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## Physical activity: An alternative approach to treating depression

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### Abstract

A lack of physical activity stands out as a modifiable risk factor contributing to the development of depression. Exercise proves effective in alleviating depression symptoms across both clinical and non-clinical populations. Its impact extends to influential systems such as neurotransmitters and functions akin to antidepressants in the brain. Exercise fosters elevated neurotrophin levels while curtailing cortisol release through inhibition of the hypothalamic–pituitary–adrenal axis, resulting in a diminished psychological stress response. The positive outcomes derived from exercise parallel the effects of antidepressants among individuals grappling with depression. In light of these observations, this paper undertakes an analysis of exercise as a viable alternative to antidepressant treatments. The exploration encompasses a review of the depression concept, including its causes, signs, and symptoms. Additionally, the paper delves into the mechanisms and transformative effects of exercise on depression. Multiple studies underscore the merits of exercise for individuals with depression, suggesting that its effects may indeed serve as a plausible alternative to antidepressants in certain scenarios.

**Keywords:** Physical activity, depression symptoms, exercise

### Introduction

Depression is a persistent and debilitating mental condition that profoundly impacts mood, resulting in significant functional limitations in daily life. A prevalent health concern, depression affects approximately 350 million individuals worldwide. Statistically, one in every five people is expected to experience depression during their lifetime (Hidalgo and Dep-exercise Group, 2019) <sup>[9]</sup>. Globally, major depressive disorder (MDD) stands as the foremost cause of disability, with a lifetime prevalence of around 17%. Depressive disorders rank as the second leading contributor to the global burden of illness (Schuch *et al.*, 2018) <sup>[10]</sup>.

This condition manifests diversely, giving rise to a broad spectrum of distressing symptoms. Its impact extends beyond the individual, potentially leading to strained relationships, family discord, heightened susceptibility to substance abuse, diminished resilience in the face of serious illnesses, and an elevated risk of mortality, not solely attributable to the threat of suicide.

This condition stands among the primary contributors to disability, prompting substantial financial investments in its treatment. Beyond its direct impact, depression is recognized as a potential precursor to other health disorders. Recent research has revealed its association with heightened mortality and morbidity in individuals with diabetes. Notably, in pregnant women, depression poses a dual threat, affecting both maternal well-being and the health of the child. Furthermore, its influence extends to the dynamics of labor and may have enduring effects on the mother-child relationship in the years that follow.

Depression is typically addressed through the use of either antidepressant medications or psychotherapy. Nevertheless, for those grappling with mild, moderate, or severe depression, medication costs can be prohibitive, while psychotherapy may be inaccessible and offer limited effectiveness. The use of antidepressants is associated with significant adverse effects, as a substantial number of patients exhibit non-responsiveness or encounter side effects. These medications have been linked to undesirable consequences such as insomnia, sexual dysfunction, and overall dissatisfaction, among other issues.

In response to the side effects associated with pharmacological interventions, healthcare professionals are exploring non-pharmacologic alternatives, with a growing emphasis on the role of exercise have extensively documented the widespread recommendation of physical exercise in the treatment of depression. The American Psychological Association (2019) has recently advocated for exercise monotherapy, positioning it as a complementary and alternative option for adults facing depression when psychotherapy or pharmacotherapy proves ineffective or unacceptable. A multitude of recent studies further highlight the effectiveness of physical exercise in the treatment and management of depressive disorders. The protective benefits of regular physical activity extend across diverse individuals, irrespective of age or gender.

### Signs and symptoms of depression

Various experts have identified multiple signs and symptoms crucial for diagnosing depression. For instance, Kołomanska *et al.* (2019) [5] have delineated primary indicators, including persistent sadness, diminished interest, prolonged feelings of fatigue, and a sustained loss of energy lasting at least two weeks. Additionally, depression is often accompanied by anxiety, sleep disturbances, alterations in appetite, difficulties in concentration, and emotions of guilt, low self-esteem, or thoughts of self-harm, as highlighted by Brupbacher *et al.* (2019) [2]. Other manifestations encompass a loss of pleasure or interest, persistent fatigue, feelings of worthlessness, impaired cognitive function, suicidal plans, or attempts.

### Effects of exercise on depression

Engaging in regular physical activity or exercise yields a spectrum of mental health advantages, encompassing a lowered risk of depression and anxiety, the effective management of existing conditions, and the cultivation and preservation of mental functions. The positive impacts of exercise and physical activity align with the effects of anxiolytics and antidepressants, applicable to both individuals in good mental health and those grappling with depression (Rizvi and Khan, 2019) [7]. Brupbacher *et al.* (2019) [2] observed no significant distinctions between exercise interventions and antidepressant medication. The potential benefits extend to individuals dealing with depression, with exercise demonstrating comparable effectiveness to traditional antidepressant treatments. Haller *et al.* (2018) [11] presented evidence suggesting that exercise may bring about a substantial reduction in depressive symptoms, comparable to the outcomes achieved through pharmacotherapy. Numerous recent meta-analyses have corroborated the antidepressant effects of exercise on depressive symptoms (Haller *et al.*, 2018) [11]. In the context of pregnancy, Kołomanska *et al.* (2019) [5] highlighted the efficacy of both physical activity and psychotherapy in mitigating the risk of depression during the perinatal period. Notably, they underscored the limitations in treating depression during pregnancy, advising against the use of antidepressants. It is noteworthy that even simple practices such as regular walks, characterized by low-intensity exercises, can markedly alleviate depression symptoms in pregnant women.

Multiple studies have demonstrated the correlation between

physical exercise and a decreased prevalence of depressive disorders, positioning exercise as a viable alternative in depression treatment. For example, Brupbacher *et al.* (2019) [2] presented findings on the impact of exercise on depressive symptoms, which have been synthesized in numerous meta-analyses. Systematic reviews have further identified moderate-to-large effect sizes associated with aerobic, resistance, and yoga exercises in alleviating depression. Notably, there were no significant disparities between these exercise interventions and antidepressant medication. In the case of depressive patients, aerobic exercise interventions were found not only to enhance cardiorespiratory fitness but also to address the increased risk of cardiovascular mortality and morbidity associated with depression (Brupbacher *et al.*, 2019) [2]. Additionally, Morres *et al.* (2018) [12] highlighted the substantial and widespread antidepressant effects of aerobic exercise in adult patients diagnosed with major depression through mental health services.

The antidepressant impact of aerobic exercise has been substantiated through various studies involving patients with Major Depressive Disorder (MDD), as demonstrated by Heinzel *et al.* (2018) [3]. Brett *et al.* (2018) [1] conveyed that both aerobic and resistance exercises yield positive outcomes in mitigating depression. Exercise interventions emerge as promising approaches for alleviating depressive symptoms, offering advantages such as freedom from the adverse effects and financial burdens associated with antidepressant medications and psychotherapy. Empirical evidence lends support to the consideration of resistance exercise training as a viable alternative or supplementary therapy for managing depressive symptoms.

### Mechanism of depression changes with exercise

Recent research indicates that exercise promotes the generation of new nerve cells and releases proteins, such as brain-derived neurotrophic factor, enhancing the survival of nerve cells and consequently reducing the psychological stress response (Hidalgo and Dep-Exercise Group, 2019) [9]. Furthermore, Heinzel *et al.* (2018) [3] noted that the underlying physiological and, specifically, neurobiological mechanisms driving this effect remain not fully understood. Earlier hypotheses, primarily based on observations in healthy individuals, proposed that exercise leads to an improvement in cardiorespiratory fitness (e.g., maximum oxygen uptake). This, in turn, influences neurotrophins—particularly brain-derived neurotrophic factor—stress-related hormone cortisol, and the brain's oxygen and energy supply. Elevated neurotrophin levels were found to diminish cortisol release by inhibiting the hypothalamic–pituitary–adrenal axis, resulting in a reduction in the psychological stress response and a positive impact on mood.

### Conclusion

Exercise exerts a notable antidepressant impact on individuals dealing with depression. Research has consistently demonstrated its efficacy in mitigating depressive symptoms, positioning it as a potential alternative to antidepressants in certain situations. It is imperative to underscore the significance of policies aimed at enhancing physical activity levels among individuals, thereby allowing them to reap the associated benefits of exercise.

**References**

1. Brett RG, Cillian PM, Mats H, Jacob DM, Mark L, Matthew PH. Association of efficacy of resistance exercise training with depressive symptoms metaanalysis and meta-regression analysis of randomized clinical trials. *J Am Med Assoc Psychiatry*. 2018;75(6):566-576. Available from: <https://www.gwern.net/docs/psychology/2018-gordon.pdf>.
2. Brupbacher G, Gerger H, Wechsler M, Zander Schellenberg T, Straus D, Porschke H, *et al*. The effects of aerobic, resistance, and meditative movement exercise on sleep in individuals with depression: Protocol for a systematic review and network meta-analysis. *Syst Rev*. 2019;8(105):1-10. Available from: <https://www.systematicreviewsjournal.biomedcentral.com/track/pdf/10.1186/s13643-019-1018-4>.
3. Heinzl S, Rapp MA, Fydrich T, Ströhle A, Terán C, Kallies G, *et al*. Neurobiological mechanisms of exercise and psychotherapy in depression: The SPeED study rationale, design, and methodological issues. *Clin Trials*. 2018;15(1):53-64.
4. Khoshnab LP, Nikseresht A. Comparison of the effect of aerobic exercise and antidepressant medications on depression and sexual desire of depressed middle-aged women. *Int J Women's Health Reprod Sci*. 2017;5(2):119-122.
5. Kołomanska D, Zarawski M, Mazur-Bialy A. Physical activity and depressive disorders in pregnant women a systematic review. *Medicina*. 2019;55(212):1-16. Available from: <http://www.mdpi.com/journal/medicina>.
6. Gartlehner G, Gaynes BN, Amick HR, Asher GN, Morgan LC, Coker-Schwimmer E, *et al*. Comparative benefits harms of antidepressant, psychological, complementary, and exercise treatments for major depression: An evidence report for a clinical practice guideline from the American College of Physicians. *Ann Int. Med*. 2016;164(5):331-341.
7. Rizvi S, Khan AM. Physical activity and its association with depression in the diabetic hispanic population. *Cureus*. 2019;11(6):e4981. Royal College of Psychiatrists. Position Statement on Antidepressants and Depression. London, United Kingdom: Royal College of Psychiatrists; 2019. [https://www.rcpsych.ac.uk/docs/defaultsource/improving-care/better-mh-policy/positionstatements/ps04\\_19---antidepressants-and-depression.pdf?sfvrsn=ddea9473\\_5](https://www.rcpsych.ac.uk/docs/defaultsource/improving-care/better-mh-policy/positionstatements/ps04_19---antidepressants-and-depression.pdf?sfvrsn=ddea9473_5).
8. Alexandrino-Silva C, Ribeiz S, Frigerio M, Bassolli L, Alves T, Busatto G, Bottino C. Prevention of depression and anxiety in community-dwelling older adults: The role of physical activity. *Arch Clin Psychiatry*. 2019;46(1):14-20.
9. Hidalgo JL. Effectiveness of physical exercise in the treatment of depression in older adults as an alternative to antidepressant drugs in primary care. *BMC psychiatry*; c2019, 19.
10. Schuch FB, Vancampfort D, Firth J, Rosenbaum S, Ward PB, Silva ES, *et al*. Physical activity and incident depression: a meta-analysis of prospective cohort studies. *American Journal of Psychiatry*. 2018 Jul 1;175(7):631-48.
11. Haller S, Vernooij MW, Kuijper JP, Larsson EM, Jäger HR, Barkhof F. Cerebral microbleeds: imaging and clinical significance. *Radiology*. 2018 Apr;287(1):11-28.
12. Morris M, Ogan C. The Internet as mass medium. In *The Media, Journalism and Democracy*. Routledge; c2018 Jan 17. p. 389-400.