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**Exercise alone
reduces
patient-perceived
symptoms of
depression
as effectively
as cognitive
behavioral
therapy or
drugs.**

Q / Does exercise alleviate symptoms of depression?

EVIDENCE-BASED ANSWER

A / **YES.** Exercise reduces patient-perceived symptoms of depression when used as monotherapy (strength of recommendation [SOR]: **B**, meta-analysis of randomized controlled trials [RCTs] with significant heterogeneity). It relieves symptoms as effectively as cognitive behavioral therapy (CBT) or pharmacologic antidepressant therapy (SOR: **B**, meta-analysis) and more effectively than bright light therapy

(SOR: **B**, meta-analysis).

Resistance exercise and mixed exercise (resistance and aerobic) work better than aerobic exercise alone (SOR: **B**, meta-analysis). High-frequency exercise is more effective than low-frequency exercise (SOR: **B**, small RCT). “Mindful” exercise, which has a meditative focus, such as tai chi and yoga, also reduces symptoms of depression (SOR: **B**, systematic review of RCTs).

Evidence summary

A 2009 Cochrane review analyzed the results of 28 RCTs that evaluated the effect of exercise (aerobic, resistance, or mixed aerobic and resistance) compared with no exercise, pharmacotherapy, CBT, and light therapy on symptoms of depression as measured by several validated depression scales.¹ The authors of the review compared pooled data from several different psychometric scales by calculating the standard mean difference (SMD) and used the following “rule of thumb” when interpreting the data: 0.2 represents a small effect, 0.5 a moderate effect, and 0.8 a large effect.

Pooled analysis of 23 RCTs (N=907) comparing exercise with no exercise found that exercise significantly reduced symptoms of depression (SMD=-0.82; 95% confidence interval [CI], -1.12 to -0.51). However, significant heterogeneity between the studies limits these conclusions. Five RCTs (N=218) showed a moderate effect of exercise on maintaining the antidepressant effect for 4 to 26 months after the intervention (SMD=-0.44; 95% CI, -0.71 to -0.18).

Subgroup analyses in the same review showed no significant difference between ex-

ercise and CBT (6 RCTs, N=152; SMD=-0.17; 95% CI, -0.51 to 0.18) or between exercise and antidepressant drugs in reducing depressive symptoms (2 RCTs, N=201; SMD=-0.04; 95% CI, -0.31 to 0.24). The small size of these studies limits the ability to detect a potentially important clinical difference. One small RCT (N=18) in the review showed that exercise reduced symptoms more effectively than light therapy (SMD=-6.4; 95% CI, -10.2 to -2.6).

Mixed exercise and more of it get better results

Subgroup analyses within the same Cochrane review showed that resistance exercise (SMD=-1.34; 95% CI, -2.07 to -0.61) and mixed exercise (SMD=-1.47; 95% CI, -2.56 to -0.37) reduced symptoms of depression more than aerobic exercise alone (SMD=-0.63; 95% CI, -0.95 to -0.30). A very small RCT (N=23) noted larger reductions in Beck Depression Inventory scores among patients who exercised 3 to 5 times a week—30-minute sessions at 60% to 80% maximum heart rate—compared with patients who exercised only once a week (mean difference=-10.46; 95% CI, -16.06 to -4.85).²

Meditative exercise shows positive effect

A systematic review in 2008 assessed 6 RCTs that evaluated meditative exercises such as yoga, tai chi, and qigong for treating depression. All 6 studies showed a “positive response” to treatment, with 5 studies reporting a statistically significant reduction in depression scores. Because a great deal of heterogeneity existed among study parameters, no quantitative analysis was done to estimate the size of the positive effect.³

Recommendations

The National Institute for Health and Clinical Excellence recommends structured, supervised exercise programs, 3 times a week for 45 to 60 minutes each session over 10 to 14 weeks to treat mild depression.⁴

The Institute for Clinical Systems Improvement guideline recommends physical activity for 30 minutes 3 to 5 days a week to decrease symptoms of major depression.⁵

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