Healthy E-mail

Service

The Question

How does Movement improve your Mood?

A Closer Look

Sedentary-accustomed to sit or rest a great deal; to take little exercise.
Idle- not working or active; doing nothing; not in use or operation; habitually doing nothing.

"An idle mind is the devils workshop." This saying simply means that if your mind doesn't keep busy with good things, bad things will enter it. If this is true, then an idle body may be just as vulnerable!

The physical benefits of regular exercise are well known and include:

- Increased muscle strength and tone, flexibility, coordination, balance and stamina, as well as increased strength and function of the heart;
- improved circulation, blood pressure, blood sugar, posture, digestion, quality of sleep, and weight management;
- decreased risk of heart attack, osteoporosis, and type 2 diabetes;
- reduced back and joint problems and associated pain;
- enhanced function of the immune system
- improved libido (sexual drive).

In addition, research has shown that exercise improves mood, mental health and well-being by:

- increasing mental focus;
- reducing levels of stress, anxiety, and depression.

How does exercise improve psychological well- being?
Exercise causes an increased production and release of naturally occurring chemicals in the brain called neurotransmitters. Neurotransmitters allow brain cells to communicate with each other. *Scientists have identified over 100 neurotransmitters in the brain alone, and evidence suggests that there are many more.*

Most research on the psychological benefits of exercise focuses on the

effects of the following neurotransmitters.

- **Dopamine**:
  Dopamine affects our ability to experience pleasure and pain and experience emotions allowing us to be excitable, talkative and motivated (seek rewards). It also helps to control movement of muscles. Exercise naturally increases the level of dopamine produced in the brain.
- **Serotonin**:
  Serotonin may be considered a "happy hormone". It regulates our mood, calms anxiety, and relieves depression as well as regulates cravings for food or other substances (increases feelings of satiety).
  Serotonin levels can become depleted with chronic stress or anxiety, low carbohydrate diets or starvation, and/or prolonged inactivity (a sedentary lifestyle). This leaves you feeling depressed, irritable, moody and exhausted.
  Exercise, even at moderate intensity, can significantly increase serotonin levels in the brain.
- **Endorphins**:
  Endorphins are a group of opiate proteins produced naturally in our brain. These neurotransmitters provide pain relieving effects which are more potent than morphine. Increased endorphin levels reduce our perception of pain and the negative effects of stress. Levels of endorphin are naturally increased in response to prolonged, continuous, rhythmic exercise such as running, swimming, biking or rowing. These neurotransmitters are thought to be responsible for the euphoric feeling distance runners often experience.

Researchers continue to explore the biologic connection between exercise, neurotransmitters and psychological well being. Although these neurotransmitters may have multiple functions in the brain and body; studies show that exercise for 30 minutes at least 5 days per week or more at a moderate intensity level is what is required to experience these beneficial psychological effects.

Moderate intensity exercise is defined by using:

The talk test: a simple way to measure relative intensity. As a rule of thumb, if you're doing moderate-intensity activity you can talk, but not sing, during the activity. If you're doing vigorous-intensity activity, you will not be able to say more than a few words without pausing for a breath.

Target Heart Rate: a person's target heart rate should be 50 to 70% of his or her maximum heart rate. This maximum rate is based on the person's age. An estimate of a person's maximum age-related heart rate can be obtained by subtracting the person's age from 220. For example, for a 50-year-old person, the estimated maximum age-related heart rate would be calculated as 220 - 50 years = 170 beats per minute (bpm). The 50% and 70% levels would be:

- 50% level: 170 x 0.50 = 85 bpm, and
- 70% level: 170 x 0.70 = 119 bpm

Thus, moderate-intensity physical activity for a 50-year-old person will require that the heart rate remains between 85 and 119 bpm during physical activity.

Other psychological and emotional benefits from exercise include:

- **Increased confidence.** Meeting exercise goals or challenges, even small ones, can boost your self-confidence. Getting in shape can also make you feel better about your appearance.
- **Take your mind off worries.** Exercise is a positive activity that can shift your focus away from the cycle of negative thoughts that feed anxiety and depression.
- **Increased social interaction.** Exercise may give you the chance to meet or socialize with others. Just exchanging a friendly smile or greeting as you walk around your neighborhood can help your mood.
- **Cope in a healthy way.** Doing something positive to manage anxiety or depression is a healthy coping strategy. Trying to feel better by drinking alcohol, dwelling on how badly you feel, or hoping anxiety or depression will go away on their own can lead to worsening symptoms. (Adapted from Mayo Clinic: Depression and exercise)

Take Home Message

Move for your Mood! Exercise is one of the most effective lifestyle modifications that can be made to improve both body AND mind.

Editorial Comment

Depression, anxiety and other mental health conditions are complex illnesses which often require ongoing treatment and care from health care professionals. Individuals with these conditions may benefit from regular exercise. However, just as with any medical condition, it is important to consult with your primary care provider before beginning an exercise program. Other medical conditions that may require modified types or intensity levels of exercise include heart disease, asthma or lung disease, diabetes, liver or kidney disease, arthritis, or other physical disabilities. Regardless of individual limitations movement can be beneficial.

Whether you are just beginning an exercise program, or are an individual who exercises on a regular basis, ***MSU MOVES***, the newest Health4U web based service provides support for you to create, customize and track progress toward your personal fitness goals. Get started now by visiting this unique health and lifestyle resource. Join ***MSU MOVES*** at http://msumoves.msu.edu.

Research Quality Grade: **2=B**

Reference and Further Reading

Medicinenet.com - Endorphins: natural pain and stress fighters

Exercise: a neglected intervention in mental health care?

WebMD: Benefits of Exercise

Kids Health

Mayo Clinic: depression and exercise

Centers for Disease Control and Prevention - Measuring Physical Activity Intensity

Diehl JJ, et al. Exercise: The data on its role in health, mental health, disease prevention, and productivity. Primary Care: Clinics in Office Practice. 2008;35:803.

Salmon P. Effects of physical exercise on anxiety, depression, and sensitivity to stress: A unifying theory. Clinical Psychology Review. 2001;21:33.

Woods JA. Exercise, inflammation, and innate immunity. Neurologic Clinics. 2006;24:585.

Lowry CA, et al. That warm fuzzy feeling: Brain serotonergic neurons and the regulation of emotion. Journal of Psychopharmacology. 2009;23:392.

Pollock KM. Exercise in treating depression: Broadening the psychotherapist's role. Journal of Clinical Psychology/In Session: Psychotherapy in Practice. 2001;57:1289.

Dunn AL, et al. Exercise treatment for depression: Efficacy and dose response. American Journal of Preventive Medicine 2005;28:1.

Hansen J, et al. Exercise duration and mood state: How much is enough to feel better? Health Psychology. 2001;4:267.

Herring MP, O'Connor PJ, Dishman RK The effect of exercise training on anxiety symptoms among patients: a systematic review. Arch Intern Med. 2010;170(4):321-3

The information contained in the abstracts is not a personal health recommendation.
You should consult your own healthcare provider about decisions involved in your care.

Research Quality Grades: (1) = A+, (2) = A-, (3) = B, (4) = C, (5) = D *

*Quality of Evidence
(1) I: Evidence obtained from at least one properly randomized controlled trial. Well-designed and well-conducted meta-analyses were also considered, and were graded according to the quality of the studies on which the analyses were based (e.g., Grade I if the meta-analysis pooled properly randomized controlled trials). Please also note: occasionally randomized controlled trial studies may be given a lower grade due to other issues in the research design.
(2) II-1: Evidence obtained from well-designed controlled trials without randomization.
(3) II-2: Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one center or research group.
(4) II-3: Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of the introduction of penicillin treatment in the 1940s) could also be regarded as this type of evidence.
(5) III: Opinions of respected authorities, based on clinical experience; descriptive studies and case reports; or reports of expert committees.

MICHIGAN STATE UNIVERSITY

Questions about the Healthy E-mail Service?
Contact Us: HealthyEmail.ServiceTeam@ht.msu.edu
Visit our website: https://healthyemail.msu.edu/