**Causes and Potential Benefits of Major Depressive Disorder**

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**Major Depressive Disorder (MDD) is a life altering illness that stems from neurological issues such as neuroinflammation, cerebral volume alterations, and functional changes within the brain and body. These issues are not only shown to lead to MDD but have also in some cases caused cognitive dysfunction. Many people who are diagnosed with these neurological disorder automatically assume that the only treatment is medication or therapy. However, recent studies have shown otherwise. New studies have explained how something as simple as exercise can be used as a treatment for a neurological disorder that is so life altering for people affected. Not only is exercise a form of treatment for various disorders and will provide the same treatment as therapy and medication, but it is also positively impacting a person’s overall health in the process. Although neurological disorders have such a negative effect on a person’s life, the fact that exercise may be able to help improve their mental health while also improving their overall physical health is exciting and poses a more positive outcome than medication or therapy.**

**Introduction**

Major depressive disorder (MDD) is a psychiatric disorder that a number of people struggle with that unfortunately causes their quality of life to be impacted in a negative way. The cause of MDD is shown to stem from neurological issues such as neuroinflammtion, oxidative stress, (Ignacio) cerebral volume alterations, and functional changes in brain networks. (Najjar) Studies also show that neuroinflammation and oxidative stress are linked to neurovascular dysfunction with blood brain barrier hyperpermeability which studies also show causes MDD. With that being said it is also stated within the same study that they are unsure of the accuracy of the blood brain barrier dysfunction. (Najjar) A few of the tests regarding how changes in the body cause MDD are used to detect the specificity of MDD and many other neurological disorders. A few of these tests include vivo neuroimaging, neuropathological human studies and animal studies. (Ignacio) These tests were performed to compare brain tissue between patients who have been diagnosed with MDD, to detect other disorders that might be reoccurring in patients with MDD, and for measuring relative uptake ratio of blood flow. These results are relevant for many reasons, one of those being that results have shown that people who suffer from MDD often also struggle with other major psychiatric disorders or cognitive dysfunctions, but the additional disorder or dysfunction is not the same in every patient. A few of the additional disorders found among patients diagnosed with MDD include impairment psychosocial functioning, (Ignacio) epilepsy, stroke, and multiple sclerosis. (Najjar) The impact that these cognitive dysfunctions and neurological disorders, such as MDD, have on a person’s life is can be detrimental to their health. In the article “Cognitive dysfunction and work productivity in major depressive disorder” they explained just a little more in detail how the lives of people suffering from this disorder are actually effected. The main example they gave was how cognitive dysfunctions such as MDD may be having a more significant impact on work productivity of people diagnosed than we are aware of. (Clark) When it comes to considering treatments, options such as antidepressants and cognitive behavioral therapy are common. However recent findings have shown that exercise may be a comparable treatment.

**Recent Progress**

More recent studies have shown exercise to be an effective treatment for Major Depressive Disorder. (Ignacio) Not only has exercise been shown to help with MDD but it is also beneficial for treating a number of other disorders and chronic illnesses. Although exercise may not seem like it would have enough of an impact to treat depression, results from numerous tests have shown otherwise. Physical exercise serves the same purpose as other treatments because of a few alterations that are made within the body. Some of these alterations include promoting molecular changes to force the nervous system from pro-inflammatory to anti-inflammatory, releasing pro-inflammatory cytokines, altering levels of serotonin available for hippocampal neurogenesis, and the releasing of noradrenaline in the hippocampus. (Ignacio) These changes that occur throughout the body during exercise, allowing it to be considered a treatment. Additionally, the exercise is also improving the overall health of a person, such as their cardiovascular and respiratory functions.

**Discussion**

When considering options for treating MDD and other neurological disorders, people automatically think that the only available treatment options are traditional treatments such as medication and therapy. Common medications used by the majority of people diagnosed with different forms of depression, including major depressive disorder, are antidepressants. The reason people do not consider exercise as a treatment may be because they don’t think that it will actually benefit them or they may not be aware of the science behind the communication between our body during exercise and our nervous system. Although this may be the case for some people who chose to use other forms of treatment, other people may not have access to these other options due to money or other circumstances. For people in this situation, finding out that exercise is a form of treatment equal to the mainstream options but without the financial burdens could have a significant impact on them for the rest of their lives.

This article does a great job of explaining that although those treatments are beneficial, exercise does the same job and has the same results as other forms of treatment even though it is much less common than other options. It is also interesting how pieces of the body and brain can be altered to affect a person’s quality of life to such an extreme. This is very important for anyone suffering from MDD or a similar disorder because things such as a decrease in work production are significant and could cause a person to lose their job. This is only one example of things in everyday life that people diagnosed with MDD and other disorders may suffer from. After reading these articles, it is very interesting that just from physical activity, our body makes alterations allowing for a treatment for depression that is effective by itself or alongside other forms of treatment. A further study could be about the connection between neurological disorders and uncommon treatments such as exercise. Another interesting topic may be whether or not certain physical exercises allow for faster results or if maybe a specific exercise is better for one neurological disorder than another. If further studies are able to support that more fine details relating specific exercises to specific mental illnesses, it would be even more beneficial more people may begin using exercise as a form of treatment and will help their overall health in the process.

**References**

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