

A Study on the "Music-Movement" Synergistic Mechanism for Cultivating Students' Rhythm Sense in Aerobics Teaching of Physical Education Major

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ABSTRACT

Aerobics is a core compulsory course for physical education majors in colleges and universities. Its teaching system not only focuses on the systematic imparting of motor skills but also places the cultivation of musical rhythm sense in a key position. As the soul of aerobics, music profoundly influences the rhythmic expression, emotional communication and overall aesthetic experience of movements. To explore innovative paths for aerobics teaching, this study integrated literature review, expert interview and logical analysis to investigate the impact mechanism of teaching strategies emphasizing rhythm sense cultivation on the rhythm perception ability and comprehensive literacy of physical education majors. The results showed a high correlation between musical rhythm and the rhythmic characteristics of aerobics movements. Systematic rhythm sense training significantly enhanced students' in-depth understanding of musical connotation and expressiveness, thereby promoting the organic integration and accurate expression of musical elements and body movements. With the gradual improvement of students' rhythm sense, their interest in aerobics learning, physical coordination, sports skill level and awareness of independent after-class exercise all showed a significant upward trend; meanwhile, their aesthetic taste and subjective initiative in creating beauty were synchronously enhanced. This study concludes that taking rhythm sense cultivation as the core teaching goal and strengthening it can effectively improve students' rhythm perception and expression ability, stimulate their learning initiative and internal motivation, thus optimizing the overall effect of aerobics teaching. It has important theoretical value and practical significance for promoting the popularization of aerobics in colleges, universities and even at the social level.

KEYWORDS

Physical education; Aerobics teaching; "Music-movement" synergy; Rhythm sense cultivation

1 Introduction

With the comprehensive implementation of quality-oriented education in China, the most prominent feature of physical education curriculum reform is the transformation of teaching methods, which has driven the continuous updating of teaching content and posed severe challenges to modern aerobics courses and teaching. Aerobics is a compulsory course in higher education, essentially different from other courses. Its teaching not only involves the transmission of knowledge and skills but also emphasizes the grasp of musical rhythm sense—an element hailed as the "soul of aerobics".

Aerobics integrates various elements such as the duration of limb movement intervals, speed, force intensity and range. With its beautiful melody, distinct rhythm, and fast, intense and enthusiastic style, it enhances artistic appeal, where musical rhythm sense plays a leading role in showing the beauty of human movements. This unique charm of aerobics music has promoted its popularization and development. Only when musical rhythm sense is organically integrated with movement rhythm can the optimal sports performance be achieved.

However, in current college aerobics teaching, teachers often focus on technical and skill training while neglecting the cultivation and research of students' musical rhythm sense—a key factor in improving aerobics quality. From the perspective of practical teaching, musical rhythm is inherently related to body movement, but teachers often ignore physical expression and the internal connection between music and the body when training rhythm sense. They tend to train students in a static state rather than through dynamic body movements. Moreover, systematic training of musical rhythm sense is insufficient compared with the training of melody and tone.

Exploring and innovating the cultivation methods of musical rhythm sense can not only improve students' aerobics ability and musical literacy but also strengthen their aesthetic awareness education, which is an important research issue in aerobics learning, practice and teaching. This study focuses on the cultivation of musical rhythm sense of college students in aerobics, aiming to gain theoretical insights and provide effective theoretical basis for future aerobics teaching.

2 Domestic Research Status

Since its emergence in the 1980s, aerobics has been widely spread worldwide as a fitness sport and quickly introduced into school physical education curricula, becoming one of the most popular sports among students. However, most schools only pay attention to movement teaching and ignore rhythm sense and its educational significance in the

teaching process. The cultivation of rhythm sense awareness aims to stimulate students' learning interest, improve teaching quality, and ultimately enable students to master potential rules for independent practice, develop exercise habits and cultivate lifelong sports awareness.

From the 1980s to the present, aerobics theory has become increasingly rich and perfect. With the growing recognition of aerobics by the public, research content has become more comprehensive and refined. A retrieval of Chinese sports journals shows that a total of 4,982 papers on aerobics have been published so far, covering overviews, teaching, technology, choreography, aesthetics and psychological impacts.

Deng pointed out that aerobics integrates gymnastics, dance and music to pursue human health and beauty, and rhythm is an important component. However, many students lack training in musical rhythm sense, resulting in poor ability to understand and interpret music, which affects teaching effectiveness. His study used literature review, questionnaire survey and mathematical statistics to explain the composition of aerobics rhythm and musical rhythm, and adopted methods such as lecture, gesture training, clapping practice and physical fitness exercise with music to strengthen students' rhythm sense, helping them better understand, experience and interpret music, thus integrating music into aerobics and improving teaching quality.

Gui proposed that selecting appropriate methods to cultivate students' rhythm sense in aerobics general courses can enhance their understanding of musical expressiveness, enabling them to perceive music with their hearts. This integration of music and aerobics provides a better experience for practitioners and improves the quality of general aerobics teaching.

3 Methods

3.1 Research Objects

Participants were students from the 2023 aerobics optional class in the School of Physical Education, Zhengzhou Normal University. All participants voluntarily joined the study and signed informed consent forms. The study was approved by the Ethical Review Committee of Zhengzhou Normal University.

3.2 Research Methods

Literature review

Relevant literature was retrieved from the Library of Zhengzhou Normal University, Zhengzhou Library, CNKI and other databases to summarize previous research results at home and abroad, providing theoretical support for this study.

3.3 Expert Interview

Interviews were conducted with experts in aerobics training, school physical education and sports training to solicit opinions and suggestions on the research content and methods. Experts in education, psychology were also consulted for the design of research tools.

3.4 Logical Analysis

Existing research results and literature data were comprehensively analyzed and summarized to conduct logical reasoning on the cultivation of students' rhythm sense in aerobics teaching, aiming to provide theoretical basis for practical teaching.

3.5 Results and Discussion

3.5.1 Characteristics of Aerobics Music Rhythm

Rhythm refers to the path of limb movement within a certain period, which is the core element of aerobics. All movements must follow a rhythm, reflected in the regular changes of force intensity and speed. Aerobics movements are organized and standardized rhythmically, breaking away from the natural state. The rhythm sense of aerobics is expressed through the standardization of body movements, and rhythmic movement can enhance the coordination and orderliness of body movement.

3.5.2 Distinct Rhythm and Clear Beat

Music serves as the "password" for aerobics practice and the beat of movements. The rhythmic sequence in music

appears periodically, including 2 beats or compound beats (4-8 beats), with one strong beat and the rest sub-strong or weak beats. The repetition of strong and weak beats forms a regular, emotional melody. Clear rhythm allows practitioners to easily distinguish the alternation of strong and weak beats, highlighting the intensity of movements. Aerobics movements must follow musical rhythm, especially the handling of strong beats—for example, the moment the foot touches the ground coincides with the strong beat. Thus, the rhythm of movements must be consistent with music to achieve coordination.

3.5.3 Beautiful Melody and Spirit-inspiring Effect

Music directly affects human emotions, mood and movement. The popularity of aerobics is not only due to its effectiveness and modern movements but also the vitality brought by modern music. Beautiful melody and strong rhythm trigger emotional associations and an impulse to participate. Aerobics music has appreciation value, cultivates aesthetic sentiment and improves aesthetic ability. Healthy and lively music can inspire spirit, relieve tension and fatigue, enhance practice effect and appreciation value, and stimulate practitioners' mood to achieve physical and psychological balance.

3.5.4 Jumping Rhythm and Strong Appeal

When the music speed of a complete aerobics set reaches 144-180 beats per minute, it forms a bright and intense jumping rhythm, which has a strong appeal to encourage participation. This enhances the sense of rhythm and appeal of aerobics movements. Modern music such as disco, jazz, rock and roll, as well as national music with distinct rhythm, are suitable for aerobics.

4 The Role of Music in Aerobics Teaching

4.1 Promoting Expressiveness

Without music, aerobics loses its charm. Only under beautiful melody and distinct rhythm can practitioners fully show the physical beauty, posture beauty, health beauty, expressive beauty and musical beauty of aerobics. Relevant studies have confirmed that rhythm has a positive effect on human muscles and the nervous system, reflected in changes in psychological and external states. Inspired by music, practitioners are more enthusiastic about artistic pursuit, devoting themselves to showing movements and expressing emotions.

4.2 Enhancing Training Effect

Music affects the central nervous system, triggering associative memory to deepen the sense of rhythm, helping practitioners find suitable movements and integrate music with movements. Appropriate music improves the ability to adapt to rhythm changes, making movements more accurate and dynamic. Aerobics usually uses music with a rhythm of 120-156 beats per minute—fast rhythm continuously stimulates the central nervous system, triggering high excitement and guiding limb movements. The continuity of music also helps practitioners master complete sets of movements faster. With music, practitioners adjust movement range and intensity according to rhythm, enhancing accuracy and promoting the formation of dynamic stereotypes.

4.3 Strengthening Movement Memory

Practitioners with good musical sense can involuntarily make corresponding movements when hearing music. The connection between musical rhythm, melody and movement images in the brain helps with association and natural reactions. Aerobics music often repeats different melodies and rhythms, sometimes adding special sound effects. Practitioners trigger movement memory through musical characteristics, and continuous practice integrates music with movements. Over time, they form a conditioned reflex, making movements following music without thinking, which is conducive to memorizing complete sets of movements.

4.4 Influencing Psychology

Music with different rhythms and melodies has different psychological effects. Aerobics involves coordinated muscle contraction, with stimuli transmitted to the central nervous system to issue movement instructions. Cheerful music strings emotional impulses with rhythm, making the body jump involuntarily, providing physical and mental pleasure.

Interviews with practitioners showed that aerobics with music refreshes the mind, relieves pressure and eliminates tension.

4.5 Expressing Aerobics Awareness

Music has a profound impact on the soul. Aerobics music (such as jazz, disco, percussion, light music and symphony) highlights the contrast between strong and weak beats, triggering strong auditory resonance. Its spatial diffusion and penetration stimulate practitioners physically and psychologically, showing the connotation of aerobics beauty. Body movements integrate with psychological emotions in this context, achieving physical and mental resonance. Aerobics without music is like a silent movie—dynamic but incomplete. Only with matching music can its connotation be fully expressed. Thus, music selection should precede choreography, with movements following the beginning, ups and downs and end of music to create an unforgettable effect.

5 Teaching Methods for Cultivating Students' Rhythm Sense

5.1 Training Uniform Beat Sense

Accurate beat sense is the basis of rhythm sense training, closely related to beat speed, including uniform speed sense and related to note duration, referring to the alternation of beats connected by accents. Music has continuity, interval, circulation and uniformity. Everyone has an innate beat sense, and students can perceive rhythm by listening to different musical beats.

5.2 Cultivating Stable Speed Sense

Rhythm sense training relies on stable speed sense—the ability to maintain a fixed speed in music for a long time. Speed is an important means of musical expression; different speeds in the same work convey different connotations.

5.3 Developing Sharp Rhythm Sense

Cultivating rhythm sense requires students to feel the artistic conception and emotion of music with their hearts. It is crucial to strengthen the training of music's inherent rhythm sense. For example, four consecutive sixteenth notes create a stopwatch-like running feeling, and some note combinations resemble machine gun fire. Teachers can use these vivid rhythmic characteristics combined with body dynamics for training. Students perceive rhythm mainly through limbs—vocal and dance performances rely on limb movements. Musical performance should not overemphasize skills but focus on feeling the real rhythm to integrate into music.

6 Application of Music in Aerobics And Precautions

6.1 Selecting Music According to Movement Characteristics

Music is the basis of movement rhythm and the source of aerobics, which cannot exist independently. Aerobics is an art form using rhythmic movements. Thus, music selection should integrate musical and movement images—choreographing movement rhythm according to melody, developing diverse movements according to rhythm changes, making movements rise and fall with melody, with strong force and distinct rhythm, integrating aerobics and music into an artistic whole of health and beauty.

6.2 Consistency Between Musical and Movement styles

Music selection directly affects the style, structure, speed and rhythm of aerobics. Good music stimulates choreographers' inspiration and practitioners' mood. Competitive or performance aerobics should choose personalized music according to team characteristics; mass fitness aerobics music should reflect national style and highlight the times.

6.3 Selecting Music According to Age Characteristics for Fitness Aerobics

Music speed should match practitioners' conditions. Fitness aerobics has distinct rhythm and moderate speed. Young people are suitable for strong rhythm music (disco, jazz, national music) to make movements fast, powerful and lively; middle-aged and elderly people for light, beautiful and cheerful music; children for lively, cheerful and rhythmic music.

6.4 Integrity of Music Selection

Due to the short duration of aerobics music, editing is often needed. In editing, attention should be paid to the unity of overall style, beat integrity and theme consistency, avoiding a hodgepodge. Especially, the end of music should match the ending movement, ensuring movement stops when music ends.

7 Conclusion

Music is the soul of aerobics, inseparable from it. This study introduces the meaning and characteristics of aerobics music, and discusses the role of music in aerobics in detail, helping teachers and practitioners better combine technical movements with music to show the health and beauty of aerobics. Music triggers memory association, facilitating the mastery of movement essentials. Beautiful music improves practitioners' musical sense, aesthetic sense and expressiveness, enriches imagination, achieving the goals of improving health, cultivating correct posture, shaping a beautiful figure and cultivating aesthetic sentiment. Reasonable music selection in aerobics teaching, integrating beautiful shapes and smooth movements with music, optimizes teaching effect.

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