



EFFECT OF MUSIC ON HEART RATE AND BREATHE RATE

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Abstract

The purpose of this study was to find out the effect of music on heart rate and breathe rate. They were participated in intercollegiate level. To achieve the purpose of the study 15 men physical education students were selected from Zion college of Physical Education, Kadappa. The player's age ranged from 20-25 years. The variables selected for this study were such as heart rate and breathe rate. There would be significant difference between on selected independent variables such as heart rate and breathe rate. The single group experimental design was used for this study. Immediately before and after training test was taken. The collected data were statistically analyzed by one way repeated measures of ANOVA. In all the cases 0.05 level significances was fixed to test the hypothesis.

Keywords: High tempo Music, Heart Rate & Breathe Rate.

Introduction

Music is an art form whose medium is sound organized in time. Common elements of music are pitch (which governs melody and harmony), rhythm (and its associated concepts tempo, meter, and articulation), dynamics, and the sonic qualities of timbre and texture. The word derives from Greek word *mousike*, "art of the Muses".

Music can improve the psychological state of athletes and create positive ideas. It contributes to athletes' motivation and their resistance against psychological fatigue, thus improving their performance and skill learning. Music acts as an effective intervention for improving psychological and performance-related factors.

Beneficial Effect of Using Music in Sport And Exercise

The beneficial effect of using music in sport and exercise contexts has a long history and a strong intuitive appeal. Music has the capacity to capture attention, lift spirits, generate emotion, change or regulate mood, evoke memories, increase work output, reduce inhibitions, and encourage rhythmic movement – all of which have potential applications in sport and exercise. Considerable effort by researchers has been directed at understanding these effects, although many early studies used poor methods and had no underlying theoretical framework; issues we have addressed in a previous review (Karageorghis & Terry, 1997). Since that review, much new research has been published. The

purpose of the present paper is to update theoretical developments, to critically review recent research into the psychophysical and ergogenic effects of music, and to provide examples of evidence-based music interventions for practitioners.

Selection of Variables

By doing any physical activity, the heart rate, breathe rate and sweat rate. Heart rate plays vital part in the physical activity. Different playing environment affects the heart rate as well as the body core temperature. Many of this kind of physiological factors have direct relation with the playing condition. This kind of the physiological characteristics may vary the competition level of sports.

Heart rate is established by the since auricular node. The pace maker, but can be altered by the sympathetic and parasympathetic nervous system as well as endocrine hormones. Heart rate is the preferred method for monitoring exercise intensity because it is highly correlated to the work of the heart (or stress on the heart) and allows for a progressive increase in the rate of training with improvement in fitness to maintain the same training heart rate range. When one is prescribing exercise intensity, it is appropriate to establish a training heart rate range, with exercise starting at the low of the range and progressing to the upper end of the range over time.

Now let's examine the mechanisms by which heat is transferred between a person and his or her surroundings. For the body, to transfer heat to the

environment the heat produced in the body must move from deep in the body (the core) to the skin (the shell), where it has access to the playing environment. The heat is moved from the core to the skin by the blood. Only when heat reaches the skin can it be transferred to the environment by any of four mechanisms: conduction convection, radiation and evaporation

Criterion variables

1. Heart rate
2. Breathe rate

Selection of Tests

The present study was undertaken primarily to find out the effect of music on heart rate, and breathe rate. As per the available literature the following tests were used to collect relevant data on the selected dependent variables and they were presented in the table I.

Table I
Test selection

S.No	Criterion Variables	Test Items	Unit of Measurement
1	Heart rate	Radial pulse rate	In beats/minute
2	Breathe rate	Number of breathes	In number

Test and retest method was followed in order to establish the reliability of data by using twenty two subjects selected at random. The same persons under similar condition tested all the

dependent variables selected in the present study twice for the subjects. The intra class co-efficient of correlation was used to find out the reliability of the data and the results are presented in Table II.

TABLE II
INTRA CLASS CO-EFFICIENT OF CORRELATION ON SELECTED DEPENDENT VARIABLES

S. No	Criterion Variables	'R' value
1	Heart rate	0.88*
2	Breathe rate	0.86*

Experimental Design and statistical procedure

All the subjects were the tested on selected criterion variables. Gender and age group were statistically analyses by using One Way Repeated Measure ANOVA (Analysis of Variance). Hence, when ever the obtained F-ratio interaction effect test was used as a follow up test.

Since, one group and five different stages of test were compared, when ever the obtained F-ratio value in the simple effect test was significant for rows. The scheffes test was applied as post hoc test to determine the paired mean difference, if any. In all cases .05 levels of significant was fixed and

considered to be appropriate in view of the fact that very highly sophisticated equipment were not used for more stringent level of significance.

ANALYSIS AND INTERPRETATION OF THE DATA

Analysis of data

Heart rate

The analysis of one way repeated measure ANOVA on the data obtained for heart rate with the effect of music have been analyzed and presented in table III .

TABLE III

SUMMARY OF MEAN AND ONE WAY REPEATED MEASURE OF ANOVA FOR THE HEART RATE WITH THE EFFECT OF MUSIC

Mean and SD			Source of Variance	Sum of Squares	df	Mean Squares	'F'- Ratio
Normal condition	With-out music	With music					
69.6	104.8	112.2	Between	15542.80	2	7771.40	1107.19*
3.04	1.97	2.78	Within	196.53	28	7.02	

*Significant at 0.05 level. Heart rate was scored in beats/minute.

(Table value required for significance at .05 levels with df2 and 28 is 2.49)

The obtained F-ratio among the effect of music for a heart rate is 1107.19 which is greater than the table value of 2.49 with df 2 and 28 at .05 level of significance. It was concluded that there was significant difference among the effect of music without music and also normal condition on heart

rate. Since the obtained F-test was significant, the Scheffe's test was used to find out the paired mean difference and the results have been presented in table IV

TABLE IV

SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN PAIRED MEANS ON HEART RATE AT DIFFERENT TIME PERIOD

Mean			Mean Differences	Confidence Interval
Normal condition	With-out music	With music		
69.6	104.8		35.2*	2.40
69.6		112.2	42.6*	2.40
	104.8	112.2	7.4*	2.40

***Significant at .05 level.**

Table IV shows that the mean differences on heart rate between all the paired means were significant. The values are greater than the confidence interval value of 2.40, which shows significant difference at 0.05 level of confidence.

It may be concluded from the results of the study that the heart rate was higher with the effect of

music when compared to other periods of time on heart rate.

Breathe rate

The analysis of one way repeated measure ANOVA on the data obtained for breathe rate with the effect of music have been analyzed and presented in table IV

TABLE IV

SUMMARY OF MEAN AND ONE WAY REPEATED MEASURE OF ANOVA FOR THE BREATHE RATE WITH THE EFFECT OF MUSIC

Mean and SD			Source of Variance	Sum of Squares	df	Mean Squares	'F'- Ratio
Normal condition	With-out music	With music					
12.8	32.47	37.53	Between	5120.93	2	2560.47	1351.03*
1.70	1.68	1.30	Within	53.06	28	1.90	

***Significant at 0.05 level. Breathe rate was scored in beats/minute.**

(Table value required for significance at .05 levels with df2 and 28 is 2.49)

The obtained F-ratio among the effect of music for a breathe rate is 1351.03 which is greater than the table value of 2.49 with df 2 and 28 at .05 level of significance. It was concluded that there was significant difference among the effect of music without music and also normal condition on breathe rate. Since the obtained F-test was significant, the Scheffe's test was used to find out the paired mean difference and the results have been presented in table IV.

TABLE IV
SCHEFFE'S TEST FOR THE DIFFERENCES BETWEEN PAIRED MEANS ON BREATHE RATE AT DIFFERENT TIME PERIOD

Mean			Mean Differences	Confidence Interval
Normal condition	With-out music	With music		
12.8	32.47		19.67*	1.24
12.8		37.53	24.73*	1.24
	32.47	37.53	5.06*	1.24

*Significant at .05 level.

Table IV shows that the mean differences on breathe rate between all the paired means were significant. The values are greater than the confidence interval value of 2.40, which shows significant difference at 0.05 level of confidence.

Discussion on Findings

This experiment explored the effect of tempo of music plays on one's exertion during exercise. Participants were asked to exercise for two 8-minute sessions, with and without music. Music was played to participants based on slow (60 bpm), medium (100 bpm), or fast (160 bpm) tempi. Physiological responses to exercise and music were measured and compared to one another to find relationships between tempo and exerted effort. Results suggested participants who listened to music while exercising increased their average heart rate (10 bpm), exerted more effort (burned 7% more calories), and increased perceived exertion by 5%. Specifically, fast and medium tempi increased perceived exertion, while slow music decreased mean arterial pressure during exercise. Future research should continue to focus on personal musical

It may be concluded from the results of the study that the breathe rate was higher with the effect of music when compared to other periods of time on breathe rate.

preferences in genre and tempo so as to further investigate how music affects the body physiologically. (Tiffany Jones, Katie Ermatinger, Adam Waite, Han Zhang) 2011

The musical background, preference and exposure frequency could have an effect the volunteer's physiological response to altered music tempos (Vaajoki et al. 2011). If volunteers are acclimatized to fast tempo music, their heart rate would not significantly increase as the music tempo increases (Edworthy et al. 2006). Music preferences could have altered the heart rate. The consistent beats with no lyrics could have become monotonous and cause the volunteer to be uninterested. Thus increasing the tempo of music would have no significant effect on the heart rate of the subject (Shih et al. 2011).

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