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Physical Exercise, ADHD Symptoms, and Mental Health

CAN ENGAGING IN PHYSICAL EXERCISE be beneficial for adults in managing ADHD symptoms and mental health challenges? This research update reviews two studies that explored the effects of physical exercise for adults with ADHD.

The first study examined how aerobic exercise and nonaerobic exercise affect attention, impulsivity, and hyperactivity. Both types of exercise were shown to reduce impulsivity with respect to receiving a reward now versus later, with nonaerobic exercise additionally demonstrating a decrease in this type of impulsivity in adults with ADHD. The second study investigated aerobic exercise and mental health outcomes, specifically depressive symptoms, anxiety, and perceived stress. For adults with ADHD, higher levels of aerobic fitness were related to lower symptoms of depression, anxiety, and perceived stress.

These studies suggest that exercise may have potential in alleviating mental health challenges among adults with ADHD as well as symptoms associated with ADHD. Future research is needed, however, to clarify these links and the different outcomes of exercise.

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Effects of aerobic and nonaerobic exercise on ADHD

ADHD is related to impairments in various life domains, diminishing overall quality of life. Some research suggests that engaging in aerobic physical exercise may offer benefits in terms of improvements in attention, processing speed, mood, motivation, and response inhibition. However, larger studies are needed that examine both aerobic and nonaerobic exercise. Aerobic activities include activities, such as running, that lead to sweating and increased heart rate, in contrast to nonaerobic activities, such as yoga. This study investigated the impact of exercise, specifically the aerobic exercise of cycling and the nonaerobic exercise of Hatha yoga, on ADHD symptoms.

One hundred and fifty-nine adults (88 participants in the ADHD group, and 77 participants in the non-ADHD group) between the ages of eighteen and thirty-five years from the United Kingdom were randomly assigned to a ten-minute exercise session of either cycling or Hatha yoga. Participants in the cycling condition completed a two-minute cycling warmup before their cycling session. Participants in the yoga condition engaged in a two-minute exercise involving an introduction and positioning activity before their yoga session.

Cognitive measures before and after the exercise included a task that involved participants responding to certain stimuli and inhibiting their responses to other stimuli, a task that involved participants deciding between receiving a smaller reward immediately versus waiting to receive a larger reward in the future, and a task that involved making risky versus less risky choices in cards. In addition, participants wore an actigraph to measure their level of movement during these measures.

The findings showed that among both adults with and without ADHD, engaging in cycling appeared to lower impulsivity specifically with respect to needing to receive a smaller reward now versus being

able to wait until later for a larger reward. Involvement in yoga also seemed to yield a decrease in this type of impulsivity specifically in the ADHD group. No other effects of exercise on attention, cognitive or motor impulsivity, or movement were observed.

Overall, these results suggest that a brief ten-minute cycling or Hatha yoga session may help adults with ADHD manage impulsivity, particularly in terms of receiving a reward now rather than later. However, more research with additional measures may be helpful to understand the impacts of exercise on other measures of impulsivity, along with inattention and hyperactivity.

Dinu LM, Singh SN, Baker NS, Georgescu AL, Singer BF, Overton PG, & Dommett EJ. (2023). The effects of different exercise approaches on attention deficit hyperactivity disorder in adults: A randomised controlled trial. *Behavioral Sciences*, 13, 1–18. https://doi.org/10.3390/bs13020129

Fitness and mental health in adults with ADHD

Individuals with ADHD commonly experience coexisting mental health conditions such as anxiety and depression. Some studies suggest that treatment approaches that include aerobic exercise can address both ADHD symptoms and associated mental health issues. Cardiorespiratory fitness involves the capacity to move oxygen in the body to meet physically demanding tasks. This study examined cardiorespiratory fitness along with differences in mental health outcomes, specifically depression, anxiety, and perceived stress, among individuals with ADHD and those without ADHD. The associations between aerobic fitness level, mental health, and ADHD symptoms were also investigated.

Seventy-two participants (36 participants with ADHD, and 36 participants without ADHD) in Canada between the ages of eighteen to thirty-five years completed questionnaires of ADHD, mood, anxiety symptoms, and perceived cardiorespiratory fitness. They also completed a physical activity involving a six-minute walking task that allowed for measurement of estimated cardiorespiratory fitness.

Results showed that participants with ADHD reported worse mental health compared to the non-ADHD group, although cardiorespiratory fitness did not differ between participants with and without ADHD. Higher perceived cardiorespiratory fitness levels were related to better mental health in terms of less perceived stress, anxiety, and mood difficulties, particularly for participants with ADHD. Greater estimated cardiorespiratory fitness using the walking task was also related to less perceived stress. In particular, for adults with ADHD, higher fitness was related to less depressive symptoms and lower stress.

These findings suggest that increasing aerobic fitness levels could be a promising approach to support mental health in adults with ADHD. Future directions for research can involve examining whether fitness levels causally predict better mental health in adults with ADHD.

Ogrodnik M, Karsan S, & Heisz JJ. (2023). Mental health in adults with ADHD: Examining the relationship with cardiorespiratory fitness. *Journal of Attention Disorders*, 27, 698–708. https://doi.org/10.1177/10870547231158383

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