THE EFFECTIVENESS OF TREATMENT OF CERVICOGENIC DIZZINESS WITH MANUAL THERAPY

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Statement of Originality

The thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to the final version of my thesis being made available when deposited in the University's Digital Repository, subject to the provisions of the Copyright Act 1968.

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Statement of Authorship

I hereby certify that this thesis is in the form of a series of published papers of which I am a joint author. I have included as part of the thesis a written statement from each co-author, endorsed by the Assistant Dean (Research Training), Faculty of Health and Medicine attesting to my contribution to the joint publications (Appendix A).

.....

Susan Reid Date:

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Publications and presentations

The following publications and presentations were a direct result of the work completed in this thesis:

Published and submitted papers included as part of this thesis

1. Reid, SA, Rivett, DA, Katekar, M, Callister, R. (2012) Efficacy of manual therapy treatments for people with cervicogenic dizziness and pain: protocol of a randomised controlled trial. *BMC Musculoskeletal Disorders* 13: 201-208.
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Published abstracts

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Therapy, Amsterdam. WPT2011, Special Interest Report Abstracts. Physiotherapy Volume 97 Supplement S1 p. eS1581.

2. Reid Susan, Rivett Darren Anthony, Katekar Michael Gerard, Callister Robin (2011) Identification of patients with cervicogenic dizziness during recruitment for a randomised controlled clinical trial. Journal of Physiotherapy, e Supplements. 2011 APA Conference Abstracts:004.

3. Reid Susan, Rivett Darren Anthony, Katekar Michael Gerard, Callister Robin, (2011) Manual therapy treatment of cervicogenic dizziness and pain: preliminary results of a randomised controlled trial. Journal of Physiotherapy, e Supplements. 2011 APA Conference Abstracts:220.

4. Reid SA, Rivett DA, Callister R, and Katekar MG. (2012) The treatment of cervicogenic dizziness with manual therapy: preliminary results of a randomized controlled trial. In Proceedings of the 10th Congress of the International Federation of Orthopaedic Manipulative Therapists (IFOMPT), October 2012, Quebec City, Quebec, Canada. In Journal of Orthopaedic & Sports Physical Therapy 2012; 42(10):A60.

5. Reid SA, Rivett DA, Callister R, and Katekar MG. (2012) Identification of patients with cervicogenic dizziness during recruitment for a randomized controlled trial. In Proceedings of the 10th Congress of the International Federation of Orthopaedic Manipulative Therapists (IFOMPT), October 2012, Quebec City, Quebec, Canada. In Journal of Orthopaedic & Sports Physical Therapy 2012; 42(10):A60.

6. Reid SA, Callister R, Rivett DA. (2013) The effectiveness of two common manual therapy treatment approaches to cervical spine dysfunction. In Proceedings of the 3rd International Mulligan Conference. IV Cirne International Rehabilitation Neuromusculoskeletal and Sport Congress. Rio de Janeiro, Brazil.

7. Reid, SA (2013) Cervicogenic dizziness and VBI; how do you differentiate? In the Proceedings of the 3rd International Mulligan Conference. IV Cirne

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8. Reid SA, Rivett DA, Callister R, and Katekar MG (2013) The treatment of cervicogenic dizziness with Mulligan SNAGS and Maitland mobilisations: which is more effective? Australian Journal of Physiotherapy, e Supplements. 2013 APA Conference Abstracts: p141.

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The following conference presentations were a direct result of the work completed in this thesis:

1 Reid SA (2008) Cervicogenic Dizziness. APA NSW Biennial State Symposium, October 2008, Sydney.

2 Reid SA, Rivett DA, Callister R, and Katekar MG. (2009) The Treatment of Cervicogenic Dizziness and Pain with Sustained Natural Apophyseal Glides (SNAGs): a Randomized Controlled Trial. International Mulligan Concept Conference, May 2009, Chicago.

3 Reid SA, Rivett DA, Callister R, and Katekar MG. (2011) The Identification of People with Cervicogenic Dizziness. World Confederation for Physical Therapy 16th International Congress (WCPT), June 2011, Amsterdam, The Netherlands.

4 Reid SA, Rivett DA, Callister R, and Katekar MG. (2011) Cervicogenic Dizziness and Pain: preliminary findings of a Randomized Controlled Trial. 2nd International Mulligan Concept Conference, June 2011, Porto, Portugal.

5 Reid SA, Rivett DA, Callister R, and Katekar MG. (2011) The identification of Cervicogenic Dizziness during a Randomized Controlled Trial. Australian 17th Biennial Physiotherapy Conference, October 2011, Brisbane.

6 Reid SA, Rivett DA, Callister R, and Katekar MG. (2011) Manual therapy treatment of cervicogenic dizziness and pain: preliminary results of a

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7 Reid SA, Rivett DA, Callister R, and Katekar MG. (2011) The treatment of cervicogenic dizziness and pain with manual therapy. NOTSA 21st Annual Clinical and Scientific Meeting, October 2011, Newcastle.

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9 Reid SA, Rivett DA, Callister R, and Katekar MG. (2012) The treatment of cervicogenic dizziness with manual therapy: preliminary results of a randomized controlled trial. 10th Congress of the International Federation of Orthopaedic Manipulative Therapists (IFOMPT), October 2012, Quebec City, Quebec, Canada.

10 Reid SA, Rivett DA, Callister R, and Katekar MG. (2012) Identification of patients with cervicogenic dizziness during recruitment for a randomized controlled trial. 10th Congress of the International Federation of Orthopaedic Manipulative Therapists (IFOMPT), October 2012, Quebec City, Quebec, Canada. In Journal of Orthopaedic & Sports Physical Therapy 2012;42(10):A60.

11 Reid SA, Callister R, Rivett DA. (2013) The effectiveness of two common manual therapy treatment approaches to cervical spine dysfunction. 3rd International Mulligan Conference. IV Cirne International Rehabilitation Neuromusculoskeletal and Sport Congress. Rio de Janeiro, Brazil.

12 Reid, SA (2013) Cervicogenic dizziness and VBI; how do you differentiate? 3rd International Mulligan Conference. IV Cirne International Rehabilitation Neuromusculoskeletal and Sport Congress. Rio de Janeiro, Brazil.

13 Reid SA, Rivett DA, Callister R, and Katekar MG (2013) The treatment of cervicogenic dizziness with Mulligan SNAGS and Maitland mobilisations:

which is more effective? Musculoskeletal Physiotherapy Australia 18th Biennial Conference, Melbourne, Australia. October 2013.

14 Reid SA, Katekar MG, Callister R & Rivett DA (2013) The treatment of cervicogenic dizziness with manual therapy: a randomised controlled trial with 12-month follow-up. The Neuro-Otology Society of Australia Conference, October 2013, Melbourne.

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List of Abbreviations

ANOVA one-way analysis of variance

CI confidence interval

CROM cervical range of motion

DHI Dizziness Handicap Inventory

GPE global perceived effect

HRA head repositioning accuracy

MM Maitland mobilisation

MIC minimal important change

MDC minimal detectable change

NHP natural head position

PJM passive joint mobilisations

RCT randomised controlled trial

ROM range of motion

SD standard deviation

SEM standard error of measurement

SNAG sustained natural apophyseal glide

VAD vertebral artery dissection

VAS visual analogue scale

VBI vertebro-basilar insufficiency

WAD whiplash-associated disorder

Abstract

The primary aim of this thesis was to determine and compare the effects of two forms of manual therapy on chronic cervicogenic dizziness over the short (12 weeks) and long (12 months) term. Eighty-six participants with chronic cervicogenic dizziness were randomised to receive sustained natural apophyseal glides (SNAGs) with self-SNAGs (n=29), passive joint mobilisations (PJMs) with range of motion (ROM) exercises (n=29), or a placebo intervention (n=28). Participants received 2-6 treatments over 6 weeks, with outcomes measured at baseline, post-treatment, 12 weeks and 12 months. Intention-to-treat analyses were performed, with the significance level set at 0.05.

The intensity of dizziness was significantly reduced post-treatment and at 12 weeks in both manual therapy groups, and the frequency of dizziness was significantly reduced at 12 weeks compared to the placebo. The PJM group had less dizziness handicap than the placebo group post-treatment and at 12 weeks, and less pain at 12 weeks. For cervical range of motion (ROM), the SNAG group improved in six directions and the PJM group in one direction post-treatment and at 12 weeks, compared to the placebo group. There was no effect on head repositioning accuracy or balance.

When the long-term (12 months) effects of manual therapy were evaluated there were no significant differences in dizziness intensity or pain intensity between the groups, however both manual therapy groups reported dizziness less often and had lower dizziness handicap scores than the placebo group. At 12 months there was greater ROM in six directions for the SNAG group and four directions for the PJM group compared to placebo. There were no meaningful differences between groups for head repositioning accuracy. The SNAG group had better balance than the placebo group on two dynamic tests. There were no differences between the two manual therapy groups at 12 months for any outcomes. Both manual therapy groups found treatment more beneficial than the placebo intervention at 12 weeks and 12 months. There were no adverse effects lasting longer than 24 hours.

One limitation of the study was that it was not possible to blind the treating therapist to group allocation. Another limitation was that the effect of the home-based exercises could not be adequately assessed, as compliance with completion of home exercise diaries was poor.

As part of this thesis, the process used in this RCT to identify people with cervicogenic dizziness has been outlined as a first step in developing a screening process to identify cervicogenic dizziness in clinical practice. In addition, the physical characteristics of the participants with identified cervicogenic dizziness were compared to normative data to further describe this condition and aide in its identification. Participants with cervicogenic dizziness were found to have significant deficits in cervical ROM, head repositioning accuracy and balance when compared to published normative values.

This thesis has provided evidence for the first time that a small number of manual therapy treatments, combined with recommendations to perform simple home-based exercises, can make a significant difference over the short and long term to patients experiencing chronic cervicogenic dizziness. The results have implications in identification and improving treatment for many patients, as dizziness occurring together with neck pain is a common and disabling problem.