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The Effects of Three Different Exercise Modes on Mood

Karli Green

Huron University College

Many people agree that exercise is needed to create a happy and healthy lifestyle, however little of the media influence or research studies go beyond the physical benefits of being active. This research paper examines three different exercise modes and their effect on the internal motivator — mood. Mood change over a single session of each exercise was measured on the Current Mood States Scale. Analysis of variance found no significant mood change difference, suggesting that although mood improves with exercise, the type of exercise does not affect the amount of change. The results did not support the hypothesis that aerobics would produce the greatest change in mood, implications of these results, possible errors and future applications will be discussed.

Today's media-laden culture is crawling with reasons why people should exercise — the obesity epidemic, the expansion of the fast-food nation, the explosion of diet products and services, the ever-thinning ideal body size, and on and on. But besides these aesthetic reasons to maintain an active lifestyle, there also exists a motivating factor to stay physical that's more than just skin deep. For years researchers have been conducting studies and finding evidence that, not only does exercise contribute to a great set of legs, it can produce a gorgeous smile as well!

Mood is typically a long lasting, positive or negative emotional state. As well, it appears that mood may be an internal motivator for exercise. Cramer, Nieman, and Lee (1991) conducted a study on the effects of moderate exercise on the psychological well-being and mood of women. They had the women involved in moderate exercise training five times a week for 15 weeks, and used measures including the General Well Being Scale, State-Trait Anxiety Inventory and Profile of Mood States. They concluded that
moderate exercise was associated with improved general well being and significant decreases in anxiety (Cramer, Nieman & Lee, 1991). Prior to these findings, McCann, Lisa, and Holmes (1984) had done a similar study involving the effects of aerobic exercise, particularly in depressed women. Instead of having all the women perform the exercises as Cramer, Nieman and Lee did, McCann, Lisa, and Holmes had a third of their participants taking part in strenuous aerobics, a third did relaxation exercises, and the last third had no treatment. The women were assessed before beginning the exercises and after a 10 week period, and the results showed that the aerobics group saw greater decreases in depression than either the relaxation group or no treatment group (McCann, Lisa & Holmes, 1984). Both of these studies indicate that moderate exercise appears to decrease depression and anxiety, while improving positive mood. These findings were early evidence that our cultures obsession with exercise may be rooted in how exercise makes us feel, and not just the outward physical effects. However, neither study detailed what the moderate to strenuous aerobic exercises were, or how long the participants had to be involved in them in order to see a positive change in their mood.

Hansen, Stevens, and Coast (2001) conducted a study on exercise duration and mood, predominantly observing how much exercise was enough to make participants feel better. They used the Profile of Mood State Inventory as their measure of mood, and tested participants during a resting trial, after a one minute trial, 10 minute trial, 20 minute trial, and 30 minute trial on a stationary bike. An analysis of variance found improved vigour, as well as reduced confusion, fatigue and negative mood occurring after 10 minutes, and progressing over 20 minutes; however additional improvements were not seen after this time (Hansen, Stevens, and Coast, 2001). Their study suggested that, not only does exercise improve energy and reduce negative mood, but less than 30
minutes a day is all that is needed to reap these benefits. Robert Yeung’s (2006) article on the acute effects of exercise on mood also supports the idea of small daily bouts of exercise. He found evidence that due to physiological mechanisms like endorphins and change in body temperature, as well as psychological mechanisms like distraction from problems and mastery, after just one exercise session, participants felt better (Yeung, 2006). It appears that the media’s push to get people active is overdone – as long as the person tries moderate exercise they should be motivated to continue by their improved mood after the very first session. A facet that these previous studies have overlooked is what kind of exercise is best to improve mood.

Netz and Lidor (2003) studied the effects of mindful exercises and yoga on mood versus the aerobic exercise of swimming. Assessing the participants on anxiety, depression, and subjective well being, they found that yoga worked better at improving mood than the mindfulness exercises and the swimming. Ne, Hadi and Na, Hadi (2007) conducted a study with a focus particularly on hatha yoga and well-being. They found significant improvements in well-being just as Netz and Lidor did, and over a six month time they observed improvements in physical and mental health as well. Thus it appears that yoga may be an exercise of choice when it comes to improving ones mood and overall health. However, such improvements in health, well-being and energy were also found by Batholomew, Morrison and Ciccolo (2005) in their study of the effects of moderate-intensity aerobics on mood and well-being, thus, it is unclear which of these exercise modes produces the most beneficial effects.

Previous research is conclusive on one fact – exercise can help increase energy, and decrease negative mood. However, what is lacking in this research is evidence of what type of exercise works the best. In a culture surrounded by media telling people to
Exercise Mode on Mood

live active lives, be healthy and get exercise, it would be beneficial to know exactly what exercise is going to have the greatest positive effect on the individual. This study wishes to uncover what exercise mode, between three popular types – weight training, aerobics and yoga – will produce the greatest change in mood, and thus be more beneficial to the individual. Due to previous research, the hypothesis is that all forms of exercise will have an effect on mood; however, aerobics will create the greatest change in mood scores.

Method

Participants

The participants were ten university students recruited from Huron University College in London, Ontario. There were eight females, and two males ranging in age from 19 to 22. The participants were all Caucasian, of relatively good health (allowing them to participate in the exercise classes), and had valid student cards (allowing them access into the recreation centre). They were recruited erratically from the Huron campus by being approached and asked to participate in an exercise study. Each participant signed a consent form and received three energy bars. All participants were treated according to the ethical guidelines outlined by Huron University College.

Materials

Each participant received a study booklet including an information sheet about the study, a consent form, a schedule for the exercise classes, and seven copies of the Current Mood State Scale. The Current Mood State Scale, created by Berman, W. H. and Turk, D. C. (1981), has good reliability indicated by a cronbach’s alpha of 0.926. It consists of nine items that are rated on a scale of one (not at all), to five (extremely). A copy of the scale can be found in Appendix A. The participants were given three Detour
Whey Protein Energy Bars (Forward Foods, LLC) as compensation for being part of the study.

**Apparatus**

The study utilized three exercise classes at the University of Western Ontario Recreation Centre. Participants were not required to bring their own exercise equipment, however each exercise class used a variety of apparatus. The weight training class used mats, dumbbells, toning cords, steps, and hand held weights. The aerobics class used stationary speed bikes and the yoga class used floor mats. Each class was run by a trained instructor from the recreation centre, was available over a number of different days for the participants to choose from, and lasted 60 minutes in length.

**Design**

The study was a within-subjects, repeated measures experimental design. The independent variable was exercise and consisted of three levels – weight training, aerobics, and yoga. The dependent variable was the mood change score, defined as the overall change score between two Current Mood State Scales completed for each exercise. The participants received all levels of the independent variable, and were compared on the continuous dependent variable.

**Procedure**

The researcher approached ten students at Huron University College and asked them to participate in an exercise and mood study. The students were given a letter of information about the study and a consent form which was signed and returned to the researcher upon agreeing to join the study. The researcher explained that participation meant attending three, 60 minute exercise classes over the next two weeks, and completing surveys for each class. The participants chose the days they would attend.
each exercise class from a schedule allowing the researcher to control for any exercise class-order confounds. Only one class could be attended a day, and each participant had to take part in one weight training, one aerobics, and one yoga class. Participants also chose a day in which they would not attend an exercise class. The researcher gave each participant seven copies of the Current Mood State Scale. The participants filled one scale out before each exercise session, and after each exercise session. They also filled out one scale during the day of no exercise. Before beginning the study, the researcher also gave each participant three energy bars as compensation for taking the time to do the study. The participants had two weeks from the start of the study to the end. At the end of the study period the researcher collected the completed Current Mood State Scales from each participant, thanked them for their participation, and gave them a debriefing form explaining the background of the study and the hypothesis. The researcher calculated mood change scores across each exercise for each participant and then inputted the scores into an SPSS computer program to analyze them.

Results

A one-way within subjects analysis of variance was conducted on the mood change scores, across three modes of exercise including weight training ($M=1.80$, $SD=1.03$), aerobics ($M=4.00$, $SD=4.40$), and yoga ($M=3.80$, $SD=2.86$). The mood change scores did not differ significantly across the exercise modes, Greenhouse-Geisser adjusted $F(1.53, 13.77)=1.64$, $p>0.05$, partial $\eta^2=0.15$. See the following page for an ANOVA summary table of this data.
**Exercise Mode on Mood**

**ANOVA Summary Table**

*Tests of Within Subjects Effects*

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
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<td>Exercise Modes</td>
<td>29.60</td>
<td>1.53</td>
<td>19.351</td>
<td>1.64</td>
<td>0.23</td>
<td>0.15</td>
</tr>
<tr>
<td>(Greenhouse-Geisser)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>162.40</td>
<td>13.77</td>
<td>11.80</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Exercise Mode on Mood

Discussion

Previous research has shown conclusive evidence that exercise has an impact on mood. In this study, exercise did have some impact on mood, as determined by the generation of mood change scores from the Current Mood State Scales. However, differences in mood change across the three exercise modes was not clear. The results showed that, although the means of the mood scores differed slightly, the ANOVA calculations found no overall significance within subjects across the different exercises. Therefore the hypothesis that aerobics would show the greatest increase in mood change was not correct. There appears to be no difference in mood change scores across weight training, aerobics, or yoga contrary to previous research. The implications of these results are that either all three types of exercise produced the same amount of mood change and are therefore all as beneficial to the individual, or none of the exercises produced enough mood change to be valuable. Another implication of these results are the possible errors within the study that may have confounded the findings. These errors include lack of control, sampling errors, music as a variable, and survey bias.

The structure of the study resulted in there being a lack of control over the independent variables of exercise. Due to the necessity of using a professional centre for the exercise classes, the researcher had no control over the classes themselves, the length of the classes, the intensity of the classes, or the regularity of the classes. Since participants could choose classes from a two week period, the instructors for the classes may have differed, along with the way they ran the class. There was also lack of control over the participants, since going to the specific exercise classes was up to them, the researcher had no way of knowing if they actually went, if they did the correct class, and if they filled out the surveys at the correct time. To help structure future studies to
control for these problems, researchers may want to hold each exercise class on a set
day, at a specific place and be present in order to control the specific aspects of the class,
and make sure participation occurs correctly.

The sampling of university students around exam time may also have attributed
to errors within the results. During the study a number of the participants dropped out and had to be replaced, and some forgot their surveys and had to re-write their responses. As well, others expressed so much stress over exams that their moods may have been reflecting those issues rather than just pertaining to the way they felt prior to and after the exercise. Future studies may want to choose a time of year in which their sample is dealing with regular daily stressors to better observe how exercise can change mood on a daily basis.

A factor that was not considered prior to the start of the study was music. It is a popular routine for exercise trainers to play loud music intended to pump up their classes, or soft relaxing music in the case of yoga. As of yet, researchers do not know if music plays a role in mood change, however, until this is determined, it remains a possible extenuating variable that could confound the results of this study. Different music was played during each exercise session, and therefore it can only be assumed that the music may have had an effect on the participants’ mood, above and beyond that of the exercise alone. Future researchers may want to try an exercise study void of any music, or determine if music does have any mood altering effects.

The final area of concern involves the Current Mood States Scale. The scale is a quick measure of mood, however eight out of nine items on the scale deal with negative mood, while only one item is positive. Although the reliability of the scale is good, the researcher questioned the lack of positive mood descriptors and felt a survey using a
more even split of positive and negative mood traits may better evaluate participants' mood. Future researchers may want to look into finding a mood scale directed at the entire mood spectrum instead of focusing on just the negative end of mood.

In the future, researchers should focus on finding conclusive results about the amount of influence exercise exerts on mood, and what types of exercise are best at improving mood. This research will likely have practical applications within education systems as school boards would likely incorporate the most beneficial exercise outlets into their programs. The media would also benefit from research on exercise and mood. No longer would commercials and ads be confined to pressuring the population about their outward appearance, they would have an internal motivator to advocate for their exercise products. Imagine being able to gain a daily dose of 'happy' from your bike ride to work, or your yoga stretches at lunch ... the idea may not be as farfetched as it seems.
Exercise Mode on Mood

References


Appendix A: Current Mood State Scale

Rate each of the following moods according to how you are feeling right now:

<table>
<thead>
<tr>
<th></th>
<th>UNHAPPY</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not at all</td>
<td>2</td>
<td>A little</td>
<td>3</td>
<td>Moderately</td>
</tr>
<tr>
<td>2</td>
<td>BOTHERED</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Not at all</td>
<td>2</td>
<td>A little</td>
<td>3</td>
<td>Moderately</td>
</tr>
<tr>
<td>3</td>
<td>WORRIED</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Not at all</td>
<td>2</td>
<td>A little</td>
<td>3</td>
<td>Moderately</td>
</tr>
<tr>
<td>4</td>
<td>BORED</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Not at all</td>
<td>2</td>
<td>A little</td>
<td>3</td>
<td>Moderately</td>
</tr>
<tr>
<td>5</td>
<td>LONELY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Not at all</td>
<td>2</td>
<td>A little</td>
<td>3</td>
<td>Moderately</td>
</tr>
<tr>
<td>6</td>
<td>FRUSTRATED</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Not at all</td>
<td>2</td>
<td>A little</td>
<td>3</td>
<td>Moderately</td>
</tr>
<tr>
<td>7</td>
<td>TENSE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Not at all</td>
<td>2</td>
<td>A little</td>
<td>3</td>
<td>Moderately</td>
</tr>
<tr>
<td>8</td>
<td>NEGLECTED</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Not at all</td>
<td>2</td>
<td>A little</td>
<td>3</td>
<td>Moderately</td>
</tr>
<tr>
<td>9</td>
<td>CONTENTED</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Not at all</td>
<td>2</td>
<td>A little</td>
<td>3</td>
<td>Moderately</td>
</tr>
</tbody>
</table>