Exercise your brain

Introduction to Cognitive Science
Lubica Komarova
30 Oct 2019
Long term exercise

• Cardio vascular help
• Lowering risk of cancel
• Lowering chances of getting basically any disease
Fig. 1. The Time Course of Behavioral, Functional, Physiological, and Neurochemical Effects of Acute Exercise.

<table>
<thead>
<tr>
<th>Exercise Protocol</th>
<th>Time Course: Post-Exercise Condition</th>
<th>Anatomical Sites</th>
<th>Behavioral Changes</th>
<th>Physiological Changes</th>
<th>Neurochemical Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>1st week</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-intensity</td>
<td>1st week</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-intensity</td>
<td>1st week</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Data reported from the largest studies cited in the literature.

Behavioral Changes:
- Physical activity level
- Mood
- Physical function
- Cognitive function
- Psychological function

Physiological Changes:
- Blood pressure
- Heart rate
- Body temperature

Neurochemical Changes:
- Dopamine
- Serotonin
- Noradrenaline

Endorphins

GABA

BDNF

GFAP

NMDA

5-HT

5-HT1A

Enhanced positive mood states

Increased physical activity

Increased brain activity during task performance

Increased cognitive function

Enhanced mood states

Enhanced mood states

Enhanced mood states
Acute exercise

- Short term exercise
- Improves cognitive functioning, especially in areas of prefrontal cortex-dependent cognition
- Improving executional functions
- Enhancing mood states
- Decreasing stress levels
Longer lasting effects

- Hippocampus
- Prefrontal cortex
- Delaying cognitive decline
Best way to exercise

• High intensity
• Medium intensity training
  • The longest lasting results
• Low intensity training
• Self chosen training
  • Biggest impact on cognitive functions such as memory, attention, decision making, etc
Future

• Many possibilities for cognitive scientists
• Clearly defying the focus group as well as training plans
Thank you for your attention

Move!
References

