FPIN's Clinical Inquiries

Physical Activity and the Prevention of Depression

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Clinical Question

Can physical activity prevent the development of depression?

Evidence-Based Answer

Yes. Physical activity appears to be associated with a lower risk of developing depression and depressive symptoms. (Strength of Recommendation: B, based on a systematic review of cohort trials and individual randomized controlled trials [RCTs] and cohort trials.)

Evidence Summary

A 2018 meta-analysis of 49 prospective cohort studies (N = 266,939) examined whether physical activity decreases the risk of developing depression.[1] Study participants did not have depression at baseline. Most of the studies enrolled adults, although some also enrolled children and older adults. Physical activity was self-reported and was defined as any bodily movements requiring energy expenditure. Depression was diagnosed using defined cutoffs from a variety of depression screening instruments. Trials were one year or longer. Compared with patients who had low levels of physical activity, those engaged in high levels of physical activity (definition varied by study; included groups with greater frequency, intensity, and volume of physical activity) had a lower risk of developing depression (36 trials; odds ratio [OR] = 0.83; 95% CI, 0.79 to 0.88; I^2 = 0). The included studies were conducted in diverse geographic regions, and this meta-analysis found a range of ORs among different areas (0.65 to 0.84); however, in each region, physical activity was found to be protective against developing depression. The protective effect of physical activity against depression was similar among the different age groups (two trials; OR = 0.90; 95% CI, 0.83 to 0.98 for children; eight trials; OR = 0.78; 95% CI, 0.70 to 0.87 for adults; and nine trials; OR = 0.79; 95% CI, 0.72 to 0.86 for older adults).

A 2018 prospective cohort study, with 33,908 healthy adults living in a rural area of Norway, examined whether exercise was protective against new-onset depression.[2] Patients were followed for an average of 11 years (range = nine to 13). Those who self-reported any physical activity each week were compared with those who reported no physical activity weekly. Depression was assessed using the Hospital Anxiety and Depression Scale, a self-report questionnaire. The authors used multiple models to adjust for age, sex, marital status, social class, tobacco and alcohol use, and body mass index. Across all models, there was a statistically significant increase in the incidence of depression for those who were not physically active, compared with those who had one to two hours of physical activity per week (adjusted OR = 1.4; 95% CI, 1.2 to 1.8). Although the authors identified a dose-response relationship between total physical activity and odds of

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depression, there was a diminishing benefit of exercising more than one hour per week.

A 2018 RCT of 61 university students (72% female; 18 to 30 years of age) evaluated the effect of exercise intensity on the development of depressive symptoms.[3] Patients were randomized to six weeks of high-intensity interval training, moderate continuous training, or no exercise. Participants exercised three times a week on a stationary cycle for a total of 18 sessions. High-intensity interval training consisted of 60 seconds of high-intensity intervals with 10 60-second recovery intervals for 20-minute sessions; moderate continuous training consisted of continuous training for 27.5 minutes; the no-exercise group was told to remain sedentary. Before and after the intervention, students completed the Beck Depression Inventory (21 items, scored from 0 to 63, with higher scores indicating worse depression). Compared with the control group's change in depressive symptom scores (from 16.7 before the intervention to 23.1 after), the high-intensity interval training group and the moderate continuous training group had a significant decrease in depressive symptoms (high-intensity interval training: a score of 13.2 before the intervention to 12.2 after; $P = .012$ vs. no exercise; moderate continuous training: a score of 11.4 before to 9.4 after; $P = .005$ vs. no exercise). There was no difference in the change of scores between high-intensity interval training and moderate continuous training ($P = .77$). Students in the control group had a statistically significant increase in depressive symptoms throughout the intervention, which the authors attribute to the stressors of starting a university semester.

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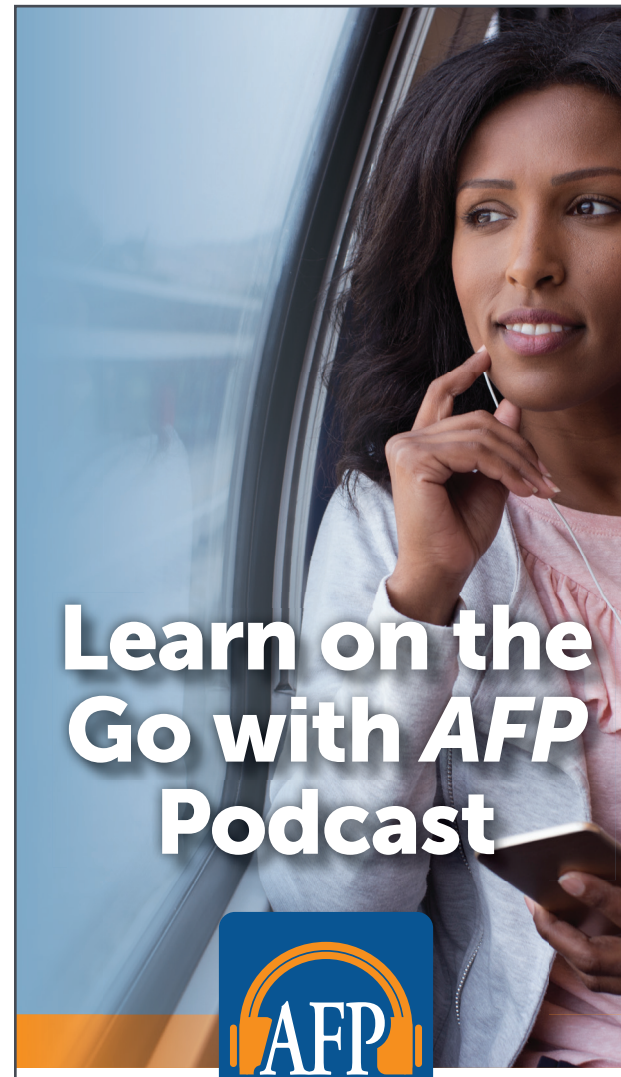

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