



Can Physical Activity Prevent Depression?

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Depression is becoming an increasingly prevalent global mental health issue. In fact, the World Health Organization (WHO) has predicted that depression will be the second leading cause of disability, after ischemic heart disease, by the year 2020 (WHO, 2010). This is alarming given the heavy burden of depression on quality of life and health care services.

Systematic reviews have demonstrated that physical activity (PA) may play a role in treating depression (e.g., Rimmer et al., 2012). With the high prevalence of depression and its impact on health, more attention is needed in identifying effective mental health promotion strategies that prevent the onset of depression.

In our review, we examined:

- whether PA might play a preventive role to the onset of depression (Mammen & Faulkner, 2013; available on request from the first author); and
- the amount of PA needed to protect against depression.

Review Process

We followed a standard protocol for conducting our review. After a thorough search, screening and selection process, 30 studies were identified that met our inclusion criteria.

The criteria required that studies:

- employed a prospective-based, longitudinal design (see *Key Terms* in p.2 sidebar);
- examined the relationships between PA and depression over at least two time intervals;
- identified PA as the exposure variable (see *Key Terms*) and depression as the outcome variable; and
- defined depression using self-report questionnaires to detect clinical depression, or more-direct measures of depression, such as a physician's diagnosis.

In addition, formal study quality assessments were conducted. A majority of these studies were found to be of high quality.

Can PA Prevent Depression?

Of the 30 studies, 25 found that PA prevented the onset of depression in the future. Specifically, there was an inverse relationship between baseline PA and depression at the time of follow-up.

Summary

This article outlines research findings from a systematic review that examined whether physical activity protects against depression, and the amount of physical activity needed to help prevent the onset of depression. The authors suggest that promoting physical activity may be a useful health promotion strategy to reduce the risk of depression.

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- Those who had lower PA levels at baseline had a significant increased risk of developing depression at follow-up (range: 6 - 34%).
- Conversely, those who had higher PA levels at baseline had a significant decreased risk of developing depression at follow-up (range: 8 - 63%).

How Much Physical Activity is Needed to Prevent Depression?

Due to the many different ways physical activity was measured in the 30 studies, a clear dose-response relationship between PA and depression was unclear.

However, based on the review, participating in even less than 150 minutes of physical activity per week, as recommended by the Canadian Physical Activity Guidelines, can protect against future depression.

For example, Jonsdottir and colleagues (2010) reported that subjects engaging in PA (e.g., gardening/walking) for 120 minutes week were at a 63% reduced risk of developing future depression. Other studies also found that engaging in “lower” levels of PA, such as less than 20 minutes/day, can protect against depression (Brown, Ford, Burton, Marshall, & Dobson, 2005; Lucus et al. 2011).

What Modes of Physical Activity Can Prevent Depression?

Our review solely examined aerobic types of PA such as cycling, running, or walking. Other modes such as weight training or yoga could be examined in future studies and reviews.

Caveats

Despite consistency in the literature regarding the preventive effects of PA on depression, some caution is required. There could be alternative explanations of the positive findings, such as bias, confounding factors or chance.

However, as noted, the majority of reviewed studies were rated as being of high methodological quality. In most cases, during statistical analysis, the studies took account of a wide range of possible confounding factors that can result in interpretation errors, such as disability, smoking, alcohol consumption, and social status.

Even after accounting for possible confounding factors, the relationship between PA and a decreased risk of depression remains. Yet, there may be other important, unmeasured factors, such as genetic variations, that predict both PA and depression.

Conclusions

The evidence is sufficient to conclude that PA may prevent depression. More exploratory work is needed on potential mechanisms and the dose-response relationship. However, there is promising evidence that any level of PA, including low levels, can prevent future depression.

At the least, advising adults to meet Canada’s current recommended guidelines for PA would appear to be an appropriate suggestion for protecting against depression.

From a population health perspective, promoting PA may serve as a valuable mental health promotion strategy in reducing the risk of developing depression. In our view, when it comes to mental health promotion, an ounce of prevention is worth a pound of cure! 🍀

Key Terms

Depression: According to WHO (2014), “depression is a common mental disorder, characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness, and poor concentration. Depression can be long-lasting or recurrent, substantially impairing an individual’s ability to function at work or school or cope with daily life.”

Prospective-based, longitudinal design: A study design which examines the relationships between variables measured at least during 2 separate occasions. (In this study, a minimum of 1 year in-between.)

Exposure Variable: An exposure variable (or independent variable) is a variable of interest to determine if changes in a variable, or various levels of the variable (e.g., physical activity) may change a separate outcome variable (e.g., depression).

About the Authors

Guy Faulkner is a Professor in the Faculty of Kinesiology and Physical Education at the University of Toronto.



Broadly, his research has focused on two inter-related themes: the development of physical activity interventions; and physical activity and mental health.

George Mammen is a PhD student in the Faculty of Kinesiology and Physical Education at the



University of Toronto. His PhD research focuses on strategies/interventions to increase physical activity in children, as well as the links between physical activity and mental health, i.e., depression, anxiety, stress.

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