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PROSPERO
International prospective register of systematic reviews

Citation

Dennis Visser, Ewout B. Smit, Karin (H.L.) Gerrits. Effectiveness and characteristics of physical fitness training on cardiorespiratory fitness in older adults: a systematic review of systematic reviews. PROSPERO 2020 CRD42020140575 Available from: https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42020140575

Review question

1. What is the effectiveness of physical fitness training on cardiorespiratory fitness compared to other or no training in adults over 65 years old?

2. What are the training characteristics that are associated with significant effects on cardiorespiratory fitness in adults over 65 years old?

3. Which recommendations for physical fitness training for older people over 65 can be made as a result of this umbrella review?

Searches

PubMed, EMBASE, CINAHL and the Cochrane Library.

Search to be performed.

Language restriction: English only.

Types of study to be included

Systematic reviews

Condition or domain being studied

This review studies the effects of physical fitness training on the cardiorespiratory fitness of older adults. There are many guidelines for this type of training in adults. This is not the case with older adults. This makes it difficult to draw up a scientifically based program for this type of training in geriatric rehabilitation. This review is a first step in the development of recommendations for physical fitness training for older adults.

Participants/population

The included review must present results of at least a subgroup of older adults aged 65 and older. There are no other criteria with regard to the population.

Intervention(s), exposure(s)

Physical fitness training aimed at improving or maintaining cardiorespiratory fitness.

Comparator(s)/control

The studies included in the included systematic reviews may be either randomised, quasi-randomised, non-randomised, or without a control intervention.

Context

Inclusion criteria:

- We will include systematic reviews of intervention studies. Reviews will be classified as systematic if they at least fulfill the following criteria: description of a search strategy and in- and exclusion criteria. The studies included in the included systematic reviews may be either randomised, quasi-randomised, non-randomised, or without a control intervention.Cardiorespiratory fitness is measured at least before and after the intervention

- The intervention is a physical training that is expected to improve cardiorespiratory fitness

- The description of the intervention must contain at least one of the following: Frequency, Intensity, Time or Type of exercise

Exclusion criteria:

- Systematic review does not report an intervention

- Insufficient description of the intervention in the systematic review

- No cardiorespiratory outcomes

Main outcome(s)

The outcome numbers correspond with the research questions.

1. The described outcomes are focused on fitness and have been measured at least twice so that they actually show the effect of the training on fitness. Think of:

a. Cardiorespiratory function:

i. Heart rate response

ii. VO2 max

iii. VO2 peak

iv. Muscle fatigue

b. Performance:

i. 2/4/6 Minute Walking Test

ii. Endurance capacity

iii. Exercise tolerance

c. Any other outcome measure that describes cardiorespiratory fitness

2. Training characteristics will be described using Frequency, Intensity, Time and Type of exercise (FITT-criteria).

Measures of effect

None

Additional outcome(s)

Quality of the reviews

Measures of effect

Not applicable

Data extraction (selection and coding)

1. Two reviewers (DV, EBS) independently screen titles and abstracts of the full list and agreement has to be reached before the article will be subjected to a full-text assessment. In case, an article is only selected by one reviewer a discussion will take place between the two reviewers to determine whether the study should be selected for a full-text analysis. In the case that consensus cannot be reached than the article will be included for full text analysis.

2. Next, both reviewers independently assess the full text of the selected articles. In case, an article is only selected by one reviewer a discussion will take place between the two reviewers to determine whether the

study should be included in the review. A third reviewer (HLG) will be consulted in case that the two reviewers cannot reach consensus on inclusion. .

3. The two reviewers independently assess the review quality and extract the data from each included review. The results of the quality assessment and data extraction will be compared and discrepancies will be resolved through discussion.

4. The methodological quality of the reviews will be determined by A MeaSurement Tool to Assess systematic Reviews (AMSTAR 2)?

5. The validated JBI Data Extraction Form for Systematic Reviews and Research Syntheses* will be used for data extraction. Two authors will independently undertake this process. Characteristics of studies will be tabulated as:

a. Review characteristics: author/year, objectives, participants (characteristics/total number), setting/context, interventions of interest, number of databases/sources searched, date range of included studies, number of total studies included, detailed description of the included primary studies related to healthy eating promotion (number/type of studies/country of origin), appraisal instrument and rating, method of analysis and outcomes assessed; and

b. Review Results:

i. Effect of training on cardiorespiratory fitness

ii. Training characteristics using the FITT-criteria

*Aromataris E, Munn Z (Editors). Joanna Briggs Institute Reviewer's Manual. The Joanna Briggs Institute, 2017. Available from https://reviewersmanual.joannabriggs.org/

Risk of bias (quality) assessment

A MeaSurement Tool to Assess systematic Reviews 2 (AMSTAR 2)*.

*Shea BJ, Reeves BC, Wells G, Thuku M, Hamel C, Moran J, Moher D, Tugwell P, Welch V, Kristjansson E, Henry DA. AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. BMJ. 2017 Sep 21;358:j4008.

Strategy for data synthesis

No meta-analysis will be performed. Due to the expected large differences between the different groups of elderly people and the different types of physical fitness training, these will not be sufficiently comparable. Therefore we will use a narrative synthesis to describe the results of the included reviews on the effect of training and the training characteristics including FITT-criteria (see question #26). The results of the quality assessment will also be reported in this synthesis. There are no limitations to the data synthesis, this mean that there will not be a minimal number of systematic reviews as well as number of studies in the included reviews. Furthermore, data synthesis will include studies of all quality levels, however the risk of bias and its impact on the data synthesis will be reported.

Analysis of subgroups or subsets

If sufficient articles are found, the results may be broken down by patient group (for example stroke patients or patients after an orthopedic procedure). The results will be described in the same way as stated under the heading data extraction, only per patient group.

Contact details for further information

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Organisational affiliation of the review

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Type and method of review

Intervention, Narrative synthesis, Review of reviews, Systematic review

Anticipated or actual start date

08 May 2019

Anticipated completion date

08 May 2020

Funding sources/sponsors

ZonMw (national funding body for medical research)

Postbus 93245

2509 AE Den Haag

Projectnumber: 839120007

Gerion (educational institute for the training of elderly care physicians)

Postbus 7057

1007 MB Amsterdam

Conflicts of interest

None known

Language

English

Country

Netherlands

Stage of review

NIHR | National Institute for Health Research

PROSPERO
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Review Ongoing

Subject index terms status
Subject indexing assigned by CRD

Subject index terms
Adult; Cardiorespiratory Fitness; Exercise; Humans; Physical Fitness

Date of registration in PROSPERO
13 March 2020

Date of first submission
12 July 2019

Stage of review at time of this submission

Stage	Started	Completed
Preliminary searches	Yes	No
Piloting of the study selection process	Yes	No
Formal screening of search results against eligibility criteria	No	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

The record owner confirms that the information they have supplied for this submission is accurate and complete and they understand that deliberate provision of inaccurate information or omission of data may be construed as scientific misconduct.
The record owner confirms that they will update the status of the review when it is completed and will add publication details in due course.

Versions
13 March 2020