

# Music Rhythm and Movement Performance Research Review

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## Abstract

**With the rapid development of the world, it is more and more difficult to improve the performance of sports. Only by fine and scientific training and training methods can we find out and make up for the outstanding athletes. The rhythm of music is everywhere in our life, especially in sports. For most of the current projects, the combination of technology and sense of rhythm is paid more and more attention to, so as to improve the training results. In order to understand the current research status of music rhythm and sports performance, this paper summarizes and combs the research status of music rhythm and sports performance at home and abroad by reading relevant research literature. After that, the author tries to find out the different effects of music on the performance of music and the expectation of people.**

## Keywords

**Music; Rhythm; Sports Performance.**

## 1. Introduction

The sense of rhythm refers to the aesthetic feeling caused by the regular and periodic movement form of the objective things (including human life and social life) and artistic images. The sense of rhythm of art is based on people's physiology and psychology. The strength, length and strength of the music rhythm appear alternately. The repeated changes of Aerobics movements, the coordination of ball technical movements and the breathing and inhaling of various combination movements of martial arts are all reflected. The most sensitive organ to rhythm is the auditory organ. In music as an art of hearing, people have the strongest demand for the sense of rhythm. Although rhythm is a form sense, it has the aesthetic function of empathy. Sports performance refers to the collective display of people's physical fitness in a certain sport. It is not only used to describe the athletes, but also to describe all the participants. For example, when you run 5km, the time you spend, the acceleration at the start, the technique of running on the way, the uniform speed, the sprint to the end, and so on. This is your performance in running 5km style. When you kick the ball, you play football, cross the ball, turn around, sprint in short distance, contact with the opponent, pass the ball vigorously, the landing point of the ball, and shoot, etc The movement performance of the style.

## 2. The effect of music rhythm on sports performance

There are many ways to cultivate the sense of rhythm. The body's experience of rhythm is the most basic and primary stage. It can make the body respond to the rhythm through sound stimulation. The simplest practice can start from practicing mechanical movements and practicing simple rhythm. Therefore, physical education is the most basic, direct and effective course to train students' sense of rhythm and body coordination. [1]

Whether it is the progressive training in physical education, the beautiful dance posture of sports dance, the "consciousness gymnastics" training of Taijiquan, and various ball games, the success of students in completing the task of improving physical coordination under the guidance of "rhythm" can greatly improve their physical and mental health, Improve their self-

confidence to participate in interpersonal communication and social competition in society. In modern society, "people pursue a perfect and high-speed life, and sports match just meets the requirements and wishes of modern people's life. In sports competitions, it can present a complete body beauty and various forms of beauty to meet people's pursuit of beauty [2]

There are studies abroad on 50 young adult subjects who were asked to exercise with and without music. When playing fast and loud music, the total duration of exercise and heart rate will increase. However, there was no correlation between increased heart rate and the presence or absence of music due to the lack of uniformity of exercise programs. Under the condition of moderate movement of self rhythm and optional music, music may play a role of distraction in sports. Music stimulation can increase exercise time, which is a stress relief method for young medical students. However, the importance and beneficial effects of music on health should not be underestimated. [3] The results of this study show that music, which is regarded as pleasure, stimulation and exercise, is coordinated with several internal variables (including heart rate and cerebral cortex), as well as the vertical swing of the body. [4]

It has also been hypothesized that concerts that stimulate or stimulate physical activity improve mood, reduce fatigue (karagorghis et al., 2005) [5], and improve performance (Waterhouse et al., 2010). [6] Therefore, we developed the Brunel music Rating Scale (bMRI) and bmri-2 to select music suitable for sports. Although the development of these scales is mainly guided by subjective scores of rhythm and melody.

In foreign studies, the duration of exercise increased significantly when music was played. Potteiger et al. Reported the strong influence of music under moderate exercise intensity. Fast jazz, slow classical music and optional music reduced the sense of fatigue relative to control state [7-9]. However, Pujol et al. Reported that rapid music had no effect on performance or fatigue in a 30 second maximum strength cycle test [10]. Elliott et al. Also allowed self selection of exercise intensity and reported similar results [11].

### **3. Research on the influence of music rhythm on sports performance of different groups**

In Wang Xinyi's research, primary school students continue to explore the speed and length of rhythm in the process of beating, in order to experience the characteristics of rhythm, students more intuitive to feel the rhythm. Therefore, in the process of cultivating pupils' sense of rhythm, schools and teachers can properly prepare some percussion instruments for students, and also can give full play to their own strength, encourage and guide students to make their own musical instruments, stimulate their interest in rhythm learning with the rhythm sense of musical instruments, and improve their artistic aesthetic ability. [12]

Yang Kaiwen randomly selected part of the eighth grade students of Yanquan school in Lixia District of Jinan City as the research object, 40 boys and 40 girls, a total of 80 students. According to the ratio of the number of single swing rope skipping to the number of mistakes in the three minute test, the effect of training the stable metronome of single swing rope skipping is better than that of rhythmic music, and even better than that of non rhythmic practice. With the improvement of performance and the reduction of the number of mistakes, it can be judged that the students have a certain sense of rhythm. Through the analysis of the data, it is found that the rhythm training improves the students' performance of one minute single swing rope skipping. [13]

Li Haiyan's research sample is to select 90 students of public sports aerobics elective course by drawing lots before the experiment. There are three natural classes: one is the experimental group (30 students) are girls, the other is the control group (30 students) are all girls, one is the control group (30 people) are girls. Inner Mongolia Agricultural University elective classes are randomly selected for students. When the experimental class students use the variation image

teaching method to carry out aerobics action representation, under the changing music rhythm, the students are in a constant impact of motor nerve caused by hearing. Imagery training can effectively stimulate the excitatory center of the brain nerve of students, arouse students' high attention, make their "action" keep up with the rhythm of changing music, thus completing the imagery process of action with high quality, and at the same time, it can stimulate and strengthen the correct rhythm of action and music through changing music in the process. Students can deepen the understanding and feeling of music rhythm and action rhythm, and gradually distinguish and distinguish music with different rhythm, so as to achieve continuous feeling and improve the cognitive level of rhythm sense. [14]

Potential candidates are recruited through word of mouth, social media (Facebook) and flyers posted in university cafeterias and fitness centers. The volunteers were active and apparently healthy men and women. It is important to compare the music preferences of sedentary, physical activity and exercise groups during exercise. In this way, more general conclusions can be drawn about different groups. The results of this study indicate that music use has an impact on physiological (i.e., travel distance) and psychophysiological (i.e., RPE, HR) variables, although the results are only significant between M140 and nm between exercise and fatigue. Travel distance showed that although this was not significant, the two groups who listened to music tended to have longer distances than those who did not listen to music. This suggests that with medium or fast-paced music, its users can exercise longer than normal. In conclusion, fast rhythm can increase the heart rate during exercise. Although no other significant effects were observed in this study, further studies can examine other physiological variables. [15]

#### **4. The influence of music rhythm on different sports**

Aerobics movement itself contains aesthetic feeling. The fluctuation and length of movement rhythm reflect the beauty of action. In the process of Aerobics practice, the action should be closely consistent with the music. Music is the carrier of the action. The action expresses the idea of music. The action is harmonious and the rhythm is strong. It can show the beauty of body. In the process of practice, students are always accompanied by music. The vigorous and warm music can bring more music enjoyment to the practitioners, which reflects the beauty of music. The teaching methods of strengthening language stimulation to cultivate music rhythm sense, strengthening rhythm stimulation training music rhythm sense teaching method, combining hearing and action training music rhythm sense teaching method, student practice training music rhythm sense teaching method, students' self language prompt training music rhythm sense teaching method, to cultivate students' aerobics music rhythm sense and improve action Quality is effective. [16]

In the research of Yang Yansheng and Yu Haifeng, they take two classes of students majoring in physical education as the research object, and explore the influence of fancy rope skipping on the rhythm sense of the experimental group students through the experimental method. After three months of rope skipping training, the rhythm sense of the body has been greatly improved. The comparative analysis of the experimental results between the experimental group and the control group can be concluded as follows: single rope jumping under music, music The change of metronome test results is obvious. This shows that there is a significant difference between the experimental class after rope skipping practice and the control class without rope skipping practice on the rhythm sense, that is to say, fancy rope skipping can promote the sense of rhythm of students majoring in physical education. [17]

There are some other events, such as shooting. Shooting is a closed sport, which has high requirements for movement and rhythm. Stability, coordination and rhythm are the core elements of shooting training. All of them are closely related to precision and coordination. [18] high level shooting armed police members have better individual shooting rhythm. By means

of questionnaire, this paper collects the two breathing rhythms commonly used and considered to be the best in three situations of relaxation adjustment, before the target position and firing process. The rhythm before relaxation adjustment and upper target position is suction screen huff screen, and the rhythm of firing process is suction screen huff screen, with the unit of seconds. The difference test of each corresponding rhythm is helpful to understand the breathing rhythm of athletes and promote their mastery of breathing rhythm in relaxation and competition situations [20]. Then, in martial arts, rhythm is also a very important factor. Liu Peng wrote: rhythm can enhance the awareness of attack and defense of athletes, help athletes adjust their physical state, show the style and rhythm of martial arts, and also reflect the technical level of athletes [21].

Of course, there is also rhythm training in volleyball. Zhao Yali wrote: many exercises in sports are closely related to rhythm, and volleyball teaching is also widely used [22].

With regard to walking performance, the current research results are consistent with the literature, confirming that music can induce an energy effect and improve exercise performance, especially in low to moderate intensity activities [23]. This phenomenon may be related to the potential role of music in stimulating and distracting people's attention in monotonous and / or unpleasant environments [24]. However, few studies have reported the impact of music on sports related emotional reactions; although these studies are not based on optional sports, their results are consistent with the results of this study, and do not show significant differences in music related emotional responses to exercise [25].

More importantly, in the current study, although RPE was higher under musical stimulation, no emotional changes were observed in the three subjects. Karageorghis et al. And Harmon and Kravitz believe that this is because fast music can attract attention and temporarily distract the subject's attention from fatigue. Intervention study should be carried out to observe the long-term effects of listening to music on perception, physiology and emotional response during exercise. [26,27]

Other studies have shown that fast music (140 BPM) can improve the performance of RPE and walking speed without significantly changing HR, VO<sub>2</sub> or emotional response. Therefore, listening to fast music while walking can help sedentary or novice exercise regularly, disperse their fatigue and fatigue, and create a better sense of happiness during activities. [28]

According to moelants, D, when participants are asked to provide us with their favorite music and perform fast Fourier transform on these music works, it is obvious that there is also a major attractor between 2.6 and 2.8 Hz. This is inconsistent with previous studies, which show that the western music in the second half of the 20th century had a clear preference for rhythm of 120 beats min<sup>-1</sup>. [29] more specifically, more than 120 times of min<sup>-1</sup> music seemed to be beneficial to running, and it dominated the peak frequency chosen during running. In recent years, there have been attempts to provide sports leaders, coaches and researchers with a way to choose music synchronized with sports. [30]

## 5. Development trend and conclusion

We have learned that the sense of music rhythm has a certain impact on sports performance. If we really apply the sense of rhythm to the project technology and find the best rhythm sense of different projects and different technologies, for each sports project, I believe, it will be a great achievement. It can also be explored that in different sports, to find the rhythm that is most conducive to the physical and mental development of different groups. When rhythm and sports technology are combined, the impact on the performance of athletes. To sum up, the sense of music rhythm has a positive effect on sports performance. The movement performance cannot do without the sense of rhythm, no matter in the movement performance speed, the

strength or the coordination and so on. For different groups of people, the impact of different projects is also different.

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