

Does Physiotherapy Research in South Korea Match International Best-practice Osteoarthritis Guidelines? A Narrative Review

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ABSTRACT

The aim of this study was to explore physiotherapy-based osteoarthritis (OA) research conducted in South Korea, focusing on the utilisation of non-surgical management and its alignment with international clinical practice guidelines (CPGs). Databases (MEDLINE, EMBASE, CINAHL and SPORTDiscus – accessed via EBSCOhost) and Google Scholar were searched to identify clinical articles and trials focused on research related to OA management in physiotherapy conducted in South Korea. A total of 11 studies met the inclusion criteria – nine were randomised controlled trials, one utilised a prospective design and one adopted a quasi-experimental approach. These studies employed various interventions such as kinesiology tape, electrotherapies, and exercise. None of the studies implemented education, self-management, and weight control as management. There is a discrepancy between research-based physiotherapy for OA management in South Korea and international CPGs. These findings may be explained by factors such as education, healthcare systems, and cultural differences.

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Key Words: Culture, Guidelines, Motivation, Osteoarthritis, South Korea

INTRODUCTION

More than 500 million people worldwide are affected by osteoarthritis (OA) (Hunter et al., 2020). The global prevalence of OA increased by 48% between 1990 and 2019, and OA was reported as one of the leading causes of disability in 2019 (Cunningham et al., 2021; Hunter et al., 2020). In addition, OA places a significant economic burden on many countries, including the USA, the UK, Australia, and New Zealand (Leifer et al., 2022; O'Brien et al., 2021). The average annual direct expense incurred by the health system caring for an individual with OA is \$27,000 (NZD) (Leifer et al., 2022). The region with the greatest average annual direct costs was North America (\$20,020, NZD), while Asia (\$11,570), Europe (\$1,820), and Australia (\$1,170) reported comparatively lower costs (Leifer et al., 2022). A similar trend has been shown in South Korea, where both prevalence and costs associated with OA care have increased in the past few years (Lee & Kim, 2017). According to the Korean National Health and Nutrition Examination Survey (NHANES), the prevalence of radiographic knee OA among people in South Korea over the age of 49 years was 35.1% from 2010 to 2013 (Hong et al., 2020; J.-H. Park et al., 2017). Between 2011 and 2018, the number of total knee joint replacement surgeries increased by 45% (Kim et al., 2021).

The growing burden associated with OA has led researchers to develop prompt and efficient management strategies for people diagnosed with the condition (Speerin et al., 2014). Numerous

clinical practice guidelines (CPGs) have been published by internationally recognised organisations, including the American College of Rheumatology (ACR), Osteoarthritis Research Society International (OARSI), and the National Institute for Health and Care Excellence (NICE) (Babatunde et al., 2022). These CPGs advocate that high-value self-management strategies, including exercise, weight management, and patient education, should be the first line of treatment for the non-surgical management of OA (Cunningham et al., 2021; Rice et al., 2019).

Despite international efforts to improve care for people with OA, many physiotherapists and other health professionals still provide low-value care modalities of little benefit to their patients (Holm et al., 2019). Research has indicated that similar low-value care is also given in South Korea (Kim et al., 2021; Suh et al., 2017), where the most common forms of non-surgical intervention appear to be superficial heat and transcutaneous electrical nerve stimulation (TENS), followed by interferential current therapy (ICT), and laser therapy (Suh et al., 2017).

The low-value care clinicians provide in South Korea may be due to the implementation of these non-surgical interventions in research settings or a lack of local research. Findings of a scoping review conducted by Diarbakerli et al. (2022) indicated that low-value care provided by clinicians not engaging in evidence-based practice (EBP) could be blamed on inadequate funding and/or a lack of research. Moreover, Lee et al. (2022)

argue that insufficient physiotherapy-related research has been conducted in South Korea to explore the various factors (such as attitudes, education, health system barriers, skills, culture, and application in clinical practice) associated with the uptake or avoidance of EBP. This research gap makes it difficult to fully comprehend the limitations and prospects for enhancing the standard of care delivery, for people with OA, among clinicians in South Korea.

This narrative review aims to examine physiotherapy-based OA research completed in South Korea, the types of non-surgical treatments investigated, and the alignment of this research with the recommendations of international CPGs.

METHODS

Terms and search strategy

A database search to identify clinical research articles describing trials focused on OA management research in physiotherapy in South Korea was completed in March 2023. The search covered the period from 2000 to 2023. The MEDLINE, EMBASE, CINAHL, SPORTDiscus (accessed via EBSCOhost) databases and Google Scholar were searched. Specific terms related to the management of physiotherapy and OA in South Korea are shown in the Appendix.

Eligibility criteria

Eligibility for this review was confined to studies engaged or conducted by physiotherapists using randomised controlled trials (RCTs), prospective design, or quasi-experimental trials in South Korea. There was no restriction based on body site OA, but studies of rheumatoid arthritis and post-surgery physiotherapy management were excluded. The search was limited to articles written in English.

Study selection and data extraction

The first author (MLP) completed the study selection and data extraction. References identified through the database search were downloaded to EndNote (The EndNote Team, 2013). Duplicates were then removed. Title and abstract screening was completed prior to full-text review to identify the most relevant studies.

Data synthesis

Study characteristics were extracted and tabulated under the following headings: author, mean age, sample size, study design, inclusion and exclusion criteria, interventions and control groups, outcome measures, and key findings.

RESULTS

Study selection and inclusion

Figure 1 displays the PRISMA flow diagram demonstrating the selection of literature. A total of 672 articles were identified in the initial search. Duplicates ($n = 55$) were removed, and article titles and abstracts were screened against the inclusion and exclusion criteria. A total of 15 articles were deemed suitable for full-text review. Six of these studies were excluded because their full text was written in Korean. A reference search of the included studies identified two additional articles. A total of 11 studies were therefore included in the present review.

Participants

Participant characteristics are reported in Table 1. A total of 328

participants were included across all the studies, with sample sizes ranging from 10 to 46 participants. Three articles recruited fewer than 10 subjects per group (Kim et al., 2016; Park et al., 2019; S.-H. Park et al., 2017). The mean age of participants in the remaining nine studies varied from 46 to 73 years; two studies did not report this data (Park et al., 2019; S.-H. Park et al., 2017). One study addressed OA of the hand (Kang et al., 2019), and the remaining papers focused on knee joint OA.

Inclusion and exclusion criteria of study participants

The inclusion and exclusion criteria differed across the 11 studies, but all participants were diagnosed with OA. Orthopaedic surgeons or GPs made the diagnosis of OA based on x-ray findings in all studies. The Kellgren-Lawrence (K-L) classification system was often utilised as an inclusion criterion, although mean K-L grades differed among the studies. Only one study employed inclusion criteria based on the American College of Rheumatology (ACR) (Kang et al., 2019). Two studies did not provide clearly reported inclusion criteria (Kim et al., 2016; Lee et al., 2016).

Study intervention and control

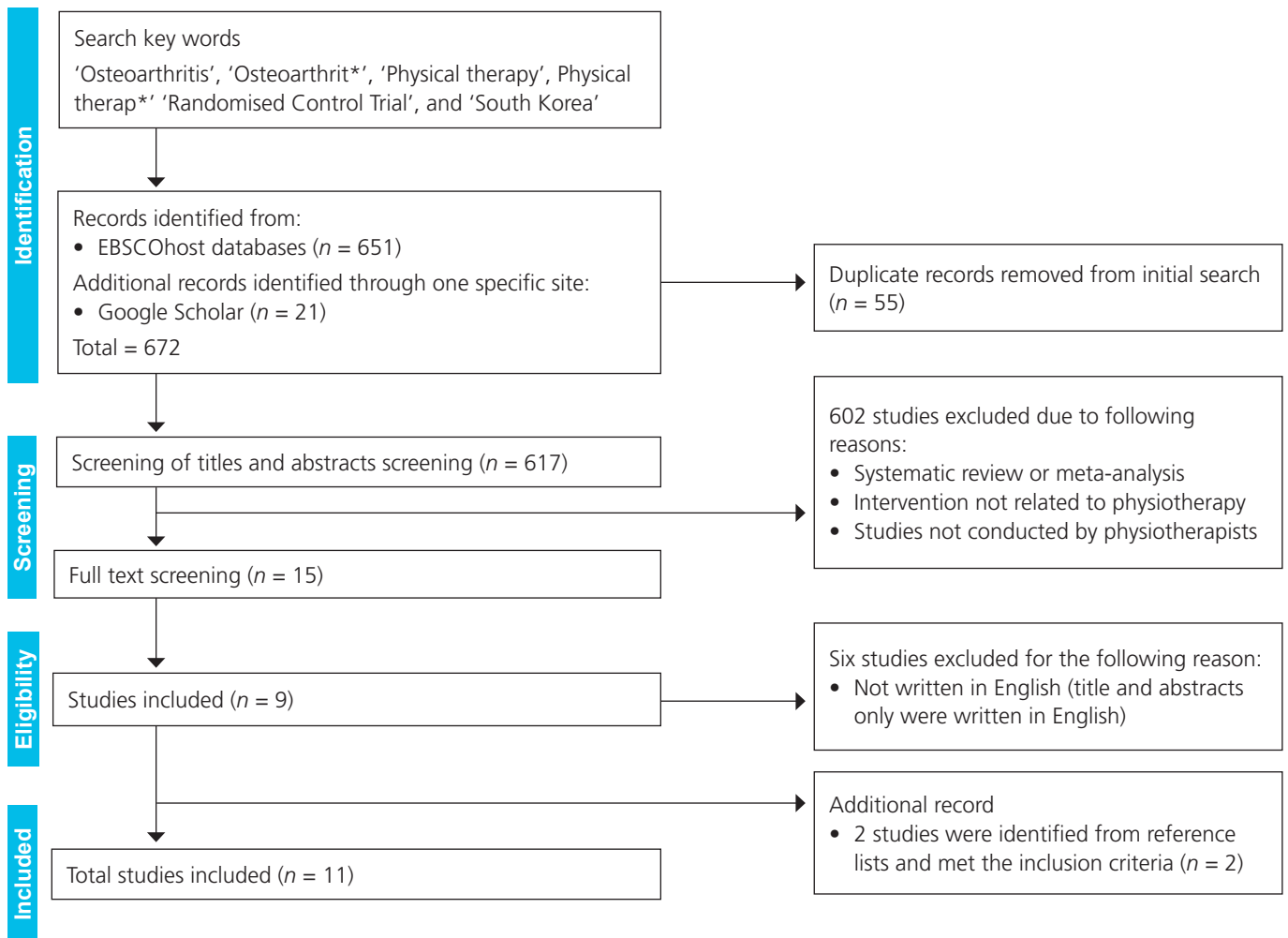
A range of different interventions were used in the included studies (Table 1). Four studies reported using kinesiology taping (KT) to manage knee OA. Two studies used electric modalities (Kim et al., 2019; Kim et al., 2016), and five studies (Kang et al., 2019; Kim et al., 2020; Nam et al., 2014; Oh et al., 2020; Park et al., 2017) employed exercise interventions, including neuromuscular exercise and resistance exercises. The usual frequency of intervention was three times per week, and the treatment period ranged from four to 12 weeks. Two studies did not provide clear information on the dosage, intensity, or progression of their interventions for resistance exercise (Y. Cho et al., 2015; Kim et al., 2020). In six studies, the control and intervention groups received almost identical treatments, such as heat packs, interferential current waves, and ultrasonic waves (Table 1). Despite four studies using KT as their primary intervention, little information was available regarding the providers of this intervention (H.-Y. Cho et al., 2015; Lee et al., 2016; Park et al., 2019; S.-H. Park et al., 2017). Only one study indicated using a certified KT instructor (H.-Y. Cho et al., 2015), while the other three did not provide any information about the therapists responsible for the intervention. In one study, participants applied self-treatment with a therapeutic machine (TENS) at home and reported to the assessor via telephone contact (Kim et al., 2019).

Outcome measures

A range of different outcome measures was used across the studies. The visual analogue scale (VAS) was the primary measure used to evaluate pain. One study applied manual muscle testing (MMT) to measure strength (Nam et al., 2014), while a hand dynamometer was used in participants with hand OA (Kang et al., 2019). Kim et al. (2020) aimed to enhance quadriceps muscle strength as the primary treatment, but muscle strength was measured neither before nor after the treatment. In addition, some studies included health-related questionnaires such as the Korean-Western Ontario and McMaster Universities (K- WOMAC), the Western Ontario and McMaster Universities (WOMAC), and the Short-Form Health Survey (SF 36) (Kim et al., 2019; Kim et al., 2016; Kim et al.,

Figure 1

Identification of Studies Via Databases and Registers



2020; Lee et al., 2016; Nam et al., 2014; Oh et al., 2020).

KEY FINDINGS

The interventions in all studies demonstrated statistically significant within-group results indicating therapeutic benefits. However, of the 11 studies, five had inadequate sample sizes (between 10 and 13 participants), which could result in inaccurate estimations of the treatment effect sizes (Y. Cho et al., 2015; Kim et al., 2016; Oh et al., 2020; Park et al., 2019; S.-H. Park et al., 2017). Moreover, in addition to the primary intervention, several studies employed a combination of various therapeutic methods such as heat packs, TENS, manual therapy, or exercise. These combined interventions and diverse outcome measures would make it challenging to determine the effect of the primary intervention across studies.

DISCUSSION

This study investigated whether research conducted in South Korea included conservative OA physiotherapy treatments aligned with international CPGs. This review has revealed

a disparity between the recommended guidelines and the management of physiotherapy-based OA research in South Korea. This discussion highlights the discrepancies, discusses considerations about the included studies' methodological quality, and offers potential explanations for the observed discrepancies.

International CPGs versus physiotherapy-based research in South Korea

International clinical guidelines for OA management advocate using education, exercise, self-management, and weight control as first-line treatments (Rice et al., 2019; Whittaker et al., 2021). Of these, only exercise was adopted by the South Korean studies included in the present review. None of the South Korean studies implemented self-management, education, or weight reduction. Yet, in several studies, thermal modalities, electrotherapy, and KT were commonly applied as the primary intervention (H.-Y. Cho et al., 2015; Kim et al., 2019; Kim et al., 2016; Lee et al., 2016; Park et al., 2019; S.-H. Park et al., 2017). Of interest, a systematic review and meta-analysis conducted by Zeng et al. (2015) revealed that electrical stimulation therapies

Table 1
Study Characteristics of Reviewed Literature

Author (year)	Participants N M (SD) age, (years)	Study design Body site	Inclusion/exclusion criteria	Experimental group Frequency of intervention	Control group Frequency of control	Outcome measure(s)	Key findings
H. Y. Cho et al. (2015)	N = 46 EG N = 23 Age: 58.2 (4.5) CG N = 23 Age: 57.5 (4.4)	RCT Knee OA	Inclusion: > 50 years, >1 year of symptomatic OA, radiographic confirmation, walking with pain (50/100 VAS), no ligament injury Exclusion: fracture, surgery, neurological disorder from vestibular problem, taking analgesic medication	KT Pre / post	Placebo KT Pre / post	VAS; ROM; Proprioception	IG: improved VAS, ROM and proprioception CG: no improvement with VAS, ROM and proprioception
Y. Cho et al. (2015)	N = 37 EG 1 N = 12 Age: 71.2 (7.0) EG 2 N = 13 Age: 69.4 (3.6) CG N = 12 Age: 71.2 (3.4)	RCT Knee OA	Inclusion: > 65 years of age, K-L grade II to III, deficits in sensation, circulation, balance, or range of motion, or serious foot problem Exclusion: hip, knee, ankle surgery, circulatory or neurological disorder	EG 1: proprioceptive training: 30 min, 2 times/week, 12 weeks EG 2: quadriceps strengthening (isometric exercise): 10 reps/3 sets, 2 times/week, 12 weeks	Heat pack (20 min) and TENS (15 min): 2 times/week, 12 weeks	Foot progression angle; weight-bearing ratio; knee adduction moment	EG 1: improved foot progression angle, weight bearing ratio, knee adduction moment EG 2 and CG: no improvement
Kang et al. (2019)	N = 29 EG N = 15 Age: 46.7 (4.6) CG N = 14 Age: 47.9 (4.)	RCT Hand OA	Inclusion: ACR criteria (hand pain or stiffness in at least 2/10 selected joints, hard tissue enlargement of at least 2 DIP joints, 3 or fewer swollen MCP joints, deformity in at least 1/10 selected joints) Exclusion: cognitive disorder, history of serious trauma, surgery, corticosteroid injection in a hand joint	Stretching and strengthening exercises: 10 reps/0-2 weeks; 15 reps/3-8 weeks; no sets Plus paraffin bath (30 min): 5 times/week, 8 weeks	Paraffin bath (30 min): 5 times/week 8 weeks	Hand grip strength; AUSCAN index	Within EG and CG: improved hand grip strength and AUSCAN index

Author (year)	Participants N M (SD) age, (years)	Study design Body site	Inclusion/exclusion criteria	Experimental group Frequency of intervention	Control group Frequency of control	Outcome measure(s)	Key findings
Kim et al. (2019)	N = 40 EG N = 20 Age: 59.5 (9.2) CG N = 20 Age: 56.0 (7.4)	Prospective, randomised single-blind, comparative controlled trial Knee OA	Inclusion: > 18 years of age, K-L grade I to IV, radiography: 15° knee flexion Exclusion: knee surgery, steroid injection, infection	LIPUS with TENS (home based self-therapy): 8 weeks, 20 min, 3 or < 3 sessions/day	TENS (home based self-therapy): 8 weeks, 20 min, 3 or < 3 sessions/day	VAS; WOMAC; SF-36; FAC thickness	Within intervention and control group: improved VAS and WOMAC; No significant differences in FAC between all groups; No difference between groups difference for SF-36 Within groups: improved VAS and K-WOMAC
Kim et al. (2016)	N = 20 EG N = 10 Age: 65.3 (4.2) CG N = 10 Age: 65.5 (4.0)	RCT Knee OA	No inclusion or exclusion criteria stated	HILT and conservative physiotherapy: 3 times/week, 4 weeks	Conservative physiotherapy; deep heat; interferential current; ultrasonic wave	VAS; K-WOMAC	Within groups: improved VAS and K-WOMAC
Kim et al. (2020)	N = 30 EG N = 15 Age: 69.3 (4.2) CG N = 15 Age: 70.0 (5.3)	RCT Knee OA	Inclusion: > 65 years of age, K-L grade II Exclusion: neurological, cardiovascular and rheumatic diseases	Resistance exercise with band and heat pack, ultrasound and interference wave: 2 sets/10 reps, 3 times/week, 4 weeks	Heat pack, ultrasound and interference wave	VAS; K-WOMAC	Within groups: improved VAS and K-WOMAC
Lee et al. (2016)	N = 30 EG N = 15 Age: 72.0 (4.0) CG N = 15 Age: 73.1 (5.8)	RCT Knee OA	No inclusion criteria stated Exclusion: no fracture, no ligament injury, no other soft tissue injury, no dysesthesias	KT and conservative treatment: 3 times/week, 4 weeks	Conservative treatment (heat pack and interference wave): 3 times/week, 4 weeks	VAS; K-WOMAC; ROM	Within groups: improved VAS and K-WOMAC EG: ROM increased
Nam et al. (2014)	N = 30 EG N = 15 Age: 64.9 (6.8) CG N = 15 Age: 63.7 (5.6)	RCT Knee OA	Inclusion: > 60 years of age, K-L grade > 2, not currently exercising Exclusion: surgery	Squatting position on aero step: 1 min/3 sets, 3 times/week, 6 weeks	Squatting position on stable ground: 1 min/3 sets, 3 times/week, 6 weeks	Knee flexion ROM; quadriceps MMT; hamstring MMT; K-WOMAC	Within groups: improved knee flexion, MMT and K-WOMAC

Author (year)	Participants	Study design	Inclusion/exclusion criteria	Experimental group	Control group	Outcome measure(s)	Key findings
Oh et al. (2020)	<p>N = 26</p> <p>EG</p> <p>N = 13</p> <p>Age: 64.5 (3.6)</p> <p>CG</p> <p>N = 13</p> <p>Age: 67.2 (5.3)</p>	<p>RCT</p> <p>Knee OA</p>	<p>Inclusion: > 60 years of age with OA</p> <p>Exclusion: neurological diseases and surgery</p>	<p>Visual feedback balance training and heat and wet therapy, ICT, ultrasonic therapy: 3 times/week, 8 weeks</p>	<p>Muscle strengthening exercise with elastic band and heatand wet therapy, ICT, ultrasonic therapy: 3 sets/10 reps</p> <p>Knee extension: 3 times/week, 8 weeks</p>	<p>VAS; K-WOMAC</p>	<p>Within groups: improved VAS and K-WOMAC</p> <p>Between groups: no difference</p>
Park et al. (2017)	<p>N = 30</p> <p>EG1</p> <p>N = 10</p> <p>Age: not reported</p> <p>EG2</p> <p>N = 10</p> <p>Age: not reported</p> <p>CG</p> <p>N = 10</p> <p>Age: not reported</p>	<p>RCT</p> <p>Knee OA</p>	<p>Inclusion: able to follow instructions, pain in knee joint, able to walk, K-L grade < 2</p> <p>Exclusion: > 80 years of age, surgery, mental issue(s), allergic to taping, rheumatic arthritis, participants who perform strengthening exercises</p>	<p>EG1: non-elastic taping with magnetic field therapy (15 min) plus general physiotherapy</p> <p>EG2: elastic taping with magnetic field therapy (15 min) plus general physiotherapy</p> <p>3 times/week, 6 weeks</p>	<p>General physiotherapy (heat pack and ICT)</p>	<p>VAS; WOMAC</p>	<p>Within groups improved pain and WOMAC</p>
Park et al. (2019)	<p>N = 10</p> <p>Age: not reported</p>	<p>Quasi-experimental</p> <p>Knee OA</p>	<p>Inclusion: > 60 years of age with OA, K-L grade I-III, able to walk, VAS > 5</p> <p>Exclusion: knee swelling, skin disorder, rheumatoid arthritis, previous knee surgery or waiting for surgery</p>	<p>KT applied</p> <p>Immediate effect (before and after)</p>	<p>No KT applied</p>	<p>Timed Up and Go test; 10-metre walk test; VAS</p>	<p>KT group: improved pain, balance and walking</p>

Note. ACR = American College of Rheumatology; AUSCAN = Australian/Canadian osteoarthritis hand index; CG = control group; DIP = distal interphalangeal; EG = experimental group; FAC = femoral articular cartilage; HILT = high intensity laser therapy; ICT = interferential current therapy; K-L = Kellgren-Lawrence; KT = kinesiology taping; K-WOMAC = Korean Western Ontario and McMaster Universities Osteoarthritis Index; LIPUS = low-intensity pulsed ultrasound; MCP = metacarpophalangeal; MMT = manual muscle test; OA = osteoarthritis; RCT = randomised control trial; ROM = range of motion; TENS = transcutaneous electrical nerve stimulation; VAS = visual analogue scale; WOMAC = Western Ontario and McMaster Universities Osteoarthritis Index.

were not more effective than control interventions (sham or blank). Furthermore, recently published research by Whittaker et al. (2021) suggests these treatments should only be used in conjunction with primary interventions, as there is a lack of high-quality studies supporting their use. Treatments used in South Korean studies appear inconsistent with internationally recommended active management approaches with low-value interventions commonly employed. Moreover, in their OA management research, South Korean physiotherapists demonstrate a preference for using thermal modalities and electrotherapy.

Methodological considerations

This review did not undertake a detailed methodological critique but has identified some methodological issues within the included studies. In particular, most of the studies presented with small sample sizes, which are not representative of the population, limiting generalisability. Furthermore, small sizes may lead to statistically significant findings which are not necessarily clinically meaningful. Only one study (H.-Y. Cho et al., 2015) performed a power calculation to determine the required sample size before recruiting participants. In addition, three studies that included strengthening exercise as their primary intervention did not measure strength in ways that enabled comparisons between groups (Y. Cho et al., 2015; Kang et al., 2019; Kim et al., 2020). In one instance (Kim et al., 2020), the researchers did not measure strength at baseline or follow-up. Of those studies measuring strength, none utilised an isokinetic dynamometer, the gold standard for strength measurements (Zapparoli & Riberto, 2017). Instead, muscle strength was assessed using a hand-held dynamometer and MMT. It is important to note that MMT has been found to have limited validity and reliability compared to the gold standard (Bohannon, 2019). In eight of the studies, the control group was given a combination of treatments such as heat packs, TENS, and ICT, which made it difficult to determine the individual effects of each intervention. Moreover, only Kim et al. (2019) only conducted a long-term follow-up assessment and assessed participants 23 days after the intervention.

Possible reasons for discrepancies between studies and guidelines

The aim of developing international CPGs for the management of OA is to provide optimal and effective care to individuals with OA (Whittaker et al., 2021). Despite this, research has found that CPGs are not frequently followed by physiotherapists and other health professionals (Babatunde et al., 2022). This review of South Korean research-based physiotherapy OA management found that a large proportion of studies tested treatments that do not align with international recommendations for high-value care. These findings may be attributed to specific characteristics of South Korean education, health care systems, and culture.

Lee et al. (2022) observed a limited recognition of evidence-based practice and international guidelines among physiotherapists in South Korea. This observation was attributed to the lack of accessible resources and inadequate teaching of international guidelines. Notably, a comprehensive translation of guidelines for OA is currently unavailable, with only selected extracts and translations provided for specific professionals (doctors). Furthermore, evidence suggests that more focus is

needed on the critical appraisal of health research within South Korean physiotherapy curricula to give physiotherapy graduates the necessary skills to assess the robustness of clinical research (Kang et al., 2017). Kang et al. (2017) compared physiotherapy education and licensing exams in the United States and South Korea, revealing a difference in the inclusion of subjects such as safety, protection, professional competency, and research. These aspects accounted for 6.5% of the curriculum and licensing exams in the United States, while they were absent in South Korea (Kang et al., 2017). The exclusion and consequent lack of familiarity of these topics could contribute to the mismatch between the primary physiotherapy intervention for OA management in these South Korean studies and current CPGs. To bridge the existing gap, it may be beneficial to recognise the importance of EBP and research principles in the physiotherapy education curriculum in South Korea. Moreover, it seems imperative to have translated guidelines in Korean to ensure healthcare professionals can easily access the necessary information and resources for effective care of OA.

Discrepancies between physiotherapy management in South Korea and international approaches to OA management could also be attributed to the country's National Health Insurance system, which provides healthcare services to most of the population (Kim et al., 2014). This system allocates funding for all medical services, including physiotherapy-specific interventions like heat/cold therapy, TENS, ICT, laser, and therapeutic exercise (Suh et al., 2017). However, costs associated with the treatments recommended by international guidelines (education, self-management, and weight management) are not covered (Suh et al., 2017). Although the funding system covers therapeutic exercise, this intervention is funded post-operatively but not as a conservative intervention (Suh et al., 2017). Furthermore, a study conducted by Shim et al. (2018) reported that, due to funding issues, over 90% of osteoarthritis patients in South Korea did not receive education on OA management and the benefits of exercise. More than half the reviewed papers in this study applied low-value interventions covered by national insurance funding in South Korea. It is possible the research reviewed in this study simply mirrored daily routine treatment in South Korea, which is limited to modalities covered by the National Health Insurance system. Findings by Diarbakerli et al. (2022) indicate that the prevalence of low-quality treatments and the replication of such interventions in research could be attributed to the insufficient funding of health schemes in which treatment is given and research is conducted. Therefore, to shift from the current passive care approaches in research in South Korea, the government should review the funding it provides to its National Health Insurance system.

Cultural attitudes are also likely to influence the treatment selection used in research and practice. Sathiyamoorthy et al. (2018) conducted a comprehensive review and synthesis of the literature on OA management in 75 Asian countries, including South Korea. This review concludes that Asian patients often expect to rest and be provided with interventions by healthcare professionals rather than actively participating in rehabilitation (Sathiyamoorthy et al., 2018). This worldview could influence patients' perceptions of OA causes and treatment options. This view could lead patients to adopt a passive role in their

treatment, and research interventions may reflect this worldview (Lee et al., 2022). Naylor et al. (2024) conducted a study in Australia showing that physiotherapists working in private clinics applied low-value treatments to patients due to considerations of patients' expectations and financial returns. This finding implies that the influence of patients' expectations could change practice, and patients' cultural backgrounds and beliefs may contribute to the discrepancy between physiotherapy research on OA management in the country and the current CPGs. Sathiyamoorthy et al. (2018) noted that, because the various guidelines related to current OA management have been developed from Western cultural perspectives, it may be problematic to apply them in Asian settings. While exercise-based treatments are efficacious in Western countries, it is still unknown if these treatment approaches would be acceptable in a South Korean context. Therefore, if health professionals rely solely on EBP and Western-informed management, the treatment they provide may not meet the socio-cultural expectations of their patients and result in less-than-optimal outcomes.

LIMITATIONS

This review has several limitations. Only English language studies were included in the present review. This factor significantly limited the number of studies available for analysis and comparison, and eliminated the opportunity to consider potentially valuable evidence written and published in Korean. In addition, this review did not apply a detailed methodological critique. Furthermore, only one reviewer read and assessed the studies included. Despite these limitations, this is the first study providing insights into research exploring conservative physiotherapy treatments of OA assessed in South Korea. Future reviews should include literature published in both Korean and English to enable consideration of a broader range of cultural perspectives and to enhance the comprehensiveness of findings and employ a systematic critical appraisal assessment of the studies included.

CONCLUSION

Despite numerous clinical guidelines providing recommendations for the optimal management of OA conditions, this review has found that research investigating the effectiveness of physiotherapy interventions for OA management conducted in South Korea is not aligned with the recommendations of international CPGs. The specific characteristics of South Korean education, such as a lack of translated guidelines and its healthcare systems and culture, could explain these findings.

KEY POINTS

1. Korean physiotherapy researchers have not investigated treatments recommended by international guidelines for osteoarthritis management.
2. Cultural expectations and research funding may explain the mismatch between Korean research and international guidelines.
3. A Western approach to rehabilitation may not provide the expected outcomes when implemented in groups of people with different worldviews.

DISCLOSURES

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CONTRIBUTIONS OF AUTHORS

Conceptualisation and methodology, MLP, NM, and DWO; writing – original draft preparation, MLP; writing – review and editing, MLP, NM, and DWO.

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REFERENCES

- Babatunde, O. O., Dawson, S., Brammar, J., Parton, L., Dziedzic, K., & Adebajo, A. O. (2022). Patient and public involvement in implementation of evidence-based guidance for musculoskeletal conditions: A scoping review of current advances and gaps. *BMC Rheumatology*, 6(1), 84. <https://doi.org/10.1186/s41927-022-00310-x>
- Bohannon, R. W. (2019). Considerations and practical options for measuring muscle strength: A narrative review. *Biomed Research International*, 2019, 8194537. <https://doi.org/10.1155/2019/8194537>
- Cho, H.-Y., Kim, E.-H., Kim, J., & Yoon, Y. W. (2015). Kinesio taping improves pain, range of motion, and proprioception in older patients with knee osteoarthritis: A randomized controlled trial. *American Journal of Physical Medicine and Rehabilitation*, 94(3), 192–200. <https://doi.org/10.1097/PHM.0000000000000148>
- Cho, Y., Kim, M., & Lee, W. (2015). Effect of proprioceptive training on foot posture, lower limb alignment, and knee adduction moment in patients with degenerative knee osteoarthritis: A randomized controlled trial. *Journal of Physical Therapy Science*, 27(2), 371–374. <https://doi.org/10.1589/jpts.272.371>
- Cunningham, J., Doyle, F., Ryan, J. M., Clyne, B., Cadogan, C., Cottrell, E., Smith, S. M., & French, H. P. (2021). Primary care-based models of care for osteoarthritis: A scoping review protocol. *Health Research Board Open Research*, 4, 48. <https://doi.org/10.12688/hrbopenres.13260.2>
- Diarbakerli, E., Thoreson, O., Björklund, M., Dahlberg, L. E., Englund, M., Gerdhem, P., Kvist, J., Mohaddes, M., Peolsson, A., Rolfson, O., Öberg, B., & Abbott, A. (2022). Learning from the past to plan for the future: A scoping review of musculoskeletal clinical research in Sweden 2010–2020. *Upsala Journal of Medical Sciences*, 127, e8709. <https://doi.org/10.48101/ujms.v127.8709>
- Holm, I., Risberg, M. A., Roos, E. M., & Skou, S. T. (2019). A pragmatic approach to the implementation of osteoarthritis guidelines has fewer potential barriers than recommended implementation frameworks. *Journal of Orthopaedic & Sports Physical Therapy*, 49(1), 1–4. <https://doi.org/10.2519/jospt.2019.0601>
- Hong, J. W., Noh, J. H., & Kim, D.-J. (2020). The prevalence of and demographic factors associated with radiographic knee osteoarthritis in Korean adults aged ≥ 50 years: The 2010–2013 Korea National Health and Nutrition Examination Survey. *PLoS One*, 15(3), e0230613. <https://doi.org/10.1371/journal.pone.0230613>
- Hunter, D. J., March, L., & Chew, M. (2020). Osteoarthritis in 2020 and beyond: A Lancet commission. *Lancet*, 396(10264), 1711–1712. [https://doi.org/10.1016/S0140-6736\(20\)32230-3](https://doi.org/10.1016/S0140-6736(20)32230-3)
- Kang, M.-H., Lee, T.-H., Cha, S.-M., Oh, J.-S., Lee, T.-S., Oh, T.-Y., Kim, S.-Y., Lee, H.-S., Lee, G.-W., & Kim, K.-S. (2017). Proposal for improving the system of physical therapy education and the Korean physical therapist licensing examination based on a comparison of the systems in World Confederation for Physical Therapy member countries. *Journal of Educational Evaluation For Health Professions*, 14, 10. <https://doi.org/10.3352/jeehp.2017.14.10>

- Kang, T.-W., Lee, J.-H., Park, D.-H., & Cynn, H.-S. (2019). Effects of a finger exercise program on hand function in automobile workers with hand osteoarthritis: A randomized controlled trial. *Hand Surgery & Rehabilitation, 38*(1), 59–66. <https://doi.org/10.1016/j.hansur.2018.09.007>
- Kim, E.-D., Won, Y. H., Park, S.-H., Seo, J.-H., Kim, D.-S., Ko, M.-H., & Kim, G.-W. (2019). Efficacy and safety of a stimulator using low-intensity pulsed ultrasound combined with transcutaneous electrical nerve stimulation in patients with painful knee osteoarthritis. *Pain Research & Management, 2019*, 7964897. <https://doi.org/10.1155/2019/7964897>
- Kim, G.-J., Choi, J., Lee, S., Jeon, C., & Lee, K. (2016). The effects of high intensity laser therapy on pain and function in patients with knee osteoarthritis. *Journal of Physical Therapy Science, 28*(11), 3197–3199. <https://doi.org/10.1589/jpts.28.3197>
- Kim, G.-J., Oh, H., Lee, S., Lee, K., & Kim, K. (2020). Effects of resistance exercise using the elastic band on the pain and function of patients with degenerative knee arthritis. *Journal of Physical Therapy Science, 32*(1), 52–54. <https://doi.org/10.1589/jpts.32.52>
- Kim, L., Kim, J.-A., & Kim, S. (2014). A guide for the utilization of Health Insurance Review and Assessment Service national patient samples. *Epidemiology and Health, 36*, e2014008. <https://doi.org/10.4178/epih/e2014008>
- Kim, Y.-B., Choi, H.-S., Kang, E. M., Park, S., Seo, G.-W., Chun, D.-I., & Min, T.-H. (2021). Trends of total knee arthroplasty according to age structural changes in Korea from 2011 to 2018. *International Journal of Environmental Research and Public Health, 18*(24), 13397. <https://doi.org/10.3390/ijerph182413397>
- Lee, K., Yi, C.-W., & Lee, S. (2016). The effects of kinesiology taping therapy on degenerative knee arthritis patients' pain, function, and joint range of motion. *Journal of Physical Therapy Science, 28*(1), 63–66. <https://doi.org/10.1589/jpts.28.63>
- Lee, S., & Kim, S.-J. (2017). Prevalence of knee osteoarthritis, risk factors, and quality of life: The Fifth Korean National Health and Nutrition Examination Survey. *International Journal of Rheumatic Disease, 20*(7), 809–817. <https://doi.org/10.1111/1756-185X.12795>
- Lee, Y.-S., Oh, D.-W., & Kim, S.-S. (2022). Factors influencing attitudes toward, education, skills, barriers, and application of evidence-based practice among physiotherapists in South Korea. *Physiotherapy Quarterly, 30*(3), 19–26. <https://doi.org/10.5114/pq.2022.116448>
- Leifer, V. P., Katz, J. N., & Losina, E. (2022). The burden of OA-health services and economics. *Osteoarthritis Cartilage, 30*(1), 10–16. <https://doi.org/10.1016/j.joca.2021.05.007>
- Nam, C.-W., Kim, K., & Lee, H.-Y. (2014). The influence of exercise on an unstable surface on the physical function and muscle strength of patients with osteoarthritis of the knee. *Journal of Physical Therapy Science, 26*(10), 1609–1612. <https://doi.org/10.1589/jpts.26.1609>
- Naylor, J. M., Gibson, K., Mills, K., Schabrun, S. M., Livings, R., Dennis, S., & Thom, J. (2024). A snapshot of primary care physiotherapy management of knee osteoarthritis in an Australian setting: Does it align with evidence-based guidelines? *Physiotherapy Theory and Practice, 40*(2), 347–356. <https://doi.org/10.1080/09593985.2022.2114816>
- O'Brien, D., Pigg, W., Ellis, R., Baldwin, J. N., Quicke, J. G., Evans, N., & Dzie, K. (2021). An evidence-informed model of care for people with lower-limb osteoarthritis in New Zealand. *New Zealand Journal of Physiotherapy, 49*(1), 24–30. <https://doi.org/https://doi.org/10.15619/NZJP/49.1.04>
- Oh, H., Lee, S., Lee, K., & Choi, J. (2020). The effects of visual feedback balance training on the pain and physical function of patients with chronic degenerative knee arthritis. *Journal of Physical Therapy Science, 32*(9), 563–565. <https://doi.org/10.1589/jpts.32.563>
- Park, J.-H., Hong, J.-Y., Han, K., Suh, S.-W., Park, S.-(Park et al., 2017)Y., Yang, J.-H., & Han, S.-W. (2017). Prevalence of symptomatic hip, knee, and spine osteoarthritis nationwide health survey analysis of an elderly Korean population. *Medicine, 96*(12), e6372. <https://doi.org/10.1097/MD.0000000000006372>
- Park, J.-S., Yoon, T., Lee, S.-H., Hwang, N.-K., Lee, J.-H., Jung, Y.-J., & Lee, G. (2019). Immediate effects of kinesiology tape on the pain and gait function in older adults with knee osteoarthritis. *Medicine, 98*(45), e17880. <https://doi.org/10.1097/MD.00000000000017880>
- Park, S.-H., Park, Y.-H., & Lee, J.-H. (2017). Effects of magnetic field therapy after taping application on pain and function of patients with knee osteoarthritis. *Journal of Physical Therapy Science, 29*(9), 1548–1551. <https://doi.org/10.1589/jpts.29.1548>
- Rice, D., McNair, P., Huysmans, E., Letzen, J., & Finan, P. (2019). Best evidence rehabilitation for chronic pain part 5: Osteoarthritis. *Journal of Clinical Medicine, 8*(11), 1769. <https://doi.org/10.3390/jcm8111769>
- Sathiyamoorthy, T., Ali, S. A., & Klooseck, M. (2018). Cultural factors influencing osteoarthritis care in Asian communities: A review of the evidence. *Journal of Community Health, 43*(4), 816–826. <https://doi.org/10.1007/s10900-018-0470-8>
- Shim, H.-Y., Park, M., Kim, H.-J., Kyung, H.-S., & Shin, J.-Y. (2018). Physical activity status by pain severity in patients with knee osteoarthritis: A nationwide study in Korea. *BMC Musculoskeletal Disorders, 19*(1), 380. <https://doi.org/10.1186/s12891-018-2301-6>
- Speerin, R., Slater, H., Li, L., Moore, K., Chan, M., Dreinhöfer, K., Ebeling, P. R., Willcock, S., & Briggs, A. M. (2014). Moving from evidence to practice: Models of care for the prevention and management of musculoskeletal conditions. *Best Practice & Research. Clinical Rheumatology, 28*(3), 479–515. <https://doi.org/10.1016/j.berh.2014.07.001>
- Suh, C. Y., Lee, Y. J., Shin, J.-S., Lee, J., Kim, M.-R., Koh, W., Cha, Y.-Y., Shin, B.-C., Hwang, E.-H., Suhr, K., Kim, M., & Ha, I.-H. (2017). Analysis of medical service use of knee osteoarthritis and knee meniscal and ligament injuries in Korea: A cross-sectional study of national patient sample data. *BMC Musculoskeletal Disorders, 18*(1), 438. <https://doi.org/10.1186/s12891-017-1795-7>
- Whittaker, J. L., Truong, L. K., Dhiman, K., & Beck, C. (2021). Osteoarthritis year in review 2020: Rehabilitation and outcomes. *Osteoarthritis Cartilage, 29*(2), 190–207. <https://doi.org/10.1016/j.joca.2020.10.005>
- Zapparoli, F. Y., & Riberto, M. (2017). Isokinetic evaluation of the hip flexor and extensor muscles: A systematic review. *Journal of Sport Rehabilitation, 26*(6), 556–566. <https://doi.org/10.1123/jsr.2016-0036>
- Zeng, C., Li, H., Yang, T., Deng, Z.-H., Yang, Y., Zhang, Y., & Lei, G.-H. (2015). Electrical stimulation for pain relief in knee osteoarthritis: Systematic review and network meta-analysis. *Osteoarthritis Cartilage, 23*(2), 189–202. <https://doi.org/10.1016/j.joca.2014.11.014>

Appendix

DATABASE SEARCH

Order of terms searched	Key words	No. of references identified
Search 1 (S1) AND	(osteoarthritis OR osteoarthritis*)	895,447
Search 2 (S2) AND	(physiotherp* OR "physical therap*")	123,204
Search 3 (S3) (2000–2023) AND	("South Korea" OR "republic of Korea")	6,129 5,611
Search 4 (S4) NOT	(RCT OR randomi* OR experimental)	1,833
Search 4 (S5)	("systematic review" OR meta)	651

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