

PRESIDENT'S MESSAGE

Rick Wickstrom, PT, DPT, CPE, CME

The OHSIG launched new benefits of belonging for OHSIG members that may be accessed from the OHSIG home page, <https://www.orthopt.org/content/special-interest-groups/occupational-health>. Our new OHSIG Member Profile and Directory Searches are designed to drive internal networking of OHSIG members, as service opportunities to OHSIG members who qualify for the Occupational Health Practitioner Certificate. Physical Therapists as well as Occupational Therapists who are eligible to join as AOPT Individual Partners may qualify for the OHP Program Certificate.

Our internal and external directory searches allow for filtering by the six Occupational Health Service Areas covered in our OHP independent study courses, as well as other occupational health roles that include: Clinical Researcher, Disability Case Consultant, Education Clinical Instructor, Education Program Instructor, Employer Consultant, Expert Witness for Litigation, Lifestyle Health Coach, and Provider Consultant. OHSIG members may enter multiple practice locations that may be searched by city, state or zip code. **All OHSIG members are invited to update their OHSIG Member Profile and lead by example to complete the OHP Certificate.** Our revenues from this program will fund evidence-based research and public relations initiatives.

Last week, I returned from attending the annual APTA Private Practice annual meeting. There was much excitement around the PPS Direct to Employer program that complements our OHP. It was great to hear a recap of evidence that demonstrated the value of a PT First model compared to traditional physician referral.

I look forward to networking at our OHSIG Annual Meeting. This meeting will be held in person at CSM 2024 on Friday, February 16 from 1:30 PM to 2:30 PM EST. Shortly following this meeting will be OHSIG's featured presentation that begins at 3 PM EST: *Innovative Workplace Strategies for Promoting Musculoskeletal Health and Well-being Using the Total Worker Health® Approach*. This will be a panel presentation by speakers Cory Blickenstaff, PT, MSPT; Michael Kean, CSP; Katia M. Costa-Black, PT, PhD, and Stewart Levy, RPh, MBA.

This edition of OPTP will mark the launch a new Member Spotlight that will feature one of our emerging leaders, Dr. Christine "Chris" McCullum, PT, DPT. Chris is leading by example to drive recognition of our profession as our OHSIG Public Relations Chair and through her private practice experience. She was kind enough to send me an autographed copy of her new book, titled *The On-Site Physical Therapist: Direct-to-Employer Care*.

Finally, it is my pleasure to introduce an article titled *Prevention and Work Disability Due to Non-specific Low Back Pain* by David Hoyle, PT, DPT. David currently serves as OHSIG Nominating Committee Chair and has contributed greatly to the success of our OHP Certificate program and many other OHSIG initiatives. This "servant leader" goes above and beyond the call of duty to foster engagement and excellence in occupational health.

OHSIG MEMBER SPOTLIGHT

Chris McCullum, PT, DPT

1. Why did you become a Physical Therapist?

When I was in eighth grade, I told my mom I wanted to be a PE teacher. She countered with, "What about a physical therapist?" I asked her what that was. She said, "Physical therapists help people like your Aunt Rita." My Aunt Rita had severe cerebral palsy and I always loved helping her whenever we visited. From that moment I started on the path to becoming a physical therapist, and decades later I still love what I do.



2. What is your current Occupational Health service focus?

My company's focus is direct to employer (D2E) services in on-site clinics at company locations. Our clients include manufacturing, packaging, warehouse/distribution, transportation, and electrical installation. We provide pre-employment testing, on-site ergonomic services, job coaching, OSHA 1st aid, and early intervention. One goal is to get as many employees to use the clinic as possible. Evidence shows that employees who use on-site physical therapy services for low back pain have improvements in overall health.¹ The direct access laws in Colorado, and the self-insured status of my clients makes physical therapy a great solution for musculoskeletal and minor medical issues.

3. What do you love most about your Occupational Health practice?

I can make an immediate impact on how an employee feels, or the comfort/difficulty of their job. So often, employees think that discomfort is normal or "just the way it is." Physical therapists know it doesn't have to be that way.

During the pandemic, the lack of equity in healthcare for essential workers became blatantly obvious. Having health insurance and being able to leave work to access medical care are not synonymous. With me on-site, I helped to bridge that gap.

4. What frustrates you most about your practice environment?

When I first got into Occupational Health, there was no clinical education curriculum that I could pursue in Occupational Health. I had to piece together training for all aspects of D2E services. It was fairly daunting and not efficient. However, the OHSIG through the AOPT has become a great resource. And, now that we have the Occupational Health Practitioner Certificate,² clinicians have all the information they need to become specialists in Occupational Health in an expedient manner.

One frustration that remains in my practice is the post-injury focus of occupational health services. Most employer and insurance dollars are spent after injuries occur. However, with health care costs continuing to rise and physical therapist direct access moving forward, I think we are on the cusp of operating from an employee-centric position (pre-injury), toward the NIOSH Total Worker Health® vision.

5. How do you hope to position your practice in the next 5 years?

When I've met physical therapists/nurses/employers throughout the years, I am repeatedly surprised by the lack of awareness that on-site services are "a thing" and how/why D2E services work. I've just authored and published a book called, *The On-Site Physical Therapist: Direct to Employer Care*.³ My goal is to get more therapists involved in the D2E service model and get more employers using it. Less dependency on insurance reimbursement, lower cost to employers, and more autonomy for physical therapists are just some of the benefits. It's a win-win situation.

In 5 years, I hope my practice still has a few D2E clients and that I will be recognized as a consultant for physical therapists and companies alike, for D2E services. If I am a spark to push this sector of Occupational Health services, then I have done my job.

6. What regulatory or organizational changes are needed to promote occupational health practice?

The APTA has consistently pushed direct access and is now focusing more on primary care access with physical therapists as the gatekeepers. Getting the Private Practice Section, Academy of Orthopaedic Physical Therapy, and the Occupational Health Special Interest Group aligned and operating together would provide the expertise and momentum needed to achieve the goal of physical therapists as primary care clinicians. State insurance legislation would also need to address the issue of insurance companies denying payment for direct access physical therapy services.

Finally, our physical therapy schools need to educate students on all aspects of care including direct access and Occupational Health. A brief overview of Occupational Health, OSHA, and Worker's Compensation topics is not enough for students to be aware of the opportunities, limitations, and victories in this care model.

REFERENCES

1. Childs JD, Fritz JM, Wu SS, et al. Erratum to: *Implications of Early and Guideline Adherent Physical Therapy for Low Back Pain on Utilization and Costs*. *BMC Health Serv Res*. 2016; 16(1):444. Doi:10.1186/s12913-016-1681-2
2. Occupational Health Special Interest Group. Accessed November 20, 2021. <https://www.orthopt.org/content/special-interest-groups/occupational-health>
3. McCallum C. *The On-Site Physical Therapist: Direct to Employer Care*. Gatekeeper Press; 2023.

Prevention of Work Disability Due to Non-specific Low Back Pain

David Hoyle, PT, DPT, MA, OCS
Occupational Health Practitioner

INTRODUCTION

According to data provided by the U.S. Bureau of Labor Statistics, there were 128,220 reported cases of work related back pain in 2021.¹ Recovery from work related and other back pain remains a challenge with the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) reporting that back pain is the main cause of years lived with disability (YLDs) with 619 million individuals affected in 2020 and predictions that number will increase to 843 million by 2050.² The World Health Organization (WHO) indicates that the majority of low back pain is non-specific, indicating that it cannot be confidently accounted for by another diagnosis such as an underlying disease, pathology, or tissue damage.³ The WHO indicates treatment for non-specific low back pain (NSLBP) include:

- *physical therapies to improve muscle strength and ability to move and resume physical activity and exercise,*

- *psychological and social support to help people manage their pain and return to doing activities they enjoy,*
- *reducing strain during physical work, and*
- *lifestyle changes including more physical activity, healthy diet and good sleep habits.*³

Physical Therapists are experts at all aspects of treatment of non-specific LBP as outlined by WHO and are in an ideal position to ease the burden of NSLBP with regards to YLDs. According to the American Physical Therapy Association (APTA), physical therapists are movement experts who help patients avoid surgery and prescription drugs, maximize mobility, manage pain and chronic conditions, and improve physical function and fitness.⁴

A recent publication by the The Workers Compensation Research Institute (WCRI) demonstrated that although physical and occupational therapy for patients with back pain resulted in signif-

icant benefit, outcomes for patients whose care was covered under workers' compensation (WC) was inferior to that of those covered by other payers.⁵ The authors theorized that a disproportionate prevalence and impact from psychosocial factors on those covered under WC may have led to the disparity in outcomes. The authors included "poor recovery expectations after an injury, fear of pain due to movement, catastrophizing, perceived injustice, job dissatisfaction, pessimism, being fearful in general, having low levels of motivation, or experiencing lack of family or community support systems" as non-clinical factors that may be more common in those covered under WC and likely to have a negative effect on recovery.⁵

In a paper developed by WCRI to be a resource serving as an introduction to behavioral health care in WC, the authors defined behavioral health care as encompassing all services that address behavioral health problems that affect overall health and wellness. Behavioral health issues within workers' compensation lie on a spectrum from psychosocial factors as previously described to mental health diagnoses. The need for behavioral health care in WC lies largely with injured workers without mental health diagnoses or injuries that affect cognitive process but with individuals with psychological barriers to recovery from musculoskeletal injuries including NSLBP. Provision of behavioral health care lies with various disciplines including physical therapists and not solely with mental health professionals.⁶ In a randomized controlled trial using the Keele STarT Back Screening Tool (SBST), physical therapists were given specific training in an attempt to better meet the needs of individuals at higher risk of chronic disability. The SBST has been demonstrated to categorize people with NSLBP into groups of low, medium, and high risk for chronic disability. Physical therapists who participated in the study and were referred patients in the medium and high risk categories were given 3 and 9 days of training on treatment of NSLBP respectively. Therapists seeing medium risk patients were educated in addressing symptoms and function, while those seeing high risk patients received further training in "psychologically informed physiotherapy" aimed at addressing psychosocial obstacles to recovery in addition to symptoms and function.⁷ This stratified approach to management of low back pain has been associated with fewer self-reported days off work within each risk group as well as societal cost savings for the low and medium risk groups when compared to current best practice.⁸

Although physical therapy outcomes for those with work related injuries may be less than those covered by other payers, WCRI demonstrated that early initiation of physical therapy for injured workers with low back pain resulted in a decrease in medical service utilization, decreased claim costs for all treatment costs, and shorter duration of temporary disability than late initiation of physical therapy (initiated more than 14 days after injury). For workers with more than 7 days lost work time and 3 or more visits of physical therapy, physical therapy started after 30 days of injury was associated with increased likelihood of MRI and opioid prescriptions compared to those who initiated therapy within 3 days of injury.⁹

The challenge of preventing needless disability associated with non-specific low back pain is one that is multi-factorial appearing to be affected by the interplay of psychosocial factors as well as nervous system and anatomic changes but one that physical therapists are in a position to lead. To develop a comprehensive treatment approach physical therapists will need to arm themselves with

tools such as psychologically informed therapy as well as perhaps rethinking exercise paradigms based on factors such as acuity and reactivity. Although evidence is constantly in evolution, the following is designed to give direction as to areas of knowledge and skill development physical therapists should undertake to improve efficacy in treatment and prevent disability. It is thought that these areas although separated for convenience and understanding are highly inter-related and influence each other. It is the interconnectivity in the various areas that seems to point to the need for a person centered biopsychosocial approach to the treatment of NSLBP in preventing disability. The model is shown in Figure 1.

BIOLOGICAL CHANGES IN NSLBP

Pain

The International Association for the Study of Pain (IASP) revised its definition of pain in 2020 from a definition that was first written in 1979.¹⁰ The IASP definition reads that pain is, "An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage."¹⁰ IASP further classifies pain as either nociceptive, nociplastic or neuropathic in origin. The 3 definitions are:

Nociceptive Pain: Pain that arises from actual or threatened damage to non-neural tissue and is due to the activation of nociceptors.

Neuropathic Pain: Pain caused by a lesion or disease of the somatosensory nervous system.

Nociplastic Pain: Pain that arises from altered nociception despite no clear evidence of actual or threatened tissue damage causing the activation of peripheral nociceptors or evidence for disease or lesion of the somatosensory system causing the pain.¹¹

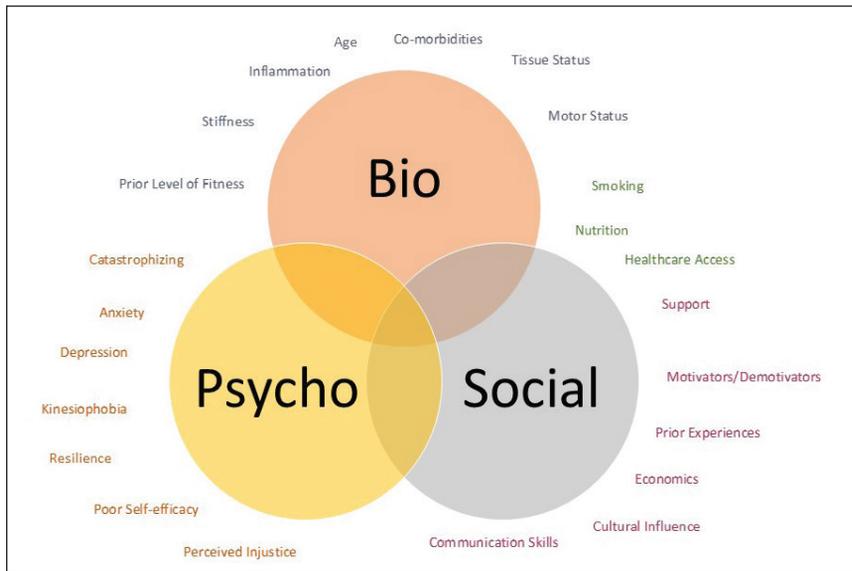
As neuropathic pain has an identifiable source and the purpose of this paper is to prevent disability in non-specific low back pain, concentration will be on nociceptive and nociplastic pain.

Nociceptive pain is associated with pathophysiological processes in peripheral tissues which activate afferent neurons. These processes include noxious chemical (inflammatory), mechanical and thermal stimuli.^{12,13} Nociceptive pain is localized to the area of injury or dysfunction, proportionate to mechanical and anatomical nature to aggravating and easing factors, and usually intermittent and sharp with movement or mechanical provocation.¹⁴ Nociceptive pain is the pain that is typically seen in people with acute NSLBP.

In contrast to nociceptive pain, nociplastic pain is diffuse, non-anatomic areas of pain and tenderness, with disproportionate, non-mechanical and unpredictable patterns of painful response to non-specific aggravating or easing factors. Nociplastic pain has a strong association of maladaptive psychosocial factors including negative emotions, poor self-efficacy, and maladaptive beliefs and pain behaviors.¹⁵ Nociplastic pain has been associated with changes in the nervous system and its response to stimuli referred to as sensitization. The changes which occur in the central nervous system (central sensitization) act to amplify peripheral input and/or generate the perception of pain in the absence of peripheral input.¹⁶ Nociplastic pain is the pain that is typically seen in people with chronic NSLBP and disability.

Pain control appears to be a key element in not only disability prevention but also in influencing factors that may lead to chronicity and disability including changes in motor control and deconditioning (see below). Emerging knowledge of pain mechanisms is leading to new approaches in pain management that may

Figure 1. Biopsychosocial Model



Represents the biopsychosocial model and its inter-relatedness. A person's pain experience is thought to be influenced by all three domains of the biopsychosocial model. Some of the many factors in each domain are listed outside the specific domain. Note that smoking, nutrition, and healthcare access, are between bio and social indicating that these are social components that have a direct effect on the biological status of the individual.

of pain. It is likely that there is an interaction between pain types. But regardless of whether the patient may have pain that falls into one or more than one classification and that different pain classifications seem to respond to different types of treatment, it is important for physical therapists to stay current with pain science, identify the pain mechanisms, and use evidence based principles to best manage patient pain in an effort to maximize function and minimize disability.

NEUROMUSCULAR

Non-specific LBP is defined by the inability to identify a specific disease or structural reason that explains the pain.³ Despite the inability to identify specific structures or diseases, different individuals with NSLBP appear to respond differently to similar treatments. As a result, a proposed approach to managing NSLBP is to sub-group individuals by shared characteristics and their response to treatments which has been referred to as a Treatment-Based Classification (TBC) system.²¹ Use of rehabilitative ultrasound imaging has demonstrated

help physical therapists better manage acute and chronic pain conditions. Topicals, such as ointments and gels, once thought of as a way to cover up pain but not thought to promote recovery may allow for activity during acute nociceptive pain which may stimulate recovery. Advancements in pain relieving patches as well as a re-emergence of pain relieving electrical nerve stimulation both available over-the-counter and about which physical therapists should be knowledgeable, places tools in the hands of physical therapist short of prescription medications to which they can guide patients for short term relief and to facilitate recovery.

For patients either with or at risk for chronic pain, central sensitization, and nociplastic pain psychologically informed approaches of care have led to the re-emergence of deep paced breathing, progressive muscle relaxation, and sleep hygiene and pain neuroscience education to decrease pain and prepare the patient for a more positive movement experience. The discovery of neuroplasticity of the central nervous which allows for the changes associated with central sensitization leading to nociplastic pain can be used to reverse the process resulting in new approaches of physical therapy. Using psychological principles, Cognitive Functional Therapy¹⁷ and the Pain Recovery and Integrative System Model (PRISM)¹⁸ are being provided by physical therapists. Pain Reprocessing Therapy¹⁹ developed outside of physical therapy has shown promise for low back pain. The principles of cognitive behavioral therapy can be incorporated by physical therapists such as in the Back Skills Training (BeST)²⁰ program or in everyday practice or referrals can be made to physical therapists or other professionals who incorporate these newer concepts into pain management.

It seems highly likely that at least patients with chronic NSLBP may have more than one pain generator and more than one type

differences in muscle activation between controls and people with NSLBP as well as across sub-categories of people with NSLBP across the TBC system.²² Changes seen in the neuromuscular system have been shown to take the form of changes in control as well as morphometric adaptations of the muscles of the trunk.^{23,24}

It is expected that the initial changes may be related to control or function of the muscles due to injury related afferent input,²³ nociception, and acute pain.²⁴ Possible effects include an inhibition of muscle contraction effecting the timing and magnitude of contraction and an increased muscle tone sometimes referred to as muscle guarding. It has been shown that manual therapy has an effect on multifidus muscle thickness during a submaximal task which may indicate that although the effect of SMT is likely multi-factorial, one major factor is likely to be neuromuscular.²⁵

It has been proposed persistence of pain and inflammatory mechanisms may lead to atrophy, muscle fiber change, fatty infiltration, subsequently leading to decreased strength and endurance and ultimately function.²⁴ Muscles most often implicated as changing in response to and perpetuating NSLBP include the muscles of the back including the paravertebral muscles, with a concentration on the multifidus. In the acute phase multifidus activation has been shown to be reduced and increased. The mechanism is expected to be neural through spinal reflex inhibition and increased descending drive. Since multifidus atrophy is often observed in chronic NSLBP, the overall effect appears to be inhibition.²⁴

However, in the acute phase, although much of the research has been focused on the multifidus, the erector spinae muscles, primarily the lumbar and thoracolumbar portions of the longissi-

mus and iliocostalis muscles have also been shown to have changes in the presence of pain.²⁴ Early targeted activation of the multifidus in the form of a motor control approach are sufficient to restore multifidus size. This would seem to imply that early loss of size of the multifidus is less a factor than the loss of muscle fiber mass. However, in chronic NSLBP not only is atrophy observed but studies demonstrate fatty infiltration of the multifidus.²⁶ Investigation into the role of both the superficial and deep anterior trunk muscles have also been performed with emphasis on external and internal obliques and transverse abdominis.²³

Studies using motor control exercises targeting an increase in transverse abdominis activation have resulted in improvement in pain and disability.²³ In addition to changes in muscle activation, muscle size, transition of fiber type, and the presence of fatty infiltration, change in the central nervous system related to muscle representation on the motor cortex has been shown on transcranial magnetic stimulation.²⁴ These changes indicate a convergence of the representation of specific muscles such as a convergence of the discrete brain representation of the multifidus and erector spinae.

Additionally, these studies demonstrate lower excitability of descending motor pathways. Although many current treatment plans for NSLBP focus on activation of trunk muscles, relaxation is another component of motor control. Flexion-relaxation refers to a pattern of muscle activity in which the lumbar muscles relax at the end range of maximum voluntary flexion.²⁷ This pattern of relaxation is present in most normal, pain-free individuals, but is absent in many patients with low back pain and present another target for physical therapy through biofeedback, stretching, and other interventions.²⁷

Physical therapists need to stay current with the research about muscle control and coordination as well as changes in muscle size and composition in an effort to maximize recovery from both acute and chronic NSLBP. At times specifically targeted motor control, coordination, and endurance exercises may be sufficient to reduce pain and disability. In the case of significant atrophy especially in the presence of fatty infiltration, these types of exercises may be insufficient to restore function.

PSYCHOSOCIAL CHANGES IN WORK RELATED NSLBP

The Americans with Disability Act (ADA) “defines a person with a disability as a person who has a physical or mental impairment that substantially limits one or more major life activity.”²⁸ At one time the presence of a physical or mental disability or impairment was expected to result in inferior social and economic status. It was expected that unemployment and lower education levels would be the result of having a disability. In 1973, section 504 of the Rehabilitation Act was enacted by the U.S. Congress recognizing that inferior social and economic status was not always a result of the disability itself but often was the result of barriers and prejudices of society and made people with disabilities a protected class from a civil rights perspective.²⁹

Over the next two decades steps were taken through social unrest and case law to strengthen the protection of individuals with disability including their right for non-discrimination when it came to employment. On July 26, 1992, the employment provisions in Title I of the ADA went into effect²⁹ greatly clarifying and enhancing the rights of individuals with disabilities with regards to employment solidifying that physical and mental impairment should not be considered to be equivalent to work disability. Title

I of the ADA put people with disabilities on a more even playing field with their fully able counter parts when it came to employment opportunities as long as the individual with the disability could perform essential functions of the job with or without reasonable accommodation.²⁸

In 2008, the Americans with Disability Amendment changed the definition of “disability” further broadening the scope of coverage³⁰ and further protecting the rights of workers with work related injuries. The totality of this legislation requires that employers make an effort to accommodate workers who have a request for an accommodation due to injury or illness. Equal Employment Opportunity Commission guidance on requests for accommodation indicate that even if an employee is not aware of a note, a return to work note with restrictions by a medical provider, constitutes a request for accommodation on the part of the worker and triggers the need for the interactive process.³¹ Specifically the EEOC states:

An employee has been out of work for six months with a workers' compensation injury. The employee's doctor sends the employer a letter, stating that the employee is released to return to work, but with certain work restrictions. (Alternatively, the letter may state that the employee is released to return to a light duty position.) The letter constitutes a request for reasonable accommodation.³¹

The above legislation puts physical therapists in a unique position to facilitate presentism (being at work). Presentism in its own right prevents work related disability in that the employee is at work. Additionally, the presentism may have a positive effect on preventing chronicity, permanent impairment, and even facilitate recovery.

PHYSICAL THERAPISTS' ROLE IN PROMOTING PRESENTISM AND MINIMIZING WORK DISABILITY

Physical therapists through their professional education have the prerequisite knowledge to engage other stakeholders in the workers compensation system to promote presentism. A comparison of biopsychosocial influences in 2 workers is shown in **Figure 2**. These stake holders including the physician of record, the case and claims manager, the employer, and the injured worker, their family and representation as appropriate. The physical therapist has the opportunity to build on their prerequisite knowledge to become a consultant to stakeholders to further facilitate presentism.

Physicians and most other medical professions do not have the skills, environment, tools, and time with the patients to determine functional abilities related to work in an evidence informed manner.³¹ The physical therapist may have more access to the patient than any other provider. They also engage the patient in an environment that has or for which tools to simulate work functions can be used to follow best evidence practices in determining work abilities. Most frequently this should take the form of work task tolerance testing during physical therapy treatment³² and should be reassessed and updated on regular intervals based on patient recovery.

Additionally, physical therapists can assist the patient in remediating physical impairment and psychological barriers that may impact performance to expand the patient's safe abilities through-

out the course of care.³³ In the case where work task tolerance testing is not performed in the absence of therapy or in a prolonged absence of work following active treatment this could also take the form of a Functional Capacity Evaluation.³¹

For employers who are covered entities under the ADA, development of ADA compliant job descriptions outlining the essential functions³⁴ of a job is best practice and requirement. Often job descriptions lack detail that can assist in safe return to work efforts. Beyond a physical function component to job descriptions another best practice is to have outlined functional requirements for tasks to which employees can be assigned of providing accommodations in the form of transitional or permanent alternative work assignments.

Physical therapists as experts in human movement with additional study can become experts in job site analysis to assist the employer in development of both ADA compliant job descriptions as well as transitional work assignments. Physical therapists are also well positioned to gain additional knowledge in ergonomic principles, sources of musculoskeletal stress, and consult with employers to provide work accommodations through engineering, administrative, and behavioral controls.³³ Institution of ergonomic solutions may not enable a worker with functional impairments to maximize productivity and presentism but may provide a safer environment for other employees who share the modified work tasks to prevent injury of others in the workforce.

In the absence of evidence based functional abilities for return to work, physical therapists can provide functional abilities to the employer in the form of Fit for Duty testing.³⁴ Fit for Duty testing has specific guidelines as to the need for all testing to be job-related and requires additional training of a physical therapist for compliance in addition to advanced skills for functional testing

as would be used in ongoing work task tolerance testing or functional capacity evaluation. Testing in the medical domain, ordered by medical professionals and testing in the employment domain, ordered by the employer are both permissible and are within the expertise of physical therapists but do have some regulatory differences.³⁵

In addition to medical providers and the employer, claims examiners, adjusters, and case managers can benefit from the information provided by physical therapists and may benefit from consultation from physical therapists to support return to work and case closure efforts through the above skills and services which can be provided by physical therapists.

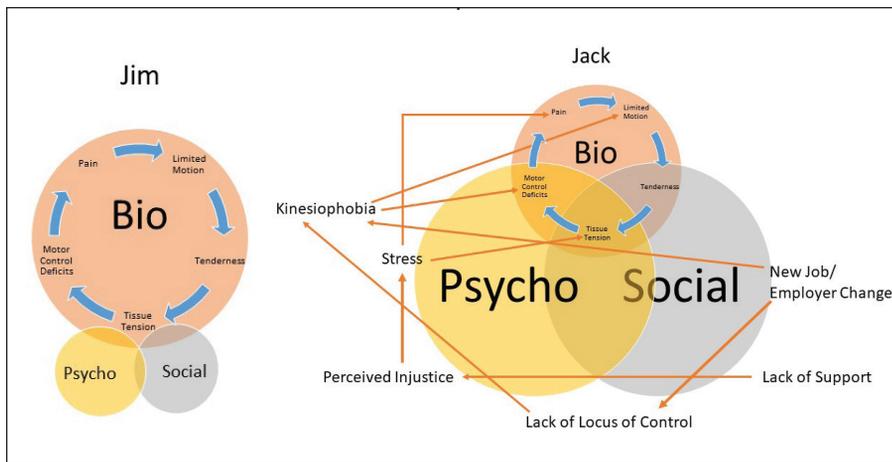
EFFECTS OF PRESENTISM ON PREVENTING CHRONICITY AND PROMOTING RECOVERY OF BACK PAIN

This article has demonstrated changes in muscle control and activation, changes in fiber type, muscle mass, and the presence of fatty infiltrate as well as changes in motor control and the mechanisms leading to pain experience from NSLBP. Although not completely understood, these changes appear to be an interaction of biological, psychological, and societal influences. Historically physical therapists have principally approached recovery through a biological lens.

Recently with better understanding of pain mechanisms and the thoughts, beliefs, and behaviors of people with NSLBP, development of psychologically informed practice attempts to promote positive and mitigate negative psychological influences on recovery. The final factor of social influence on recovery and work-related disability is often overlooked. Some of these influences such as the structure and regulatory nature of the workers' compensation systems are likely beyond the expertise and control of most healthcare practitioners.

One societal factor previously mentioned, promoting presentism, needs to be at the forefront of all physical therapists treating NSLBP. Additionally, physical therapists through professional development and consultation with other stakeholders need to insert themselves as the professional of choice to facilitate presentism through consultation with other stakeholders. Presentism in itself limiting work disability also can augment treatment and has the potential to prevent, limit, and even reverse biological changes associated with NSLBP. For instance, psychological factors such as self-worth, self-efficacy, depression, isolation, anxiety, kinesiophobia, whether present prior to injury or developed post activity can be positively influenced through the right work assignment.

Figure 2. Comparing Psychosocial Influences in Two Weeks



Representation of the contribution and inter-relationship for two people with the same injury with regards to tissue but different responses based on psychosocial factors. Jim is confident in and likes his job. Jack is new at his job, doesn't feel support, is concerned about finances, thinks maybe he shouldn't be doing this type work and doesn't understand all the people and processes involved in his recovery. Jim is likely to try to get back to work and recover and Jack may avoid return to work which may increase his stress about his situation and factors associated with being out of work. Jack will need more support for a successful recovery and outcome.

Additionally, encouraging appropriate activity may reduce inflammation as has been shown in animal models, decrease pain, restore motor control, prevent or reverse fiber type changes, decrease mass and fatty infiltration of muscle, as well as prevent or reverse central nervous system changes affecting motor control and leading to central sensitization and nociplastic pain. Appropriate work assignment likely has a place outside of NSLBP to other musculoskeletal conditions that pose a high risk for long term work absence, disability, and chronicity.

Although not comprehensive, this article is designed to highlight the need for the physical therapist to gain expertise and be a consulting in promoting presentism in NSLBP in an effort to augment medical care and facilitate recovery as well as a primary mode of preventing work disability. The combination of our growing knowledge of the biological changes associated with NSLBP in combination with an understanding of psychological factors and means of mitigating along with appropriate work assignment throughout recovery appears to be our best chance at impacting the growing problem of work disability due to NSLBP.

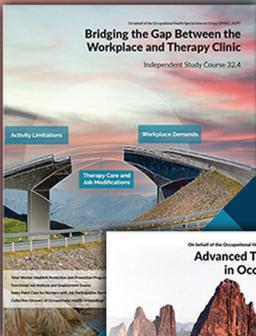
For physical therapists interested in gaining knowledge in areas applicable to supporting presentism, the Occupational Health Special Interest Group of the Academy of Orthopaedic Physical Therapists has put together a self-study series^{33,34} and certification process³⁶ that can educate physical therapists in advanced skills to facilitate presentism.

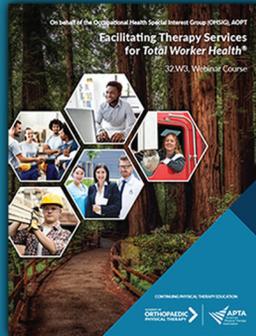
REFERENCES

1. U.S. Bureau of Labor Statistics. Databases, Tables Y Calculators by Subject. Accessed October 11, 2023. <https://data.bls.gov/timeseries/CSU00X32XXXX6P100>
2. GBD 2021 Low Back Pain Collaborators. Global, regional, and national burden of low back pain, 1990–2020, its attributable risk factors, and projections to 2050: a systematic analysis of the Global Burden of Disease Study 2021. *Lancet Rheumatol.* 2023;5(6):e316-e329. doi:10.1016/S2665-9913(23)00098-X
3. World Health Organization. Newsroom/Fact sheets/Detail/Low back pain. Published 19 June 2023. Accessed October 11, 2023. <https://www.who.int/news-room/fact-sheets/detail/low-back-pain>
4. American Physical Therapy Association. ChoosePT. Accessed October 11, 2023. <https://www.choosept.com/>
5. Negrusa S, Thumula V, Lea RD, Liu T. Patient-reported functional outcomes after low back pain. A comparison of workers' compensation and other payers. WC-23-17. February 2023. Workers Compensation Research Institute.
6. Thumula V, Negrusa S. A primer on behavioral health care in workers compensation. White Paper. WC-22-18. August 2022. Workers Compensation Research Institute.
7. Hill JC, Whitehurst DGT, Lewis M, et al. Comparison of stratified primary care management for low back pain with current best practice (STarT Back): a randomized controlled trial. *Lancet.* 2011;378(9802):1560-1571. doi:10.1016/S0140-6736(11)60937-9
8. Whitehurst DGT, Bryan S, Lewis M, Hill J, Hay EM. Exploring the cost-utility of stratified primary care management for low back pain compared with current best practice with risk-defined subgroup. *Ann Rheum Dis.* 2012;71:1796-1802. doi:10.1136/annrheumdis-2011-200731
9. Wang D, Mueller K, Lea R. The timing of physical therapy for low back pain: does it matter in workers' compensation? WC-20-25. September 2020. Workers Compensation Research Institute.
10. International Association for the Study of Pain. Revised-definition-flysheets_R2-1-1-1.pdf. Accessed November 7, 2023. https://www.iasp-pain.org/wp-content/uploads/2022/04/revised-definition-flysheets_R2-1-1-1.pdf
11. International Association for the Study of Pain. Terminology. Accessed November 7, 2023. <https://www.iasp-pain.org/resources/terminology/>
12. Ekman EF, Koman LA. Acute pain following musculoskeletal injuries and orthopaedic surgery: mechanisms and management. *Instr Course Lect.* 2005;54:21-33.
13. Julius D, McCleskey EW. Cellular and molecular properties of primary afferent neurons. In: McMahon SB, Koltzenburg M, eds. *Textbook of Pain.* 5th ed. Churchill Livingstone: Elsevier; 2006:35e48.
14. Smart KM, Blake C, Staines A, Thacker M, Doody C. Mechanisms-based classifications of musculoskeletal pain: Part 3 of 3: Symptoms and signs of nociceptive pain in patients with low back (leg) pain. *Man Ther.* 2012;17:352-357.
15. Smart KM, Blake C, Staines A, Thacker M, Doody C. Mechanisms-based classifications of musculoskeletal pain: Part 1 of 3: Symptoms and signs of central sensitisation in patients with low back (±leg) pain. *Man Ther.* 2012;17:336-344.
16. Eller-Smith OC, Nicol AL, Christianson JA. Potential mechanisms underlying centralized pain and emerging therapeutic interventions. *Front Cell Neurosci.* 2018;12: 35. doi:10.3389/fncel.2018.00035
17. Urits I, Hubble A, Peterson E, Orhurhu V, Ernst CA, Kaye AD, Viswanath O. An update on cognitive therapy for the management of chronic pain: a comprehensive review. *Curr Pain Headache Rep.* 2019;23(8):57. doi:10.1007/s11916-019-0794-9
18. Tatta J, Pignataro RM, Bezner JR, George SZ, Rothschild CE. PRISM-Pain recovery and integrative systems model: a process-based cognitive-behavioral approach for physical therapy. *Phys Ther.* 2023;103(10):pzad077. doi:10.1093/ptj/pzad077
19. Ashar YK, Gordon A, Schubiner H, et al. Effect of pain reprocessing therapy vs placebo and usual care for patients with chronic back pain: a randomized clinical trial. *JAMA Psychiatry.* 2022;79(1):13-23. doi:10.1001/jamapsychiatry.2021.2669
20. Lamb SE, Lall R, Hansen Z, et al. A multicentred randomised controlled trial of a primary care-based cognitive behavioural programme for low back pain. The Back Skills Training (BeST) trial. *Health Technol Assess.* 2010;14(41):1-253, iii-iv. doi:10.3310/hta14410
21. Fritz JM, Cleland JA, Childs JD. Subgrouping patients with low back pain: evolution of a classification approach to physical therapy. *J Orthop Sports Phys Ther.* 2007;37:290-302.
22. Kiesel KB, Underwood FB, Mattacola CG, Nitz AJ, Malone TR. A comparison of select trunk muscle thickness change between subjects with low back pain classified in the treatment-based classification system and asymptomatic

- controls. *J Orthop Sports Phys Ther.* 2007;37(10):596-607. doi:10.2519/jospt.2007.2574. Erratum in: *J Orthop Sports Phys Ther.* 2008;38(3):161.
23. Shanbehzadeh S, ShahAli S, Hides J, Ebrahimi-Takamjani I, Rasouli O. Effect of motor control training on trunk muscle morphometry, pain, and disability in people with chronic low back pain: a systematic review and meta-analysis. *J Manipulative Physiol Ther.* 2022;45(3):202-215. doi:10.1016/j.jmpt.2022.06.003
 24. Hodges PW, Danneels L. Changes in structure and function of the back muscles in low back pain: different time points, observations, and mechanisms. *J Orthop Sports Phys Ther.* 2019;49(6):464-476. doi:10.2519/jospt.2019.8827
 25. Brenner AK, Gill NW, Buscema CJ, Kiesel K. Improved activation of lumbar multifidus following spinal manipulation: a case report applying rehabilitative ultrasound imaging. *J Orthop Sports Phys Ther.* 2007;37(10):613-619. doi:10.2519/jospt.2007.2470
 26. Shi L, Yan B, Jiao Y, Chen Z, Zheng Y, Lin Y, Cao P. Correlation between the fatty infiltration of paraspinal muscles and disc degeneration and the underlying mechanism. *BMC Musculoskelet Disord.* 2022;23(1):509. doi:10.1186/s12891-022-05466-8
 27. Neblett R, Mayer TG, Brede E, Gatchel R. Correcting abnormal flexion-relaxation in chronic lumbar pain: Responsiveness to a new biofeedback training protocol. *Clin J Pain.* 2010;26(5):403-409. doi:10.1097/AJP.0b013e3181d2bd8c
 28. National Network Information, Guidance, and Training on the Americans with Disability Act. Top ADA Frequently Asked Questions. Accessed November 15, 2023. <https://adata.org/faq/what-definition-disability-under-ada>
 29. Disability Rights Education & Defense Fund. The history of the Americans with Disability Act. Accessed November 15, 2023. <https://dredf.org/about-us/publications/the-history-of-the-ada/>
 30. US Department of Labor. Office of Federal Contract Compliance Programs. Compliance Assistance Guides. Americans with Disability Act (ADA) of 1990, As Amended. Accessed November 15, 2023. [https://www.dol.gov/agencies/ofccp/compliance-assistance/ada#:~:text=The%20ADA%20Amendments%20Act%20of,Employment%20Opportunity%20Commission%20\(EEOC\).](https://www.dol.gov/agencies/ofccp/compliance-assistance/ada#:~:text=The%20ADA%20Amendments%20Act%20of,Employment%20Opportunity%20Commission%20(EEOC).)
 31. Allison S, Galper S, Hoyle D, Mecham J. Current concepts in functional capacity evaluations: a best practices guideline. April 30, 2018. American Physical Therapy Association. Accessed November 16, 2023. https://www.orthopt.org/uploads/content_files/files/2018_Current_Concepts_in_OH_PT_FCE_06_20_18_FINAL%281%29.pdf
 32. Daley D, Payne LP, Galper J, et al. Clinical guidance to optimize work participation after injury or illness: the role of physical therapists. *J Orthop Sports Phys Ther.* 2021;51(8):CPG1-CPG102. doi:10.2519/jospt.2021.0303
 33. Academy of Orthopaedic Physical Therapy. Independent Study Course 32.5 Advanced Therapy Programs in Occupational Health; 2022. <https://www.orthopt.org/course/32-5-32-5-advanced-therapy-programs-in-occupational-health>
 34. Academy of Orthopaedic Physical Therapy. Independent Study Course 32.4 Bridging the Gap Between the Workplace and Therapy Clinic; 2022. <https://www.orthopt.org/course/32-4-bridging-the-gap-between-the-workplace-and-therapy-clinic>
 35. Snyder D, Wickstrom R, Simons S, Helmsies A, Bagbey S. Current concepts in occupational health: regulatory compliance. *Orthop Phys Ther Practice.* 2020;32(1):40-45.
 36. Academy of Orthopaedic Physical Therapy. Occupational Health Special Interest Group. 32.W3 , Facilitating Therapy Services for total worker health®. Accessed November 16, 2023. <https://www.orthopt.org/content/special-interest-groups/occupational-health/facilitating-therapy-services-for-total-worker-health>

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