

## Effect of Cognitive Behavioral Therapy as intervention for people with kinesiophobia: A meta-analysis

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### Citation

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### Review question

The aim of this meta-analysis of randomized controlled trials is to evaluate the efficacy of Cognitive Behavioral Therapy for patients with kinesiophobia.

### Searches

We will search articles in nine electronic database including PubMed, EMBASE, Web of Science, EBSCO, Cochrane Library and four Chinese databases (CNKI, Sinomed, WanFang and VIP). All the publications until March 4, 2023 will be searched without any restriction of countries or article type. Reference list of all selected articles will independently screened to identify additional studies left out in the initial search. Each database was searched using a combination of subject terms and free terms, with Boolean logic operators to link the search terms.

### Types of study to be included

Randomized controlled trials (RCTs) will be included.

### Condition or domain being studied

The concept of kinesiophobia was put forward in 1990. Kinesiophobia is the act of avoiding physical activity or movement because people are stimulated by pain or fear that physical activity will cause damage to the body. Kinesiophobia is partly associated with pain, disability, and quality of daily life. Studies have shown a prevalence of kinesiophobia in chronic pain of 50% to 70%. A survey of kinesiophobia in cardiac rehabilitation patients showed that 45.4% of patients experienced high levels of kinesiophobia. Longitudinal studies have shown that high levels of kinesiophobia predict negative changes in quality of life. However, kinesiophobia is also considered a modifiable factor that can contribute to early pain relief and functional recovery and improved quality of life through active prevention and education.

### Participants/population

people with kinesiophobia will be included.

### Intervention(s), exposure(s)

Cognitive behavioral therapy was the main interventions.

### Comparator(s)/control

Studies that satisfied all of the following criteria were included: The population, intervention, comparison and outcome (PICO) framework guided the selection of eligibility criteria.

Population: There were no restrictions on the type of disease, but the primary outcome indicator or secondary outcome indicator had to include kinesiophobia. People with lower limb paralysis, amputation or mental disorders were excluded.

Interventions: Cognitive Behavioral Therapy

Comparisons: routine care or any other interventions that did not involve Cognitive Behavioral Therapy.

Outcome: kinesiophobia score. Measured using three commonly used scales, including the Tampa Scale for Kinesiophobia (TSK- 17) and the shortened version of the Tampa Scale for Kinesiophobia (TSK- 11) .

Exclusion criteria: Research protocols, ongoing studies, reviews and conference abstracts were excluded.

### Main outcome(s)

Mean change in Tampa Kinesiophobia Scale–11 or Tampa Kinesiophobia Scale–17.

### Measures of effect

SMD

### Additional outcome(s)

None

### Measures of effect

None

### Data extraction (selection and coding)

Two authors will independently extract data. Any disagreement will be resolved by discussion until consensus is reached or by consulting a third author. The following data will be extracted: author, year of publication, country where the study was conducted, study period, original inclusion criteria, total number of people included in the study.

### Risk of bias (quality) assessment

Two reviewers will independently assess risk of bias based on the following domains from recommendations from the Cochrane handbook: 1. Adequate sequence generation; 2. Allocation concealment; 3. Blinding; 4. Incomplete outcome data and how it was addressed; 5. Selective reporting of the outcome; 6. Any other biases. results of bias assessment will be presented in a figure and a graph indicating low, high or unclear risk of bias for each of the 6 items in each trial. Sensitivity analysis will be conducted based on the bias assessment to assess robustness of results .

### Strategy for data synthesis

Data synthesis RevMan software version 5.4 and Stata are used to synthesise the quantitative data. The data were continuous, and the effect size was calculated by the standardised mean difference (Cohen's d). To adapt to the heterogeneity of the studies, random- effects models were used.  $I^2$  statistics and 95% confidence intervals were used to assess the heterogeneity of the effect sizes in the study. When a high degree of heterogeneity was found, sensitivity analysis and subgroup analysis were performed.

### Analysis of subgroups or subsets

Sensitivity analysis to assess robustness of results and subgroup analysis to determine whether the summary effects vary in relation to clinical characteristics of the trials included are pre-specified. In addition, sensitivity analysis, including only those trials free of any assessed bias will be conducted.

### Contact details for further information

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### Organisational affiliation of the review

GUANGDONG PHARMACEUTICAL UNIVERSITY

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### Review team members and their organisational affiliations

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Miss Yanxin Xu. GUANGDONG PHARMACEUTICAL UNIVERSITY

### Type and method of review

Meta-analysis, Systematic review

### Anticipated or actual start date

04 March 2023

### Anticipated completion date

30 June 2023

### Funding sources/sponsors

None

### Grant number(s)

State the funder, grant or award number and the date of award

None

### Conflicts of interest

### Language

English

### Country

China

### Stage of review

Review Ongoing

### Subject index terms status

Subject indexing assigned by CRD

### Subject index terms

Cognitive Behavioral Therapy; Humans; Kinesiophobia; Patients; Randomized Controlled Trials as Topic

### Date of registration in PROSPERO

06 April 2023

### Date of first submission

26 March 2023

### 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

06 April 2023

06 April 2023

## Appendix S2 Search strategy

Search ran: 2024.11

### Appendix S2. Search terms in each database

Databases	Step	Searches	Results
PubMed	#1	("Cognitive Behavioral Therapy"[Mesh]) OR (Behavioral Therapies, Cognitive[Title/Abstract]) OR (Behavioral Therapy, Cognitive[Title/Abstract]) OR (Behavior Therapies, Cognitive[Title/Abstract]) OR (Behavior Therapy, Cognitive[Title/Abstract]) OR (Behaviour Therapies, Cognitive[Title/Abstract]) OR (Behaviour Therapy, Cognitive[Title/Abstract]) OR (Cognitive Behavioral Therapies[Title/Abstract]) OR (Cognitive Behavior Therapies[Title/Abstract]) OR (Cognitive Behavior Therapy[Title/Abstract]) OR (Cognitive Behaviour Therapy[Title/Abstract]) OR (Cognitive Behaviour Therapies[Title/Abstract]) OR (Cognitive Therapy[Title/Abstract]) OR (Cognitive Therapies[Title/Abstract]) OR (Cognition Therapy[Title/Abstract]) OR (Cognition Therapies[Title/Abstract]) OR (Cognitive Psychotherapy[Title/Abstract]) OR (Cognitive Psychotherapies[Title/Abstract]) OR (Therapies, Cognitive Behavioral[Title/Abstract]) OR (Therapy, Cognitive Behavioral[Title/Abstract]) OR (Therapy, Cognitive Behavior[Title/Abstract]) OR (Therapies, Cognitive Behavior[Title/Abstract]) OR (Therapies, Cognitive Behaviour[Title/Abstract]) OR (Therapy, Cognitive Behaviour[Title/Abstract]) OR (Therapy, Cognitive[Title/Abstract]) OR (Therapies, Cognitive[Title/Abstract]) OR (Therapies, Cognition[Title/Abstract]) OR (Therapy, Cognition[Title/Abstract]) OR (Psychotherapies, Cognitive[Title/Abstract]) OR (Psychotherapy, Cognitive[Title/Abstract])	87193
	#2	((((((((((("kinesiophobia"[Mesh]) OR (Kinesophobia[Title/Abstract])) OR (Kinetophobia[Title/Abstract])) OR (Fear of Movement[Title/Abstract])) OR (Fear of Activity[Title/Abstract])) OR (Fear Movement[Title/Abstract])) OR (Fear Avoidance[Title/Abstract])) OR (Movement Phobia[Title/Abstract])) OR (Movement Fear[Title/Abstract])) OR (Phobia, Movement[Title/Abstract])) OR (Pain-Related Activity Avoidance[Title/Abstract])) OR (Pain Related Activity Avoidance[Title/Abstract])) OR (Avoidance, Pain-Related Activity[Title/Abstract])) OR (Activity Avoidance, Pain-Related[Title/Abstract]))	4367
	#3	((((((((((randomized controlled trial[Publication Type]) OR (controlled clinical trial[Publication Type])) OR (randomized controlled trial[Title/Abstract])) OR (controlled clinical trial[Title/Abstract])) OR (Controlled Clinical Trials, Randomized[Title/Abstract])) OR (Clinical Trials, Randomized[Title/Abstract])) OR (Trials, Randomized	4049562

		Clinical[Title/Abstract]) OR (randomized[Title/Abstract]) OR (randomised[Title/Abstract]) OR (randomly[Title/Abstract]) OR (trial[Title/Abstract]) OR (groups[Title/Abstract]) OR (RCT[Title/Abstract])	
	#4	#1 AND #2 AND #3	132
Cochrane Library	#1	MeSH descriptor: [Cognitive Behavioral Therapy] explode all trees	14499
	#2	(Behavioral Therapies, Cognitive OR Behavioral Therapy, Cognitive OR Behavior Therapies, Cognitive OR Behavior Therapy, Cognitive OR Behaviour Therapies, Cognitive OR Behaviour Therapy, Cognitive OR Cognitive Behavioral Therapies OR Cognitive Behavior Therapies OR Cognitive Behavior Therapy OR Cognitive Behaviour Therapy OR Cognitive Behaviour Therapies OR Cognitive Therapy OR Cognitive Therapies OR Cognition Therapy OR Cognition Therapies OR Cognitive Psychotherapy OR Cognitive Psychotherapies OR Therapies, Cognitive Behavioral OR Therapy, Cognitive Behavioral OR Therapy, Cognitive Behavior OR Therapies, Cognitive Behavior OR Therapies, Cognitive Behaviour OR Therapy, Cognitive Behaviour OR Therapy, Cognitive OR Therapies, Cognitive OR Therapies, Cognition OR Therapy, Cognition OR Psychotherapies, Cognitive OR Psychotherapy, Cognitive):ti,ab,kw	59748
	#3	#1 OR #2	61738
	#4	MeSH descriptor: [Kinesiophobia] explode all trees	40
	#5	(Kinesophobia OR Kinetophobia OR Fear of Movement OR Fear of Activity OR Fear Movement OR Fear Avoidance OR Movement Phobia OR Movement Fear OR Phobia, Movement OR Pain-Related Activity Avoidance OR Pain Related Activity Avoidance OR Avoidance, Pain-Related Activity OR Activity Avoidance, Pain-Related):ti,ab,kw	6906
	#6	#4 OR #5	6934
	#7	(randomized controlled trial OR controlled clinical trial OR Controlled Clinical Trials, Randomized OR Clinical Trials, Randomized OR Trials, Randomized Clinical OR randomized OR randomised OR randomly OR trial OR groups OR RCT):ti,ab,kw	1748925
	#8	#3 AND #6 AND #7	1195
Embase	#1	'cognitive behavioral therapy'/exp	33,968
	#2	'cognitive behavioral therapy':ab,ti OR 'behavioral therapies, cognitive':ab,ti OR 'behavioral therapy, cognitive':ab,ti OR 'behavior therapies, cognitive':ab,ti OR 'behavior therapy, cognitive':ab,ti OR 'behaviour therapies, cognitive':ab,ti OR 'behaviour therapy, cognitive':ab,ti OR 'cognitive behavioral therapies':ab,ti OR 'cognitive behavior therapies':ab,ti OR	30998

		'cognitive behavior therapy':ab,ti OR 'cognitive behaviour therapy':ab,ti OR 'cognitive behaviour therapies':ab,ti OR 'cognitive therapy':ab,ti OR 'cognitive therapies':ab,ti OR 'cognition therapy':ab,ti OR 'cognition therapies':ab,ti OR 'cognitive psychotherapy':ab,ti OR 'cognitive psychotherapies':ab,ti OR 'therapies, cognitive behavioral':ab,ti OR 'therapy, cognitive behavioral':ab,ti OR 'therapy, cognitive behavior':ab,ti OR 'therapies, cognitive behavior':ab,ti OR 'therapies, cognitive behaviour':ab,ti OR 'therapy, cognitive behaviou':ab,ti OR 'therapy, cognitive':ab,ti OR 'therapies, cognitive':ab,ti OR 'therapies, cognition':ab,ti OR 'therapy, cognition':ab,ti OR 'psychotherapies, cognitive':ab,ti OR 'psychotherapy, cognitive':ab,ti	
	#3	#1 OR #2	52550
	#4	'kinesiophobia'/exp	857
	#5	'kinesiophobia':ab,ti OR 'kinesophobia':ab,ti OR 'kinetophobia':ab,ti OR 'fear of movement':ab,ti OR 'fear of activity':ab,ti OR 'fear movement':ab,ti OR 'fear avoidance':ab,ti OR 'movement phobia':ab,ti OR 'movement fear':ab,ti OR 'phobia, movement':ab,ti OR 'pain-related activity avoidance':ab,ti OR 'pain related activity avoidance':ab,ti OR 'avoidance, pain-related activity':ab,ti OR 'activity avoidance, pain-related':ab,ti	4958
	#6	#4 OR #5	5031
	#7	'randomized controlled trial'/exp	851518
	#8	'randomized controlled trial':ab,ti OR 'controlled clinical trial':ab,ti OR 'controlled clinical trials, randomized':ab,ti OR 'clinical trials, randomized':ab,ti OR 'trials, randomized clinical':ab,ti OR 'randomized':ab,ti OR 'randomised':ab,ti OR 'randomly':ab,ti OR 'trial':ab,ti OR 'groups':ab,ti OR 'rct':ab,ti	5446989
	#9	#7 OR #8	5542049
	#10	#3 AND #6 AND #9	146
EBSCO	S1	SU cognitive behavioral therapy OR TI ( Cognitive Behavioral Therapy OR Behavioral Therapies, Cognitive OR Behavioral Therapy, Cognitive OR Behavior Therapies, Cognitive OR Behavior Therapy, Cognitive OR Behaviour Therapies, Cognitive OR Behaviour Therapy, Cognitive OR Cognitive Behavioral Therapies OR Cognitive Behavior Therapies OR Cognitive Behavior Therapy OR Cognitive Behaviour Therapy OR Cognitive Behaviour Therapies OR Cognitive Therapy OR Cognitive Therapies OR Cognition Therapy OR Cognition Therapies OR Cognitive	137,349

		Psychotherapy OR Cognitive Psychotherapies OR Therapies, Cognitive Behavioral OR Therapy, Cognitive Behavioral OR Therapy, Cognitive Behavior OR Therapies, Cognitive Behavior OR Therapies, Cognitive Behaviour OR Therapy, Cognitive Behaviour OR Therapy, Cognitive OR Therapies, Cognitive OR Therapies, Cognition OR Therapy, Cognition OR Psychotherapies, Cognitive OR Psychotherapy, Cognitive ) OR AB ( Cognitive Behavioral Therapy OR Behavioral Therapies, Cognitive OR Behavioral Therapy, Cognitive OR Behavior Therapies, Cognitive OR Behavior Therapy, Cognitive OR Behaviour Therapies, Cognitive OR Behaviour Therapy, Cognitive OR Cognitive Behavioral Therapies OR Cognitive Behavior Therapies OR Cognitive Behavior Therapy OR Cognitive Behaviour Therapy OR Cognitive Behaviour Therapies OR Cognitive Therapy OR Cognitive Therapies OR Cognition Therapy OR Cognition Therapies OR Cognitive Psychotherapy OR Cognitive Psychotherapies OR Therapies, Cognitive Behavioral OR Therapy, Cognitive Behavioral OR Therapy, Cognitive Behavior OR Therapies, Cognitive Behavior OR Therapies, Cognitive Behaviour OR Therapy, Cognitive Behaviour OR Therapy, Cognitive OR Therapies, Cognitive OR Therapies, Cognition OR Therapy, Cognition OR Psychotherapies, Cognitive OR Psychotherapy, Cognitive )	
	S2	SU kinesiophobia OR TI ( Kinesiophobia OR Kinesophobia OR Kinetophobia OR Fear of Movement OR Fear of Activity OR Fear Movement OR Fear Avoidance OR Movement Phobia OR Movement Fear OR Phobia, Movement OR Pain-Related Activity Avoidance OR Pain Related Activity Avoidance OR Avoidance, Pain-Related Activity OR Activity Avoidance, Pain-Related ) OR AB ( Kinesiophobia OR Kinesophobia OR Kinetophobia OR Fear of Movement OR Fear of Activity OR Fear Movement OR Fear Avoidance OR Movement Phobia OR Movement Fear OR Phobia, Movement OR Pain-Related Activity Avoidance OR Pain Related Activity Avoidance OR Avoidance, Pain-Related Activity OR Activity Avoidance, Pain-Related )	44,377
	S3	SU randomized controlled trials OR TI ( randomized controlled trial OR controlled clinical trial OR Controlled Clinical Trials, Randomized OR Clinical Trials, Randomized OR Trials, Randomized Clinical OR randomized OR randomised OR randomly OR trial OR groups OR RCT ) OR AB ( randomized controlled trial OR controlled clinical trial OR Controlled Clinical Trials, Randomized OR Clinical Trials, Randomized OR Trials, Randomized Clinical OR randomized OR randomised OR randomly OR trial OR groups OR RCT )	12,296,251
	S4	S1 AND S2 AND S3	350
Web of	#1	TS=(Cognitive Behavioral Therapy OR Behavioral Therapies, Cognitive OR Behavioral Therapy, Cognitive OR	79,692

Science		Behavior Therapies, Cognitive OR Behavior Therapy, Cognitive OR Behaviour Therapies, Cognitive OR Behaviour Therapy, Cognitive OR Cognitive Behavioral Therapies OR Cognitive Behavior Therapies OR Cognitive Behavior Therapy OR Cognitive Behaviour Therapy OR Cognitive Behaviour Therapies OR Cognitive Therapy OR Cognitive Therapies OR Cognition Therapy OR Cognition Therapies OR Cognitive Psychotherapy OR Cognitive Psychotherapies OR Therapies, Cognitive Behavioral OR Therapy, Cognitive Behavioral OR Therapy, Cognitive Behavior OR Therapies, Cognitive Behavior OR Therapies, Cognitive Behaviour OR Therapy, Cognitive Behaviour OR Therapy, Cognitive OR Therapies, Cognitive OR Therapies, Cognition OR Therapy, Cognition OR Psychotherapies, Cognitive OR Psychotherapy, Cognitive)	
	#2	TS=(Kinesiophobia OR Kinesophobia OR Kinetophobia OR Fear of Movement OR Fear of Activity OR Fear Movement OR Fear Avoidance OR Movement Phobia OR Movement Fear OR Phobia, Movement OR Pain-Related Activity Avoidance OR Pain Related Activity Avoidance OR Avoidance, Pain-Related Activity OR Activity Avoidance, Pain-Related)	25,481
	#3	TS=(randomized controlled trial OR controlled clinical trial OR Controlled Clinical Trials, Randomized OR Clinical Trials, Randomized OR Trials, Randomized Clinical OR randomized OR randomised OR randomly OR trial OR groups OR RCT)	6,650,610
	#4	#3 AND #2 AND #1	710
Scopus	#1	TITLE-ABS-KEY ( "Cognitive Behavioral Therapy" OR "Behavioral Therapies, Cognitive" OR "Behavioral Therapy, Cognitive" OR "Behavior Therapies, Cognitive" OR "Behavior Therapy, Cognitive" OR "Behaviour Therapies, Cognitive" OR "Behaviour Therapy, Cognitive" OR "Cognitive Behavioral Therapies" OR "Cognitive Behavior Therapies" OR "Cognitive Behavior Therapy" OR "Cognitive Behaviour Therapy" OR "Cognitive Behaviour Therapies" OR "Cognitive Therapy" OR "Cognitive Therapies" OR "Cognition Therapy" OR "Cognition Therapies" OR "Cognitive Psychotherapy" OR "Cognitive Psychotherapies" OR "Therapies, Cognitive Behavioral" OR "Therapy, Cognitive Behavioral" OR "Therapy, Cognitive Behavior" OR "Therapies, Cognitive Behavior" OR "Therapies, Cognitive Behaviour" OR "Therapy, Cognitive Behaviour" OR "Therapy, Cognitive" OR "Therapies, Cognitive" OR "Therapies, Cognition" OR "Therapy, Cognition" OR "Psychotherapies, Cognitive" OR "Psychotherapy, Cognitive" )	89,170
	#2	TITLE-ABS-KEY ( "Kinesiophobia" OR "Kinesophobia" OR "Kinetophobia" OR "Fear of Movement" OR "Fear of	4,759

		Activity" OR "Fear Movement" OR "Fear Avoidance" OR "Movement Phobia" OR "Movement Fear" OR "Phobia, Movement" OR "Pain-Related Activity Avoidance" OR "Pain Related Activity Avoidance" OR "Avoidance, Pain-Related Activity" OR "Activity Avoidance, Pain-Related" )	
	#3	TITLE-ABS-KEY ( "randomized controlled trial" OR "controlled clinical trial" OR "Controlled Clinical Trials, Randomized" OR "Clinical Trials, Randomized" OR "Trials, Randomized Clinical" OR "randomized" OR "randomised" OR "randomly" OR "trial" OR "groups" OR "RCT" )	12,480,145
	#4	#1 AND #2 AND #3	251
CBM	#1	"Cognitive behavioral therapy "[common field: intelligence] OR "cognitive-behavioral therapy "[common field: intelligence] OR" cognitive behavioral intervention "[common field: intelligence] OR "cognitive behavioral patterns "[common field: intelligence] OR "Cognitive psychotherapy "[commonly used field: intelligence] OR "cognitive therapy "[commonly used field: intelligence] OR" cognitive behavior "[commonly used field: intelligence] OR "Behavioral therapy "[commonly used field: intelligence] OR" therapy, cognitive "[commonly used field: intelligence] OR "behavioral therapy, cognitive "[commonly used field: intelligence] OR" psychotherapy, cognitive "[commonly used field: intelligence]	23221
	#2	"Kinesiophobia "[common field: intelligence] OR "activity phobia "[common field: intelligence] OR" activity fear "[common field: intelligence] OR "movement fear "[common field: intelligence] OR" fear avoidance "[common field: intelligence] OR "Movement avoidance "[common field: intelligence] OR" activity avoidance "[common field: intelligence] OR "resistance to movement "[common field: intelligence] OR" Fear of activity "[common field: intelligence] OR "Fear avoidance beliefs "[common field: intelligence]	513
	#3	#1 AND #2	35
CNKI		(SU= cognitive behavioral therapy OR SU=' cognitive-behavioral therapy 'OR SU= cognitive behavioral intervention OR SU= cognitive behavioral model OR SU= cognitive psychotherapy OR SU= cognitive therapy OR SU= cognitive behavioral OR SU= behavioral therapy OR SU=' therapy, cognitive 'OR SU=' therapy, cognitive' OR SU=' psychotherapy, cognitive ' AND (SU= kinesiophobia OR SU= activity phobia OR SU= activity fear OR SU= movement fear OR SU= fear avoidance OR SU= movement avoidance OR SU= resistance to movement OR SU= fear of activity OR SU= fear avoidance belief)	51

VIP	((((((((((((((Subject title OR keyword = cognitive behavioral therapy) OR (subject title or keyword = "cognitive AND (NOT subject title or keyword = behavioral therapy")) OR subject title or keyword = cognitive behavioral intervention) OR Title OR key words = cognitive behavioral model) OR title OR key words = cognitive psychotherapy) ) OR title OR key words = cognitive therapy) OR OR = "behavioral therapy, cognitive") OR (OR = "psychotherapy, cognitive") Cognitive ") AND (((((((((((Title OR keyword = kinesiophobia OR title OR keyword = activity phobia) OR title or keyword = activity fear) OR title or keyword = fear avoidance) OR OR = exercise avoidance (OR = activity avoidance) OR = resistance to exercise (OR = fear of activity) OR = fear avoidance beliefs))	42
Wanfang	(Subject: cognitive behavioral therapy) or Title or keywords: cognitive behavioral therapy or cognitive behavioral intervention or cognitive behavioral model or cognitive psychotherapy or cognitive psychotherapy or cognitive therapy or cognitive behavior or behavioral therapy or therapy, Cognitive or therapy, Cognitive or behavioral therapy, Cognitive or psychotherapy, Cognitive or psychotherapy, Cognition) and (Subject: kinesiophobia) or title or key words: kinesiophobia or fear of activity or fear of exercise or fear avoidance or exercise avoidance or activity avoidance or resistance to exercise or fear avoidance beliefs))	199

**Databases:** PubMed, Cochrane Library, Embase, EBSCO, Web of Science, Scopus, CBM, CNKI, VIP, Wanfang



# PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
<b>TITLE</b>			
Title	1	Identify the report as a systematic review.	1
<b>ABSTRACT</b>			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	1
<b>INTRODUCTION</b>			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	1-2
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	2
<b>METHODS</b>			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	3
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	3
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Supplementary Material
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	3
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	3
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	3
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	3
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	4
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	4
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	5
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	4
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	4
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	4
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	4
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	4
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	4
Certainty	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	4

Section and Topic	Item #	Checklist item	Location where item is reported
assessment			
<b>RESULTS</b>			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	5
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	5
Study characteristics	17	Cite each included study and present its characteristics.	5
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	5,6
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	6-9
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	6-9
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	6-9
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	6-9
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	9
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	9
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	9
<b>DISCUSSION</b>			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	9-11
	23b	Discuss any limitations of the evidence included in the review.	11
	23c	Discuss any limitations of the review processes used.	11
	23d	Discuss implications of the results for practice, policy, and future research.	11
<b>OTHER INFORMATION</b>			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	12
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	12
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	12
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	12
Competing interests	26	Declare any competing interests of review authors.	12
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	12