PHYSICAL ACTIVITY FOR THE PREVENTION AND MANAGEMENT OF MENTAL HEALTH AND ILLNESS: IMPLICATIONS DURING & AFTER COVID-19

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**Talk objectives**

1) Understand the relationship between physical activity, cardiorespiratory fitness & muscular strength with common mental health symptoms/disorders.

2) Understand the evidence for the efficacy, mechanisms and implementation of exercise for depression

3) Place in contact of COVID-19 pandemic and practical solutions to keep active

**Disclosures**

Lead author EPA guidelines & and senior author of Lancet commission.

Book on Exercise and Mental health with Dr Simon Rosenbaum

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“Lack of activity destroys the good condition of every human being, while movement and methodical physical exercise save it and preserve it.”

- Plato (~400bc)
Physical Activity and Incident Depression: A Meta-Analysis of Prospective Cohort Studies

Felipe B. Schuch, Ph.D., Davy Vancampfort, Ph.D., Joseph Firth, Ph.D., Simon Rosenbaum, Ph.D., Phillip B. Ward, Ph.D., Edson S. Silva, B.Sc., Mats Hallgren, Ph.D., Antonio Ponce De Leon, Ph.D., Andrea L. Dunn, Ph.D., Andrea C. Deslandes, Ph.D., Marcelo P. Fleck, Ph.D., Andre F. Carvalho, Ph.D., Brendon Stubbs, Ph.D.

Objective: The authors examined the prospective relationship between physical activity and incident depression and explored potential moderators.

Method: Prospective cohort studies evaluating incident depression were searched from database inception through Oct. 18, 2017, on PubMed, PsycINFO, Embase, and SPORTDiscus. Demographic and clinical data, data on physical activity and depression assessments, and odds ratios, relative risks, and hazard ratios with 95% confidence intervals were extracted. Random-effects meta-analyses were conducted, and the potential sources of heterogeneity were explored. Methodological quality was assessed using the Newcastle-Ottawa Scale.

Results: A total of 49 unique prospective studies (N=266,939, median proportion of males across studies, 47%) were followed up for 1,837,794 person-years. Compared with people with low levels of physical activity, those with high levels had lower odds of developing depression (adjusted odds ratio=0.83, 95% CI=0.79, 0.88; I²=0.0). Furthermore, physical activity had a protective effect against the emergence of depression in youths (adjusted odds ratio=0.90, 95% CI=0.83, 0.98), in adults (adjusted odds ratio=0.78, 95% CI=0.70, 0.87), and in elderly persons (adjusted odds ratio=0.79, 95% CI=0.72, 0.86). Protective effects against depression were found across geographical regions, with adjusted odds ratios ranging from 0.65 to 0.84 in Asia, Europe, North America, and Oceania, and against increased incidence of positive screen for depressive symptoms (adjusted odds ratio=0.84, 95% CI=0.79, 0.89) or major depression diagnosis (adjusted odds ratio=0.86, 95% CI=0.75, 0.98). No moderators were identified. Results were consistent for unadjusted odds ratios and for adjusted and unadjusted relative risks/hazard ratios. Overall study quality was moderate to high (Newcastle-Ottawa Scale score, 6.3).

Conclusions: Available evidence supports the notion that physical activity can confer protection against the emergence of depression regardless of age and geographical region.

Original Investigation
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Assessment of Bidirectional Relationships Between Physical Activity and Depression Among Adults
A 2-Sample Mendelian Randomization Study

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Selected only Single-nucleotide polymorphism (SNPs) previously reported as genome-wide significant

Two physical activity phenotypes—self-reported (N = 377,234) and objective accelerometer-based (N = 91,084)

Accelerometer-based activity on MDD (IVW odds ratio (OR) = 0.74 for MDD per 1 SD unit increase in average acceleration (95% confidence interval (CI) = 0.59-0.92)

No evidence for negative influences of MDD on accelerometer-based activity (IVW b = 0.04 change in average acceleration for MDD versus control status, 95% CI = -0.43-0.51, p = .87).

Self report PA – no influence in either direction
13 prospective studies \( (N = 75,831, \text{median males} = 50.1\%) \) followed for 357,424 person-years.

People high self-reported PA (versus low PA) were at reduced odds of developing anxiety AOR = 0.74; [95% CI] = 0.62-0.88

High PA protective against agoraphobia (AOR = 0.42; 95% CI = 0.18, 0.98)

Posttraumatic stress disorder (AOR = 0.57; 95% CI = 0.39, 0.85).
• Persistently high sedentary behaviour = increased depression

• An additional hour of light activity per day between age 12 years and 16 years was associated with an 8–11% decrease in depression score.

• 1-2 h reduction in daily sedentary behaviour could substantially reduce the risk of depressive symptoms in adolescents.
The association between cardiorespiratory fitness and the incidence of common mental health disorders: A systematic review and meta-analysis


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Handgrip a good proxy for muscular strength

Greater hand grip strength is associated with fewer depressive symptoms in the general population and those with probably MDD (Firth et al under review)
Exercise as a treatment for depression: A meta-analysis adjusting for publication bias
Felipe B. Schuch a, b, *, Davy Vancampfort c, d, Justin Richards e, Simon Rosenbaum f, Philip B. Ward f, Brendon Stubbs g, h

Exercise and internet-based cognitive–behavioural therapy for depression: multicentre randomised controlled trial with 12-month follow-up
Mats Hallgren, Björn Heigdottir, Matthew P. Herring, Zangin Zeebari, Nils Lindefors, Viktor Kaldén, Agneta Öjehagen and Yvonne Forsell

Background
Evidence-based treatment of depression continues to grow, but successful treatment and maintenance of treatment response remains limited.

Aims
To compare the effectiveness of exercise, internet-based cognitive-behavioural therapy (ICBT) and usual care for depression.

Method
A multicentre, three-group parallel, randomised controlled trial was conducted with assessment at 3 months (post-treatment) and 12 months (primary end-point). Outcome assessors were masked to group allocation. Computer-generated allocation was performed externally in blocks of 36 and the ratio of participants per group was 1:1:1. In total, 946 adults with mild to moderate depression aged 18–71 years were recruited from primary healthcare centres located throughout Sweden. Participants were randomly assigned to one of three 12-week interventions: supervised group exercise, clinician-supported ICBT or usual care by a physician. The primary outcome was depression severity assessed by the Montgomery–Åsberg Depression Rating Scale (MADRS).

Results
The response rate at 12-month follow-up was 64%. Depression severity reduced significantly in all three treatment groups in a quadratic trend over time. Mean differences in MADRS score at 12 months were 12.1 (ICBT), 11.4 (exercise) and 9.7 (usual care). At the primary end-point the group-time interaction was significant for both exercise and ICBT. Effect sizes for both interventions were small to moderate.

Conclusions
The long-term treatment effects reported here suggest that prescribed exercise and clinician-supported ICBT should be considered for the treatment of mild to moderate depression in adults.

Declaration of interest
None.

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Association of Efficacy of Resistance Exercise Training With Depressive Symptoms
Meta-analysis and Meta-regression Analysis of Randomized Clinical Trials

Brett R. Gordon, MSc; Cillian P McDowell, BSc; Mats Halgren, PhD; Jacob D. Meyer, PhD; Mark Lyons, PhD; Matthew P. Herring, PhD

RESULTS Fifty-four effects were derived from 33 randomized clinical trials involving 1877 participants. Resistance exercise training was associated with a significant reduction in depressive symptoms with a moderate-sized mean effect $\Delta$ of 0.66 (95% CI, 0.48-0.83; $z = 7.35; P < .001$). Significant heterogeneity was indicated (total $Q = 216.92$, $df = 53$; $P < .001$; $I^2 = 76.0\%$ [95% CI, 72.7%-79.0%]), and sampling error accounted for 32.9% of observed variance. The number needed to treat was 4. Total volume of prescribed RET, participant health status, and strength improvements were not significantly associated with the antidepressant effect of RET. However, smaller reductions in depressive symptoms were derived from randomized clinical trials with blinded allocation and/or assessment.

CONCLUSIONS AND RELEVANCE Resistance exercise training significantly reduced depressive symptoms among adults regardless of health status, total prescribed volume of RET, or significant improvements in strength. Better-quality randomized clinical trials blinding both allocation and assessment and comparing RET with other empirically supported treatments for depressive symptoms are needed.
Guidelines – where are we?

Original article

EPA guidance on physical activity as a treatment for severe mental illness: a meta-review of the evidence and Position Statement from the European Psychiatric Association (EPA), supported by the International Organization of Physical Therapists in Mental Health (IOPTMH)

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Take home messages – movement and mental health/illness & in light of COVID

Higher levels of PA associated with decreased risk of developing depression/anxiety in the future.

Being consistently sedentary or new onset of increased sedentary behaviour associated with increased MH symptoms.

Cardiorespiratory fitness and handgrip good objective measures which also indicate targets for prevention & management common mental health symptoms.

Find a movement you enjoy (light activity, running, strength work, yoga) and keep doing it.

Activities we find enjoyable and are able to do more likely to have long term sustained engagement.
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