

## Balance exercises in arthritis need to be targeted to the individual

The recent paper by Chaipinyo and Karoonsupcharoen (2009) raises some issues that warrant further discussion and research. Some of these are methodological issues, and some relate to the underlying constructs being addressed by the interventions, and how these were assessed.

From a methodological perspective, a randomised trial was used, with assessor blind to group allocation at each assessment occasion. A sample size of 48 (24 in the home-based strength training, and 24 in the home-based balance training) was recruited. However, despite randomisation, the two groups had moderate differences at baseline (only data for those who remained in the study at followup are provided,  $n = 24$  for the balance group and  $n = 18$  for the strength training group); eg, there were five second differences between the two groups for time to walk 15 m, and the Get Up and Go test. This issue does not seem to have been considered in the analyses or discussion, other than highlighting that all six dropouts were from the strength training group. Those dropping out appeared to have better mobility, leaving a final sample in the strength training group with poorer performance measures.

However, some more fundamental questions need to be asked from a clinical perspective. Some of these relate to the underlying understanding of what constitutes effective standing balance. This leads on to the selection of appropriate measures to detect meaningful change in this domain, and also the composition of the balance training program. Balance is generally considered multidimensional, to include both static and dynamic elements (Huxham 2001, Horak 2006), and that assessment should include evaluation of some of the type of tasks involved in 'balance failure' (ie, falls), such as stepping and walking, turning, reaching, or leaning. While measures of gait speed and the Get Up and Go test do incorporate a global measure of some of these elements, we consider a brief suite of clinical tests evaluating each of these domains individually to be more useful, accurate, and sensitive to change, than those selected for this study. An alternative, that would take a similar amount of time but evaluate four aspects of balance and integrate into an overall balance score, is the BOOMER (Haines 2007).

Given the multidimensional aspects of balance, a training program should incorporate more than a stepping task, and a squatting task (which is more a functional strength exercise than a balance task). In the falls prevention literature, the Otago exercise program has been shown to reduce falls in a number of studies of older people with falls risk (with

samples including 35% with lower limb osteoarthritis). This program incorporates a tailored/individualised balance (and strengthening) program, with exercises selected to address identified aspects of balance dysfunction or muscle weakness. The majority of the strengthening exercises are also functionally oriented. A final issue with the exercise programs used in this study is that if the study wanted to compare relatively discrete strength training and balance training programs, then the squatting exercise should form part of the strength training program, rather than the balance training program (though, of course, in reality a program for people with arthritis would often incorporate both strength and balance training).

Another important aspect of the intervention in interpreting the outcomes is its duration. Four weeks is a relatively short period to observe change with these exercise programs, and more often periods of three to six months have been reported (Fransen 2007, King et al 1998).

Consideration of all of these factors suggests that the findings of this study should be considered exploratory rather than confirmatory. There is a need for a well designed randomised trial utilising a comprehensive suite of balance assessments, and a tailored balance training program of longer duration, to more clearly articulate the broad range of potential benefits of this approach in people with arthritis. Results from such a study would guide clinicians as to the importance of incorporating balance assessment and retraining into routine practice with people with lower limb arthritis.

**Keith D Hill<sup>1</sup> and Susan B Williams<sup>2</sup>**

<sup>1</sup>La Trobe University and Northern Heath, <sup>2</sup>National Ageing Research Institute, Australia

### References

- Chaipinyo K, Karoonsupcharoen O (2009) *Aust J Physiother* 55: 25–30.
- Huxham F et al (2001) *Aust J Physiother* 47: 89–100.
- Horak F (2006) *Age and Ageing* 35 Suppl 2: ii7–ii11.
- Haines T et al (2007) *Arch Phys Med Rehabil* 88: 1614–1621.
- Fransen M, McConnell S (2008) Cochrane Database of Systematic Reviews. Art. No.: CD004376.
- King A et al (1998) *Am J Prev Med* 15: 316–333.

### Website

<http://www.acc.co.nz/injury-prevention/home-safety/older-adults/otago-exercise-program/index.htm>