

The Effect of Music on Affect at Progressive Cycling

Reza Nikbakhsh¹, Ardeshir Zafari²

¹*Faculty of Physical Education and Sport Science, Islamic Azad University – South Tehran Branch, Tehran, Iran*

²*Department of Physical Education and Sport Science, Zanzan Branch, Islamic Azad University, Zanzan, Iran*

ABSTRACT

*Participants will experience more positive affect from exercise. Music may play a major role on In-task affect of subjects. The previous studies indicated that there are conflicting results in regard to music's effect on the affect of exercise participants. What are the more benefits of exercising in the preferred music condition than exercising in the no music condition on In-task affect? The purpose of this study was to examine the preferred music's effect on In-task affect of untrained young adult's male's participation during progressive ergo meters cycling. The participants were 20 untrained young adult's males [Age (yrs): 24.65 ± 2.41 and BMI (Kg/m^2): 22.64 ± 2.58] that randomly selected from 24 students in a stationary bike cycling class. The independent variable was music and the two music conditions were preferred Iranian music and no music. The dependant variable was the subject's affect, which was measured with Hardy and Rejeski's (1989) bipolar Feeling Scale, which was designed specifically for exercise. During the first class session of the study, the participants learned how to complete the Feeling Scale and how to exercise with stationary bike cycle based on the YMCA's sub maximal cycle test protocol. During the next class sessions, preferred music and no music conditions were used. The exercises and order of exercise in each class session was consistent. All subjects exercised alone in all two music conditions by used headphone. In order to determine whether there were any statistically significant differences in the In-task affect of subjects during cycle ergo meter exercise, a two-tailed independent samples *t* test was used for comparing of affect's means between the training & preferred music group and the training & no-music group. The results indicated no significant differences in the mean scores for In-task affect in the training & preferred music condition as compared to the training & no-music conditions. These results were similar to any workload and to total condition. Preferred music and no music have the same effect on subject's affect and no differences observed between them. The results did not add any evidence that music had a significant positive effect during exercise. A mixed-method research study that consist of both quantitative and qualitative methodology may better help to understand the extent to which music actually enhance subject's affect while exercising.*

Key words: Music, Cycling, Affect, Exercise.

INTRODUCTION

In the beginning of the new millennium, there has been an increased participation in activities; such as, aerobic exercise, running, walking, swimming, climbing, and cycling; to promote fitness. Physical activity helps participants to improve their psychological and physical health, and to increase their overall well-being. Participants will experience psychological benefits from exercise. These include general well-being, reduced anxiety and stress,

relaxation, less depression, mood elevation, improved performance in fine and gross motor skills, improvement in cognitive functioning, and the acquisition of new skills [33].

Music has been suggested as an important component of mood enhancement and may help to make the workout more enjoyable and more beneficial for these individuals [5, 25, and 27]. Music may aid in fostering recall of pleasant feelings that could surface while working out [10, 27]. Music can increase molecular energy, help to release emotions, relieve fatigue, and stimulate thinking, sensitivity, and creativity [29]. A determination needs to be made concerning the effects of music on how people good feel while exercising.

While music has the potential to affect participants in a variety of ways [2, 8, 9, 15, 16], the focus of this study will be on how music affects psychologically when exercising. Music may contribute to an overall sense of enjoyment while exercising, it is also important to consider the specific effects music has on exercise participants. More study is needed concerning the specific effects of music on exercise participants because results from previous studies are both inconclusive and conflicting. The previous studies indicated that there are conflicting results in regard to music's effect on the affect. Some studies indicated that music had a significantly positive effect on affect; some studies indicated that music had a significantly negative effect on affect, and other studies indicated that music had not significantly effect on affect. Patton (1991) reported that no significant difference of affect between the group of aerobic students exercising to preferred music and the group of aerobic students exercises to any music. Dwyer (1995) showed that the music group had significantly higher affect than the no music group. Zilonka (1999) indicated that music during a walking activity allowed the participants to experience more enjoyment while exercising. Hayakawa et al. (2000) reported that the mood state of the participants was much more positive when music was played during exercise than when they exercised to no music. Lee (2001) reported that the no music condition had a more positive effect on the feeling state of the participants. Karageorghis and Terry (1999) reported affect difference between the motivational music and no music. The results indicated that asynchronous music was more effective on affect rather than no music. This conclusion was confirmed by Pfister, Berrol and Caplan (1998); Potteiger, Schroeder and Goff (2000); Nethery (2002); Pates, Karageorghis, Fryer and Maynard (2003); Tenenbaum (2004); Crust (2004); Hewston, Lane, Karageorghis and Nevil (2005); Terry, Dinsdale, Karageorghis and Lane (2007). Rejeski, Best and Griffith (1993), and Boucher and Trenske (1990) concluded that participants exercising on cycle ergo meters at medium and high intensity had a significantly higher affect when music was playing than when there was no music playing. They concluded that the music may have created upbeat emotional states. The music may have reminded the participants of good memories and helped them fantasized and think about good things that may happen in the future. Brownley, McMurray, and Hackney (1995) concluded that the untrained runners, compared to trained runners, experienced more positive affect when running at low and high intensity levels while listening to music as compared to no music. The trained runners, however, reported that their affect was lowest during the music conditions. Tenenbaum (2004) reported that the college runners believed that music helped them feel better and more motivated during the beginning of the run. As the workload increased, However, music was not as effective as acting as a distracter to the affect. Elliot, Carr, and Savage (2004) showed that motivational music enhanced affect during sub maximal cycle ergo meter.

It appears, however, that when participants were either given a choice of music or were able to exercise to preferred music, the results indicated that music had a favorable effect on affect. Once again, there are conflicting results related to whether or not music has an effect on affect while exercising. This study is to investigate preferred music's effect on In-task affect during stationary bike cycling in untrained young adult's male's participation. Therefore, what are the effects of preferred music on In-task affect of untrained young adult's male's participation during progressive ergo meters cycling? What are the more benefits of exercising in the preferred music condition than exercising in the no music condition on In-task affect?

MATERIALS AND METHODS

The purpose of this study was to examine the preferred music's effect on In-task affect of untrained young adult's male's participation during progressive ergo meters cycling. The independent variable was music and the two music conditions were preferred music and no music. The dependant variable was the conscious subjective aspect of emotion or feeling states (*affect*), which was measured with Hardy and Rejeski's (1989) bipolar Feeling Scale, which was designed specifically for exercise. This is an 11-point single item scale ranging from +5 (*very good*) to -5 (*very bad*) with a midpoint of 0 (*neutral*). The validity of the Feeling Scale was demonstrated by its authors [2]. A determination was made as to music's effect on affect.

The participants were 20 untrained young adult's males [Age (yrs): 24.65 ± 2.41 and BMI (Kg/m^2): 22.64 ± 2.58] that randomly selected from 24 students in a stationary bike cycling class. All the subjects were informed of their rights to anonymity and confidentiality. The Institutional Review Board for Human Subjects at The Islamic Azad

University approved this study in March 2010. In order to participate in the study 20 the subjects signed an informed consent form. At the onset of the study, the subjects were not informed about the purpose of the study; they were only told that the results would help trainers to develop better strategies for improving methods of training. The research study was conducted at a local indoor aerobic club in the university during the spring of 2010. Before the testing began, the participants filled out a survey containing a list of six groups of Iranian music selections. They were asked to rate these groups of music from 1 (*least preferred*) to 5 (*most preferred*) and the music used in the preferred music condition was determined by using a number scale. During the first class session of the study, the participants learned how to complete the Feeling Scale and how to exercise with stationary bike cycle (Elema – Schonander, EM.36, 1.1, FABISO3; Germany) based on the YMCA's sub maximal cycle test protocol. The first workload set as warm up period [20]. During the next class session, preferred music condition was used. Finally, during last session no music was used. The exercises and order of exercise in each class session was consistent. All subjects exercised alone in all two music conditions (preferred music, and no music) by used headphone. Data was collected from each section during three class sessions over a one week period. In order to determine if music had an effect on the subject's In-task affect, immediately after cycling the subjects filled out the Feeling Scale. In order to determine whether there were any statistically significant differences in the In-task affect of subjects during cycle ergo meter exercise, a two-tailed independent samples t test was used for comparing of affect's means between the training & preferred music group and the training & no-music group.

RESULTS AND DISCUSSION

It was hypothesized that the scores for In-task affect would be significantly different in the training & preferred music condition as compared to the training & no-music conditions. The mean score of In-task affect in the 2nd workload cycling for the training & no-music condition was 2.15 ± 1.42 , and the mean score for the training & preferred music condition was 2.70 ± 1.17 . The mean score of In-task affect in the 3rd workload cycling for the training & no-music condition was 0.30 ± 1.12 , and the mean score for the training & preferred music condition was 0.50 ± 1.19 . The mean score of In-task affect in the 4th workload cycling for the training & no-music condition was -1.10 ± 1.07 , and the mean score for the training & preferred music condition was -0.75 ± 1.25 . The mean score of In-task affect in total workload cycling for the training & no-music condition was 0.45 ± 1.81 , and the mean score for the training & preferred music condition was 0.81 ± 1.86 (see table 1). A two-tailed independent t test indicated no significant differences in the mean scores for In-task affect in the training & preferred music condition as compared to the training & no-music conditions at the .05 level of significance. These results were similar to any workload and to total condition.

Table1. Independent samples t test for equality of affect's means between groups.

| Variable | Workload | Group | n | Mean | SD | t | df | sig |
|----------------|----------|------------------|----|-------|------|-------|-----|-------|
| In-task Affect | 2nd | Training | 20 | 2.15 | 1.42 | 1.332 | 38 | 0.191 |
| | | Training & Music | 20 | 2.70 | 1.17 | | | |
| | 3rd | Training | 20 | 0.30 | 1.12 | 0.525 | 38 | 0.603 |
| | | Training & Music | 20 | 0.50 | 1.19 | | | |
| | 4th | Training | 20 | -1.10 | 1.07 | 0.950 | 38 | 0.348 |
| | | Training & Music | 20 | -0.75 | 1.25 | | | |
| | Total | Training | 60 | 0.45 | 1.81 | 1.091 | 118 | 0.277 |
| | | Training & Music | 60 | 0.81 | 1.86 | | | |

The review of the literature indicated that when preferred music was used, there was usually a positive effect on affect. However, several studies found no significant difference in affect with the use of preferred music. The subjects in this study showed no significant differences in affect when exercising to the following two different music conditions: preferred music, and no music. The results of this study indicated no effects on In-task affect while exercising in two music conditions. These results are consistent with Patton's (1991) study that used preferred and no preferred music in a group exercise setting. Patton concluded that the participants were more focused on the instructor than the music. The social setting in the present study and in Patton's study could have been a factor in obtaining no significant differences in affect. In a group exercise setting, it may be possible that the main external source of information is not the music but is, instead, the interaction with the instructor and the participants. This social interaction may be such a distraction to the participants that they may not focus their main attention on the music. This may have been the reason that affect was the same in each music condition and was not higher in the preferred music condition as predicted based on past studies that used preferred music. Affect may have been equally enhanced because of the social factor that became an environmental distraction helping the participants to focus less on the physical discomfort they were feeling during exercise. The instructor can become the external source of information on which the participants focus their attention during group exercise sessions [28, 30, 31, and 32]. If instructors display enthusiasm when conducting a class, they can become more of an environmental distraction than the music, having the same effect that music has had in previous studies, causing the participants to

focus less on the discomfort that is felt while exercising, thus increasing affect during exercise. In this study, the participants in all the class sections were very attentive to the instructor while he was leading them in the workout. The need for the participants to concentrate on the instructor's actions and commands may have contributed to diverting the participants' attention away from the music, thus causing no significant differences in affect in the music conditions.

In a group exercise setting, music may not play a major role on In-task affect of subjects. The participants in a group exercise setting can also become an external source of information. The social interaction with the other participants in an exercise setting adds to enjoyment during exercise [31, 32]. Finkenberg, DiNucci, McCune, and McCune (1994) found that social recognition rated high on college students' list of personal incentives to participate in exercise. In a study conducted by Wankel (1985), participants who continued in an exercise program gave a higher rating to the level of friendship with other members of the exercise class than the rating given by those participants who dropped out of the exercise program. It appears that social interaction in a group exercise setting is very important to the participants and may also be an environmental factor, such as music that helps to distract the participants from the discomfort that is felt while exercising, once again increasing affect. Several studies have been conducted to examine the effect that environmental distractions such as social interaction have on affect. Terrey and Karageorghis (2006) concluded that in an exercise setting that has available both external sources of information such as music, noise, and social interaction and internal sources of information such as fatigue and physical pain, a person will process one source of information while the processing of the other source will be restricted. Other studies have indicated that when people who were exercising focused their attention to cognitive tasks, they rated their perception of effort lower than when they were only focusing their attention on internal sources of information [13, 14]. Focusing on the social interaction and not the music could have distracted the participants from the fatigue and physical pain they were experiencing and could have been a factor in the participants' experiencing equal enhancement of affect in each of the music conditions. During this study, the subjects in the two class sections were exercised alone to the same music conditions by used headphone, but they were very social with one another before and after each class. They laughed a lot, at times would talk to each and other while they were exercising alone, and would make comments to the instructor throughout classes. The subjects in the last class section, however, were very quiet. They rarely talked and rarely interacted with the instructor during the classes, but were very interactive with each other and the instructor-both before and after the classes. It was apparent that the social aspect played a role in increasing the enjoyment and affect of the subjects in all class sections. Finally, the affect of the subjects in this study may have been affected by recent events that occurred through there life's. These factors could have had an effect on the ratings of affect.

CONCLUSION

The review of the literature indicated that exercising to preferred music may have (a) a more positive effect and (b) no effect on affect than using other music conditions when exercising alone and in a group setting; but, the results of this study did not showed any effect on affect. The results indicated that preferred music and no music have the same effect on subject's affect and no differences observed between two music conditions. The results of this study did not add any evidence that music had a significant positive effect during exercise. Even though the results of this study do not support this belief, it is important to continue to conduct studies in order to examine this issue further. A mixed-method research study that consist of both quantitative and qualitative methodology may better help to understand the extent to which music actually enhance subject's affect while exercising. Future studies may shed more light on this issue.

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