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The effects of music on sports

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Abstract
The use of music at sporting events is a practice that is thousands of years old, but has recently had resurgence as a noted phenomenon. Some sports have specific traditions with respect to pieces of music played at particular intervals. Others have made the presentation of music very specific to the team-even to particular players. Music may be used to build the energy of the fans, and music may also be introduced in ways that are less directly connected with the action in a sporting event. In this paper we are presenting, the effect of music on an athlete's performance. The experiment was done comparing the distance ran by 2 groups of participants on the treadmill. One group of participants was exposed to music while running on the treadmill. The other group of participants was not exposed to any music during their treadmill run.

Keywords: Brain, Subconscious, Sports, Music

1. Introduction

The interplay of exercise and music has been long-discussed, crossing the disciplines of biomechanics, neurology, physiology and sport psychology. People "automatically feel the beat" of the music they listen to and instinctively adjust their walking pace and heart rate to the tempo of the music. Listening to music while exercising has been found in multiple studies to create an increased sense of motivation, distracting the mind while increasing heart rate. Faster tempo music has been found by researchers to motivate exercisers to work harder when performing at a moderate pace, but peak performance has been found to be unaffected by listening to music [1]. In a study published in 2009, researchers at the Research Institute for Sport and Exercise Sciences at Liverpool John Moores University had 12 subjects ride a stationary bicycle at a pace that they could sustain for 30 minutes while listening to a song of the subject's choice. In successive trials, they rode the bikes again, with the tempo of the music variously increased or decreased by 10%, without the subject's knowledge. The researchers found that the riders heart rate and mileage decreased when the tempo was slowed, while they rode a greater distance, increased their heart rate and enjoyed the music more at the faster tempo. Though the participants thought their workout was harder at the more upbeat tempo, the researchers found that when the faster-paced music was heard while exercising "the participants chose to accept, and even prefer, a greater degree of effort" [2]. Scientists at the University of Wisconsin–La Crosse found in a 2003 study that participants who chose to listen to faster-paced music generated a higher heart rate, pedaled harder and generated more power, increasing their level of work by as much as 15% by diverting their focus to the music. The study tested 20 volunteers who listened to an MP3 player loaded with a mix of 13 songs that they selected and then rode an exercise bike for an hour at a pace and gear of their choice. The study found that heart rates rose from 133 to 146 beats per minute and power output increased accordingly, when listening to the tempo-less sound of crashing waves versus music with a medium to fast tempo [3, 4]. A 2004 study by a research team from Australia, Israel and the United States found that runners performing at a pace where they were at 90% of their peak oxygen uptake enjoyed listening to music, but that the music had no effect on their heart rate or running pace, regardless of the music's tempo [1] [5]. Generally, studies suggest that athletes use music in purposeful ways in order to facilitate their training and performance. In one study, seventy elite Swedish athletes were given a questionnaire relating the empirical motives for listening to music. The results showed that athletes most often listened to music during pre-event, pre-training sessions, and warm-ups. The reasons why athletes reportedly listened to music were because they felt that it increased activation, positive affect, motivation, performance levels, and flow [6]. There is also type's workout music using brainwave entrainment that claims to boost performance [7]. Music helps people in a variety of ways. Apart from being a form of entertainment, it is also a good motivational and relaxation tool. However, one of the most significant uses of music is in exercise. Music can help to make exercise more enjoyable and tolerable. It can also help to improve a person's athletic performance. Music helps athletes to be distracted from the pain and fatigue when they exercise and therefore it helps to perform better. When an athlete focuses on music, he becomes subconsciously distracted from the fatigue. However, recent studies suggest that music serves as more than just a distraction. Music can help to affect the mood of an athlete. Listening to lively music for example, can psyche up an athlete and motivate him to increase the intensity of his training. Slow paced songs can help to relax an athlete before working out or competing. Music also helps to synchronize the rhythm of body movements and can help our muscles in the earning of new motions/movement. Our Hypothesis is that, an athlete who listens to music will be able to run faster and farther than one who doesn't listen to music whilst exercising.

2. Methodology

In this experiment we use : 5 boys and 5 girls aged 16 years of age, A treadmill, A stopwatch, MP3 player with earphones. Fast paced songs are uploaded into the MP3.

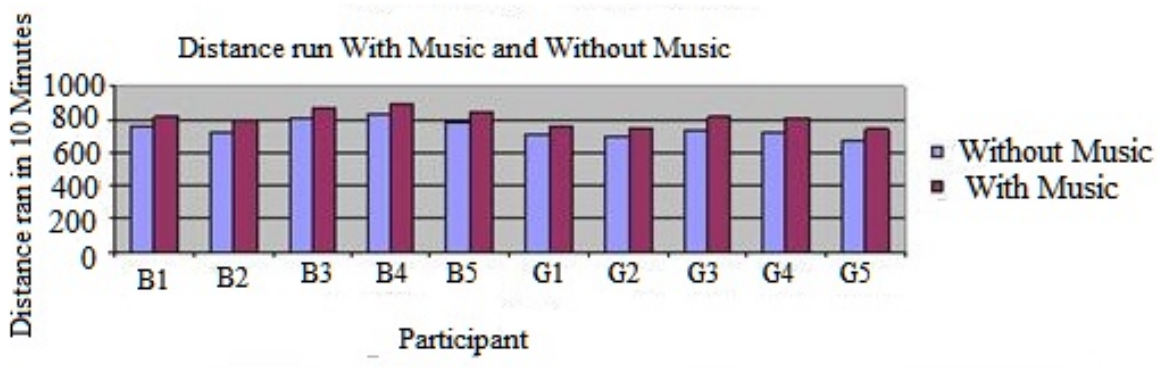
1. For this experiment, the independent variable is whether the participant is listening to the music. The dependent variable is the distance ran by the participant on the treadmill within the specified time. The distance ran by the participant is indicated on the treadmill display. The constants (control variables) are the age of the participants, the time given to the participants to familiarize themselves with the treadmill and the fixed time given for participants to run on the treadmill.
2. Five boys and five girls aged 16 years old are selected to take part in this experiment. The participant must be physically fit and must not have any health problems.
3. On the 1st day of experiment, the 5 boys and 5 girls are brought into the gym and made to warm up for 5 minutes. No music is used on this 1st day of the experiment. After the warm up, the 1st participant is given 5 minutes to run on the treadmill to familiarize himself with the equipment. The participant is then made to run on the treadmill for 10 minutes. The time is monitored using the stopwatch. The distance the participant ran on the treadmill for the 10 minutes is recorded in the table given below. The remaining 9 participants are made to go through the same process.
4. On the 2nd day of the experiment, the 5 boys and 5 girls are again brought into the gym and made to warm up. They are again given 5 minutes to familiarize themselves with the treadmill .This time, as they run on the treadmill for 10 minutes; they are made to listen to some fast paced songs on the MP3. The time is monitored using the stopwatch. The distance each participant ran on the treadmill is recorded in the table given below.

3. Results and Analysis

The results show that the participants were able to run longer distances when listening to lively music.

Condition	Distance ran on treadmill in 10 minutes---With Music and Without Music (meters)										Average
	Boy1	Boy2	Boy3	Boy4	Boy5	Girl1	Girl2	Girl3	Girl4	Girl5	
Without Music	758	723	805	824	782	708	694	734	721	670	741.90
With Music	813	792	875	894	853	762	745	812	805	745	809.60

The graph below represents the results of our experiment. In X-axis we use B1→Boy 1, B2→Boy 2, B3→Boy 3, B4→Boy 4, B5→Boy 5, G1→Girl 1, G2→Girl 2, G3→Girl 3, G4→Girl 4, G5→Girl 5.



4. Conclusion

The hypothesis is that participants listening to music during exercise will be able to run faster and farther than the participants, who are listening to music, is proven to be true. Having music in the background makes time see to pass more quickly and it distracts us from pain and fatigue. Therefore, music can be an effective tool in training an athlete's stamina, confidence and performance.

5. References

1. Reynolds, Gretchen. "Phys Ed: Does Music Make You Exercise Harder?" The New York Times, August 25, 2010. Accessed August 26, 2010.
2. Waterhouse J, Hudson P, Edwards B. Effects of music tempo upon submaximal cycling performance." Scand J Med Sci Sports. 2010; 20(4):662-9. doi:10.1111/j.1600-0838.2009.00948.x PMID 19793214
3. Fauber John. via Milwaukee Journal Sentinel. "Workout with a tempo: Choice of music can affect exercise intensity", The Free Lance–Star, November 9, 2003. Accessed August 26, 2010.
4. Staff. Upbeat Music Boosts Exercise Intensity, Medical News Today, October 20, 2003. Accessed August 26, 2010.
5. Tenenbaum G, Lidor R, Lavyan N, Morrow K, Tonnel S, *et al.* The effect of music type on running perseverance and coping with effort sensations, Psychology of Sport and Exercise, 2004; 5(2):89-109. doi:10.1016/S1469-0292(02)00041-9
6. Laukka, Petric, Lina Quick. Emotional and Motivational Uses of Music in Sports and Exercise: A Questionnaire Study among Athletes. Psychology of Music. 2011; 41:198-215. Print.
7. Fit Catalyst - Workout Brainwave Entrainment.