



The Effects of High-Intensity Interval Training (HIIT) on Mood in College Students with and without ADHD

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SCAN ME

Introduction

- Attention-deficit/hyperactivity disorder (ADHD) is characterized by an ongoing pattern of inattention, hyperactivity, and/or impulsivity that causes impairment in multiple domains of functioning (APA, 2013). In fact, individuals with ADHD are more likely than their peers to develop mood and anxiety disorders (Kessler et al., 2006).
- Evidence-based treatments for ADHD include pharmacological (e.g., stimulant medications) and psychosocial (e.g., cognitive behavior therapy, academic skills coaching) interventions. However, these approaches have various limitations. Stimulant medication is costly, may have adverse side effects, and does not address mood difficulties; psychosocial interventions are costly and difficult to obtain in rural areas such as Wyoming.
- There is preliminary evidence in support of physical exercise as an intervention for ADHD in children due to increased executive functioning post-exercise (Neudecker et al., 2019). However, less is known about the impacts of exercise on mood symptoms in emerging adults with ADHD.
- The current study evaluated the acute efficacy of high intensity interval training (HIIT) for college students with ADHD on mood symptoms.

Method

Participants

- Undergraduates ($N = 63$, 78.4% White, 58.7% female) between 18- and 25-years-old ($M_{age} = 20.52$) enrolled at the University of Wyoming
- ADHD group participants ($n = 32$, 59.3% female) endorsed 5+ symptoms of inattention and/or hyperactivity and impairment on a clinical interview (Alder & Cohen, 2004)

Procedure

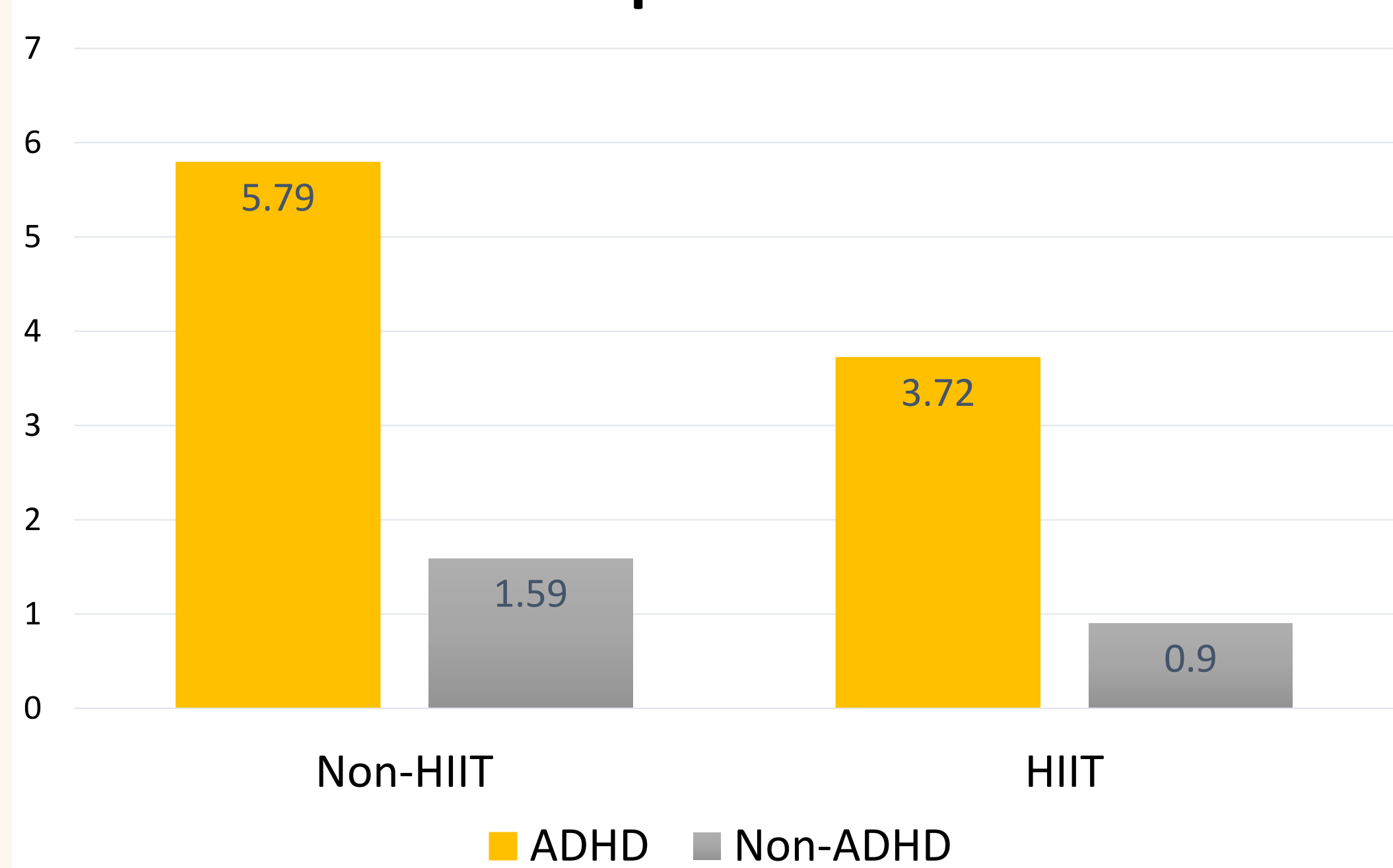
Participants attended two experimental sessions:

- HIIT session: 16 minutes of cycling on a Schwinn AD2 Airdyne leg-cycling and arm-cranking ergometer
- Non-HIIT session: no physical exercise

Measures

Within 24 hours of each appointment, participants reported on their mood symptoms using the *Depression, Anxiety, and Stress Scale* (Lovibond & Lovibond, 1995).

Depression



In the 24-hour period following 16-minutes of high intensity interval training (HIIT) on a stationary bicycle, male college students with ADHD reported a significant decrease in their depressive symptoms.

These findings suggest that HIIT may be an inexpensive and relatively safe treatment for comorbid depressive symptoms in college students with ADHD.

Results

- Series of Session (HIIT or Non) x ADHD x Sex repeated measures ANOVAs were conducted regarding mood symptoms. No interactions emerged.
- More depressive symptoms were endorsed by individuals with ADHD ($p=.002$, $\eta_p^2=.17$) regardless of session or sex.
- Following the HIIT session, depression scores differed reliably ($p=.013$, $\eta_p^2=.11$) with all groups evidencing a decrease in symptoms except for the non-ADHD females.
- Across session and sex, ADHD participants reported more anxiety than their peers ($p=.004$, $\eta_p^2=.15$).
- Participants with ADHD reported higher levels of stress ($p<.001$, $\eta_p^2=.26$) regardless of session; and women with ADHD endorsed higher levels of stress ($p=.011$, $\eta_p^2=.11$) than their male counterparts.
- HIIT did not reliably decrease symptoms of anxiety or stress for any group.

Discussion

- Consistent with previous findings (Kessler et al., 2006), college students with ADHD reported more symptoms of depression, anxiety, and stress than their peers. Interestingly, women with ADHD reported higher levels of stress than men with ADHD.
- Following HIIT, male college students with ADHD reported a significant decrease in their depressive symptoms, but not their anxiety or stress.
- PA interventions are cheap and relatively safe, so the threshold to determine that sufficient research support exists to recommend the intervention is lower (see Hurt et al., 2011). Our findings suggest that interventions for college students with ADHD and depression should consider including HIIT as a treatment component.
- Future research should evaluate the long-term effects of HIIT on mood in emerging adults with ADHD.

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