Is there sufficient evidence?

We read with interest this article (Scianni et al 2009) and compliment the authors on their systematic review. However, as researchers in the field we wish to make two points.

The number of randomised clinical trials in the area is very small which may have led Scianni and colleagues to include an unusual mixture of studies which in our view should not be included in a single review. Specifically progressive resistance strength training and electrical stimulation. Strength training is at an early stage in clinical trials in cerebral palsy, especially randomised trials. Like all interventions in cerebral palsy, it takes time to define the appropriate intervention protocol, to identify to whom it may be applicable, and to design appropriate trials with reliable assessment measures and adequate power. We disagree with the conclusion that it is 'not effective in children with cerebral palsy'. Our conclusion, on review of the studies is that there is insufficient evidence and additional work needs to be done.

The conclusion that 'strengthening interventions are not worthwhile' is subjective and is not supported by the data. It also runs contrary to what participants in previous and current PRST trials in Melbourne are telling us – that PRST is enjoyable, very worthwhile, and something which many adolescents and young adults wish to incorporate in their daily lives, for a variety of reasons. For many adolescents this is a social outlet which makes them feel good about themselves. It is important not to give people unrealistic expectations or claims about the effect of an intervention, but the individual should decide whether it is worthwhile or not. We as able bodied people can attend a gym and commence a training program without it undergoing rigorous scrutiny and we can decide the benefit to us; the same should apply to people with disability. It is a shame that Scianna et al should include such a subjective comment, in their abstract, unsupported by data, in an otherwise scholarly review.

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Results present a challenge for clinicians and researchers

Like the letter writers, we found the result of our systematic review (Scianni et al 2009) to be interesting. It came from a rigorous application of *a priori* definitions and followed the blinding procedures outlined by the Cochrane collaboration.

It is possible to get different results from a meta-analysis using the post-intervention scores rather than the change scores. When using the standardised mean difference when combining trials where the outcome measures use different units (eg, Nm of torque versus points on a 0–5 scale), it is necessary to use one or the other – they cannot be combined. While using the change scores takes into account baseline differences between the groups, most randomised trials do not report them, as was the case in our systematic review. This is one of the reasons that the routine inclusion of change scores and the placement of individual data on the eAddenda of *Australian Journal of Physiotherapy* is valuable (Herbert 2008) – it allows the inclusion of data into future systematic reviews. Proponents of using post-intervention scores argue that any baseline differences between the groups will be 'washed out' across the meta-analysis because some will favour the experimental group and some will favour the control group. Either way, it is important that there is similarity between the groups at baseline – one of the independent items of the PEDro scale for methodological quality of randomised trials (de Morton 2009) – because participants with different beginning levels of impairment may respond differently to the same intervention. In future trials, similarity at baseline may need to be achieved with stratification.

Both letters claim that it is not reasonable to combine different strengthening interventions, but neither outlines why not. We argue that in answering the question of whether strength can be increased in children with cerebral palsy, it is appropriate to include any intervention that is *repetitive, involves near maximal contractions, and is progressed as participants' abilities change* – as in our review. Furthermore, a subgroup analysis of only progressive resistance exercise produced similar results. Our second question was whether strength training was *worthwhile*. For the purpose of this review, this was defined as carryover to the activity level, and in this context, the data support the conclusion that intervention was not worthwhile judged by this measure. Whether strengthening interventions are worthwhile in terms of participant satisfaction and/or quality of life remains to be seen, since it is only recently that these types of outcomes have been measured in clinical trials of physiotherapy intervention.

The meta-analysis shows that the evidence, as it exists at the moment, is that strengthening is not effective. One of the possible reasons for this may be that the intensity of the intervention was not enough, according to the guidelines for strengthening (American College of Sports Medicine 2002). This challenges clinicians and researchers to focus on the dose of their intervention, whether prescribing an individual exercise program or designing a randomised trial. If the questions raised by this systematic review result in future trials being designed to meet the challenges posed, then these will be included in the next meta-analysis carried out to answer the question 'Is strengthening effective in children with cerebral palsy?'

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