

How can science influence our clinical decisions?

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Practice leads science and science leads practice. At least in an ideal world it should go both ways. It is clear that in a dynamic clinical environment science lags behind clinical developments. Research takes time, but is a necessary step to test and challenge clinical ideas. However, research can also guide clinical practice. New found evidence and chance findings can help guide clinical decisions. Clinical practice should be guided by outcomes of clinical trials, regardless of whether they are positive or negative. Furthermore, new physiological and biomechanical insights can help shape practice, but the size of clinical effect cannot be estimated without clinical trials. A number of recent observations from science have the potential to shape clinical interventions. First, there is increasing evidence that continence, breathing disorders and back pain are inextricably linked. Data from epidemiological work shows that these conditions are related longitudinally; presence of one condition is associated with the development of another. Data from physiological studies show that people with incontinence and breathing disorders have changes in trunk muscle control that are similar to those identified in spinal pain. These conditions cannot be considered independently and our clinical eyes must be focussed on management of patients as a whole. Second, recent experimental work is changing our view of the motor adaptation to pain. In recent years there has been a surge of interest in the exercise to enhance spinal stability. A plethora of programs have been developed, but recent work is challenging this view. These studies suggest that many people with back pain have increased stiffness of the spine as a result of increased muscle activity, particularly the more superficial muscles. In this case it would seem that exercise should aim to optimise stability rather than simply increase it. Along a similar line, other work suggests that the dynamic properties of the spine are altered. This highlights the need to train dynamic control rather than static mechanisms. Third, we have shown that the motor cortex can be reorganised with some types of training, but not others. Identification of the parameters that drive such change can help us optimise treatment. Finally, data from clinical trials are beginning to help us select the patients that benefit most from an intervention. This is a critical step in the advancement of clinical decision-making and, of course, clinical outcomes.