveness.

**Control Group Curriculum:** The control group followed a standard dance instruction program focused on technical movement practice without any rhythm enhancement modules. The curriculum emphasized:

- **Mastering fundamental movements of Tibetan Xianzi Dance and Dai Peacock Dance.**
- **Repeating and refining these movements to improve precision and technical consistency.**

## 2.2 Action Quality Evaluation Criteria

The assessment of action quality utilized six key indicators to comprehensively measure participants' performance during the training. The specific indicators are detailed in Table 2:

**Table 2(a):** Action Quality Evaluation Criteria

CRITERION	MEASUREMENT CONTENT	EVALUATION STANDARD	SCORE RANGE
<b>FLUENCY</b>	The smoothness of transitions between movements, avoiding stiffness or pauses.	High score for natural and seamless transitions; low score for abrupt or frequent pauses.	1-10
<b>COORDINATION</b>	The degree of coordination among body parts (e.g., arms, legs, torso) during movements.	High score for consistent and well-coordinated movements; low score for imbalance or lack of rhythm.	1-10

**Table 2(b):** Action Quality Evaluation Criteria

CRITERION	MEASUREMENT CONTENT	EVALUATION STANDARD	SCORE RANGE
<b>EXPRESSIVENESS</b>	The emotional expression conveyed through movements, reflecting the theme and music.	High score for strong expressiveness and emotional engagement; low score for stiffness or lack of emotion.	1-10
<b>RHYTHM SYNCHRONIZATION</b>	The alignment of movements with the music's rhythm, including onset and resolution of movements.	High score for perfect synchronization with the rhythm; low score for frequent mismatches or delays.	1-10
<b>AMPLITUDE</b>	The spatial expression of movements, such as the extent of arm and leg extensions.	High score for wide and full movements; low score for small or constrained motions.	1-10
<b>STABILITY</b>	The balance and control during movement execution, avoiding body sway or instability.	High score for stable and controlled movements; low score for instability or shifts in balance.	1-10

This set of indicators ensures a holistic evaluation of participants' action quality, capturing both technical precision and artistic expressiveness. These criteria were applied consistently throughout the study to analyze the effectiveness of rhythm enhancement training in improving dance movement performance.

### 2.3 Data Collection Methods

To comprehensively evaluate participants' movement quality, this study utilized video recording and analysis as the primary data collection method. High-definition cameras were employed to document the complete execution of movements by both the experimental and control groups during training and testing sessions. These recordings captured all aspects of performance, focusing on six core indicators: fluency, coordination, expressiveness, rhythm synchronization, amplitude, and stability.

Multiple angles were used to ensure detailed and comprehensive data collection. After each session, the recorded videos were analyzed frame by frame using slow-motion playback. This method allowed for precise observation of each performance aspect. The scoring was conducted independently by three dance experts, ensuring objectivity and consistency. Each expert scored participants based on predefined criteria for the six indicators. The final score for each participant was calculated as the average of the experts' evaluations, minimizing potential biases and ensuring a reliable assessment.

## 2.4 Data Analysis

A mixed-methods approach, combining quantitative and qualitative analyses, was employed to thoroughly examine the effects of rhythm enhancement training.

**Quantitative Analysis:** Quantitative analysis involved statistical techniques to identify measurable changes in participants' performance. Specific methods included: Descriptive Statistics: Calculations of means and standard deviations provided an overall understanding of performance changes before and after training. Paired Sample t-Test: This test evaluated changes in the experimental group's scores across all indicators, measuring the impact of rhythm enhancement training. Independent Sample t-Test: A comparison of post-training scores between the experimental and control groups validated the advantages of rhythm-based training over traditional methods.

**Qualitative Analysis:** Qualitative analysis aimed to provide nuanced insights into how rhythm enhancement training influenced movement quality. By closely observing video recordings, the research team analyzed specific improvements in fluency, expressiveness, and rhythm synchronization. Descriptive summaries were used to detail changes in participants' movement dynamics and expressiveness, highlighting factors that contributed to their enhanced performance. This qualitative perspective enriched the quantitative results, offering a holistic understanding of the training's impact.

## 3. Experimental Results and Analysis

The results of the experiment, summarized in Table 3, demonstrate that after 12 weeks of rhythm enhancement training, the experimental group showed significant improvement across all action quality indicators. In contrast, the control group exhibited only marginal improvement. The post-test scores of the experimental group were significantly higher than those of the control group, highlighting the critical role of rhythm training in enhancing dance movement performance.

**Table 3(a):** Pre- and Post-Test Results of the Experimental and Control Groups

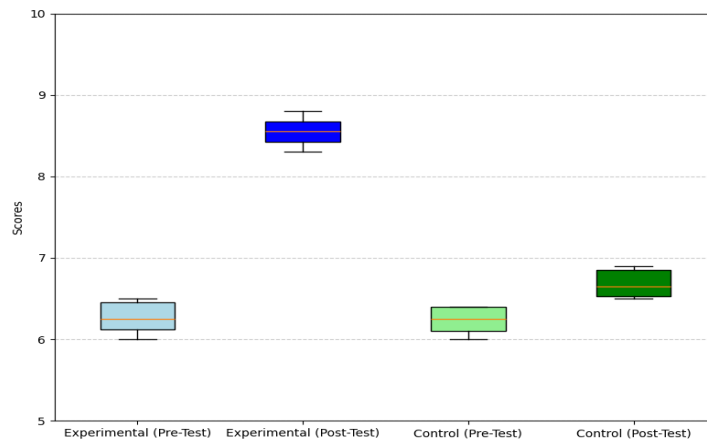
INDICATOR	EXPERIMENTAL GROUP PRE-TEST (MEAN ± SD)	EXPERIMENTAL GROUP POST-TEST (MEAN ± SD)	CONTROL GROUP PRE-TEST (MEAN ± SD)	CONTROL GROUP POST-TEST (MEAN ± SD)
FLUENCY	6.5 ± 0.8	8.7 ± 0.6	6.4 ± 0.7	6.9 ± 0.6
COORDINATION	6.2 ± 0.9	8.5 ± 0.5	6.1 ± 0.8	6.6 ± 0.7
EXPRESSIVENESS	6.0 ± 0.8	8.4 ± 0.7	6.1 ± 0.6	6.5 ± 0.8
RHYTHM SYNCHRONIZATION	6.3 ± 0.7	8.8 ± 0.5	6.4 ± 0.8	6.7 ± 0.6



**Table 3(b):** Pre- and Post-Test Results of the Experimental and Control Groups

INDICATOR	EXPERIMENTAL GROUP PRE-TEST (MEAN ± SD)	EXPERIMENTAL GROUP POST-TEST (MEAN ± SD)	CONTROL GROUP PRE-TEST (MEAN ± SD)	CONTROL GROUP POST-TEST (MEAN ± SD)
AMPLITUDE	6.1 ± 0.9	8.3 ± 0.6	6.0 ± 0.8	6.5 ± 0.7
STABILITY	6.5 ± 0.8	8.6 ± 0.6	6.4 ± 0.7	6.9 ± 0.6

The experimental group achieved substantial gains in all six indicators, with the greatest improvements observed in rhythm synchronization (+2.5), expressiveness (+2.4), and fluency (+2.2). These results suggest that rhythm enhancement training effectively enhanced participants' ability to synchronize movements with music, express emotions through dance, and perform movements smoothly and continuously. In contrast, the control group showed only slight increases in scores, with most indicators improving by less than 0.5 points. This disparity underscores the limitations of traditional dance training in addressing rhythm perception and its impact on movement quality (Wang et al., 2020). Post-test comparisons reveal that the experimental group consistently outperformed the control group in all indicators, with p-values < 0.01 for all comparisons. This finding highlights the critical role of rhythm training in fostering improvements in movement quality that cannot be achieved through conventional methods alone.



**Figure 1:** Comparison of Pre-Test and Post-Test Scores

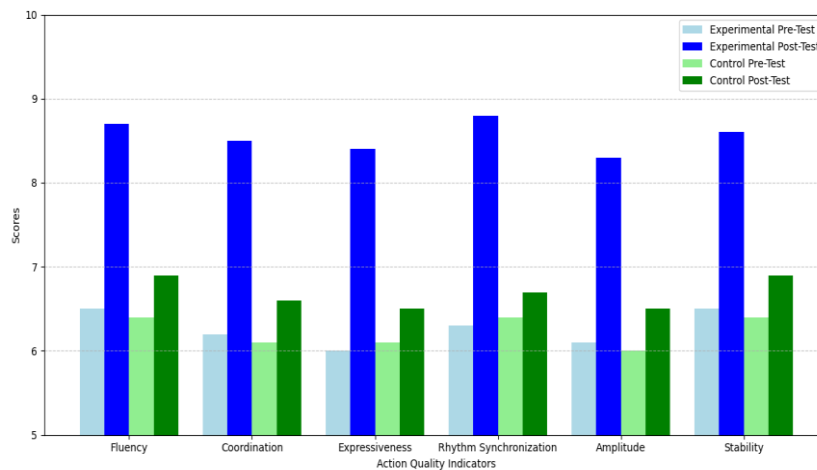
As illustrated in Figure 1, the experimental group demonstrated significant improvements in all indicators. Post-test scores were substantially higher than pre-test scores, with the data distribution becoming more concentrated. This reflects the consistency and efficiency of rhythm enhancement training in improving action quality. In contrast, the control group showed limited changes. Although some indicators displayed slight increases, the overall magnitude of improvement was minimal, and the data distribution did not exhibit significant shifts. This highlights the restricted impact of conventional dance training in enhancing movement quality, particularly in

aspects related to rhythm synchronization and expressiveness. The results underscore the critical role of rhythm enhancement training in achieving not only significant but also consistent improvements in dance movement quality across multiple dimensions (Yang et al., 2023). The effects of rhythm enhancement training on various action quality indicators are detailed in Figure 1 and Table 4.

**Table 4:** Post-Test Results Comparison Between Groups

INDICATOR	EXPERIMENTAL GROUP POST-TEST (MEAN ± SD)	CONTROL GROUP POST-TEST (MEAN ± SD)	P-VALUE
FLUENCY	8.7 ± 0.6	6.9 ± 0.6	< 0.01
COORDINATION	8.5 ± 0.5	6.6 ± 0.7	< 0.01
EXPRESSIVENESS	8.4 ± 0.7	6.5 ± 0.8	< 0.01
RHYTHM SYNCHRONIZATION	8.8 ± 0.5	6.7 ± 0.6	< 0.01
AMPLITUDE	8.3 ± 0.6	6.5 ± 0.7	< 0.01
STABILITY	8.6 ± 0.6	6.9 ± 0.6	< 0.01

As shown in Table 4, the experimental group achieved significantly higher post-test scores across all indicators compared to the control group ( $p < 0.01$ ). The most notable differences were observed in rhythm synchronization (+2.1) and expressiveness (+1.9), highlighting the pronounced impact of rhythm enhancement training on these aspects. These findings confirm the central role of music rhythm in improving action quality. Specifically, rhythm synchronization training enabled participants to align their movements more precisely with musical beats, while enhanced expressiveness allowed them to convey emotions and artistic intent more effectively. This aligns with existing research that emphasizes the critical influence of rhythm on dance movement coordination and expressiveness. The results underscore the value of rhythm-focused approaches in elevating both the technical and artistic dimensions of dance performance.



**Figure 2:** Comparison of Action Quality Indicators Before and After Training

Fluency and Coordination: The experimental group showed remarkable improvements in fluency (+2.2) and coordination (+2.3), significantly outperforming the control group. These enhancements demonstrate that rhythm enhancement training provides a stable rhythmic framework, reducing pauses in movement transitions and fostering a more natural flow. Furthermore, the increase in coordination reflects participants' improved ability to precisely control the alignment and interaction of different body parts, resulting in more harmonious overall movements. Rhythm Synchronization and Expressiveness: As core dimensions of dance performance, rhythm synchronization and expressiveness saw the most significant gains in the experimental group.

The improvement in rhythm synchronization (+2.5) indicates heightened sensitivity to rhythm perception, enabling participants to achieve greater alignment between movements and musical beats. This finding supports Xu Yao's assertion that "rhythm is the soul of dance expression." The enhancement in expressiveness (+1.9) highlights participants' improved ability to convey emotions and artistic intent through movement, effectively enriching the overall aesthetic and emotive impact of their dance performances. Amplitude and Stability: The experimental group's notable increases in amplitude (+2.2) and stability (+2.1) further underscore the benefits of rhythm enhancement training. Enhanced amplitude reflects greater body tension and expanded spatial movement range, while improved stability indicates better control and balance during movement execution. These results align with Xiang Bentao's observation that folk music rhythms play a critical role in improving physical control capabilities in dance.

## **4. Discussion**

### **4.1 The Relationship Between Folk Rhythm Characteristics and Dance Movement Quality**

As a core feature of ethnic culture, folk music rhythms not only reflect the emotions and historical memory of a people but also play a pivotal role in shaping the quality of dance movements. This study incorporated the rhythms of Tibetan Xianzi Dance and Dai Peacock Dance into the training curriculum, revealing the significant effects of their distinctive rhythmic characteristics on various movement quality indicators. The steady rhythm of Tibetan Xianzi Dance provided participants with a stable rhythmic framework, promoting fluency and stability in their movements.

The deep and steady beats allowed participants to better sense the shift in their center of gravity and balance internal control, leading to notable improvements in coordination and stability. In contrast, the light and agile rhythm of Dai Peacock Dance encouraged larger movement amplitude and

enhanced expressiveness. Its melodic and rhythmic fluidity guided participants to perform with greater emotional depth and dynamic adaptability, highlighting the rhythm's pivotal role in improving the artistic and emotional quality of movements. Additionally, rhythm served as a critical guide for movement synchronization during training. The findings demonstrated that rhythm enhancement training enabled participants to achieve more precise alignment with musical beats. Particularly in handling complex rhythm changes, participants developed stronger beat perception and execution skills, thereby enhancing their movement accuracy and overall expressiveness.

#### **4.2 Implications for Fitness Training and Practical Significance**

**The Role of Rhythm in Fitness Education:** Traditional fitness instruction often emphasizes technical movements and physical conditioning, while neglecting the potential of rhythm training to improve movement quality. The results of this study underscore that rhythm not only supports technical execution but also enhances fluency, coordination, and stability. Integrating rhythm training into fitness instruction offers a novel approach to improving teaching effectiveness and student outcomes.

**The Importance of Rhythm Sensitivity Training:** Rhythm sensitivity training has proven to significantly improve synchronization with music and overall expressiveness. This is particularly valuable for music-driven fitness forms such as aerobics and square dance, where the interplay between music and movement is essential. Incorporating rhythm training into these programs can improve participants' holistic performance and deepen their understanding of music-movement integration.

**Enhancing Physical Control and Emotional Expression:** Through rhythm enhancement training, participants were able to elevate both their technical skills and emotional expression. This dual enhancement has significant implications for designing fitness programs that combine artistic and health-oriented objectives. For instance, rhythm training in programs targeted at older adults could boost their engagement and enjoyment by fostering improved movement quality and rhythm perception.

**Cultural Transmission and Practical Value:** Introducing folk music rhythms into modern fitness instruction enriches the curriculum and facilitates the transmission of traditional culture. By incorporating diverse ethnic rhythms into fitness classes, participants can gain a deeper appreciation for cultural heritage while benefiting physically. Such programs not only promote cultural awareness but also provide new avenues for the creative dissemination of traditional music and dance.

#### **5. Conclusion and Recommendations**

This study systematically examined the profound impact of folk music

rhythms on dance fitness movement quality through rhythm enhancement training. The findings revealed that rhythm enhancement training significantly improves multiple core indicators of movement quality, particularly fluency, coordination, rhythm synchronization, and expressiveness. Participants in the experimental group demonstrated markedly superior rhythm perception and movement expressiveness compared to the control group, confirming that rhythm is not only essential to dance artistry but also a critical factor in enhancing technical movement quality. The distinctive characteristics of different folk music rhythms have unique and targeted effects on movement quality. The steady rhythm of Tibetan Xianzi Dance provided a foundational framework for stability and internal control, enabling participants to achieve better balance and precision in movement. Meanwhile, the light, dynamic rhythm of Dai Peacock Dance enhanced movement amplitude and emotional expressiveness, highlighting the rhythm's role in enriching both the technical and artistic dimensions of dance performance. Through rhythm perception and training, participants aligned more precisely with musical beats, showcasing movements with greater naturalness and expressiveness. The results offer practical implications for dance fitness instruction.

Curriculum design should prioritize the integration of music rhythm and movement quality, employing rhythm sensitivity training to enhance participants' musical perception and movement expressiveness. For example, systematic incorporation of rhythm training into fitness courses such as square dance and aerobics can improve movement quality while increasing the artistic and enjoyable aspects of the sessions. Additionally, promoting fitness programs that integrate folk music rhythms can provide participants with a unique opportunity to experience the cultural richness of traditional music while preserving and promoting ethnic heritage. Introducing rhythms from various ethnic groups, such as the bold rhythms of Mongolian dance or the melodic rhythms of Uyghur dance, could diversify fitness programs and stimulate learners' interest. Despite its meaningful conclusions, this study has certain limitations. First, the research focused primarily on university students, and the applicability of its findings to other age groups and occupational contexts remains uncertain. Second, the study examined only two types of music rhythms, Tibetan Xianzi Dance and Dai Peacock Dance, leaving the influence of other folk rhythms on movement quality unexplored.

Third, the research evaluated the short-term effects of rhythm enhancement training without assessing its long-term sustainability. Future research should expand in several directions. Increasing the diversity of study participants, including individuals from different age groups, professions, and cultural backgrounds, would help validate the findings' generalizability. Further exploration of diverse folk or regional music rhythms could uncover their unique effects on movement quality. Additionally, combining neuroscience and

kinesiology perspectives could shed light on how rhythm training enhances movement quality through neural pathways and muscle memory. Finally, designing long-term follow-up studies to evaluate the sustained impact of rhythm training on movement quality and daily performance would provide a more comprehensive understanding of its benefits. In summary, this study not only provides scientific evidence for the innovative development of modern dance fitness education but also opens new avenues for the preservation and modernization of folk music rhythms. By adopting broader perspectives and delving deeper into the mechanisms of rhythm training, future research can further advance this field, contributing to both fitness education and the transmission of ethnic cultural heritage.

## Reference

- Campbell, P. S. (2017). *Music, education, and diversity: Bridging cultures and communities*. Teachers College Press.
- Chapple, E. D., & Davis, M. (1988). Expressive movement and performance: Toward a unifying theory. *TDR (1988-)*, 32(4), 53-79.
- Douka, S., Zilidou, V. I., Lilou, O., & Manou, V. (2019). Traditional dance improves the physical fitness and well-being of the elderly. *Frontiers in aging neuroscience*, 11, 75.
- Eyigor, S., Karapolat, H., Durmaz, B., Ibisoglu, U., & Cakir, S. (2009). A randomized controlled trial of Turkish folklore dance on the physical performance, balance, depression and quality of life in older women. *Archives of gerontology and geriatrics*, 48(1), 84-88.
- García, A. M. (2024). The Impact of Traditional Dance on Physical Fitness and Coordination in Spain. *Revista de Psicología del Deporte (Journal of Sport Psychology)*, 33(2), 308-317.
- Gong, Y., Jirajarupat, P., & Zhang, Y. (2024). Music Form and Performance Techniques of Bayu Folk Songs. *International Journal of Education and Literacy Studies*, 12(3), 50-57.
- Goodridge, J. (1999). *Rhythm and timing of movement in performance: Drama, dance and ceremony*. Jessica Kingsley Publishers.
- Grant, C. (2014). *Music endangerment: How language maintenance can help*. Oxford University Press.
- Guocheng, Z., & Sensai, P. (2022). *The Development of Xinyang Folk Songs in Henan Province, China* [Mahasarakham University].
- Kassing, G. (2007). *History of dance: an interactive arts approach*. Human Kinetics.
- Thaut, M. H., Trimarchi, P. D., & Parsons, L. M. (2014). Human brain basis of musical rhythm perception: common and distinct neural substrates for meter, tempo, and pattern. *Brain sciences*, 4(2), 428-452.
- Wang, F. (2024). Philosophical manifestation in dance: bridging movement and thought. *Trans/Form/Ação*, 47, e02400248.

- Wang, S., Yin, H., Meng, X., Shang, B., Meng, Q., Zheng, L., Wang, L., & Chen, L. (2020). Effects of Chinese square dancing on older adults with mild cognitive impairment. *Geriatric Nursing*, 41(3), 290-296.
- Yang, F., Wang, G., Guo, W., Sun, S., Huang, Y., & Zhou, T. (2023). To construct a three-category radiomics model based on multi-parameter magnetic resonance imaging to distinguish prostatitis for athletic patients. *Revista multidisciplinar de las Ciencias del Deporte*, 23(90).
- Zachopoulou, E., Tsapakidou, A., & Derri, V. (2004). The effects of a developmentally appropriate music and movement program on motor performance. *Early Childhood Research Quarterly*, 19(4), 631-642.
- Zhang, R., & Pu, S. (2024). On the religious philosophy and mysticism elements in Chinese folk dance. *Trans/Form/Ação*, 47, e02400252.