The effectiveness of exercise interventions for tendinopathy.

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Review question

1. Which exercise interventions are most effective across all tendinopathies?

2. Does the type/location of the tendinopathy, or other specific covariates, affect which are the most effective exercise therapies?

Searches

The search will initially be conducted for a scoping review of exercise interventions for tendinopathies, and will be updated for the effectiveness review on its commencement.

The scoping review will use a three-step search strategy, as follows:

i) MEDLINE and CINAHL will be searched using the initial keywords (mh tendinopathy OR tx tendin* or tx tendon*) AND (mh exercise OR tx exercis*, followed by an analysis of the text words in the titles/abstracts, and those used to describe the articles in order to create a full search strategy;

ii) The full search strategy will be adopted for each database and applied systematically to: MEDLINE, CINAHL, AMED, EMBase, SPORTDiscus, the Cochrane Library, JBI Evidence Synthesis, PEDRo, Epistemionikos. The following trial registries will be searched: Clinical trials.gov, ISRCTN, The Research Register, EU-CTR, ANZCTR. We will also search for unpublished studies via OpenGrey, MedNar, The New York Academy Grey Literature Report, Ethos, CORE and Google Scholar;

iii) For each article located in steps 1 and 2, we will conduct a search of cited and citing articles using Scopus, and hand-searching, where necessary.

We will not place a language limit on the searches, but rather, we will include any literature for which a translation is accessible.

The searches will include material from 1998 onwards.

Types of study to be included

RCTs.

Quasi-experimental studies with a control group.

Condition or domain being studied

Any type or location of tendinopathy, defined as tendon degeneration, and characterized by a combination of pain, swelling and impaired performance.

Participants/population

Inclusion: patients of any age, any gender, and with a tendinopathy of any severity or duration at any anatomical location.

Exclusion: plantar heel pain.

Intervention(s), exposure(s)

Exercise therapy including, but not limited to: eccentric, concentric, heavy slow resistance, stretching, cardiovascular, whole-body, or a combination of these exercise types.

The exercise may be used as a first- or second-line intervention, and may be delivered in isolation, or with adjunct therapies such as shockwave or laser, or after regenerative or orthobiologic techniques (e.g., prolotherapy, platelet-rich plasma or stem-cell treatments).

Comparator(s)/control

The following comparisons will be considered:

One type of exercise with another type;
Exercise with conservative intervention (single or combined);

Exercise with a control (e.g., waiting list, wait-and-see);

Exercise with surgery.

Context

Exercise delivered in primary or secondary care, or community locations.

Developed nations (the top 59 countries in the human development index).

Main outcome(s) [1 change]

Change in pain, measured using any validated pain scale, from baseline to the last available follow-up.

Measures of effect

Not applicable.

Additional outcome(s) [1 change]

Change in patient reported function, measured using any validated functional outcome measure, from baseline to last available follow-up.

Change in quality of life, measured using any validated outcome measure (e.g. SF-36, EQ-5D), from baseline to last available follow-up.

Change in muscle strength, measured using validated technique (e.g. isometric, isotonic, from baseline to last available follow-up.

Change in range of motion, measured using any validated technique (e.g. goniometry), from baseline to last available follow-up.

Change in work-related outcomes (e.g. work ability scale), from baseline to last available follow-up.

Patient satisfaction on completion of intervention.

Patient-reported return to activities on completion of intervention.

Adverse events occurring at any time-point.

Measures of effect

Not applicable.

Data extraction (selection and coding)

The studies retrieved from the searches will be screened for relevance, and those identified as being potentially eligible will be fully assessed against the inclusion/exclusion criteria, and selected or rejected, as appropriate.

Data will then be extracted from the studies selected for inclusion, using a data extraction form designed by the study team.

The data to be extracted will include: specific details of the populations, interventions, study methods, and outcomes of significance to the review findings.
Data will be extracted by one reviewer and verified by a second using Microsoft Excel.
Authors will be contacted regarding any data found to be missing in any of the studies.

Risk of bias (quality) assessment

The Cochrane risk of bias (for RCTs) and JBI (for quasi-experimental studies) tools will be used to assess risk of bias and methodological quality.

The critical appraisal will be performed by two independent reviewers, and any conflicts will be resolved through discussion, or by consultation with a third reviewer.

Covidence will be used for the risk of bias assessment, and JBI SUMARI software for critical appraisal of quasi-experimental studies.

Data will not be excluded based on the methodological quality of the source study, and quality will be accounted for in subsequent sensitivity analyses and quantitative down-weighting.

Strategy for data synthesis

Continuous outcome measures will be used to quantify treatment effects by calculating standardized mean differences.

Initially, meta-analyses of direct comparisons will be performed, and model building will then combine both direct and indirect comparisons within a network framework to quantify the probability of each intervention (or combined interventions) being the most effective, the second-best, etc.

All meta-analyses will be performed within a Bayesian random effects framework to facilitate flexible modelling and probabilistic interpretations.

Heterogeneity in relative treatment effects will be explored with meta-regression and a priori trial-level covariates relating to person and trial characteristics.

Associations caused by reporting multiple outcomes due to repeated observations across different follow-up times and studies incorporating several related variables will be accounted for by performing multivariate models or including additional hierarchical parameters where appropriate.

The models analysed will be conducted using Bayesian Markov chain Monte Carlo methods using the WinBUGS language and the R2WinBUGS package in the R programming environment.

We will also conduct relevant subgroup analyses, as described below.

Analysis of subgroups or subsets [1 change]

We will establish the effectiveness of different types and formats of exercise across tendinopathies by investigating differences and interactions across subgroups such as age, athleticism, chronicity and

comorbidity. Where possible, these subgroups will be incorporated into the network meta-analysis as covariates.?

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Type and method of review
Intervention, Meta-analysis, Systematic review

Anticipated or actual start date
01 November 2020

Anticipated completion date
31 August 2021

Funding sources/sponsors
NIHR HTA Programme (Project ref. 129388)

Please note that this is a draft protocol which may be subject to amendment following phase I of this NIHR-funded evidence synthesis project (a scoping review)

Conflicts of interest
None known

Language
English

Country
England, Scotland

Stage of review
Review Ongoing

Subject index terms status
Subject indexing assigned by CRD

Subject index terms
Exercise; Exercise Movement Techniques; Exercise Therapy; Humans; Musculoskeletal Diseases; Resistance Training; Tendinopathy; Treatment Outcome

Date of registration in PROSPERO
10 February 2020

Date of first submission
07 February 2020

Stage of review at time of this submission
The review has not started

Stage	Started	Completed
Preliminary searches	No	No
Piloting of the study selection process	No	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
10 February 2020