

Research Article

Effect of music on post-exercise recovery rate in young healthy individuals

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Received: 05 February 2015

Accepted: 04 March 2015

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ABSTRACT

Background: Music has been used in exercise classes for many decades. The role of music in increasing the exercise performance is well recognized but there is very little information about effect of music on post-exercise recovery time.

Methods: The present study was conducted to see the effect of musical sounds on post-exercise recovery time following moderate exercise with Harvard step test in young healthy volunteers. 30 young healthy volunteers (17 males, 13 females) aged between 17 to 20 years were recruited for the study. Pulse rate, systolic BP, diastolic BP were recorded prior to exercise in lying down position. The participants were subjected to moderate exercise by Harvard step test for 3 minutes on 3 consecutive days. They were allowed to rest in silence on 1st day, rest with hearing slow music on 2nd day and rest with hearing fast music on 3rd day. During the post-exercise relaxation time PR, SBP and DBP were measured immediately and after every 1 min. until the parameters returned to resting values. Data was statistically analysed using ANOVA test and 0.05 level of significance was set prior to the study.

Results: The result showed that with slow music, recovery time of pulse rate (5.2 ± 2.1), systolic blood pressure (3.9 ± 1.1) and diastolic blood pressure (3.2 ± 1.7) were significantly faster as compared to both no music and fast music.

Conclusion: The study concluded that music hastens post-exercise recovery and slow music has greater relaxation effect than fast or no music.

Keywords: Music, Pulse rate, Systolic blood pressure, Diastolic blood pressure, Post-exercise recovery time

INTRODUCTION

Music is one of the few activities that involve using the whole brain. It is intrinsic to all cultures and can have surprising benefits not only for learning language, improving memory and focusing attention, but also for physical coordination and development. Of course, music can be distracting if it's too loud or too jarring, or if it competes for our attention with what we are trying to do. But for the most part, exposure to many kinds of music has beneficial effects.

Many studies have related the use of music in exercise to improved performance, finding specifically that listening to music prior to or during exercise improves performance. Studies conducted on the effect of different musical tempo on physiological changes during exercise yielded controversial results.

Some studies showed that switching from slow to fast music during progressive exercise results in more work efficiency with significant changes of physiological parameters¹ while other studies have shown that

physiological parameters were not affected.² As a result the effect of different musical tempo remains unclear. Further not much has been studied about the effect of music and different musical tempo on the post exercise recovery time. In the intervention study reported here, the effects of different musical tempo on post exercise recovery of physiological parameters following a bout of physical exercise in young healthy individuals were tested.

We hypothesized that music hastens post exercise recovery and that slow music shall have greater effect than fast or no music.

METHODS

In this study 30 young healthy volunteers (18 males, 13 females) in age group of 17 to 21 years were included. Volunteers suffering from any cardio-respiratory disorders, epilepsy, hypertension or trained athletes were excluded from the study. Pulse rate, systolic BP, diastolic BP were recorded using the digital sphygmomanometer prior to exercise in lying down position with closed eyes.

The participants were subjected to moderate exercise by Harvard step test for 3 minutes on 3 consecutive days. They were allowed to rest in silence on 1st day, rest with hearing slow music on 2nd day and rest with hearing fast music on 3rd day. Background music was played using laptop through headphones during the two experimental treatments with the other test being a no music control. During the post-exercise relaxation time PR, SBP and DBP were measured immediately and after every 1 min. until the parameters returned to resting values.

Data was statistically analyzed using ANOVA test. The 0.05 level of significance was set prior to the study.

RESULTS

Table 1 shows general characteristics namely age, body weight, height, BMI, pulse rate and blood pressure of the study volunteers. Table 2 shows the effects of slow and fast music therapy on post-exercise recovery of systolic blood pressure, diastolic blood pressure and pulse rate.

Table 1: General characteristics and cardiovascular parameters of volunteers.

	Males	Females
Age	18.6 ± 1.3	18.2 ± 1.0
Body weight	60.1 ± 4.2	53.0 ± 3.1
Height	170.2 ± 2.5	155.6 ± 2.4
BMI	19.5 ± 2.2	21.4 ± 1.2
Pulse Rate	76.6 ± 4.7	74.3 ± 5.1
Systolic BP	121.4 ± 7.2	113.2 ± 4.4
Diastolic BP	68.6 ± 4.1	64.3 ± 3.0

Data presented are mean ± SD

Table 2: Effect of slow and fast music on recovery time of PR, SBP and DBP following exercise.

Parameters	No music	Slow music	Fast music
PR recovery time	6.7 ± 2.3 [#]	5.2 ± 2.1 ^{*,#}	6.1 ± 1.9 [*]
SBP recovery time	5.2 ± 1.8 [#]	3.9 ± 1.1 ^{*,#}	5.0 ± 1.2 [*]
DBP recovery time	4.9 ± 1.2 [#]	3.2 ± 1.7 ^{*,#}	4.5 ± 1.1 [*]

Data presented are mean ± SD

*Comparison with no music group

#Comparison with fast music group

*P <0.05; #P<0.05

Post-exercise recovery time was significantly faster in slow music therapy when compared to recovery time of fast music therapy and no music intervention (P <0.05).

DISCUSSION

According to the present study relaxation with slow music after a bout of physical exercise caused faster recovery of pulse rate and blood pressure. It is consistent with other study which proved that music has the potential to reduce physiological indicators of anxiety including pulse rate and blood pressure.^{3,4}

Music reduced muscular and mental tension and thereby decreased sympathetic stimulation as observed in some studies.⁴ In addition to this, the plasma catecholamine is also lowered when relaxation is accompanied by music.⁵ Probably these factors together caused recovery of the pulse rate and blood pressure to baseline earlier than relaxation in the absence of music.

The pulse rate and blood pressure returned to baseline faster while listening to slow music when compared to fast music probably music of slow tempo reduced the arousal, leaving the subject in a state of relaxation.⁶

Some studies also proved that individual music preferences had no effect on the recovery time with music. Thus the relaxation effect of music is independent of the likes and dislikes of the individual.⁷

CONCLUSION

The study concluded that music accelerates post-exercise recovery and slow music has greater relaxation effect than fast or no music. Present study shows that slow music can be used as one of the best relaxation tool to improve the work efficiency of the employees at the work place.

Limitations

Present study is limited to a small bout of exercise and is conducted on healthy volunteers. Further studies have to be conducted with larger sample size; on patients during the hospital stay; prior, during and following surgical procedures. Furthermore, day-to-day variability in pulse

rate and blood pressure as well as personal music interests are limitations of this study.

ACKNOWLEDGEMENTS

The author wishes to express his appreciation to the participants of the study, Dr. Kena Jasani & Dr. Neeraj Mahajan.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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DOI: 10.5455/2320-6012.ijrms20150414

Cite this article as: Desai RM, Thaker RB, Patel JR, Parmar J. Effect of music on post-exercise recovery rate in young healthy individuals. *Int J Res Med Sci* 2015;3:896-8.