

## Clinician's Commentary

Arnold et al.'s systematic review of studies that examined exercise to reduce fall risk in older adults provides clinicians with important information to guide practice.<sup>1</sup> In this commentary I discuss (1) the utility of systematic reviews for clinicians; (2) limitations of systematic reviews; (3) other factors, in addition to the research literature, that should be considered in decision making for evidence-based practice (EBP); and (4) clinical implications that can be derived from this systematic review, as well as from two related articles published in 2008.

Providing EBP is not easy. The challenge of making an *informed* decision regarding the best intervention is magnified by the time-consuming processes of accessing, reading, evaluating, and synthesizing a large volume of literature. In 1972, Sir Archie Cochrane (1908–1988), a medical researcher, passionate pioneer of evidence-based medicine, and visionary for the internationally renowned Cochrane Collaboration, wrote, “I had considerable freedom of clinical choice of therapy: my trouble was that I did not know which to use and when. I would gladly have sacrificed my freedom for a little knowledge.”<sup>2</sup> Cochrane's words encapsulate the daunting task of sifting through multiple studies in order to determine what the evidence suggests I should be doing with my clients. Fortunately, though, there is help. Meta-analyses and systematic reviews synthesize and interpret the results of randomized controlled trials (RCTs) and other experimental studies. These types of research syntheses are invaluable resources for clinicians—someone else has done the work of sifting through the literature for us!

Using a well-established and rigorous methodology for conducting a systematic review, Arnold et al.<sup>1</sup> identified key issues that confront physiotherapists working with clients from the community who are at risk for falls:

1. Is there a preferred type of exercise intervention (e.g., tai chi, land exercise, aquatic exercise, resistance or balance training)?
2. Is it preferable to use individual or group interventions?
3. Is an exercise intervention alone sufficient, or do programmes that include detailed clinical assessments with prescription of a tailored exercise programme and home modification result in better outcomes?
4. Are there identified parameters for effective prescription of exercise in terms of intensity, frequency, and duration?
5. Which outcome measures should be used to guide evaluation of the effectiveness of therapeutic interventions?

The results of Arnold et al.'s systematic review revealed that the answers to these clinical questions are not yet completely clear. Indeed, the review identified important weaknesses and gaps in the literature that should be addressed in future studies (e.g., enhanced rigour in study designs and methods). Systematic reviews cannot compensate for identified weaknesses or fill gaps within published studies; they simply synthesize the existing evidence. Although this may frustrate clinicians who are searching for definitive assessments and treatments for their clients, systematic reviews can only summarize the best *available* research evidence. Clinicians should be aware not only of interventions in which the evidence is strong but also of treatments for which there is limited or incomplete evidence. As noted by Sackett and colleagues, it is important also to remember not only that practice should be based on the “best research evidence” but that the research evidence should be integrated with *clinical expertise* and *patient values*, the other two components of the triad that compose EBP.<sup>3</sup>

Accordingly, clinicians must critically evaluate their practice to identify not only the relative effectiveness of interventions but also client-specific characteristics (e.g., are there commonalities in client characteristics, such as age or specific comorbidities, that would suggest that this particular client would respond similarly to an intervention provided previously to clients with similar characteristics?). In addition, the client's preferences for type of intervention (e.g., aquatic exercise versus tai chi) should be included in the decision-making process, so that the client is not only informed of the relative effectiveness, advantages, and potential disadvantages or risks of the various options for intervention but also is encouraged to factor his or her personal values into the decision through a shared decision-making process.

Arnold et al.<sup>1</sup> provide a synthesis of published literature available from 2000 through 2006. Two recent papers<sup>4,5</sup> support and expand upon Arnold et al.'s findings. Gates and colleagues<sup>4</sup> conducted a meta-analysis of studies examining the effectiveness of multi-factorial assessment and treatment for preventing falls and injury in both community and emergency-care settings. Unlike qualitative systematic reviews, meta-analyses provide a statistical analysis of combined results of studies that used the same outcome measures. Gates et al.<sup>4</sup> included studies published through 2007 (three of which were also included in the systematic review by Arnold et al.<sup>1</sup>) and concluded that the evidence for effectiveness of multi-factorial programmes in reducing number of fallers or fall-related injuries is limited.

However, it is important to recognize that Gates et al.<sup>4</sup> ultimately incorporated studies from primary-care as well as community and emergency-care settings, and thus their results cannot be compared directly to those of Arnold et al.<sup>1</sup>

In a second recent article, Jarvinen and colleagues<sup>5</sup> (all noted experts in the area of falls in the elderly), interpreted the existing literature by suggesting a shift from the pharmaceutical approach to fracture prevention (i.e., use of bisphosphonates to combat reduced bone mineral density) to that of fall risk reduction. Their position was based on the following points: (1) the strongest risk factor for fracture is falls, not osteoporosis; (2) more than 80% of low-trauma fractures occur in persons who do not have osteoporosis; and (3) treatment with bisphosphonates can not adequately address fracture prevention, especially in those over 80 years of age. Noting that the evidence indicates that at least 15% of falls in this population can be prevented, the authors stated that the strongest evidence of effectiveness for falls prevention is for strength and balance training! Finally, Jarvinen et al.<sup>5</sup> advocated the use of the Physiological Profile Assessment (PPA) to evaluate fall risk, reporting that it has a 75% positive predictive accuracy in differentiating those who are likely to experience multiple falls in the following year from those who are likely to fall once or less.

After reading the systematic review by Arnold et al.<sup>1</sup> and reflecting on its findings in the context of the papers by Gates et al.<sup>4</sup> and Jarvinen et al.,<sup>5</sup> I offer two take-home messages for clinicians to reduce falls in older clients in a community setting:

1. The best interventions for reducing fall risks appear to be those that focus on strength and balance training, either in group sessions or in individually prescribed programs. Although not all prescription parameters have been identified (i.e., intensity and frequency of training), greater success in reducing the number and rate of falls is likely with programmes of at least 6 months' duration.
2. Although there is no single "best tool" to identify fall risk, tools that incorporate assessment of balance appear to be most important (e.g., the PPA).

In conclusion, clinicians should be encouraged by the efforts of Arnold et al.<sup>1</sup> and others who have rigorously synthesized<sup>4</sup> and interpreted<sup>5</sup> the results of the large number of studies exploring fall risk assessment and

falls prevention. The following lines from a sonnet by Edna St. Vincent Millay captures my view of some of the challenge involved in digesting the information from many different studies:

Upon this gifted age, in its dark hour,  
Rains from the sky a meteoric shower  
Of facts . . . they lie unquestioned, uncombined.  
Wisdom enough to leech us of our ill  
Is daily spun, but there exists no loom to weave it into  
fabric.<sup>6</sup> (p.140)

I view systematic reviews and meta-analyses as looms that weave the many threads of data from multiple studies into a fabric that can support the work of clinicians. This information can be then be integrated with clinical expertise and patients' values to provide optimal evidence-based care.

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