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## Title

### ***Can resistance training improve mental health outcomes in older adults? A systematic review and meta-analysis of randomized controlled trials***

## Abstract

**Purpose** This systematic review and meta-analysis aimed to analyze the effects of resistance training (RT) and to compare the different RT prescriptions, sample characteristics, and mental health outcomes (depressive and anxiety symptoms) in older adults. **Methods** All studies that were available on 28th April 2023. For the analysis of intervention effects on depressive and anxiety symptoms, standardized mean differences and standard errors were calculated. Meta-analyses using random-effects models, employing robust variance meta-regression for multilevel data structures, with adjustments for small samples. **Results** For depressive symptoms, the mean effect was - 0.94 (95 %CI: -1.45 - -0.43,  $P < 0.01$ ,  $I^2 = 93.4\%$ ), and for anxiety symptoms, the mean effect was -1.33 (95 %CI: -2.10 - -0.56,  $P < 0.01$ ,  $I^2 = 92.3\%$ ). The mean effect was -0.51 (95 %CI: -0.67 - -0.35,  $P < 0.01$ ,  $I^2 = 36.7\%$ ) for older adults without mental disorders, and those with mental disorders the mean effect was  $ES = -2.15$  (95 %CI: -3.01 - - 1.29,  $P < 0.01$ ,  $I^2 = 91.5\%$ ). **Conclusion** RT was able to improve mental health outcomes in individuals with and without mental disorders, and some RT characteristics influenced the effect of RT on mental health. © 2024 Elsevier B.V.

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## Year

2024

## Source title

Psychiatry Research

## Volume

333.0

## Art. No.

115746

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## DOI

10.1016/j.psychres.2024.115746

## Link

<https://www.scopus.com/inward/record.uri?eid=2-s2.0-85183480971&doi=10.1016%2fj.psychres.2024.115746&partnerID=40&md5=cb58fa4515ad25aec5396a880389aa6a>

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## **Author Keywords**

Aging; Anxiety; Depression; Mental illness; Mood; Strength training

## **Index Keywords**

Aged; Anxiety; Depression; Humans; Mental Disorders; Outcome Assessment, Health Care; Randomized Controlled Trials as Topic; Resistance Training; aging; anxiety; clinical outcome; depression; human; mental disease; mental health; meta analysis; mood; prescription; quality control; randomized controlled trial (topic); resistance training; Review; systematic review; therapy effect; aged; depression; mental disease; outcome assessment; procedures

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## Funding Details

Fundação de Amparo à Pesquisa do Estado de São Paulo, FAPESP, (2021/01318-0);  
Fundação de Amparo à Pesquisa do Estado de São Paulo, FAPESP

## Funding Texts

P.M.C. is supported by the São Paulo Research Foundation ( FAPESP ) with a postdoctoral fellowship (FAPESP process: 2021/01318-0 ).

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## **Publisher**

Elsevier Ireland Ltd

## **ISSN**

01651781

## **CODEN**

PSRSD

## **PubMed ID**

38281452.0

## **Language of Original Document**

English

## **Abbreviated Source Title**

Psychiatry Res.

## **Document Type**

Review

---

## Publication Stage

Final

## Source

Scopus

## EID

2-s2.0-85183480971