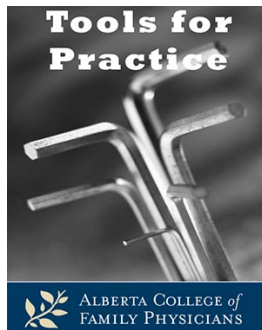


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Working out depression: Is exercise effective for depression?

Clinical Question: Can exercise improve mild to moderate depression?

Bottom-Line: Exercise shows benefit in treating mild to moderate depression but the evidence is at a high risk of bias with smaller benefit in higher quality studies. In high quality studies showing benefit, approximately one in 8-12 patients with mild-moderate depression will attain remission due to exercise.

Evidence:

- At least 10 systematic reviews have been done.¹⁻¹⁰ Focusing on four of highest quality in depression [13-58 randomized controlled trials (RCTs), 720-2,982 participants, usually mild-moderate depression]:¹⁻⁴
 - Results in standard mean differences (SMD): A statistical tool to combine different scales with limited clinical meaning.
 - Effect on depression compared to no treatment or control: Three meta-analyses found statistically significant improvements in depressive symptoms, ranging from “moderate” to “large” effects (SMD 0.6 to 1.1).^{1,2,4} Results inconsistent.
 - In high quality studies:
 - Using randomization concealment, intention-to-treat and blinded assessors: Two meta-analyses were no longer statistically significant.^{1,2}
 - Using only publication in peer reviewed journal/dissertation: Remaining analysis: SMD reduced from 1.1 to 0.7 (now a “moderate” effect).⁴
 - Duration reduced effect from “large” (SMD=1.8) in studies <8 weeks duration, to “moderate” (SMD=0.6) if >8 weeks.⁴
 - Exercise not statistically different from psychotherapy (seven RCTs, 189 patients) or medication (four RCTs, 300 patients).¹
 - Limitations: Many studies used patient self-report for results;^{1,4} small sample sizes; exercise was usually supervised/done in groups (therefore socializing could effect results);⁴ blinding, randomization concealment, and intention-to-treat infrequent.
 - Examining the five highest quality RCTs:¹¹⁻¹⁵ Three of five found statistically significant (or nearly):^{11,12,15}

- Response ($\geq 30\%$ reduction in Hamilton Depression score): Number Needed to Treat (NNT) 5 over 10 weeks.¹⁵
- Remission (“normal” Hamilton Depression score): NNT 8-12 over four months.¹¹

Context:

- Exercise has dose-dependent, positive effects on quality of life in non-depressed patients.¹⁶
- In chronic illness without depression, exercise has an inconsistent, small-moderate effect on depressive symptoms (SMD=0.3).⁹
- Largest effects of exercise were observed among those with mild-to-moderate depression.⁸
 - Evidence is insufficient to judge if one type of exercise is better.^{3,4}

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