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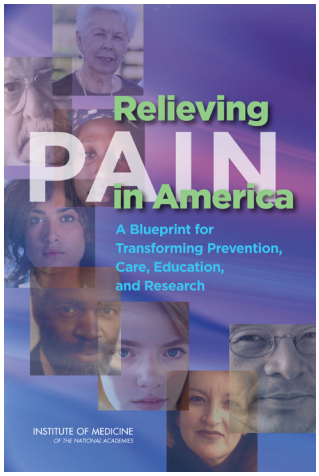
Relieving Pain in America

A Blueprint for Transforming Prevention, Care, Education, and Research



Chronic pain affects about 100 million American adults—more than the total affected by heart disease, cancer, and diabetes combined. Pain also costs the nation up to $635 billion each year in medical treatment and lost productivity.

The 2010 Patient Protection and Affordable Care Act required the Department of Health and Human Services (HHS) to enlist the Institute of Medicine (IOM) in examining pain as a public health problem. Acting through the National Institutes of Health (NIH), HHS asked the IOM to assess the state of the science regarding pain research, care, and education and to make recommendations to advance the field.

Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research presents the IOM study committee's findings and recommendations.

Pain represents a national challenge. A cultural transformation is necessary to better prevent, assess, treat, and understand pain of all types.

Fostering a Cultural Transformation

Pain represents a national challenge. A cultural transformation is necessary to better prevent, assess, treat, and understand pain of all types.

Government agencies, healthcare providers, healthcare professional associations, educators, and public and private funders of health care should take the lead in this transformation. Patient advocacy groups also should engage their diverse constituencies. This report provides a blueprint for achieving this transformation.

Pain as a Public Health Challenge

To reach the vast multitude of people with various types of pain, the nation must adopt a population-level prevention and management strategy. HHS should develop a comprehensive plan with specific goals, actions, and timeframes. The plan should:

- heighten awareness about pain and its health consequences;
- emphasize the prevention of pain;
- improve pain assessment and management in the delivery of healthcare and financing programs of the federal government;
- use public health communication strategies to inform patients on how to manage their own pain; and
- address disparities in the experience of pain among subgroups of Americans.

Better data are needed to help shape efforts. Although pain is known to be prevalent across society, reliable data are lacking on the full scope of the problem, especially among those currently underdiagnosed and undertreated, including racial and ethnic minorities; people with lower levels of income and education; women, children, and older people; military veterans; surgery and cancer patients; and people at the end of life; among others. Therefore, the National Center for Health Statistics, Agency for Healthcare Research and Quality (AHRQ), other federal and state agencies, and private organizations should accelerate the collection of data on pain incidence, prevalence, and treatments. Data should be collected at regular intervals using standardized questions, protocols for surveys, and electronic medical records to identify the following information:

- subpopulations at risk;
- characteristics of acute and chronic pain;
- profound health consequences of pain, including death, disease, and disability; and
- related trends over time.

Care of People with Pain

People with pain receive care in various ways, including assistance with self-management, primary care, specialty care, and pain clinics, among others. Treatments can include medications, surgery, behavioral interventions, psychological counseling, rehabilitative and physical therapy, and complementary and alternative therapies. For many people, however, pain prevention, assessment, and treatment are inadequate.

Among steps to improving care, healthcare providers should increasingly aim at tailoring pain care to each person's experience, and self-management of pain should be promoted. Also, primary care physicians—who handle most front-line pain care—should collaborate with pain specialists in cases where pain persists. Public and private insurers can help by offering incentives to support the delivery by primary care providers of coordinated, evidence-based, interdisciplinary pain assessment and care for persons with complex pain.

A number of barriers—including regulatory, legal, institutional, financial, and geographical barriers—limit the availability of pain care and contribute to the disparities found among some groups. Government agencies, healthcare providers, and public and private funders of health care should adopt a comprehensive, strategic approach to reduce or eliminate these barriers.

Education Challenges

Across health care and society alike, there are major gaps in knowledge about pain. Educating health professionals about how to better understand pain and its causes will help bridge these gaps.

To improve patient and public understanding of pain, federal agencies and other stakeholders should redesign education programs. They should aim to foster an understanding among patients, the public, and healthcare providers that there are complex biological and psychosocial aspects

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to pain, and they should develop materials about the nature of pain; ways to use self-help strategies to prevent, cope with, and reduce pain; and available treatments for pain. The materials should be specifically targeted to patients, the public, and healthcare providers.

To increase understanding among the array of health professionals who deal with pain, undergraduate and graduate training programs should offer standardized information about pain and include experience in caring for pain in interprofessional settings. Improving education is especially important for primary care providers, given their key role in pain management. In addition, all care providers should keep their knowledge current by engaging in continuing education programs; and licensure, certification, and recertification examinations should include assessments of providers' pain education.

Research Challenges

Research has made remarkable strides in understanding the biological, cognitive, and psychological underpinnings of pain, and the future promises advances in a number of fields—from genomic and cellular through behavioral mechanisms. Still, many gaps persist, and developing more effective and less risky pain relievers remains a major challenge. Additional challenges exist when trying to use advances in the implementation sciences to help translate effective treatments from research into practice and to adapt the regulatory process to enable more efficient evaluation and approval of potentially effective therapies. This will be especially important as personalized medicine approaches to pain management develop. At present, however, federal dollars for pain research are in short supply and likely to decrease. Moreover, the responsibility for pain research is spread thin.

The committee recommends that an existing NIH institute be designated the lead institute for pain. It also recommends that the NIH Pain Consortium take a stronger leadership role in effecting the necessary transformation in how pain research is conducted, by fostering coordination across institutes and centers, by improving study section decision making on pain proposals, and by exploring a range of potential public-private initiatives.

The need for pain-related research is not confined to the NIH. Research into the prevention, occurrence, and costs of pain and the delivery and financing of pain treatment are of concern to many public health entities, for example, the Centers for Disease Control and Prevention, for epidemiological data and public education strategies; AHRQ, for quality improvement; the Health Resources and Services Administration, with respect to professional education and service delivery for vulnerable populations; and the Centers for Medicare and Medicaid Services, for reimbursement-related research and demonstration programs.

Revised March 2012

Blueprint for Action

The committee offers a blueprint for action in transforming prevention, care, education, and research, with the goal of providing relief for people with pain in America. The blueprint prioritizes the committee's recommendations. While some recommendations should be implemented by the end of 2012—including developing a comprehensive strategy, developing strategies to reduce barriers in care, supporting collaboration between pain specialists and primary care clinicians, and designating a lead institute at the NIH that is responsible for moving pain research forward—all other recommended actions must build on these short-term achievements and should be taken soon afterward. These other actions must be ongoing efforts that should be firmly developed and put in place by the end of 2015.

The strategy should be comprehensive in scope, inclusive in its development, expeditious in its implementation, and practical in its application. Most importantly, the strategy must be far-reaching. As evidenced in this report, pain is a major driver for visits to physicians and other healthcare providers, a major reason for taking medications, a major cause of disability, and a key factor in quality of life and productivity. Given the burden of pain in human lives, dollars, and social consequences, relieving pain should be a national priority.

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IASP Curriculum Outline on Pain for Physical Therapy

http://www.iasp-pain.org/Content/NavigationMenu/GeneralResourceLinks/Curricula/Therapy/default.htm

Task Force Members: Helen Slater, Kathleen Sluka, Anne Söderlund, Paul J. Watson (Chair)

Outline Summary

Introduction

Pain is a common problem and the primary therapeutic objectives of physical therapists working with people in pain are the reduction of pain and associated disability, the improvement of function, and promotion of health and well-being in everyday living.

For the most effective management of pain, physical therapists must have an understanding of the biological basis, the psychosocial and environmental components of pain and their impact on the pain experience across the life span. Therapists should be familiar with pain assessment and measurement approaches and should be able to implement a broad variety of evidence-based pain management strategies. The key focus is to encourage early engagement of the patient in appropriate active pain management strategies (what the patient can do) rather than focus on passive interventions (what you do to the patient). In this regard, treatment interventions are designed to form part of an overall pain management approach which should also incorporate self-management.

While physical therapists are not responsible for pharmacological management, they should have sufficient knowledge about pharmacological agents and their side effects and be able to optimise the 'therapeutic window' offered by pharmaceutical agents to encourage the use of active management strategies as appropriate for each individual patient. It is essential to take a patient-centred holistic and collaborative view of the needs of the client/patient with pain and disability.

Considerable variation exists from country to country in the academic structure of professional programs for physical therapy and in the professional expectations that are made of an entry-level therapist. The specific content of this pain curriculum can be integrated within programs using whatever structural and educational approaches would be the most appropriate to meet local professional and program needs. However, this curriculum is designed to be most appropriate for students who have previously completed courses in anatomy, physiology, and kinesiology or movement science, and the majority of their professional therapeutics courses. We recommend that physical therapy pain management should be taught independently in the curriculum from other traditional courses such as orthopedics, manual therapy, or physical agents.

Principles

The following principles guide the curriculum development for entry-level physical therapists and draw from the Declaration of Montréal (IASP 2010):

Article 1. The right of all people to have access to pain management without discrimination

Article 2. The right of people in pain to acknowledgment of their pain and to be informed about how it can be assessed and managed

Article 3. The right of all people with pain to have access to appropriate assessment and treatment of the pain by adequately trained health care professionals

1. Pain is viewed as a biopsychosocial experience that includes sensory, emotional, cognitive, developmental, behavioral, spiritual and cultural components.
2. Pain may be acute, persistent, or both and pain duration will guide the development of the pain management plan.
3. Pain must be assessed in a comprehensive and consistent manner using valid and reliable assessment tools.
4. Patients have a right to the best possible pain management. Pain assessment and management are integral aspects of physical therapy management and should involve patients and their family members.
5. Pain assessment and management should be recorded in a clear and readily accessible manner.
6. Patient and family education about pain and its (self) management are essential components of a physical therapy management plan.
7. The physical therapist is an essential member of the pain management team.

Students should be familiar with the theoretical models behind interventions as well as the empirical evidence for effectiveness of these interventions. Course instructors are encouraged to adopt a critical appraisal perspective as a basis for decision making when reviewing the benefits and limitations of interventions.

Objectives

Upon completion of this pain curriculum the entry-level physical therapist will be able to:

1. Apply knowledge of basic science of pain to the assessment and management of people with pain.
2. Promote health and well-being through prevention of pain and disability.
3. Assess and measure the biological and psychosocial factors that contribute to pain, physical dysfunction and disability using valid and reliable assessment tools.
4. Identify professional, system, patient, family and community barriers to effective pain assessment and management.
5. Develop an evidence-informed physical therapy management program in collaboration with the client/patient, directed at modifying pain, promoting tissue healing, improving function and reducing disability.
6. Implement management that includes patient education, active approaches such as functionally oriented behavioural movement re-education approaches and exercise (including pacing), and passive approaches such as manual therapy, and application of electrophysical agents as relevant.
7. Demonstrate an awareness of their scope of practice to evaluate and manage patients experiencing pain using evidenced-based practice strategies for clinical decision-making.
8. When appropriate, refer patients in a timely manner for additional care to practitioners with expertise such as medical and surgical, behavioral and psychological, or pharmacological interventions.
9. Recognize individuals who are at risk for under-treatment of their pain (e.g., individuals who are unable to self-report pain, neonates, cognitively impaired).
10. Practice in accordance with an ethical code that recognizes human rights, diversity, and the requirement to "do no harm."
11. Reflect critically on effective ways to work with and improve care for people with pain.
12. Regularly update personal knowledge on pain and its management.

Curriculum Content Outline

I. Multidimensional Nature of Pain

A. Magnitude of the problem: epidemiology of pain as a public health problem with social, ethical, and economic considerations

B. Current theories of the anatomical, physiological, and psychological basis of pain and pain relief.

C. Definition of pain and the multidimensional nature of the pain experience.

D. Impact of age, gender, family, culture, spirituality, and the environment on the pain experience

E. Role and responsibilities of the physical therapist in pain management and the integration of physical therapy into the interdisciplinary team.

F. Roles and responsibilities of other health care professionals in the area of pain management and the merits of interdisciplinary collaboration.

G. Integration of physical therapy interventions into an holistic management strategy in collaboration with other professions (health and non-health).

H. Pain across the life span (physiological and psycho-social factors, implications for assessment, measurement, and intervention)

1. Implications and assessment of pain in infancy, childhood, and adolescence with reference to optimizing physical, psychological, educational and social development and integrate these into the management strategy.
2. Specific problems faced by the elderly with painful conditions with respect to the influence of co-morbidities, access to appropriate services and maintenance of independence.

I. Basic science:

1. Understand and describe nociceptors and the adequate stimuli to activate nociceptors in different tissue types (i.e. skin, muscle, joint, viscera). Explain the afferent innervations of the spinal cord from different tissue types, and how pain from different tissues is processed centrally.
2. Define and describe peripheral sensitization and how these changes are associated with pain perception
3. Describe neurogenic inflammation, the neurotransmitters involved in this process, and how these neurotransmitters could contribute to peripheral pain processing.
4. Understand the changes and role of ion channels, excitatory neurotransmitters, and inhibitory neurotransmitters in the peripheral nervous system and in non-neuronal cells, and explain how these changes are important in the processing of pain transmission.
5. Describe animal models of pain. Understand what the models are trying to mimic, and why one would use an animal model to study pain.
6. Describe the pain pathways involved in the sensory discriminative and motivational affective component of pain.
7. Describe and define central sensitization and how this is similar and different from peripheral sensitization.
8. Describe and understand the mechanisms that underlie pain behaviors: referred pain, primary hyperalgesia, secondary hyperalgesia, allodynia.
9. Understand the role of excitatory neurotransmitters, inhibitory neurotransmitters, and glia in the central nervous system in enhancement of pain transmission, and changes that occur as a result of tissue injury.
10. Describe the descending pathways that modulate pain transmission.
11. Understand the differences between pain facilitation and pain inhibition, brain sites, and neurotransmitters that play a role in this process. In particular understand how these pathways can be activated by non-pharmacological treatments.
12. Understand the long-term consequences of chronic pain on the brain.
13. Understand neuroimaging tools and key brain regions underpinning the experience of pain, and how this changes depending upon the context, cognitive and emotional state of the individual.
14. Compare and contrast two or more theories on the interactions between pain and motor function (e.g. Vicious Cycle Theory and Pain Adaptation Theory).

II. Pain Assessment and Measurement

A. Recognize the differences between acute and chronic pain and the implications for assessment and management of the patient.

B. Emphasize performance of a comprehensive assessment using reliable and validated tools in the acute pain phase to prevent the onset of chronicity.

C. Use a biopsychosocial approach for assessment of pain and disability as it accounts for the multidimensional nature of pain in domains relevant to physical therapy practice.

D. Account for the multidimensional nature of pain by including appropriate assessment measures for primary domains including:

1. Sensory
2. Affective
3. Cognitive

4. Physiological
5. Behavioral

E. Recognize strengths and limitations of commonly used measures for different pain dimensions:

1. Self-report measures as "accepted standard" not gold standard
2. Physical performance measures including Functional Capacity Evaluations (FCEs)
3. Physiological/autonomic response measures

F. Modify pain assessment strategies to match inherent variability associated with the patient's clinical presentation:

1. Individual factors (e.g. age, sex, etc.)
2. Sociocultural influences (e.g. spirituality, ethnicity, etc.)
3. Clinical characteristics of pain (e.g. duration, anatomical location, etc.)
4. Pain type and state (e.g. neuropathic pain, cancer pain, etc.)
5. Vulnerable populations (e.g. communication barriers, cognitive impairment etc.)

G. Interpret, critically appraise (reliability, validity, and responsiveness), and implement available pain assessment instruments for:

1. Screening for the development of chronic conditions
2. Identifying accepted patient subgroups for application of treatment
3. Determining clinical relevance and/or magnitude of patient outcomes

H. Understand the need to monitor and review the effectiveness of treatment/management and modify treatment and management strategies appropriately.

I. Understand the need to refer to relevant health professional as appropriate and in a timely manner.

III. Management of Pain

A. Demonstrate an ability to integrate the patient assessment into an appropriate management plan using the concepts and strategies of clinical reasoning

B. Understand the principles of an effective therapeutic patient/professional relationship to reduce pain, promote optimal function and reduce disability through the use of active and where appropriate, passive pain management approaches

C. Assist patients to develop a daily routine to support achievement and, where necessary, readjustment of habits and roles according to individual capacity and life situation

D. Understand the need to involve family members and significant others including employers where appropriate.

E. Use a person-centered perspective to formulate collaborative intervention strategies consistent with a physical therapy perspective

F. Understand appropriate pharmacology

1. Understand the principles of the pharmacology of medications used to treat pain:
    a. non-opioid medications
    b. opioids
    c. adjuvants
    d. topical analgesics and local anaesthetics
2. Understand the limitations of the pharmacological management of chronic pain, the importance of combining pharmacological approaches with non-pharmacological management of chronic pain and the use of such strategies alongside appropriate evidence-based active self management strategies

G. Patient education

1. Recognise the impact of, and evidence for, the use of therapeutic neuroscience education and self-management as a critical part of pain management.
2. Design and apply appropriate educational strategies based on educational science.
3. Identify the range of educational opportunities available across therapeutic domains (eg, injury, disease, medical and post surgical intervention) with consideration of age, culture and gender.
4. Consider the scope and evidence for/against various contemporary therapeutic educational styles (e.g. biomedical, psychological, neuroscience) and models (e.g stages of change theory) and service delivery modes including face to face, web-based, group education.
5. Identify key variables which may impact on knowledge outcomes for the patient (eg self efficacy, health literacy, co-morbidities, culture), the clinician (eg health professional's pain-related beliefs), the message (e.g. use of multimedia), and the context (e.g. insurance limitations; risk reduction; injury prevention)

H. Behavioral management

1. Understand and apply functional behavioral analysis of pain conditions.
2. Appraise the value of screening tools in the identification of psychosocial factors predictive of persistent disability.
3. Apply behavioural approaches (physical and cognitive behavioral components) and evaluate the effects.

I. Exercise

1. Understand the parameters (i.e., mode, frequency, duration, intensity) of therapeutic exercise for pain relief.
2. Describe how to modify exercise parameters as they relate to the pain condition, age, psychosocial factors, and patient's health status.
3. Recognize the importance of implementing adjunct therapies to address issues related to exercise prescription (i.e., biopsychosocial, fear avoidance behaviour, catastrophizing, cognitive behavioural therapy).
4. Understand the importance of patient education in prescribing therapeutic exercise, including the concept of motivation, pacing) to enhance overall treatment effectiveness and compliance.

J. Reintegration into work (paid and unpaid employment)

1. Identify the factors associated with prolonged work loss and integrate strategies to overcome barriers to return to work
2. Understand the role of ergonomic principles, modified workplace accommodations
3. Develop a management plan in co-ordination with employers and case managers

K. For the following interventions

1. Manual Therapy (massage, manipulation, mobilization)
2. Acupuncture
3. Transcutaneous electrical nerve stimulation (TENS, IFC)
4. Laser
5. Relaxation
6. Biofeedback
    i. Understand the proposed neurophysiological mechanisms and the associated effects, and for manual therapy the biomechanical effects, of each intervention as it pertains to pain management.
    ii. Understand the principles of clinical application and current evidence for the each intervention in the management of different pain conditions.

IV. Clinical Conditions

A. Understand the use of education, exercise and adjuvant physical therapy interventions as they pertain to specific acute and chronic pain conditions. The following is a list of different clinical conditions commonly managed with physical therapy. Other conditions may also warrant physical therapy interventions.

1. Low back and neck pain
2. Arthritis
3. Headache and Migraine
4. Cancer pain
5. Fibromyalgia
6. Myofascial pain
7. Neuropathic pain

8. Complex regional pain syndromes
9. Temporomandibular disorder
10. Tendinopathies
11. Adhesive capsulitis
12. Sprains
13. Postoperative pain
14. Pelvic floor pain

References

Sluka KA, Mechanisms and Management of Pain for the Physical Therapist, IASP Press, 2009. This book provides a general overview of the epidemiology, definitions, basic science mechanisms, assessment, physical therapy management, interdisciplinary care, and pain syndromes. It uses an evidence-based approach to pain management including information on education, exercise, electrotherapy, manual therapy, and physical agents.

Additional references listed below expand what is currently found in the above text:

1. Apkarian AV, Baliki MN, Geha PY. Towards a theory of chronic pain. Prog Neurobiol. 2009 Feb;87(2):81-97. Epub 2008 Oct 5. Review.
2. Engers AJ, Jellema P, Wensing M, van der Windt DAWM, Grol R, van Tulder MW. Individual patient education for low back pain. Cochrane Database of Systematic Reviews 2008, Issue 1. Art. No.: CD004057. DOI: 10.1002/14651858.CD004057.pub3.
3. Foster G, Taylor SJC, Eldridge S, Ramsay J, Griffiths CJ. Self-management education programmes by lay leaders for people with chronic conditions. Cochrane Database of Systematic Reviews 2007, Issue 4. Art. No.: CD005108. DOI: 10.1002/14651858.CD005108.pub2. Publication status and date: Edited (no change to conclusions), published in Issue 1, 2009.
4. Furlan AD, van TulderMW, CherkinD, Tsukayama H, Lao L, Koes BW, Berman BM. Acupuncture and dry-needling for low back pain. Cochrane Database of Systematic Reviews 2005, Issue 1. Art. No.: CD001351. DOI: 10.1002/14651858.CD001351.pub2. Publication status and date: Edited (no change to conclusions), published in Issue 9, 2010.
5. Green S, Buchbinder R, Hetrick SE. Physiotherapy interventions for shoulder pain. Cochrane Database of Systematic Reviews 2003, Issue 2. Art. No.: CD004258. DOI: 10.1002/14651858.CD004258. Publication status and date: Edited (no change to conclusions), published in Issue 9, 2010
6. Kendall N, Burton K, Watson PJ, Main C. Tackling musculoskeletal problems: a guide for clinic and workplace. TSO. London 2009.
7. Moseley, G. L., Nicholas M K, et al. (2004). A randomized controlled trial of intensive neurophysiology education in chronic low back pain." Clin J Pain 20(5): 324-30.
8. Persson A L, Veenhuizen H, Zachrison L, Gard G. Relaxation as treatment for chronic musculoskeletal pain: a systematic review of randomised controlled studies. Physical Therapy Reviews.2008;13(5):355-365.
9. Trinh K, Graham N, Gross A, Goldsmith CH, Wang E, Cameron ID, Kay TM, Cervical Overview Group. Acupuncture for neck disorders. Cochrane Database of Systematic Reviews 2006, Issue 3. Art. No.: CD004870. DOI: 10.1002/14651858.CD004870.pub3. Publication status and date: Edited (no change to conclusions), published in Issue 3, 2010.

Pain Management Syllabi

Textbook: Mechanisms and Management of Pain for the Physical Therapist (IASP text by Sluka, 2009)

Lecture Schedule

Week	Hoeger Bement	Sluka
1	Pain Introduction	Pain Introduction Basic Science: Peripheral Mechanisms Ch. 1 and 2
2	Basic Science: Peripheral Mechanisms	Basic Science: Central Mechanisms Basic Science: Supraspinal Processing Ch. 3
3	Basic Science: Central Mechanisms	Basic Science: Supraspinal Processing Motor Control/Pain Heterogeneity Ch. 4
4	Waddell's Nonorganic Signs Pain Theories Referred Pain Placebo	Basic Science Cases and Discussion Ch. 5
5	Pain Assessment	Pain Management: Interdisciplinary Pain Management: Medical Pain Management: Psychological Ch. 11, 12 , and 13
6	Pain Across the Lifespan Pediatric	Geriatric Pain Headache Fibromyalgia and Myofascial Pain Ch. 14 and 15
7	Exercise-Induced Analgesia	Spine Pain Arthritis Acute Pain Ch. 16 and 18
8	Clinical Evaluation and Management of Chronic Pain (Geiser)	Women's Health CRPS/Neuropathic Personalized Genomics and Pain Ch. 17
9	Evaluation and Management (cont) Thought Viruses (Geiser)	Pain Assessment Ch. 5
10	Cognitive-Behavioral Management	Pain Management: General Principals, Education, Exercise Ch. 6 and 7
11	Motor Control	Pain Management: Manual Therapy, Electrotherapy, Physical Agents Ch. 8, 9, and 10
12	Fibromyalgia Myofascial Pain	Pain Management: Overview and Discussion- Assignment 2
13	CRPS/Neuropathic	Pain Management: Discussion and Cases Cases from Sluka Text- Assignment 3

Laboratory Schedule – Hoeger Bement

Week	Content
1	Introduction- Biopsychosocial Model
2	Experimental Pain (Pressure, Ischemic, Thermal)
3	Group Project Work
4	Complementary Therapies (acupuncture, tai chi, meditation)
5	Group Project Work
6	Pain Assessment
7	Midterm Exam
8	Patient Perspectives and Education
9	Patient Lab Assessment
10	Cognitive-Behavioral Assessments
11	Group Project Presentations
12	Group Project Presentations
13	Cancer Pain (includes lecture and lab)

Assignments- Hoeger Bement

1. Patient Assessment Lab
   - Incorporate biopsychosocial factors in your evaluation
   - Choose the most appropriate pain assessment- score and interpret
2. Capstone Project: The class is divided into groups and assigned a pain condition. Each group will be required to provide a summary on the following:
   - Demographics of condition- use to establish case study/patient scenario
   - Background on the condition
   - Resources
   - Pain Evaluation and Assessment
     - ✓ Two best assessment tools and rationale (include copy if new to class)
     - ✓ Other issues that should be addressed
       - Biopsychosocial (address each category)
   - Physical therapy issues and treatment strategies
   - Mechanisms for pain relief using evidence-based approach
   - Patient Education

Assignments- Sluka

1. Patient Evaluation:
   - Evaluations will utilize at the minimum the VAS, McGill Pain Questionnaire or Brief Pain Inventory, at least one functional questionnaire, quality of life questionnaire, or disease specific questionnaire, and a functional test
   - Propose a treatment for their patient using an evidence-based approach for justification of their specific treatment plan
2. Pain Management: Overview and Discussion (week 12 of the syllabus)
   - Construct a written description to the patient for how each treatment (education, exercise, heat, cold, TENS, manual therapy) will work to reduce their pain.
   - Construct a written description for a physician on why you would like to use each treatment (education, exercise, heat cold, TENS, manual therapy).
   - Read Cases 1-5 (Chapter 19)* and write a treatment plan
3. Pain Management: Discussion and Cases (week 13 of the syllabus)
   - Write a description to your patient explaining the underlying mechanisms of their pain: acute and chronic.
   - Construct a written description to your patient for why you would like to pursue a psychological evaluation and for why you would like to pursue a multidisciplinary treatment program.
   - Read Cases 6-10 (Chapter 19)* write a treatment plan

*****Chapter 19 contains 10 case studies that "describe pain in a selection of patients with a variety of diagnoses. Assessments are outlined, and normative values for tests are given where applicable. Each case is followed by a general description of the rationale for the patient having primarily a peripheral or central mechanism or a combination of peripheral and central components for the pain. The physical therapy treatment is outlined, along with other treatments or referrals as appropriate. Finally, the clinical evidence to support the treatment plan is given, based on evidence presented in prior chapters."

Class Readings and Resources

- IASP Pain Curriculum Recommendations for Physical Therapists
- Institute of Medicine Report, 2011
- IASP website: www.iasp-pain.org
    - Taxonomy
    - Global Year Against Pain- great references for each condition
    - IASP texts- edited by experts in the pain field
- *Mechanisms and Management of Pain for the Physical Therapist* (Ed: Sluka) International Association for the Study of Pain (IASP) Press, 2009.
    - Excellent references with each chapter
- *Pain: A Textbook for Therapists* (Eds: Strong, Unruh, Wright, and Baxter) Churchill Livingstone, 2002.
- *Science of Pain* (Eds: Basbaum and Bushnell) Academic Press, 2009
    - Excellent evidence-based approach on neuroanatomy and neurophysiology of pain
- *Handbook of Pain Assessment* 3rd Edition (Eds: Turk and Melzack) Guilford Press, 2011.
    - McGill Pain Questionnaire
    - Pediatric Pain
    - Pain in Older Persons
        - Shega J, Emanuel L, Vargish L, Levine SK, Bursch H, Herr K, Karp JF, Weiner DK. Pain in Persons with Dementia: Complex, Common, and Challenging. *Journal of Pain* 8(5): 373-378, 2007.
    - Cancer Pain
- PTJ
    - Special Issue on Psychologically Informed Practice (May 2011)
    - Scalzitti DA. Screening for Psychological Factors in Patients with Low Back Problems: Waddell's Nonorganic Signs. *Physical Therapy Journal* 77(3): 306-312, 1997.
- JOSPT: George and Zeppieri Clinical Commentary, July 2009
    - "Physical Therapy Utilization of Graded Exposure for Patients With Low Back Pain"
    - Students given questions for class discussion
- *Painful Yarns: Metaphors and Stories to Help Understand the Biology of Pain* (Ed: Moseley) Dancing Giraffe Press, 2007.

Articles:

- Melzack R, Wall PD. Pain Mechanisms: A New Theory. *Science* 150: 971-979, 1965.
    - Gate Control Theory of Pain
- Hoheisel U, Mense S, Simons DG, Yu XM. Appearance of New Receptive Fields in Rat Dorsal Horn Neurons Following Noxious Stimulation of Skeletal Muscle: A Model for Referral of Muscle Pain? *Neuroscience Letters* 153(1): 9-12, 1993.
    - Classic article on central sensitization and referred pain using animal models
- Flor H. The Modification of Cortical Reorganization and Chronic Pain by Sensory Feedback. *Applied Psychophysiology and Biofeedback* 27(3), 2002.
    - fMRI studies on phantom limb pain and chronic LBP

Audience Recommendations:

- *Explain Pain* (Butler and Moseley) Orthopedic Physical Therapy Products, 2003.
- Moseley and Butler website: www.gradedmotorimagery.com
- Videos
    - Understanding Pain: What to do about it in less than five minutes?)
        - www.youtube.com/watch?v=4b8oB757DKc
    - Lorimer Moseley- why things hurt
        - www.youtube.com/watch?v=gwd-wLdIHjs
    - VS Ramachandran: 3 clues to understanding your brain
        - www.youtube.com/watch?v=Rl2LwnaUA-k
    - Spoon Theory
        - www.youtube.com/watch?v=Nz0f0RVra48&feature=related