Sweat is the best antidepressant:
But where do we go from here?

Guy Faulkner, PhD, CIHR-PHAC Chair in Applied Public Health School of Kinesiology, University of British Columbia

There is now a sufficiently, robust evidence base to confirm the existence of a strong relationship between physical activity and a number of dimensions of mental health. Existing evidence suggests physical activity may prevent and treat mental illness, as well as enhance well-being for those with existing mental or physical illness. In terms of using structured exercise to treat mental illness, the most convincing evidence is in the area of clinical depression.

A Focus on Depression

Depression is a common mental illness that is prevalent in Canada and globally. It is estimated that 350 million people are currently affected by depression, and by the year 2020, it is predicted to be the leading cause of disability worldwide. The illness has a tremendous impact on quality of life and functioning, and it is associated with an increased risk of a range of secondary health conditions such as cardiovascular disease. The adverse health effects of depression extend beyond the individual. Approximately five million Canadians (or about one in seven people) use health services for a mental illness annually with a cost to the economy of well in excess of $50 billion. For a range of reasons, additional strategies to prevent and treat depression are required.

Prevention

In a systematic review, Mammen and Faulkner reviewed studies with a longitudinal design examining relationships between physical activity and depression. Most studies found a significant, inverse relationship between physical activity at baseline and depression at followup. This suggests that physical activity prevents the onset of depression. Given the different ways physical activity was measured in the reviewed studies, a clear dose–response relationship between physical activity and reduced depression was not apparent. Although meeting the Canadian Physical Activity Guidelines, established for health benefits, appear to be equally appropriate for the prevention of depression.
It is possible that these findings can be explained by methodological limitations or confounding factors. Perhaps these findings can be explained by bias in some way — for example, individuals with a physical disability may have both a higher risk of depression and lower levels of physical activity. Most studies, however, continue to demonstrate a relationship between physical activity and a decreased risk of depression while accounting for a wide range of possible confounding factors, such as disability, smoking, alcohol use and social status, in the statistical modelling. Overall, these types of studies suggest physical activity has a protective effect against developing depression.

**Treatment**

The most recent Cochrane review on the topic of exercise as a treatment for depression was conducted by Cooney and colleagues. They identified 39 randomized controlled trials (RCTs), which are typically understood as being the strongest type of research design. The meta-analysis of these RCTs showed a moderate effect size (-0.62 (95% confidence interval -0.81 to -0.42)) for exercise versus no treatment control conditions.

- When only considering the six RCTs with low risk of bias, a further analysis showed a small clinical effect in favour of exercise, which did not reach statistical significance.
- Additionally, the authors compared the exercise effects to those of cognitive behavioural therapy for the seven trials that had these comparisons and found no significant difference.
- Similarly, four trials compared exercise with antidepressant medication and no significant difference was found.

These findings suggest exercise might be an additional consideration for treatment — not necessarily better than traditional treatment approaches — but comparable in terms of depression outcome.

There are many unanswered questions such as the exact dosage and mode of exercise that might work best. One reason for this is the variability in the “dosage” of exercise that researchers examine. A recent review examined the dose characteristics of five RCTs reporting a significant treatment effect of exercise in the treatment of depression. They concluded that the exercise dose should likely use supervised aerobic exercise and occur three times weekly at moderate intensity for a minimum of nine weeks in the treatment of depression.

**Where do We Go from Here?**

There is a relatively large and consistent body of literature that indicates being physically active prevents depression and that exercise can alleviate depressive symptoms. Also, there is a range of plausible mechanisms that explain why physical activity may have an antidepressant effect. Because physical activity is an effective method for improving important aspects of physical health, the promotion of physical activity for depression can be seen as a “win-win”. From a population-health perspective, promoting physical activity may serve as a valuable mental health promotion strategy in reducing the risk of developing depression. Exercise also appears, on the surface at least, to be a cheap, safe, accessible option for treating depression.
How Common is Exercise Prescription for Depression?

Although there is no data to answer this question in Canada, some indication might be drawn from current clinical guidelines. While currently being revised, the Canadian Network for Mood and Anxiety Treatments (CANMAT) Clinical guidelines for the management of major depressive disorder (MDD) in adults considers exercise within the portfolio of “complementary and alternative medicine treatments”. These include strategies such as light therapy, acupuncture, nutraceutical therapies (e.g., omega-3 fatty acids), and herbal therapies (e.g., St. John’s wort).

Being categorized as such might conceivably signal to clinicians and the general public that exercise is not “mainstream” and possibly not even “medical treatment”. In terms of the specific guidelines regarding exercise, it was concluded that there was Level 2 evidence for the benefit of exercise as adjunct to medications in mild to moderate MDD, but not as monotherapy. Level 2 evidence is defined as “at least 1 RCT with adequate sample size and/or meta-analysis with wide confidence intervals.” It is not clear how these conclusions were drawn given the number of appropriately sized RCTs and meta-analyses actually cited by the authors in reaching these conclusions – including two large RCTs demonstrating an antidepressant effect equal to medication. Such a lukewarm endorsement regarding the evidence for exercise in the context of depression suggests broader barriers to the acceptance and promotion of exercise as a credible treatment option for depression.

Of more practical concern for treatment is whether there is a structure in place for referring individuals to supervised exercise programs that include exercise counselling by qualified practitioners. Both physical activity and mental health professionals have important roles to play in establishing inter-professional dialogue and collaboration in developing such structures. Without such collaboration, it will not be possible to make exercise, an evidence-based treatment option, more accessible to more individuals seeking help for depression. The 2016 Physical Activity Forum, hosted by the Alberta Centre for Active Living, will include a discussion of next steps for practitioners, decision-makers and researchers to support physical activity for the prevention and treatment of depression in Alberta. We welcome you to attend and be part of the conversation with other professionals from across the province. For more information, visit https://www.centre4activeliving.ca/our-work/physical-activity-forum/2016/
References


About the Author

Guy Faulkner, PhD, is a Professor in the School of Kinesiology at the University of British Columbia and also a Canadian Institutes of Health Research-Public Health Agency of Canada (CIHR-PHAC) Chair in Applied Public Health.

Dr. Faulkner is a Research Affiliate of the Alberta Centre for Active Living, serves on ParticipACTION’s research committee and is a member of their Research Work Group for the annual Report Card on Physical Activity for Children and Youth. He is also the founding editor of the Elsevier journal Mental Health and Physical Activity.