

Pain education is required for all physiotherapists

I applaud Jones and Hush (2011) for their Editorial in the December issue of *Journal of Physiotherapy*.

Raising the profile of pain education is crucial as it enables ongoing advancement of our profession in many different ways. First, as the Editorial points out, it behoves all clinicians to have both a good grounding in basic science as well as the means to apply it to clinical practice. Second, it should give us a better understanding of our patients and their needs. Third, these benefits will help to give us a competitive advantage in the health-care marketplace.

Jones and Hush (2011) highlight the undoubted importance of undergraduate (including graduate-entry) physiotherapy programs. However, it is also important that postgraduate education reflects the same aims. Speaking personally, a postgraduate degree in Pain Management has revolutionised the way I treat all patients.

There is a common misconception that the pain sciences, or indeed a pain management approach, are only for those involved in treatment of chronic pain sufferers. Nothing could be further from the truth. The biopsychosocial model of pain has been championed in recent years. This model enables clinicians (either as an individual or in a multidisciplinary team) to perform a formulation of any person who is experiencing pain. A formulation examines all three domains of a person in pain (the biological body processes, the psychological background and response, and the environment in which the person lives) and suggests how those domains inter-relate to lead to the outcome of the experience of pain. It is not that physiotherapists have all the skills in each of these areas. However, such an approach enables us to accept that there may be lots of contributors to the pain being experienced by that person in front of us.

Such a process of formulation is almost intuitive in chronic pain due to the frequency of significant psychological and social concomitants to the pain. However, a similar diagnostic process is also essential in all acute situations, as it is common for there to be issues such as belief structures, anxiety, family or work situations, that impact on the experience of pain. Failure to identify these factors will lead to us not doing as good a job as we might.

Since JJ Bonica first championed the multidisciplinary environment in assessing and treating people with chronic pain, the unique contribution of different professions to the understanding of pain treatment has grown. Jones and Hush (2011) emphasise this multidisciplinary aspect of pain education. Clinicians from other disciplines have so much to offer to help us understand more fully the complexity of pain. Few courses offer an opportunity to actually learn with and from each other. The formal postgraduate study program with which I am involved (the postgraduate degree program in Pain Management, Sydney Medical School, The University of Sydney) is one of the few that provide such an environment.

I would encourage all physiotherapists to brush up on their pain science, both basic and clinical, as well as training clinicians of the future.

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Reference

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Physiotherapists must collaborate with other stakeholders to reform pain management

The need to update pain curricula for students undertaking physiotherapy degrees Australia-wide was well argued by Jones and Hush (2011) in their Editorial, highlighting the significant gaps in current knowledge and skills in pain management among the emerging physiotherapy workforce in Australia. Similar issues exist for the broader health workforce, as outlined in the National Pain Strategy (Australian and New Zealand College of Anaesthetists 2010).

We need to better prepare the emerging workforce to manage the predicted substantial increase in this global area of need over the next 30 years (March and Woolf 2010, Woolf et al 2010). These epidemiologic data are consistent with Australian projections for chronic health conditions generally and chronic pain specifically (KPMG 2009). While we agree that there is need to provide consistent evidence-based and interdisciplinary education in pre-registration physiotherapy programs in Australia, it is also imperative to optimise the evidence-informed practical skills and knowledge of clinicians currently in the workforce and who are likely to remain working for some time. These clinicians are likely to play an important role in shaping the beliefs and practice behaviours of the emerging workforce.

Initiating a shift in beliefs and practice behaviours in any area is challenging and can only be sustained when supported by parallel changes in systems and policy. Reform strategies, therefore, need to be developed and implemented in a multi-stakeholder partnership framework, such as a network or community of practice model, in order to be effective and sustainable (Ranmuthugala et al 2011). In this regard, there are many opportunities for collaboration among researchers, clinicians, consumers, and other stakeholders such as universities, health departments, rural health services, and policy makers to drive much-needed reform in this area.

While Jones and Hush (2011) review important curriculum reform in Canada and the US, we feel it is timely to highlight some of the initiatives currently being undertaken in Western Australia (WA) to help close this gap and improve service delivery to consumers who live the experience of pain. The key platform that has enabled implementation of these initiatives is the WA Health Networks, integrated into the Department of Health, WA. The aim of the of the WA Health Networks is to involve all stakeholders who share a common interest in health to interact and share information to collaboratively plan and facilitate implementation of consumer-centred health services through development of evidence-informed policy and programs. The Spinal Pain Working Group, as part of the Musculoskeletal Health Network, has been proactive in developing, implementing, and evaluating a number of projects to address state policy for service delivery in the context of spinal pain (Spinal Pain Model of Care 2009). Examples of such projects, which have been recently reported to Pain Australia as progress towards local implementation activities of the National Pain Strategy, include:

- An audit of beliefs and likely practice behaviours of emerging health professionals across health disciplines and tertiary institutions in WA
- Development of an evidence-based and consumer-centred guide to low back pain which has received inter-professional endorsement
- Implementation of a system inversion in tertiary pain medicine units, so that patients attend interdisciplinary group-based pain education before seeing a pain specialist (STEPS project)
- Delivery of interdisciplinary, evidence-based education to GPs about best-practice management of spinal pain (GPEP project)
- Delivery of interdisciplinary, evidence-based education to health professionals and consumers/carers in rural and remote regions of WA regarding best-practice management and self-management, respectively, of spinal pain (HPEP project)
- Development of a consumer-centred web platform for self-management of musculoskeletal pain
- Establishment of an interdisciplinary musculoskeletal stakeholder forum (focused on the development and/or implementation of health policy and best practice guidelines in the context of musculoskeletal pain).

It is possible that additional important initiatives are currently being undertaken throughout Australia. We propose that it would be beneficial to the physiotherapy community to communicate such initiatives more widely as a mechanism to facilitate more co-ordinated health reform in the area of pain management and to highlight opportunities for collaboration by physiotherapists. In this regard, perhaps the Journal could offer a potential avenue for such communication, for example via a supplemental issue on pain?

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Likelihood ratios ought to be interpreted in the context of the pre-test odds

I read with interest the paper by Prosser et al (2011) which nicely documented the likelihood ratios (LRs) associated with wrist examination. I question the application of the descriptors associated with the results, and feel that a central message of this paper could be read as 'none of these tests are much use'. I believe this is a misrepresentation.

Clinicians want to know if, after doing some test, the patient is more or less likely to have some pathology, and by how much. The LR allows the clinician, by Bayesian reasoning, to arrive at the odds that some pathology is present after knowing both the result of the test **and** the pre-test odds (Altman and Bland 1994). There's evidence a lot of clinicians don't really understand this concept fully (Westover et al 2011) so we need to be careful in presenting data that can confuse this issue. I'm arguing that adding the descriptors 'limited' and 'moderate' (Prosser et al 2011) is not useful as a LR is no use to a clinician with a patient in front of them unless you also know the associated pre-test odds for that pathology. If you instead only rely on these descriptors, then it's an easy step for the unwary clinician to think 'this test is not worth doing' since Prosser and colleagues said its use was 'limited' (Prosser et al 2011).

Say, based on the history, a patient has pre-test odds of 50% of having a tear in their TFCC, ie, an even money bet. Positive and negative MRI findings are associated with LRs of about 5.6 and 0.2 respectively (Prosser et al 2011) which means that the clinician would then be able to say, 'after doing the test, the odds will be either 84% or 17% that the patient has the pathology.' The physio can then tell her patient if the MRI is positive that there are 'more than 4 chances in 5 of having a TFCC tear' or (after a negative test) 'less than 2 chances in 5 of a tear'. She has gone from a coin toss to being right about 80% of the time, and if the patient wants to know if they should see a surgeon or not, she can now help them make their decision.

So you're now saying it's a 'good' test then? Well, no. With the same example, but pre-test odds of 10%, we have post-test odds of 38% and 2% respectively for positive and negative tests – ie, despite the test outcome I still think the patient probably doesn't have the pathology. 90% pre-test odds would be associated with post-test odds of 98% and 64%, ie, I still think that they probably do have this pathology, I'm just betting different amounts of money on it. Claiming these tests are 'good' or 'bad' because of their LR is misleading since their clinical interpretation relies equally on the pre-test odds (except for LRs of 1 which *are* genuinely useless as they don't alter the post-test odds at all.) Beyond that, we can only really use these LR numbers in isolation to compare the utility of two different tests, ie, 'how much better is this test than that test?' Stating that the test is of 'limited' or 'moderate' utility without reference to the pre-test odds is essentially trying to describe if some number (which can range from 0 to 1, or 1 to infinity, Altman and Bland 1994) is 'large' or 'small'. This paper has documented (very well in my opinion) LR for these clinical tests, and I think this is how the data should have been presented.

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Response

We thank Dr Whiteley for his interest in our study.

Dr Whiteley argues that likelihood ratios cannot be used to make judgements about the accuracy of a diagnostic test because the post-test probability generated by a diagnostic test depends on the pre-test probability. Consequently he believes that our conclusion – that provocative wrist tests are of limited value for diagnosing wrist ligament injuries – misrepresents the data.

Post-test probabilities do, of course, depend on pre-test probabilities (Herbert et al 2011). Likelihood ratios quantify the extent to which a diagnostic test modifies pre-test probabilities. Accurate diagnostic tests substantially modify pre-test probabilities, especially in cases of uncertainty (when pre-test probabilities are neither very low nor very high). In contrast, inaccurate tests (tests which carry little diagnostic information) have very little effect on pre-test probabilities.

The descriptors that we used to describe test accuracy were based on those recommended by Portney and Watkins (2009). In our opinion these descriptors are, if anything, a little too generous. By way of illustration, consider the *best* positive likelihood ratio we reported: MRI diagnosis of TFCC injuries had a positive likelihood ratio of 5.6, so it was classified as a ‘moderately useful’ test. If we were to use this test on a person for whom we felt completely ambivalent about the diagnosis of TFCC injury (ie, on a

person for whom the pre-test probability was 50%) the test would change the estimated probability of TFCC injury to 84%, a change in probability of 34%. This test would aid diagnosis a bit but not much – with a post-test probability of 84% we would still not be confident that the person does have a TFCC injury. So a descriptor of ‘moderately useful’ seems, if anything, generous. The absolute change in probability produced by a test finding is always greatest for a pre-test probability of 50%, so in all other scenarios this test modifies the probability of the diagnosis by less than 34%.

We stand by the specific assertion that MRI tests are moderately useful for the diagnosis of TFCC injury and the general assertion that provocative wrist tests are of limited value for diagnosing wrist ligament injuries. Readers who object to our interpretation of the data are free to do their own calculations and use their own descriptors of the usefulness of these tests.

Rosemary Prosser, Lisa Harvey, Paul LaStayo, Ian Hargeaves, Peter Scougall and Rob Herbert

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