

# The mind-power revolution

Physiotherapist David Butler is the Director of the Neuro Orthopaedic Institute and a Senior Lecturer at the University of South Australia.

He is interested in integrating neurobiology into clinical decision-making and educating the public and professionals about pain, stress and performance management.

He is the author of *Mobilisation of the Nervous System, The Sensitive Nervous System* and co-author of *Explain Pain*.

Here, Butler writes about the revolution in the scientific understanding of the power of the mind and its potential effect on clinical practice.

Books about the power of the mind have been mainstream reading for years and they often make the best-seller lists. The popularisation of the mind-power movement is underpinned by a revolution in brain imaging, which provides some understanding of how the brain constructs its numerous outputs (pain, movement, thought). That has allowed paradigms such as neuromatrix to enter the clinical practice of modern professionals, including physiotherapists. [Editor's note: according to Canadian pain researcher Ronald Melzack, the neuromatrix theory proposes that pain is an experience produced by characteristic 'neurosignature' patterns of nerve impulses. These patterns may be triggered by sensory inputs, but they may also be generated independently of them.]

Research into placebos emphasises the power of the brain and the importance of context (e.g. time, place, knowledge) in brain constructions (see 'Placebos in practice' on page 28). It's great to know our brains are so changeable! But what has the mind-power movement done for clinicians?

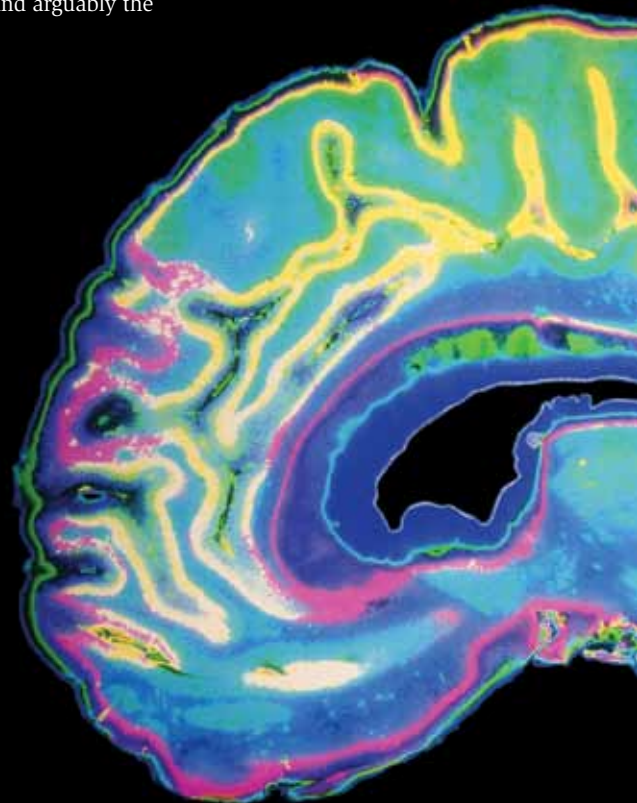
Besides the introduction of graded-motor imagery programs (which are still in the embryonic stage), no changes are apparent in clinical physiotherapy practice. Nor have significant changes appeared in undergraduate curricula. Physiotherapists may well be in danger of entering a 'knowledge gap': clinical practice and standard education may not

be keeping up with the sciences associated with the mind-power movement, sciences such as neuroplasticity and neuroimmunology.

A two-pronged gift is now available if we want to grasp it. If the brain and its likely secretion, the mind, are as powerful, as plastic and contextually adaptable as the sciences suggest, then we should rapidly revise our patients' (and our own) educational therapies, either as sole therapies or as an empowering element of other evidence-based strategies such as graded exercise. To construct outputs, the brain seeks contextual knowledge (e.g. a pain output may not necessarily be constructed in the context of severe injury) and arguably the

most potent context is knowledge. We all move, think and act differently with knowledge.

Patients are one recipient of this gift of knowledge. Contrary to the thinking of many professionals, patients can 'get' and benefit from education in neuroscience—physiotherapist and researcher Lorimer Moseley showed this nearly a decade ago in his paper 'Unravelling the barriers to reconceptualisation of the problem in chronic pain: the actual and perceived ability of patients and health professionals to understand the neurophysiology'.



The continuing neuroscience (mind-power) revolution means that potent explanatory and threat-reducing narratives are increasingly available for patients and their plastic brains. For example, the links between catastrophisation and sensitivity via immune compounds make catastrophisation ‘real’, and the mirror neurone revolution not only provides an understanding of patients who say it hurts when they think of moving, but it should also engender biologically rational and evidence-based imagery therapy.

Physiotherapists (and our collective plastic brain) also stand to benefit from the gift of the sciences behind mind-power. For years, variables associated with the patient (such as kind of injury and thoughts about the injury) were thought to be the most critical aspects dictating outcomes. They are still important, but a new direction in research reveals that features related to us—the healthcare practitioners—may be just as important to outcome. For example, clinicians who can take on more biopsychosocial assessment and management strategies, essentially taking on the brain, are likely to have better outcomes with chronic-pain patients.

Here lies the real potential and power of this scientific revolution. The sciences behind power-of-the-mind thinking underpin new professional paradigms that are critical for professional nourishment. Paradigms such as pain mechanisms now encourage the embracement of immunology and molecular biology and allow physiotherapy to grapple with notions of pain as a neuroimmune construction in the brain. The neuromatrix paradigm, which far surpasses the gate-control paradigm, facilitates clinical engagement with plasticity. Evolutionary biology paradigms provide rich narratives when we realise that much of the changes we contemplate clinically—changes such as inflammation, pain and protective movement—are essentially for the continuation of the species and should be de-threatened.

These neuroscience-based paradigms can be merged with older psychological paradigms such as fear avoidance and ‘onion skins’. In the hands and brains of therapists capable of clinical reasoning, these new paradigms should empower traditional pathoanatomical paradigms, or said in another way, allow biomedicalism to merge with biopsychosocial approaches.

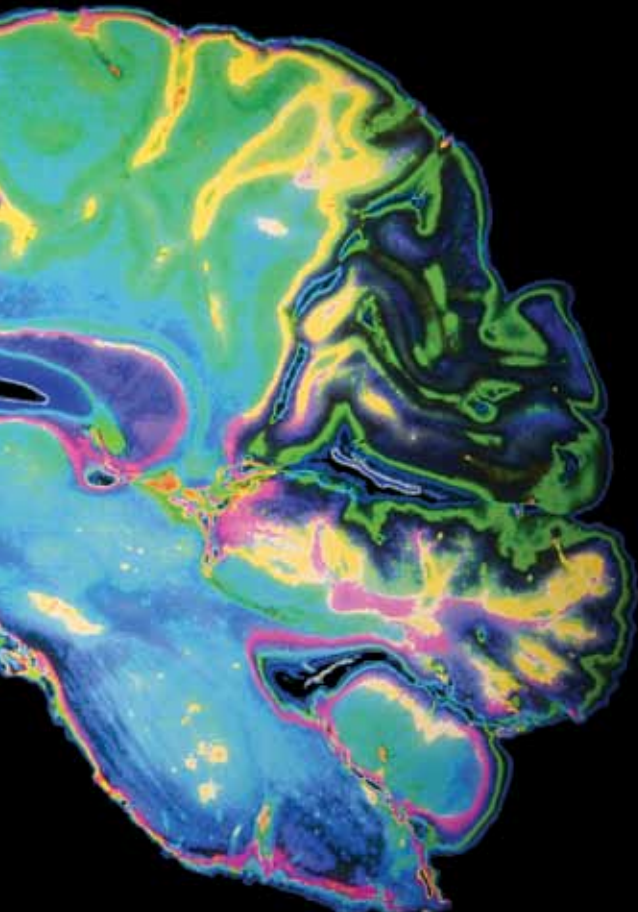
Neuroscience education is hard work—it takes time, professional reinvestment and often a shift in educational resources. For older therapists (remember that

plasticity, fortunately, occurs over the lifespan!) there are new subjects that weren’t around when they graduated.

Clinical experience and continuing education in the area of pain do not necessarily lead to better evidence-based pain management, but educational shifts are needed urgently. Pain costs Australia almost as much in one year as the National Broadband Network will, and dollar figures obscure the loss of social, family and creative life. And pain is only one expensive output of threatened and challenged brains—emotions, cognitions, movement and stress are among many others.

Perhaps it is time for physiotherapy to embrace more of the sciences behind the mind-power revolution. It may mean reviewing and changing things like undergraduate curricula and the content of continuing education. We may need more specialisation aimed at working with brain engagement and biopsychosocialism rather than biomedicalism. It may also mean introducing educational sciences—such as the science of conceptual change—into management and engagement with emerging brainpower-based therapies such as graded motor imagery and therapeutic neuroscience education.

These are exciting days in science—the next step is to make it exciting (and advantageous) for patients as well.



*References available on request. Email [inmotion@physiotherapy.asn.au](mailto:inmotion@physiotherapy.asn.au).*