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A process approach in manual and physical therapies: beyond the structural model

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KEYWORDS

Process Approach, Structural Model, Manual and Physical Therapy

ABSTRACT A Process Approach is a current therapeutic model for manual and physical therapists; in particular, in the area of musculoskeletal and pain care (Lederman, 2013). A Process Approach promotes a view that the loci of recovery and health are innate processes within the body/person, and are influenced by the individual's environment (physical, psychological and social). The role of the therapist is to co-create with the patient environments that support these self-recovery processes. A Process Approach is a practical alternative to the traditional Structural Model in manual-physical therapies. It has important implications for clinical and self-care management as well as treatment cost-effectiveness. This approach also redefines the traditional therapist-patient roles in manual and physical therapies. A Process Approach provides a potential new framework for education and research in manual therapy.

Introduction

There is a shared premise in manual and physical therapies that all individuals have a self-healing capacity; and, that the viability of this system determines the person's ability to recover their health and functionality. It is also assumed that recovery can be optimised by removing particular obstacles that impede self-healing (Mootz & Phillips, 1997; AACOM, 2015).

In manual and physical therapies the obstacles to self-healing are often believed to arise from faults, misalignments or imbalances within the body's structure. By removing these structural obstacles damaging stresses can be minimised and physiology improved. When achieved, this "utopian" structural state could help self-healing, prevent the development of pathology and support well-being (Mootz & Phillips, 1997; AACOM, 2015). This state could also reduce the energy costs to the system; energy that can be "utilised elsewhere" for self-healing. This therapeutic approach is the basis of a Structural Model in manual and physical therapies. This model is frequently used to rationalise the cause of the patient's complaint as well as to justify the clinical management.

A Process Approach shares the view that the body/person has the capacity for self-healing. However, the focus in a Process Approach is to identify the dominant processes associated with recovery. Once identified, the aim is to co-create with the patient environments that support these innate recovery processes. This is where a Process Approach takes a different therapeutic vector from a Structural Model. In a Process Approach the management is aimed directly at supporting the recovery processes rather than indirectly altering biomechanics/structure/anatomy or posture, as proposed in a Structural Model.

Why do we need a new clinical model?

The Structural Model is derived from 500 years of anatomy and biomechanics in which the body is viewed as a machine; and deeply influenced by 20th century orthopaedics - the wishful belief that permanent structural change can be attained by knife-free "manual surgery", e.g. correcting leg-length discrepancies, balancing muscle pairs, normalising spinal curves, freeing and adjusting vertebra or joints, balancing the pelvis, influencing rib position, rearranging the cranial bones or remodelling fascia by manual means.

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Research in the last two decades has eroded the foundations of the Structural Model. It has been demonstrated that perceived asymmetry, imbalances or postural deviations are normal biological variations and not pathology (Lederman, 2011). Research in this field has demonstrated that the cause of many common musculoskeletal and pain complaints cannot be explained by biomechanics, structure or even posture (Bakker et al, 2009; Roffey et al, 2010; review, Lederman, 2011). This applies to many of the conditions seen regularly in manual and physical therapy practice. Included are: acute and chronic low back and neck pain (Dieck, 1985; Hamberg-van Reenen 2007; review Lederman, 2011), shoulder conditions such as impingement and frozen shoulder (Zuckerman & Rokito, 2011), cuff tears (Tashjian, 2012; Tashjian et al, 2014) tendinopathies (Ackermann & Renström, 2012), pain conditions in the upper half of the body including various periscapsular pain conditions (Hamberg-van Reenen 2007; Waersted et al, 2010) and various types of headaches (Haldeman & Dagenais, 2001; Fernández-de-las-Peñas et al, 2007; Fernández-de-Las-Peñas et al, 2007). This implies that a structural reorganisation/harmonisation of the body is unlikely to be therapeutically beneficial in managing these conditions.

There is also a practical limitation to a Structural Approach. The assumed anatomical changes brought about by manual means are practically unattainable. The forces produced by manual techniques and duration of exposure to these physical challenges are far below the threshold required for long-term adaptive changes (see discussion, Lederman, 2013). Tissues have loading-to-adaptation thresholds which are often many times the force that can be generated by manual techniques (Cyron & Hutton, 1981; Chaudhry et al, 2008). Without this loading-to-adaptation threshold our tissues would progressively become lax by the forces produced by muscle contractions and the physiological stresses of daily activities (Ramey & Williams, 1985; Nilsson & Thorstensson, 1989). Furthermore, long-term tissue and neural adaptation requires prolonged exposure to physical activities (Prosser, 1996; Harvey et al, 2000; Harvey et al, 2003; Ben et al, 2005; Ben & Harvey, 2010). To induce an adaptive tissue change, the manual events would have to be repeated for many hours daily, over several weeks or even months (Bergmann et al, 2007; Arampatzis, 2010; review, Lederman, 2013; Rohlmann et al, 2014). These time scales are unlikely to be met in a clinical setting.

Even if we accept the argument that musculoskeletal conditions can be improved by biomechanical/structural change we would still face the clinical hurdle of how to achieve it by manual means. Here is where a Process Approach provides a practical clinical alternative to the Structural Model.

The three recovery processes

As discussed above, a basic proposition in manual therapies is that an improvement in health is dependent on the person's innate, self-healing / recovery processes. This raises the question, what are these recovery processes and how do they differ from one condition to another? For example, which process underlies recovery from acute injury, say an ankle sprain, and how does it differ from the process associated with recovery from a persistent condition, such as chronic low back pain?
There are three principal processes through

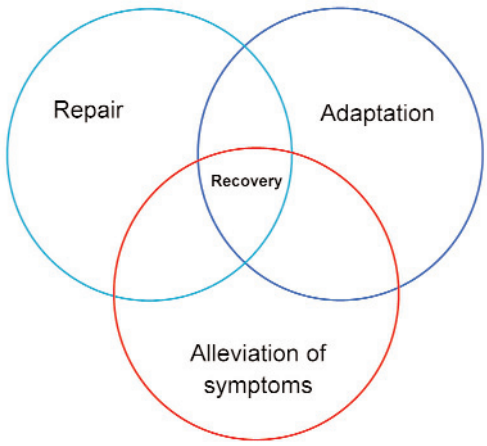

Fig 1 : The three recovery processes. Recovery from most musculoskeletal and pain conditions is associated with one or several of these processes.

which a person can recover from any condition: repair, adaptation and alleviation of symptoms (Fig. 1). If a person, say, sprained their ankle or had surgery we would expect them to recover their functionality through a process of tissue repair (Witte & Barbul, 1997; Mutsaers et al, 1997; Enoch & Leaper, 2008; Bunker et al, 2014). On the other hand, if a person was immobilised following an ankle fracture we would expect dysfunctional tissue and motor control adaptation to take place (Kidd et al, 1992; Liepert et al, 1995; Muijka & Padilla, 2001; Seki et al, 2001). Subsequently, after removal of the cast, functional recovery would be dependent on adaptive tissue changes and central nervous system plasticity, also an adaptive process (Kidd et al, 1992; Tillman & Cummings, 1993; review, Lederman, 2005 & 2010). In this example, a functional recovery is associated primarily with adaptive processes.

In the next example a person is experiencing chronic back pain for several months. Within a few weeks of treatment there is a dramatic improvement in their condition. Imagine that a MRI scan was taken before treatment and another several weeks later when the patient is pain-free. Would we expect to see any tissue changes that could explain the person's improvement? The answer is probably not; the spinal findings/pathologies are likely to remain unchanged (Boos et al, 1995; van Tulder et al, 1997; Savage et al, 1997; Borenstein et al, 2001; Borenstein et al, 2001; Waddell & Burton, 2001; Jarvik et al, 2005; Carragee et al, 2006; Kanayama et al, 2009). We can therefore assume that their recovery is related to attenuation of their symptoms rather than by tissue repair or adaptation (Grubb, 2004; Woolf, 2011). Under these circumstances the patient would consider their back condition to be fully recovered as they are now able to carry out daily activities without pain. Hence, another form of recovery is through symptomatic change. Probably this course of recovery underlies the clinical successes of many chronic musculoskeletal pain conditions (Fig. 2).

Fig. 2 - Recovery by alleviation of symptoms. This patient has extensive glenohumeral (GH) joint pathology including complete rupture of GH capsule and tears of supraspinatous and long head of biceps (A). Despite this extensive pathology and after six weeks of rupturing his biceps tendon the patient was pain free and returned to playing tennis. Three years after the injury he is still playing tennis regularly, without any shoulder pain (With permission from the patient).

The recovery processes in many conditions can be readily identified. Acute injuries and post-surgery conditions are associated with tissue damage. Therefore, repair is likely to be the principal recovery process, particularly in the first 1-3 weeks after onset; depending on tissue involved and extent of damage (Eming et al, 2007). This includes conditions such as acute spinal and disc injuries, joint / capsular-ligamentous damage, muscle tears, etc. (see review, Lederman, 2005).

Recovery by adaptation is associated with chronic conditions where movement losses are due to tissue and motor control changes. Included are post-immobilisation conditions, long-term contractures after injury or surgery (see review, Lederman, 2005), stiff phase of frozen shoulder (Neer et al, 1992; Uhthoff & Boileau, 2007), as well as central nervous system damage such as stroke (Johansson & Belichenko, 2002; Molteni et al, 2004). Change in movement patterns and use of posture are also expected to be associated with adaptive neuromuscular processes (Schmidt & Lee, 2005; review, Lederman, 2010).

A change in symptoms may play an important role in recovery in a wide range of chronic conditions; included are: improvement in low back and neck pain (Boos et al, 1995; Jarvik et al, 2005; van Tulder et al, 1997; Borenstein et al, 2001; Waddell & Burton, 2001; Savage et al, 1997; Borenstein et al, 2001; Kanayama et al, 2009), symptomatic relief in osteoarthritis (Staud, 2011; Lee et al, 2011; Murphy, 2012), improvements in painful tendinopathies (Alfredson & Lorentzon, 2002; Khan, 2003; Rio, 2014) and other unexplained local and regional whiplash-associated pain conditions (Koelbaek-Johansen, 1999; Stone, 2013).
It should be noted that symptomatic recovery is not limited to pain experience. It includes other symptoms of 'dis-ease', such as stiffness, paraesthesia and experiences such as anxiety and depression.

Overlapping processes

In many conditions recuperation is associated with a combination of recovery processes. This is depicted by the overlap areas in Fig. 1.

The overlap between repair and adaptation represents the recovery associated with remodelling of tissues after injury. Initially, repair is dominated by an inflammatory/ immune response that in time shifts towards regeneration and later remodelling processes (Eming et al, 2007). These latter processes are largely adaptive in nature, influenced by the individual's activities (Järvinen & Lehto, 1975; Järvinen, 1976 & 1993; Goldspink, 1985; Montgomery, 1989; Kiviranta et al, 1994; Buckwalter, 1996; Vanwanseele et al, 2002; Vanwanseele et al, 2002; McNulty & Guilak, 2015). This overlap also demonstrates the possibility for dominant recovery processes to change over time; in this example, from repair to adaptation (Fig. 3).

The overlap between repair and alleviation of symptoms is often seen in recovery from acute conditions. This recovery is partly by resolution of inflammation and attenuation of nociceptive excitation at the site of damage. Some of the symptomatic improvement is associated with diminishing central sensitisation and a parallel attenuation of allodynia and hyperalgesia in local tissues (damaged and undamaged, Woolf, 2011).

The recovery associated with alleviation of chronic pain is represented by the overlap between alleviation of symptoms and adaptation. Often chronic pain is associated with central sensitisation, a process related to neural plasticity and adaptation (Woolf, 2011).

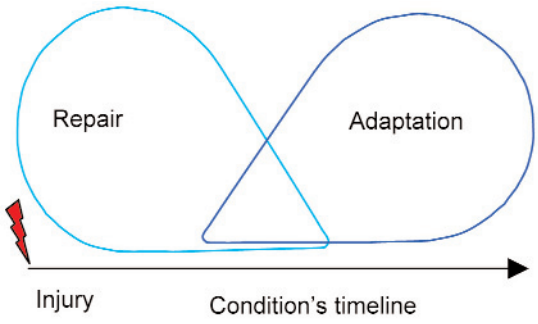

Fig. 3 - Transformation and overlap of processes from repair to adaptation

This overlap is seen in conditions such as chronic spinal pain, postoperative pain or regional pain syndromes. Recovery in these conditions is likely to be due to long-term desensitisation; a process also associated with neuroplasticity (Woolf, 2011).

In clinical reality, several of these processes overlap in any given condition. However, often one of these three processes tends to dominate the person's process of recovery (Figs. 4a, b & c).

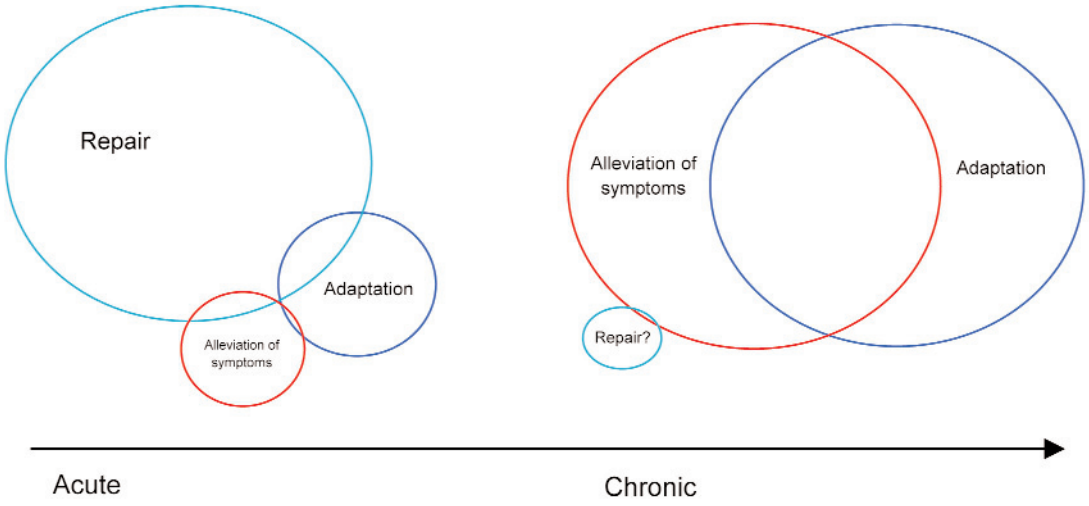

Fig. 4a - Processes associated with recovery in acute and chronic low back pain. The overlap between alleviation of symptoms and adaptation represents CNS plasticity associated with recovery in chronic LBP.

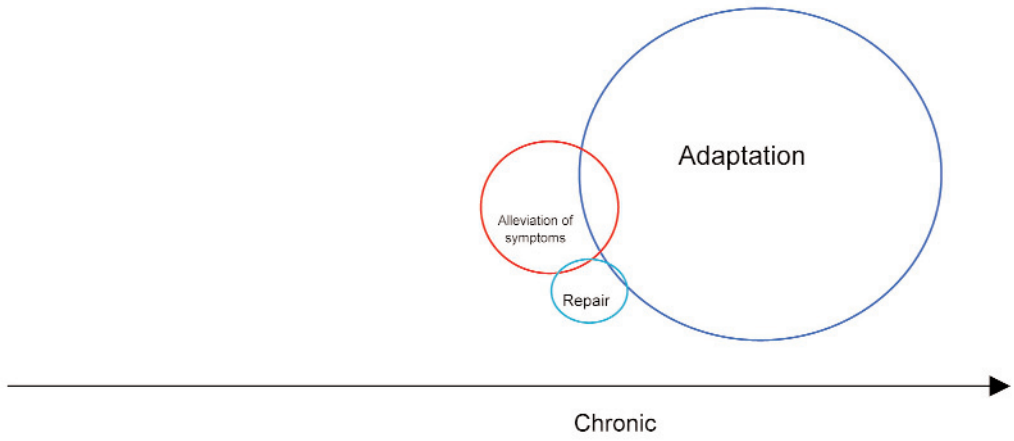

Fig. 4b - Processes associated with functional recovery after immobilisation.

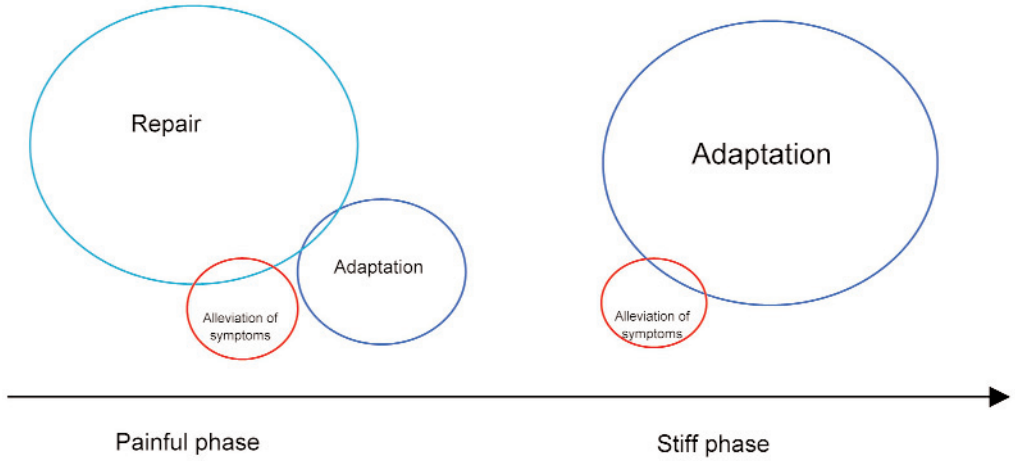

Fig. 4c - Processes associated with recovery in frozen shoulder.

Recovery environments and behaviour

The management in a Process Approach aims to co-create with the patient environments that will support their recovery. But how is this management achieved; on what are these recovery environments modelled?

To answer this we need to look back at the self-healing proposition. When a person is faced with the experience of injury, pain or loss of functionality they tend to modify their behaviour. The role of this specific behaviour is to support the underlying physiological process associated with recovery, e.g. reducing weight-bearing activities (behaviour) on a sprained ankle (tissue damage and inflammatory process). This behaviour is part of a multidimensional protective/recovery strategy. This whole person strategy is termed here the recovery response and the behaviour associated with it the recovery behaviour. What humans "do naturally" to recover functionality seems to be well supported by rehabilitation research and pain sciences (see above discussions).

A Process Approach is informed by biopsychosocial research and patient care is modelled on the recovery behaviour. The management revolves around identifying and amplifying the behavioural traits that are beneficial to recovery (Fig. 5).

Behaviour and repair environment

The recovery behaviour associated with repair is marked by a short period of withdrawal from physical activities that are potentially damaging. This corresponds to the inflammatory phase of repair when tissues are at their most vulnerable state. This period is followed by a regeneration and remodelling phase and is matched by activities that gradually load the affected areas; a behaviour that optimises recovery of the tissues' physiological and biomechanical properties. (Gelberman et al, 1980; Strickland & Glogovac, 1980; Gelberman et al, 1982; Montgomery, 1989; Hargens & Akeson, 1986; Akeson et al, 1987; Buckwalter & Grodzinsky, 1999). This behaviour implies that management of acute injuries could include manual techniques that emulate this physical environment, i.e. providing moderate cyclical loading to the affected area. This can be in the form of passive or active mobilisation techniques or active movement challenges gradually applied to the affected area.
This management modality can be applied to a wide range of conditions including all post-surgery care, connective tissue, muscle and joint injuries, disc prolapse or any other acute condition. However, within a short period from onset (say, 2-3 weeks) the repair process becomes more adaptive in nature suggesting a shift towards an adaptive environment.

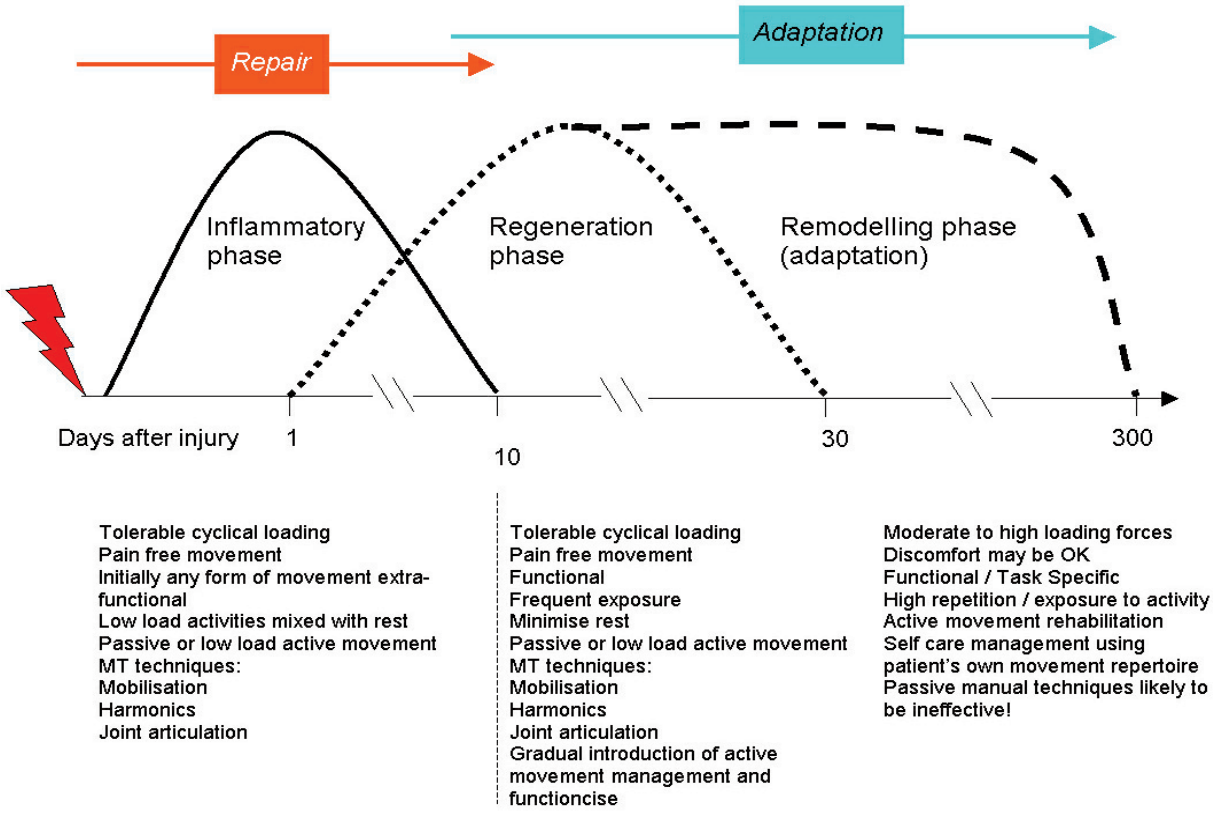

Fig. 5 - Management considerations in repair and adaptation processes.

Behaviour and adaptation environment

Adaptive processes are profoundly influenced by the recovery behaviour. Let's for a minute imagine a condition such as ankle joint contractures and range of movement limitation following immobilisation in a plaster cast. In the absence of medical care the individual will attempt to execute activities which matter to them most such as standing and walking. This trait of carrying out movement which resembles the intended activity is called task specific practice; or task rehabilitation when applied as a therapeutic intervention (Lederman, 2010). Added to this, the person will gradually increase the physical loading on that limb as well as extend the time spent in these activities.

This recovery behaviour provides important information about the nature of the adaptation supporting environment. The management strives to be active rather than passive. There is strong evidence that active movement provides the necessary loading forces required for tissue adaptation (Cyron & Hutton, 1981; Chaudhry et al, 2008; Arampatzis, 2010). Furthermore, motor control recovery is highly dependent on active, task specific movement (Goodbody & Wolpert, 1998; Van Peppen et al, 2004; Healy & Wohldmann, 2006; van de Port et al, 2007; Bogey & Hornby, 2007; Sullivan et al, 2007; Flansbjer et al, 2008; Cano-de-la-Cuerda et al, 2015). Motor control science suggests that movement should resemble daily activities selected from the individual's movement repertoire (Lederman, 2010 & 2013; Cano-de-la-Cuerda et al, 2015). For example, range losses due to ankle joint contracture could be rehabilitated by daily activities that challenge these movement losses, such as walking, use of stairs, etc. However, movement or manual techniques that are passive or dissimilar to the individual's recuperation objectives are generally less effective in supporting functional recovery (Newham & Lederman, 1997; Lederman, 2010 & 2013).

Behaviour and alleviation of symptoms

The question that comes into mind here is what actions do individuals take in order to alleviate their pain / symptoms; and can this behaviour be amplified as part of manual/physical therapy management?

To explore pain modulating environments we need to look at the nature of acute and chronic pain. Often acute pain has a clear protective biological role to prevent further tissue damage. Chronic pain, on the other hand, has a more obscure biological role, as underlying tissue damage may not be evident or necessarily the cause of pain (Niv & Dvor, 2004; Woolf, 2011). This suggests that in acute conditions the therapeutic aim is to support repair (as discussed above), rather than alleviating pain. It would be expected that the pain experience will attenuate in line with the resolution of repair. Hence, the management in acute pain conditions can follow the principles of "active rest", i.e. mixing a period of rest with low loading activities (see, behaviour and repair environment above).

In chronic pain conditions, where pain has an obscure role the management can focus directly on pain alleviation and return to functionality. Here, the symptom alleviating environment is also modelled on the recovery behaviour: maintaining daily activities, introduction of progressive physical challenges (overloading, repetition) and using the individual's own movement repertoire (specificity), when possible. Concomitantly, providing support, reassurance and empowering information plays a dominant role in management of persistent symptoms (Garland, 2012; review, Lederman, 2013; Nijs et al, 2013).

The role of manual therapy in alleviating symptoms may be associated with touch effects and "soothe-seeking" behaviour (review, Lederman, 1998 & 2005). It has been observed that when individuals are in distress or pain they will often seek to alleviate these experiences through social and physical contact with others, e.g. touch (van der Kolk, 2002; Schweinhardt & Bushnell, 2010; Garland, 2012; Jaremka et al, 2014). This behaviour contains psychological as well as physical components that are partly "hard-wired" within human behaviour and reinforced in childhood through the parent-child relationship (Harlow, 1959 & 1961; Hooker, 1969; Burton & Heller, 1964; Morris, 1971; Reite, 1984; Schanberg et al, 1984; Field et al, 1986; van der Kolk, 2002). When a child (care-seeker) experiences pain they will actively seek to soothe it by contact with a significant other/parent (caregiver). In response the parent will often use a soothing, caring tone of voice and body manner that invites closeness and contact with the child. The child's anxieties are often soothed by cognitive rational means ("you'll be alright; it's only a small cut"). The parent / care-giver will often make some form of physical contact with the child, habitually lifting and rocking the child or rubbing the painful area (Bowlby, 1969; Gordon & Foss, 1966; Korner & Thoman, 1972). Within this interaction empathy and compassion play an important role in support-

Care-seeking/giving behaviour	**Clinical parallels**
Care-giving and care-seeking	Therapeutic relationship
Soothing-calming anxieties	Cognitive behavioural tools
Reassurance	Reassurance
	Counselling skills
	Diffuse descending inhibition
Compassion, empathy	Compassion, empathy, mirror neurons
Distraction from symptoms (physical or cognitive)	External focus of attention
Touch	Manual techniques, massage, soft-tissue manipulation, cranial
	Diffuse descending inhibition
Rubbing affected area	Massage
	Superficial proprioception stimulation
	Mechanoreceptor-nociceptive gating mechanisms
Holding and rocking	Mobilisation techniques, Harmonics, Traiger Method
	Deep proprioceptive-vestibular stimulation
	Mechanoreceptor-nociceptive gating mechanisms

Table 1. Alleviation of symptoms. Care-giving and care seeking behaviour and clinical parallels.

ing self-regulation and alleviation of symptoms. It is likely that this care-giving and care-seeking is mirrored within the therapist-patient relationship; where elements of this interaction are amplified in clinic, Table 1 (Lederman, 1998 & 2005).

Multidimensional recovery environment

The management in a Process Approach aims to co-create with the individual environments in which recovery can be optimised. This environment contains behavioural, psychological-cognitive and social-cultural dimensions (Fig. 6).

The recovery processes are heavily influenced by the individual's physical-psychosocial environment. These factors support the exposure to beneficial movement challenges as well as having important psychological influences. These can have positive effect on well-being and directly contribute to alleviation of symptoms (Smeets et al, 2006; Buchner et al, 2006; Garland, 2012; Vachon et al, 2013; Jaremka et al, 2014; Kamper et al, 2015). For example, adaptation requires tissue loading and frequent exposure to physical stresses. These physiological needs can only be met when the individual engages in activities that provide such challenges. However, the individual's cognitions about their condition, psychological state and social-cultural factors may influence their level of engagement in recovery behaviour (Bauman et al, 2012).

Imagine an individual who had a plaster cast removed after ankle fracture. Their functional recovery will be highly dependent on weight-bearing activities such as walking and climbing stairs. This behaviour, in turn, depends on cognitive and psychological factors, motivation, needs and functional goals ("get back to work, be able to play tennis again", etc.). But this recovery behaviour is also dependent on multiple environmental factors. They include social (going out with friends), occupational (walk to work), and recreational opportunities (cycling, running).

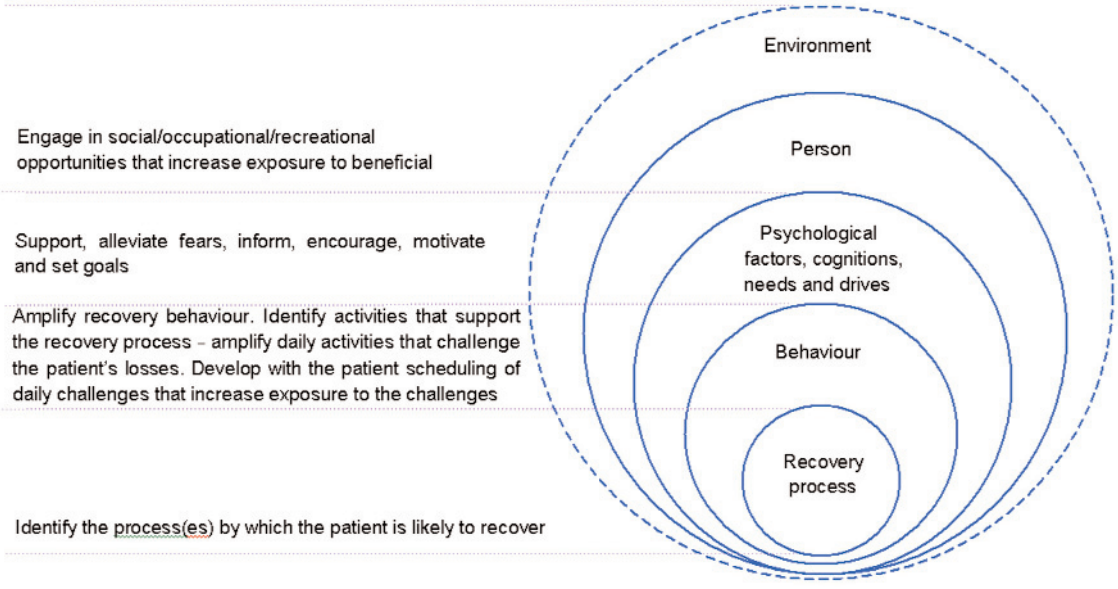

Fig. 6 - Multidimensional management. The recovery processes are highly dependent on the actions that a person takes within their environment. These factors need to be acknowledged and addressed in the management. Adapted from LEDERMAN E 2013 THERAPEUTIC STRETCHING: TOWARDS A FUNCTIONAL APPROACH. ELSEVIER

Obstacles to recovery

Back to the original premise that the person has self-healing capacity; if that's the case why do some individuals fail to recover their functionality?

Let us return to the example above of the post-immobilisation patient. If the individual is depressed, has fear of movement or re-injury or lacks motivation they are less likely to engage in recovery behaviour, say, going for frequent walks (Kori et al, 1990; George et al, 2006; Elfving et al, 2007; Leeuw et al, 2007; Thomas et al, 2008; Rainville et al, 2011). Equally, other environmental factors can influence their recovery engagement. For example, living in a small high-rise flat in a neighbourhood where stepping out for a walk is too dangerous; or places where the climate does not provide such opportunities (e.g. icy pavement or intense heat). Hence, recovery and its obstacles are multidimensional processes and are addressed during the management (Table 2).

In a Process Approach there is an emphasis on exploring with the individual opportunities/possibilities that could support their recovery. The management also explores the obstacles which may impede this process. As discussed previously, these obstacles are often complex bio-psychosocial processes and rarely structural or postural.

Functioncise and self-care

There are 168 hours in a week. Most therapists will see their patients once or twice a week. This will provide a hands-on duration of, say, 30 minutes to an hour per week. So the question is, where does the healing take place; what happens in the 167 hours when we don't see the patient?
Repair, adaptation and processes associated with alleviation of symptoms are highly dependent on frequent daily movement challenges, with some processes such as adaptation requiring several hours per day of stimulation (Kjaer et al, 2009). The weekly clinical contact time with the patient or even the addition of a structured exercise regime is unlikely to meet these physiological demands. It suggests that the clinical session provides the initiation of management. However, what the individual does within their environment plays a crucial role in their improvement. But in what activities should the patient engage beyond the session?

The practical solution is to integrate the movement challenges into the patient's environment and daily activities. This form of management is termed "Functioncise", where particular daily activities are amplified to provide the movement challenges that support the recovery processes. In this approach the individual is encouraged to use their own movement repertoire to recover their functionality (Fig. 7).

Obstacles to recovery	
Psychological	Anxieties, emotional states (e.g. depression), priorities (take care of the children), motivation, attitudes & beliefs, e.g. locus of health
Pain & pain anxieties	Limitation due to pain, fear of developing or worsening pain, fear of re-injury, fear of future disability
Cognitions about condition	Lack or misinformation about the nature of the condition
Social/cultural	Social attitudes (some cultures are low on active life styles), life styles (recreational activities, life-work balance), fads and opportunities
Occupational	Lack of rest, lack of variety, lack of autonomy, work environment (physical or social)
Physical capacity	Severe MSK damage, CNS damage,
Health Status	Viability of the systems underlying recovery processes. Comorbidities, e.g. cardiovascular disease, diabetes and cancers
Environment	Climate, terrain, access to public parks, transportation, etc.

Table 2. Obstacles to recovery (to name but a few). Note that structural and biomechanical factors are not listed as major obstacles to recovery.

It is a "ready-made" therapy where movement challenges are selected from activities that are shared by the individual and others (walk, stand, sit, etc), as well as from their unique recreational or occupational movement repertoire. For a person who is recovering from a knee injury and is unable to walk or climb stairs, the management will be to challenge walking gradually, and then stair-climbing, etc. If they play tennis this activity will also be incorporated later in the management (for full discussion on this form of management see Lederman, 2010 & 2014). Hence, in a Process Approach the management is person centred and highly individualised.

In contrast, a Structural management aims to improve functionality by structural and biomechanical means, e.g. adjusting, balancing, strengthening specific muscles, fixing, repositioning, realigning, resetting and postural and movement correction. This is reflected in the exercises by which these goals are pursued. Structural orientated rehabilitation is mostly extra-functional in nature; it contains movement or activities that are outside the individual's experience. They include exercises which are dissimilar to a recognisable functional movement. These practices often promote separation of movement from its goal focusing on particular muscles, muscle groups or chains (e.g. core exercise, scapular stabilisation and muscle-by-muscle rehabilitation). Often movement is fragmented into smaller components, e.g. working specifically on knee extension strength in sitting to improve walking. Research suggests that such extra-functional practices are not effective in improving functional daily activities (Goodbody & Wolpert, 1998; Van Peppen et al, 2004; Healy & Wohldmann, 2006; van de Port et al, 2007; Bogey & Hornby, 2007; Sullivan et al, 2007; Flansbjer et al, 2008; Cano-de-la-Cuerda et al, 2015; see reviews, Lederman, 2005, 2010 & 2013).
Engaging the individual in "functioncise" provides several important benefits. The patient is using their own movement resources; what they already know and recognise. They are not required to learn new exercise regimes which take time and effort, are often costly and unachievable for most patients (e.g. learning to contract specifically the core muscles). A functional management seldom relies on any specialized exercise equipment or set-aside time for exercising. The remedial movement challenges are integrated into the person's daily activities; they can be practised anywhere and at any time. This approach uses the patient's own recovery goals. It empowers them to self-care and supports adherence to the recovery programme (Ice, 1985; Sluijs et al, 1993; Locke, 1966; Evenson & Fleury, 2000; Jackson et al, 2005; Jolly et al, 2007; Chan et al, 2009; Jordan et al, 2010; De Silva 2011; Bauman et al, 2012).

Self-recovery: redefining the therapeutic relationship

The capacity of the person for self-healing/recovery suggests the need to re-examine the traditional therapist-patient roles. If individuals can self-heal, than what is the therapist's role in this process?

In a structural approach the patient is highly dependent on the therapist for removing the structural obstacles to recovery, e.g. spinal manipulation or cranial techniques. These techniques cannot be self-administered. The treatment table is often the centre-piece of a structural treatment. This emphasises the position of the patient as a passive recipient of care. Under these therapeutic circumstances the patient rarely achieves autonomy and the locus of health remains permanently in the hands of others.
A Process Approach provides the individual with a different message. It promotes the view that recovery lies fully within their body and the actions they take (Chan et al, 2009). Most of the clinical management by the therapist can be replicated by the patient within their environment. The patient is considered a capable/valuable contributor to the management, and is invited to take an active part in their recovery. In a Process Approach the therapist has the important role of health educator, as well as supporting and facilitating the individual in their recovery process (Burton et al, 1999; Linton & Andersson, 2000; Moseley et al, 2004; McCall & Ginis, 2004; Henrotin et al, 2006; Nijs et al, 2013).

Role of manual therapy techniques in a process approach

The role of hands-on, manual therapy is redefined in a Process Approach. As discussed previously, in a Structural Model manual techniques are often used to correct or remove an obstacle in the structure. In a Process Approach manual techniques are used to support the underlying recovery process.

In a Process Approach manual techniques are viewed as a vehicle to deliver touch effects. These can have a positive influence on sense of self, well-being and body image (review, Lederman, 1998 & 2005). Touch effects can also have profound calming-soothing influences. Passive or active mobilisation of the affected area by the therapist can provide implicit reassurance that movement is safe. Taken together, all these factors can support recovery, particularly for alleviation of symptoms and pain.

Manual techniques (passive or active) that provide local or more general movement can be used to support tissue repair processes. This could be in situations when the patient is unable to engage in recovery behaviour (often due to pain or physical incapacity).

There is a clear message from research that manual therapy techniques, in particular passive techniques, are likely to have little or no effect on tissue adaptation or neuromuscular/motor plasticity (Lederman, 1997, 2010 & 2013; Kjaer et al, 2009; Tardioli et al, 2012). In this area manual therapy can be used for guidance or to support the active movement performed by the patient. For full discussion and demonstration of active management in clinic, see Lederman, 2010.
In a Process Approach manual management can be an important therapeutic tool. Fig. 5 and Table 1 provide some suggestions about matching the most suitable techniques/ management to the individual's recovery process.

A clinical task

Next time you are with a patient ask yourself a simple question: by which process is this person likely to recover?

Summary

Some of the differences between a Structural and a Process Approach are summarised in Table 3.

- The body / person has self-healing / self-recovery capacity
- The effectiveness of manual and physical therapy depends on the person's self-recovery capacity
- A Structural Model holds the view that self-recovery can be enhanced by removing structural/postural/ biomechanical obstacles
- A Process Approach promotes the view that the self-healing capacity can be supported directly without the need to remove structural obstacles
- A Process Approach identifies three key processes associated with recovery: repair, adaptation and alleviation of symptoms
- In a Process Approach the aim is to co-create with the individual environments in which their recovery process can be optimised
- Self-care is a dominant component in a Process management. The actions that an individual takes within their environment are seen as a key for recovery
- All human activities provide physical challenges. Specific daily activities can provide the movement challenges necessary for optimal recovery. This approach where specific activities are amplified is termed functioncise
- Manual therapy can be useful as part of an overall management. The role of manual therapy is to support the patient's recovery processes

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Structural Model	Process Approach
Self-healing / recovery premise	Self-healing / recovery premise
Management focuses on creating ideal bio-mechanical conditions for recovery	Management focuses directly on recovery processes
Manual techniques or physical activities aim to correct structure or biomechanics	Manual techniques or physical activities support recovery processes
Medical diagnosis + biomechanical and anatomical considerations	Medical diagnosis + by which process will the individual improve
Tissue causing symptoms	Identifying underlying recovery processes. Tissue identification not essential for management
Therapist or clinically determined management goals	Patient determined management goals
Structural change as therapeutic target	Patient determined functionality as therapeutic target
Management in the biomechanical dimension	Multidimensional management
Therapist dependent / external locus of health	Emphasis on self-care / independence / autonomy internal locus of health
Pathologising normality (postural deviations, asymmetries, imbalances, weak muscles, etc.)	Focus on pathways/opportunities to recovery. Positive messages and empowerment
Recovery occurs during the clinical sessions	Recovery occurs in individual's environment
Exercise dissimilar to human movement (extra-functional)	Functional management created from the patient's own movement repertoire
Education - anatomy / biomechanics dominated	Education - processes directed

Table 3. Summary: comparison of Structural Mode to Process Approach. These are general principles. They do not necessarily reflect the individual styles or views of therapists

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