

The Relationship Between Adolescent Exercise and Adult Mental Health



Lilly Stoller, Applied Data Analysis, Wesleyan University

Introduction

- Mental illness is one of the most prevalent health conditions in the United States with 1 in every 5 Americans experiencing mental illness in a given year ("About Mental Health," 2023)
- "Experts recommend that children and adolescents ages 6 through 17 years should do 60 minutes or more of moderate-to-vigorous physical activity (PA) daily" (U.S. Department of Health and Human Services, 2018)

Univariate

• 64.7% of the sample have been diagnosed with a mental disorder (depression, anxiety and/or PTSD) and 33.26% have not.

Results

- Distribution of # of times participants worked out to a sweat is somewhat normal, with with twice a week being the most frequent (31.6%), and 0 times being the least occurring (5.5%)
- "Males are more physically active in utero, infanthood," childhood, adolescence, adulthood, through to old age." (Hands et al., 2016)
- Studies, scientists and psychiatrists have all recommended the use of exercise for both mental and physical benefits, as well as the use of PA for coping mechanisms for already presented mental illnesses

Research Questions

- Is there an association between adolescent physical activity and the presence of mental disorders as an adult?
- Does this relationship vary when broken down by biological sex, as males have been previously found to be more physically active than females?

Bivariate

• A logistic regression found that the number of times adolescents sweat per week is significantly and negatively associated with the likelihood of suffering from a mental health related issue/disorder. (O.R. 0.918, CI 0.86-0.98) Those who sweat have an expected odds of mental health issues that is 0.918 times lower than those who don't sweat. (Figure 1)

> Figure 1. Proportion of Participants with Mental Health Related Issues vs. the Number of Times Participants Workout to Sweat Per Week



Methods

Sample

- The National Longitudinal Study of Adolescent to Adult Health (Add Health) is a representative survey of adolescents in grades 7th-12th who have been observed in five waves over time
- Sample is composed of 20,000 adolescents across the US, where data is broken down into wave 1, when the participants began the study as adolescents, and wave 5, in their late 30s/early 40s

Measures

- Adolescent PA in wave 1 was investigated in the survey by the prevalence/quantity of exercise or lack thereof by asking: how many times in a normal week do you work, play, or exercise hard enough to make you sweat and breathe heavily? Categorical responses ranged from 0 (never), 1 (1 or 2 times), 2 (3 to 5 times), 3 (6 or 7 times) and 4 (more than 7 times) per week.
- Mental health in wave 5 was broken down into three disorders - depression, anxiety and PTSD - asking the same question for each condition: Has a doctor, nurse, or other health care provider ever told you that you have or had depression?
- A binary variable reflecting mental health was created stating that 1= the participant has one of the conditions, therefore

0.0 -Number of Times Sweat per Week

Multivariate

- After controlling for sweat per week, females are more than twice than likely than males to have a mental health related issue (OR 2.06) (Figure 2)
- After controlling for sex, the number of times sweat per week is not significant anymore. There is still a miniscule positive relationship between females, and a slightly negative relationship for males (O.R. 2.06)(Figure 2)

Figure 2. Probability of Adults Having a Mental Health Related Disorder Given The Amount of Time Participants Sweat per Week by Sex



they are classified to have a mental illness, and 0 = the participant does not have mental illness.

Discussion

- After controlling for biological sex, the relationship between the probability of having a mental health related issue as an adult and the number of times participants sweat as an adolescent is not significant anymore; therefore, biological sex is a confounding variable
- Findings suggest that overall, females have more mental health related issues regardless of how many times they worked out to a sweat per week than males
- Because data was collected in the 1994-1995 school year, so it is likely more recent data has been collected as mental health has been "destigmatized" over the years

References: About Mental Health. (2021). Retrieved March 3, 2023, from Centers for Disease Control and Prevention website: https://www.cdc.gov/mentalhealth/learn/index.htm Hands, B., Larkin, D., Cantell, M., & Rose, E. L. (2016). Male and Female Differences in Health Benefits Derived from Physical Activity: Implications for Exercise Prescription. Journal of Womens Health, Issues and Care, 5(4). https://doi.org/10.4172/2325-9795.1000238 US Department of Health and Human Services. Physical Activity Guidelines for Americans, 2nd edition. Washington, DC: US Department of Health and Human Services; 2018.