Protective Effects of Acute Exercise on Anxiety

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Background
Past literature demonstrates that exercise helps improve mental health, alleviate depression, and increase positive affect. 1, 2, 7, 8, 10 The positive qualities that are linked to exercise have lead researchers to investigate how exercise may affect health issues, such as anxiety. Studies have shown that exercise helps decrease anxiety in the general population and those with general anxiety disorder, 4, 6, 9, 13 Meditation and rest conditions in past studies have also proven to be an effective means in reducing anxiety 1, 3, 5, 11. However, only one study has examined the protective effects of rest and exercise when emotional stimuli are presented after the state anxiety has been induced 12. This study further examines the finding that exercise has a more robust protective effect than rest on state anxiety.

Purpose
- To investigate if exercise has protective effects against state anxiety induced by unpleasant stimuli.
- Hypothesized that we would find similar results to the Smith (2013) study.

Research Question
- Compared to a rest condition, does an acute bout of exercise protect against state anxiety increasing due to unpleasant stimuli?

Methods
Participants
- 11 participants
- Convenience Sample
- Ages 19-30 years old
- 9 undergraduate, 2 graduate students

Procedure
Day 1
- Informed Consent
- Questionnaires
  - Health History
  - Physical activity questionnaire
  - Godin Inventory
  - Beck Depression Inventory

Day 1 & Day 2
- Administer 1st State trait anxiety scale (STAI)
- Performed either exercise or rest
- For exercise & rest recorded exertion, leg pain, pleasure & arousal
- 2nd STAI
- 7 min slideshow of unpleasant/Neutral stimuli
- 3rd STAI
- Emotional Regulation questionnaire (Day 2 only)

Results

<table>
<thead>
<tr>
<th>Category</th>
<th>Unpleasant Stimuli</th>
<th>Neutral Stimuli</th>
</tr>
</thead>
<tbody>
<tr>
<td># of participants</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Gender</td>
<td>5 Men</td>
<td>3 Men</td>
</tr>
<tr>
<td>Race</td>
<td>4 White</td>
<td>1 Black</td>
</tr>
<tr>
<td>7-day Physical Activity</td>
<td>31.9 (4.1)</td>
<td>31.4 (4.1)</td>
</tr>
<tr>
<td>Trait Anxiety</td>
<td>34.7 (5.9)</td>
<td>39.4 (9.1)</td>
</tr>
</tbody>
</table>

Anxiety Scores for Unpleasant Stimuli Figure 2

Exercise

Activity vs. rest

Viewed pictures

Anxiety Scores for Neutral Stimuli

Exercise

Activity vs. rest

Viewed pictures

Discussion/ Conclusion
- High internal validity for the unpleasant slideshow.
- Exercise did not have any protective effects against anxiety as compared to rest.
- Our findings were not similar to the Smith (2013) study which maybe due to the smaller sample size & different stimuli.
- Findings are useful for the overall study & add to the literature of exercises protective effects against anxiety.

Limitations
- Small sample size.
- Participant knew condition beforehand.
- Anxiety measurement post exercise might show physiological discomfort.
- Participants had low anxiety scores.

Future Directions
- Continue collecting data.
- Take STAI longer after stimuli presentation.
- Measure EEG while viewing pictures.
- Sample pool of highly anxious individuals.

References

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