

Fingerprints

September 2026

HAND THERAPY NEW ZEALAND
Ringaromi Aotearoa

Table of Contents

Contents

Editors' Note 3
Does the addition of proprioception exercises compared to conventional therapy improve pain and outcome measures for thumb carpometacarpal joint osteoarthritis? 4
Educational opportunities 11
Consent for clients' information and images 12

Editors' Note

Kia ora Colleagues,

This is the third edition for 2026. Thanks to Esther McGee for kindly sharing their Hand and Upper Limb Treatment (HAULT) assignment and summary with us. We really appreciate your contributions and dedication to the profession!

Contributing to fingerprints provides you with 5 points for your log book per submission. There is no cap on the number of points you can gain via these submissions (See Log Book for Continuing Education Points published by HTNZ). If you have any material that you would like to share on Fingerprints, please send us an email at nico.magni@aut.ac.nz.

Does the addition of proprioception exercises compared to conventional therapy improve pain and outcome measures for thumb carpometacarpal joint osteoarthritis?

By Esther McGee

Thumb carpometacarpal joint (CMCJ) osteoarthritis (OA) is a common degenerative condition frequently encountered in hand therapy practice and is associated with significant pain, reduced mobility, weakness, and impaired functional performance (Karanasios et al., 2024; O'Brien et al., 2022). It affects more women than men, particularly after menopause, and can significantly limit the ability to perform activities of daily living such as gripping, pinching, opening jars, and manipulating objects (O'Brien et al., 2022). The pathophysiology involves progressive degeneration of the trapeziometacarpal joint, ligamentous laxity, osteophyte formation, and deterioration of articular surfaces, which can ultimately lead to joint instability and reduced neuromuscular control (Karanasios et al., 2024). Conservative management is considered the first-line approach prior to surgical intervention and typically involves multimodal conventional therapy, including orthotic support, strengthening and mobility exercises, manual therapy, and ergonomic advice (O'Brien et al., 2022).

Proprioception refers to the body's ability to sense joint position and movement, mediated by mechanoreceptors within muscles, ligaments, and joint capsules (Hagert, 2010). Evidence suggests that individuals with thumb CMCJ OA have impaired proprioceptive function, which may contribute to joint instability, pain, and functional limitations (Seok et al., 2020). Despite this, proprioceptive exercises are not routinely incorporated into conventional rehabilitation protocols, and their effectiveness in improving clinical outcomes remains unclear (Cantero-Téllez et al., 2022b; Karanasios et al., 2024). Therefore, the purpose of this systematic review was to evaluate whether adding proprioceptive exercises to conventional therapy improves pain and functional outcomes in individuals with thumb CMCJ osteoarthritis.

A systematic search of five electronic databases—EBSCO, Google Scholar, PubMed, Ovid, and the Cochrane database—was conducted between May and July 2025. Inclusion criteria were randomized controlled trials published within the previous five years involving participants with thumb CMCJ OA and comparing conventional therapy alone with conventional therapy combined with proprioceptive exercises. Studies were required to include pain and/or functional outcome measures. After screening 444 records and assessing 10 full-text articles, four randomized controlled trials met the inclusion criteria. The methodological quality of the included studies was assessed using the PEDro scale (de Morton, 2009). The four studies included a total of 259 participants initially, with 222 remaining after attrition. Participants were all over the age of 50, and most were female, reflecting the higher prevalence of thumb CMCJ OA in postmenopausal women (Campos-Villegas et al., 2024; Cantero-Téllez et al., 2022a; Cantero-Téllez et al., 2022b). Radiographic staging ranged from Eaton-Glickel grades I to III, indicating mild to moderate OA severity (Berger & Meals, 2015). Sample sizes were relatively small, ranging from 42 to 83 participants, which limits the generalizability of findings. Conventional therapy in the control groups typically included orthotic use, strengthening exercises, manual therapy, and ergonomic advice (Cantero-Téllez et al., 2022a; Cruz-Gambero et al., 2023). The experimental groups received the same treatment with the addition of proprioceptive

exercises.

The proprioceptive interventions included joint position reproduction and force reproduction exercises designed to improve joint position sense and neuromuscular control (Cantero-Téllez et al., 2022a; Cantero-Téllez et al., 2022b; Cruz-Gambero et al., 2023). One study used proprioceptive neuromuscular facilitation (PNF) exercises involving rhythmic stabilization and resisted contractions (Campos-Villegas et al., 2024).

Pain intensity was assessed using validated outcome measures such as the Visual Analogue Scale (VAS) and Numeric Pain Scale (NPS), which are reliable and valid tools for measuring pain in osteoarthritis populations (Alghadir et al., 2018). All four studies reported improvements in pain following intervention in both control and experimental groups. However, greater reductions in pain were observed in the experimental groups receiving proprioceptive training (Campos-Villegas et al., 2024; Cantero-Téllez et al., 2022a; Cruz-Gambero et al., 2023). Some studies reported statistically significant differences between groups, while others did not demonstrate statistically significant differences at longer follow-up periods (Cantero-Téllez et al., 2022a; Cantero-Téllez et al., 2022b). Despite this, several studies reported large effect sizes, suggesting clinically meaningful improvements in pain (Campos-Villegas et al., 2024; Cantero-Téllez et al., 2022a). However, large effect sizes in small studies may be influenced by bias, placebo effects, or subjective outcome measures (Cohen, 1988; Higgins et al., 2019).

Functional outcomes were assessed using validated self-reported measures such as the Canadian Occupational Performance Measure (COPM), Disabilities of the Arm, Shoulder and Hand questionnaire (DASH), and QuickDASH (Campos-Villegas et al., 2024; Cantero-Téllez et al., 2022a; Cruz-Gambero et al., 2023). These measures assess perceived functional ability and disability and have demonstrated validity in musculoskeletal populations (Cantero-Téllez et al., 2021; MacDermid et al., 2007). All four studies reported

improvements in functional performance following intervention, with statistically significant improvements favoring the proprioceptive intervention groups (Campos-Villegas et al., 2024; Cantero-Téllez et al., 2022a; Cantero-Téllez et al., 2022b; Cruz-Gambero et al., 2023). These findings suggest that proprioceptive training may improve functional performance by enhancing neuromuscular control and joint stability.

Despite promising findings, several limitations were identified. The small number of studies and small sample sizes limit the strength and generalizability of the evidence (Higgins et al., 2019). Additionally, blinding of therapists and participants was limited, and outcome measures were primarily subjective increasing the risk of bias (Higgins et al., 2019). Follow-up periods were short, with no studies assessing outcomes beyond three months, limiting understanding of long-term effectiveness (Campos-Villegas et al., 2024). Adherence to home exercise programs was also poorly reported, which may influence treatment outcomes (Argent et al., 2018).

Variability in intervention protocols was another limitation, making it difficult to determine optimal exercise parameters. While most studies used joint position reproduction exercises, one study demonstrated positive results using proprioceptive neuromuscular facilitation, suggesting multiple approaches may be effective (Campos-Villegas et al., 2024).

In conclusion, this systematic review provides preliminary evidence that adding proprioceptive exercises to conventional therapy may improve pain and functional outcomes in individuals with thumb CMCJ osteoarthritis. Improvements were observed in both pain and functional performance, suggesting proprioceptive training may enhance rehabilitation outcomes. However, the evidence is limited by methodological weaknesses, small sample sizes, and short follow-up periods. Clinicians may consider incorporating proprioceptive exercises into rehabilitation programs, particularly for post-menopausal women who

represent a high-risk population (Campos-Villegas et al., 2024; O'Brien et al., 2022). Future research should focus on larger randomized controlled trials with standardized intervention protocols, objective outcome measures, and long-term follow-up to establish definitive clinical guidelines.

Reference

Alghadir, A. H., Anwer, S., Iqbal, A., & Iqbal, Z. A. (2018). Test-Retest Reliability, Validity, and Minimum Detectable Change of Visual Analog, Numerical Rating, and Verbal Rating Scales for Measurement of Osteoarthritic Knee Pain. J Pain Res, 11, 851-856. https://doi.org/10.2147/jpr.S158847

Argent, R., Daly, A., & Caulfield, B. (2018). Patient Involvement With Home-Based Exercise Programs: Can Connected Health Interventions Influence Adherence? JMIR Mhealth Uhealth, 6(3), e47. https://doi.org/10.2196/mhealth.8518

Berger, A. J., & Meals, R. A. (2015). Management of Osteoarthrosis of the Thumb Joints. The Journal of Hand Surgery, 40(4), 843-850. https://doi.org/https://doi.org/10.1016/j.jhsa.2014.11.026

Campos-Villegas, C., Pérez-Alenda, S., Carrasco, J. J., Igual-Camacho, C., Tomás-Miguel, J. M., & Cortés-Amador, S. (2024). Effectiveness of Proprioceptive Neuromuscular Facilitation Therapy and Strength Training Among Post-Menopausal Women with Thumb Carpometacarpal Osteoarthritis. A Randomized Trial. J Hand Ther, 37(2), 172-183. https://doi.org/10.1016/j.jht.2022.07.005

Cantero-Téllez, R., Algar, L. A., Valdes, K. A., & Naughton, N. (2022a). Clinical Effects of Proprioceptive Thumb Exercise for Individuals with Carpometacarpal Joint Osteoarthritis: A Randomized Controlled Trial. Journal of Hand Therapy, 35(3), 358-366. https://doi.org/https://doi.org/10.1016/j.jht.2022.06.009

Cantero-Téllez, R., Pérez-Cruzado, D., Villafañe, J. H., García-Orza, S., Naughton, N., & Valdes, K. (2022b). The Effect of Proprioception Training on Pain Intensity in Thumb Basal Joint Osteoarthritis: A Randomized Controlled Trial. Int J Environ Res Public Health, 19(6). https://doi.org/10.3390/ijerph19063592

Cantero-Téllez, R., Villafañe, J. H., Medina-Porqueres, I., Garcia-Orza, S., & Valdes, K. (2021). Convergent Validity and Responsiveness of the Canadian Occupational Performance Measure for the Evaluation of Therapeutic Outcomes for Patients with Carpometacarpal Osteoarthritis. J Hand Ther, 34(3), 439-445. https://doi.org/10.1016/j.jht.2020.03.011

Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences (Rev. ed.). Lawrence Erlbaum Associates. https://doi.org/10.4324/9780203771587

Cruz-Gambero, L., Tuljak, A. L., Garcia Orza, S., Villafañe, J. H., & Cantero-Téllez, R. (2023). Effectiveness of Proprioception Training in Functional Recovery of Thumb Osteoarthritis. Single, Multicenter, Non-Blind Randomized Clinical Trial. Reumatología Clínica (English Edition), 19(8), 417-422. https://doi.org/https://doi.org/10.1016/j.reumae.2023.05.002

de Morton, N. A. (2009). The PEDro Scale is a Valid Measure of the Methodological Quality of Clinical Trials: a Demographic Study. Aust J Physiother, 55(2), 129-133. https://doi.org/10.1016/s0004-9514(09)70043-1

Hagert, E. (2010). Proprioception of the Wrist Joint: A Review of Current Concepts and Possible Implications on the Rehabilitation of the Wrist. Journal of Hand Therapy, 23(1), 2-17. https://doi.org/https://doi.org/10.1016/j.jht.2009.09.008

Higgins, J. P., Savović, J., Page, M. J., Elbers, R. G., & Sterne, J. A. (2019). Assessing risk of bias in a randomized trial. In Cochrane Handbook for Systematic Reviews of Interventions (pp. 205-228). https://doi.org/https://doi.org/10.1002/9781119536604.ch8

Karanasios, S., Mertyri, D., Karydis, F., & Gioftsos, G. (2024). Exercise-Based Interventions Are Effective in the Management of Patients with Thumb Carpometacarpal Osteoarthritis: A Systematic Review and Meta-Analysis of Randomised Controlled Trials. Healthcare, 12(8), 823. https://www.mdpi.com/2227-9032/12/8/823

MacDermid, J. C., Wessel, J., Humphrey, R., Ross, D., & Roth, J. H. (2007). Validity of Self-Report Measures of Pain and Disability for Persons Who Have Undergone Arthroplasty For Osteoarthritis of the Carpometacarpal Joint of the Hand. Osteoarthritis and Cartilage, 15(5), 524-530. https://doi.org/https://doi.org/10.1016/j.joca.2006.10.018

O'Brien, V., Johnson, J., Pisano, K., & Enke, A. (2022). Dynamic Stabilization of the Painful Thumb: A Historical and Evidence-Informed Synthesis. J Hand Ther, 35(3), 388-399. https://doi.org/10.1016/j.jht.2022.06.007

Seok, H. S., Lee, K. H., Lee, Y., Bae, K. J., Kim, J., & Gong, H. S. (2020). Is Thumb Proprioception Decreased in Patients With Trapeziometacarpal Joint Osteoarthritis? Annals of Plastic Surgery, 85(4), 379-383. https://doi.org/10.1097/sap.0000000000002422

Educational opportunities

Below are a series of resources for educational purposes that the HTNZ Education committee and us have identified in the last period. You can also keep an eye out for updates on the HTNZ blog page.

Combined AHTA & HTNZ Conference 2027

Conference in Sydney 13-15 August 2027. Exciting!

Online Journals

Hand Therapy New Zealand offers access to several fantastic journals. If you haven't accessed them already, head over the Journal page and follow the instructions. The benefit of having access to these journals is that if you find an article on HandyEvidence that you like or you just want to search for information in the journals, you can often access the full text.

Hand Coach

This series of courses are run by Alison Coyle. They are great to expand your skills or meet the HTNZ registration requirements if you are an associate. Head over to their website to see what they offer - https://handcoach.co.nz

HandyEvidence

Nico's website reviews and assesses three clinically relevant scientific articles on Hand Therapy every week. In addition, it contains a database of over 950 previous synopses searchable by topic and level of evidence. It has been sponsored by HTNZ for 2026 for all New Zealand Hand Therapists.

Consent for clients' information and images



HAND THERAPY NEW ZEALAND
Ringaromi Aotearoa

Consent form – use of clinical case information and images

I, (*patient's name:* _____) consent to the use of information and images including photographs or videos from my hand therapy assessment and treatment to be used for (*mark agreement by clicking on box or print and tick*)

- ☐ Educating clinicians relevant to hand therapy
- ☐ Educating clinical students
- ☐ Service audit
- ☐ Publication in professional or scientific journal

I understand that the information and images will not have my name attached to them and will not obviously identify me in any way.

Patient Details:

Name: _____ Tel: _____

Email: _____

Signed: _____ Date: Click or tap to enter a date.

Clinician Details:

Name: _____ Tel: _____

Email: _____

Organisation: _____

Hand Therapy New Zealand membership ☐Full ☐Associate Membership No. _____

Signed: _____ Date: Click or tap to enter a date.

Consent form case study final 15/02/2021

DRAFT

You can download the original document on HTNZ webpage.