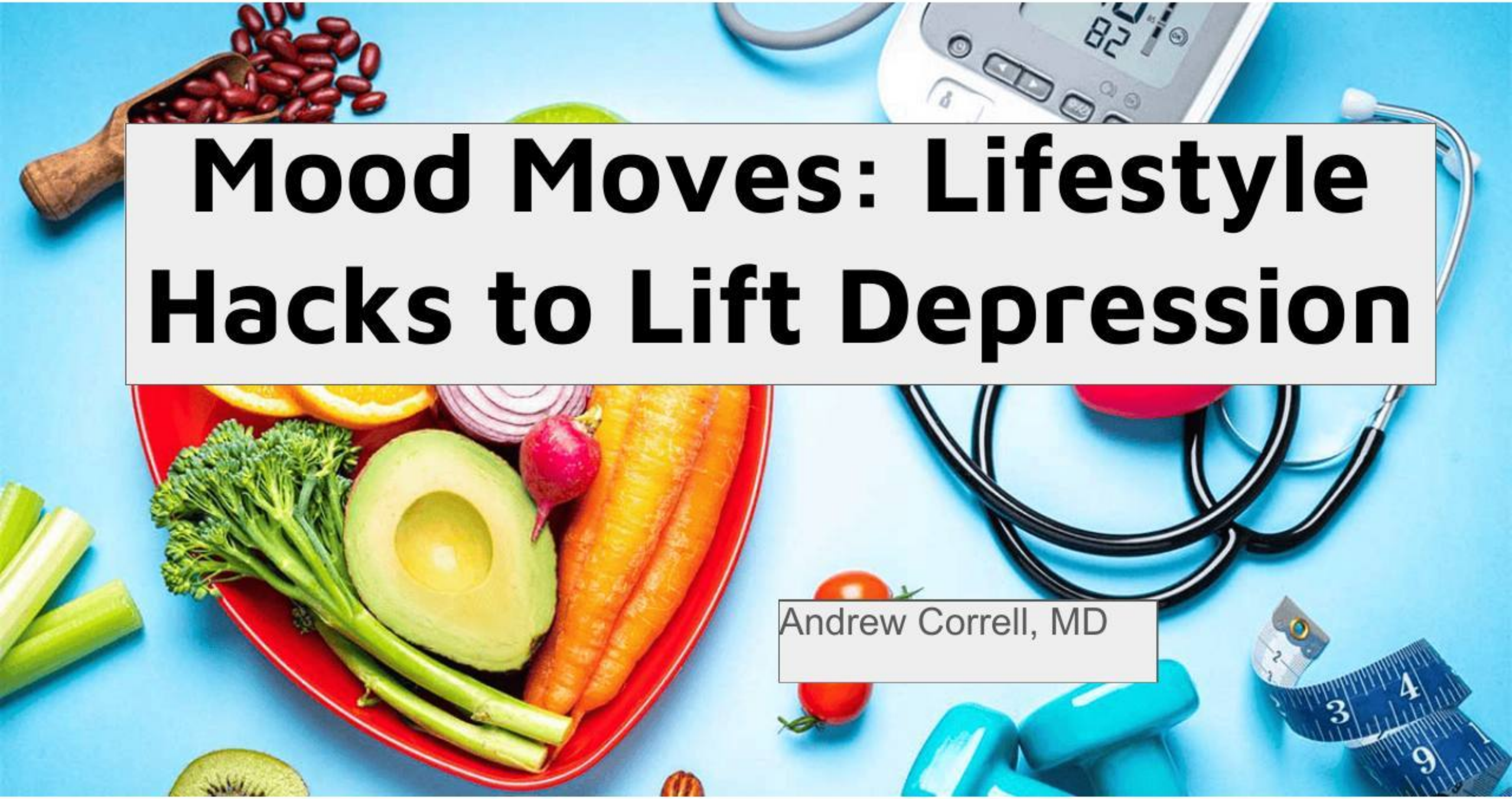

Mood Moves: Lifestyle Hacks to Lift Depression

Andrew Correll, MD

6 WAYS TO TAKE CONTROL OF YOUR HEALTH

AMERICAN COLLEGE OF Lifestyle Medicine

Lifestyle medicine is the therapeutic use of six lifestyle pillars—a whole-food, plant-predominant eating pattern, regular physical activity, restorative sleep, stress

DICINE

1 NUTRITION

Extensive scientific evidence supports the use of a whole-food, predominantly plant-based diet as an important strategy in prevention of chronic disease, treatment of chronic conditions and, in intensive therapeutic doses, remission of chronic illness. This eating pattern is fiber-filled, nutrient-dense, and antioxidant-rich. It consists of a variety of minimally processed vegetables, fruits, whole grains, legumes, nuts and seeds.

2 PHYSICAL ACTIVITY

Regular and consistent physical activity combats the negative effects of sedentary behavior. It is important that adults engage in both general physical activity as well as purposeful exercise on a weekly basis as part of overall health and resiliency. Aim for at least 150 minutes per week.

3 RESTORATIVE SLEEP

Sleep is necessary for human life. Adults with chronically insufficient or fragmented sleep can experience impaired memory, cognitive processing, mood, reaction time, a high risk of dementia onset, weight gain, glucose dysregulation, and cardiovascular issues. Most adults should get 7-9 hours of quality sleep per night.

whole-food, plant-predominant eating pattern, regular physical activity, restorative sleep, stress management, positive social connections, and the avoidance of risky substances—to prevent, treat and put into remission chronic conditions such as heart disease, type-2 diabetes, obesity and more.



LIFESTYLE MEDIC

unset, weight gain, glucose dysregulation, and cardiovascular issues. Most adults should get 7-9 hours of quality sleep per night.

4 STRESS MANAGEMENT

The chronic stress of modern society has made it more difficult to practice healthy lifestyle habits and can exacerbate health issues such as cardiovascular disease, insulin resistance, sleep deprivation, depression, anxiety, weight gain, and more. Recognizing and replacing negative stress responses with healthy coping mechanisms and stress reduction techniques leads to improved wellbeing.

5 SOCIAL CONNECTION

Positive social connections affect our physical, mental and emotional health. Leveraging the power of relationships and social networks can bring meaning and purpose to life, while also helping to reinforce healthy behaviors.

6 AVOIDANCE OF RISKY SUBSTANCES

Use of tobacco and excessive alcohol consumption have been shown to increase the risk of chronic diseases and death. Treatments often take time, different approaches and many attempts. Patience and support are an important part of breaking risky substance habits.

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lifestylemedicine.org



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Psychiatric Problem

SSRIs,
antipsychotics,
mood stabilizers







Psychotherapy

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Health Problem

Lifestyle changes



Medication





Patient-physician relationship

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Exercise for depression treatment

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Diet



For depression treatment

The Effects of Dietary Improvement on Symptoms of Depression and Anxiety: A Meta-Analysis of Randomized Controlled Trials

Eligible studies were RCTs comparing the effect of dietary interventions to nondietary control conditions. All "whole-of-diet" dietary interventions were eligible, delivered via any format, including individualized dietary counseling, group dietary classes, and standardized dietary prescription. In addition, all "types" of

Objective: Poor diet can be detrimental to mental health. However, the overall evidence for the effects of dietary interventions on mood and mental well-being has yet to be assessed. We conducted a systematic review and meta-analysis examining effects of dietary interventions on symptoms of depression and anxiety.

Results: Sixteen eligible randomized controlled trials (published in English) with outcome data for 45,826 participants were included; the majority of which examined samples with nonclinical depression ($n = 15$ studies). Nonetheless, dietary interventions significantly reduced depressive symptoms ($g = 0.275$, 95% CI = 0.10 to 0.45, $p = .002$). Similar effects were observed among high-quality trials ($g = 0.321$, 95% CI = 0.12 to 0.53, $p = .002$) and when compared with both inactive ($g = 0.308$, 95% CI = 0.02 to 0.60, $p = .038$) and active controls ($g = 0.174$, 95% CI = 0.01 to 0.34, $p = .035$). No effect of dietary interventions was observed for anxiety ($k = 11$, $n = 2270$, $g = 0.100$, 95% CI = −0.04 to 0.24, $p = .148$). Studies with female samples observed significantly greater benefits from dietary interventions, for symptoms of both depression and anxiety.

−0.04 to 0.24, $p = .148$). Studies with female samples observed significantly greater benefits from dietary interventions, for symptoms of both depression and anxiety.

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CLINICIAN

myocardial infarction

My highlighting

Myocardial infarction > Complications

- Hypertension
- Diabetes mellitus

Complications

Prevention

- Lifestyle modifications for ASCVD prevention [12]
  - Smoking cessation
  - Healthy, plant-based diet [31]
  - Regular physical activity and exercise
- Management of comorbidities, e.g. treatment of hypertension
- Low-dose aspirin is beneficial for certain high-risk groups. [12]
- For detailed information on primary prevention see "ASCVD prevention."

NOTES FEEDBACK

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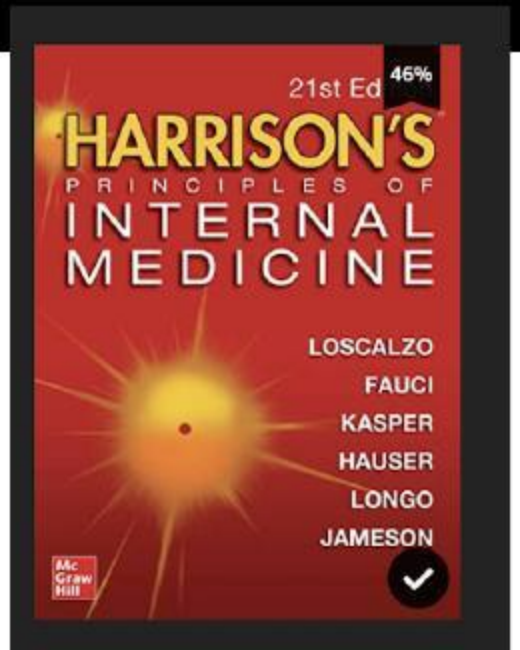
DIET Total caloric intake per capita increases as countries develop. With regard to CVD, a key element of dietary change is an increase in intake of saturated animal fats and hydrogenated vegetable fats, which contain atherogenic *trans* fatty acids, along with a decrease in intake of plant-based foods and an increase in simple carbohydrates. Fat contributes <20% of calories in rural China and India, <30% in Japan, and well above 30% in the United States. Caloric contributions from fat appear to be falling in the HICs.



Ch 238 Epidemiology of Cardiovascular Disease

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Exercise for Depression

What is the number needed to treat for SSRIs for depression?



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What is the number needed to treat for SSRIs for depression?

The numbers needed to treat (NNT) for TCAs ranged from 7 to 16 {median NNT 9} patient expected event rate ranged from 63% to 26% respectively) and for SSRIs from **7 to 8** {median NNT 7} (patient expected event rate ranged from 48% to 42% respectively) . Jul 8, 2009

National Institutes of Health (NIH) (.gov)
https://pubmed.ncbi.nlm.nih.gov › ...

Antidepressants versus placebo for depression in primary care

American Academy of Family Physicians | AAFP
https://www.aafp.org › pubs › afp › issues

Effectiveness of Antidepressants Compared with Placebo ...

by J GUIRGUIS-BLAKE · 2010 · Cited by 9 — **SSRIs** showed a clinical benefit for improvement in **depression** scores (**NNT** = 7; 95% CI, 7 to 8).

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How about psychotherapy NNT for depression?

Was Eysenck right after all? A reassessment of the effects of psychotherapy for adult depression

P. Cuijpers +3

Epidemiology and Psychiatric Sciences

2018 · 112 citations DOI

The number needed to treat for psychotherapy for adult depression is 4.18, but this effect size drops to 0.31 when adjusting for bias.

Relapse rates after psychotherapy for depression - stable long-term effects? A meta-analysis.

Christiane Steinert +3

Journal of Affective Disorders

2014 · 114 citations DOI

Psychotherapy for depression has a lower relapse rate compared to non-psychotherapeutic treatments, with a number needed to treat of 5.55.

Comparison of psychotherapies for adult depression to pill placebo control groups: a meta-analysis

P. Cuijpers +6

Psychological Medicine

2013 · 84 citations DOI

Psychotherapy for adult depression has a number needed to treat of 7.14, comparable to antidepressant medications.

What is the number needed to treat for exercise for depression?



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American Academy of Family Physicians | AAFP
https://www.aafp.org › pubs › afp › issues

Aerobic Exercise Effective for Mild to Moderate Depression

by D SLAWSON · 2005 · Cited by 11 — ... percent; numbe needed to treat [NNT] = five). No significant differences occurred between the two high-dose exercise groups. Patients in ...

National Institutes of Health (NIH) (.gov)
https://www.ncbi.nlm.nih.gov › articles › PMC6137526

Association of Efficacy of Resistance Exercise Training ...

by BR Gordon · 2018 · Cited by 530 — The **number needed to treat** was 4. Total volume of prescribed RET, participant health status, and strength improvements were not significantly ...

BMC Medical Research Methodology
https://bmcmedresmethodol.biomedcentral.com › articles

Estimating the number needed to treat from continuous

by R Froud · 2009 · Cited by 58 — At three months, **NNT** estimates ranged from 5.1 (95% CI 3.4 to 10.7) to 9.0 (5.0 to 45.5) for **exercise**, 5.0 (3.4 to 9.8) to 5.4 (3.8 to 9.9) for ...

American Academy of Family Physicians | AAFP
https://www.aafp.org › pubs › afp › issues › fpin-ci-exer...

Exercise for Depression in Older Adults

FPIN'S CLINICAL INQUIRIES
FROM THE FAMILY PRACTICE INQUIRIES NETWORK

Exercise for Depression in Older Adults

SARAH HOURSTON, MD, ND, BRIAN BERTSCHE, MD, BRIAN VUKELIC, MD, DOMINIK OSE, MPH, DrPH, ELIZA TAYLOR, MPH, AND KIRSTEN STOESSER, MD, University of Utah, Salt Lake City, Utah

Am Fam Physician. 2024;109(2):177-178

Author disclosure: No relevant financial relationships.

Clinical Question

Does regular exercise improve clinical depression symptoms in adults older than 60 years?

Evidence-Based Answer

Exercise is beneficial for treating depression in adults older than 60 years. Exercise training is recommended for healthy older adults because it significantly decreases depressive symptoms. (Strength of Recommendation [SOR]: A, meta-analysis of randomized controlled trials [RCTs].) Exercise improves depression in older patients with normal or impaired cognition. (SOR: A, meta-analysis of RCTs and cohort studies.) High-intensity resistance exercise also improves depression in older patients (number needed to treat [NNT] = 3). (SOR: B, systematic review of an RCT.)

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Review

41 Randomised Controlled Trials including participants 18 years or older with a diagnosis of major depressive disorder (MDD) or depressive symptoms determined by validated screening measures

2.264 participants postintervention

systematic review and meta-
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Numbers needed to treat (NNT)



NNT is the number of patients needed to treat to have at least one with a large reduction in depressive symptoms. A lower NNT indicates that treatment is more effective

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festyle Medicine

Methods

According to a partially randomized patient preference design, 141 patients with depression and/or anxiety disorder were randomized or offered preferred 16-week treatment: antidepressant medication (escitalopram or sertraline) or group-based running therapy ≥2 per week. Baseline (T0) and post-treatment assessment at week 16 (T16) included mental (diagnosis status and symptom severity) and physical health indicators (metabolic and immune indicators, heart rate (variability), weight, lung function, hand grip strength, fitness).

Results

Of the 141 participants (mean age 38.2 years; 58.2% female), 45 participants received antidepressant medication and 96 underwent running therapy. Intention-to-treat analyses showed that remission rates at T16 were comparable (antidepressants: 44.8%; running: 43.3%; p=.881). However, the groups differed significantly on various changes in physical health: weight (d=0.57; p=.001), waist circumference (d=0.44; p=.011), systolic (d=0.45; p=.011) and diastolic (d=0.53; p=.002) blood pressure, heart rate (d=0.36; p=.033) and heart rate variability (d=0.48; p=.006).



Journal of Affective Disorders 329 (2023) 19–29

Contents lists available at ScienceDirect

ournal of Affective Disorders

urnal homepage: www.elsevier.com/locate/jad

erapy: Comparing effects on mental and
ith depression and anxiety disorders

lan [a], Bianca A. Lever-van Milligen [a], Mandy X. Hu [a],
orn [a], Neeltje M. Batelaan [a], Digna J.F. van Schaik [a],
an Oppen [a], Brenda W.J.H. Penninx [a]

Amsterdam, Amsterdam Public Health Research Institute & Amsterdam Neuroscience, Oldenaller 1,

GPS), Department of Medical and Clinical Psychology, Tilburg University, Tilburg, the Netherlands

STRACT

Background: Antidepressant medication and running therapy are both effective treatments for patients with pression and anxiety disorders. However, they may work through different pathophysiological mechanisms could differ in their impact on physical health. This study examined effects of antidepressants versus running apy on both mental and physical health.

Methods: According to a partially randomized patient preference design, 141 patients with depression and/or xiety disorder were randomized or offered preferred 16-week treatment: antidepressant medication (escita-opram or sertraline) or group-based running therapy ≥2 per week. Baseline (T0) and post-treatment assessment t week 16 (T16) included mental (diagnosis status and symptom severity) and physical health indicators metabolic and immune indicators, heart rate (variability), weight, lung function, hand grip strength, fitness).

Results: Of the 141 participants (mean age 38.2 years; 58.2 % female), 45 participants received antidepressant edication and 96 underwent running therapy. Intention-to-treat analyses showed that remission rates at T16 ere comparable (antidepressants: 44.8 %; running: 43.3 %; p = .881). However, the groups differed signifi-antly on various changes in physical health: weight (d = 0.57; p = .001), waist circumference (d = 0.44; p = 011), systolic (d = 0.45; p = .011) and diastolic (d = 0.53; p = .002) blood pressure, heart rate (d = 0.36; p = 033) and heart rate variability (d = 0.48; p = .006).

Limitations: A minority of the participants was willing to be randomized; the running therapy was larger due to greater preference for this intervention.

Conclusions: While the interventions had comparable effects on mental health, running therapy outperformed antidepressants on physical health, due to both larger improvements in the running therapy group as well as larger deterioration in the antidepressant group.

Trial registration: Trialregister.nl Number of identification: NTR3460.

immense suffering by
lth (Cuijpers et al., 2013;
ive treatment strategies
ation is, next to psycho-
atment with moderate
w et al., 2015; Cuijpers
ffective for all and often

associated with side effects (Hu et al., 2004). An interesting alternative treatment is exercise therapy. Meta-analyses showed that for mild to moderate depression the effect of exercise interventions is comparable to antidepressant medication and psychotherapy (with largest effects for aerobic exercise with at least moderate intensity, supervised by exercise professionals), while for severe depression exercise interventions seems to be a valuable complementary therapy (Knapen et al., 2015; Schuch et al., 2016). For persons with anxiety disorders, exercise interventions also showed similar effectiveness to established treatments, although the

try, Amsterdam UMC, Vrije Universiteit Amsterdam, Oldenaller 1, 1081 HJ Amsterdam, the Netherlands.
Verboeven).

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Available online 23 February 2023
0165-0327/© 2023 The Author(s). Published by Elsevier B.V. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4.0/).

Results Ninety-seven reviews (1039 trials and 128 119 participants) were included. Populations included healthy adults, people with mental health disorders and people with various chronic diseases. Most reviews (n=77) had a critically low A MeaSurement Tool to Assess systematic Reviews score. Physical activity had medium effects on depression (median effect size=−0.43, IQR=−0.66 to −0.27), anxiety (median effect size=−0.42, IQR=−0.66 to −0.26) and psychological distress (effect size=−0.60, 95% CI −0.78 to −0.42), compared with usual care across all populations. The largest benefits were seen in people with depression, HIV and kidney disease, in pregnant and postpartum women, and in healthy individuals. Higher intensity physical activity was associated with greater improvements in symptoms. Effectiveness of physical activity interventions diminished with longer duration interventions.

Systematic review

Effectiveness of physical activity interventions for improving depression, anxiety and distress: an overview of systematic reviews

Ben Singh [1], Timothy Olds [1], Rachel Curtis [1], Dorothea Dumuid [1], Rosa Virgara [1], Amanda Watson [1], Kimberley Szeto [1], Edward O'Connor [1], Ty Ferguson [1], Emily Eglitis [1], Aaron Miatke [1], Catherine EM Simpson [1], Carol Maher [2]

Correspondence to Dr Ben Singh, University of South Australia, Adelaide, South Australia, Australia; ben.singh@unisa.edu.au

BMJ Learning | Take

Depression and Anxiety Disorders: Benefits of Exercise, Yoga, and Meditation

PDF Print Comments

SY ATEZAZ SAEED, MD, KARLENE CUNNINGHAM, PhD, AND RICHARD M. BLOCH, PhD

Am Fam Physician. 2019;99(10):620-627

TABLE 1

Effectiveness of Exercise for Treatment of Depression and Anxiety

Evidence source	Findings
Systematic review of studies of exercise for unipolar or bipolar depression[5]	Exercise plus SSRI therapy was more effective than other treatments, especially for treatment-resistant depression
Meta-analysis of 23 RCTs of exercise for unipolar depression or depressive symptoms[6]	Exercise was generally helpful, particularly in studies of unipolar depression; positive effects were reduced in studies with validity steps and no longer present at follow-up
Summary of meta-analyses and systematic reviews of complementary and alternative medicine therapies for MDD[7]	Recommended 30 minutes of supervised aerobic or resistance exercise three times per week for mild to moderate MDD, and as adjunctive therapy for moderate to severe MDD
Meta-analysis of 41 studies with participants experiencing MDD or subclinical depressive symptoms[8]	Significantly large control group response in exercise trials made evaluting the actual effects of exercise challenging
Meta-analysis of 25 RCTs with participants experiencing MDD; investigated the effect of publication bias[9]	Removing publication bias, which underestimated effects, increased positive effects of exercise
Meta-analysis of 35 RCTs with participants experiencing clinically diagnosed MDD; included trials from China and South America[10]	Inclusive analysis showed moderate positive effect for exercise, which was eliminated when trials were limited to low risk of bias
Meta-analysis of eight RCTs of exercise for clinically diagnosed anxiety[11]	Exercise had moderate positive effects on anxiety but was less effective than SSRIs; aerobic and nonaerobic exercises were effective
Qualitative review of 12 RCTs and five meta-analyses of exercise for clinically diagnosed anxiety or subclinical anxiety symptoms[12]	Exercise had mild positive effects, but methodologic problems led authors to withhold recommendation for use in anxiety disorders
Meta-analysis of six RCTs with participants experiencing clinically diagnosed anxiety disorder and/or stress-related disorder[13]	Exercise significantly reduced anxiety with moderate effect size; exclusion of trials for posttraumatic stress disorder eliminated effect
Meta-analysis of seven RCTs with participants experiencing clinically diagnosed anxiety[14]	No overall effect for aerobic exercise; cognitive behavior therapy or medication was significantly more effective than aerobic exercise; exercise was more effective than waitlist controls but not other controls; did not recommend aerobic exercise for anxiety disorders
Meta-analysis and network analysis of MDD[15]	No differences between exercise and antidepressants or other complementary and alternative therapies

MDD = major depressive disorder; SSRI = selective serotonin reuptake inhibitor; RCT = randomized controlled trial.

Information from references 5 through 15.

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Research

Effect of exercise for depression: systematic review and network meta-analysis of randomised controlled trials

BMJ 2024 ; 384 doi: https://doi-org.ezproxy.libraries.wright.edu/10.1136/bmj-2023-075847 (Published 14 February 2024)

Cite this as: *BMJ* 2024;384:e075847

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thebmj Visual abstract

Effect of exercise for depression

A systematic review and network meta-analysis of randomised controlled trials

Summary

For treating depression, various exercise modalities are well tolerated and effective, particularly walking or jogging, yoga, and strength training. Effects were comparable to psychotherapy and pharmacotherapy. Exercise worked better when more intense

Population

14 170 participants | Participants with depression (ie, meeting clinical thresholds or diagnosed by a clinician) | No other exclusion criteria, so participants are from any age, and with any comorbidities

Study design

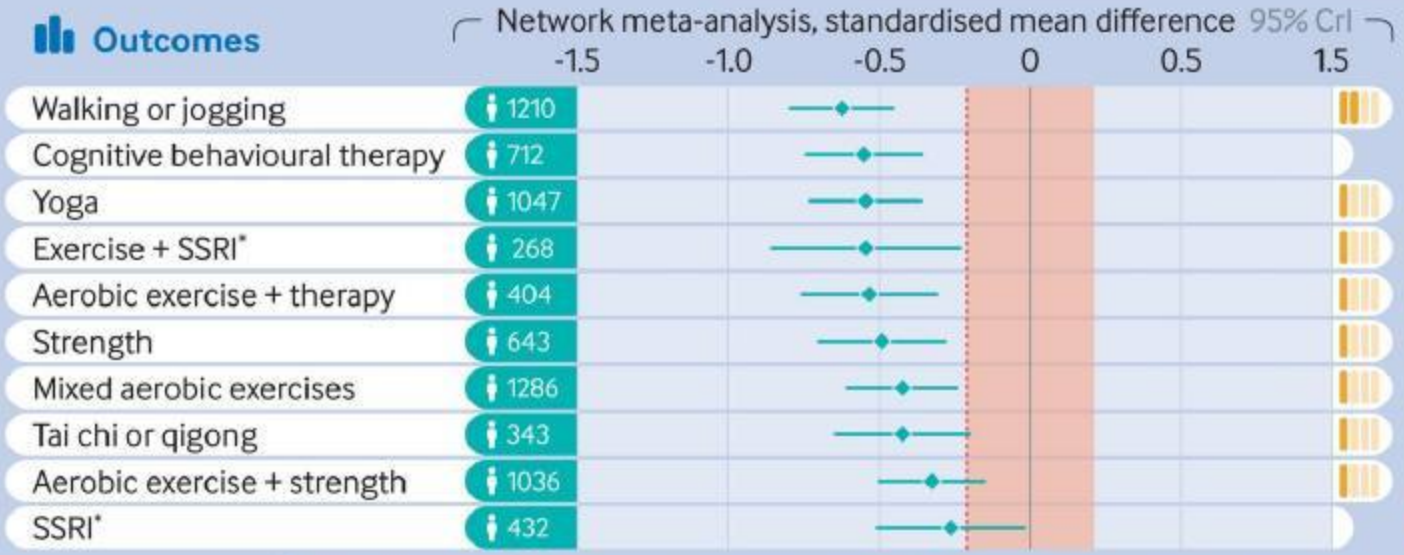
218 studies | 495 unique arms



Comparison

Different forms of exercise compared with other common treatments for depression. All results are presented as 'compared with active controls.'

Outcomes



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https://bit.ly/BMJ-exedep

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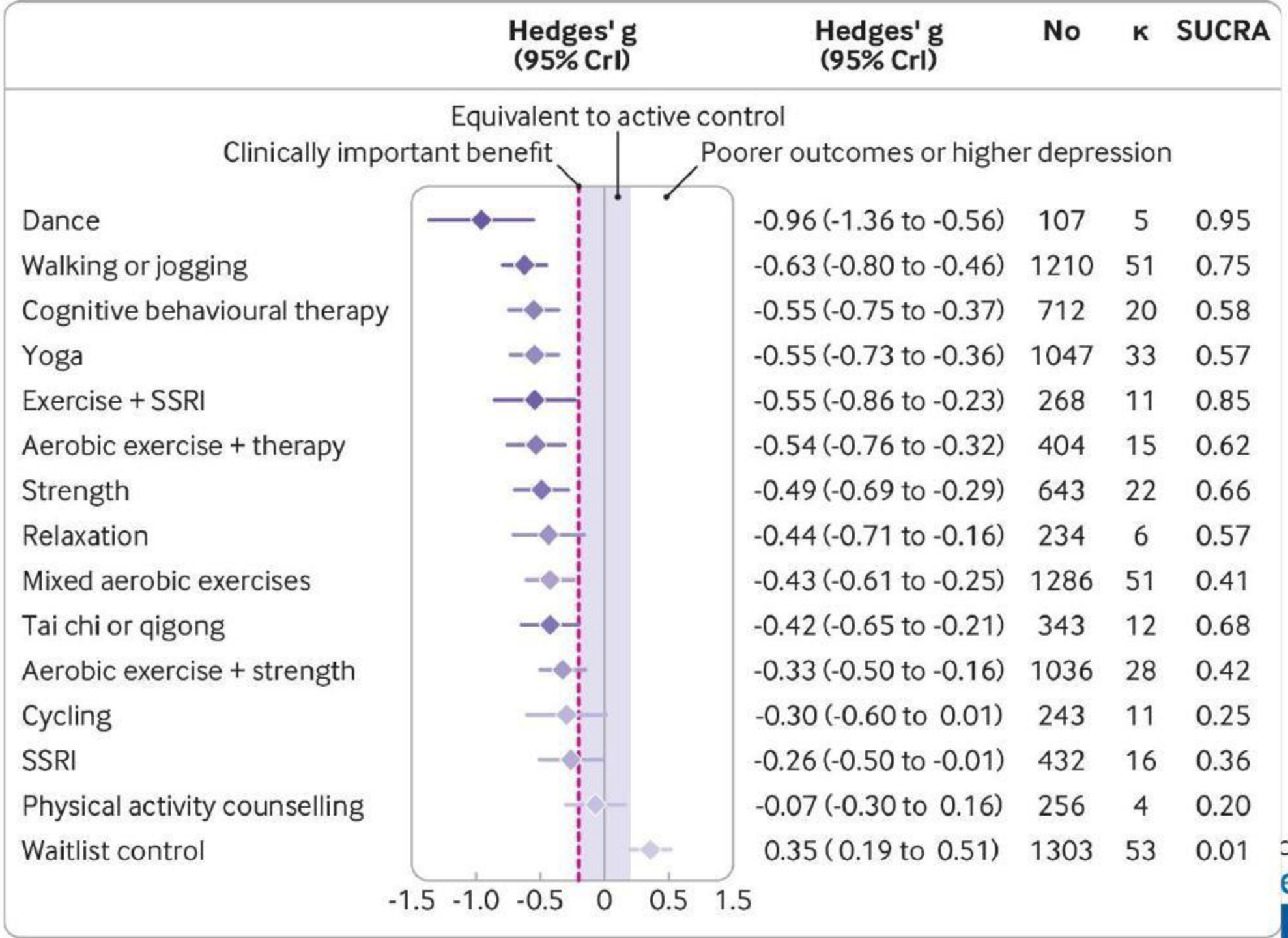

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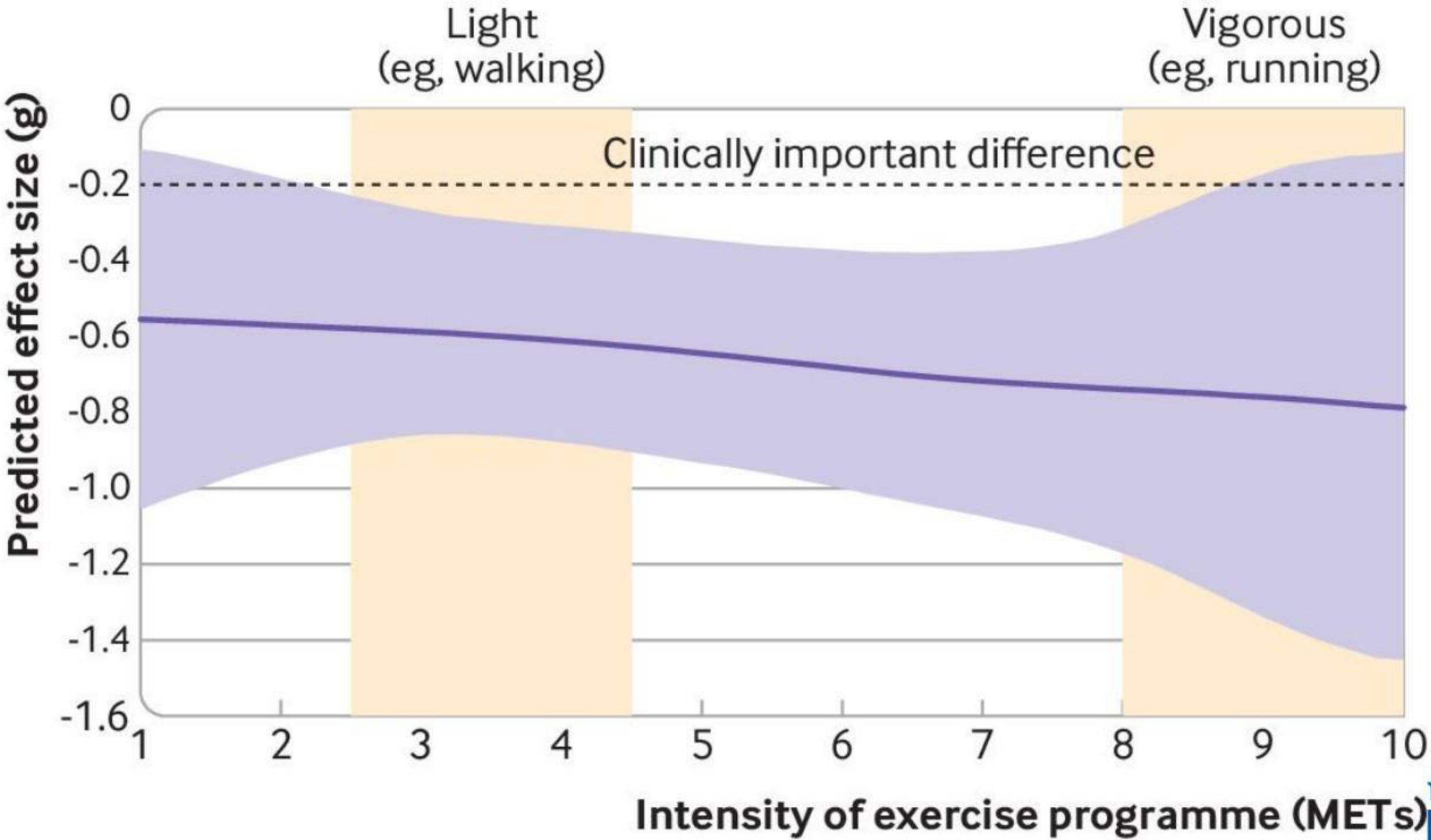
Light
(eg, walking)
Vigorous
(eg, running)
Clinically important difference
Predicted effect size (g)
0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
-1.4
-1.6
1
2
3
4
5
6
7
8
9
10
Intensity of exercise programme (METs)

What’s happening in your brain when you exercise that makes the dark clouds start to lift?

t modulates neurotransmitter levels, including serotonin and norepinephrine, and increases brain-derived neurotrophic factor (Ross et al., 2022).
Exercise also improves sleep patterns, reduces stress, and enhances self-esteem (Hossain et al., 2024).
Structurally, exercise may target brain regions affected by depression, such as the prefrontal cortex, anterior cingulate cortex, and hippocampus (Gujral et al., 2017).

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Association between physical exercise and mental health in 1·2 million individuals in the USA between 2011 and 2015: a cross-sectional study

Sammi R Chekroud, Ralitza Gueorguieva, Amanda B Zheutlin, Martin Paulus, Harlan M Krumholz, John H Krystal, Adam M Chekroud

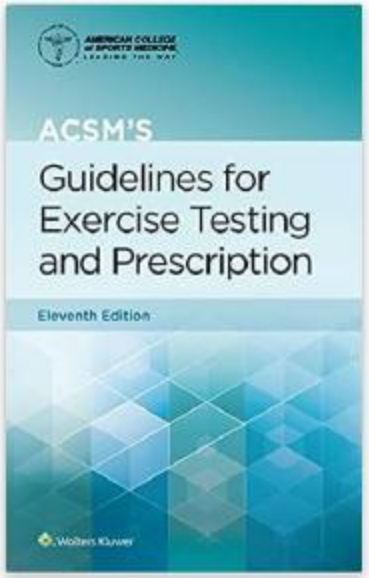
Summary

Background **Exercise is known to be associated with reduced risk of all-cause mortality, cardiovascular disease, stroke, and diabetes, but its association with mental health remains unclear. We aimed to examine the association between exercise and mental health burden in a large sample, and to better understand the influence of exercise type, frequency, duration, and intensity.**

Lancet Psychiatry 2018
5: 739–46

Published Online
August 8, 2018
http://dx.doi.org/10.1016/S2215-0366(18)30227-X

Incredible book to refer to



ACSM's Guidelines for Exercise Testing and Prescription (American College of Sports Medicine) Eleventh, Spiral Edition

by Gary Liguori (Author), American College of Sports Medicine (ACSM) (Author)

4.7 ★★★★½ 563 ratings

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Exercise Testing 296
Exercise Prescription 297
Special Considerations 298
Rx Intellectual Disability and Down Syndrome 299
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Rx Kidney Disease 305
Exercise Testing 306
Exercise Prescription 307
Special Considerations 308
Rx Metabolic Syndrome 309
Exercise Testing 310
Exercise Prescription/Special Considerations 310
Rx Multiple Sclerosis 311
Exercise Testing 312
Exercise Prescription 313
Special Considerations 314
Rx Osteoporosis 315
Exercise Testing 316
Exercise Prescription 316
Special Considerations 317
Rx Overweight and Obesity 318
Exercise Testing 319
Exercise Prescription 320
Special Considerations 320
Weight Loss Program Recommendations 321
Bariatric Surgery 321
Rx Parkinson Disease 322
Exercise Testing 325
Exercise Prescription 327
Special Considerations 329
Rx Pulmonary Diseases 331
Asthma 331
Exercise Testing 332
Exercise Prescription 333
Special Considerations 334
Chronic Obstructive Pulmonary Disease 334
Exercise Testing 335

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Exercise w/ fibromyalgia 🔥

- Start with aerobic activity 1-2 days a week, gradually increasing to 2-3 days a week.
- Begin with light aerobic activity (30-39% heart rate reserve), gradually progressing to moderate intensity (40-59% heart rate reserve).
- Start with 10 minutes of activity, increasing to 30-60 minutes per day as tolerated.
- Consider low-impact activities such as aquatic exercises, walking, dancing, and aerobic movement to music.
-Resistance and flexibility exercises also helpful.

FITT — **EVIDENCE-BASED FITT RECOMMENDATIONS FOR INDIVIDUALS WITH FIBROMYALGIA (128–133,135,138,142,152,153)**

	Aerobic	Resistance	Flexibility
Frequency	Begin with 1–2 d · wk^{-1} and gradually progress to 2–3 d · wk^{-1}.	2–3 d · wk^{-1} with a minimum of 48 h between sessions	2–3 d · wk^{-1}
Intensity	Begin with light (30%–39% V O_2R or HRR). Gradually progress to moderate intensity (40%–59% V O_2R or HRR).	40%–80% 1-RM. Gradually increase to 60%–80% concentric 1-RM for strength. For muscle endurance, use ≤50% 1-RM.	Stretch within limits of pain to the point of tightness or slight discomfort.
Time	Begin with 10 min · d^{-1} and progress to a total of 30–60 min · d^{-1} as soon as tolerated.	Strength: Gradually progress, as tolerated, from 4–5 to 8–12 repetitions, increasing from 1 to 2–4 sets per muscle group with at least 2–3 min between sets; endurance: 15–20 repetitions, increasing from 1 to 2 sets with a shorter rest interval	Hold each stretch for 10–30 s.
Type	Low-impact (*e.g.*, aquatic exercise, walking, dance and other aerobic movement to music, swimming, cycling)	Body weight, elastic bands, dumbbells, cuff/ankle weights, weight machines. For resistance in water, use devices to manipulate turbulence (velocity, surface area). For resistance in water, use devices to manipulate turbulence (velocity, surface area).	Static stretches (passive and/or active), for all major muscle tendon groups. Dynamic stretches may also be used.

1-RM, one repetition maximum; HRR, heart rate reserve; V O_2R, oxygen uptake reserve.

American College of Sports Medicine, Liguori G, Feito Y, Fountaine C, Roy B, eds. ACSM's Guidelines for Exercise Testing and Prescription. Eleventh edition. Wolters Kluwer; 2021

AMERICAN COLLEGE of SPORTS MEDICINE

Exercise in those with diabetes

- Flexibility training may be beneficial for individuals with all types of diabetes.
- However, it should not replace recommended activities like aerobic and resistance training.
- This is because flexibility training does not impact glucose control, body composition, or insulin action.
- Autonomic neuropathy can cause blunted heart rate and blood pressure responses to exercise.
- Due to this, the Rating of Perceived Exertion (RPE) should be used to gauge exercise intensity.

FITT	FITT RECOMMENDATIONS FOR INDIVIDUALS WITH DIABETES (9,10,33,34)		
	Aerobic	**Resistance**	**Flexibility and Balance**
Frequency	3–7 d · wk^{-1} No more than 2 consecutive days without activity	A minimum of 2 nonconsecutive d · wk^{-1}, but preferably 3 d	≥2–3 d · wk^{-1} for both
Intensity	Moderate to vigorous (based on subjective experience of "moderate" to "very hard")	Moderate (50%–69% of 1-RM) to vigorous (70%–85% of 1-RM) to improve strength	Stretch to the point of tightness or slight discomfort. Balance exercises: light to moderate intensity
Time	T1DM and T2DM: 150 min · wk^{-1} at moderate to vigorous intensity	At least 8–10 exercises with 1–3 sets of 10–15 repetitions to near fatigue per set early in training	Hold static stretch for 10–30 s; 2–4 repetitions of each exercise. Balance for any duration.
Type	Prolonged, rhythmic activities using large muscle groups (*e.g.*, walking, cycling, swimming Continuous activity or HIIT	Resistance machines, free weights, resistance bands, and/or body weight	Static, dynamic, other stretching, yoga
Unstructured activity (errands, housework, yard work) is encouraged in those with diabetes to aid in reducing sedentary time, increasing daily energy expenditure and assisting with weight management			

American College of Sports Medicine, Liguori G, Feito Y, Fountaine C, Roy B, eds. ACSM's Guidelines for Exercise Testing and Prescription. Eleventh edition. Wolters Kluwer; 2021

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Exercising with low back pain

🔥🧯



Can introduce exercise as soon as two weeks after an acute flare
Regular walking often does not worsen symptoms
For chronic LBP ***with*** generalized pain, consider progressive, low-intensity aerobic exercise.
💡👉For chronic LBP ***without*** generalized pain, moderate-to-high intensity aerobic exercise is suggested.
Exercises focusing on coordination, endurance, and trunk strengthening can alleviate subacute and chronic LBP with movement impairments. Yet, evidence doesn't support the benefit of single-dimension abdominal strengthening.



American College of Sports Medicine, Liguori G, Feito Y, Fountaine C, Roy B, eds. ACSM's Guidelines for Exercise Testing and Prescription. Eleventh edition. Wolters Kluwer; 2021

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Exercising with osteoporosis

- Moderate intensity
- With walking, dancing or other impact-loading exercises like jumping or bench stepping
- Don't recommend impact exercises in those at high fracture Risk based on 10-year risk of major osteoporotic fracture (low <10%, moderate 10-19%, or high >20%) using a FRAX score

FITT — **FITT RECOMMENDATIONS FOR INDIVIDUALS WITH OSTEOPOROSIS (79,265,274)**

	Aerobic	Resistance	Flexibility
Frequency	4–5 d · wk^{-1}	Start with 1–2 nonconsecutive d · wk^{-1}; may progress to 2–3 d · wk^{-1}	5–7 d · wk^{-1}
Intensity	Moderate intensity (40%–59% V O_2R or HRR). Use of the CR-10 scale with ratings of 3–4 might be a more appropriate method of establishing intensity.	Adjust resistance so that last 2 repetitions are challenging to perform. High intensity and high velocity training can be beneficial in those who can tolerate it.	Stretch to the point of tightness or slight discomfort.
Time	Begin with 20 min; gradually progress to a minimum of 30 min (with a maximum of 45–60 min).	Begin with 1 set of 8–12 repetitions; increase to 2 sets after ~2 wk; no more than 8–10 exercises per session	Hold static stretch for 10–30 s; 2–4 repetitions of each exercise
Type	Walking, cycling, or other individually appropriate aerobic activity (weight bearing preferred). Impact loading exercises such as jumping or bench stepping can be used in those with low or moderate risk for fracture.	Standard equipment can be used with adequate instruction and safety considerations. Compound movement exercises are best	Static stretching of all major joints

HRR, heart rate reserve; V O_2R, oxygen uptake reserve.

American College of Sports Medicine, Liguori G, Feito Y, Fountaine C, Roy B, eds. ACSM's Guidelines for Exercise Testing and Prescription. Eleventh edition. Wolters Kluwer; 2021

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Exercising with HFREF and afib

If HfREF with no afib, then start at 40-50% and increase to 70-80% HRR at all times symptom-limited and after an exercise test.
If HfREF with afib, then exertion (11-14 on a 6-20 pt scale) is best

Not too much resistance training recommended (1-2 day/wk), and flexibility also helpful

FITT FITT RECOMMENDATIONS FOR INDIVIDUALS WITH HEART FAILURE (25,33)

	Aerobic	Resistance	Flexibility
Frequency	Minimally 3 d · wk^{-1}; preferably up to 5 d · wk^{-1}	1–2 nonconsecutive d · wk^{-1}	≥2–3 d · wk^{-1} with daily being most effective.
Intensity	Start at 40%–50% and progress to 70%–80% of V O_2 reserve (or HRR); titrate based on perceived exertion. If atrial fibrillation is present, use perceived exertion only, such as RPE (11–14 on a 6–20 scale) or talk test.	Begin at 40% 1-RM for upper body and 50% 1-RM for lower body exercises. Gradually increase to 70% 1-RM over several weeks to months.	Stretch to the point of feeling tightness or slight discomfort.
Time	Progressively increase to 20–60 min · d^{-1}.	1–2 sets of 10–15 repetitions focusing on major muscle groups.	10–30 s hold for static stretching; 2–4 repetitions of each exercise.
Type	Aerobic exercise, focusing on treadmill- or free-walking and stationary cycling as capable.	Weight machines, dumbbells, elastic bands, and/or body weight can be used.	Static, dynamic, and/or PNF stretching.

1-RM, one-repetition maximum; HRR, heart rate reserve; PNF, proprioceptive neuromuscular facilitation; RPE, rating of perceived exertion; V O_2, volume of oxygen consumed per unit time.

American College of Sports Medicine, Liguori G, Feito Y, Fountaine C, Roy B, eds. ACSM's Guidelines for Exercise Testing and Prescription. Eleventh edition. Wolters Kluwer; 2021, p. 260.

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Mindfulness



For depression treatment

Journal of Integrative and Complementary Medicine > Vol. 28, No. 1

Review Article | NO ACCESS | Published Online: 12 January 2022

Effects of Mindfulness Meditation Intervention on Depressive Symptoms in Emerging Adults: A Systematic Review and Meta-Analysis

Authors: Chuntana Reangsing, Christina Lauderman, and Joanne Kraenzle Schneider | AUTHORS INFO & AFFILIATIONS

Publication: Journal of Integrative and Complementary Medicine • https://doi-org.ezproxy.libraries.wright.edu/10.1089/jicm.2021.0036

Results: Forty-five studies resulted in 49 comparisons, including 3479 participants (23.0–2.7 years old); 1826 participants practiced mindfulness and 1653 served as controls. Overall, mindfulness interventions showed significant reduction in depression compared with controls ($g = 0.44$, 95% confidence interval: 0.33–0.55). Mindfulness interventions conducted in Asian countries had a greater decrease in depression ($g = 0.69$) than studies conducted in North America ($g = 0.44$) or Europe ($g = 0.23$). Mindfulness interventions showed greater reductions in depression in studies with higher proportion of females (*Slope* = 0.010, $\tau^2 = 0.07$, $Q_{between} = 7.10$, $p = 0.008$). Mindfulness interventions conducted in emerging adults with depressive disorders reduced depression more ($g = 1.12$) than in emerging adults without ($g = 0.40$). Providing mindfulness intervention in a group setting had a greater reduction of depression ($g = 0.54$) than on an individual basis ($g = 0.30$). More minutes of unstructured mindfulness practice per session showed a greater reduction in depressive symptoms (Slope = 0.016, $Q_{between} = 1.34$, $p = 0.035$). Using intention-to-treat analyses showed a lower ES ($g = 0.14$) than not using it ($g = 0.55$). Other quality indicators were not significant moderators. Primary researchers did not report the adverse effects of mindfulness interventions.

FA + acceptance + compas. (*n* = 18)

- Attention to the body, body scan, breathing as an anchor, awareness and acceptance of mental and emotional states, labelling experience, empathic compassion
- Therapist and self-applied
- 5 weeks: 2 h/week

AR (*n* = 15)

- Cue controlled exhalation, progressive, deep muscle relaxation
- Therapist-applied
- 5 sessions: 1.5 h/session

PR (*n* = 26)

- Isometric Squeeze Muscle relaxation
- Therapist and audio-applied
- 1 session: 60-min

MBI groups

ACT (adapted) (*n* = 121)

- Attention training, metacognitions, acceptance/ mindfulness, screening behaviour, and values-based goals
- Therapist
- 10 weeks: 1.5 h/week

FA (*n* = 49)

- Breathing meditation, body scan, informal practices, mindful of needs and positive mindful practices.
- Self-applied (online files and audio)
- 6 weeks (14.12 Mn days of practice)

AR (*n* = 41)

- Muscle relaxation, cue-controlled, differential, rapid relaxation, diaphragmatic breathing, and applying skills
- Therapist-applied
- 16 weeks: 1.13 h/week

Relaxation groups

- Muscle relaxation and relaxation by recall and counting alone (cueing)
- Therapist-applied
- 8 weeks:1 h/week

Other (*n* = 25)

- Slow breathing
- Therapist and self-applied
- 6 weeks (0.33 h/week)

were found using deconstructive exercises. The overall ES was g = -0.23 [95% confidence interval (CI) -0.40 to -0.07], favouring meditation (number needed to treat = 7.74). Heterogeneity was low

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Background

impact on wellbeing, quality of life and general functioning, and involve considerable costs to individuals and to society at large (Simpson *et al.*, 2010).

Psychological treatments of anxiety frequently include relaxation therapy, which is considered a behavioural approach that emphasizes the development of a specific response that counteract anxiety (Manzoni *et al.*, 2008). This response – i.e. relaxation response – is characterized by a set of physiological adjustments that are elicited in the absence of tension in the body and mind, and they are often accompanied by reduced neurological arousal together with a decrease in sympathetic activity and a sense of being physically rested (Esch *et al.*, 2003; Klainin *et al.*, 2015). The rationale of relaxation interventions seems to be mainly physiological so that persons suffering from anxiety would have elevated activation of the sympathetic nervous system and relaxation would have a direct impact in its reduction (Taylor *et al.*, 2003; Conrad and Roth, 2007; Chiang *et al.*, 2009). In addition, when people learn to relax, they learn a psychological coping strategy, and a sense of control. Relaxation interventions incorporate several techniques, all of which are particularly focused on changing physiological responses to anxiety with relaxing and stabilizing effects on the autonomic nervous system. They cover different procedures such as abdominal or diaphragmatic breathing, e.g. slow,

Sleep



For depression treatment

Sleep Medicine Reviews 43 (2019) 118–128

Contents lists available at ScienceDirect

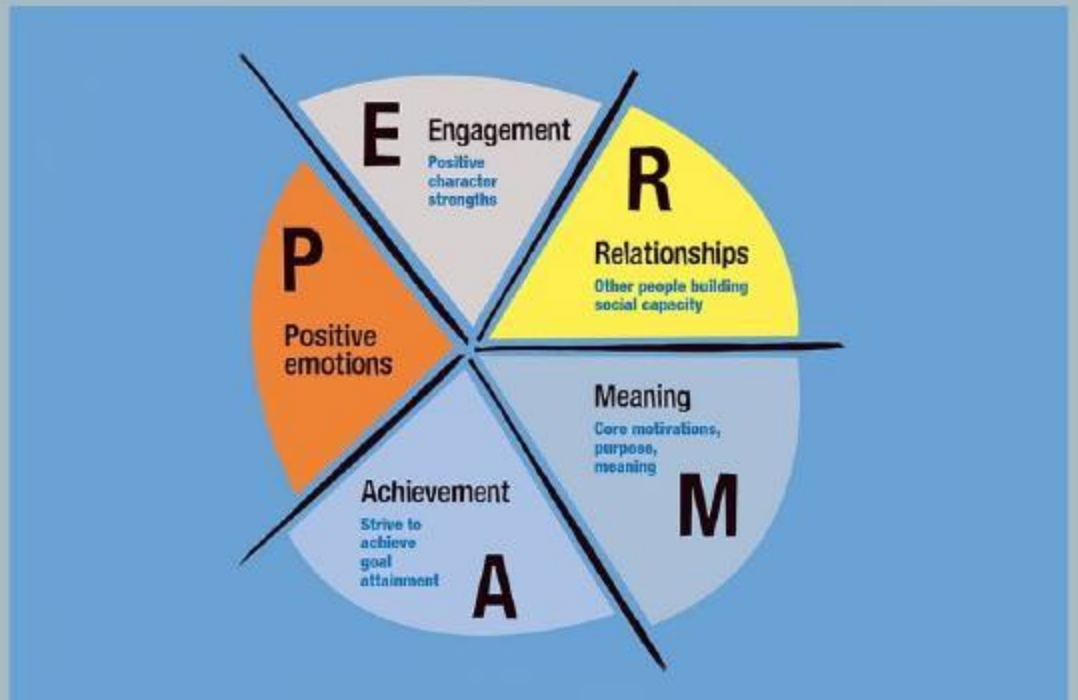
Sleep Medicine Reviews



SUMMARY

Poor sleep is a significant risk factor for depression across the lifespan and sleep problems have been hypothesised to contribute to the onset and maintenance of depression symptoms. However, sleep problems are usually not a direct target of interventions for depression. A range of non-pharmacological treatments can reduce sleep problems but it is unclear whether these interventions also reduce other depression symptoms. The aim of this review was to examine whether non-pharmacological interventions for sleep problems are effective in reducing symptoms of depression. We carried out a systematic search for randomised controlled trials of non-pharmacological sleep interventions that measured depression symptoms as an outcome. Forty-nine trials (n = 5908) were included in a random effects meta-analysis. The pooled standardised mean difference for depression symptoms after treatment for sleep problems was −0.45 (95% CI: −0.55,−0.36). The size of the effect on depression symptoms was moderated by the size of the effect on subjective sleep quality. In studies of participants with mental health problems, sleep interventions had a large effect on depression symptoms (d = −0.81, 95% CI: −1.13,−0.49). The findings indicate that non-pharmacological sleep interventions are effective in reducing the severity of depression, particularly in clinical populations. This suggests that non-pharmacological sleep interventions could be offered as a treatment for depression, potentially improving access to treatment.

Positive Psychiatry



For depression treatment



17. A 20-year-old man comes to the office for follow-up of his Major Depressive Disorder, with atypical features that has responded well to the activating fluoxetine 40mg you prescribed him. He now wants to not just alleviate his depression but feel happier. You mention the field of positive psychology and potential interventions to increase his happiness. Which of the following interventions supported by research to increase happiness and/or well-being is ***incorrectly*** described?

a) Best Possible Self Intervention - Envisioning and writing about one's best possible future self to increase optimism and positive emotions.

b) Compassion interventions - Practicing kindness and empathy towards others to increase positive emotions and social connection.

c) Character strengths - Identifying and using one's personal strengths to increase self-esteem and positive emotions.

d) Gratitude journaling - Regularly writing about things one is thankful that did not happen to him or her.

e) Reminiscence - Reflecting on positive past experiences to increase positive emotions and life satisfaction.



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e) Reminiscence - Reflecting on positive past experiences to increase positive emotions and life satisfaction.

Best possible selves/ optimism	Participants are instructed to imagine a future life, and what it will ideally look like. They typically focus on different domains per period (for example, day or week) and often gain insight into the domains at the start of the intervention. Example domains are: love, hobbies, employment, physical and mental health. Other interventions focusing on optimism are grouped under this classifier.	42,104,373–394
Character strengths	Participants do a strengths assessment (for example, values in action character strengths) and use their top strengths in a new way, as a one-off or over a period of time. Suggestions are typically provided to explain how strengths can be used. Variations of this task are included (for example, set goals in relationship to best or preferred strengths).	42,113,340,360, 391,395–404
Gratitude	Participants are asked to reflect on experiences, events or people they are grateful for. May involve expressing gratitude to other people.	42,57,113,249,327,360,374, 376,382,383,390–393, 396,399,403,405–429
Pleasurable experiences	Participants are asked to reflect on or think about experiences that were fun, amusing or joyful, or that are bringing happiness to their life.	166,188,318,319,413
Three good things	Participants are asked to write or think about three good things that happened over a period (typically reflecting back on the same day) and reflect on why those things occurred. The activity is typically repeated for a number of days.	42,113,360,375, 378,381,391,396, 400,403,415,430–433
Other PPIs	A variety of different takes on the PPIs mentioned above were further tested, including acts of novelty and acts of kindness, gift of time, savouring interventions, meaning making, humour interventions and alternate forms of character strength interventions.	56,132,318,319,360, 374,384,396, 397,422,431–448
Reminiscence interventions	Interventions that focus on reviewing past experiences. Includes life review therapy focusing on integration of difficult life events from the past, development of agentic life stories and retrieval of specific positive memories.	169,172,305,400, 431,449–466

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Need evidence-based questionnaires for patients?



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