

Physical Activity and Incident Depression: What the Data Tell Us



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- [Depression](#)



RESEARCH UPDATE

Depression is a leading cause of illness burden and disability worldwide. People with major depressive disorder are at [increased odds](#) of not meeting recommended physical activity levels (> 150 minutes per week). Structured physical activity may also [reduce symptoms](#) in patients with depression.² There is some evidence that physical activity may exert protective effects on the risk of incident (ie, new-onset) depression, but no previous studies have used meta-analyses to quantify this association. [Schuch and colleagues](#)³ performed a systematic review and meta-analysis of prospective cohort studies to examine the role of physical activity in reducing the risk of incident depression, and to explore potential factors moderating this association. The study was performed according to MOOSE and PRISMA guidelines for systematic, quantitative reviews.

Study authors searched PubMed, Embase, PsychINFO, and SPORTDiscus from inception through October 2017. Study quality was assessed using the Newcastle-Ottawa Scale. The authors included studies of people free of depression/depressive symptoms at baseline; studies measuring physical activity with a self-report questionnaire; prospective studies with at least one year of follow-up; studies evaluating incident depression as an outcome; and studies reporting data on odds ratios or relative risks (or including the necessary raw data to calculate these measures).

The primary outcome measures were the overall adjusted odds ratio and relative risk for incident depression/depressive symptoms, calculated using random-effects meta-analysis. Subgroup analyses were also performed to investigate effects of geography, age, method of physical activity assessment, method of depression assessment, and potential confounding or moderating factors (such as age, sex, body mass index, and smoking).

Forty-nine unique studies, comprising 266,939 subjects, were identified that met study inclusion/exclusion criteria. A total of 47% of participants were male and subjects were followed for a mean of 7.4 years. The mean Newcastle-Ottawa Scale score was 6.3 (out of 9), representing moderate-to-high methodological quality. People with higher (versus lower) physical activity levels were at significantly reduced odds (adjusted OR = 0.83, 95% CI 0.79-0.88, $p < 0.001$) and risk (adjusted RR = 0.83, 95% CI 0.76-0.90, $p < 0.001$) of incident depression, although there was evidence of publication bias for each estimate.

In subgroup analyses, there was evidence for significant protective associations of physical activity on incident depression in studies from Asia, Europe, North America, and Oceania. Protective effects were also found in children, adults, and older persons. The associations remained significant in studies adjusting for potential confounding factors, including publication bias, age, sex, body mass index, and/or baseline depressive symptoms. In meta-regression analyses, sample size, publication year, length of follow-up, sex, and study quality did not moderate the association between physical activity and incident depression.

The authors concluded that theirs was the first meta-analysis of physical activity and incident depression. They suspect that multiple mechanisms, including biochemical and psychosocial factors, contribute to protective effects of physical activity against depression. Potential study limitations include the use of self-report questionnaires for physical activity, which introduces a potential recall bias, and differences in the assessment of baseline depressive symptoms across studies. However, they note the robustness of findings in subgroup and sensitivity analyses. The included studies did not permit an analysis of a potential “dose-dependent” relationship between physical activity and risk of depression. The authors call for future studies looking at the “dose” and type of physical activity

The bottom line

Higher physical activity levels are robustly associated with decreased risk of future depression in people of all ages.

References:

1. Schuch F, Vancampfort D, Firth J, et al. [Physical activity and sedentary behavior in people with major depressive disorder: a systematic review and meta-analysis](#). *J Affect Disord*. 2017;210:139-150.
2. Schuch F, Vancampfort D, Richars J, et al. [Exercise as a treatment for depression: a meta-analysis adjusting for publication bias](#). *J Psychiatr Res*. 2016;77:42-51.
3. Schuch FP, Vancampfort D, Firth J, et al. [Physical activity and incident depression: a meta-analysis of prospective cohort studies](#). *Am J Psychiatry* 2018; 175: 631-648.