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An Interprofessional Consensus of Core Competencies for Prelicensure Education in Pain Management: Curriculum Application for Physical Therapy

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Core competencies in pain management for prelicensure health professional education were recently established.¹ These competencies represent the expectation of minimal capabilities for graduating health care students for pain management and include 4 domains: multidimensional nature of pain, pain assessment and measurement, management of pain, and context of pain (Appendix 1). The purpose of this article is to advocate for and identify how core competencies for pain can be applied to the professional (entry-level) physical therapist curriculum. By ensuring that core competencies in pain management are embedded within the foundation of physical therapist education, physical therapists will have the core knowledge necessary for offering best care for patients, and the profession of physical therapy will continue to stand with all health professions engaged in comprehensive pain management.

Background

One hundred million adults in America have chronic pain.² This statistic is greater than the number of individuals affected by diabetes, cancer, and heart disease combined.^{2,3} Chronic pain management costs the United States more than \$600 billion per year in health care costs and lost wages² and creates major human and economic costs for patients, families, and society.¹ Inadequate treatment or mismanagement of pain can cause

delays in healing as well as long-lasting changes to the peripheral and central nervous systems.⁴ The Institute of Medicine published a report on pain in 2011 that highlighted it as a national challenge and recognized the need for a cultural transformation to effectively prevent, assess, treat, and understand pain of all types.² This report addressed the deficit in pain education across all professions and promoted the inclusion of standardized information about pain within an “interprofessional setting.”² Specific to physical therapy, a faculty survey of accredited physical therapist education programs in North America revealed 4 hours of pain education as the most frequently reported in the curricula.⁵ Those findings are contrasted with a study of Canadian health sciences programs wherein the 7 physical therapy programs responding reported a mean of 41 hours in pain education.⁶

Over the last several decades, the science of pain has made significant advances in both basic science and clinical science domains.⁷⁻¹² For example, the plasticity in the nociceptive system both at the peripheral nociceptor level—termed *peripheral sensitization*—and in the central nociceptive pathways—termed *central sensitization*—is commonly recognized by pain researchers and clinical pain specialists.^{11,13-15} It is also commonly recognized by researchers and pain

clinicians that people with chronic pain have enhanced peripheral and central excitability and simultaneously have reduced central pain inhibition.^{14,15} Furthermore, the influence of psychosocial factors on the pain experience has been extensively documented in a variety of painful conditions.^{12,13,16-18} As an example, it has become increasingly clear that pain catastrophizing is a predictor of poor outcomes and that fear of movement limits participation in daily activities and exercise.^{12,19-22}

Expert pain clinicians support a mechanism-based treatment approach to pain that would focus on the underlying nociceptive plasticity peripherally or centrally and further address psychosocial factors that enhance the pain experience.^{15,23,24} Those individuals with high pain catastrophizing or depression prior to treatment, including both those with acute pain (<3 months' duration) and those with chronic pain (>12 months' duration), did not show improvements and had elevated levels of disability following physical therapy interventions.²⁴ Pain clinicians and the International Association for the Study of Pain (IASP) define several different pain conditions: (1) *nociceptive pain* arises from actual or threatened damage to non-neural tissue and is due to activation of nociceptors, (2) *neuropathic pain* is caused by a lesion or disease of the somatosensory ner-

vous system, and (3) *pain of unknown origin* persists in the absence of tissue injury or is out of proportion to the initial insult and is thought to have enhanced central excitability, loss of central inhibition, or both.^{22,25} Understanding these constructs would assist physical therapists in clinical decision making.

Currently, most physical therapist education programs do not directly address pain science but rather teach management of diseases from a biomechanical approach to the joint or site in question. For example, clinical orthopedic classes are often organized around specific body areas such as the shoulder, knee, or back and address specific tests, manual therapies, and exercises for that particular area. However, patients generally seek medical help, including physical therapy, because of the pain, and nearly all patients have alterations in nociceptive processing and confounding psychosocial factors that need to be addressed. A better understanding of the underlying mechanisms, psychosocial constructs, and effective therapies for pain management would improve pain management and quality of life and lower health care costs.²⁶⁻²⁸

Improving pain education is fundamental for primary care providers, given they play a key role in pain management as the point of entry for most patients.² Physical therapists are often a point of entry to the health care system for many patients^{29,30}; therefore, adequate pain education will put physical therapists in a unique position to be leaders in the clinical practice of pain management and to facilitate interprofessional pain management health care teams. Physical therapists are increasingly seen as primary care providers, and direct access to physical therapists is a central compo-

nent of the American Physical Therapy Association's (APTA's) strategic plan, Vision 2020.²⁹

Core Competencies in Pain Management

Core competencies in pain management for prelicensure health professional education were recently established through an interprofessional summit that engaged health care experts.¹ The goal of this summit was to identify core competencies in pain management for prelicensure clinical education that can serve as a foundation for the development of comprehensive pain management curricula across all health professions. The structured process took place in 2 phases. The first phase consisted of an executive committee of 7 experts in pain education. The executive committee synthesized current evidence and existing profession-based competencies and developed a draft set of competencies. The second phase consisted of 29 members representing 10 professions who met in person to recommend a set of consensus-based competencies. A 2-day summit for interprofessional consensus on pain management competencies was held in Sacramento, California, in August 2012. Competencies were reviewed as a group, which was followed by small-group discussions led by the executive committee using the World Café model. The full summit group then reassembled to review and discuss each domain and finalize the competencies. A final draft of domains and competencies was sent for review and refinement in October 2012. Additional background and resources to help integrate the interprofessional pain management competency program are available online (see Appendix 2).

The core competencies in pain management intentionally paralleled the framework of the guidelines for pain

education published by the IASP in 2012.³¹ The IASP has established coordinated curriculum guidelines for individual professions, including physical therapy, and an interprofessional curriculum guideline³² (Appendix 2). The curriculum guidelines are outlined around the following content areas: multidimensional nature of pain, pain assessment and measurement, management of pain, and clinical conditions. Furthermore, the interprofessional core competencies summit included key individuals involved in the development of the IASP curriculum guidelines.

The newly established core competencies in pain management facilitate the development of a cohesive and comprehensive foundation for educational programs that can be readily shared among health care teams. When all health care professionals have the same basic expected foundation of pain education, they will be able to improve their practice within their respective disciplines. For example, ensuring that all health care practitioners understand the concept of central sensitization and its impact on chronic pain is likely to expedite clinical decision making. If a patient with chronic pain with central sensitization is prescribed a centrally acting medication, the physical therapists will understand the rationale and impact of this medication on the chronic pain condition. This information includes potential side effects and the impact on nonpharmacological pain approaches implemented by the physical therapist. Ultimately, establishing core competencies for pain education will improve clinical outcomes, regardless of the profession. In support, it has been shown that education of physical therapists in psychosocial risk factors and pain reduced disability for those with the highest risk compared with physical therapists

who did not receive the education.^{33,34} Each profession will contribute its expertise to the 4 domains with the focus of treating the patient in pain.

Description of Each Domain and Relation to Physical Therapy

Although the core competencies apply to prelicensure health professional education across all health professions, the authors explicitly state that they are intended to be flexible and moldable to each profession and each school or curriculum or learning experience that seeks to meet the core competencies as a minimal expected outcome.¹ They may be used as a guide for physical therapist educators to evaluate and advance pain education based on the specialized role and needs of the physical therapist student.

Domain 1—Multidimensional Nature of Pain: What Is Pain?

The first domain focuses on the fundamental concepts of pain, including the science, nomenclature, experience of pain, and pain's impact on the individual and society. It is necessary to understand the complex biological and psychosocial nature of pain to adequately manage pain. In physical therapy, this knowledge would relate to understanding the basic science of pain and pain management approaches, the biopsychosocial model of pain, and the multidimensional nature of pain. The biological science includes understanding neural plasticity and sensitization, molecular biological changes, and genetics.⁷⁻⁹ The psychological components include how pain catastrophizing, fear of movement, and self-efficacy would affect treatment choices and the underlying biological substrates of these components.¹² Social concerns go beyond the individual and include the impact on the family structure and

support, health care systems, and finances, as well as the impact of sociopolitical factors in our society on social and cultural beliefs and family support and pain.^{12,35} Understanding the complex multidimensional nature of pain will allow physical therapists the opportunity to provide a patient-centered inter-professional approach to pain management.

Domain 2—Pain Assessment and Measurement: How Is Pain Recognized?

The second domain relates to how pain is assessed, quantified, and communicated, in addition to how the individual, the health system, and society affect these activities. Given the multidimensional nature of pain, it is critically important that pain be assessed comprehensively.^{16,36} This approach would include the use of valid and reliable tools not only for assessment of pain but also for the impact of pain on the person. Using measurement tools to assess the severity of pain at rest and during activity (eg, numerical rating scales)³⁷ and the impact of pain on function (eg, Brief Pain Inventory, Six-Minute Walk Test),³⁸⁻⁴⁰ psychosocial variables (eg, fear of movement, pain catastrophizing),⁴¹⁻⁴⁴ or quality of life (eg, 36-Item Short-Form Health Survey [SF-36])⁴⁵ will provide a better understanding of the multidimensional nature of pain (for a review and summary of tests and measures, see DeSantana and Sluka³⁶). Establishing core assessment tools used in clinical practice and clinical research would enhance comparison and communication among clinicians of multiple disciplines and among clinical researchers. For example, experts in clinical pain research have proposed guidelines for the measurement of pain treatment outcomes aligned around core domains (ie, pain, physical function, emotional function, global improve-

ment, symptoms, and adverse events) in the Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials (IMMPACT).^{46,47} Furthermore, the National Institutes of Health have developed simple assessment tools for health outcomes (eg, PROMIS) that include pain and its impact on function, emotional health, and quality of life.⁴⁸

Assessing the variable nature of pain in an individual across time, the effect of treatment on pain, and the clinical context for the pain will guide appropriate and individualized treatment plans. Physical therapists routinely partner with the patient in formulating treatment goals and priorities; this approach is equally critical in forming realistic pain-related goals.^{49,50} External factors can interfere with effective pain assessment and management and might include patient or provider biases and issues related to health care access or third-party payers.^{16,51,52} Performing a comprehensive pain assessment at the initial evaluation and subsequent encounters will guide an effective pain management plan that is adaptable to the patients' changing needs.^{23,36}

Domain 3—Management of Pain: How Is Pain Relieved?

This domain focuses on collaborative approaches to decision making, diversity of treatment options, the importance of patient autonomy, risk management, flexibility in care, and treatment based on appropriate understanding of the clinical condition. Management of pain refers to interventions that aim to reduce pain, as well as interventions that aim to improve coping, function, and quality of life. Improvements in coping, function, and quality of life can occur with or without reductions in pain.

Physical therapy plays an integral role in pain management through education, exercise, and application of manual, electrotherapeutic, and physical modalities.⁵³ Many of the competencies listed under the management domain are generally incorporated into existing physical therapist curriculum and apply directly to pain care. Examples include the following: (1) physical therapists are taught to include the patient and their social support in education and decision-making processes, (2) physical therapists are well educated in health promotion and self-management teaching, and (3) physical therapists are well positioned to routinely monitor pain management outcomes and adjust the plan of care when needed.⁵⁴⁻⁵⁶ To assist students in achieving the prelicensure pain management competencies, the curriculum would further reflect self-management strategies that include education on the science of pain,⁵⁷⁻⁶⁰ exercise and exercise progression,⁶¹⁻⁶⁴ pacing,⁶⁵⁻⁶⁷ and non-pharmacological self-management techniques (eg, exercise, transcutaneous electrical nerve stimulation, heat, cold).^{14,53,68-72}

Additionally, physical therapists should be aware of the value and services of other health professions and incorporate these services into the pain management treatment plan, as a multidisciplinary approach to pain management has been found to be more effective than uniprofessional approaches.^{73,74} A comprehensive treatment plan for pain management, therefore, would include not only physical therapy management but also collaborative input from an interprofessional team of physicians, nurses, psychologists, and other professionals regarding pharmacological and psychological interventions, further education, and other strategies to influence all facets of patient care.⁷⁴ For example,

although physical therapists do not prescribe or administer most pharmacologic interventions, they should be aware of potential side effects of these interventions, including but not limited to medication overuse, that would impede patient progress.

Domain 4—Clinical Conditions: How Does Context Influence Pain Management?

This domain focuses on the role of the clinician in the application of the competencies developed in domains 1 through 3 and in the context of varied patient populations, settings, and care teams. Pain is universal across the physical therapist practice domains; therefore, it is essential to use appropriate pain assessment and management techniques that would be unique to the needs of special populations. Pain also occurs across the life span; therefore, using age-specific pain assessments is necessary to gain a better understanding of the impact on the person and family. For instance, one cannot use self-report assessment in infants or individuals with severe cognitive impairments, but there are other assessment tools that are appropriate for these patient populations.^{36,48,75-78}

Within this domain, it is important to understand the scope of practice and contribution of other health professions to the pain management care of the patient. As physical therapists are increasingly becoming an entry point for patients into the health care system,^{29,30} including those with pain, it is important to know not only when to refer patients for potential problems but also when additional professions should be engaged in the pain management care team. For instance, someone with depression, anxiety, or significant psychosocial concerns might benefit from referral to a pain psychologist,⁷⁹ whereas someone with

fibromyalgia might benefit from referral to a physician, advanced practice nurse, or physician assistant for pharmacological management.⁸⁰ The physical therapist can develop an individualized treatment plan by partnering with the patient and by obtaining input and services from appropriate health care providers in order to create the greatest benefit to the patient.^{49,50}

Core Values and Physical Therapy

Embedded within each of the 4 domains are core values that parallel the principal values of physical therapy such as advocacy, collaboration, compassion, effective communication, and evidence-based practice (Appendix 3). Throughout their education, physical therapy students learn to demonstrate patient advocacy and communicate respectfully in a therapeutic manner with patients, which clearly improve patient satisfaction and outcomes.^{49,50} Physical therapists are ideally suited to provide patient education given that it is central to their role and the nature of their involvement with patients and caregivers when providing physical therapy through an episode of care.⁵⁴ It is critical, therefore, that physical therapists understand the nature of acute and chronic pain with the latest science. Physical therapists also exhibit the ability to coordinate the interventions recommended in the individualized care plan using evidence-based practice.⁵³ Thus, physical therapy students must learn to communicate the latest science underlying pain and its management, communicate in a professional manner, work well with various members of the interprofessional health care team, and understand the roles of other members of the health care team in managing patients' pain.

Integration of Competencies Into a Physical Therapist Curriculum

Pain science, assessment, and management are multidimensional constructs that affect nearly all aspects of patient care and should be a thread throughout the curriculum. A stand-alone course on pain and its management, as an addition to pain management concepts threaded throughout the curriculum, can emphasize detailed pain science, psychosocial barriers to patient management, and the importance of interdisciplinary pain management strategies. Finally, there are challenges that physical therapy educators must overcome to incorporate pain science and management throughout the curriculum and in using competency-based education to fulfill this goal. Incentives will need to be built in throughout all levels of the discipline to emphasize pain management as an important construct in physical therapy.

Competency-based education emphasizes a specified level of performance based on a student's knowledge, skills, and attitude.^{81,82} The application of these competencies would ensure that physical therapist students effectively perform and demonstrate skills to reduce pain, improve function and quality of life, and reduce comorbidities and costs related to unrelieved pain. The pain management domains and core competencies are meant to be used as a guide and applied to learning activities in the physical therapy prelicensure curriculum and incorporated into outcome assessment. These learning activities include, but are not limited to, didactic approaches, practical examinations, case-based learning opportunities, and simulation or standardized patient encounters throughout the span of physical therapist education.

To instill the importance of pain management to the profession of physical therapy, pain education should occur early and often. The relatively recent endorsement and integration of the *International Classification of Functioning, Disability and Health* (ICF) model from the World Health Organization⁸³ as a foundational model into the education of physical therapists can facilitate the infusion of education about pain throughout a curriculum. Pain within the ICF model is represented as an impairment that influences and is influenced by activity limitations and participation restrictions, as well as environmental and personal factors.⁸³ Therefore, the relevance of virtually all of the pain management domains and core competencies related to health, at both the level of the individual and society, can be explicitly linked to the ICF to facilitate students' learning about pain sciences, assessment, and management as an integral component to the practice of physical therapy consistent with a biopsychosocial approach to health care.

In addition, learning about pain assessment and management within a larger framework of clinical reasoning about pain can facilitate the integration of pain education throughout the curriculum, with clinical reasoning about pain serving as part of the early scaffolding upon which students learn to reason through patient presentations in all practice settings. One example is the research-derived model of clinical reasoning strategies proposed by Edwards and colleagues,⁸⁴ which emphasizes reasoning that focuses on the interplay between quantitatively and qualitatively assessed aspects of patients' presentations in the clinical reasoning of expert physical therapists, consistent with a biopsychosocial approach. When applied to the assessment and management of

patients with pain, it is one example of a clinical reasoning model that can explicitly highlight the development of an understanding of patients' pain experiences that includes both more traditional quantitative assessment and measurement of the pain impairment itself, integrated within a larger, more qualitative understanding of how an individual's pain experience is influenced by and exerts influence on the relevant personal and environmental factors involved. Developing an understanding of a patient's story or narrative has been shown to be a hallmark of effective, collaborative clinical reasoning that results in the development of an individualized patient-centered plan of care.⁸⁴ When comparing this approach to clinical reasoning with the biopsychosocial framework represented in the pain core competencies, it is reasonable to conclude that an approach to clinical reasoning that integrates quantitative and qualitative reasoning is necessary.^{85,86}

Pain assessment is generally one of the first pain concepts introduced in courses such as introduction to physical therapy, principles of physical therapist practice, and tests and measures. It would be important at this stage to start highlighting how to assess pain from a multidimensional perspective beyond the use of numeric rating scales (eg, verbal analog scale, visual analog scale). Incorporation of assessments and the impact of pain on function and quality of life, as assessed through the Brief Pain Inventory or the SF-36, are directly applicable to designing appropriate treatment plans.³⁶ The physical therapist curriculum is generally aligned around several practice domains: orthopedics, neurology, integumentary, and cardiopulmonary.⁵⁴ Because the majority of people in each of these practice domains have pain, acute and chronic, it is important to meet the

core competencies and incorporate the IASP curriculum guidelines into these courses. Table 1 describes several examples to further illustrate ways in which pain education can be intentionally and explicitly woven into a curriculum through a series of patient/client management courses.

Most physical therapist education programs integrate pain directly into their existing curriculum. A stand-alone pain management course can supplement the integration of pain education throughout the curriculum to emphasize the underlying science of pain; the complex biological and psychosocial effects of pain; the impact of pain on the patient, family, and society; and the interprofessional management of pain.³² An example of a stand-alone pain course in the physical therapist curriculum would include an emphasis on the science of pain, in-depth assessment, empathetic and therapeutic communication, pain management strategies, and the interdisciplinary nature of pain management (Tab. 2). Alternatively, given the importance of interprofessional care that is integral to these competencies (see domain 4 in Appendix 1), interprofessional learning experiences could be an ideal way to meet the competencies. These learning experiences might include courses in which physical therapist students are educated with physicians, nurses, psychologists, pharmacists, and social workers.⁸⁷ Another approach could be a case-based learning or assessment approach in which pain is a key feature of the case.⁸⁸⁻⁹⁰ That model could serve as an effective approach for learning effective, evidence-based pain management during clinical learning experiences. Much of the understanding of pain science, assessment, and management principles is not specific to a particular profession but rather spans professions. If all health professions under-

stand and manage pain from the same multidimensional perspective, and if all health professions understand specific roles of each profession in pain management, greater success in the management of pain should occur.

There are significant challenges for incorporating learning activities focused on pain competencies into physical therapist education either within an existing program or through an interprofessional curriculum. These challenges include the amount of time necessary to educate about pain in the curriculum and research that is needed so that evidence-based practice is standard in the curriculum. Education within a physical therapist curriculum generally spans the 4 key systems important in physical therapist practice (ie, musculoskeletal, neuromuscular, cardiopulmonary, and integumentary) and other systems (eg, renal, immune).

Given that pain can be an impairment that influences activity and participation in any of these systems, it is important that there be a thoughtful consideration of how pain is addressed throughout the curriculum.^{54,56} Although integration into an existing curriculum is likely the easiest way to address the pain competencies, there may be a lack of expertise within the existing faculty. Implementation may require education of existing faculty in pain science and management, designation of one faculty person with content expertise to coordinate the curricular pain management thread with faculty responsible for the various patient client management courses across all practice domains, hiring new faculty to address the core competencies, or using existing resources to supplement current curriculum. As online courses are developed, it may be possible to ade-

quately address the competencies through these materials. Interprofessional education poses additional and specific challenges, including extra financial resources, communication and scheduling among programs, and buy-in from administration and faculty across colleges within a university setting. Finally, not all of the competencies are evidence based to guide teaching and application. For example, evidence is lacking for the management of acute-on-chronic conditions (domain 3, competency 7). If someone has a total knee replacement, physical therapy rehabilitation tends to be similar regardless of whether the person also has a chronic pain condition such as fibromyalgia. This issue extends to other professions. Surgical protocols, including post-surgical medications, have a tendency to be similar whether or not chronic pain is in the medical history. Thus, the application of the competencies into curricula will continue to evolve as evidence-based practice advances to meet the growing demands for appropriately trained health care providers.

To help guarantee the adoption of the core competencies on pain management into a physical therapist curriculum, additional incentives may be required. Competencies are aligned, measured, and incentivized in health care education to meet the needs of society.⁸² These authors asserted that accreditation bodies, and by extension the health professions education institutions they accredit, are accountable to society to ensure that priority health needs of society are being met.⁸² For physical therapy, the accrediting agency is the Commission on Accreditation in Physical Therapy Education (CAPTE). One criterion CAPTE uses as a foundation for the *Evaluative Criteria for Physical Therapy Programs*⁵⁶ is the contemporary prac-

Table 1. Selected Examples of Ways to Integrate Pain Core Competencies Within a Series of Musculoskeletal Patient/Client Management Courses in a Doctor of Physical Therapy Curriculum^a

Timing and Location Within Curriculum	Focus of Patient/Client Management Course	Pain Management Domains and Core Competencies	Example of Integration of Pain Core Competency Into Curricular Content
First-year student, first semester	Foundations of Physical Therapy Course: Basic Interview and Data Gathering/Measurement Skills, Acute Care Setting Focus	<p><u>Domain 1, competency 1:</u> Explain the complex, multidimensional, and individual-specific nature of pain</p> <p><u>Domain 2, competency 1:</u> Use valid and reliable tools for measuring pain and associated symptoms to assess and reassess related outcomes as appropriate for the clinical context and population</p> <p><u>Domain 4, competency 2:</u> Explain how to assess and manage pain across settings and transitions of care</p>	<p>Discussion of pain as a complex multidimensional experience</p> <p>Integrate discussion of pain into introduction to the ICF model, including relevant factors of the ICF model that interact to create the pain experience of an individual (eg, pain as impairment, links to activity limitations and/or participation restrictions, influences of environmental factors, personal factors)</p> <p>Discuss choice of appropriate pain impairment measurement tools for patients of various ages and cultures in acute care settings, rehabilitation settings, and outpatient care settings and affected to various degrees physically and/or cognitively</p> <p>Use various patient cases to illustrate the interplay of factors within the ICF model that result in various levels of functional limitation for individuals with similar medical diagnosis but differing clinical presentations</p>
First-year student, second and third semesters	Patient/Client Management Course: Musculoskeletal I and II	<p><u>Domain 1, competency 2:</u> Present theories and science for understanding pain</p> <p><u>Domain 1, competency 3:</u> Define terminology for describing pain and associated conditions</p> <p><u>Domain 2, competency 3:</u> Assess patient preferences and values to determine pain-related goals and priorities.</p> <p><u>Domain 2, competency 4:</u> Demonstrate empathic and compassionate communication during pain assessment</p> <p><u>Domain 3, competency 2:</u> Identify pain treatment options that can be accessed in a comprehensive pain management plan</p> <p><u>Domain 3, competency 3:</u> Explain how health promotion and self-management strategies are important to the management of pain</p> <p><u>Domain 3, competency 7:</u> Develop a treatment plan that takes into account the differences among acute pain, acute-on-chronic pain, chronic/persistent pain, and pain at end of life</p>	<p>Discussion of the importance of understanding a patient's pain experience and all of the physical, psychological, and sociocultural factors related to current level of pain and effects on physical functioning</p> <p>Integration of considerations of this understanding of a patient's pain experience into introduction to clinical reasoning strategies model,⁸⁴ with a focus on both quantitative and qualitative assessment and management of pain</p> <p>Laboratory exercises centered around patient cases where students role play with faculty and practice using narrative reasoning and collaborative reasoning strategies to understand the patient's story, perspectives, and preferences and collaboratively set pain-related and other appropriate goals linked to a consensus achieved with the patient about priorities and preferences</p> <p>Introduction to concept of central sensitization and evidence-based interventions, including educational strategies used by physical therapists in managing patients with chronic/persistent pain related to central sensitization</p> <p>Practice clinical reasoning case-based exercises where the goal is to hypothesize which type of pain a patient has based on interview and physical examination data (eg, nociceptive, neurogenic, central sensitization) and link to appropriate management goals and interventions and outcomes measures</p>

(Continued)

Table 1.
Continued

Timing and Location Within Curriculum	Focus of Patient/Client Management Course	Pain Management Domains and Core Competencies	Example of Integration of Pain Core Competency Into Curricular Content
Second-year student, first semester	Patient/Client Management Course: Neuromuscular I	<p><u>Domain 1, competency 1:</u> Explain the complex, multidimensional, and individual-specific nature of pain</p> <p><u>Domain 2, competency 1:</u> Use valid and reliable tools for measuring pain and associated symptoms to assess and reassess related outcomes as appropriate for the clinical context and population</p> <p><u>Domain 2, competency 2:</u> Describe patient, provider, and system factors that can facilitate or interfere with effective pain assessment and management</p> <p><u>Domain 4, competency 4:</u> Implement an individualized pain management plan that integrates the perspectives of patients, their social support systems, and health care team providers in the context of available resources</p>	<p>Students consider the cases of 2 patients with a cerebrovascular accident. One patient has minimal to no cognitive impairments, whereas the other patient has moderate cognitive impairments. Both patients present identical activity and participation limitations and impairments.</p> <p>Students work in small groups to compare and contrast plans for examination and management of pain (and other relevant factors) in each case</p> <p>Student groups present their proposed plans of care for each patient case, including discussion of potential barriers to optimal pain assessment and management for each case. The plans of care must include specifics of proposed level of the patient's involvement, involvement and roles of family/caregivers, and other health care team members.</p>
Second-year student, second semester	Patient/Client Management Course: Cardiovascular/ Cardiopulmonary	<p><u>Domain 1, competency 2:</u> Present theories and science for understanding pain</p> <p><u>Domain 2, competency 1:</u> Use valid and reliable tools for measuring pain and associated symptoms to assess and reassess related outcomes as appropriate for the clinical context and population</p> <p><u>Domain 2, competency 3:</u> Assess patient preferences and values to determine pain-related goals and priorities</p> <p><u>Domain 4, competency 1:</u> Describe the unique pain assessment and management needs of special populations</p>	<p>Students consider the case of a patient with lower extremity PAD who expresses a lack of understanding about whether it is safe to engage in exercise to help in the weight loss plan that has been mandated by the patient's primary care physician</p> <p>Students search the literature and identify appropriate measurement tools to assess activity levels in patients with pain due to PAD</p> <p>Students must develop a strategy to explain to the patient the scientific basis for the pain with physical activity and to educate the patient about current evidence that supports doing exercise in the presence of pain due to PAD to improve function</p>
Third-year student, first semester	Patient/Client Management Course: Special Populations	<p><u>Domain 1, competency 2:</u> Present theories and science for understanding pain</p> <p><u>Domain 2, competency 2:</u> Describe patient, provider, and system factors that can facilitate or interfere with effective pain assessment and management</p> <p><u>Domain 2, competency 4:</u> Demonstrate empathic and compassionate communication during pain assessment</p> <p><u>Domain 3, competency 2:</u> Identify pain treatment options that can be accessed in a comprehensive pain management plan</p> <p><u>Domain 4, competency 1:</u> Describe the unique pain assessment and management needs of special populations</p>	<p>Introduction to evidence related to the assessment and management of phantom limb pain as experienced by patients with amputations (eg, evidence describing the use of GMI in this population). Students engage with individuals (guests in class) who have amputations and who have or have had phantom limb pain. Students practice eliciting their narratives, with the goal of understanding their perceptions of their experiences with health care providers in acute care settings through to outpatient care settings. Students then identify factors that potentially facilitated or presented barriers in their pain management history.</p> <p>Introduction to the current evidence related to assessment and management of pain in patients diagnosed with CRPS I</p> <p>Students view a recorded interview of an actor who portrays an individual with CRPS, describing their narrative</p> <p>Students are tasked with searching the literature to identify evidence-based interventions for patients with CRPS with corresponding proposed neurophysiological rationales</p> <p>Students compare and contrast evidence and related scientific rationales for interventions in patients with phantom limb pain and CRPS (eg, GMI)</p>

(Continued)

Table 1.
Continued

Timing and Location Within Curriculum	Focus of Patient/Client Management Course	Pain Management Domains and Core Competencies	Example of Integration of Pain Core Competency Into Curricular Content
Third-year student, first semester	Patient/Client Management Course: Musculoskeletal III	<p>Domain 2, competency 1: Use valid and reliable tools for measuring pain and associated symptoms to assess and reassess related outcomes as appropriate for the clinical context and population</p> <p>Domain 3, competency 1: Demonstrate the inclusion of patient and others, as appropriate, in the education and shared decision-making process for pain care</p> <p>Domain 3, competency 7: Develop a treatment plan that takes into account the differences among acute pain, acute-on-chronic pain, chronic/persistent pain, and pain at the end of life</p> <p>Domain 4, competency 1: Implement an individualized pain management plan that integrates the perspectives of patients, their social support systems, and health care providers in the context of available resources</p>	<p>Introduction to evidence related to identification and measurement of risk factors related to development of chronic/persistent pain, with a focus on prevention of progression to chronic/persistent pain.</p> <p>Includes application to patient case scenarios where students clinically reason about identification of risk factors and appropriate interventions aimed at reducing risk of progression to persistent pain.</p> <p>Engage in standardized patient encounter where the “patient” presents a complex pain history and many relevant psychosocial factors can be identified in addition to relevant physical impairments and pain, with the goal of appropriately communicating and reasoning throughout assessment and development of a collaborative plan of care for that patient. Performance is recorded, and students self-assess and debrief with faculty, who also assess performance.</p>

^a ICF=International Classification of Functioning, Disability and Health, PAD=peripheral arterial disease, GMI=graded motor imagery, CRPS=complex regional pain syndrome.

tice of physical therapy that is grounded in the current literature. Physical therapists frequently treat people with pain problems in their practices, yet the current evaluative criteria explicitly mention “pain” only in relation to curriculum content on patient examination. Therefore, contemporary entry-level physical therapist curriculum plans should include these core competencies in pain management. Current trends in accreditation toward assessment of student learning outcomes and, increasingly, toward competency-based approaches may provide incentives to ensure competencies, such as the core competencies in pain management, as integral components of entry-level physical therapy education.

The National Physical Therapy Examination (NPTE) is based on an analysis of practice, most recently conducted in 2011,⁹¹ and assesses minimum standards for safe and effective practice. In the prior analysis, “pain” was directly assessed under evaluation and diagnosis. Thus, the incorporation of these pain competencies in the NPTE will occur only to the extent these competencies are reflected in a practice analysis itself, making it difficult for physical therapist education programs to rely on the NPTE to provide a significant incentive to curricular change that would include these competencies. The American Council of Academic Physical Therapy,⁹² the component of APTA representing the entry-level physical therapist education programs, could endorse the competencies and thus provide an imprimatur for their adoption within physical therapist education.

Moreover, these competencies are applicable beyond prelicensure education because they represent the critical content for pain science, assessment, and management. All

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Table 2.

Example of a Stand-alone Pain Mechanisms and Management Course in a Physical Therapy Curriculum^a

Week	Subject	Pain Management Domains and Competencies
Section 1: Basic Principles and Science		
1	Pain Introduction Basic Science: Peripheral Mechanisms	Domain 1—Multidimensional Nature of Pain: What Is Pain? Competencies 1–5
2	Basic Science: Central Mechanisms Basic Science: Supraspinal Processing	
3	Basic Science: Supraspinal Processing Motor Control Basic Science: Pain Heterogeneity	
4	Basic Science Cases and Discussion	
Section 2: Pain Management and Syndromes		
5	Pain Management: Interdisciplinary Pain Management: Medical Pain Management: Psychological	Domain 3—Management of Pain: How Is Pain Relieved? Competencies 1–4, 6 Domain 4—Clinical Conditions: How Does Context Influence Pain Management? Competencies 1–3
6	Pain Across the Life Span: Pediatric to Gerontology Pain Pain Syndromes: Headache Pain Syndromes: Fibromyalgia and Myofascial Pain	
7	Pain Syndromes: Spine Pain Pain Syndromes: Arthritis Pain Syndromes: Acute Pain	
8	Pain Syndromes: Women’s Health Pain Syndromes: Complex Regional Pain Syndrome/ Neuropathic Pain Management: Personalized Genomics and Pain	
Section 3: Physical Therapy Pain Management		
9	Pain Assessment Assignment: Evaluation of “Pain Patient,” Write Evaluation and Evidence-Based Treatment Plan	Domain 2—Pain Assessment and Measurement: How Is Pain Recognized? Competencies 1–4
10	Physical Therapy Pain Management: General Principles Physical Therapy Pain Management: Education Physical Therapy Pain Management: Exercise	Domain 3—Management of Pain: How Is Pain Relieved? Competencies 1–5, 7 Domain 4—Clinical Conditions: How Does Context Influence Pain Management? Competencies 1, 2, 4, 5
11	Physical Therapy Pain Management: Manual Therapy Physical Therapy Pain Management: Electrotherapy Physical Therapy Pain Management: Physical Agents	
12	Pain Management: Overview and Discussion Pain Management: Case Studies	Direct application of the principles of all 4 domains using individual case presentations
13	Pain Management: Discussion and Cases	
14	Pain Management: Discussion and Cases, Interprofessional Panel	
15	Pain Management: Discussion, Cases, Review	

^a This course would be in addition to integrating pain science, assessment, and management throughout the curriculum.

health professionals, including physical therapists, should be competent within the 4 domains because of the prevalence of pain in patients seeking physical therapy.^{2,3} In addition, physical therapists need to be current with pain knowledge to remain experts on the pain management team and, as clinical instructors to physical therapist students and in mentoring new graduates, must be prepared to reinforce and extend

students’ learning from the academic setting related to up-to-date pain management information. Inclusion into postlicensure education may include continuing education opportunities, licensure renewal, and possibly certificate programs. Pervasive adoption may necessitate requirement for core competency in pain management by accreditors of prelicensure physical therapy schools as

well as postgraduate or continuing education programs.

Conclusion

These consensus-derived pain management core competencies provide a foundation for improving pain management throughout the life span, across the health care continuum, and within the diverse backgrounds of the patients. The challenges are not only to adopt and

meet these pain management competencies but also to keep them up-to-date with the dynamic needs of society while keeping them relevant to the many essential professional constituents. Future innovative initiatives that are evidence based, and in tune with the current science, will be needed as the competencies evolve to meet the cultural transformation that is occurring in pain management. Moreover, these competencies should be adapted for continuing education to keep the existing physical therapy workforce current in assessment and intervention and integrated into the interprofessional health care team.

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References

- 1 Fishman SM, Young HM, Lucas AE, et al. Core competencies for pain management: results of an interprofessional consensus summit. *Pain Med.* 2013;14:971–981.
- 2 Committee on Advancing Pain Research, Care, and Education, Institute of Medicine. *Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research.* Washington, DC: Institute of Medicine of the National Academies; 2011.
- 3 Gaskin DJ, Richard P. The economic costs of pain in the United States. *J Pain.* 2012; 13:715–724.
- 4 Cheatle MD, O'Brien CP. Opioid therapy in patients with chronic noncancer pain: diagnostic and clinical challenges. *Adv Psychosom Med.* 2011;30:61–91.
- 5 Scudds RJ, Scudds RA, Simonds MJ. Pain in the physical therapy curriculum: a faculty survey. *Physiother Theory Pract.* 2001;17: 239–256.

- 6 Watt-Watson J, McGillion M, Hunter J, et al. A survey of prelicensure pain curricula in health science faculties in Canadian universities. *Pain Res Manag.* 2009;14: 439–444.
- 7 Sluka KA. Central mechanisms involved in pain processing. In: Sluka KA, ed. *Mechanisms and Management of Pain for the Physical Therapist.* Seattle, WA: IASP Press; 2009:41–72.
- 8 Sluka KA. Peripheral mechanisms involved in pain processing. In: Sluka KA, ed. *Mechanisms and Management of Pain for the Physical Therapist.* Seattle, WA: IASP Press; 2009:19–40.
- 9 Sluka KA. Definitions, concepts, and models of pain. In: Sluka KA, ed. *Mechanisms and Management of Pain for the Physical Therapist.* Seattle, WA: IASP Press; 2009:3–18.
- 10 Frey Law LA, George SZ. Individual differences and pain variability. In: Sluka KA, ed. *Mechanisms and Management of Pain for the Physical Therapist.* Seattle, WA: IASP Press; 2009:73–94.
- 11 Basbaum AI, Bautista DM, Scherrer G, Julius D. Cellular and molecular mechanisms of pain. *Cell.* 2009;139:267–284.
- 12 Gatchel RJ, Peng YB, Peters ML, et al. The biopsychosocial approach to chronic pain: scientific advances and future directions. *Psychol Bull.* 2007;133:581–624.
- 13 Roussel NA, Nijs J, Meeus M, et al. Central sensitization and altered central pain processing in chronic low back pain: fact or myth? *Clin J Pain.* 2013;29:625–638.
- 14 Nijs J, Van Houdenhove B, Oostendorp RA. Recognition of central sensitization in patients with musculoskeletal pain: application of pain neurophysiology in manual therapy practice. *Man Ther.* 2010; 15:135–141.
- 15 Woolf CJ. Central sensitization: implications for the diagnosis and treatment of pain. *Pain.* 2011;152(3 suppl):S2–S15.
- 16 Foster NE, Delitto A. Embedding psychosocial perspectives within clinical management of low back pain: integration of psychosocially informed management principles into physical therapist practice—challenges and opportunities. *Phys Ther.* 2011;91:790–803.
- 17 Keefe FJ, Porter L, Somers T, et al. Psychosocial interventions for managing pain in older adults: outcomes and clinical implications. *Br J Anaesth.* 2013;111:89–94.
- 18 Nicholas MK, George SZ. Psychologically informed interventions for low back pain: an update for physical therapists. *Phys Ther.* 2011;91:765–776.
- 19 Walton DM, Macdermid JC, Giorgianni AA, et al. Risk factors for persistent problems following acute whiplash injury: update of a systematic review and meta-analysis. *J Orthop Sports Phys Ther.* 2013;43:31–43.
- 20 Edwards RR, Cahalan C, Mensing G, et al. Pain, catastrophizing, and depression in the rheumatic diseases. *Nat Rev Rheumatol.* 2011;7:216–224.

- 21 Kent P, Kjaer P. The efficacy of targeted interventions for modifiable psychosocial risk factors of persistent nonspecific low back pain: a systematic review. *Man Ther*. 2012;17:385–401.
- 22 Kosek E. Medical management of pain. In: Sluka KA, ed. *Mechanisms and Management of Pain for the Physical Therapist*. Seattle, WA: IASP Press; 2009:231–255.
- 23 Main CJ, George SZ. Psychologically informed practice for management of low back pain: future directions in practice and research. *Phys Ther*. 2011;91:820–824.
- 24 Bergbom S, Boersma K, Overmeer T, Linton SJ. Relationship among pain catastrophizing, depressed mood, and outcomes across physical therapy treatments. *Phys Ther*. 2011;91:754–764.
- 25 Merskey H, Bogduk N. *Classification of Chronic Pain: Description of Chronic Pain Syndromes and Definition of Pain Terms*. Seattle, WA: IASP Press; 1994.
- 26 Belfer I. Nature and nurture of human pain. *Scientifica (Cairo)*. 2013;2013:415279. doi: 10.1155/2013/415279.
- 27 Thomas SP, Johnson M. A phenomenologic study of chronic pain. *Wet J Nurs Res*. 2000;22:683–705.
- 28 Trafton JA, Oliva EM, Horst DA, et al. Treatment needs associated with pain in substance use disorder patients: implications for concurrent treatment. *Drug Alcohol Depend*. 2004;73:23–31.
- 29 American Physical Therapy Association. Vision 2020. 2013. Available at: <http://www.apta.org/Vision2020/>. Accessed November 2013.
- 30 Pendergast J, Kliethermes SA, Freburger JK, Duffy PA. A comparison of health care use for physician-referred and self-referred episodes of outpatient physical therapy. *Health Serv Res*. 2012;47:633–654.
- 31 International Association for the Study of Pain. IASP Interprofessional Pain Curriculum Outline. Available at: <http://www.iasp-pain.org/Education/CurriculumDetail.aspx?ItemNumber=2057>. Accessed November 2013.
- 32 International Association for the Study of Pain. IASP Curriculum Outline on Pain for Physical Therapy. Available at: <http://www.iasp-pain.org/Education/CurriculumDetail.aspx?ItemNumber=2055>. Accessed November 2013.
- 33 Hunter J, Watt-Watson J, McGillion M, et al. An interfaculty pain curriculum: lessons learned from six years experience. *Pain*. 2008;140:74–86.
- 34 Overmeer T, Boersma K, Denison E, Linton SJ. Does teaching physical therapists to deliver a biopsychosocial treatment program result in better patient outcomes? A randomized controlled trial. *Phys Ther*. 2011;91:804–819.
- 35 St. Marie BJ. Coexisting addiction and pain in people receiving methadone for addiction. *West J Nurs Res*. 2013 Jul 15 [Epub ahead of print]. doi: 10.1177/0193945913495315.
- 36 DeSantana JM, Sluka KA. Pain assessment. In: Sluka KA, ed. *Mechanisms and Management of Pain for the Physical Therapist*. Seattle, WA: IASP Press; 2009:95–132.
- 37 Price DD, McGrath PA, Rafii A, Buckingham B. The validation of visual analogue scales as ratio scale measures for chronic and experimental pain. *Pain*. 1983;17:45–56.
- 38 Cleeland CS, Ryan KM. Pain assessment: global use of the Brief Pain Inventory. *Ann Acad Med Singapore*. 1994;23:129–138.
- 39 Steffen TM, Hacker TA, Mollinger L. Age- and gender-related test performance in community-dwelling elderly people: Six-Minute Walk Test, Berg Balance Scale, Timed Up & Go Test, and gait speeds. *Phys Ther*. 2002;82:128–137.
- 40 Novy DM, Simmonds MJ, Lee CE. Physical performance tasks: what are the underlying constructs? *Arch Phys Med Rehabil*. 2002;83:44–47.
- 41 Waddell G, Newton M, Henderson I, et al. A Fear-Avoidance Beliefs Questionnaire (FABQ) and the role of fear-avoidance beliefs in chronic low back pain and disability. *Pain*. 1993;52:157–168.
- 42 Swinkels-Meewisse EJ, Swinkels RA, Verbeek AL, et al. Psychometric properties of the Tampa Scale for Kinesiophobia and the Fear-Avoidance Beliefs Questionnaire in acute low back pain. *Man Ther*. 2003;8:29–36.
- 43 Sullivan M, Bishop S, Pivik J. The Pain Catastrophizing Scale: development and validation. *Psychol Assess*. 1995;7:524–532.
- 44 Nicholas MK. The pain self-efficacy questionnaire: taking pain into account. *Eur J Pain*. 2007;11:153–163.
- 45 Ware JE Jr, Sherbourne CD. The MOS 36-Item Short-Form Health Survey (SF-36), I: conceptual framework and item selection. *Med Care*. 1992;30:473–483.
- 46 Dworkin RH, Turk DC, Farrar JT, et al. Core outcome measures for chronic pain clinical trials: IMMPACT recommendations. *Pain*. 2005;113:9–19.
- 47 Turk DC, Dworkin RH, Allen RR, et al. Core outcome domains for chronic pain clinical trials: IMMPACT recommendations. *Pain*. 2003;106:337–345.
- 48 Cook KF, Dunn W, Griffith JW, et al. Pain assessment using the NIH Toolbox. *Neurology* 2013;80(11 suppl 3):S49–S53.
- 49 Oliveira VC, Refshauge KM, Ferreira ML, et al. Communication that values patient autonomy is associated with satisfaction with care: a systematic review. *J Physiother*. 2012;58:215–229.
- 50 Pinto RZ, Ferreira ML, Oliveira VC, et al. Patient-centred communication is associated with positive therapeutic alliance: a systematic review. *J Physiother*. 2012;58:77–87.
- 51 Tait RC, Chibnall JT, Kalauokalani D. Provider judgments of patients in pain: seeking symptom certainty. *Pain Med*. 2009;10:11–34.
- 52 Joranson DE. Are health-care reimbursement policies a barrier to acute and cancer pain management? *J Pain Symptom Manage*. 1994;9:244–253.
- 53 Sluka KA, ed. *Mechanisms and Management of Pain for the Physical Therapist*. Seattle, WA: IASP Press; 2009.
- 54 *Guide to Physical Therapist Practice*. 2nd ed. *Phys Ther*. 2001;81:9–746.
- 55 *A Normative Model of Physical Therapist Professional Education, Version 2004*. Alexandria, VA: American Physical Therapy Association; 2004.
- 56 Commission on Accreditation in Physical Therapy Education. Evaluative Criteria for Accreditation of Education Programs for the Preparation of Physical Therapists. 2013. Available at: <http://www.calstate.edu/app/dpt/documents/CAPTE-criteria-2009.pdf>. Accessed November 2013.
- 57 Van Oosterwijck J, Meeus M, Paul L et al. Pain physiology education improves health status and endogenous pain inhibition in fibromyalgia: a double-blind randomized controlled trial. *Clin J Pain*. 2013;29:873–882.
- 58 Moseley GL, Nicholas MK, Hodges PW. A randomized controlled trial of intensive neurophysiology education in chronic low back pain. *Clin J Pain*. 2004;20:324–330.
- 59 Moseley GL. Evidence for a direct relationship between cognitive and physical change during an education intervention in people with chronic low back pain. *Eur J Pain*. 2004;8:39–45.
- 60 Louw A, Diener I, Butler DS, Puentedura EJ. The effect of neuroscience education on pain, disability, anxiety, and stress in chronic musculoskeletal pain. *Arch Phys Med Rehabil*. 2011;92:2041–2056.
- 61 Bement MK. Exercise-induced hypoalgesia: an evidence-based review. In: Sluka KA, ed. *Mechanisms and Management of Pain for the Physical Therapist*. Seattle: IASP Press; 2009:143–166.
- 62 Busch AJ, Barber KA, Overend TJ, et al. Exercise for treating fibromyalgia syndrome. *Cochrane Database Syst Rev*. 2007;(4):CD003786.
- 63 Fransen M, McConnell S, Bell M. Therapeutic exercise for people with osteoarthritis of the hip or knee: a systematic review. *J Rheumatol*. 2002;29:1737–1745.
- 64 Chou R, Huffman LH. Nonpharmacologic therapies for acute and chronic low back pain: a review of the evidence for an American Pain Society/American College of Physicians clinical practice guideline. *Ann Intern Med*. 2007;147:492–504.
- 65 Nielson WR, Jensen MP, Karsdorp PA, Vlaeyen JW. A content analysis of activity pacing in chronic pain: what are we measuring and why? *Clin J Pain*. 2013 Sep 21 [Epub ahead of print]. doi: 10.1097/AJP.000000000000024.
- 66 Nielson WR, Jensen MP, Karsdorp PA, Vlaeyen JW. Activity pacing in chronic pain: concepts, evidence, and future directions. *Clin J Pain*. 2013;29:461–468.
- 67 Andrews NE, Strong J, Meredith PJ. Activity pacing, avoidance, endurance, and associations with patient functioning in chronic pain: a systematic review and meta-analysis. *Arch Phys Med Rehabil*. 2012;93:2109–2121.

- 68 Lorig KR, Ritter PL, Laurent DD, Plant K. The Internet-based arthritis self-management program: a one-year randomized trial for patients with arthritis or fibromyalgia. *Arthritis Rheum*. 2008;59:1009-1017.
- 69 Sluka KA, Marchand S, Bjordal JM, Rakel BA. What makes TENS work? Making sense of the clinical literature. *Phys Ther*. 2013;93:1397-1402.
- 70 Nijs J, van Wilgen PC, Van Oosterwijck J, et al. How to explain central sensitization to patients with "unexplained" chronic musculoskeletal pain: practice guidelines. *Man Ther*. 2011;16:413-418.
- 71 Bjordal JM, Johnson MI, Ljunggreen AE. Transcutaneous electrical nerve stimulation (TENS) can reduce postoperative analgesic consumption: a meta-analysis with assessment of optimal treatment parameters for postoperative pain. *Eur J Pain*. 2003;7:181-188.
- 72 Bjordal JM, Johnson MI, Lopes-Martins RA, et al. Short-term efficacy of physical interventions in osteoarthritic knee pain: a systematic review and meta-analysis of randomized placebo-controlled trials. *BMC Musculoskelet Disord*. 2007;8:51.
- 73 Flor H, Fydrich T, Turk DC. Efficacy of multidisciplinary pain treatment centers: a meta-analytic review. *Pain*. 1992;49:221-230.
- 74 Turk DC, Stanos SP, Palermo TM, et al. *Interdisciplinary Pain Management*. Glenview, IL: American Pain Society; 2010.
- 75 Herr K, Coyne PJ, McCaffery M, et al. Pain assessment in the patient unable to self-report: position statement with clinical practice recommendations. *Pain Manag Nurs*. 2011;12:230-250.
- 76 Herr K. Pain assessment strategies in older patients. *J Pain*. 2011;12(3 suppl 1):S3-S13.
- 77 Stevens BJ, Harrison D, Rashotte J, et al. Pain assessment and intensity in hospitalized children in Canada. *J Pain*. 2012;13:857-865.
- 78 Stapelkamp C, Carter B, Gordon J, Watts C. Assessment of acute pain in children: development of evidence-based guidelines. *Int J Evid Based Healthc*. 2011;9:39-50.
- 79 Turk DC, Okifuji A, Sherman J. Behavioral aspects of low back pain. In: Taylor J, Twome L, eds. *Physical Therapy of the Low Back*. 3rd ed. New York, NY: WB Saunders Co; 2000:351-368.
- 80 Häuser W, Thieme K, Turk DC. Guidelines on the management of fibromyalgia syndrome: a systematic review. *Eur J Pain*. 2010;14:5-10.
- 81 Gruppen LD, Mangrulkar RS, Kolars JC. The promise of competency-based education in the health professions for improving global health. *Hum Resour Health*. 2012;10:43.
- 82 Frenk J, Chen L, Bhutta ZA, et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. *Lancet*. 2010;376:1923-1958.
- 83 *International Classification of Functioning, Disability and Health: ICF*. Geneva, Switzerland: World Health Organization; 2001.
- 84 Edwards I, Jones MA, Carr J, et al. Clinical reasoning strategies in physical therapy. *Phys Ther*. 2004;84:312-330.
- 85 Christensen N, Jones MA, Edwards I, Higgs J. Helping physiotherapy students develop clinical reasoning capability. In: Higgs J, Jones MA, Loftus S, Christensen N, eds. *Clinical Reasoning in the Health Professions*. 3rd ed. Amsterdam, the Netherlands: Elsevier; 2008:245-256.
- 86 Christensen N, Nordstrom T. Facilitating the teaching and learning of clinical reasoning. *Handbook of Teaching and Learning for Physical Therapists*. 3rd ed. St Louis, MO: Elsevier; 2013:183-199.
- 87 Watt-Watson J, Hunter J, Pennefather P, et al. An integrated undergraduate pain curriculum, based on IASP curricula, for six health science faculties. *Pain*. 2004;110:140-148.
- 88 Erb D, Kaprielian V, Dieter P, et al. Improving Interprofessional Understanding via Interprofessional Case Conferences. *MedEdPORTAL*. 2011. Available at: <https://www.mededportal.org/publication/8437>. Accessed November 2013.
- 89 Dufault MA, Sullivan M. A collaborative research utilization approach to evaluate the effects of pain management standards on patient outcomes. *J Prof Nurs*. 2000;16:240-250.
- 90 Wamsley M, Staves J, Kroon L, et al. The impact of an interprofessional standardized patient exercise on attitudes toward working in interprofessional teams. *J Interprof Care*. 2012;26:28-35.
- 91 Bradley KM, Caramagno J, Waters S, Koch A. *Analysis of Practice for the Physical Therapy Profession: Entry-Level Physical Therapists*. Federation of State Boards of Physical Therapy. 2011. Available at: http://www.fsbpt.org/Portals/0/documents/free-resources/PA2011_PTfinalReport20111109.pdf. Accessed November 2013.
- 92 American Council of Academic Physical Therapy. 2013. Available at: <http://www.acapt.org/>. Accessed November 2013.

Appendix 1.

Pain Management Domains and Core Competencies^a

Domain 1
Multidimensional Nature of Pain: What Is Pain?
This domain focuses on the fundamental concepts of pain, including the science, nomenclature, and experience of pain, and pain’s impact on the individual and society.
1. Explain the complex, multidimensional, and individual-specific nature of pain.
2. Present theories and science for understanding pain.
3. Define terminology for describing pain and associated conditions.
4. Describe the impact of pain on society.
5. Explain how cultural, institutional, societal, and regulatory influences affect assessment and management of pain.
Domain 2
Pain Assessment and Measurement: How Is Pain Recognized?
This domain relates to how pain is assessed, quantified, and communicated, in addition to how the individual, the health system, and society affect these activities.
1. Use valid and reliable tools for measuring pain and associated symptoms to assess and reassess related outcomes as appropriate for the clinical context and population.
2. Describe patient, provider, and system factors that can facilitate or interfere with effective pain assessment and management.
3. Assess patient preferences and values to determine pain-related goals and priorities.
4. Demonstrate empathic and compassionate communication during pain assessment.
Domain 3
Management of Pain: How Is Pain Relieved?
This domain focuses on collaborative approaches to decision making, diversity of treatment options, the importance of patient agency, risk management, flexibility in care, and treatment based on appropriate understanding of the clinical condition.
1. Demonstrate the inclusion of patient and others, as appropriate, in the education and shared decision-making process for pain care.
2. Identify pain treatment options that can be accessed in a comprehensive pain management plan.
3. Explain how health promotion and self-management strategies are important to the management of pain.
4. Develop a pain treatment plan based on benefits and risks of available treatments.
5. Monitor effects of pain management approaches to adjust the plan of care as needed.
6. Differentiate physical dependence, substance use disorder, misuse, tolerance, addiction, and nonadherence and how these conditions affect pain and function.
7. Develop a treatment plan that takes into account the differences among acute pain, acute-on-chronic pain, chronic/persistent pain, and pain at end of life.
Domain 4
Clinical Conditions: How Does Context Influence Pain Management?
This domain focuses on the role of the clinician in the application of the competencies developed in domains 1–3 and in the context of varied patient populations, settings, and care teams.
1. Describe the unique pain assessment and management needs of special populations.
2. Explain how to assess and management pain across settings and transitions of care.
3. Describe the role, scope of practice, and contribution of the different professions within a pain management care team.
4. Implement an individualized pain management plan that integrates the perspectives of patients, their social support systems, and health care providers in the context of available resources.
5. Describe the role of the clinician as an advocate in assisting patients to meet treatment goals.

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Appendix 2.

Resources for Pain Education

1. International Association for the Study of Pain, www.iasp-pain.org
2. American Pain Society, www.americanpainsociety.org
3. Pain Management Special Interest Group, Orthopaedic Section, American Physical Therapy Association, www.orthopt.org/content/special_interest_groups/pain_management
4. Intraprofessional Pain Management Competency Program, University of California–Davis, www.ucdmc.ucdavis.edu/paineducation
5. painHEALTH, painhealth.csse.uwa.edu.au/
6. National Institutes of Health, PROMIS, www.nihpromis.org/#3
7. Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials, IMMPACT, www.immpact.org/
8. Sluka KA. <i>Mechanisms and Management of Pain for the Physical Therapist</i> . Seattle, WA: IASP Press; 2009
9. Butler DS, Moseley GL. <i>Explain Pain</i> . Adelaide, Australia: Noigroup Publications; 2003
10. Fishman SM, Ballantyne JC, Rathmell JP. <i>Bonica’s Management of Pain</i> . Philadelphia, PA: Lippincott Williams & Wilkins; 2010
11. Schmidt RF, Gebhart GF. <i>Encyclopedia of Pain</i> . 2nd ed. New York, NY: Springer; 2013
12. Turk DC, Melzack R. <i>Handbook of Pain Assessment</i> . New York, NY: Guilford Press; 2011
13. Committee on Advancing Pain Research, Care, and Education, Institute of Medicine. <i>Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research</i> . Washington, DC: Institute of Medicine of the National Academies; 2011

Appendix 3.

Core Values/Principles^a

• Advocacy	• Empathy
• Collaboration	• Ethical Treatment
• Communication	• Evidence-Based Practice
• Compassion	• Health Disparities Reduction
• Comprehensive Care	• Interprofessional Teamwork
• Cultural Inclusiveness	• Patient-Centered Care

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