GWENDOLEN JULL, AO, PhD, MPhty, FACP

Discord Between Approaches to Spinal and Extremity Disorders: Is It Logical?

Rapid advances in the basic, clinical, and behavioral sciences are molding developments in conservative management of musculoskeletal disorders. A review of the literature over the past 2 to 3 decades quickly reveals a wealth of knowledge in the fields of pain, movement, sensorimotor control, and behavioral sciences as they pertain to various musculoskeletal disorders, to name a few.

Curiously, there seems to be discord developing between approaches to the assessment and management of patients, depending on whether they present with an extremity or spinal disorder. It seems that in today’s clinical world, a person who presents to a physical therapist for management of chronic hip pain of a 2-year duration with radiological evidence of osteoarthritis (OA) stands to be managed quite differently than that person would if he/she presented with chronic low back pain of a 2-year duration with radiological evidence of OA—yet, same person, same cognitions and behaviors, same education, same history of pain, same pathology, similar pathophysiology, and conditions that are anatomically only 4 inches apart.

This viewpoint will comment on examples of differences emerging in some current practices. The aim is not to present a scientific treatise about underpinning sciences and evidence-based practice or to comment on what is correct or incorrect. Rather, the aim is to stimulate thought on the seeming discord in clinical practice, with respect to both the clinical evaluation of, as well as management approaches to, extremity and spinal disorders.

CLINICAL EVALUATION
Differences in conservative management approaches between extremity and spinal disorders are illustrated in the recent edition of the multi-authored text, Grieve’s Modern Musculoskeletal Physiotherapy. This text presents a consolidated overview of contemporary knowledge and practice and was written by a range of international authors. It illustrates differences in approaches between extremity and spinal disorders, despite these having a common basic and behavioral science base and adopting a common biopsychosocial framework for patient management. Conspicuously, the basic principles and format of the clinical evaluation are concordant across upper- and lower-limb disorders. In contrast, there is no consistency in principles of evaluation in the spinal region. The text presents 4 different evaluation/classification approaches currently being used for lumbar spine disorders (and there are many more if all published models are considered), and 3 approaches for the lumbopelvic region.

Another notable point of difference is that evaluations of disorders of the upper and lower limbs retain a pathoanatomical framework within the biological domain of the biopsychosocial model. One outcome of the physical examination is to identify structural impairments/tissue incompetence toward making a provisional structural diagnosis. In contrast, provisional and basic structural diagnosis in spinal disorders is discouraged, even though, for instance, recent evidence indicates that a basic diagnosis of a cervical zygapophyseal joint arthropathy can be made quite accurately from a clinical examination that features manual segmental examination.

These basic differences in regard to pathoanatomy are present, even though both the spine and the limbs deal with similar challenges. For instance, limita-
ions of radiological imaging to identify relevant lesions are common to both extremity and spinal disorders and well appreciated and understood. Likewise in common are limitations to the clinical examinations for a definitive pathoanatomical diagnosis. Yet, a clinician has no fear of discussing a diagnosis of hip OA with a patient, but there is an apparent fear of doing harm in discussing a diagnosis of L5-S1 zygapophysial OA with a patient with chronic low back pain. This reticence probably also reflects current diverse opinions on whether there is a presence and the role of peripheral nociception in chronic spinal pain.

The physical examinations of extremity disorders, in common, engage a relatively consistent and comprehensive systems approach to elicit relevant functional, biomechanical, movement, neuromuscular, and sensorimotor impairments. Findings guide treatment prescription. The approach to evaluation of low back pain disorders is not as regular, and if a clinician follows a certain classification method, the physical examination is, in the main, modeled toward instituting a certain treatment approach rather than necessarily screening all systems. Is it possible for the implications of neuromuscular and sensorimotor impairments to be so different between extremity and spinal disorders that they can be dismissed?

MANAGEMENT APPROACHES

In addition to differences in clinical evaluation, there are differences in utilization of certain treatment approaches and techniques in managing extremity and spinal disorders. These can be illustrated by considering management of the acute injury and the use of manual therapy and exercise.

Management of the Acute Injury

Scenario 1 A person sustains a soft tissue sprain of the ankle in a basketball game. The initial approach to management is “PRICE” (protection in the form of a support [eg, semi-rigid brace] to avoid further injury and protect injured structures; rest, which can be in the form of reduced weight bearing with the use of crutches; ice; compression; and elevation to control swelling).

Scenario 2 This same person did not make the game because, on the way, the person was involved in a motor vehicle crash and sustained a soft tissue injury to the neck (a whiplash injury). Same person, a soft tissue injury—yet the initial approach to management is the precise opposite, following current guidelines.

Protection—any form of support (a collar)—should not be used. Rest is not encouraged. Rather, the person is advised to stay active, resume usual activities, and commence exercise. The discord in approaches is quite remarkable.

Manual Therapy

There appears to be no hesitation to place “hands on” in the evaluation and management of most extremity disorders, be they acute or chronic. Manual therapy is commonly used as one mode of treatment in a multimodal program. Rather than any calls for “hands off” in extremity disorders, attention is being directed toward how manual therapy is delivered for best effects within a multimodal program for chronic conditions such as knee OA. In contrast, in the management of spinal disorders, particularly chronic low back pain, the calls for “hands off” have been long-standing and persistent from some quarters. While it is hands off for the back, it is a hands-on approach for mechanical neck pain. Thus, a patient stands to receive a different management approach depending on whether the pain is in the neck or the back.

Exercise Programs

There is concordance in the principles for exercise programs for rehabilitation of extremity disorders. Regardless of the region, the exercise programs in common aim to rehabilitate deficiencies associated with the individual’s disorder, as found in the physical examination. They variously incorporate training to enhance neuromuscular control; proprioception; muscle strength and endurance; flexibility; as well as function-specific training related to work, sport, or activities of daily living. In contrast, there is no consistency or agreement about exercise strategies or training programs for persons with low back pain disorders. Unlike the more comprehensive programs used to rehabilitate extremity disorders, exercise for low back pain variously focuses on movement-based strategies, strength and endurance training, or training neuromuscular control. Very few directly address sensorimotor impairments such as proprioception and balance deficits. This discord in approach to rehabilitation, especially between the low back and extremity disorders, is puzzling.

Current philosophies for pain and its management and use of patient-reported outcome measures as primary outcomes, especially for low back pain, may explain some of this discord.

PAIN

There has been an explosion in research in pain neuroscience. In very simplistic terms, we know that pain is processed “in the brain” across a network of brain regions. There is an increasing appreciation of the complex entity of pain and its processing within the central nervous system and the many different elements that can contribute to the pain experience, including genetic factors, immune system changes, and psychological features.

However, often there is not a clear understanding of what is being referred to as “chronic pain” when approaches to management are advocated. For instance, is it defined by a timeline or pain mechanisms? Some researchers and clinicians focus on central neuroplastic changes and consider that once tissues have healed, peripheral nociception is no longer a major player in a person’s pain state. There is criticism of those who consider any role for peripheral nociception within the biopsychosocial dimensions of a chronic musculoskeletal disorder. This focus is underpinning management approaches...
targeted directly toward the central nervous system, which do not consider a role for physical therapies. However, a singular focus for chronic pain is narrow and incomplete, and dismissal of any role of peripheral nociception in all chronic musculoskeletal conditions is incorrect.

Conditions such as arthritis provide a simple example of a continuing source of peripheral nociception as one of the important features in a chronic state. Furthermore, its “removal” by a total hip arthroplasty, for instance, results in immediate, complete relief of chronic hip pain in the vast majority of people and reversal of preoperative reductions in the gray matter of the neuroplastic brain. In the spine, removal of cervical facet joint nociception via a radiofrequency neurotomy improves pain, disability, nociceptive flexor reflex threshold, range of movement, psychological distress, and pain catastrophizing in a most challenging group of patients with persisting high levels of pain and disability following a whiplash injury.10,11 Furthermore, symptoms and signs returned to preradiofrequency levels within predicted times of nerve regrowth, which further suggests maintenance of a peripheral driver.12

Are Pain Relief and Rehabilitation the Same?

Over the last decades, there has been a focus on patient-centered outcomes. The primary outcomes for most clinical trials for back and neck pain have been a numerical score for pain and a questionnaire regarding disability. Thus, success of any intervention is primarily measured in terms of pain relief.

Pain relief is doubtless an important outcome, but is a focus on relieving pain reflective of physical rehabilitation? Is nothing more expected from exercise for the back or neck other than pain relief? This is not the expectation of exercise programs prescribed for extremity disorders, which aim for resolution of impairments and full functional recovery. Two scenarios of peri-postsurgical management highlight the discord developing between extremity and spinal disorders with regard to the perceived need for physical rehabilitation. The evidence-based guidelines for rehabilitation after surgical intervention for anterior cruciate ligament tears advise a comprehensive program of rehabilitation that progresses through impairment-based, sport-specific training and return to play over a period of 9 to 12 months.14 A clinical trial is in progress to test the efficacy of pain neuroscience education (2 sessions, 1 preoperative and 1 postoperative) for the management of patients undergoing surgery for lumbar radiculopathy.3 Primary outcomes are pain reduction and improvements in endogenous pain modulation, and secondary outcomes are improvement in a functional scale score and return to work.

There is currently enthusiasm for education about pain neurophysiology, and there is evidence that it is superior to traditional education in anatomy and biomechanics, but it remains a unidimensional approach. The biopsychosocial model is well regarded for managing musculoskeletal disorders and points to a multidimensional approach. The Global Burden of Disease Study4 found that low back pain and neck pain rank first and fourth, respectively, of 301 chronic conditions in terms of years lived with a disability. This would point to the need to focus on outcomes of reducing the days/years lived with a disability, and not only pain relief.

FUTURE DIRECTIONS FOR OUTCOMES

Research is revealing the myriad physical and neurophysiological changes, both centrally and peripherally, that are associated with musculoskeletal disorders, as it is identifying behavioral, social, and individual features and their inter-actions. What may help plan optimal management programs is to further our understanding of the effects of interventions on the various changes that have been documented for musculoskeletal disorders. There is a reasonable amount of but incomplete knowledge in this area.

For example, what effect does pain education versus manual therapy versus an exercise program have on changes in (1) the brain’s gray matter, (2) nociceptive flexor reflex threshold, (3) functional range of motion, (4) functional motor output, and (5) psychological distress of a patient with (a) chronic hip pain and (b) chronic low back pain? Development of a model to comprehensively evaluate treatment methods may help identify effectiveness and deficiencies in a method, and thus better inform on the nature of multimodal management plans to more effectively rehabilitate the patient and impact the years lived with disability related to a musculoskeletal disorder.

Such research may provide some answers to the questions posed during this viewpoint and address whether this current discordance in clinical evaluation and management between the extremities and the spine is logical and best practice.
Management of Acute Whiplash-Associated Disorders for Health Professionals. Sydney, Australia: Motor Accidents Authority; 2014.


CHECK Your References With the JOSPT Reference Library

JOSPT has created an **EndNote reference library** for authors to use in conjunction with PubMed/Medline when assembling their manuscript references. This addition to **Author and Reviewer Tools** on the JOSPT website under offers a compilation of all article reference sections published in the Journal from 2006 to date as well as complete references for all articles published by JOSPT since 1979—a total of more than 20,000 unique references. Each reference has been checked for accuracy. This resource is **updated quarterly** on JOSPT’s website.

The JOSPT Reference Library can be found at: [http://www.jospt.org/page/authors/author_reviewer_tools](http://www.jospt.org/page/authors/author_reviewer_tools)