

The Impact of Physical Exercise on Short and Long-Term Psychological Effects

Comment [JN1]: Good try with the title (being specific and direct) – but does this title actually make grammatical sense?

What are the short and longer-term psychological effects of physical exercise and what causes these effects? Discuss with reference to psychological theories and research.

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Psychology 102, University of Canberra, Semester 2, 2009)

Abstract

Comment [JN2]: Strong Abstract

Physical exercise has been found to have overall positive effects on a variety of short and longer-term physiological effects. High frequency or routine exercise of 30 minutes a day can have an impact lasting longer than low-frequency; it can reduce symptoms of psychological disorders such as depression or schizophrenia, whilst at the same time increasing overall well-being in those with disabilities such as cancer. Numerous studies covering the above psychological effects have been conducted on older adults, with similar results. Short-term effects of physical exercise, such as improvement in mood and self-efficacy, have been found to have a cascade effect, in that by increasing mood and self-efficacy, one will be more likely to commit to an exercise routine. Cognitive functioning, including memory and learning, has also shown improvement following aerobic exercise.

Comment [JN3]: Useful theory, but were there also other theories considered?

The Impact of Physical Exercise on Short and Long-Term Psychological Effects

Physical exercise can result in a number of short-term and long-term psychological effects. Exercise can be quite effective in improving self-esteem and mood as well as reducing symptoms of psychological disorders such as schizophrenia and depression (Chung & Baird, 1999). An improvement of overall cognitive functioning has also been linked to daily physical exercise. There are several forms of exercise which can impact on the above short-term and long-term psychological effects differently. Intensive and continuous exercise primarily utilising the heart and lungs is aerobic exercise, whereas exercise which targets an increase in muscular fitness and flexibility such as resistance training or weightlifting is anaerobic exercise (Chung & Baird, 1999). Older adults in particular, or even those suffering from a disability or from chronic illness utilise physical exercise to improve specific psychological effects such as self-efficacy, self-esteem and mood in the short-term (Graham, Kremer, & Wheeler, 2008).

Comment [JN4]: APA style:
Indent paragraphs

Mood is a temporary, short-term psychological state which is heavily affected by physical exercise. Edwards (2006) covers the relationship between regular physical exercise and mood. The main findings in his study links regular exercise to a positive improvement in mood (Edwards, 2006). Hanna et al (2008) studying mood in cancer survivors, likewise found an improvement, not only in physical function and fatigue, but also found a positive change in mood. A low to moderate level of aerobic and resistance exercise was utilised in this study (Hanna et al.). Probable causes for elevated mood following and during exercise include reduced muscle tension, increase endorphin release, enhanced fitness to fight stress and disease, exercise being an outlet for anger and

Comment [JN5]: APA style:
Cite all authors on first citation

hostility, and enhanced feelings of self-esteem or self-efficacy (Edwards, 2006). The question of just how much exercise is sufficient has been shown by Hansen, Stevens and Coast (2001) to be around 30 minutes daily. Their study involved 3 groups and measured time intervals of aerobic exercise involving stationary bikes. Their results showed progressive improvement which reached a plateau at 30 minutes past commencement of exercise with no further improvement over longer periods (Hansen, Stevens, & Coast, 2001). Bodin and Martinsen (2004) suggested that mood requires a prerequisite before benefits can occur during and following exercise. Their studies indicated that an increase of self-efficacy directly led to an increase in mood.

Self-efficacy is a short-term psychological effect which has a two-way relationship with exercise. On one hand, it is a psychological effect which can motivate commencement of physical exercise, on the other hand, it is itself a psychological? fuelled by physical exercise, in that a higher level of self-efficacy correlates to a higher level of commitment to an exercise routine. This concept of self-efficacy and exercise behaviour association

was shown by study involving strength-training with older adults. Participants with higher self-efficacy and control beliefs after 6 months were more likely to be continuing their exercise routine past the 9 and 12 month mark (Neupert, Lachman, & Whitbourne, 2009). Bodin and Martinsen (2004) suggested increasing self-efficacy is a prerequisite for a positive increase in mood. Their study involved two groups, one exercising on stationary bikes and the other group partaking in martial arts. The self-efficacy level for the group on stationary bikes was high, whereas the martial arts self-efficacy level of the participants was low, following the exercise the level of self-efficacy had significantly

Comment [JN6]: Useful theoretical construct/proposal

improved in the martial arts group, whereas the stationary bike group only slightly increased. The mood level of the martial arts group was greater than that of the stationary bike group due to the greater increase in levels of self-efficacy from low to high, rather from high to slightly higher (Bodin & Martinsen, 2004).

Stemming from the positive influence physical exercise has on self-efficacy, is well-being. Well-being is a broad psychological effect which could be short-term or long-term, based on how it is measured. Regardless of how it is defined as a psychological effect, a positive impact on well-being has been shown to have a positive influence on factors such as sociability, motivation, health and cognition (Lucas & Diener, 2004). Edwards (2006) defines psychological well-being as a profile, composed of mood, lifestyle, satisfaction with life, sense of coherence, fortitude, stress management, coping and total well-being score. His study found significant improvements in total well-being score with regular exercise, especially in short-term psychological effects such as mood, as aforementioned. Validation of the link between exercise and improvement in psychological well-being is assisted by many more studies mirroring the above results (Rendi, Szabo, Szabó, Velencei, & Kovács, 2008; Sjögren et al., 2006).

Comment [JN7]: Using citation software is great – but make sure to check it! ©

There are many studies focusing on the direction well-being takes following physical exercise in the elderly. A study conducted on how many? elderly people with no clinical disorders (Netz, Wu, Becker, & Tenenbaum, 2005) focused on the following components of well-being: emotional (anxiety, stress etc), self-perceptions (self-efficacy, self-esteem etc), bodily (pain and perception) and global perceptions (such as life satisfaction). They

found that different levels of aerobic exercise affected different components of well-being. Overall, improvements in cardiovascular capability and general fitness improved well-being as a whole. Another study focused more on bodily self-concept in older adults (Stoll & Alfermann, 2002). They similarly found that there were positive effects from physical exercise on well-being. Exercise as an intervention, has been also been shown to improve quality of life, overall fitness and function in cancer patients and survivors (McNeely et al., 2006). A broad study on individuals with stroke, cancer, diabetes and arthritis found that exercise was integral in managing mood problems that come with disability, and as such, helped limit further illness-associated psychological distress (Graham et al., 2008). Moreover, a 16-week exercise intervention in HIV-1 positive individuals has also shown improvement in psychological and physical well-being (Rojas, Schlicht, & Hautzinger, 2003).

Learning and memory is another psychological effect which exercise appears to improve, either for the short-term or long-term. In a study carried out by Coles and Tomporowski (2008), tests involving free-recall task were carried out on a group of young adults to gauge the affect of exercise on executive processing, short-term and long-term memory. They concluded that exercise arousal assisted long-term memory because those who participated in the aerobic exercise had higher rate of recall in the primacy and the recency segments of the free-recall task, compared to the control group who scored lower. The other tests, targeting executive processing and short-term memory, didn't produce results mirroring those of the free-recall test, therefore suggesting that memory and short-term and executive processing isn't affected by physical exercise (Coles &

Tomporowski, 2008). Research is yet to examine the exact cause in overall improvement of memory following physical exercise, however, one study (Winter et al., 2007) targeting aerobic exercise in particular found that an improvement in learning following exercise also occurred with an increase in brain-derived neurotrophic factor (BDNF), dopamine and epinephrine. Winter et al (2008) states that the increase in levels of BDNF, dopamine and epinephrine appear to act as mediators in improving short-term, intermediate and long-term memory respectively (Winter et al., 2007).

As well as learning and memory, physical exercise has been shown to lead to an overall improvement in cognition functioning (Hillman, Erickson, & Kramer, 2008). Improved cognitive functioning can either be a short-term or long-term psychological effect depending on the individual's commitment to the aerobic exercise routine. The cause of this effect is most likely due to the increase supply of oxygen to the brain, which elevates cognitive functioning and mood (as aforementioned) (Pierce, Madden, Siegel, & Blumenthal, 1993). The chosen method of physical exercise does not seem to have an impact on improvement of cognitive performance; Pierce et al (1993) demonstrated this by measuring the difference between aerobic exercise, strength training, flexibility exercise and a control group not partaking in any exercise. Their study found no group differences except that those who partook in the exercises perceived themselves better in cognitive functioning than those who did not exercise at all. However, Madden et al (1989) found that overall cognitive functioning in older adults following aerobic exercise did not yield the improvements suggested by previous studies. Although the older adults significantly improved their aerobic capacity, their reaction-time tests of attention and

memory retrieval, compared to a group of young adults, was slower, and there was no improvement in the older adults results due to the aerobic exercise (Madden, Blumenthal, Allen, & Emery, 1989).

The effect of physical exercise on psychological disorders such as depression and schizophrenia has been researched by numerous studies, depression in particular, as it is the leading cause of disability worldwide (het Rot, Collins, & Fitterling, 2009). Legrand and Heuze (2007) conducted a study into the effects of different frequencies of exercise on persons with depression. They found that those who exercised with a regular high frequency reported lower depression scores than those who exercised in the low-frequency group (Legrand & Heuze, 2007). Another study examined the effect of a 16-week walking program on patients with schizophrenia. Increased aerobic fitness and reduce body fat aside, there was a significant reduction in depression and anxiety in the schizophrenia symptoms (Beebe et al., 2005).

Although the psychological benefits of aerobic exercise are well known, researchers are yet to agree on which intensity, modality or workload fits best, whether high-intensity aerobic exercise will be the most effective in benefiting our mental health over moderate to low intensity aerobic exercise (Rendi et al., 2008). However, following the recent revelation of Australia being one of the obese nations in the world, the Australia state governments have each begun campaigning for their respective citizens to ‘find their 30’ minutes a day to partake in physical exercise. The majority of literature supports this 30 minute guideline, as a general starting point for improvement in short-term psychological

Comment [JN8]: Useful theoretical consideration about the way in which types of exercise may influence the psychological effects.

effects such as mood, well-being, cognitive functioning and learning and memory.

Whereas, the same amount of exercise, routinely followed (high-frequency), can reduce symptoms of psychological disorders for the long-term.

Comment [JN9]: Not a grammatical sentence

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Marker's Feedback for the Psychology 102 Essay		<i>(Worth 45% of final grade; 4310, Sem 2, 2009)</i>			
	Topic:	4. Physical exercise			
	Mark	Out of	%	Grade	
	95.00	100			
		42.75	45	95.0%	HD
Marking Criteria		Mark	Out of	%	Grade
Abstract		9.00	10	90.0%	HD
Argument		19.25	20	96.3%	HD
Theory		18.00	20	90.0%	HD
Research		19.50	20	97.5%	HD
Referencing		9.75	10	97.5%	HD
Presentation		19.50	20	97.5%	HD
Marker's Comments					
<i>Please also see tracked comments in your essay.</i>					
<p>This is a top-notch essay, congratulations. It is a strong essay in every respect. Exercise description and consideration of peer-reviewed research about the psychological effects of exercise in different populations is excellent. Perhaps the balance of the essay was more on the effects that the causes, but there was useful explanation of a possible reciprocal relationship between self-efficacy, mood and exercise and also awareness that the type of exercise could lead to different types of psychological effects. You clearly have the potential to excel in UG and PG psychology. Some relatively minor tracked comments can be found in the essay. For general feedback about essays on this essay topic, see http://en.wikiversity.org/wiki/Psychology_102/Assessment/Essay/General_feedback/Exercise</p>					