

**PREVENTION AND MANAGEMENT OF
TRAPEZIOMETACARPAL JOINT PAIN**

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SUPERVISOR'S CERTIFICATE

This is to certify that the thesis entitled "*Prevention and management of trapeziometacarpal joint pain*" submitted by Anne Wajon in fulfilment of the requirements for the degree of Doctor of Philosophy (Physiotherapy) is in a form ready for examination.

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ABSTRACT

The aim of the studies reported in this project was to examine factors associated with the prevention and management of trapeziometacarpal osteoarthritis, both in musculoskeletal physiotherapists and the general patient population.

Two studies were undertaken to investigate factors associated with the aggravation of thumb pain in musculoskeletal physiotherapists. Study 1 was a survey of the prevalence of thumb pain, and allowed determination of the most aggravating spinal manipulative therapy technique. It identified that 83% of respondents complained of an aggravation of thumb pain due to the performance of spinal manipulative therapy techniques, with 85-87% of the painful respondents complaining of thumb pain aggravated by unilateral and central PA glides. Study 2 was conducted to determine whether the alignment of the joints of the thumb during performance of these glides was associated with thumb pain. This observational study of 129 musculoskeletal physiotherapists performing a PA glide identified that aligning the metacarpophalangeal and interphalangeal joints in extension was associated with a lower prevalence of work-related thumb pain. Therefore, it is suggested that musculoskeletal physiotherapists be taught to perform these techniques with the joints of their thumb in extension in an effort to reduce the development of work-related thumb pain. Furthermore, it is suggested that those who are unable to maintain this alignment voluntarily be provided with a thermoplastic thumb splint to maintain the extended alignment.

Two studies were undertaken to investigate the conservative and surgical management of

patients with trapeziometacarpal osteoarthritis. Study 3 was a randomised controlled trial conducted to compare the efficacy of a new thumb strap splint and an abduction exercise regimen against the standard approach to conservative management of trapeziometacarpal osteoarthritis, namely a short opponens splint and pinch exercise regimen. While there was no additional benefit of one approach over the other, all participants improved in the outcomes of pain, strength and hand function over the six-week period of intervention. Nevertheless, some people find that symptom relief from conservative intervention is inadequate and short-lived, requesting surgery for the treatment of disabling and persistent pain from trapeziometacarpal osteoarthritis. Study 4 was a systematic review, conducted to determine evidence of efficacy of one surgical procedure over another. This review identified six randomised controlled trials of surgery for trapeziometacarpal osteoarthritis. While there was evidence of no difference in the reduction in weakness between the procedures, there was insufficient evidence to confirm that there was no difference in the outcomes of pain, contracture, hand function, or patient global assessment. Furthermore, there was sufficient evidence to conclude that trapeziectomy had significantly fewer adverse effects, and trapeziectomy with ligament reconstruction and tendon interposition (LRTI) had significantly more, when compared with the other procedures analysed in this review. It is suggested that the decision as to which intervention is most appropriate for a given patient be based upon the individual patient's requirements, the extent of disease, and the demands placed upon the joint by domestic duties, work, leisure and recreational activities.

The studies presented in this project assist in formulating preventative and management

strategies for people with trapeziometacarpal osteoarthritis.

I, **Anne Wajon**, hereby declare that the work contained within this thesis is my own and has not been submitted to any other university or institution as a part or a whole requirement for any higher degree.

I, **Anne Wajon**, hereby declare that I was the principal researcher of all work included in this thesis, including work published with multiple authors.

In addition, ethical approval from the University of Sydney Human Ethics Committee was granted for the studies presented in this thesis. Participants were required to read a participant information document and informed consent was gained prior to data collection.

Name ANNE E WAJON

Signed _____

Date _____

Parts of the work presented in this thesis have been published and/or presented in the following forums:

PUBLICATIONS

Wajon A (2000): The thumb 'strap splint' for dynamic instability of the trapeziometacarpal joint. *Journal of Hand Therapy* 13:236-237.

Wajon A, Ada L (2001) Prevalence of pain in the thumbs of manipulative physiotherapists. *MPA News* 36:7.

Wajon A, Ada L (2003): Prevalence of thumb pain in physical therapists practicing spinal manipulative therapy. *Journal of Hand Therapy* 16:237-244.

Wajon A, Ada L, Edmunds I (2004): Surgery for thumb (trapeziometacarpal joint) osteoarthritis [Cochrane Protocol] *The Cochrane Database of Systematic Reviews*, Issue 1. Art. No.: CD004631. DOI: 10.1002/14651858.CD004631.

Wajon A, Ada L (2005): No difference between two splint and exercise regimens for people with osteoarthritis of the thumb: a randomised controlled trial. *Australian Journal of Physiotherapy* 51: 245-249.

Wajon A, Ada L, Refshauge K (in press): Work-related thumb pain in physiotherapists is associated with thumb alignment during performance of PA glides. *Manual Therapy*

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Wajon A, Ada L, & Edmunds I (2005) Surgery for thumb (trapeziometacarpal joint) osteoarthritis [Cochrane Review]. In *The Cochrane Library*, Issue 4, John Wiley & Sons, Ltd.: Chichester, UK.

PRESENTATIONS

1998 Enhancing trapeziometacarpal stability – can it delay development of osteoarthritis in patients with painful hypermobility?

AHTA Conference and AGM, Perth WA

Awarded Jill Chapman award for best clinical paper

1998 Enhancing Trapeziometacarpal Stability

NSW Hand Surgery Association Annual Scientific and General Meeting

Leura, Blue Mountains NSW

2002 A randomised, controlled trial of the efficacy of a new splint and exercise program for people with osteoarthritis of the thumb

VIIth International Physiotherapy Congress, Sydney, NSW

- 2002 A randomised, controlled trial of the efficacy of a new splint and exercise program for people with osteoarthritis of the thumb
NSW Hand Surgery Association, Annual General Meeting, Terrigal, NSW
Awarded best scientific paper
- 2003 Efficacy of a splint and exercise program for people with osteoarthritis of the thumb: a randomised controlled trial
Trans-Tasman Hand Therapy Conference, Queenstown, NZ
- 2003 Prevalence of thumb pain in physiotherapists practicing spinal manipulative therapy
MPA 13th Biennial Conference, Convention Centre, Sydney
- 2004 Surgery for trapeziometacarpal joint osteoarthritis: undertaking a Cochrane Collaboration systematic review
NSW Hand Surgery Association Annual Conference, Canberra, ACT

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