The comparison the effect of mediate and high intensities of aerobic exercise on non athlete girl Students’ Mood States

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Abstract

The purpose of this study was to determine the effect of high intensity of aerobic exercise on non athlete’s girl Students’ Mood States. Forty seven female university students in a non athlete field participated voluntarily in this study and completed the Brunel mood scale right before and after each physical activity session. Based on the ANOVA statistical method with repeated measurements indicated that after one session of moderate intensity aerobic resulted in the reduction of vigor (0.004), confusion (0.006), mood depression (0.000) and increased the fatigue (0.000) and anger (0.018) state. One session of high intensity aerobic exercise increased fatigue (p=0.017), anger (0.053), and reduction in vigor (0.003).

Key words: Mood states, aerobic exercise, non athlete students;

1. Introduction

Mood has been defined by Lane and Terry as “a set of feelings, ephemeral in nature, varying in intensity and duration, and usually involving more than one emotion” (Lane and Terry, 2000). The effect of mood states on perception’s style, self-efficacy and performance (Kavanagh and Hausfeld, 1986), make decision (Vries et al, 2007), and even people’s attitude (Rozen. 1999) caused to psychologists to find the affective ingredients on mood states; and even sport psychologists surveyed the effect of various kind of physical activities on mood states. Physical activity is effective factors on mood states (Lepamaki, 2006). There are many psychological hypotheses such as mastery, distraction and social interaction that described how physical activity affects on mood. The Mastery Hypothesis refers to the effect of mastering a new skill improves one’s mood (Stanly, 2000). The distraction Hypothesis, that’s one of correct psychological hypothesis, alleviates depression by temporarily distracting people from the everyday stresses (Stanly, 2000. portfolio, 2008), and social interaction hypothesis that refers people may feel happier when involved in a certain social activity (Stanly, 2000). Weinberg and Gould (1995) found law intensity of physical activity such as walking and running in compare to high intensity of physical activity, caused to positive effects in mood. Berger and Motl (2000) in interview of 25 studies found the practice with moderate intensity is affective in reduction of tension, depression, anger, and confusion Peluso et al (2005), in an interview study found high intensity practice caused to embittering mood and increasing in

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depression more than anxiety. Thomas et al (1994) discover that one session aerobic exercise with 60% intense of maximum vim on stable bike caused to increase in fatigue and decrease in Vigor. Cox et al (2001) also adequate one session 30 minutes of aerobic exercise on treadmill or stable stepper with moderate intensity (50%-75%) in a decrease of negative and an increase positive mood state. Bartholomew et al (2005) showed in their study one session 30 minutes of physical activity with moderate intensity (60%-70%) on treadmill, caused to reduction negative mood states in individuals with serious clinical depression. Hoffman and Hoffman (2008) found one session running aerobice activity with ideal speed on treadmill and with suitable intensity and duration improved Vigor and reduced fatigue. Therefore with attention to mood’s importance and its positive or negative effects on psychic states (Sarafino, 1998), self-efficacy and performance (Kavanagh and Hausfeld, 1986), attitude (Rozen, 1999), and making decision (Vries et al, 2007), also incoherence of some previous findings in the effect of one session of various physical activities on mood states, and previous studies that only surveyed the effect of one session various kinds of sport activities with moderate intensity of maximum aerobic power (in the range of 50%-75% aerobic power) on mood states, and seems that high intensity of maximum aerobic vim is not surveyed yet by researchers, also, many of non athletes suppose that more benefits of physical activity result of doing it in high intensity, and maybe those people experience physiological and psychological problems; therefore purpose of this study was the determination of the effect of running as a common, inexpensive and available activity in two intensities, moderate and high maximum of aerobic vim on mood states.

2. Method

2.1. Participants

Forty seven female university students in a non athlete field aged from 19-22 years (mean average 21.52 years) participated voluntarily in this study.

2.1.1. Apparatus and task

Mood was assessed using the Brunel Mood Scale (BRUMS) made by Terry and Lane 1999. The BRUMS contains 24 items to assess six dimensions of mood states Anger, Confusing, Depression, Fatigue, Tension, and Vigor. Items are rated on a 5-point scale anchored by “not at all” (0) and “extremely” (4). Terry and Lane (2003) provided the interpretation of BRUMS scores for adult students that cited in table 1. In this table cited student’s mood states in three desirable, prudence and undesirable extent. VaezMousavi and Hamzeh (2008) demonstrated this questionnaire validity 0.712 in Iranian elite athletes. Attained it validity 0.767 between 30 female undergraduate students other physical education that was out of this sample.

<table>
<thead>
<tr>
<th>Range</th>
<th>Mood dimensions</th>
<th>Anger</th>
<th>confusion</th>
<th>depression</th>
<th>fatigue</th>
<th>tension</th>
<th>vigor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green (desirable)</td>
<td>0-3</td>
<td>0-3</td>
<td>0-2</td>
<td>0-6</td>
<td>0-3</td>
<td>+13</td>
<td></td>
</tr>
<tr>
<td>Orange (prudence)</td>
<td>4-8</td>
<td>4-8</td>
<td>3-7</td>
<td>7-13</td>
<td>4-8</td>
<td>7-12</td>
<td></td>
</tr>
<tr>
<td>Red (undesirable)</td>
<td>+9</td>
<td>+9</td>
<td>+8</td>
<td>+14</td>
<td>+9</td>
<td>0-6</td>
<td></td>
</tr>
</tbody>
</table>

Aerobic exercise’s intensity controlled with subjects with heartbeat measure set that made in German with Fase1 name. This set has one watch and a belt.

Running activity in 1600 meter for the moderate intensity (60%-70%), and 540 meter for high intensity (75%-85%) of aerobic vim was chosen.

2.3. Procedure

Before running the test, subjects were taught how to use a heartbeat measure set and were asked to report their age for calculation of maximum heartbeat to determinate aimed heartbeat for each subject. In the test session, after the procedure was described to subjects, they completed the pre-test of mood states questionnaire, then they warmed up, and heartbeat measure sets were installed on their wrists and under sternum, in order to control their beats in the required range. After the activity was finished, subjects completed second mood questionnaires. This process was repeated in all two sessions.
3. Results

The result shows the significant effect of physical activity with moderate intensity on fatigue, anger and tension states (p<0.05). (Right panel of figure 1, and table 2).

Table 2. Results of ANOVA with repeated measures on mood states in aerobic exercise with moderate intensity

<table>
<thead>
<tr>
<th>States</th>
<th>Before of activity</th>
<th>After of activity</th>
<th>F</th>
<th>df</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td>Vigor</td>
<td>7.14</td>
<td>3.36</td>
<td>4.87</td>
<td>3.34</td>
<td>9.12</td>
</tr>
<tr>
<td>Tension</td>
<td>2.53</td>
<td>2.25</td>
<td>2.19</td>
<td>2.17</td>
<td>1.64</td>
</tr>
<tr>
<td>Fatigue</td>
<td>1.25</td>
<td>1.63</td>
<td>2.12</td>
<td>2.12</td>
<td>103.18</td>
</tr>
<tr>
<td>Depression</td>
<td>2.87</td>
<td>2.37</td>
<td>1.19</td>
<td>1.91</td>
<td>45.51</td>
</tr>
<tr>
<td>Confusion</td>
<td>2.51</td>
<td>1.74</td>
<td>1.57</td>
<td>1.77</td>
<td>8.20</td>
</tr>
<tr>
<td>Anger</td>
<td>1.53</td>
<td>1.12</td>
<td>1.76</td>
<td>1.64</td>
<td>0.83</td>
</tr>
</tbody>
</table>

*P<0.05

Table 2 indicates that physical activity with moderate intensity caused to decrease Vigor (p=0.004), confusion (p=0.006), depression (p=0.000) and to increase fatigue (p=0.000), and anger (p=0.018).

A session of high intensity physical activity had significant effects on total states except mood depression (p<0.05). (Left panel of figure 1, and table 3).

Table 3. Results of ANOVA with repeated measures on mood states in aerobic exercise with high intensity

<table>
<thead>
<tr>
<th>States</th>
<th>Before of activity</th>
<th>After of activity</th>
<th>F</th>
<th>df</th>
<th>sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td>Vigor</td>
<td>6.68</td>
<td>3.09</td>
<td>4.95</td>
<td>3.91</td>
<td>9.88</td>
</tr>
<tr>
<td>Tension</td>
<td>2.08</td>
<td>2.32</td>
<td>2.31</td>
<td>2.24</td>
<td>0.514</td>
</tr>
<tr>
<td>Fatigue</td>
<td>3.14</td>
<td>3.46</td>
<td>4.48</td>
<td>2.72</td>
<td>6.10</td>
</tr>
<tr>
<td>Depression</td>
<td>1.91</td>
<td>2.99</td>
<td>1.29</td>
<td>1.75</td>
<td>2.71</td>
</tr>
<tr>
<td>Confusion</td>
<td>2.19</td>
<td>2.84</td>
<td>2.63</td>
<td>2.59</td>
<td>1.06</td>
</tr>
<tr>
<td>Anger</td>
<td>1.29</td>
<td>2.08</td>
<td>2.29</td>
<td>3.60</td>
<td>3.93</td>
</tr>
</tbody>
</table>

*P<0.05, **P<0.05

Table 3 shows that physical activity with high intensity decreases vigor (p=0.003), and increases fatigue (p=0.003) and almost significantly in anger (p=0.053) and, but didn’t have any significant effect on other mood states.

4. Discussion & Conclusion

Investigation in the effect of each intensities on the mood states showed that although moderate intensity caused reduction of Vigor, also result to reduction of anger and mood depression states. Findings were compatible with
Finding of Weinberg and Gould (1995) and Berger and Mutel (2000). One’s experience in this type of activity reduces disappointment and unvalued feeling, and bewilderment and uncertainty feeling, as well as annoyance which are all signs of depression and confusion (Watson and Clark, 1997. Watson and Tellegen, 1985. Watson et al, 1988 ). Activity in this intensity level seems to cause a temporary attraction to the task at hand and distraction from all other stressful daily issues affecting one’s emotional and psychological states, which agrees with the distraction hypothesis on improvement of mood states. The experience of performing this activity in a group setting may cause more enjoyment of the task and therefore improves the mood states, which then is in agreement with the social interaction hypothesis (Stanly, 2000). Naturally this activity needs a little group cooperation; otherwise the influence of this hypothesis could be seen on the other mood states as well. The findings relating to the increase of fatigue state were compatible with the findings of Thomas et al (1994). It seems that could be from lack or weakness of psychological hypothesis such as distraction and social interaction hypothesis's, because of pressure of this task, accumulation of lactic acid, unpleasant feeling of performing the task, and participant's non regular experiences of such activity.

In the high intensity of aerobic activity was not positive on mood states and caused to reduction of vigor, and the increase of fatigue and anger states. These findings are compatible with the previous studies (Weinberg and Gould, 1995. Peluso et al, 2005), Because of Weinberg and Gould didn't find the high intensity of physical activity, to positive effects in mood. Peluso et al found high intensity practice caused to embittering mood. Whereas, Fatigue typified by feelings of mental and physical tiredness, and anger typified by feelings which vary in intensity from mild annoyance or aggravation to fury and rage (Watson and Clark, 1997. Watson and Tellegen, 1985. Watson et al, 1988), it seems that increase of fatigue and anger states can be related to lack of distraction and social interaction hypothesis's on Mood improvement, that discussed before.

Finally, the result of this study shows that aerobic activity does not affect the Vigor as the only positive subscale. Beside the intensity of activity, the non-optimal level of Vigor in the pretest may have some effects on these changes and neutralize them. But the other subscales in the pretests were in an optimal level. Since, it was not include mastering a new skill or practicing a past skill, and participations experienced in levels of activities, a learned, not so complex, and under control of Central Pattern Generators. The findings demonstrated that intensity of activity was important in changes of mood states, so that, high intensity not caused to reduction of negative mood states, and increased the anger state. In contrast, moderate intensity associated to reduction of confusion and mood depression. Though, both intensities caused to reduction of vigor, and increase of fatigue. Therefore, with attention to the effect of mood states on behaviour and psyche, knowledge of coaches and athletes in election variety of aerobic activity for non athlete people is important; because of high intensity aerobic exercise for non athletes nevertheless will not improve their acute mood state, yet maybe annoyed them of activity. Perhaps with attention to relation between attitude and behaviour, and the effect of attitude on behaviour’s change, associated with their attitude change toward physical activity, and finally avoidance of such activities. Of course, this avoidance can be related to effect of attitude on behaviour, and compatible with Ajzen's Planned Behaviour theory. This theory knows the behaviour as a consequence of attitude (Atkinson et al, 2000).

But on the other side, also non athletes maybe after moderate level activity, experience of mental challenges due comparison between emotions and feelings, and likewise the coaches that are familiar to psychology, found that this activity in compare with high level activity, addition to probable physical benefits, maybe associated with positive changes on mood states. Therefore, the society's knowledge of mood role and its benefits on life is necessary because of it will improve their interest and attitude toward physical activity, such as aerobic activities and running. The results of study with attention to cited useful effects, suggest the experience of moderate intensity is better for no athletes. Findings discussed in relation to psychological hypothesis explaining the effect of physical activity on mood states. However it must be said that to fully support a certain hypothesis, one needs more studies on the case. Because of sensitivity and precision of mood, the results of this study can just be generalized for the people in the same situations. But on the other side, the comparison of pre-test and post-test has neutralized this condition and the probability of duplication of these findings in the same situation can be reliable.

References


Leppamaki, S. (2006). The Effect of Exercise and Light on Mood. National Public Health Institute, Department of Mental Health and Alcohol Research, Helsinki, Finland and University of Helsinki, Department of Psychiatry, Helsinki, Finland.


