

Effect of exercise on depression: literature review



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Depression is a disorder which will affect mood, thought and behaviour. Although the majority of the population will at some point in their lives experience low points and the 'blues,' depression itself is when these feelings begin to take over and affect the degree to which someone can function (Artal & Sherman, 1998).

The symptoms of depression can include a persistent sadness and feelings of emptiness, hopelessness and pessimism. People with depression will also often exhibit physical symptoms which can include decreased energy and fatigue, changes to sleeping and eating patterns (increased or decreased levels of) and increased experience of illness from headaches, digestive disorders and chronic pain episodes. (Depression Alliance) Anhedonia – the loss of joy from things or events that were once pleasurable, often including a reduced sex drive is also commonly reported by sufferers. As a result of the symptoms associated with depression and depressive disorders (major depression, bipolar) people can often become increasingly socially withdrawn by both reducing their contact with others, and through reducing their activities such as going out or participation in hobbies. Such withdrawal can also incur further psychological impact, whereby people begin to lose self-esteem and belief that they can complete activities they once had, which perpetuates to increase the depression and low mood. Major depression can have serious long term consequences – there is an increased risk of self harm and suicide, with estimates of approximately 15% of the severely depressed committing suicide (Artal & Sherman, 1998).

There is no one single root of depression that can explain all cases. People may experience depression due to a number of different factors; physical

(developing a serious disease, impaired function of brain chemicals), environmental (uncertain housing situation, living in a neighbourhood with a high crime rate) social (inter-personal relationship difficulties or divorce, loss of a job, moving away from home) or traumatic events (bereavement, experiencing a natural disaster, domestic abuse), or even through a combination of these triggers.

Depression is a clinical disorder and as a result will often need professional intervention in order to begin the road to recovery. Negative responses from others in regards to attitudes for people to 'pull their socks up' and 'snap out of it' are described by many with the condition as making the situation worse through causing distress and upset as they are unlikely to be able to do this. Treatment of depression thus usually involves professional help, through a number of available avenues for treatment types – successful recovery programmes are noted to often involve a combination of treatment methods (Lam & Kennedy, 2004).

Medication such as antidepressants like prozac or zoloft, and talking therapies such as cognitive behavioural therapy (CBT), counselling are tried and tested means of helping alleviate both the condition and its associated symptoms (Rethink). Existing treatments do not unfortunately work for everyone, and limitations of these existing treatments can include antidepressants which take weeks or months to have an effect or where side effects are at a level whereby compliance to the designated regimen is not adhered to; or the difficulties with which many people can have in accessing psychological therapies / talking treatments where waiting lists can be long

or even where certain services are not even available in an area of residence.

As a result of such factors, new ways of treating and managing psychological conditions like depression are being evaluated through research and investigation. One of these new methods is through the use of exercise, which has been increasingly suggested and supported through contemporary literature on this as an intervention. There are a number of articles which look at the link between exercise and depression and how exercise can help alleviate depression-related symptoms; and relief from the condition altogether (Halliwell, 2005; Bayak et al, 2000). Some studies report exercise treatment efficacy as being equal to medication treatments (Blumenthal et al, 1999), but a good number of published studies conclude that exercise therapy would optimise treatment within a combination therapy regime – although one notable exception to this is the Babyak et al (2000) study which found the exercise group as superior in results to both the medication group, and the combination (exercise and medication) group.

Babyak et al (2000) compared experimental depression treatment groups of exercise, medication and a combination of exercise and medication. Results of this 10-month study concluded that use of a modest exercise plan (30 minutes of a 70% maximum heart rate workout 3 times per week) is an effective treatment for depressed patients who hold a positive view to such a treatment.

Overall it has been suggested that 85% of people who use exercise therapy have found it helpful (Halliwell, 2005), and as a result of such studies, NICE

guidelines on treatment of (mild) depression states that patients of all ages should be advised of the benefits of following a structured and supervised exercise programme for between 10 – 12 weeks (Hughes, 2005; Halliwell, 2005).

The way in which exercise therapy exerts this effect on depression is suggested within the literature as through two possible routes.

The first route is physiological. Physical exertion occurring through exercise is known to cause chemical reactions within the body that result in the release of endorphins (a type of hormone) to five times their resting rate. that is secreted from the pituitary gland into the bloodstream during times of pain or stress. Through blocking the release of certain neurotransmitters in the brain, endorphins stop pain signals being received and therefore act as the body's own 'natural pain killers'. This analgesic effect also extends to causing a feeling of euphoria. Endorphins thus work towards both mood-enhancing and pain relieving effects and so will work towards alleviating depressive symptoms such as headaches, whilst also boosting positive moods. In relation to depression specifically, it has also been suggested that exercise can reduce physiological responsivity of the body to stressors, which can lead to improvements in psychological well-being, and feelings towards ability to cope. (Steptoe, Kimbell & Basford, 1998). Lastly, neurochemicals are also believed to be an important physiological means by which exercise improves depression. Research into the physiological components of depression has demonstrated low levels or ineffective transmission of neurotransmitters such as noreinephrine and serotonin and thus may play a role in depressive symptomology – as exercise increases the release of

neurotransmitters it is believed this increased availability (which is the same effect that many antidepressants exert) is behind improved mood (Ransford, 1982) after exercise.

Improvement in neurotransmitter functionality, more specifically improved serotonin availability, has also been suggested as a way in which exercise appears to help people restore normal sleep patterns, important when considering that disruption to sleep is a very common symptom experienced by people with depression. This is suggested to stem from the fact that serotonin has a role of inputting to the SCN (suprachiasmatic nuclei) where our internal body clock which regulates our circadian rhythms, is located. As serotonin is often found to be altered (decreased) in those with depression, improved availability through exercise is a way in which depressive symptoms of disturbed sleep may be helped. (Solberg, Horton & Turek, 1999)

The second proposed way in which exercise is believed to help depressed individuals is the psychological route. Participation in exercise can invoke positive feelings of self-belief and accomplishment, through which self-esteem can be improved – the so-called Mastery hypothesis (Babyak et al, 2000) where achievement makes us feel better about ourselves. This is an important aspect as the way in which social withdrawal is so often seen in those that are depressed can negatively impact self-esteem. (MIND) Along these lines involvement in exercise activity also raises the possibility of improving social support through providing opportunity for social interactions with others, with social support renowned for its importance in recovery from depression. (MIND) One of the other more psychological explanations behind

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exercise and its affect on depression is the Distraction hypothesis. Quite simply, through the distraction of the physical activity we are temporarily able to shift our focus and thoughts away from the stressors or everyday difficulties which may be contributing to the depression and low mood.

Evidence for exercise in the treatment of depression can also be supported through literature from another angle. Participation in exercise has been studied in its protective capacity against depression (Artal & Sherman, 1998), with findings that individuals categorised as participating in lower levels of exercise activity were at higher risk of developing depression than individuals who had regular and high levels of physical activity (Camacho, 1991).

On the back of available research such as that reviewed for this essay, the use of exercise in the treatment of medical conditions is gaining credibility within the medical professional to stem beyond treatment for purely physically based conditions such as heart disease and obesity, but as a means of helping those with psychological conditions like depression. Authors promoting use of exercise as a treatment for depression also often comment on the positive health benefits it will bring alongside amelioration of depression-related symptoms that other treatments for depression cannot bring (van de Vliet et al, 2003). Exercise itself is associated with positive health benefits including reducing body fat, lowering blood pressure, strengthening bones, and muscles and improving the body's cardiovascular system. Exercise is therefore a potentially more positive treatment regimen as the experience it involves does not include the negative side effects which are commonly reported from pharmacological treatments. (Halliwell, 2005).

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In summary, there is a vast array of literature that supports the integration of exercise therapy within a treatment programme for a more effective and positive treatment experience for people with mild to moderate depression. The severity of the depression will influence whether exercise is a practical treatment to provide, as more severe cases are less likely to be able to adhere to such a treatment regimen (potentially as a result of more severe physical symptoms and fatigue that may stop them from any higher level of physical exertion). As a result it is found throughout the literature that for exercise therapy to be a success and exert a therapeutic benefit, individuals must have some level of positive feeling towards participating in such a programme – thus exercise therapy is recommended for mild not moderate, but not severely depressed individuals.

Not only does the research in this field demonstrate the ability of exercise to alleviate both mood and physical symptoms through the body's release of endorphins, but can aid psychological and physical recovery through improved self-esteem through mastery, and with all the physical benefits that an active lifestyle brings. Exercise on prescription is now available throughout the UK via GP's, and so future research is thus needed into developing specific treatment programmes that will optimise both levels and types (e. g. aerobic versus mindful; Netz, 2003) of exercise, and investigating the ways that these need to be individualised (Artal & Sherman, 1998) potentially by condition, patient demographic etc for the treatment and long term care of those with depression. Research by the Mental Health Foundation does suggest however that awareness amongst the general practitioner community about the capability and availability of

exercise programmes for depression is low – only 5% of GP's are thought to offer exercise within the 3 most common treatment options they offer to their patients. (Mental Health Foundation, 2005) so raising awareness of exercise within the medical community is also a key future action within the promotion of exercise therapy.

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www.mind.org.uk

www.rethink.org