

MUSIC : ERGOGENIC EFFECTS ON SPORTS PERFORMANCE

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ABSTRACT

Music has ergo-genic effect , it increases exercise performance, delays fatigue and increases performance and endurance, power and strength. Our study tried to evaluate the effect of music on exercise performance in young untrained subjects and the effect of music on sub maximal exercise performance time duration in young adults. Music captures attention, triggers a range of emotions, alters or regulates mood, increases work output, heightens arousal, induces states of higher functioning, reduces inhibitions and encourages rhythmic movement .

INTRODUCTION

We live in a time when technology has brought us closer to music than ever before, enshrining its role in our emotional and social lives. According to the available evidence, music captures attention, triggers a range of emotions, alters or regulates mood, increases work output, heightens arousal, induces states of higher functioning, reduces inhibitions and encourages rhythmic movement . Ergogenic effect of music is evident as it improves exercise performance by either delaying fatigue or increasing work capacity. This effect results in higher than expected levels of endurance, power, productivity or strength. Listening to music while exercising improves work performance and decreases the perceived exertion and fatigue caused by ongoing exercise .

Many studies tried to explore the effect of music on exercise performance and heart rate among young untrained adults using sub-maximal exercise. They tried to assess the endurance enhancing effect of music in young adults of both sexes. The studies tried to explore that whether music increases the performance time in young boys and girls. Does it produce a significant increase in Heart rate while listening to music during exercise and not listening to music

while exercising? In addition, the studies assessed the role of self-selected music on an endurance level at a sub-maximal intensity of exercise.

ERGOGENIC & PERFORMANCE

Ergogenic. This term is used to show anything that is used to enhance physical performance or stamina.

Exercise Performance. This means carrying out specific physical routines or procedures by anyone who is performing an exercise .

CARDIOVASCULAR ENDURANCE

A small number of studies included in the critical mass investigated the effects of general music on cardiovascular endurance. In these studies it was generally found that music had a positive influence on the dependent variable. For example, Anshel and Marisi (1978) investigated the effects of general music on the physical performance of 32 male and female undergraduate college students ranging from 19-22 years of age using a bicycle ergometer. All participants were pre- and post-tested to determine level of physical fitness. All participants who listened to music while bicycling demonstrated greater aerobic endurance than a control group that didn't listen to music. This was calculated by a physical work capacity test and used as the criterion for exercise intensity on repeated conditions: participants were assigned in each of the three conditions synchronous movement to music, asynchronous movement to music, and a control condition. The study indicated that music, particularly if synchronized to physical movement, had a positive effect on the ability to endure the task and that males participants endured longer than female participants.

MUSCULAR ENDURANCE

Muscular endurance is also a potential benefit from using music in exercise. This also ties into the dissociation that comes from listening to music – music allows the listener to concentrate on the music which allows greater intensity and duration.

Muscular endurance is an important aspect of exercise. Two articles included in the critical mass investigated the effects of general music on this aspect. Razon, Basevitch, Land,

Thompson and Tenenbaum (2009) randomly assigned 60 participants, 33 male and 27 female, into four groups of fifteen. The exercise is performed using hand grips that are squeezed. After establishing the maximal squeezing value they performed 30% max

squeezing task under one of four assigned conditions: (1) full vision and preferred music, (2) full vision and no music, (3) blindfolded and preferred music, and (4) blindfolded and no music. The blindfold was used to eliminate outside distractions while listening to music or not. The test was to see if outside environmental distractions were removed does music have the effect of dissociation and enhance muscular endurance as it does for the perceived exertion. Each participant was asked to hold the grips until volitional fatigue while listening to a music selection of their own choosing. The rate of perceived exertion and attention strategies were administered at 30 second intervals. Results from a repeated measures analysis showed that participants who held the squeeze while not blindfolded and were listening to music were able to do so for a longer time than when no music, or music while blindfolded. This indicates that the dissociate effect of music does have the effect of increasing muscular endurance.

DISCUSSION

In many studies , duration of exercise increased significantly when music was played. Potteiger J A reported a strong effect of music at moderate exercise intensities-Fast jazz, slow classical and self-selected music reduced perceptions of exertion relative to a control condition . However, Pujol T J reported that fast music had no effect on performance or fatigue in a maximum intensity cycling test . Elliott et al also permitted self-selection of exercise intensity and reported similar results .

A number of studies have tested the effects of stimulative music on self-paced aerobic exercise performance and found that music enhanced work output . It is reported that the intensity of exercise determines the extent to which music can inhibit the processing of other sensory cues . At high intensity levels, physiological cues appear to dominate processing capacity due to their relative strength while at the more moderate intensity levels of exercise both internal (e.g. Kinesthetic) and external (e.g. Music) cues can be processed in parallel. While the positive effects of music on how one feels may not have the power to alter the perceptions of fatigue when exercising at very high intensities, music may change how one interprets or responds to sensation of high exertion.

In many studies, heart rate also increased significantly when music was played. However, no correlation of increase in heart rate was seen neither with the duration of the exercise nor with the presence of music. Birnbaum et al used fast music, slow music and a no music protocol during steady state exercise and indicated that fast music increased several indices related to heart and lung function.

However, Atan T concluded that listening to music and its rhythm cannot enhance anaerobic performance and cannot change the physiological response to supramaximal exercise.

CONCLUSION

The studies in the critical mass reach a conclusion that music enhances exercise performance. Music provides a dissociative distraction that allows the one performing the exercise to concentrate on the music rather than the intensity or duration of the exercise.

The preponderance of evidence found in the literature examined allows this synthesis to reach this conclusion. It is significant that even though various exercises were used with a wide variety of participants the conclusion remains consistent. Although there is not a longitudinal study found in the literature, there is a span of years between the various studies that shows the same conclusion. Whether on a bicycle, a treadmill, a handgrip or dumbbells, it was found that music enhanced cardiovascular endurance and perceived exertion.

The general overall conclusion is that music does indeed enhance performance. One of the studies was performed on 50 young adult subjects who were asked to exercise with and without music being played. There was an increase in Total duration of exercise and heart rate when music was played which was fast and loud for all. However, because of lack of uniformity in exercise protocol, no correlation could be seen between increase in heart rate and the presence or absence of music.

Music may exert an ergogenic and distractive effect during exercise under conditions of self-paced moderate exercise and self-selected music. Motivation by music can lead to increase in exercise duration, which is a stress alleviator in young medical students. Nevertheless, importance and beneficial effect of music on health cannot be underestimated.

1) Music increased the duration of exercise significantly both in boys and girls of 19-25 years of age.) No-correlation was seen between increase in heart rate with duration of exercise and music

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