Effectiveness and clinical relevance of kinesio taping in musculoskeletal disorders: an overview of systematic reviews and evidence mapping

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Abstract

Objectives To investigate the effectiveness and clinical relevance of kinesio taping (KT) in musculoskeletal disorders (MSDs) at different follow-ups.

Design Overview of systematic reviews (SRs) and evidence mapping.

Information sources Ten electronic databases were searched for SRs published from inception to 31 December 2024, and updated on 15 October 2025.

Eligibility criteria SRs with and without meta-analysis of randomised controlled trials (RCTs) were eligible for inclusion if they compared KT with interventions other than KT (eg, active interventions, no tape, placebo/sham KT) in participants with MSDs.

Main outcome measures The primary outcomes were pain intensity, function/disability, range of motion, muscle strength, quality of life and disease-specific symptoms. The secondary outcome was adverse events (AEs).

Results A total of 128 SRs (73 published SRs and 55 registered yet unpublished SRs) involving 15 812 participants from 310 unique RCTs were included. Substantial SRs were focused on lower extremity conditions (45%) and reported pain intensity (89%). Most SRs were evaluated as critically low (78%) in methodological quality and low (58%) in risk of bias, with a median total compliance rate of 75.6% in reporting quality. Findings from new meta-analyses indicated that KT may reduce pain intensity in the immediate (Hedges' g −0.69, 95% CI −0.81 to −0.57) and short (Hedges' g −0.57, 95% CI −0.77 to −0.37) term and improve function/disability (Hedges' g −0.54, 95% CI −0.69 to −0.40) in the immediate term. These effect estimates may achieve the predefined minimal clinically important difference of 0.5 SD (medium effect size). KT may show little to no effect on pain intensity in the medium term, function/disability in the short and medium term, muscle strength, range of motion, disease-specific symptoms at all follow-ups. The effects of KT may vary across subgroups or conditions, and its impact on quality of life is unclear. AEs related to KT mainly included skin irritation (number needed to harm (NNH) 173) and pruritus (NNH 356). All evidence was highly inconclusive due to very low certainty (Grading of Recommendations Assessment, Development and Evaluation), non-significant level (evidence level) and unstable clinical relevance across most outcomes.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Previous systematic reviews have evaluated the clinical effects of kinesio taping (KT) for musculoskeletal disorders, but few have assessed its clinical relevance.

⇒ With the publication of substantial recent randomised controlled trials (RCTs), existing systematic reviews have reported discordant findings for musculoskeletal disorders.

WHAT THIS STUDY ADDS

⇒ This comprehensive overview of systematic reviews and evidence mapping summarises the existing evidence on KT for musculoskeletal disorders, including 128 systematic reviews across 29 conditions (310 unique RCTs and 15 812 participants).

⇒ KT may reduce pain intensity in the immediate and short term and improve function/disability in the immediate term, but the evidence is uncertain.

⇒ KT may provide little to no effect on pain intensity in the medium term, function/disability in the short and medium term, and muscle strength, range of motion, disease-specific symptoms at all follow-ups, with most evidence rated as very low certainty.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ More caution and shared decision-making that integrates patient preferences, alternative interventions and potential adverse events (eg, skin irritation, pruritus) are needed when applying KT in clinical practice.

⇒ More high-quality, well-reported research is needed on the uncertain efficacy of KT for musculoskeletal disorders, with consideration of heterogeneity in KT usage.

Conclusions Current evidence is very uncertain regarding the clinical effects of KT on MSDs. Considerable heterogeneity, unclear clinical

relevance and potential AEs may limit its application in clinical practice. Further high-quality, well-reported RCTs and SRs are warranted to address the uncertainty regarding overall effects along with comprehensive consideration of heterogeneity in KT usage.

PROSPERO registration number CRD42024517528.

Introduction

Musculoskeletal disorders (MSDs) generate a widespread and serious burden on healthcare worldwide.[1–4] In 2021, MSDs were the leading cause of years lived with disability (YLDs), affecting approximately 1.69 billion individuals.[1] Between 2021 and 2023, the proportion of all-cause YLDs attributable to MSDs remained high (7.7% to 7.1%).[1 2] Patients with MSDs are likely to undergo long-term pain, limited mobility and psychological distress, which can impact quality of life (QOL).[5 6] Despite several actions to promote public attention to MSDs, the outcomes remain insufficient, necessitating appropriate rehabilitation services.[1 2 5]

Currently, physical therapy is strongly recommended in the management of MSDs[7] and is often preferred by patients and physicians.[8 9] Among them, kinesio taping (KT), originally created and introduced by Dr Kenso Kase in the 1970s, is a straightforward taping technique.[10] Since the application of KT with suitable tension may lift the skin, stimulate cutaneous mechanoreceptors, promote proprioception and regional microcirculation,[10 11] it has been extensively used for MSDs.[12–14] However, because the underlying mechanisms remain unclear and the number of recent randomised controlled trials (RCTs) has increased, many systematic reviews (SRs) have reported inconsistent findings for MSDs, involving elbow,[15 16] shoulder,[17 18] back,[19 20] knee[21 22] and ankle.[23 24] Meanwhile, most SRs may not assess the clinical relevance of KT by comparing effect estimates with the minimal clinically important difference (MCID) for outcomes.[25–27] MCID is the smallest change that appears to have a beneficial implication for patients.[25] Without this threshold, physicians may rely on statistical significance, making it difficult to interpret whether changes associated with KT for MSDs are clinically meaningful.[25–27]

In summary, the existing evidence on KT has probably contributed to clinical gaps between research and practice, and there is a need to synthesise the evidence on the effects of KT and assess its clinical relevance to provide concordant evidence. Both the overview of SRs[28] and evidence mapping[29] are useful evidence-based approaches to deal with diverse findings from reviews. They are capable of collating broad information, presenting a summary of evidence and facilitating rapid dissemination of knowledge.[28 29] Using these methods, this study aims to summarise SRs that assessed the effects of KT for pain intensity, function/disability, range of motion (ROM), muscle strength (MS), QOL and disease-specific symptoms in MSDs at different follow-ups, and to report KT-related adverse events (AEs).

Methods

The complete research flowchart is presented in online supplemental file 1.

Protocol and registration

We prospectively registered the protocol within the International Prospective Register of Systematic Reviews (PROSPERO, registration number: CRD42024517528) and published it prior to the literature search.[30] Detailed differences between protocol and publication are summarised in online supplemental file 2. Results were reported according to the Preferred Reporting Items for Overviews of Reviews (PRIOR) guidelines (online supplemental file 3).[31]

Inclusion and exclusion criteria

We developed the eligibility criteria using the population, intervention, comparison, outcomes and study type framework. We included SRs if they met the following criteria: (1) participants diagnosed with MSDs according to the International Classification of Diseases 11th revision;[4] (2) KT used as the primary treatment in the experimental group, either alone or in combination with other therapies; (3) any intervention (eg, placebo/sham KT) used in the control group other than KT; (4) we prioritised the core outcome sets (COSs)[32] as primary outcomes. If COSs were not established, we included pain intensity, function/disability, ROM, MS, QOL and disease-specific symptoms. The secondary outcome was AEs; (5) SRs[33] with and without meta-analysis of RCTs. We excluded SRs if they met the following criteria: (1) only one database was searched; (2) lacked complete information on primary RCTs; (3) published in languages other than English (due to limited language expertise and the searched databases comprising mostly English-language literature); (4) scoping reviews, network meta-analyses and conference abstracts. Detailed eligibility criteria are in online supplemental file 4.

Search strategy and selection

We carried out a comprehensive search for SRs from inception to 31 December 2024 in the following electronic databases: Cochrane Database of Systematic Reviews, MEDLINE, Embase, Epistemonikos, PEDro, Scopus and ISI Web of Science. We searched PROSPERO, OpenGrey and Google Scholar to identify registered yet unpublished SRs, grey literature and any cited records in the reference lists of eligible SRs, respectively. Moreover, we updated the search to 15 October 2025 to include newly published SRs through MEDLINE and Embase. Search strategies for each database are provided in online supplemental file 5.

Two review authors (QM and ZD) independently screened titles and abstracts of all identified records exported from EndNote V.21. Records deemed eligible were downloaded and assessed against the inclusion criteria by full-text reading. Subsequently, Gwet's AC1[34] statistic was applied to assess the agreement between two reviewers on study selection. Any disagreements were resolved by a third reviewer (XZ).

Data extraction

The same two authors (QM and ZD) extracted and cross-checked data using predefined forms. Regarding published SRs, we extracted the basic information, characteristics, outcomes of interest, evidence assessment tools and conclusions. For unpublished SRs, we collected the registration and planned information. We also classified SRs according to body regions (overall musculoskeletal, upper extremity, lower extremity, spinal and not otherwise classified conditions).[35] Data from primary RCTs were preferred in cases of discrepancies in SRs.

For SRs not yet published, we did not contact the corresponding authors or extract any unpublished data for subsequent statistical synthesis and evidence mapping. For SRs without meta-analysis, we extracted the effect estimates (mean difference (MD) or Hedges' g) with 95% CI from primary RCTs for outcomes. For SRs with meta-analysis, we extracted the analytical methods (fixed or random effects model), heterogeneity (Cochran's Q test p value and I^2 statistic) and pooled estimates with 95% CI for meta-analysis results. If only a single eligible RCT was identified in published SRs, we extracted the risk of bias (ROB) of this trial[36] and MD with 95% CI for its findings.

We searched each published SR and collected AEs to calculate the number needed to harm (NNH). If the SRs did not report AEs, we searched their included primary RCTs. To ensure standardised reporting, we used the Medical Dictionary for Regulatory Activities (MedDRA V.28.1) to describe AEs by preferred terms and system organ classes.[37]

Overlap between primary studies

We constructed matrix tables for different MSDs at the outcome level, containing lists of primary RCTs in the SRs. The degree of overlap among SRs was calculated using corrected covered area (CCA) in the Graphical Representation of Overlap for OVErviews tool.[38]

Reporting quality, methodological quality and ROB assessment

Two authors (QM and ZD) independently assessed the reporting quality of included SRs using the Synthesis without meta-analysis (SWiM) reporting guideline[39] and PRISMA 2020 statement.[33] Based on the reporting status of each item in the above checklists, compliance rates of complete and partial reporting were calculated to determine reporting quality. Moreover, they evaluated the methodological quality and ROB of SRs using the A Measurement Tool to Assess Systematic Reviews 2 (AMSTAR V.2) tool[40] and Risk of Bias in Systematic reviews (ROBIS) tool,[41] respectively. Disagreements were resolved through team discussions or consultation with a third author (XZ).

Strategies for data synthesis

We used vote counting based on direction of effects and summarised effect estimates for SRs without meta-analysis and presented the summary of evidence (eg, heterogeneity, pooled effects and direction) for SRs with meta-analysis.[42] Details of the re-estimation approaches and classification of follow-up periods are provided in online supplemental file 6.

If there were at least two RCTs, we performed new meta-analyses at the outcome level for all MSDs using the DerSimonian and Laird random-effects model (clinical heterogeneity was anticipated in the population, intervention and comparator). Data for the new meta-analyses on individual MSDs were derived from all unique primary RCTs listed in the matrix tables of overlap. This approach prevented the duplication of RCTs in outcomes, thus decreasing the impact of overlap of RCTs (ie, risk of double-counting) across SRs. In addition, we undertook subgroup analyses for comparator classes (no tape, placebo/sham KT, active interventions or mixed interventions) to stratify the effects of KT. For RCTs with multiple arms, we combined the groups conforming to the eligibility criteria to generate a single pairwise comparison (KT vs mixed interventions indicates KT vs control), as recommended by the Cochrane Handbook.[43] When multiple outcomes were reported in the same conceptual domain, we conducted multilevel meta-analyses with the *metafor* R package.[44 45] Statistical significance was defined as p<0.05. All statistical analyses were conducted in Review Manager V.5.4 and R language V.4.3.3.

The Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach was used to assess the certainty of evidence (CoE).[46] We followed the formal GRADE methodology for SRs with meta-analysis, while for SRs without meta-analysis, we predefined evaluation criteria with reference to the GRADE methodology but designated them as 'non-GRADE' to indicate a modified application.[47] In addition, we categorised the strength of evidence from new meta-analyses into five levels (convincing, highly suggestive, suggestive, weak and non-significant evidence).[28 48] Details of the GRADE approach and classification criteria of evidence levels are shown in online supplemental files 7 and 8.

Clinical relevance and evidence mapping

MCIDs underscore the significance of patients' perspectives,[25 49] and patients with different MSDs respond to different clinically important changes in outcomes.[26 27 49] After searching and identifying the MCIDs that most closely resembled the outcomes and participants, we compared continuous outcomes (expressed in MD or Hedges' g) from meta-analyses with their thresholds. Anchor-based MCIDs were given priority, as this method detects patient-reported changes in outcomes.[49] If no associated MCIDs were available, the distribution-based approach was used to calculate them. For pooled effects reported as Hedges' g, we predefined the MCID value as 0.5 SD, following Cohen's description[50 51] that "medium (effect sizes (ESs)) represent an effect likely to be visible to the naked eye of a careful observer". Details on the selection and calculation of MCIDs are provided in online supplemental file 9. We then interpreted the clinical relevance according to the categories (definite, probable, possible and definitely not) proposed by Man-Son-Hing *et al*.[52]

To present credible and reader-friendly evidence, we created visual evidence maps of KT effects using the ESs, clinical relevance, number of participants and diseases/conditions on the Pymeta platform.[29 53]

Sensitivity analyses

For the effect estimates and clinical relevance obtained from new meta-analyses, we conducted sensitivity analyses using different methods (comparison with the best-quality SRs results,[54] cumulative meta-analyses and leave-one-study-out analyses) and MCID thresholds (ESs of Hedges' g: small 0.2 SD; large 0.8 SD),[51] respectively. Details of the sensitivity analyses are shown in online supplemental file 10.

Patient and public involvement

There was no involvement of patients or the public in the conduct of this overview of SRs and evidence mapping.

Results

Selection of SRs

A total of 3762 records were initially identified (figure 1). After removing duplicate records, reviewing titles and abstracts, assessing eligibility through full-text reading and updating the search, 3634 records were excluded, and 128 SRs (73 published SRs and 55 registered yet unpublished SRs) were ultimately included. The inter-rater reliability of Gwet's AC1 statistic was 0.84 (95% CI 0.76 to 0.92), indicating high consistency in study selection. References of excluded reviews and related reasons are provided in online supplemental file 11.

Characteristics of included SRs

For the registered yet unpublished SRs (online supplemental file 12), most protocols remain ongoing (90.9%). The most frequently planned study areas, outcomes and ROB assessment tools were lower extremity conditions (36.4%), pain intensity (81.8%) and Cochrane ROB tool (47.3%), respectively.

Table 1 summarises the general characteristics of published SRs. These SRs (online supplemental file 13) included a median of 8 primary RCTs and 441 participants. A total of 310 unique

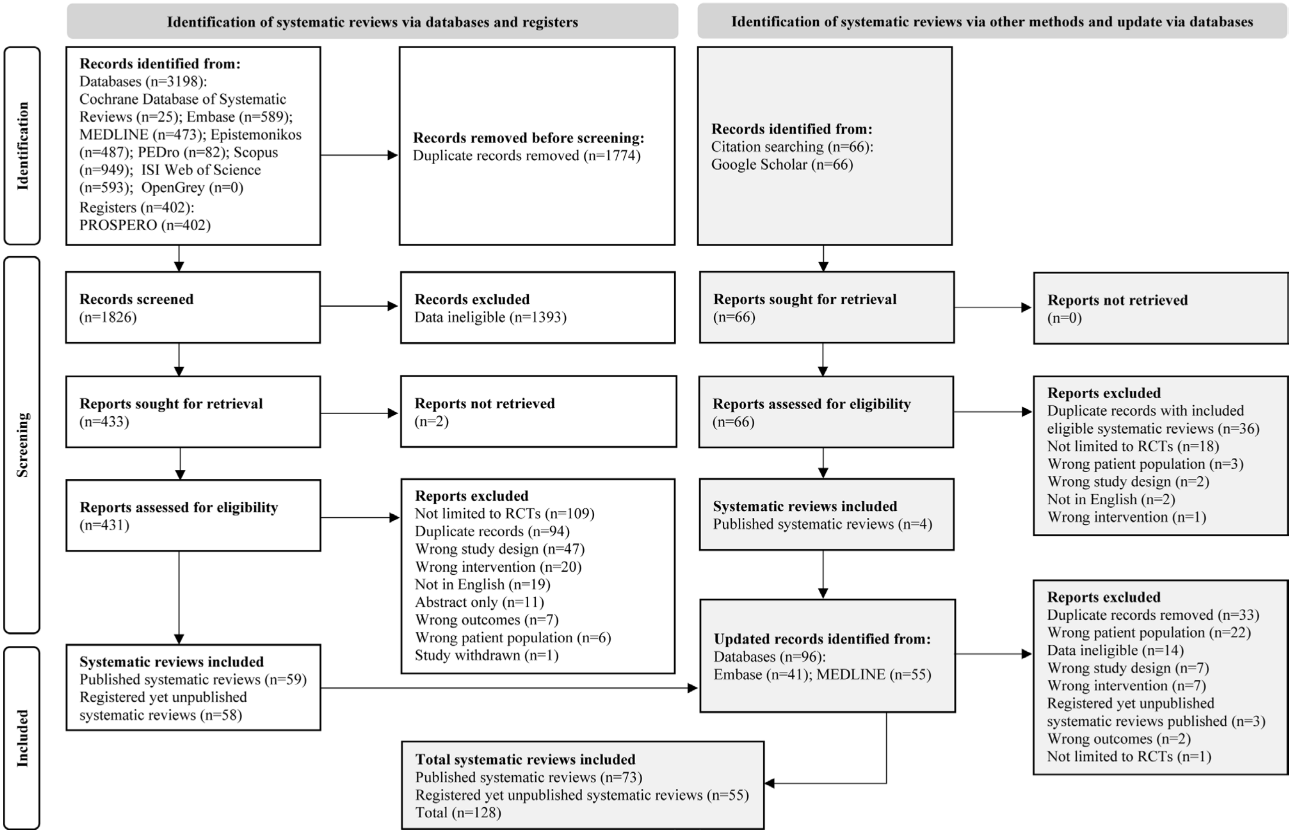


Figure 1 Preferred Reporting Items for Overviews of Reviews (PRIOR) flowchart of the systematic review selection process. RCTs, randomised controlled trials.

RCTs involving 15 812 participants were included. Most of the SRs investigated lower extremity conditions (45.2%) and pain intensity (89%). Across 73 SRs, the majority (69.9%) assessed ROB using the PEDro scale or Cochrane ROB tool, and approximately one-third (35.6%) evaluated the CoE using GRADE.

The degree of overlap based on the CCA values ranged considerably from slight (n=10; 20%) to very high (n=23; 46%) across outcomes in SRs (online supplemental file 14).

Reporting quality, methodological quality and ROB of SRs

Among the 73 published SRs, a median of 75.6% of items were completely or partially reported in the SWiM guideline and PRISMA 2020 statement checklists. For SRs without meta-analysis, most (94%) did not fully report the methods used to assess heterogeneity in reported effects. For SRs with meta-analysis, the majority (91%) did not fully report a list of excluded RCTs and relevant reasons. Most SRs (n=57; 78%) were rated as critically low (low 14; moderate 1; high 1) in methodological quality. Domain 7 (justification for excluding individual studies) was the primary critical weakness in the AMSTAR 2. The ROBIS evaluation results showed that more than half of the SRs (n=42; 58%) were considered to have low ROB. The most frequent flaws occurred in domain 4 (synthesis and findings) in phase 2. Figure 2 shows the evaluation results of the AMSTAR 2, ROBIS and SWiM guideline/PRISMA 2020 statement for SRs, with details in online supplemental files 15–17.

Summary of results from new meta-analyses

Summaries of results grouped by body region or disease/condition are presented in figures 3 and 4, and online supplemental files 18–20. Re-estimation results are reported in online supplemental files 21–24. Assessment results regarding the ROB of unique RCTs and CoE are shown in online supplemental files 25 and 26.

Pain intensity in the immediate term

The summary estimate indicated that KT may reduce pain intensity in the immediate term across MSDs. However, the effects may be limited to comparisons with no tape or placebo/sham KT, and all the evidence was uncertain.

Immediate pain relief from KT was uncertain for de Quervain's disease (DQD), after hip arthroplasty (AHA), after knee surgery (AKS), chronic knee pain, knee osteoarthritis (KOA), patellofemoral pain syndrome (PFPS), chronic low back pain (CLBP), coccydynia, neck pain (NP), pregnancy-related low back pain (PLBP), sacroiliac joint dysfunction (SJD), and upper quadrant postural dysfunction (UQPD). KT may show little to no effect for shoulder disorders, lateral elbow tendinopathy (LET), some lower extremity injuries, plantar fasciitis (PF), discopathies and degenerative spinal diseases (DDSD), spinal pain (SP) and myofascial pain syndrome (MPS).

Pain intensity in the short and medium term

Very low certainty evidence suggested that short-term improvement occurred in the KT group. However, the effects were observed only in comparisons of KT versus placebo/sham KT and may not persist into the medium term.

Small effects of KT were found for LET, PF, CLBP and PLBP, with very low CoE. The evidence was inconclusive regarding whether KT provided little to no effect for shoulder disorders, AKS, KOA, PFPS, DDSD, SP and MPS.

Table 1 General characteristics of published systematic reviews

Characteristics	SRs with MA (n=57)	SRs without MA (n=16)	Overall SRs (n=73)
Year of publication (n (%))			
2014–2019	14 (24.6)	5 (31.3)	19 (26.0)
2020–2025	43 (75.4)	11 (68.8)	54 (74.0)
Continent of first author of SRs (n (%))			
Asia	39 (68.4)	2 (12.5)	41 (56.2)
Europe	5 (8.8)	7 (43.8)	12 (16.4)
South America	5 (8.8)	2 (12.5)	7 (9.6)
North America	3 (5.3)	3 (18.8)	6 (8.2)
Africa	4 (7.0)	1 (6.3)	5 (6.8)
Oceania	1 (1.8)	1 (6.3)	2 (2.7)
Researched diseases/conditions (n (%))			
Overall musculoskeletal conditions	7 (12.3)	1 (6.3)	8 (11.0)
Upper extremity conditions	7 (12.3)	1 (6.3)	8 (11.0)
Lower extremity conditions	23 (40.4)	10 (62.5)	33 (45.2)
Spinal conditions	17 (29.8)	4 (25.0)	21 (28.8)
Not otherwise classified conditions*	3 (5.3)	0 (0.0)	3 (4.1)
Number of included primary RCTs (median (IQR))	10 (6–12)	5 (1-7)	8 (5-12)
Number of included participants (median (IQR))	530 (250–676)	254 (50–319)	441 (227–642)
Included outcome measurements (n (%))†			
Pain intensity	51 (89.5)	14 (87.5)	65 (89.0)
Function/disability	46 (80.7)	13 (81.3)	59 (80.8)
Range of motion	16 (28.1)	8 (50.0)	25 (34.2)
Muscle strength	15 (26.3)	6 (37.5)	21 (28.8)
Quality of life	1 (1.8)	3 (18.8)	4 (5.5)
Disease-specific symptoms	5 (8.8)	0 (0.0)	5 (6.8)
Risk of bias assessment tools (n (%))‡			
PEDro scale	16 (28.1)	12 (75.0)	28 (38.4)
Cochrane ROB tool	21 (36.8)	2 (12.5)	23 (31.5)
Cochrane ROB 2.0 tool	17 (29.8)	3 (18.8)	20 (27.4)
CASP checklist	3 (5.3)	0 (0.0)	3 (4.1)
Other tools§	3 (5.3)	1 (6.3)	4 (5.5)
Certainty of evidence assessment tool (n (%))¶			
GRADE	23 (40.4)	3 (18.8)	26 (35.6)

*Not otherwise classified conditions included myofascial pain syndrome and muscle fatigue.
†Partial SRs reported multiple outcomes.
‡Partial SRs assessed the risk of bias using multiple tools.
§Other tools included the Cochrane Back and Neck Review Group 13-Item criteria, Jadad scale and 2005 Oxford standard.
¶Partial SRs did not use GRADE.
CASP, Critical Appraisal Skills Programme; GRADE, Grading of Recommendations, Assessment, Development and Evaluation; MA, meta-analysis; RCTs, randomised controlled trials; ROB, risk of bias; SRs, systematic reviews.

Function/disability in the immediate term

The pooled results showed uncertain improvement in function/disability after KT intervention. However, the benefits were trivial when compared with active interventions.

Findings regarding the immediate effects of KT remained uncertain for DQD, AKS, PF, CLBP, coccydynia, PLBP, SJD, SP and muscle fatigue. KT may result in small unimportant differences for shoulder disorders, LET, chronic ankle instability (CAI), KOA, PFPS, DDSD, NP and MPS. The CoE supporting these results was very low.

Function/disability in the short and medium term

In both the short and medium term, KT may not improve function/disability. However, slight benefits of KT may be shown in comparisons with active interventions and placebo/sham KT.

The evidence was insufficient to support the effects of KT for LET and AKS. KT may have trivial effects for shoulder disorders, KOA, PFPS, CLBP, PLBP, DDSD, SP and MPS.

MS and ROM in the immediate term

The evidence was uncertain about the effects of KT on MS and ROM. Apart from a small increase in MS compared with placebo/sham KT, the subgroup analyses suggested no further clinically meaningful benefits for other comparisons.

KT may not increase MS for DQD, LET, AKS, some lower extremity injuries, PFPS, DDSD and MPS. KT may not be beneficial in improving ROM for shoulder disorders, KOA, some lower extremity injuries, PFPS, CLBP, DDSD and MPS. No reliable judgments could be drawn regarding the effects of KT on MS for KOA and muscle fatigue, and on ROM for AKS.

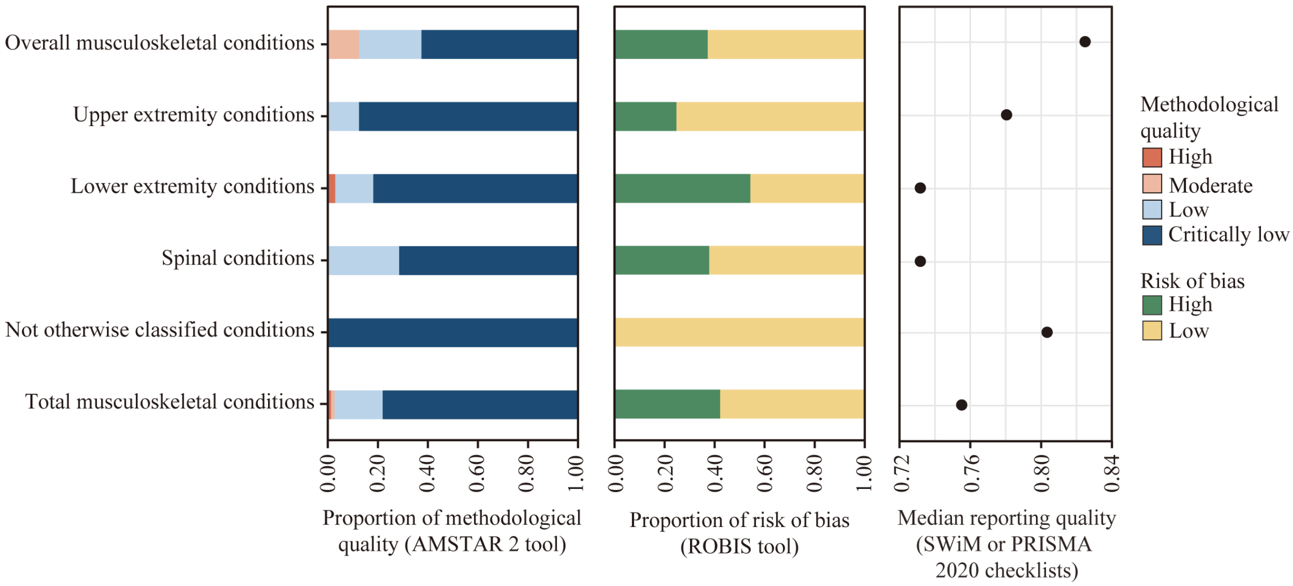


Figure 2 Assessment of methodological quality, risk of bias and reporting quality of systematic reviews, grouped by body regions. Proportions of methodological quality and risk of bias indicate the distribution of ratings by the AMSTAR 2 tool and ROBIS tool, respectively, while median reporting quality reflects the median total compliance rates with the SWiM guideline and PRISMA 2020 checklists. AMSTAR 2, A Measurement Tool to Assess Systematic Reviews 2; PRISMA, Preferred Reporting Items for Systematic reviews and Meta-Analyses; ROBIS, Risk of Bias in Systematic reviews; SWiM, Synthesis without meta-analysis.

MS and ROM in the short term

KT appeared to generate little to no increase in MS and ROM, and a small increase in ROM was observed when compared with placebo/sham KT. However, the certainty in these effect estimates was very low.

Trivial effects of KT on MS were observed for LET, KOA, some lower extremity injuries and MPS. The evidence for short-term improvements remained uncertain for KOA, CLBP, AKS and MPS.

QOL and disease-specific symptoms in the immediate term

The direction of effects on QOL favoured KT, but the CoE was very low. For disease-specific symptoms, KT may result in little to no difference. Slight improvements with KT may be limited to craniovertebral angle in UQPD rather than balance in CAI.

Adverse effects

Few RCTs (n=19; 6%) explicitly stated in their methods that AEs were recorded. Of these, 12 RCTs reported AEs (online supplemental file 27). The most common AEs of KT were skin irritation (40%) and pruritus (30%). Compared with placebo/sham KT, the total NNH was 42 (95% CI 26 to 110) (skin irritation 173; pruritus 356).

Evidence maps of clinical relevance

Figure 5 and online supplemental file 28 present evidence maps of the clinical relevance of KT effects on MSDs at different follow-ups. Overall effects (online supplemental file 20) based on new meta-analyses indicated that KT primarily resulted in possible or probable clinical relevance for outcomes in the immediate (44%; 31%) and short (62%; 26%) term, respectively, whereas the effects were definitely not clinically relevant in the medium (100%) term.

Summary of results from sensitivity analyses

Sensitivity analyses (online supplemental file 29) showed that a considerable proportion of the clinical relevance of outcomes changed when compared with the results from the best-quality SR (26%) and from cumulative meta-analyses of RCTs with low ROB (48%). The leave-one-study-out analysis also indicated that 20% of the outcomes were substantially influenced by a single RCT.

Additionally, sensitivity analyses (online supplemental file 30) indicated that clinical relevance of many outcomes changed when different ESs were used as the MCID threshold.

Discussion

This overview of SRs identified 128 SRs (73 published and 55 unpublished SRs) across MSDs (29 diseases/conditions), involving 15 812 participants from 310 unique RCTs. Most SRs were evaluated as critically low in methodological quality and low in ROB, with a median total compliance rate of 75.6% in reporting quality. Most outcomes were graded as very low CoE and non-significant level with possible or probable clinical relevance. The main findings are that using KT for MSDs may reduce pain intensity in the immediate and short term and improve function/disability in the immediate term, but the evidence is highly uncertain. The inconclusive evidence suggests that KT may result in trivial effects on pain intensity in the medium term, function/disability in the short and medium term, MS, ROM and disease-specific symptoms (balance; craniovertebral angle) for MSDs. There is insufficient evidence to confirm that KT has a positive impact on QOL in MSDs. Although KT-related AEs generally resolve without additional management, skin irritation and pruritus remain concerns.

Our findings suggest that KT may provide heterogeneous effects among different MSDs. This result is broadly consistent with the review that summarised the effects of KT for the musculoskeletal system.[35] Furthermore, given that the best-quality SRs may offer relatively credible findings,[54] 74% of the clinical relevance of outcomes remained unchanged when compared with their results. Discrepancies between new meta-analyses and best-quality SRs may be due to differences in: (1) methodological quality and ROB. Most SRs were evaluated as critically low in methodological quality, and some were judged to have high ROB, suggesting that these SRs were unlikely to provide an accurate summary of existing RCTs;[40 41] (2) inclusion criteria and number of included RCTs. We considered all comparisons of KT and included more

Outcomes (follow-ups)	Comparisons	No. of RCTs (participants)	Hedges' g (95% CI)	Hedges' g (95% CI)	Certainty of evidence	Evidence levels	Clinical relevance
Pain intensity (immediate term)	KT vs active interventions	59 (2855)		-0.37 (-0.59 to -0.15)	Very low	III	Possible
	KT vs mixed interventions	15 (856)		-0.53 (-0.88 to -0.19)	Very low	IV	Probable
	KT vs no tape	90 (4424)		-0.86 (-1.06 to -0.66)	Very low	III	Definite
	KT vs placebo/sham KT	59 (2742)		-0.80 (-1.00 to -0.61)	Very low	II	Definite
	Subtotal	223 (10877)		-0.69 (-0.81 to -0.57)	Very low	III	Definite
Pain intensity (short term)	KT vs active interventions	6 (329)		-0.32 (-1.17 to 0.53)	Very low	NS	Possible
	KT vs mixed interventions	4 (257)		-0.45 (-0.75 to -0.15)	Very low	IV	Possible
	KT vs no tape	24 (1390)		-0.45 (-0.69 to -0.22)	Very low	III	Possible
	KT vs placebo/sham KT	22 (1245)		-0.82 (-1.22 to -0.42)	Very low	III	Probable
	Subtotal	56 (3221)		-0.57 (-0.77 to -0.37)	Very low	III	Probable
Pain intensity (medium term)	KT vs no tape	1 (148)		0.02 (-0.30 to 0.34)	NA	NS	Definitely not
	KT vs placebo/sham KT	1 (145)		-0.21 (-0.54 to 0.12)	NA	NS	Possible
	Subtotal	2 (293)		-0.09 (-0.32 to 0.14)	Very low	NS	Definitely not
Function/disability (immediate term)	KT vs active interventions	37 (1914)		-0.09 (-0.35 to 0.17)	Very low	NS	Definitely not
	KT vs mixed interventions	10 (643)		-0.35 (-0.77 to 0.06)	Very low	NS	Possible
	KT vs no tape	64 (3297)		-0.78 (-1.03 to -0.53)	Very low	III	Definite
	KT vs placebo/sham KT	35 (1692)		-0.64 (-0.91 to -0.37)	Very low	III	Probable
	Subtotal	146 (7546)		-0.54 (-0.69 to -0.40)	Very low	II	Probable
Function/disability (short term)	KT vs active interventions	7 (386)		-0.51 (-1.21 to 0.20)	Very low	NS	Probable
	KT vs mixed interventions	2 (144)		-0.31 (-0.67 to 0.05)	Very low	NS	Possible
	KT vs no tape	13 (779)		0.37 (-0.16 to 0.90)	Very low	NS	Possible
	KT vs placebo/sham KT	16 (863)		-0.63 (-1.01 to -0.25)	Very low	IV	Probable
	Subtotal	38 (2172)		-0.27 (-0.54 to 0.00)	Very low	NS	Possible
Function/disability (medium term)	KT vs no tape	1 (148)		0.11 (-0.21 to 0.43)	NA	NS	Definitely not
	KT vs placebo/sham KT	1 (145)		-0.01 (-0.34 to 0.32)	NA	NS	Definitely not
	Subtotal	2 (293)		0.05 (-0.18 to 0.28)	Very low	NS	Definitely not
Muscle strength (immediate term)	KT vs active interventions	7 (241)		0.17 (-0.41 to 0.75)	Very low	NS	Possible
	KT vs mixed interventions	3 (159)		-0.31 (-0.66 to 0.03)	Very low	NS	Possible
	KT vs no tape	12 (474)		0.24 (-0.03 to 0.51)	Very low	NS	Possible
	KT vs placebo/sham KT	16 (668)		0.70 (0.31 to 1.10)	Very low	IV	Probable
	Subtotal	38 (1542)		0.37 (0.16 to 0.59)	Very low	III	Possible
Muscle strength (short term)	KT vs active interventions	1 (16)		0.24 (-0.74 to 1.22)	NA	NS	Possible
	KT vs mixed interventions	1 (84)		-0.48 (-0.94 to -0.02)	NA	IV	Possible
	KT vs no tape	1 (45)		0.00 (-0.62 to 0.62)	NA	NS	Possible
	KT vs placebo/sham KT	6 (229)		0.37 (0.10 to 0.63)	Very low	IV	Possible
	Subtotal	9 (374)		0.20 (-0.10 to 0.49)	Very low	NS	Definitely not
Range of motion (immediate term)	KT vs active interventions	6 (287)		0.00 (-0.30 to 0.30)	Very low	NS	Definitely not
	KT vs mixed interventions	3 (108)		-0.01 (-0.33 to 0.32)	Low	NS	Definitely not
	KT vs no tape	20 (1106)		0.39 (0.10 to 0.67)	Very low	IV	Possible
	KT vs placebo/sham KT	22 (968)		0.42 (0.18 to 0.67)	Very low	IV	Possible
	Subtotal	51 (2469)		0.32 (0.16 to 0.48)	Very low	III	Definitely not
Range of motion (short term)	KT vs active interventions	1 (69)		0.24 (-0.26 to 0.74)	NA	NS	Possible
	KT vs no tape	5 (335)		0.32 (0.04 to 0.61)	Very low	IV	Possible
	KT vs placebo/sham KT	6 (256)		0.68 (0.08 to 1.27)	Very low	IV	Probable
	Subtotal	12 (660)		0.48 (0.19 to 0.78)	Very low	IV	Possible
Quality of life (immediate term)	KT vs active interventions	2 (140)		0.83 (0.39 to 1.27)	Very low	IV	Probable
	KT vs no tape	2 (50)		0.51 (-0.06 to 1.07)	Very low	NS	Probable
	Subtotal	4 (190)		0.73 (0.44 to 1.03)	Very low	IV	Probable
Disease-specific symptoms (immediate term)*	KT vs active interventions	6 (242)		0.37 (-0.19 to 0.93)	Very low	NS	Possible
	KT vs no tape	2 (62)		0.57 (-0.17 to 1.32)	Very low	NS	Probable
	KT vs placebo/sham KT	6 (170)		-0.08 (-0.53 to 0.38)	Very low	NS	Possible
	Subtotal	14 (474)		0.23 (-0.12 to 0.57)	Low	NS	Possible

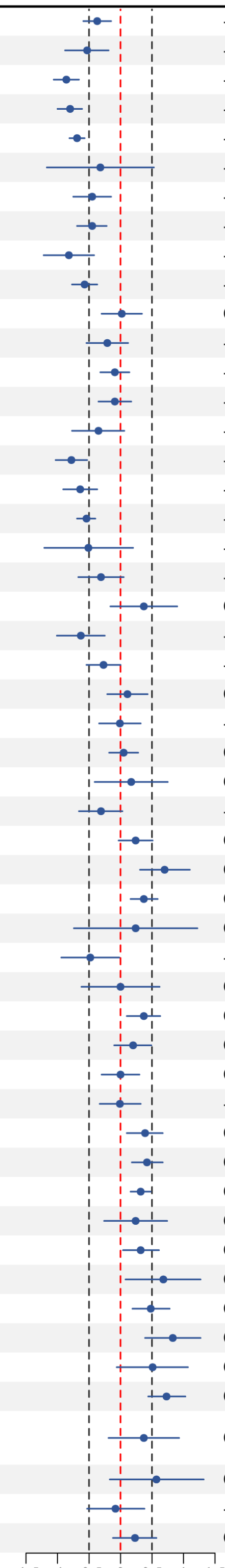
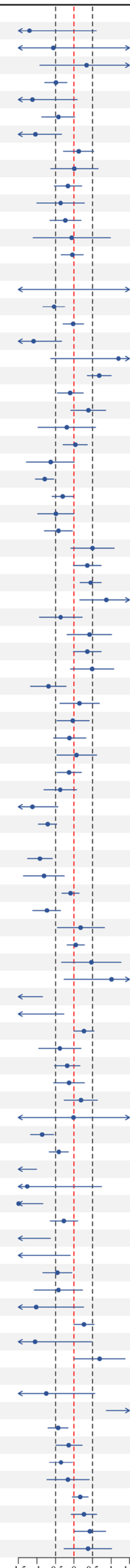


Figure 3 Summary of results for total musculoskeletal conditions obtained from new meta-analyses and subgroup comparisons. Function/disability and disease-specific symptoms were converted to a negative direction (negative values indicate improvement). The red dotted line represents the threshold of no statistical significance. The black dotted lines represent the minimal clinically important difference of 0.5 SD (medium effect size). KT, kinesio taping; RCTs, randomised controlled trials. *Disease-specific symptoms include balance and craniovertebral angle outcomes.



Diseases/conditions	Outcomes (follow-ups)	No. of RCTs (participants)	Hedges' g (95% CI)	Hedges' g (95% CI)	Certainty of evidence	Evidence levels	Clinical relevance
Upper extremity conditions							
De Quervain's disease	Pain intensity (immediate term)	6 (210)		-1.20 (-2.98 to 0.60)	Very low	NS	Probable
	Function/disability (immediate term)	2 (60)		-0.56 (-4.71 to 3.60)	Very low	NS	Probable
	Muscle strength (immediate term)	3 (80)		0.34 (-0.92 to 1.59)	Very low	NS	Possible
Lateral elbow tendinopathy	Pain intensity (immediate term)	9 (416)		-0.49 (-0.79 to -0.19)	Very low	IV	Possible
	Pain intensity (short term)	2 (164)		-1.12 (-2.32 to 0.09)	Very low	NS	Probable
	Function/disability (immediate term)	12 (542)		-0.42 (-0.87 to 0.02)	Very low	NS	Possible
	Function/disability (short term)	5 (251)		-1.04 (-1.74 to -0.33)	Very low	IV	Probable
	Muscle strength (immediate term)	9 (363)		0.13 (-0.28 to 0.53)	Very low	NS	Possible
	Muscle strength (short term)	3 (131)		0.01 (-0.63 to 0.65)	Very low	NS	Possible
Shoulder disorders	Pain intensity (immediate term)	14 (720)		-0.16 (-0.53 to 0.21)	Very low	NS	Possible
	Pain intensity (short term)	3 (102)		-0.36 (-1.00 to 0.28)	Very low	NS	Possible
	Function/disability (immediate term)	15 (721)		-0.23 (-0.65 to 0.19)	Very low	NS	Possible
	Function/disability (short term)	2 (82)		-0.06 (-1.10 to 0.98)	Very low	NS	Possible
	Range of motion (immediate term)	8 (354)		-0.04 (-0.34 to 0.25)	Very low	NS	Definitely not
Lower extremity conditions							
After hip arthroplasty	Pain intensity (immediate term)	2 (130)		-2.14 (-5.81 to 1.52)	Very low	NS	Probable
After knee surgery	Pain intensity (immediate term)	17 (972)		-0.54 (-0.84 to -0.25)	Very low	IV	Probable
	Pain intensity (short term)	5 (320)		-0.02 (-0.29 to 0.26)	Very low	NS	Definitely not
	Function/disability (immediate term)	8 (449)		-1.09 (-1.85 to -0.33)	Very low	IV	Probable
	Function/disability (short term)	2 (90)		1.20 (-0.63 to 3.03)	Very low	NS	Probable
	Range of motion (immediate term)	13 (790)		0.68 (0.36 to 1.00)	Very low	IV	Probable
	Range of motion (short term)	2 (127)		-0.10 (-0.45 to 0.25)	Low	NS	Definitely not
	Muscle strength (immediate term)	6 (215)		0.39 (-0.08 to 0.85)	Very low	NS	Possible
Chronic ankle instability	Function/disability (immediate term)	2 (67)		-0.19 (-0.97 to 0.58)	Very low	NS	Possible
	Disease-specific symptom (immediate term)*	10 (333)		0.04 (-0.29 to 0.36)	Low	NS	Definitely not
Chronic knee pain	Pain intensity (immediate term)	8 (323)		-0.63 (-1.28 to 0.01)	Very low	NS	Probable
Knee osteoarthritis	Pain intensity (immediate term)	43 (1916)		-0.79 (-1.04 to -0.55)	Very low	III	Definite
	Pain intensity (short term)	8 (453)		-0.30 (-0.59 to -0.01)	Very low	IV	Possible
	Function/disability (immediate term)	21 (922)		-0.49 (-0.98 to 0.00)	Very low	NS	Possible
	Function/disability (short term)	6 (295)		-0.42 (-0.80 to -0.04)	Very low	IV	Possible
	Muscle strength (immediate term)	7 (387)		0.50 (-0.08 to 1.08)	Very low	NS	Probable
	Muscle strength (short term)	2 (115)		0.36 (-0.01 to 0.73)	Very low	NS	Possible
	Range of motion (immediate term)	11 (675)		0.45 (0.17 to 0.73)	Very low	IV	Possible
	Range of motion (short term)	3 (229)		0.87 (0.16 to 1.57)	Very low	IV	Probable
Lower limb musculoskeletal injuries	Pain intensity (immediate term)	3 (168)		-0.36 (-0.93 to 0.22)	Very low	NS	Possible
	Muscle strength (immediate term)	7 (388)		0.42 (-0.18 to 1.01)	Very low	NS	Possible
	Muscle strength (short term)	2 (115)		0.36 (-0.01 to 0.73)	Very low	NS	Possible
	Range of motion (immediate term)	5 (256)		0.49 (-0.09 to 1.07)	Very low	NS	Possible
Patellofemoral pain syndrome	Pain intensity (immediate term)	19 (777)		-0.69 (-1.17 to -0.21)	Very low	IV	Probable
	Pain intensity (short term)	3 (96)		0.15 (-0.38 to 0.68)	Very low	NS	Possible
	Function/disability (immediate term)	13 (613)		-0.03 (-0.46 to 0.41)	Very low	NS	Definitely not
	Function/disability (short term)	3 (96)		-0.12 (-0.55 to 0.32)	Very low	NS	Possible
	Muscle strength (immediate term)	4 (193)		0.07 (-0.46 to 0.61)	Very low	NS	Possible
	Range of motion (immediate term)	3 (141)		-0.13 (-0.46 to 0.20)	Very low	NS	Definitely not
Plantar fasciitis	Pain intensity (immediate term)	15 (837)		-0.37 (-0.81 to 0.07)	Very low	NS	Possible
	Pain intensity (short term)	5 (246)		-1.12 (-1.80 to -0.44)	Very low	IV	Probable
	Function/disability (immediate term)	6 (311)		-0.71 (-0.96 to -0.47)	Very low	IV	Probable
Spinal conditions							
Chronic low back pain	Pain intensity (immediate term)	30 (1837)		-0.92 (-1.25 to -0.59)	Very low	III	Definite
	Pain intensity (short term)	8 (581)		-0.81 (-1.36 to -0.26)	Very low	IV	Probable
	Pain intensity (medium term)	2 (293)		-0.09 (-0.32 to 0.14)	Very low	NS	Definitely not
	Function/disability (immediate term)	27 (1706)		-0.73 (-1.11 to -0.36)	Very low	III	Probable
	Function/disability (short term)	9 (690)		0.18 (-0.45 to 0.82)	Very low	NS	Possible
	Function/disability (medium term)	2 (293)		0.05 (-0.18 to 0.28)	Very low	NS	Definitely not
	Range of motion (immediate term)	4 (173)		0.47 (-0.33 to 1.27)	Very low	NS	Possible
	Range of motion (short term)	2 (99)		1.01 (-0.26 to 2.27)	Very low	NS	Probable
Coccydynia	Pain intensity (immediate term)	2 (88)		-2.18 (-3.51 to -0.85)	Very low	IV	Definite
	Function/disability (immediate term)	2 (88)		-1.65 (-3.02 to -0.27)	Very low	IV	Probable
DDSD	Pain intensity (immediate term)	5 (217)		0.27 (0.00 to 0.54)	Very low	NS	Possible
	Pain intensity (short term)	3 (139)		-0.38 (-0.95 to 0.19)	Very low	NS	Possible
	Function/disability (immediate term)	3 (135)		-0.18 (-0.53 to 0.16)	Very low	NS	Possible
	Function/disability (short term)	2 (97)		-0.13 (-0.55 to 0.28)	Very low	NS	Possible
	Muscle strength (immediate term)	2 (83)		0.19 (-0.26 to 0.63)	Very low	NS	Possible
	Range of motion (immediate term)	2 (83)		-0.01 (-2.73 to 2.70)	Very low	NS	Possible
Neck pain	Pain intensity (immediate term)	11 (527)		-0.86 (-1.17 to -0.55)	Very low	IV	Definite
	Function/disability (immediate term)	9 (472)		-0.41 (-0.67 to -0.15)	Very low	IV	Possible
Pregnancy-related low back pain	Pain intensity (immediate term)	8 (518)		-1.69 (-2.38 to -1.01)	Very low	IV	Definite
	Pain intensity (short term)	2 (182)		-1.26 (-3.26 to 0.74)	Very low	NS	Probable
	Function/disability (immediate term)	6 (329)		-1.49 (-2.13 to -0.84)	Very low	IV	Definite
	Function/disability (short term)	2 (182)		-0.27 (-0.64 to 0.10)	Very low	NS	Possible
Sacroiliac joint dysfunction	Pain intensity (immediate term)	3 (176)		-2.12 (-3.60 to -0.64)	Very low	IV	Definite
	Function/disability (immediate term)	3 (176)		-2.49 (-4.87 to -0.10)	Very low	IV	Probable
Spinal pain	Pain intensity (immediate term)	4 (266)		-0.45 (-0.84 to -0.06)	Very low	IV	Possible
	Pain intensity (short term)	2 (207)		-0.42 (-1.07 to 0.23)	Very low	NS	Possible
	Function/disability (immediate term)	4 (277)		-1.02 (-2.30 to 0.26)	Very low	NS	Probable
	Function/disability (short term)	2 (207)		0.27 (0.00 to 0.54)	Very low	NS	Possible
Upper quadrant postural dysfunction	Pain intensity (immediate term)	4 (141)		-1.05 (-2.57 to 0.47)	Very low	NS	Probable
	Disease-specific symptom (immediate term)†	4 (141)		0.69 (0.00 to 1.38)	Very low	NS	Probable
Not otherwise classified conditions							
Muscle fatigue	Function/disability (immediate term)	2 (134)		-0.75 (-2.06 to 0.56)	Very low	NS	Probable
	Muscle strength (immediate term)	2 (64)		2.10 (0.87 to 3.34)	Very low	IV	Definite
Myofascial pain syndrome	Pain intensity (immediate term)	30 (1347)		-0.43 (-0.70 to -0.16)	Very low	IV	Possible
	Pain intensity (short term)	9 (448)		-0.14 (-0.49 to 0.22)	Very low	NS	Definitely not
	Function/disability (immediate term)	15 (869)		-0.35 (-0.66 to -0.04)	Very low	IV	Possible
	Function/disability (short term)	5 (256)		-0.16 (-0.73 to 0.41)	Very low	NS	Possible
	Range of motion (immediate term)	11 (342)		0.17 (-0.04 to 0.38)	Low	NS	Definitely not
	Range of motion (short term)	3 (138)		0.27 (-0.07 to 0.61)	Low	NS	Possible
	Muscle strength (immediate term)	3 (93)		0.43 (0.02 to 0.85)	Low	IV	Possible
	Muscle strength (short term)	3 (93)		0.38 (-0.26 to 1.01)	Very low	NS	Possible

Figure 4 Summary of results for specific musculoskeletal diseases/conditions obtained from new meta-analyses. Function/disability and disease-specific symptoms were converted to a negative direction (negative values indicate improvement). The red dotted line represents the threshold of no statistical significance. The black dotted lines represent the minimal clinically important difference of 0.5 standard deviation (medium effect size). DDSD, discopathies and degenerative spinal diseases; KT, kinesio taping; RCTs, randomised controlled trials. *Outcome is balance. †Outcome is craniovertebral angle.

Figure 5 Evidence maps showing the clinical relevance of kinesio taping effects for (A) pain intensity and (B) function/disability in the immediate term (immediately after intervention). Effect sizes are classified as 'trivial' (0.00 to 0.19 SD), 'small' (0.20 to 0.49 SD), 'medium' (0.50 to 0.79 SD), 'large' (≥0.80 SD). Bubble colour indicates diseases/conditions by body regions, and bubble size indicates the number of participants (larger bubbles represent more participants). CoE, certainty of evidence; KT, kinesio taping; N, total number of included participants.

RCTs than the best-quality SRs in most outcomes, which may lead to differences in pooled estimates.

Regarding the subgroup analyses, our findings show that the effects of KT may vary across comparisons. When compared with active interventions (eg, exercise), KT may mainly have trivial effects. This finding may align with the results of recent network meta-analyses,[55 56] which showed that KT may not be the most recommended therapeutic option for MSDs. When compared with no tape, although KT is widely regarded as an adjunctive therapy in clinical practice,[57] its effects may be generally small due to possible clinical relevance. However, the adjunctive efficacy of KT may be obscured by the classification of clinical relevance (definite and probable clinical relevance accounted for a considerable proportion (55%) of the results).

One current concern regarding KT is the placebo effect, given the conflicting results from previous SRs and RCTs.[57] This concern may be addressed by our new meta-analyses, which found that KT may mainly provide small benefits compared with placebo/sham KT, but with very low certainty. Existing evidence[58] suggests that low (25%) tension might be more appropriate for relieving pain than no tension or high (75%) tension. However, approximately 75% of professionals used KT with 50% tension or higher in clinical practice,[57] which may influence the effects of KT. Furthermore, some studies supported the placebo effects of KT because KT may not improve objective outcomes (eg, muscle activity).[59 60] However, KT may improve subjective outcomes (eg, self-perceived performance),[60] and the potential value of patient-reported outcomes for MSDs should not be overlooked.

Another current issue regarding KT concerns its clinical relevance and CoE.[61 62] It is noteworthy that, when compared with the results from cumulative meta-analyses of RCTs with low ROB in sensitivity analysis, approximately half of outcomes (52%) retained their clinical relevance; however, even within the low ROB subset, the uncertainty between possible and probable clinical relevance still existed. One possible explanation is that insufficient attention was paid to clinical heterogeneity (eg, dose, cut, tension). Despite stratifying the results of KT by control type and follow-up, substantial heterogeneity persisted, leading us to downgrade the CoE. While some studies identified wide variability in KT application,[57 63] meta-regressions from previous SRs[18 64] examined only the number of KT sessions. This limited exploration of KT methods limits our ability to articulate its true effects. Another possible explanation is the responder heterogeneity across MSD populations. Recent research[65 66] found that participants with higher baseline pain and disability may benefit more from physiotherapy. However, current evidence is insufficient to verify similar moderators for KT. Further exploratory trials of KT parameters and greater focus on the heterogeneity of treatment effects may help improve the consistency of evidence.

Our findings indicate that KT may primarily provide benefits in the immediate term. A possible explanation is that the mechanical support to subcutaneous space[10 11 67–69] provided by KT is likely to disappear once the tape is removed, making the effects difficult to maintain in the short or medium term.

Strengths and limitations

To our knowledge, this is the first overview of SRs and evidence mapping to summarise the effects and clinical relevance of KT for MSDs at different follow-ups. We conducted an updated and comprehensive search to include unpublished and published SRs with and without meta-analysis of RCTs. We evaluated the methodological quality, ROB and reporting quality of each published SR to inform the credibility of their findings. Given the high overlap of primary RCTs across outcomes, we performed new meta-analyses and subgroup analyses. We further evaluated the clinical relevance of effects, CoE and evidence levels and conducted sensitivity analyses. Finally, we collected AEs, and plotted evidence maps to assist readers in quickly identifying the overall effects of KT and their clinical relevance.

A limitation of this review is that we only considered SRs of RCTs published in English. While several studies found that this language restriction may not substantially influence the effect estimates[70] and conclusions,[71] and the combined search of Embase and MEDLINE provided relatively high coverage,[72] the generalisability of our findings may be limited by SRs in other languages or databases. Although the ROB at the stage of study identification and selection is low for most SRs, the results of new meta-analyses may not be up to date, and AEs of KT may be underestimated. As several cumulative meta-analyses were based on few RCTs, the low statistical power[73] may lead to imprecision in the comparisons between our results and those from low-ROB RCTs. Because no covariates were predefined,[74 75] we were unable to perform meta-regression to explore sources of heterogeneity. Finally, some outcomes in SRs were assessed using distribution-based MCIDs, which may not fully reflect patient-reported changes and may result in different thresholds.[26 49] The MCID threshold of medium ES should be interpreted with caution because small ES is more commonly used.[76]

Implications for practice and research

Although this overview synthesised substantial evidence on KT, it is not possible to provide certain recommendations for MSDs. Most evidence lacks robustness in clinical relevance, and certainty in our findings is limited by considerable heterogeneity. Hence, KT should be applied cautiously in clinical practice with shared decision-making involving patient preferences, alternative interventions and AEs (eg, skin irritation, pruritus).

Many outcomes showed high or very high overlap for MSDs, indicating that multiple SRs covered similar topics. Greater attention to previous SRs may decrease unnecessary duplication of effort.[77 78] Future SRs should improve methodological and reporting quality by providing a justified list of excluded RCTs to reduce the risk of misleading conclusions. There is a need to better clarify KT parameters and to explore responder heterogeneity using other methods (eg, individual participant data meta-analysis, causal machine learning).[79–81] Finally, researchers should interpret the pooled results with a stronger emphasis on clinical relevance rather than statistical significance alone.[25 26 49] Although a recent instrument[82] may assist in selecting credible MCIDs, the number of anchor-based MCIDs remains limited. The patient acceptable symptom state and substantial clinical benefit are also options for evaluating clinical efficacy.[83]

Conclusions

In conclusion, this overview of SRs and evidence mapping shows that current evidence is very uncertain regarding the clinical effects of KT on MSDs across all follow-ups. Its effects may vary across subgroups or individual MSDs. Although KT may achieve the MCIDs for pain intensity in the immediate and short term and function/disability in the immediate term, the overall evidence remains highly inconclusive. KT may provide little to no effect on pain in the medium term, function/disability in the short and medium term, and MS, ROM, disease-specific symptoms at all follow-ups for MSDs, but the evidence is very uncertain. The effects of KT on QOL remain unclear, and AEs may occur during its application. Given the limitations in certainty, level and clinical relevance of existing evidence, further high-quality, well-reported RCTs and SRs are warranted to address the uncertainty regarding overall effects along with consideration of heterogeneity in KT usage.

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