



Annex 1, PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	Title page
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	Abstract
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	4-5
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	5-6
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	7
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	7
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	7-8
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	8-9
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	9
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	10
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	10-11
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	11
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	11-12
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	12



PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	13
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	11
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	13
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	13
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	13
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	14-15
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	14-18
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	18
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	21-22
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	18-27
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	27
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	27-28
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	NA

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit: www.prisma-statement.org.

Annex 2, Search Strategy

The search date ends on October 1, 2022

PubMed:

#1 : "Hydrotherapy"[Title/Abstract] OR "whirlpool baths"[Title/Abstract] OR "bath whirlpool"[Title/Abstract] OR "baths whirlpool"[Title/Abstract] OR "whirlpool bath"[Title/Abstract] OR "watsu therapy"[Title/Abstract] OR "therapy watsu"[Title/Abstract] OR "water shiatsu"[Title/Abstract] OR (("acupressure"[MeSH Terms] OR "acupressure"[All Fields] OR "Shiatsu"[All Fields]) AND "Water"[Title/Abstract]) OR "WaterShiatsu"[Title/Abstract] OR "Balneology"[Title/Abstract] OR "Balneotherapy"[Title/Abstract] OR "hot springs"[Title/Abstract] OR "hot spring"[Title/Abstract] OR "spring hot"[Title/Abstract] OR "springs hot"[Title/Abstract] OR "warm springs"[Title/Abstract] OR "spring warm"[Title/Abstract] OR (("natural springs"[MeSH Terms] OR ("natural"[All Fields] AND "Springs"[All Fields]) OR "natural springs"[All Fields] OR "Springs"[All Fields] OR "Spring"[All Fields] OR "spring s"[All Fields] OR "springness"[All Fields]) AND "Warm"[Title/Abstract]) OR "warm spring"[Title/Abstract] OR "geothermal springs"[Title/Abstract] OR "geothermal spring"[Title/Abstract] OR "spring geothermal"[Title/Abstract]

8297”

#2: Low Back Pain[Title/Abstract] OR Back Pain, Low[Title/Abstract] OR Back Pains, Low[Title/Abstract] OR Low Back Pains[Title/Abstract] OR Pain, Low Back[Title/Abstract] OR Pains, Low Back[Title/Abstract] OR Lumbago[Title/Abstract] OR Lower Back Pain[Title/Abstract] OR Back Pain, Lower[Title/Abstract] OR Back Pains, Lower[Title/Abstract] OR Lower Back Pains[Title/Abstract] OR Pain, Lower Back[Title/Abstract] OR Pains, Lower Back[Title/Abstract] OR Low Back Ache[Title/Abstract] OR Ache, Low Back[Title/Abstract] OR Aches, Low Back[Title/Abstract] OR Back Ache, Low[Title/Abstract] OR Back Aches,

Low[Title/Abstract] OR Low Back Aches[Title/Abstract] OR Low Backache[Title/Abstract]
OR Backache, Low[Title/Abstract] OR Backaches, Low[Title/Abstract] OR Low
Backaches[Title/Abstract] OR Low Back Pain, Postural[Title/Abstract] OR Postural Low
Back Pain[Title/Abstract] OR Low Back Pain, Posterior Compartment[Title/Abstract] OR
Low Back Pain, Recurrent[Title/Abstract] OR Recurrent Low Back Pain[Title/Abstract] OR
Low Back Pain, Mechanical[Title/Abstract] OR Mechanical Low Back Pain[Title/Abstract]
OR Chronic Pain[Title/Abstract] OR Chronic Pains[Title/Abstract] OR Pains,
Chronic[Title/Abstract] OR Pain, Chronic[Title/Abstract] OR Widespread Chronic
Pain[Title/Abstract] OR Chronic Pain, Widespread[Title/Abstract] OR Chronic Pains,
Widespread[Title/Abstract] OR Pain, Widespread Chronic[Title/Abstract] OR Pains,
Widespread Chronic[Title/Abstract] OR Widespread Chronic Pains[Title/Abstract]

94292”

#3 : (Low Back Pain[Title/Abstract] OR Back Pain, Low[Title/Abstract] OR Back Pains,
Low[Title/Abstract] OR Low Back Pains[Title/Abstract] OR Pain, Low Back[Title/Abstract]
OR Pains, Low Back[Title/Abstract] OR Lumbago[Title/Abstract] OR Lower Back
Pain[Title/Abstract] OR Back Pain, Lower[Title/Abstract] OR Back Pains,
Lower[Title/Abstract] OR Lower Back Pains[Title/Abstract] OR Pain, Lower
Back[Title/Abstract] OR Pains, Lower Back[Title/Abstract] OR Low Back
Ache[Title/Abstract] OR Ache, Low Back[Title/Abstract] OR Aches, Low
Back[Title/Abstract] OR Back Ache, Low[Title/Abstract] OR Back Aches,
Low[Title/Abstract] OR Low Back Aches[Title/Abstract] OR Low Backache[Title/Abstract]
OR Backache, Low[Title/Abstract] OR Backaches, Low[Title/Abstract] OR Low
Backaches[Title/Abstract] OR Low Back Pain, Postural[Title/Abstract] OR Postural Low
Back Pain[Title/Abstract] OR Low Back Pain, Posterior Compartment[Title/Abstract] OR
Low Back Pain, Recurrent[Title/Abstract] OR Recurrent Low Back Pain[Title/Abstract] OR
Low Back Pain, Mechanical[Title/Abstract] OR Mechanical Low Back Pain[Title/Abstract]
OR Chronic Pain[Title/Abstract] OR Chronic Pains[Title/Abstract] OR Pains,
Chronic[Title/Abstract] OR Pain, Chronic[Title/Abstract] OR Widespread Chronic
Pain[Title/Abstract] OR Chronic Pain, Widespread[Title/Abstract] OR Chronic Pains,
Widespread[Title/Abstract] OR Pain, Widespread Chronic[Title/Abstract] OR Pains,

Widespread Chronic[Title/Abstract] OR Widespread Chronic Pains[Title/Abstract]) AND
(Hydrotherapy[Title/Abstract] OR Whirlpool Baths[Title/Abstract] OR Bath,
Whirlpool[Title/Abstract] OR Baths, Whirlpool[Title/Abstract] OR Whirlpool
Bath[Title/Abstract] OR Watsu Therapy[Title/Abstract] OR Therapy, Watsu[Title/Abstract]
OR Water Shiatsu[Title/Abstract] OR Shiatsu, Water[Title/Abstract] OR
WaterShiatsu[Title/Abstract] OR Balneology[Title/Abstract] OR Balneotherapy[Title/Abstract]
OR Hot Springs[Title/Abstract] OR Hot Spring[Title/Abstract] OR Spring, Hot[Title/Abstract]
OR Springs, Hot[Title/Abstract] OR Warm Springs[Title/Abstract] OR Spring,
Warm[Title/Abstract] OR Springs, Warm[Title/Abstract] OR Warm Spring[Title/Abstract] OR
Geothermal Springs[Title/Abstract] OR Geothermal Spring[Title/Abstract] OR Spring,
Geothermal[Title/Abstract] OR Springs, Geotherma[Title/Abstract])

104”

Web of science:

#1:TS=(Low Back Pain or Back Pain, Low or Back Pains, Low or Low Back Pains or Pain, Low Back or Pains, Low Back or Lumbago or Lower Back Pain or Back Pain, Lower or Back Pains, Lower or Lower Back Pains or Pain, Lower Back or Pains, Lower Back or Low Back Ache or Ache, Low Back or Aches, Low Back or Back Ache, Low or Back Aches, Low or Low Back Aches or Low Backache or Backache, Low or Backaches, Low or Low Backaches or Low Back Pain, Postural or Postural Low Back Pain or Low Back Pain, Posterior Compartment or Low Back Pain, Recurrent or Recurrent Low Back Pain or Low Back Pain, Mechanical or Mechanical Low Back Pain or Chronic Pain or Chronic Pains or Pains, Chronic or Pain, Chronic or Widespread Chronic Pain or Chronic Pain, Widespread or Chronic Pains, Widespread or Pain, Widespread Chronic or Pains, Widespread Chronic or Widespread Chronic Pains)

49084”

#2:TS=(Hydrotherapy or Whirlpool Baths or Bath, Whirlpool or Baths, Whirlpool or Whirlpool Bath or Watsu Therapy or Therapy, Watsu or Water Shiatsu or Shiatsu, Water or WaterShiatsu or Balneology or Balneotherapy or Hot Springs or Hot Spring or Spring, Hot or Springs, Hot or Warm Springs or Spring, Warm or Springs, Warm or Warm Spring or Geothermal Springs or Geothermal Spring or Spring, Geothermal or Springs, Geotherma)

7944”

#3: #2 AND #1

82”

EMBASE

#1:'low back pain':ab,ti OR 'back pain, low':ab,ti OR 'back pains, low':ab,ti OR 'low back pains':ab,ti OR 'pain, low back':ab,ti OR 'pains, low back':ab,ti OR lumbago:ab,ti OR 'lower back pain':ab,ti OR 'back pain, lower':ab,ti OR 'back pains, lower':ab,ti OR 'lower back pains':ab,ti OR 'pain, lower back':ab,ti OR 'pains, lower back':ab,ti OR 'low back ache':ab,ti OR 'ache, low back':ab,ti OR 'aches, low back':ab,ti OR 'back ache, low':ab,ti OR 'back aches, low':ab,ti OR 'low back aches':ab,ti OR 'low backache':ab,ti OR 'backache, low':ab,ti OR 'backaches, low':ab,ti OR 'low backaches':ab,ti OR 'low back pain, postural':ab,ti OR 'postural low back pain':ab,ti OR 'low back pain, posterior compartment':ab,ti OR 'low back pain, recurrent':ab,ti OR 'recurrent low back pain':ab,ti OR 'low back pain, mechanical':ab,ti OR 'mechanical low back pain':ab,ti OR 'chronic pain':ab,ti OR 'chronic pains':ab,ti OR 'pains, chronic':ab,ti OR 'pain, chronic':ab,ti OR 'widespread chronic pain':ab,ti OR 'chronic pain, widespread':ab,ti OR 'chronic pains, widespread':ab,ti OR 'pain, widespread chronic':ab,ti OR 'pains, widespread chronic':ab,ti OR 'widespread chronic pains':ab,ti

11692”

#2:

hydrotherapy:ab,ti OR 'whirlpool baths':ab,ti OR 'bath, whirlpool':ab,ti OR 'baths, whirlpool':ab,ti OR 'whirlpool bath':ab,ti OR 'watsu therapy':ab,ti OR 'therapy, watsu':ab,ti OR 'water shiatsu':ab,ti OR 'shiatsu, water':ab,ti OR watershiatsu:ab,ti OR balneology:ab,ti OR balneotherapy:ab,ti OR 'hot springs':ab,ti OR 'hot spring':ab,ti OR 'spring, hot':ab,ti OR 'springs, hot':ab,ti OR 'warm springs':ab,ti OR 'spring, warm':ab,ti OR 'springs, warm':ab,ti OR 'warm spring':ab,ti OR 'geothermal springs':ab,ti OR 'geothermal spring':ab,ti OR 'spring, geothermal':ab,ti OR 'springs, geotherma':ab,ti

6884”

#3:#1 AND #2

149”

Cochrane

#1: (Low Back Pain or Back Pain, Low or Back Pains, Low or Low Back Pains or Pain, Low Back or Pains, Low Back or Lumbago or Lower Back Pain or Back Pain, Lower or Back Pains, Lower or Lower Back Pains or Pain, Lower Back or Pains, Lower Back or Low Back Ache or Ache, Low Back or Aches, Low Back or Back Ache, Low or Back Aches, Low or Low Back Aches or Low Backache or Backache, Low or Backaches, Low or Low Backaches or Low Back Pain, Postural or Postural Low Back Pain or Low Back Pain, Posterior Compartment or Low Back Pain, Recurrent or Recurrent Low Back Pain or Low Back Pain, Mechanical or Mechanical Low Back Pain or Chronic Pain or Chronic Pains or Pains, Chronic or Pain, Chronic or Widespread Chronic Pain or Chronic Pain, Widespread or Chronic Pains, Widespread or Pain, Widespread Chronic or Pains, Widespread Chronic or Widespread Chronic Pains):ti,ab,kw

44327”

#2: (Hydrotherapy or Whirlpool Baths or Bath, Whirlpool or Baths, Whirlpool or Whirlpool Bath or Watsu Therapy or Therapy, Watsu or Water Shiatsu or Shiatsu, Water or WaterShiatsu or Balneology or Balneotherapy or Hot Springs or Hot Spring or Spring, Hot or Springs, Hot or Warm Springs or Spring, Warm or Springs, Warm or Warm Spring or Geothermal Springs or Geothermal Spring or Spring, Geothermal or Springs, Geotherma):ti,ab,kw

1174”

#3: #1 AND #2

165”

EBSCO

S1:SU Low Back Pain or Back Pain, Low or Back Pains, Low or Low Back Pains or Pain, Low Back or Pains, Low Back or Lumbago or Lower Back Pain or Back Pain, Lower or Back Pains, Lower or Lower Back Pains or Pain, Lower Back or Pains, Lower Back or Low Back Ache or Ache, Low Back or Aches, Low Back or Back Ache, Low or Back Aches, Low or Low Back Aches or Low Backache or Backache, Low or Backaches, Low or Low Backaches or Low Back Pain, Postural or Postural Low Back Pain or Low Back Pain, Posterior Compartment or Low Back Pain, Recurrent or Recurrent Low Back Pain or Low Back Pain, Mechanical or Mechanical Low Back Pain or Chronic Pain or Chronic Pains or Pains, Chronic or Pain, Chronic or Widespread Chronic Pain or Chronic Pain, Widespread or Chronic Pains, Widespread or Pain, Widespread Chronic or Pains, Widespread Chronic or Widespread Chronic Pains

81677”

S2:Hydrotherapy or Whirlpool Baths or Bath, Whirlpool or Baths, Whirlpool or Whirlpool Bath or Watsu Therapy or Therapy, Watsu or Water Shiatsu or Shiatsu, Water or WaterShiatsu or Balneology or Balneotherapy or Hot Springs or Hot Spring or Spring, Hot or Springs, Hot or Warm Springs or Spring, Warm or Springs, Warm or Warm Spring or Geothermal Springs or Geothermal Spring or Spring, Geothermal or Springs, Geotherma

21362”

S3:S1 AND S2

35”

Annex 3 Subgroup Analysis for Each Outcome Measure

intervention indicators	analytical indicators	subgroup	No	SMD/WMD	95%CI	I ²	P	Weight	
VAS		Overall	21	-0.901	-1.777, -0.025	98.20%	0.044	100%	
		NA	4	-0.561	-0.852, -0.27	0%	<0.0001	19.17%	
	age subgroups	≥60	10	-1.452	-1.857, -1.046	84%	<0.0001	47.84%	
		<60	7	-0.212	-3.071, 2.648	99.40%	0.885	32.99%	
	intervention format subgroups	combination therapy	9	-0.876	-1.404, -0.349	89.60%	0.001	43.27%	
		single hot spring hy	10	-1.006	-1.396, -0.616	81.40%	<0.0001	47.85%	
	country subgroups	NA	2	-0.036	-28.416, 28.344	99.90%	0.998	8.88%	
		Turkey	11	-0.722	-2.463, 1.019	99.10%	0.416	52.15%	
		Italy	3	-2.012	-2.628, -1.397	38.80%	<0.0001	14.05%	
			Hungary	7	-0.670	-0.979, -0.361	68%	<0.0001	33.80%
	ODI/RMDQ		Overall	9	-3.236	-4.898, -1.575	98.40%	<0.0001	100%
		NA	1	-0.325	-0.920, 0.271	0	0.285	11.28%	
age subgroups		≥60	6	-1.515	-2.163, -0.867	85.20%	<0.0001	67.33%	
		<60	2	-10.531	-30.663, 9.602	99.80%	0.305	21.39%	
intervention format subgroups		combination therapy	3	-0.669	-1.400, 0.062	81.50%	0.073	33.93%	
		single hot spring hy	5	-1.574	-2.409, -0.739	87.80%	<0.0001	55.99%	
country subgroups		NA	1	-20.821	-22.627, -19.016		<0.0001	10.09%	
		Turkey	4	-5.532	-9.615, -1.450	99.40%	0.008	44.01%	
		Hungary	2	-0.606	-0.921, -0.290	0%	<0.0001	22.69%	
			Italy	3	-2.272	-2.772, -1.773	0%	<0.0001	33.30%
SF-36			Overall	11	0.104	-0.397, 0.606	86.30%	0.683	100%
	age subgroups	≥60	9	0.231	-0.353, 0.814	87.50%	0.439	81.63%	
		NA	2	-0.449	-1.189, 0.292	66.60%	0.235	18.37%	
	intervention format subgroups	combination therapy	3	-0.825	-1.683, 0.033	85.40%	0.001	27.96%	
		single hot spring hy	8	0.473	0.183, 0.764	39.60%	0.059	72.04%	
	country subgroups	Italy	6	0.314	-0.009, 0.636	26.10%	0.056	83.18%	
		Turkey	3	-0.825	-1.683, 0.033	85.40%	0.059	27.96%	
		Hungary	2	0.836	0.452, 1.220	0%	<0.0001	18.86%	
	painkiller		Overall	6	-0.471	-0.922, -0.020	70.70%	0.041	100%
		age subgroups	≥60	1	-0.018	-0.538, 0.502		0.009	24.13%
			<60	5	-0.619	-1.085, -0.153	64.80%	0.945	75.87%
intervention format subgroups		combination therapy	1	-0.105	-0.660, 0.450		0.031	23.10%	
		single hot spring hy	5	-0.58	-1.107, -0.053	73.60%	0.71	76.90%	
country subgroups		Hungary	5	-0.580	-1.107, -0.053	73.60%	0.031	76.90%	
	Turkey	1	-0.105	-0.660, 0.450		0.71	23.10%		