

relay

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Supporting people affected by peripheral neuropathy & neuropathic pain

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New Ideas in Physiotherapy Rehabilitation for Neuropathic Pain

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After working in clinical practice for over 20 years and encountering a range of clinical presentations, without doubt those patients who complain of nerve pain or associated weakness and loss of function provide the greatest challenge to clinicians. This article provides an overview to physiotherapy rehabilitation and reviews current treatment and recent developments. It is impossible to cover all aspects of rehabilitation and I will concentrate on neuropathic pain and associated weakness, either as a direct cause of nerve damage or its consequence.

Any injury or disease process that affects a nerve can have very serious consequences and often requires a multidisciplinary approach to successful rehabilitation. Nerves comprise approximately 2% of the body's weight, but require over 20% of the total cardiac output.

Nerves require a very good blood supply as they have a high metabolic rate and if the blood supply is reduced symptoms may develop. Therefore, whenever the nerve is damaged recovery is often slow, but improvements can be made if the correct rehabilitation program is started.

Neuropathic Pain

At this point to it is important to differentiate between acute and chronic pain. If you pull a muscle, say running for a bus, you experience acute pain as the healing process begins and slowly over the next few days the pain will subside as the tissue repairs itself. However, some people with damaged tissue produce pain that is out of all proportion to the initial injury. They do not go through the normal healing process and, for some reason that we do not fully understand, go on to develop chronic pain. This type of pain is often referred as neuropathic pain and involves sensitization of both the nerves that carry pain sensations and regions of the brain that interprets the signals. The relationship between tissue damage and pain, as seen in acute pain, is lost with neuropathic pain.

The problem becomes less of a local problem and that is why new treatments for neuropathic pain are often directed towards the brain and nervous system. It is for this reason local treatments such as manipulation, surgery or massage for chronic neuropathic pain is not effective judging by research (see the Cochrane Library reviews at

<http://www.cochrane.org/reviews/>) for an evidence based view of many conventional treatments for nerve pain).

Phantom Limb Pain

The best way to explain this phenomena of chronic neuropathic pain to consider the problem of Phantom Limb Pain. In some people following amputation of a limb, for example, people present with excruciating foot pain even though the limb was removed several years ago. Evidently the foot cannot be the source of the pain but the area of your brain that represents your foot has not been amputated and still registers pain. This is the same for any body part and if you're experiencing chronic pain in your hand, knee or spine then rehabilitation will often need to be directed towards the brain and how it interprets the faulty pain signal. Phantom limb pain is reduced by the wearing of a prosthesis (the prosthesis is also useful for walking!) as the brain reinterprets the signals from the new limb and this helps to block the abnormal pain sensation (for more details of the 'Pain Gate Theory' proposed by Malzack and Wall in 1965 please go to this link <http://en.wikipedia.org/wiki/Pain>).



This is also the theory behind Transcutaneous Nerve Stimulation (TNS) this helps reduce chronic pain by 'blocking' the pain signal.

Pain: The dark side of Plasticity

It was believed, until quite recently, that the brain and nerves could not regenerate and the ability for change within the brain after an early age was impossible. This is wrong. We know that under certain conditions the brain has the ability to change in response to novel conditions and we can form new nerve cells. The ability of the brain to change was first suggested by Merzenich in the 1980's after extensive brain mapping research, but it took several years before the research findings were fully accepted by the scientific community.

The ability of the brain to change (neuroplasticity), is a fundamental concept in rehabilitation and forms the basis to many new research ideas in the treatment of neuropathic pain. Additionally neuroplasticity explains why, given the correct environment and stimuli, people can continue to change and learn new skills at any age. It's probably fair to say that neuroplasticity is greatest during infancy, but this does not mean to say we cannot change in old age. Who said 'you can't teach an old dog new tricks'?

Nerve Pathways and the Brain

With the recent developments in brain imaging, such as functional magnetic resonance (fMRI) scanners, it is possible to identify which areas of the brain show the greatest activity when somebody is experiencing neuropathic pain. Research is showing that many areas of the brain are active in those patients who suffer from neuropathic pain when compared with people who do not experience chronic pain. Some people 'learn pain' and abnormal pathways can be found in both the peripheral nerves and brain. It is for this reason people who experience pain initially

in one area of the body often report other sites of pain.

With neuropathic pain there is a change in the normal nerve conduction pathways and nerves become sensitized so that normal sensations such as light touch or pressure become painful (allodynia). Additionally, areas of the brain become increasingly active in response to both painful and non painful stimuli and it is as though the brain 'learns pain' and is highlighted in recent research by Baliki and colleagues (2008) who stated that chronic pain has a widespread impact on overall brain function.

Rehabilitation and Physiotherapy.

Before discussing rehabilitation it is important to consider that the best way to prevent chronic pain is by early diagnosis and access to range of health professionals who give consistent advice and self-help measures from an early stage. Unfortunately, many people with chronic pain report a history of delayed treatment, discordance between health professionals and inadequate explanations as to why they have pain. This naturally increases anxiety and stress and further exacerbates a difficult situation.

Education

At the start of any rehabilitation programme it is important to give a clear and logical explanation as to why someone continues to experience pain. We have evolved such that our behaviour changes in the presence of pain and it is a signal that tissue damage, or potential damage, is occurring. However, with chronic pain the relationship between tissue damage and pain is absent and people will experience pain when resting. Clearly, another mechanism is involved in chronic pain and the sensitization of nerves and altered brain responses must be discussed and the patient should be given time to ask questions about their particular condition.

I would recommend you read the 'Explain Pain' book written by David Butler and Lorimer Moseley for a clear and reasoned explanation to why we experience chronic pain.

Psychological Interventions

Psychological interventions in the management of chronic pain are important for two reasons. First, living with chronic pain produces many stresses and it is no surprise that anxiety and depression are commonly reported by patients. High levels of anxiety will increase pain perception and so the vicious circle is perpetuated. Second, with alterations in pain processing in the brain, psychological treatments are often used by clinical psychologists and physiotherapists to help patients reinterpret pain signals and develop better coping strategies. If you are recommended to seek this type of treatment the health professional does not think the 'problem is in your head', but recognizes that interventions such as Cognitive Behavioral Therapy (CBT) have an important role in a multidisciplinary team. For example, if you have chronic elbow pain and have been told, incorrectly, that you should not use your arm, then your beliefs about your body needs addressing before you start on a rehabilitation programme.

General fitness

Increasing exercise levels will help in treating chronic pain as it is well documented that exercise improves well-being, mood, strength and function. Furthermore, it will help activate the person with chronic pain and demonstrate that they can achieve set goals. Initially, these may be small, however once achieved there will be powerful motivators for long term gains.

Movement re-education

As previously mentioned, pain alters our behaviour and it is not uncommon for people with chronic pain to avoid any activity or movement that increases their pain.

This is known as 'fear avoidance' and people will reduce the normal levels of activity and adopt abnormal movement patterns (e.g limping) which will further aggravate the pain. These altered patterns of movement become ingrained very quickly and the physiotherapists should assess how you move so that appropriate changes can be made to help you function normally.

Recent advances:

- Motor Imagery
- Mirror Therapy

Motor Imagery

As an example of most motor imagery, close your eyes and imagine signing your name with your dominant hand. Now imagine trying to sign your name with your other hand—it's much harder with your non-dominant hand. When we think about moving our body, and even when we watch someone moving, we are actually firing the nerves in the brain that are associated with that action. Brain cells called 'mirror neurons' fire in response to movement and this is one way we can learn new movement patterns.

The relevance to someone with a painful arm who experiences pain when moving is that rehabilitation can begin by utilizing imagery to learn to move again or to modify a faulty movement pattern. If you limp due to a painful leg neuropathy, imagine walking smoothly and keeping your shoulders level. These techniques can often start the development of new movement patterns in a non threatening way as you mentally rehearse the action.

Mirror Therapy

Remember, pain and movement are closely interlinked within the brain. The body experiences pain and often limits movement as a defense mechanism to protect a perceived threat. This is entirely normal, but leads to many of

the chronic pain states we see in society. Mirror therapy (see <http://www.gradedmotorimagery.com/mirror.htm> for an explanation) is used to re-educate movement and uses the illusion of movement, by placing the painful hand in a mirror box (see fig.1). The non painful hand moves against the mirror and as the person watches the mirror they perceive their painful hand moving.

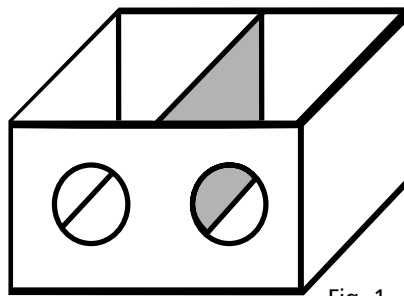


Fig. 1

Thus, movement can be slowly re-educated without causing pain and helps to re-establish the brain's connectivity for the faulty hand. Even people with 'phantom limb pain' following an amputation, can be helped with this form of therapy, as the brain can be fooled into thinking the body part has returned and the nerves to this limb will fire again.

A final thought

It is impossible to give a physiotherapy programme to a range of people with highly complex neuropathies and the topics covered in this article are to educate you about the latest thinking regarding rehabilitation. Find a physiotherapist who is recommended to you and has some experience of treating complex neuropathies. Everyone is different but, given time, many people can be helped. The key points are to find someone who can

- Explain your problem and help reduce your concerns.
- Give you realistic goals and targets
- Develop a self management strategy
- Activate you by a graded, progressive programme of exercise

- Re-establish correct movement patterns in the faulty area(s)
- Aim to return you to your previous level of activity.

And finally, now is an exciting time for any physiotherapist to be working as new research based rehabilitation is developed. More importantly, it gives new treatments that offers realistic hope to many people living with chronic pain and disability.

Further reading.

Phantoms in the Brain: Sandra Blakeslee and V.S. Ramachandran. Published by Harper Perennial 2005

The Brain that Changes Itself: Norman Doidge. Published by Penguin

Explain Pain: David Butler and Lorimer Moseley Published by NOI publications

Useful web sites for further information.

Mirror Therapy explained: <http://www.gradedmotorimagery.com/mirror.htm>

Graded motor imagery (treatment approach): <http://www.gradedmotorimagery.com/>

Research papers.

Baliki et al. (2008) Beyond Feeling: Chronic Pain Hurts the Brain, Disrupting the Default-mode Network Dynamics The Journal of Neuroscience Feb 6, 28(6) 1398-1403.

Moseley L (2002) : Combined physiotherapy and education is efficacious for chronic low back pain. Australian Journal of Physiotherapy 48: 297-302

Thacker M, Moseley GL, Flor H. (2009) Management is more than pills. BMJ (Clinical research ed.)339:b3502.

Simmonds MJ, Moseley GL, Vlaeyen JW. (2008) Pain, mind, and movement: an expanded, updated, and integrated conceptualization. The Clinical Journal of Pain. May;24(4):279-80.

Merzenich, M. Metal. (1983) Topographical organization of somatosensory cortical areas 3b and 1 in adult monkeys following restricted deafferentation. Neuroscience, 8(1): 33-55