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Review Article

Pragmatic Review to Contemplate the Subtleties of Exercise to Combat Depression

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A B S T R A C T

Depression is a major health burden associated with poor quality of life and impaired functioning. Depression is a leading cause of disability worldwide and is associated with profound economic costs. Depression is usually treated with antidepressant medications and psychological therapy or a combination of both. Exercise can be considered as a treatment option for the management of depression. The aim of this study is to investigate the effect of exercise in the prevention of depression. It is a common psychological disorder, affecting about 121 million people worldwide.

Keywords: Depression, Health, Life, Antidepressant medication, Exercise

Introduction

Depression is a state of low disposition that can affect a person's behaviour, emotional state, thoughts, and physical well-being.

The Symptoms of Depression are as Follows

- Slow down on speech and movements
- Worthlessness
- Feeling insignificant
- Weakness
- Reluctance
- Pessimism
- Slow down on thoughts[1]

According to WHO (World Health Organization), "depression is the leading cause of disability worldwide and is a major contributor to the overall global burden of disease. More women are affected by depression than men".[2] Depression is the most common mental disorder, it has a high rate of chronicity and recurrence and it is a significant risk factor for suicide, and causes workforce loss. So, depression is a serious health problem at the individual and community levels.[3]

"Exercise is defined as repetitive physical activity that is produced as a result of the contraction of skeletal muscles and requires energy expenditure above basal metabolic rate." It is a planned, structured, and voluntary action that is aimed at improving the components of physical fitness.[4]

Benefits of Regular Physical Activity

- Diminishes morbidity and mortality

- Provides a person to be socio-economically more efficient
- Upsurges the quality of life
- Positive effects on both physical and mental health[5]

While there are many studies on the effects of exercise on physical health, there are not enough studies on its effects on mental health.[6] Today, depression is the most common disease throughout the world. Exercise can be used as both a direct or complementary treatment in the treatment of mild and moderate symptoms of depression. It is thought that exercise may be an important interventional method in preventing depression.[7,8]

Paybacks of Exercise in Depression and Anxiety

Depression and anxiety can be reduced with the help of regular exercise by:

- Release of various natural brain chemicals including endogenous cannabinoids as well as endorphins which can make one feel good and healthy.

Many psychological and emotional benefits can be obtained by doing regular exercise. It can help you to:

- Gain confidence
- Get more social interaction
- Cope in a healthy way[9]

Exercise as Protective Factors in the Episode of Depression

Depression has negative effects on the quality of life of millions of people around the world.[10] Complementary therapies such as exercise, meditation, and yoga are very effective in the treatment of depression and anxiety. Physical exercise can give a positive result when it is tried as a complementary approach to standard pharmacological and psychotherapeutic treatment approaches.[11,12] Some studies have reported that exercise may be as effective as psychological interventions and drug therapy in depression treatment.[13,14] Exercise in the treatment of depression did not show any side effects like drug such as withdrawal symptoms and weight gain, dry mouth, or insomnia.[17] However, it is strongly recommended that exercise is used as adjunctive therapy, when considering that it has potential health benefits such as weight loss.[18] Many studies in the systematic review conducted by Mammen have reported that exercise can have great potential in protection as well as treatment and that there is increasing evidence on this issue. Moreover, it has been suggested that active individuals should maintain their physical activity habits and that inactive individuals should begin a physically active lifestyle. Some studies show that regular physical activity can improve mental as well as physical health of the population.[19] New findings demonstrate that exercise can be recommended as an adjunct to the use of medications in the first-line treatment for mild to moderate depression[20] as an alternative to cognitive behavioural therapy[21] and in the prevention of depression in healthy populations.[22]

Exercise and Depression - Mechanistic Pathways

Due to the multiple possible mechanisms, exercise exerts a beneficial effect on depression. A number of biomarkers and parameters are altered in patients suffering from depression. Such biomarkers and parameters can be modulated by physical exercise leading to mitigation of depressive symptoms. The helpful impact of exercise on some of the biomarkers is explained below.

Effect of Exercise on Neurotransmitters, Neurotrophins and Neurogeneration

Exercise has been shown to increase the availability of neurotransmitters such as 5-HT, dopamine, and noradrenaline in the brain.[23-25] Exercise stimulates the growth of nerve cells and the release of proteins which are beneficial for the health and survival of nerve cells.[26] Brain-Derived Neurotrophic Factor (BDNF) has a prominent role in neuroprotection, neurogenesis and synaptic plasticity.[27] The concentration of BDNF is known to be decreased in patients with MDD and is increased with anti-depressant drug treatment.[28] Exercise upsurges concentration of BDNF in patients with depression.[29] There are numerous studies that have shown that exercise improves levels of BDNF in the hippocampus.[30-32] The higher serum levels of BDNF are associated with larger hippocampal volume.[33] The hippocampal capacity is reduced in patients with depression[34,35] and antidepressant treatment allows the formation of new cells in the hippocampus.[36] An increase in hippocampal volume and improvement in short term memory was observed in patients who underwent aerobic exercise for 3 months.[37] In a single-blind RCT, a moderate-intensity aerobic exercise intervention carried out in older adults for one year was effective in increasing the size of hippocampus. The volume of left and right hippocampus was increased by 2.12% and 1.97% respectively.[38]

Modulation of Hypothalamic-pituitary-adrenal Axis

The patients with MDD experience hyperactivity of the Hypothalamic-Pituitary-Adrenal (HPA) axis secondary to hypersecretion of Corticotropin-Releasing Hormone (CRH). In patients suffering from depression the level of cortisol in plasma, urine and cerebrospinal fluid (CSF) are increased.[39] Exercise also triggers the HPA axis and increases the levels of cortisol. The cortisol serves as a negotiator between chronic stress and depression and is considered to link various cognitive deficits. In chronic stress and exercise the level of basal cortisol is elevated.[40] Although acute exercise sharply increases the levels of cortisol, chronic exercise may also increase basal cortisol levels.[41,42] Exercise promotes

structural and functional plasticity, improve cognition and stress coping and exert antidepressant-like effects. In one more review, no significant long-term effects of exercise in cortisol resting levels were found.[43] Regular exercise leads to a reduced response to various forms of stressor challenge as it has neuroproductive effects in contrast to acute exercise which itself serves as a stressor.[44]

Conclusion

The core features of depression symptoms include low mood, decreased interest or pleasure in most or all activities of the day, decreased motivation, increases or decreases in appetite and weight, insomnia, psychomotor agitation and suicidal thoughts with or without suicidal plans or attempts among people with depression, exercise can be used for managing symptoms. Also, a robust body of evidence from randomized controlled trials demonstrates that exercise is effective in treating depression. Exercise helps in reducing depression and anxiety by endorphins and taking your mind off worries. Exercise has demonstrated efficacy in reducing symptoms for people with depression. Despite its effectiveness, similar to other treatments, some people may benefit more from exercise and identifying these potential predictors of response is necessary to deal with patients' and professionals' expectations.

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