Exercise: Is it the chill pill for stress?

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Introduction

- Mental stress → increases in blood pressure & negative mood
- Large stress responses → cardiovascular disease and psychological disorders
- Exercise is believed to reduce the cardiovascular and psychological responses to stress
- However, little research has looked at both the cardiovascular and psychological responses to stress following a short bout of exercise

Research Question

Can a short bout of exercise influence the cardiovascular and psychological responses to mental stress?

Methods

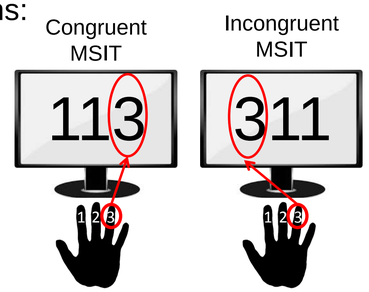
Participants

- 40 healthy participants (20 , 20), mean (SD) age = 19.95 (1.93) years.

Stress Task - Multi-Source Interference Task (MSIT)

- Participants have to select the number that is different from other numbers with their corresponding finger. Two alternating conditions:

1) Congruent: number matches finger position.
2) Incongruent: number different position to finger



Cardiovascular Assessment

- Blood pressure

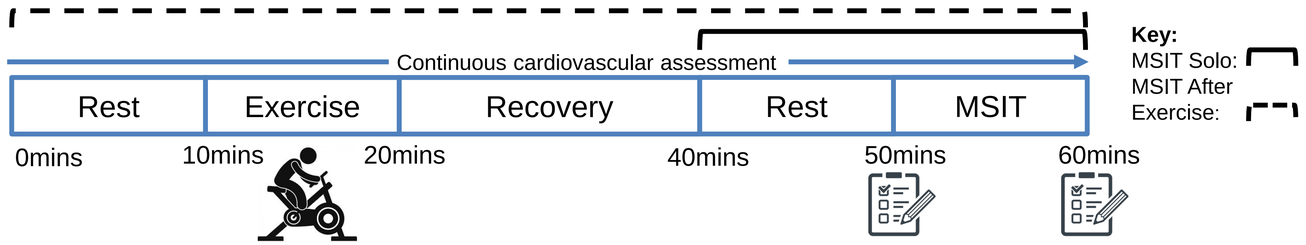
Psychological Measures

- Cognitive anxiety, somatic anxiety, difficulty and stressfulness assessed via questionnaire (1= not at all, 7 = extremely).
- Mood disturbance was measured with 32-item Profile of Mood States (1= a little, 4= extremely). A higher score represents greater mood disturbance.

3 Visits:

Visit 1: Sub-maximal exercise test to calculate fitness level (VO_2 max).
Visit 2: Participants complete MSIT solo stress task.
Visit 3: Participants complete MSIT after 10-minute moderate-intensity cycling.
Note: visit 2 and visit 3 were counterbalanced in order of completion.

Protocol



Results

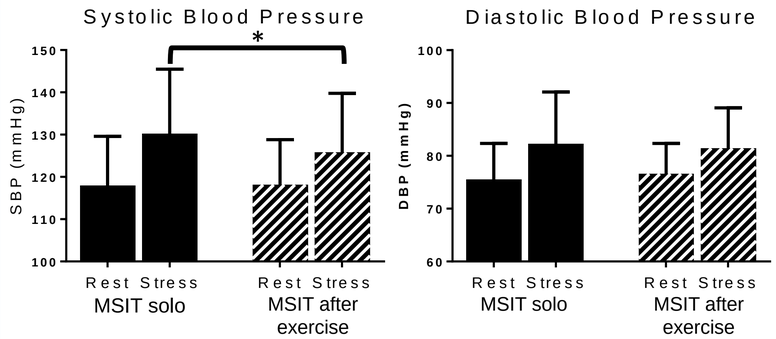


Table 1. Mean (SD) scores of task appraisals for the MSIT solo condition and MSIT after exercise condition.

	Perceived Stressfulness	Perceived Difficulty
MSIT Solo	3.26 (1.25)	3.79 (1.03)
MSIT After Exercise	3.82* (1.21)	4.21* (1.08)

*Significantly greater than MSIT Solo visit, p <.05.

Figure 1. Showing blood pressure increases during stress. *Significantly lower during MSIT after exercise visit compared to MSIT solo visit, p <.05.

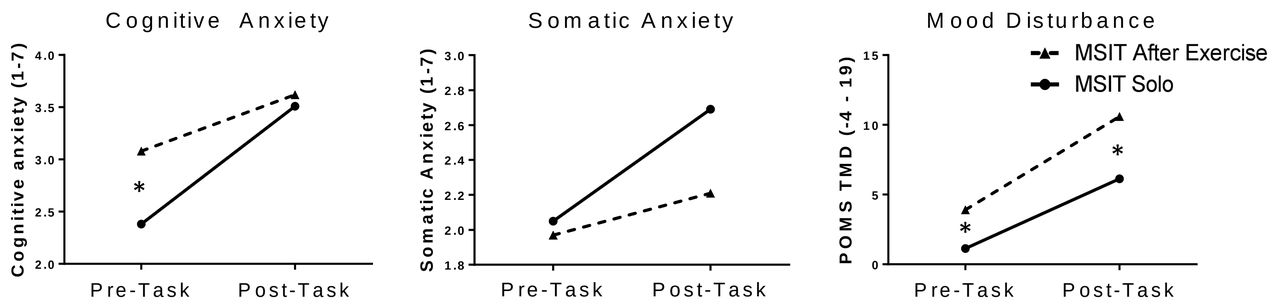


Figure 2. Showing anxiety and mood disturbance increases during stress. *Significantly greater than MSIT solo, p<.05.

Conclusions

- Exercise is beneficial for blood pressure responses to stress, but increases anxiety, negative mood, perceived difficulty and reported stress.
- Exercising before a stressful event may chill your blood pressure, but fries your brain.