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link to Reader's Digest article [1]

exercise [2] mental health [3] brain [4]



“If exercise were a pill, it would be one of the most cost-effective drugs ever invented,” says Dr Nick Cavill, a health promotion consultant. Aside from its ability to perhaps halve your risk of major illnesses such as heart disease and cancer, exercise also extends benefits to the mind, improving mental health and wellbeing.

The wonder drug?

In the early Eighties, exercise was shown to increase endorphin levels in the blood. Through triggering a positive feeling, these brain chemicals play a part in the brain-boosting effects of exercise, but the complete story is more complicated and still far from understood. Scientists at the respected Cochrane Library have asked whether a daily dose of exercise might help everything from schizophrenia to sleep disorders, tobacco addiction to anxiety, and have offered explanations as to how it might bring about its benefits. Here’s what they (and others) have found.

Schizophrenia

“Individuals with schizophrenia can improve components of mental health by participating in regular exercise,” write the authors of a review [5] into exercise therapy for schizophrenia. Whether it’s regular walking or specific strength training, it’s thought that, aside from endorphin release, exercise might help by increasing social support and sense of autonomy, improving perceptions of competence, enhancing body image and by providing distraction.

Definitive conclusions cannot yet be drawn though; more research is needed. The review included only 96 participants, with more men than women; at any one time about 220,000 people [6] are being treated for schizophrenia in the UK.

Smoking

Mice are commonly used in medical research (but are not always the best fit since what works or doesn't work in mice does not necessarily translate to humans). In one study [7] in the British Journal of Pharmacology, nicotine-treated, wheel-running mice displayed fewer signs of withdrawal (such as tremor) when compared with a sedentary group.

Exercise also seems to help people quit smoking [8], by reducing cravings and helping to manage weight gain. It's hard though to prove this with science, with results from more than 20 clinical trials [9] finding no evidence that adding exercise to smoking cessation programmes improves abstinence. An absence of scientific evidence is though just that, and it does not prove absence of effect. Real-life success stories [10] abound.

Sleep

That you will require rest when you've expended energy seems obvious—but exercising too late may interfere with sleep, by boosting body temperature.

Focussing especially on older people (since insomnia increases with age), one small study [11] showed that people slept for about 42 minutes longer, and fell asleep about 11 minutes more quickly, when they had participated in a 16-week exercise programme, consisting mainly of walking and low impact aerobics. Hard work, it seems, can pay off.

Dementia

According to Alzheimer's UK [12], regular physical exercise is one of the best things that you can do to reduce your risk of dementia, and the Academy of Medical Sciences [13] suggests that the risk can be reduced by as much as 50 per cent. It's thought that exercise may reverse age-related brain shrinkage, especially in parts of the brain responsible for memory [14], such as the hippocampus.

Depression

When scientists [15] gathered data from more than 2,000 people in 39 small clinical trials, they found exercise perhaps to be as effective as drugs or talking therapy in reducing depression. Whilst awaiting results of larger, more robust studies they wonder whether the effects seen are down to elevation of brain chemicals or enhancement of self-image when mastering a new skill. Increased social contact and distraction can also help. In one case study [16], cold water swimming helped one woman with depression become medication-free.

It is though important to realise that exercise alone is not enough to treat someone with severe depression.

Getting the right dose

"Whether wine [17] is a food, a medicine or a poison depends on the dosage," stated Paracelsus, a Swiss-German philosopher in the 16th century, and the same is true for exercise. Writing in the British Journal of Pharmacology [18], Professor Jose Vina from the University of Valencia says that "dosing is extremely important to get the beneficial effects of exercise. In moderate doses, it causes very pronounced relaxing effects, but some may even become addicted to exercise".

In mild to moderate chronic fatigue syndrome [19], an individualised, person-centred programme of exercise is needed; unsupervised or unstructured exercise may worsen symptoms. The National Institute for Health and Care Excellence [20] is to publish new guidelines on this in 2021, stressing that different combinations of approaches are helpful for different people.

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