Chronic Pain in Older Adults Comprehensive Assessment and Management

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Presented By:
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Ontario Chiropractic Association

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Agenda

Definitions/prevalence & burden/complexity

Key principles/components for assessment & management

Practical tips for management

New evidence for effectiveness

Disclosures

No Relationships with Commercial Interests

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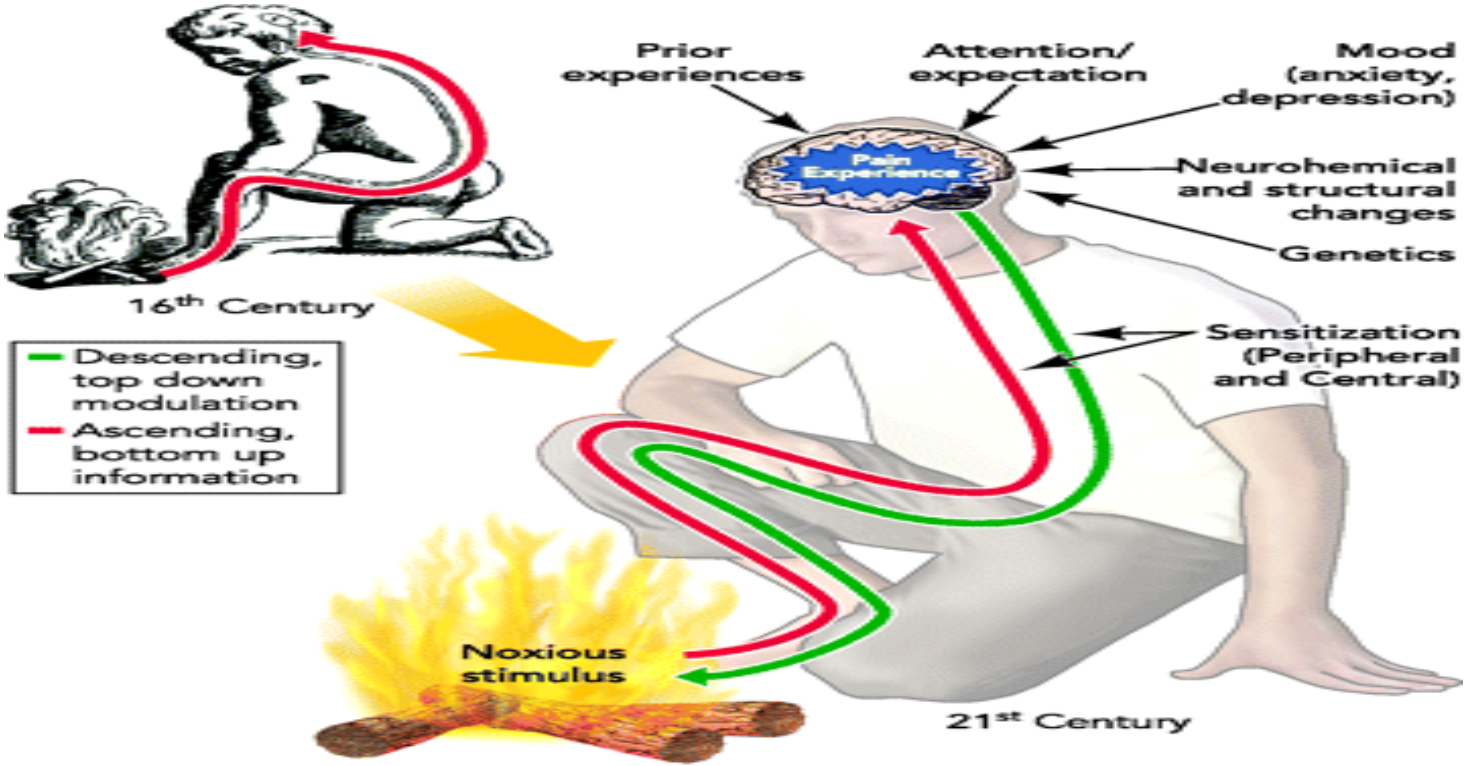
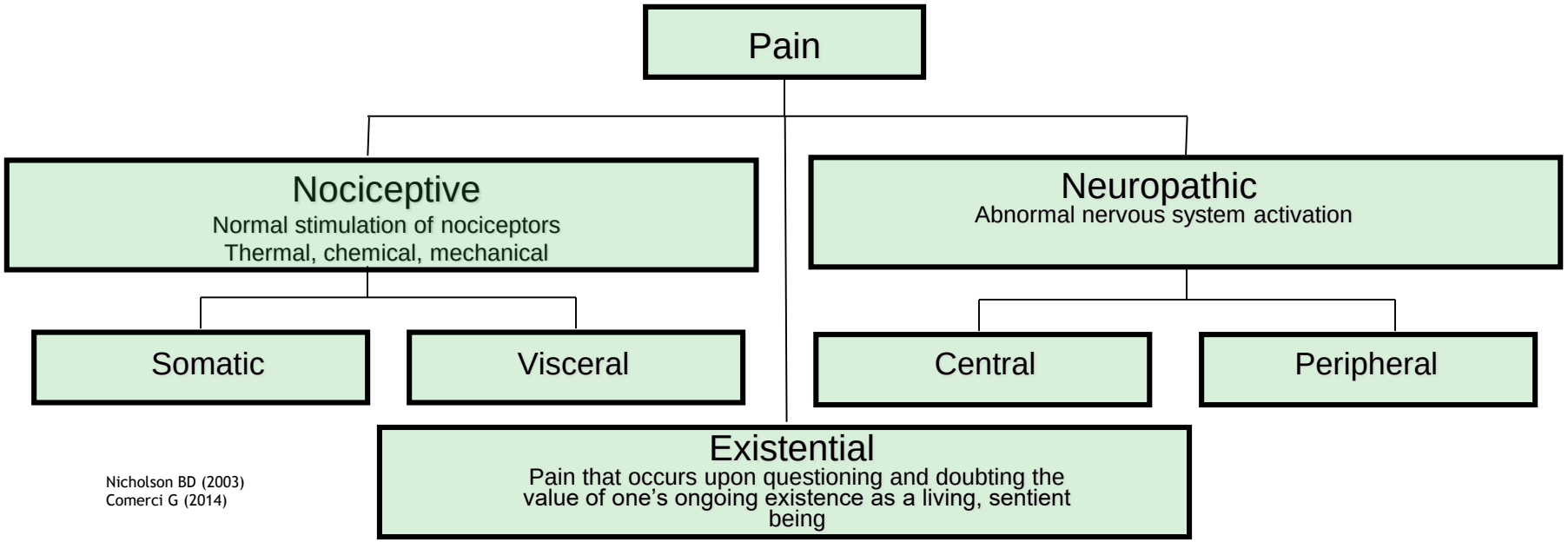
Pain defined: IASP (1986): *an unpleasant sensory and emotional experience associated with actual or potential tissue damage*




Chronic Pain
More than half the days in pain over 6 months period.
Pain > 3 Months
IASP 2019

Diagnosis: Nociceptive vs. Neuropathic



Nicholson BD (2003)
Comerci G (2014)

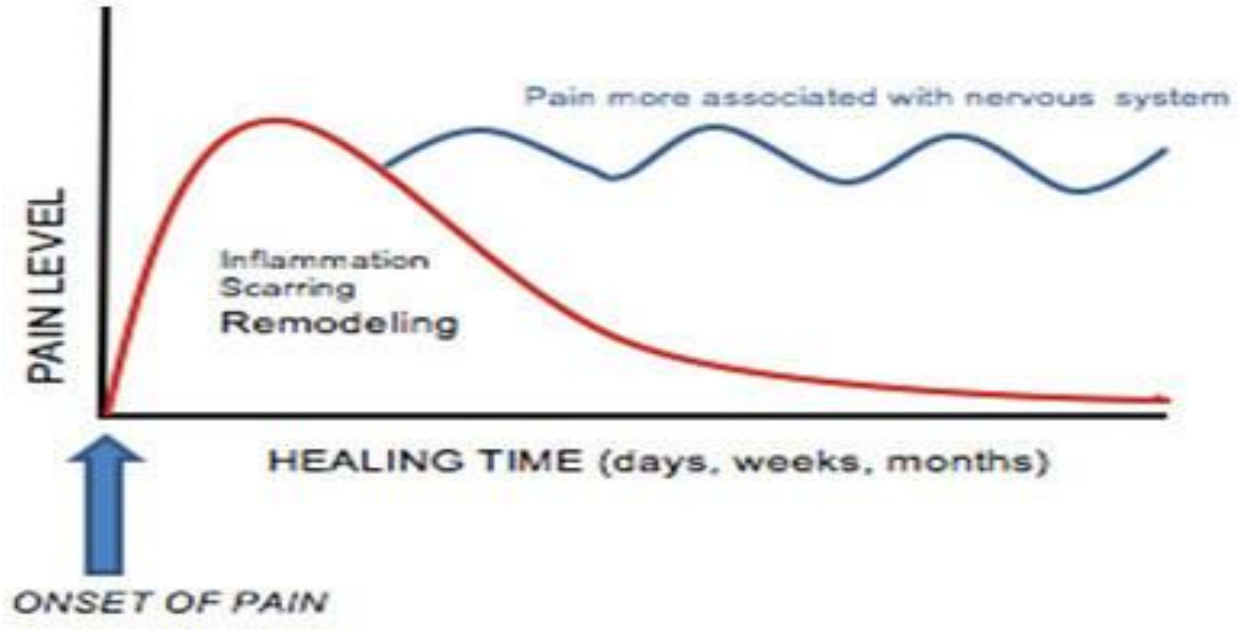
Pain persistence

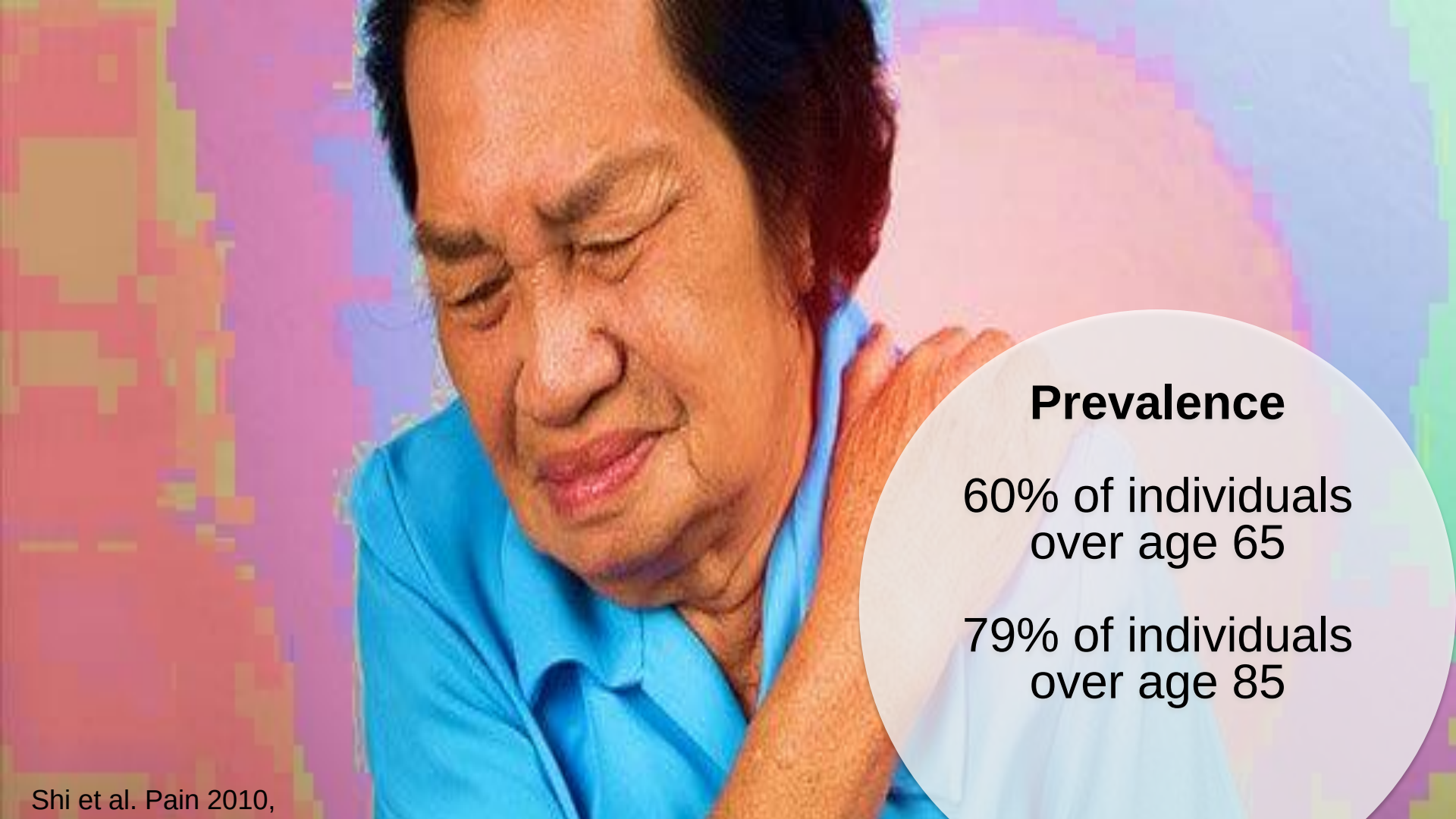
Acute Pain

- Usually obvious tissue damage
- Protective function
- Increased nervous system activity
- Pain resolves upon healing

Chronic Pain

- Pain beyond expected period of healing
- Pain no longer serves a useful purpose
- Changes in pain signalling and detection
- Degrades health and function


Pain more associated with nervous system
PAIN LEVEL
Inflammation
Scarring
Remodeling
HEALING TIME (days, weeks, months)
ONSET OF PAIN



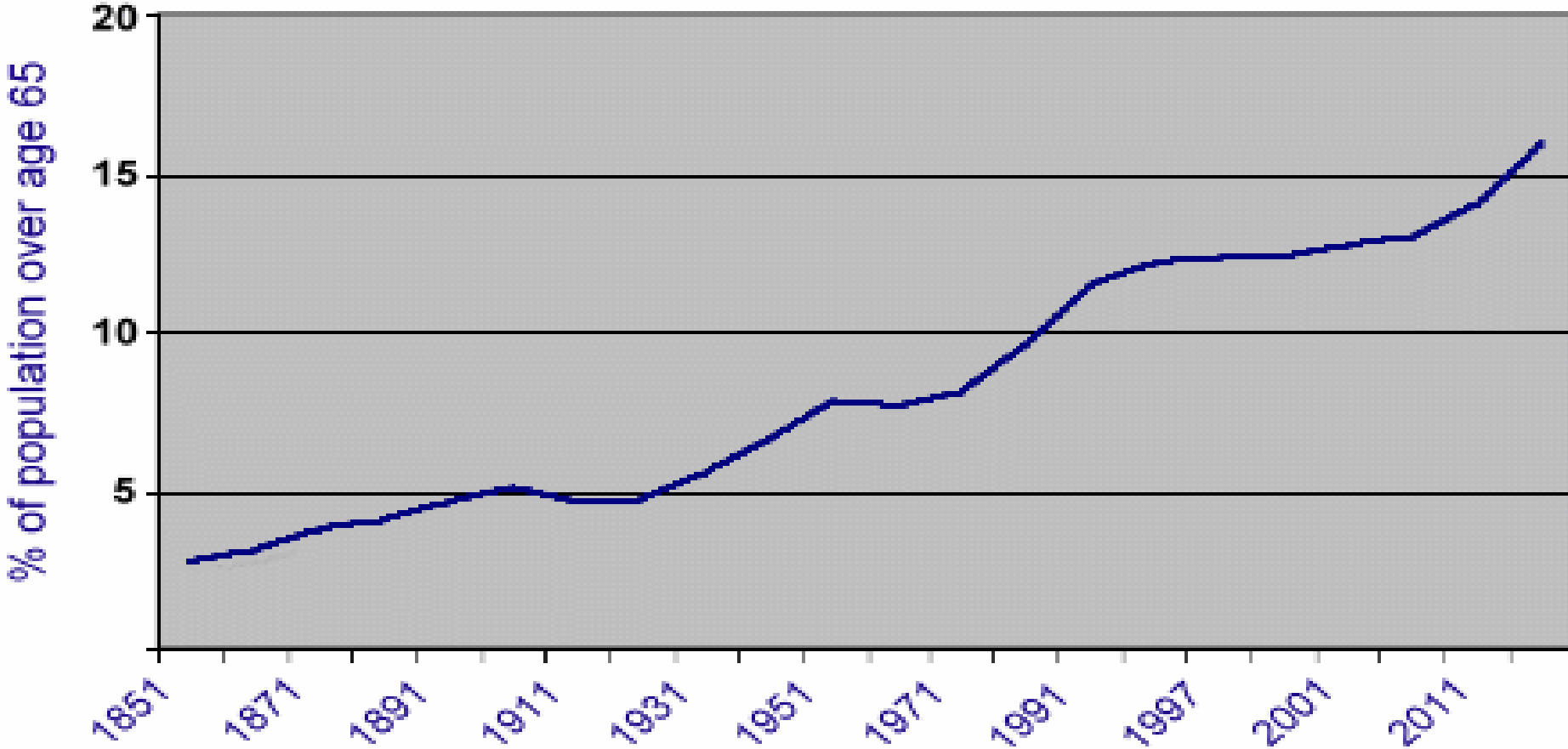
Prevalence

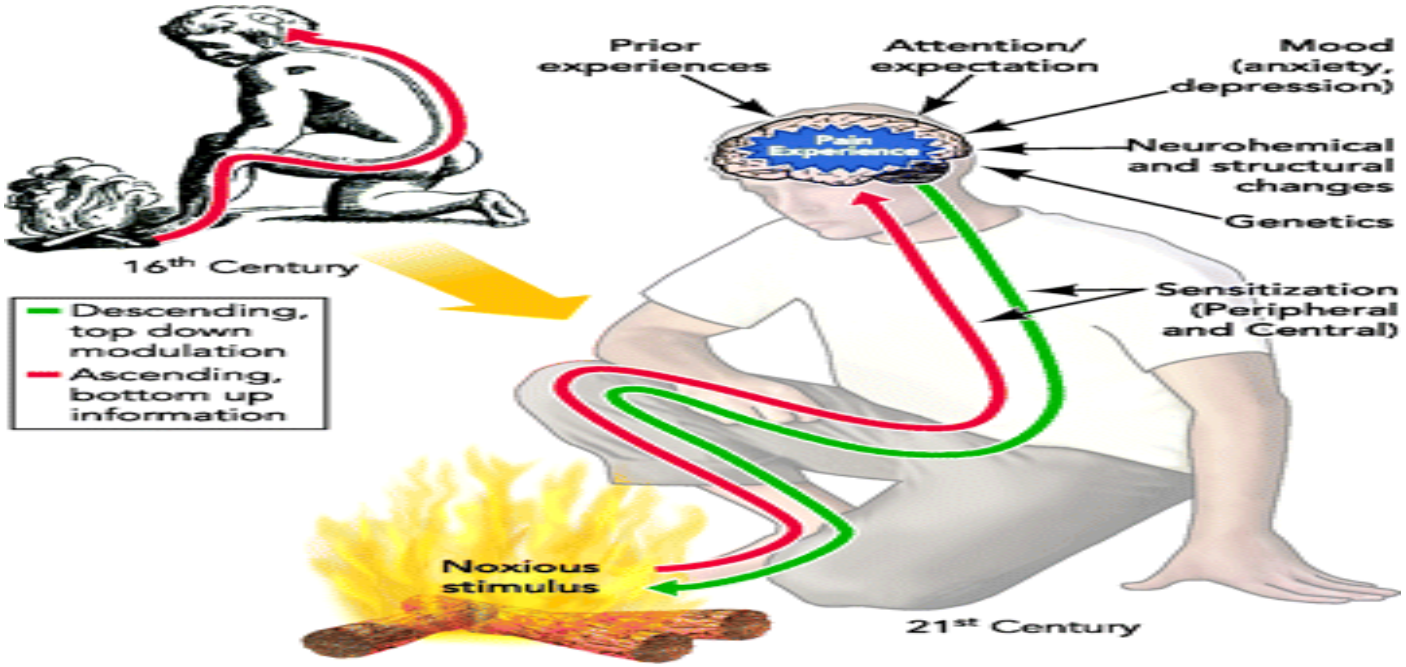
60% of individuals over age 65

79% of individuals over age 85

Shi et al. Pain 2010,

Canada's Aging Population

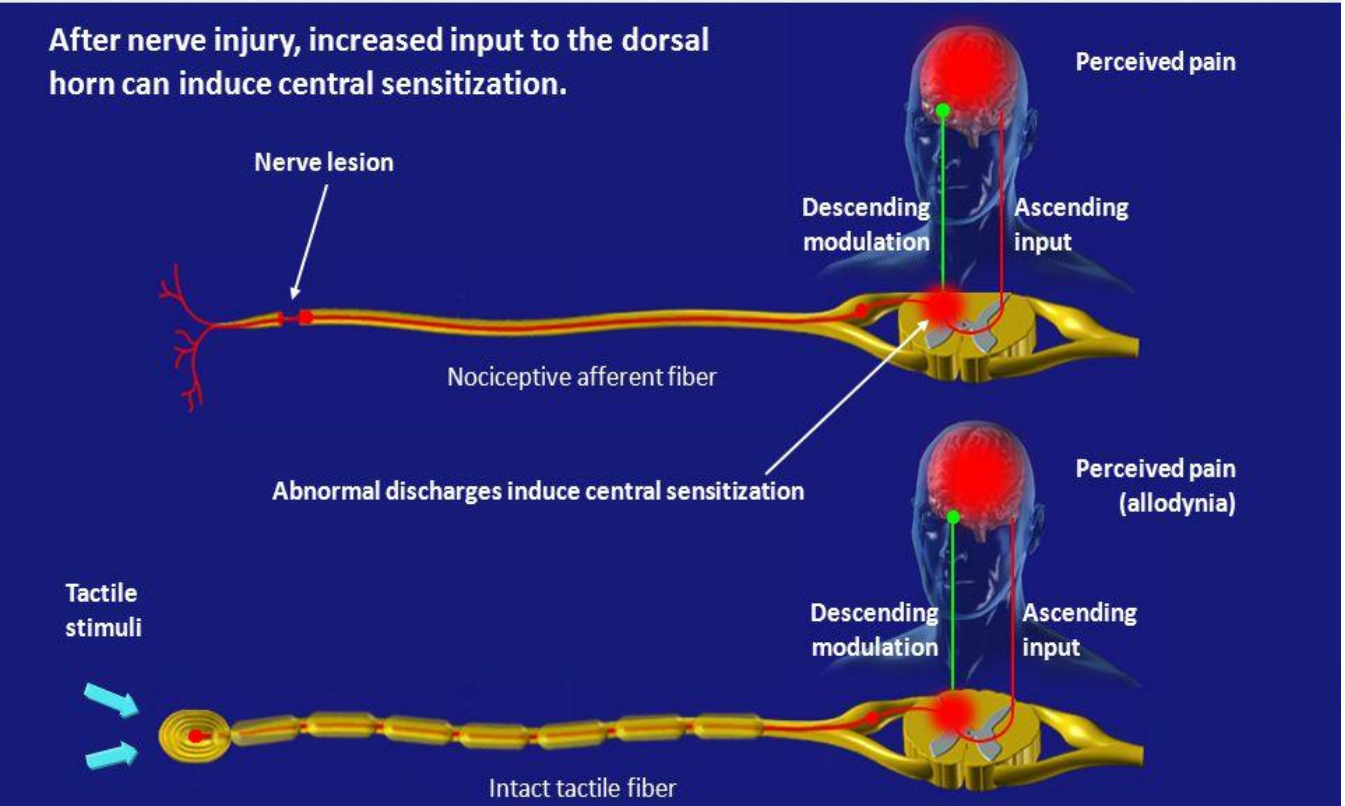




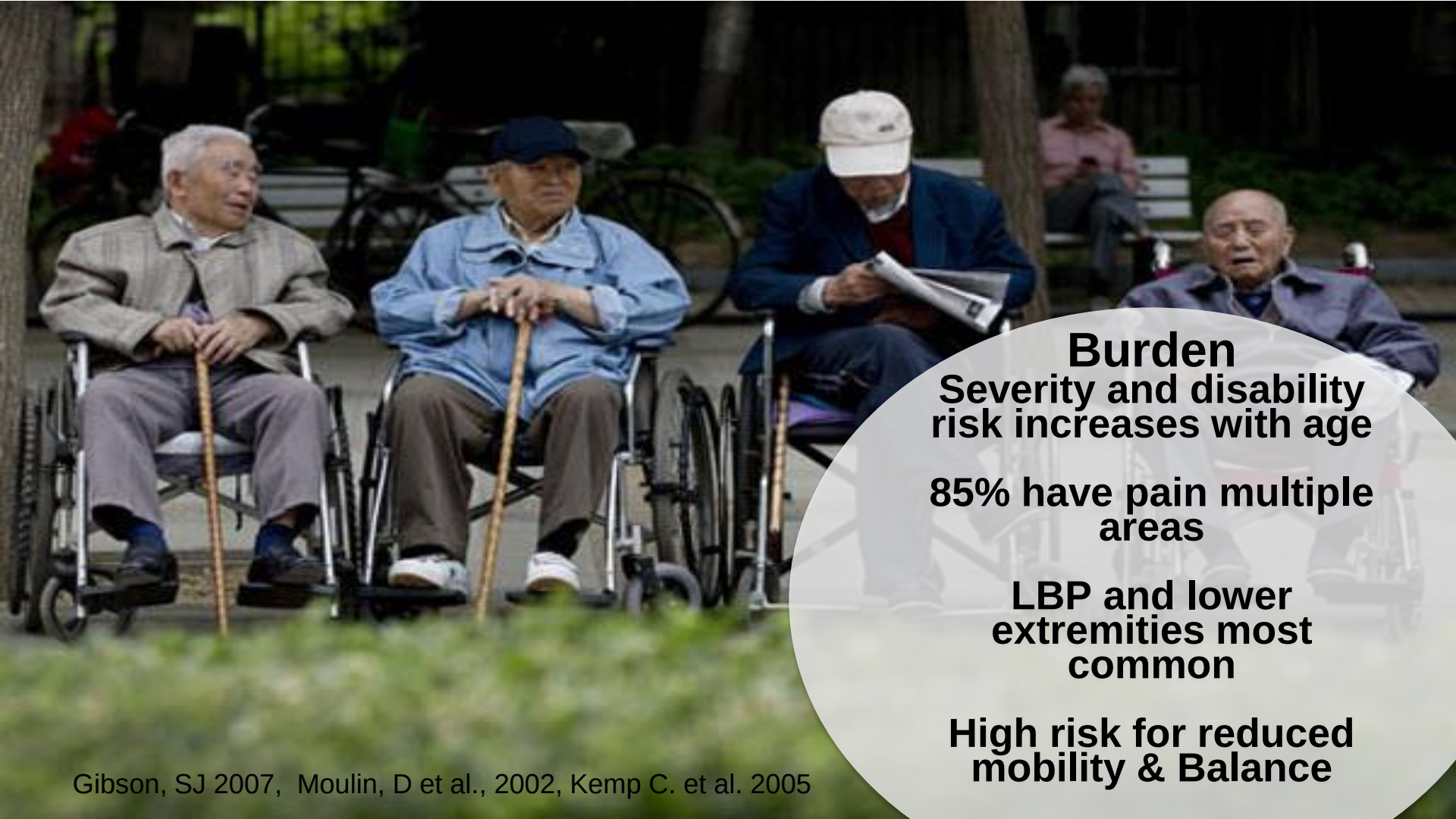
Hadjistavropoulos et al 2014

Aging related neurophysiological changes influence pain processing, and reduced pain tolerance from deterioration of the pathways involved in endogenous inhibition

Central Sensitization



Adapted from: Campbell JN, Meyer RA. *Neuron* 2006; 52(1):77-92; Gottschalk A, Smith DS. *Am Fam Physician* 2001; 63(10)1979-86; Henriksson KG. *J Rehabil Med* 2003; 41(Suppl):89-94; Larson AA *et al. Pain* 2000; 87(2):201-11; Marchand S. *Rheum Dis Clin North Am* 2008; 34(2):285-309; Rao SG. *Rheum Dis Clin North Am* 2002; 28(2):235-59; Staud R. *Arthritis Res Ther* 2006; 8(3):208-14; Staud R, Rodriguez ME. *Nat Clin Pract Rheumatol* 2006; 2(2):90-8; Vaerøy H *et al. Pain* 1988; 32(1):21-6; Woolf CJ *et al. Ann Intern Med* 2004; 140(6):441-51.



Burden

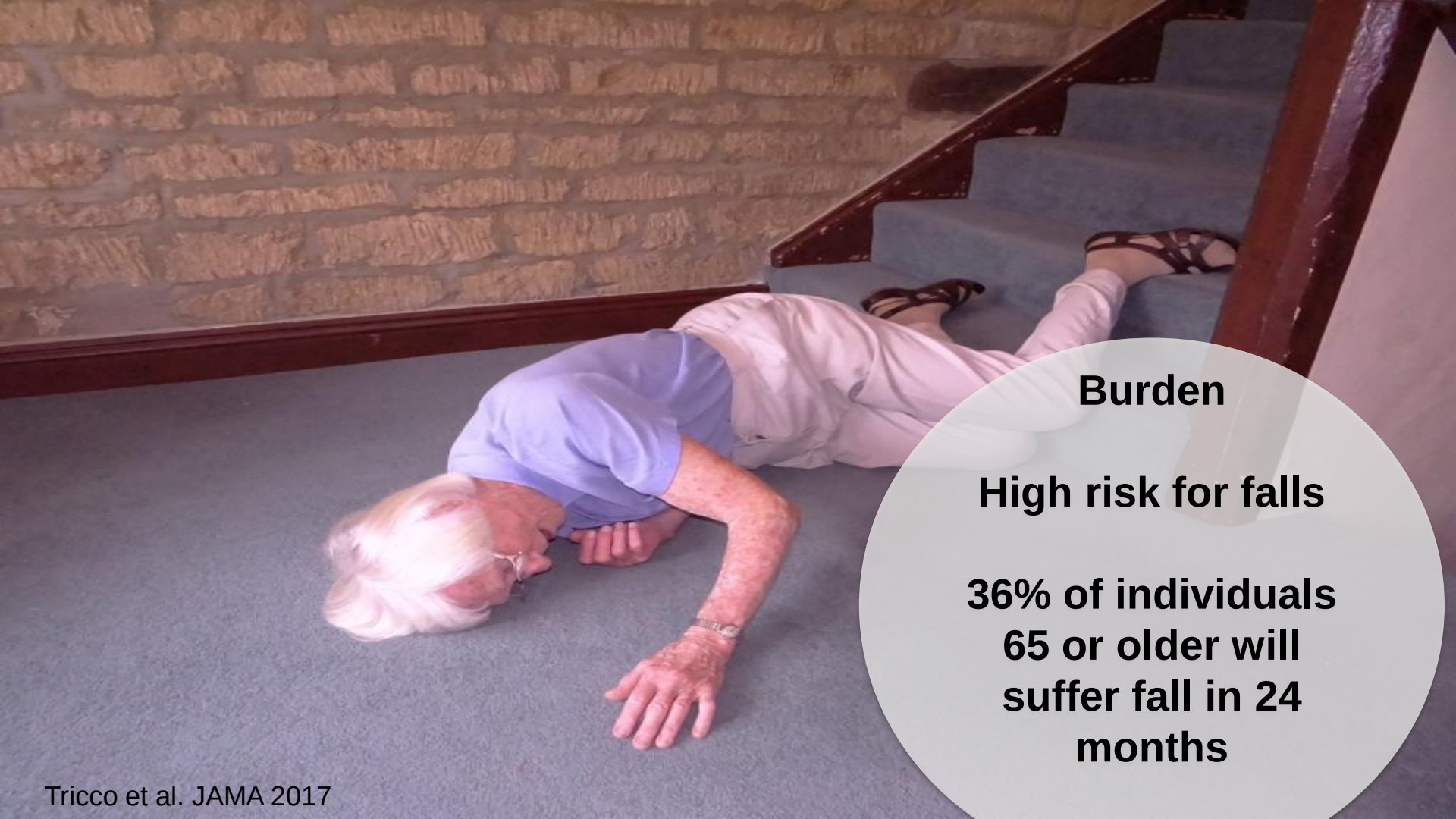
Severity and disability risk increases with age

85% have pain multiple areas

LBP and lower extremities most common

High risk for reduced mobility & Balance

Gibson, SJ 2007, Moulin, D et al., 2002, Kemp C. et al. 2005

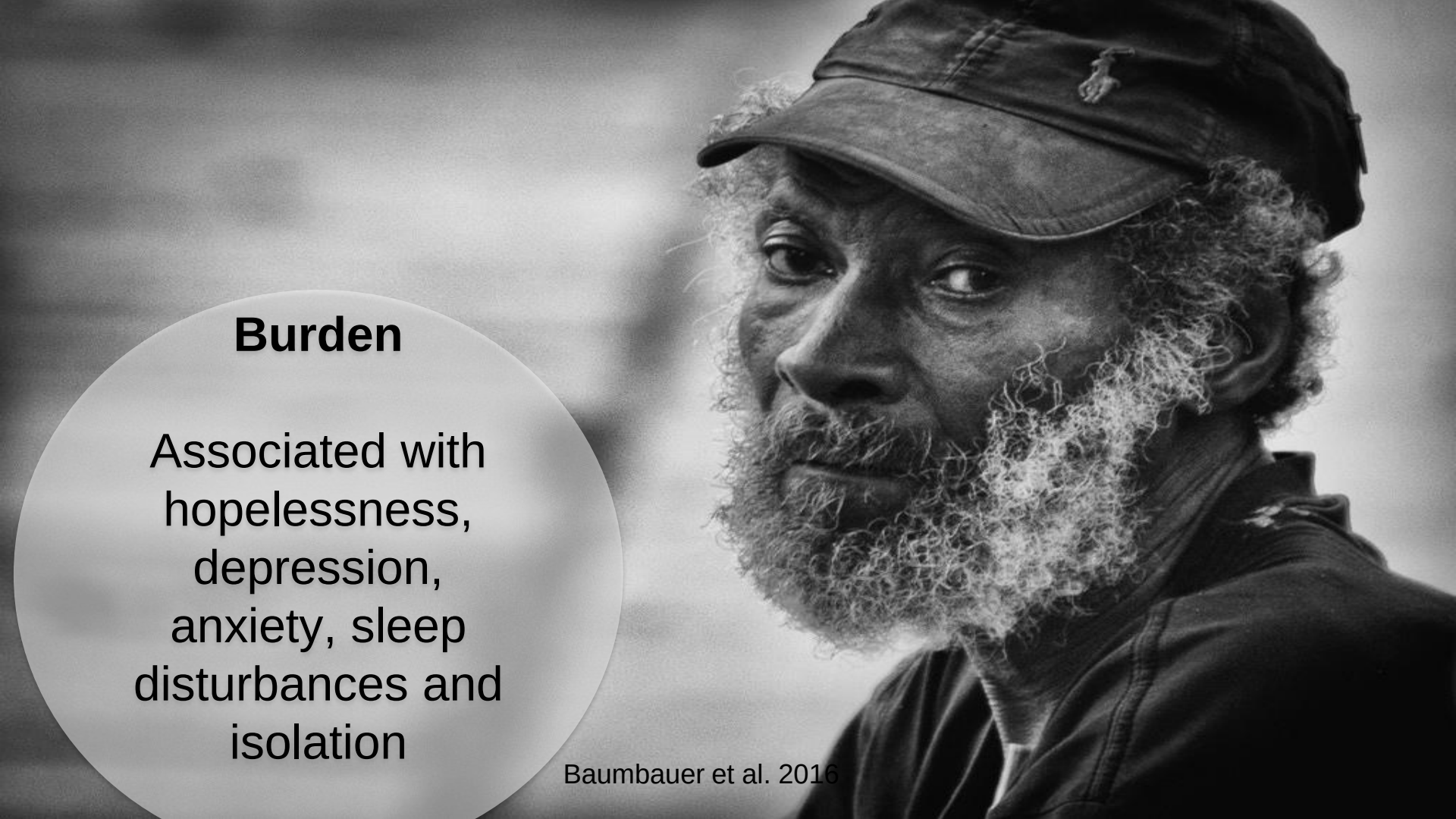


Burden

High risk for falls

36% of individuals 65 or older will suffer fall in 24 months

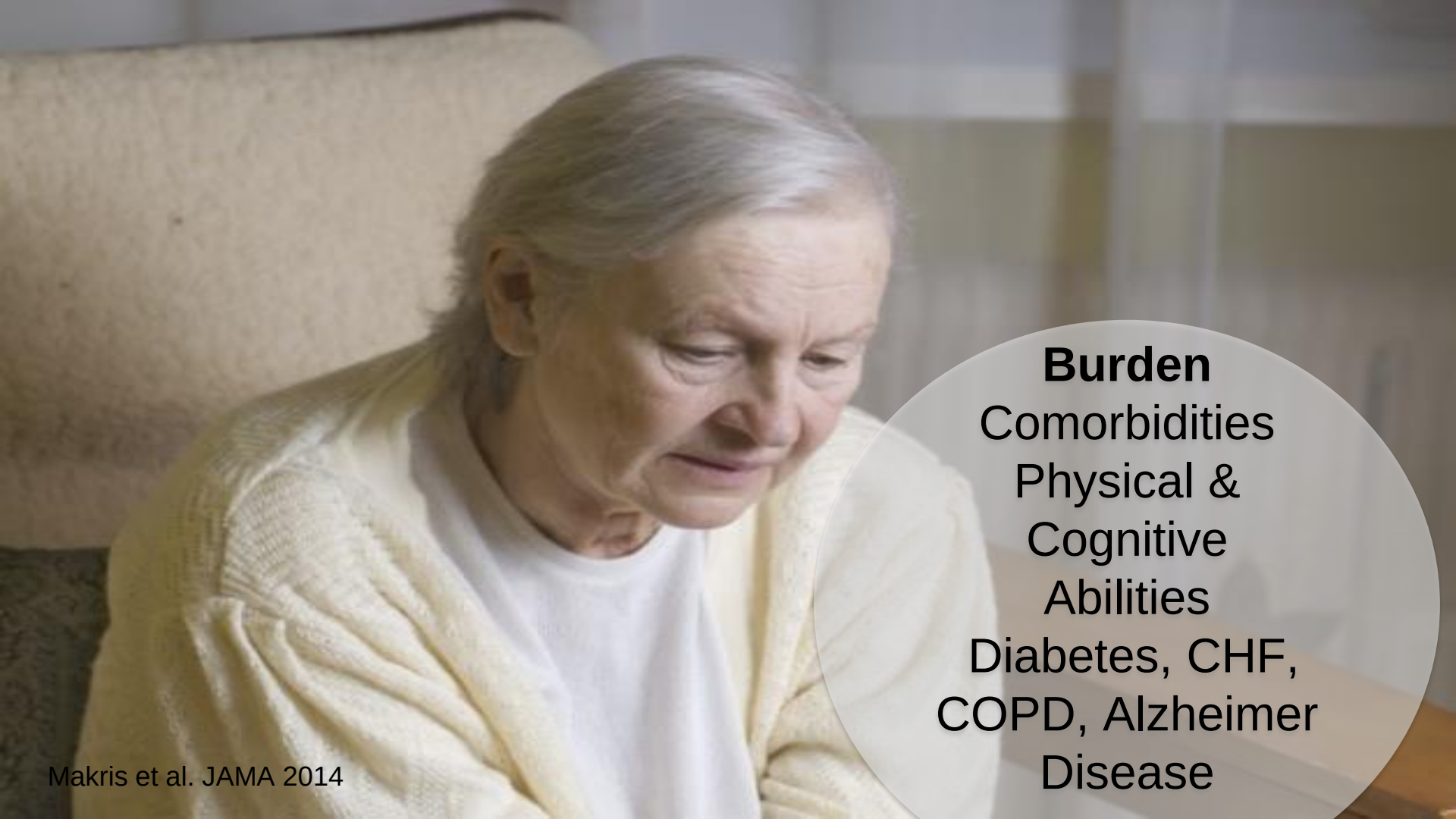
Tricco et al. JAMA 2017



Burden

Associated with hopelessness, depression, anxiety, sleep disturbances and isolation

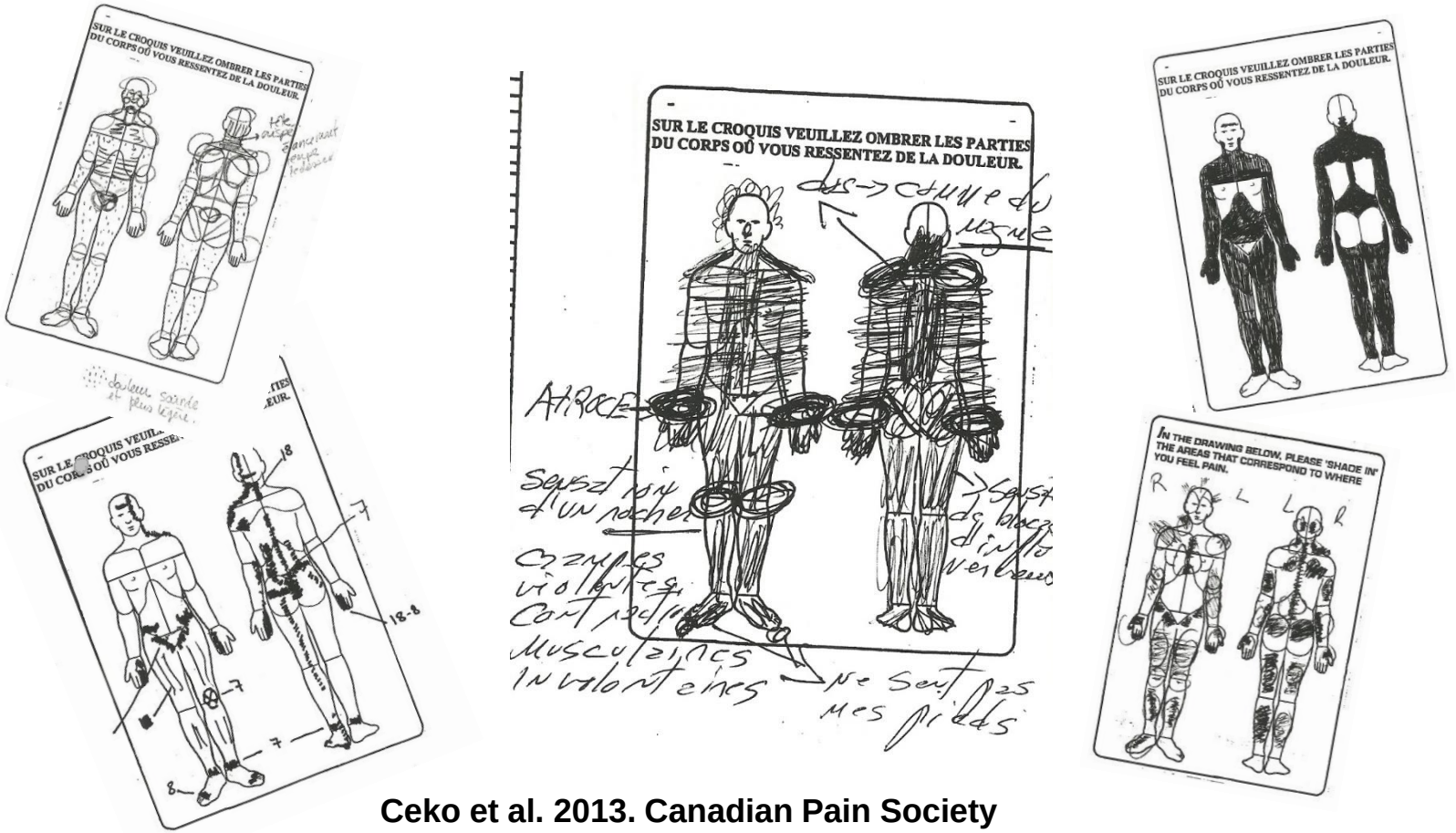
Baumbauer et al. 2016



Makris et al. JAMA 2014


Polypharmacy

Chronic Pain: Patients' Pain Diagrams



Ceko et al. 2013. Canadian Pain Society

“NIFTI” Red Flag Screening

Red Flags (check if positive)	❑ **No Red Flags**

- ❑ **Neurological:** diffuse motor /sensory loss, progressive neurological deficits, cauda equina syndrome
- ❑ **Infection:** fever, IV drug use, immune suppressed
- ❑ **Fracture:** trauma, osteoporosis risk
- ❑ **Tumour:** hx of cancer, unexplained weight loss, significant unexpected night pain, significant fatigue
- ❑ **Inflammation:** chronic low back pain > 3 months, age of onset < 45, morning stiffness > 30 minutes, improvement with exercise, disproportionate night pain

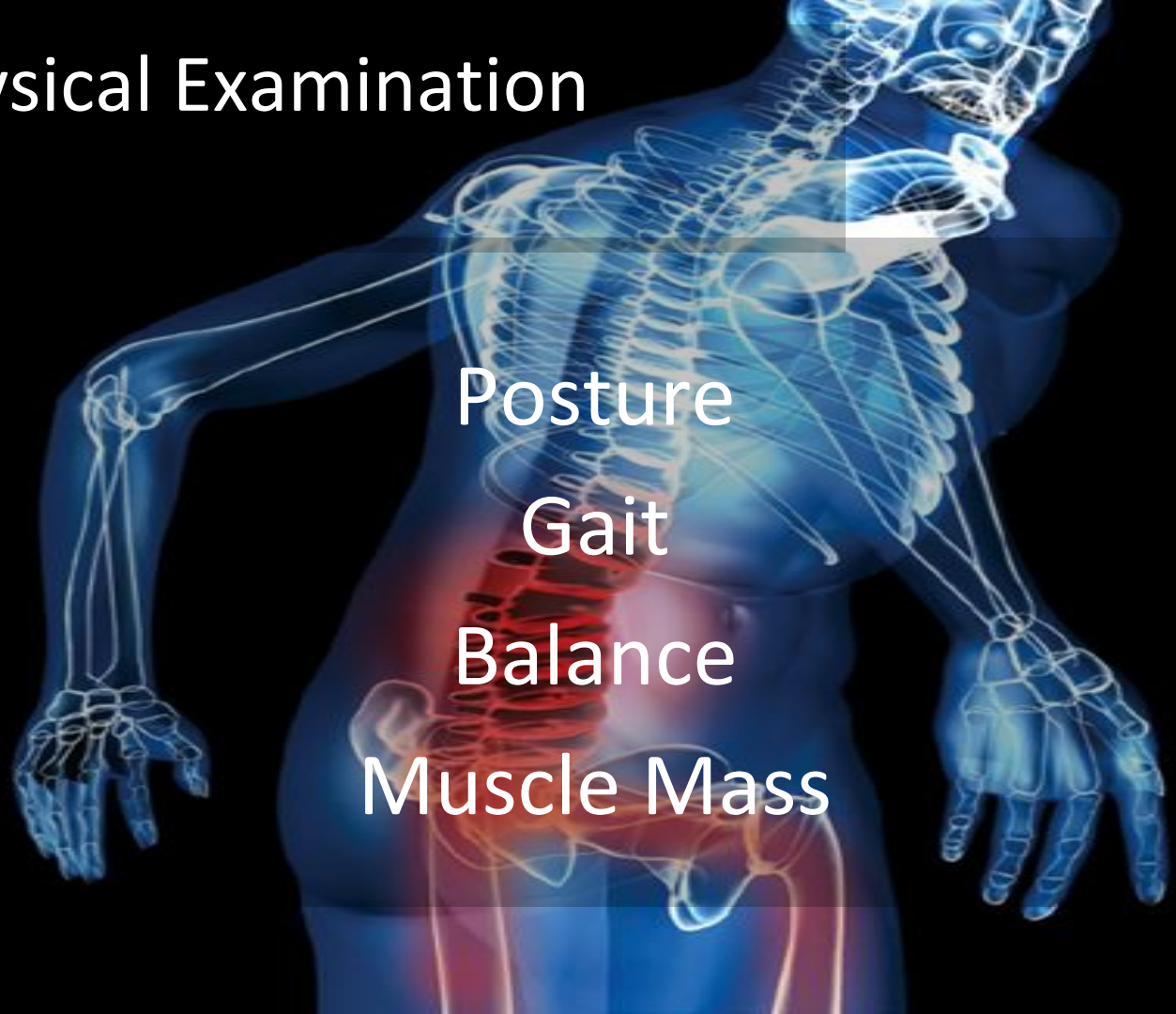
Screening “Yellow Flags”

Barriers / Yellow Flags (check if positive) ❑ **No Barriers**

For those with low back pain > 6 weeks or non-responsive to treatment:

- ❑ Belief that pain and activity will cause physical harm
- ❑ Excessive reliance on rest, time off work or dependency on others
- ❑ Persistent low or negative moods, social withdrawal
- ❑ Belief that passive treatment (i.e. modalities) is key to recovery
- ❑ Problems at work, poor job satisfaction
- ❑ Unsupportive / dysfunctional or dependent family relationships
- ❑ Over exaggeration / catastrophyzing of pain symptoms

Physical Examination



Posture

Gait

Balance

Muscle Mass

BALANCE WALK

- Raise your arms out to your sides near shoulder height.
- Select a spot or an object across the room (at least 10 steps away) and focus on it as you walk toward it, stepping with one foot directly in front of the other.
- Repeat 8-12 times.

Variation: As you walk, lift your back leg and pause one second before stepping forward.

"Sarcopenia" is a most important factor to prevent frailty

Sarco
=Muscle

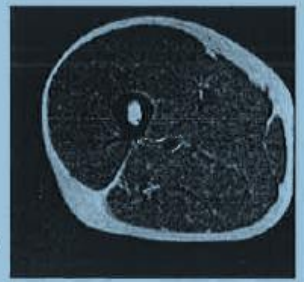
Penia
=lack of

Sarcopenia
(Muscle Weakness/Loss)

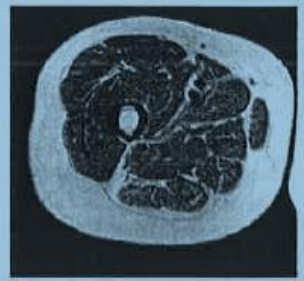
<Diagnostic criteria>

1. Low muscle mass
2. Low muscle strength
3. Low physical performance

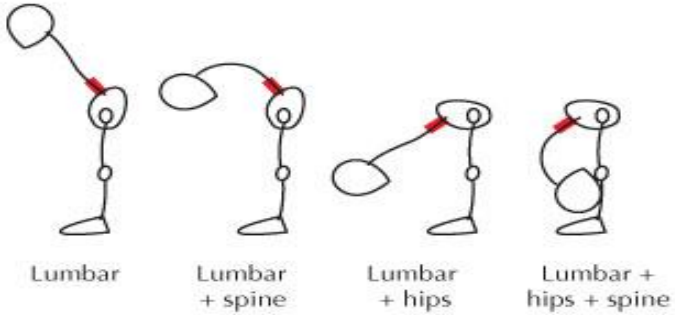
normal

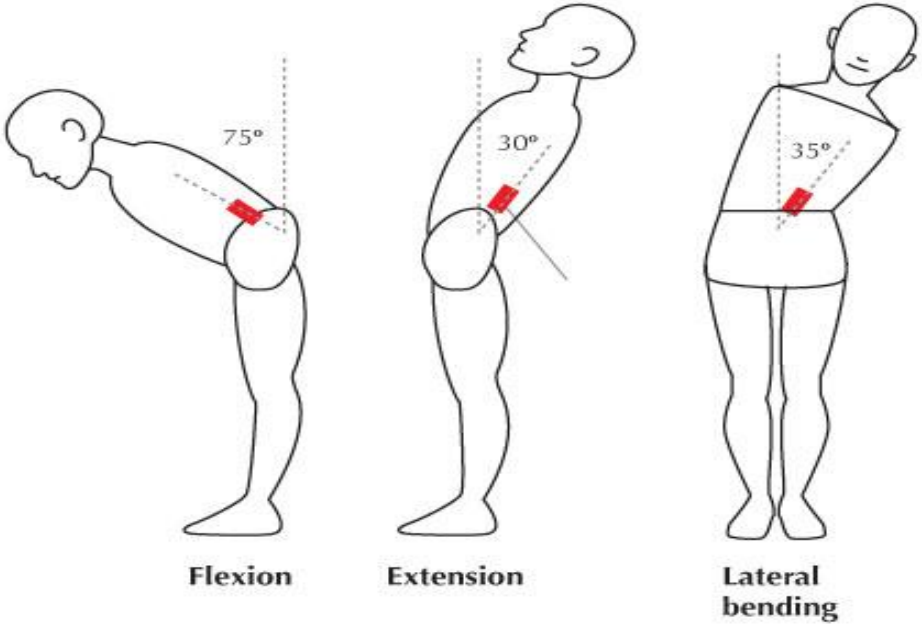


sarcopenia

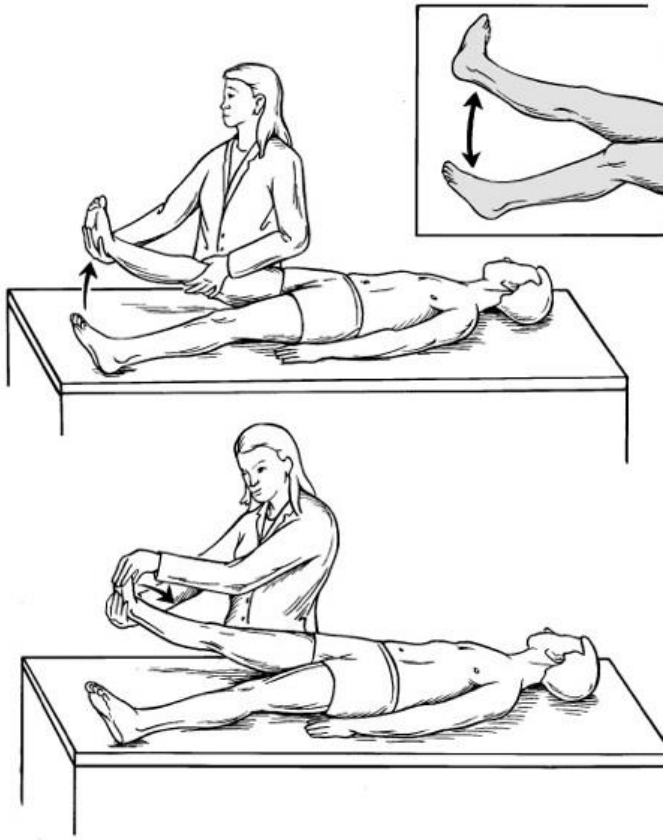


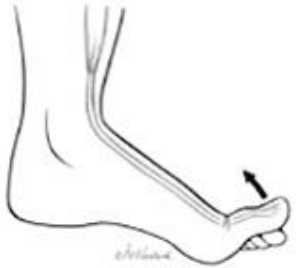
Range of Motion





Neural Tension - SLR



Disk	Nerve root	Reflex	Motor examination	Sensory loss signature zone
L3-L4	L4	Patellar	 Ankle dorsiflexion	Medial malleolus 
L4-L5	L5	None	 Great toe dorsiflexion	Dorsal third metatarsophalangeal joint 
L5-S1	S1	Achilles	 Ankle plantar flexion	Lateral heel 

Hip Osteoarthritis

- Definitions
- Patho-physiology
- Prevalence

27% adults > 45y have radiographic hip OA

- 9% symptomatic

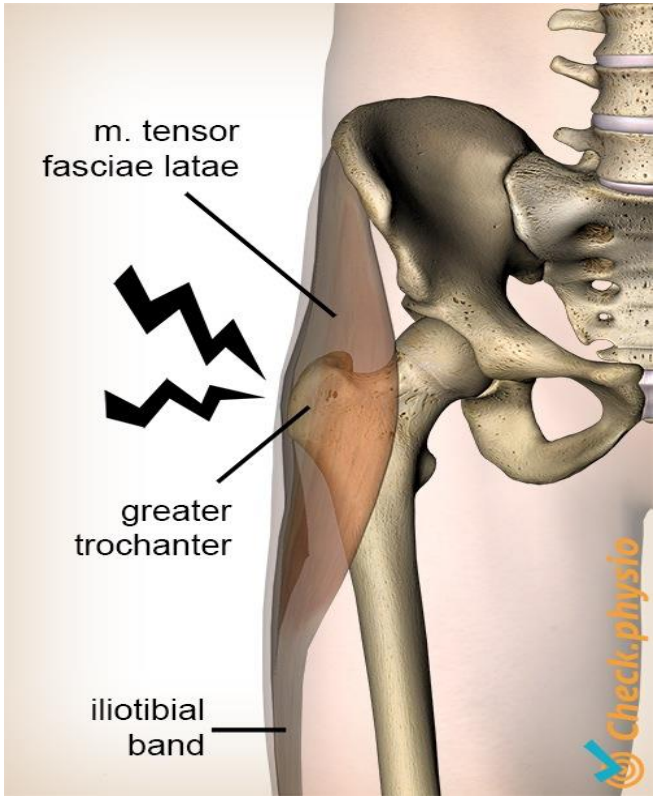
Devin et al, J Am Acad Orthop Surg 2012

Hip-Spine Syndrome

- Definitions
- Patho-physiology
- Simple – one clear source of disability
- Complex – no clear source of disability

Devin et al, J Am Acad Orthop Surg 2012

Greater Trochanter Pain Syndrome (GTPS)



- Definitions
- Patho-physiology
- Prevalence

  10-25% of population- higher in elderly

  second leading cause of adult hip pain
- Risk factors
  - Older, female, ITB pain, obesity and LBP

Williams BS, 2009, Tortolani PJ 2002, Gordon EJ 1961, Segal NA 2007, Stephens MB 2008

Differential Diagnosis

Neuropathy

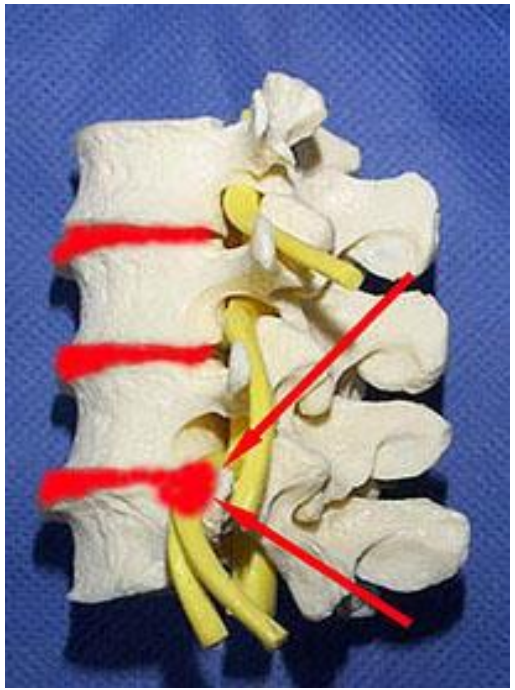
Diabetic neuropathy

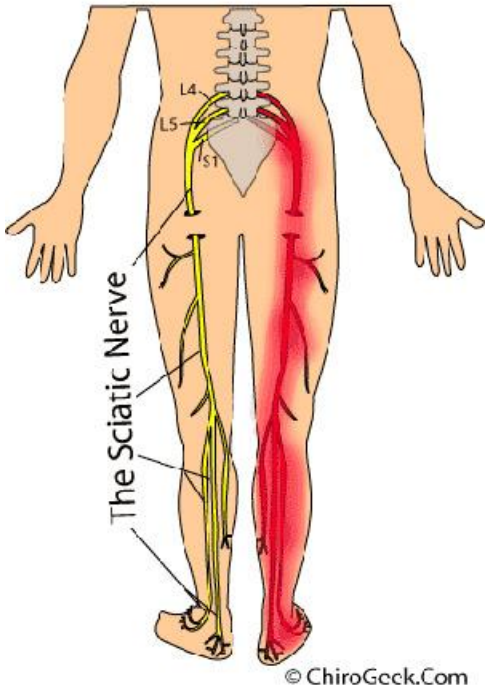
Hypothyroidism

Vit B12, Vit B1 and Folic acid

Cervical and/or Dorsal Spinal Stenosis

Lumbar Disc Herniation






pain management
algiatry
chronic pain
palliative care
analgesics
medicine
morphine
opioids
hospice
health
pain threshold
pharmaceutical industry
post-operative pain
pain assessment
prognosis
cancer pain
trauma
patient
paracetamol
physician
acute pain
relief
suffering
quality of life
illness
nurse
pain ladder
chemical dependency
healing
dose
death
geriatrics

ACP American College of Physicians℠
Leading Internal Medicine, Improving Lives

CLINICAL GUIDELINE

Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians

Amir Qaseem, MD, PhD, MHA; Timothy J. Wilt, MD, MPH; Robert M. McLean, MD; and Mary Ann Forciea, MD; for the Clinical Guidelines Committee of the American College of Physicians*

Description: The American College of Physicians (ACP) developed this guideline to present the evidence and provide clinical recommendations on noninvasive treatment of low back pain.

Methods: Using the ACP grading system, the committee based these recommendations on a systematic review of randomized, controlled trials and systematic reviews published through April 2015 on noninvasive pharmacologic and nonpharmacologic treatments for low back pain. Updated searches were performed through November 2016. Clinical outcomes evaluated included reduction or elimination of low back pain, improvement in back-specific and overall function, improvement in health-related quality of life, reduction in work disability and return to work, global improvement, number of back pain episodes or time between episodes, patient satisfaction, and adverse effects.

Target Audience and Patient Population: The target audience for this guideline includes all clinicians, and the target patient population includes adults with acute, subacute, or chronic low back pain.

Recommendation 1: *Given that most patients with acute or subacute low back pain improve over time regardless of treatment, clinicians and patients should select nonpharmacologic treatment with superficial heat (moderate-quality evidence), massage, acupuncture, or spinal manipulation (low-quality evidence). If pharmacologic treatment is desired, clinicians and patients should select nonsteroidal anti-inflammatory drugs or skeletal muscle relaxants (moderate-quality evidence). (Grade: strong recommendation)*

Recommendation 2: *For patients with chronic low back pain, clinicians and patients should initially select nonpharmacologic treatment with exercise, multidisciplinary rehabilitation, acupuncture, mindfulness-based stress reduction (moderate-quality evidence), tai chi, yoga, motor control exercise, progressive relaxation, electromyography biofeedback, low-level laser therapy, operant therapy, cognitive behavioral therapy, or spinal manipulation (low-quality evidence). (Grade: strong recommendation)*

Recommendation 3: *In patients with chronic low back pain who have had an inadequate response to nonpharmacologic therapy, clinicians and patients should consider pharmacologic treatment with nonsteroidal anti-inflammatory drugs as first-line therapy, or tramadol or duloxetine as second-line therapy. Clinicians should only consider opioids as an option in patients who have failed the aforementioned treatments and only if the potential benefits outweigh the risks for individual patients and after a discussion of known risks and realistic benefits with patients. (Grade: weak recommendation, moderate-quality evidence)*

Ann Intern Med. doi:10.7326/M16-2367 **Annals.org**
For author affiliations, see end of text.
This article was published at Annals.org on 14 February 2017.

Low back pain is one of the most common reasons for physician visits in the United States. Most Americans have experienced low back pain, and approximately one quarter of U.S. adults reported having low back pain lasting at least 1 day in the past 3 months (1). Low back pain is associated with high costs, including those related to health care and indirect costs from

sponding anatomical or radiographic abnormalities. Acute back pain is defined as lasting less than 4 weeks, subacute back pain lasts 4 to 12 weeks, and chronic back pain lasts more than 12 weeks. Radicular low back pain results in lower extremity pain, paresthesia, and/or

Summary of recommendations

Initiation and Dosing of Opioids in Patients with Chronic Noncancer Pain

Recommendation 1: When considering therapy for patients with chronic non-cancer pain

Strong Recommendation

We recommend optimization of non-opioid pharmacotherapy and non-pharmacological therapy, rather than a trial of opioids

Recommendation 2: For patients with chronic noncancer pain, without current or past substance use disorder and without other active psychiatric disorders, who have persistent problematic pain despite optimized nonopioid therapy

Weak Recommendation

We suggest adding a trial of opioids rather than continued therapy without opioids.

By a trial of opioids, we mean initiation, titration, and monitoring of response, with discontinuation of opioids if important improvement in pain or function is not achieved. The studies that identified substance use disorder as a risk factor for adverse outcomes characterized the conditions as alcohol abuse and dependence, and narcotic abuse and dependence, and sometimes referred to ICD-9 diagnoses. The mental illnesses identified in studies as risk factors for adverse outcomes were generally anxiety and depression, including ICD-9 definitions, as well as "psychiatric diagnosis", "mood disorder", and post-traumatic stress disorder.

Recommendation 3: For patients with chronic noncancer pain with an active substance use disorder

Strong Recommendation AGAINST

We recommend against the use of opioids

Clinicians should facilitate treatment of the underlying substance use disorders, if not yet addressed. The studies that identified substance use disorder as a risk factor for adverse outcomes characterized the conditions as alcohol abuse and dependence, and narcotic abuse and dependence, and sometimes referred to ICD-9 diagnoses.

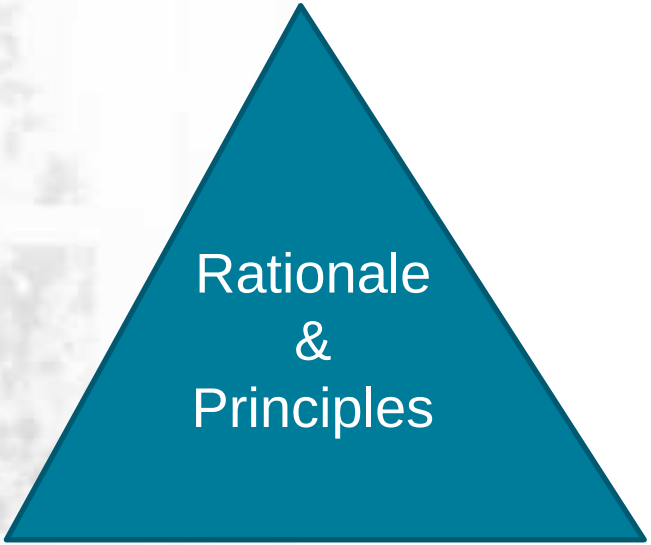
Table I. Recent Reviews of the Evidence on Anticonvulsants for Back and Radicular Pain

Study	Findings
Enke O et al., Anticonvulsants for low back pain: A systematic review and meta-analysis. *CMAJ,* 2018; 190(26):E786–93.	"Most comparisons showed no benefit on pain or disability," the review noted. Gabapentinoids were associated with increased adverse events. The overall conclusion? "Gabapentinoids are ineffective for low back pain or lumbar radicular pain."
Shanthanna H et al., Benefits and safety of gabapentinoids in chronic low back pain: A systematic review and meta-analysis of randomized controlled trials. *PLOS Medicine*, 2017; 14(8):e1002369; http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002369.	Only eight RCTs met their inclusion criteria. "In 3 studies comparing gabapentin to placebo, gabapentin showed no significant improvement of pain; and in the 3 studies comparing pregabalin to other analgesics, pregabalin actually fared worse in pain relief," according to the reviewers. Adverse events were common, especially dizziness, fatigue, confusion, and visual disturbances. "Despite their widespread use, our systematic review with meta-analysis found that there are very few randomized controlled trials that have attempted to assess the benefit of using gabapentin or pregabalin in patients of chronic low back pain," the authors say. "The existing evidence does not support the use of gabapentinoids for predominant chronic low back pain, and calls for larger, high quality trials to more definitively inform this issue."
Qaseem A et al. Noninvasive treatments for acute, subacute, and chronic low back pain: A clinical practice guideline from the American College of Physicians, *Annals of Internal Medicine,* 2017; 166(7):514–30; http://annals.org/aim/article/2603228/noninvasivetreatments-acute-subacute-chroniclowback-pain-clinical-practice.	No evidence to support the use of anticonvulsants in acute, subacute, or chronic back pain.

RCT, randomized controlled trial.

Chronic Pain Management in Elderly

Standardized

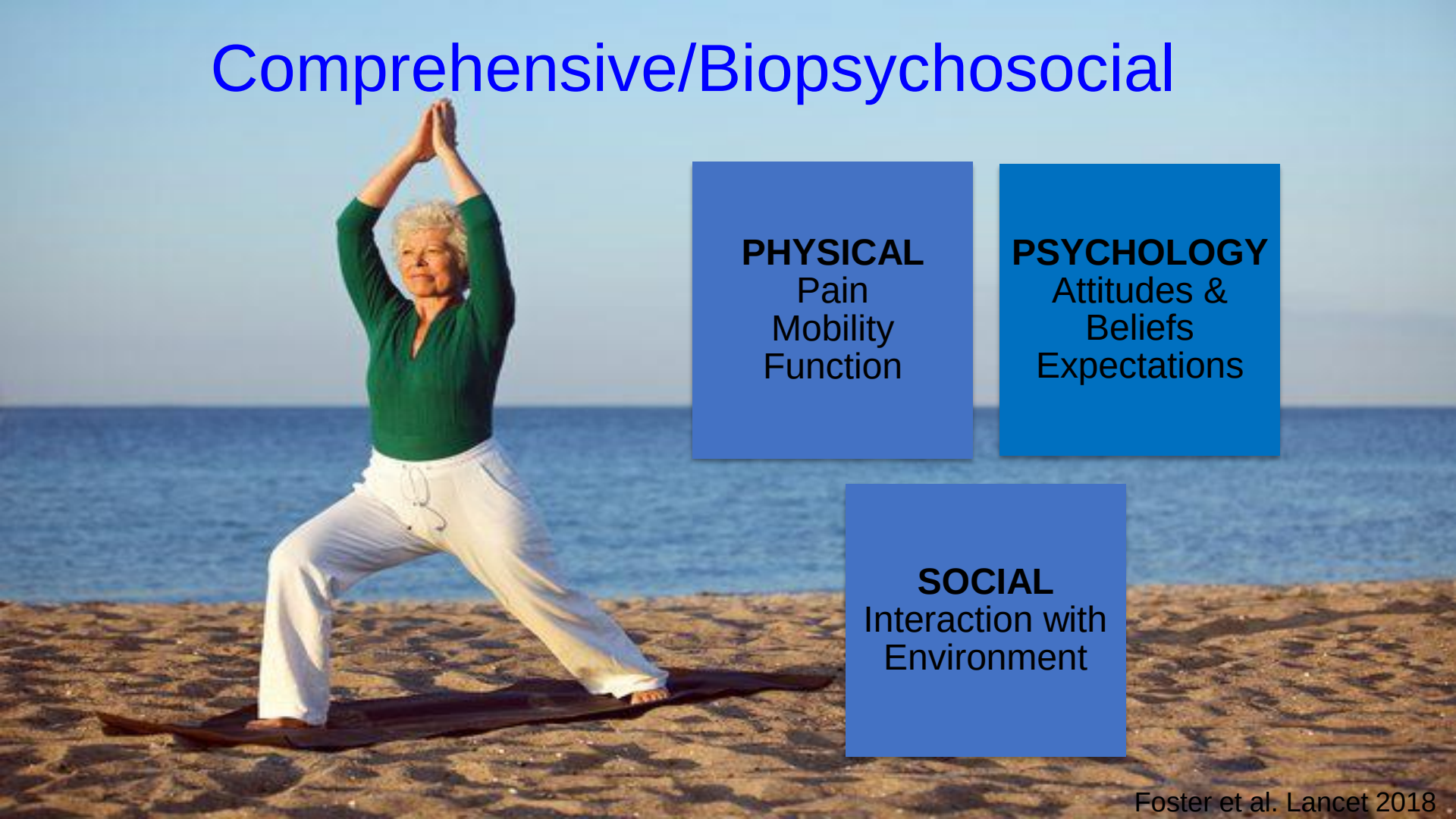


Comprehensive

Evidence-Based

Standardized

Comprehensive/Biopsychosocial



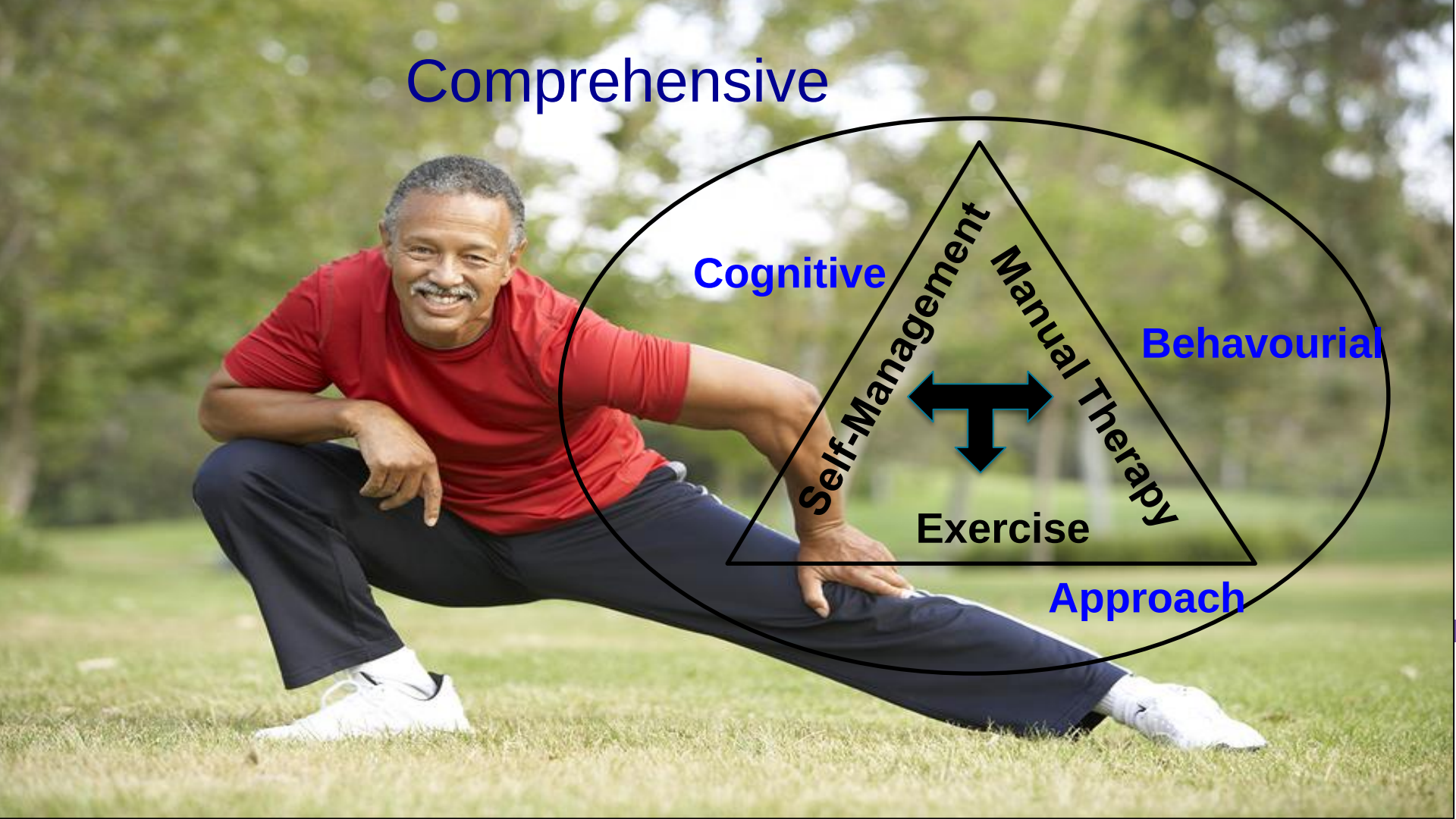
PHYSICAL
Pain
Mobility
Function

PSYCHOLOGY
Attitudes &
Beliefs
Expectations

SOCIAL
Interaction with
Environment

Foster et al. Lancet 2018

Comprehensive



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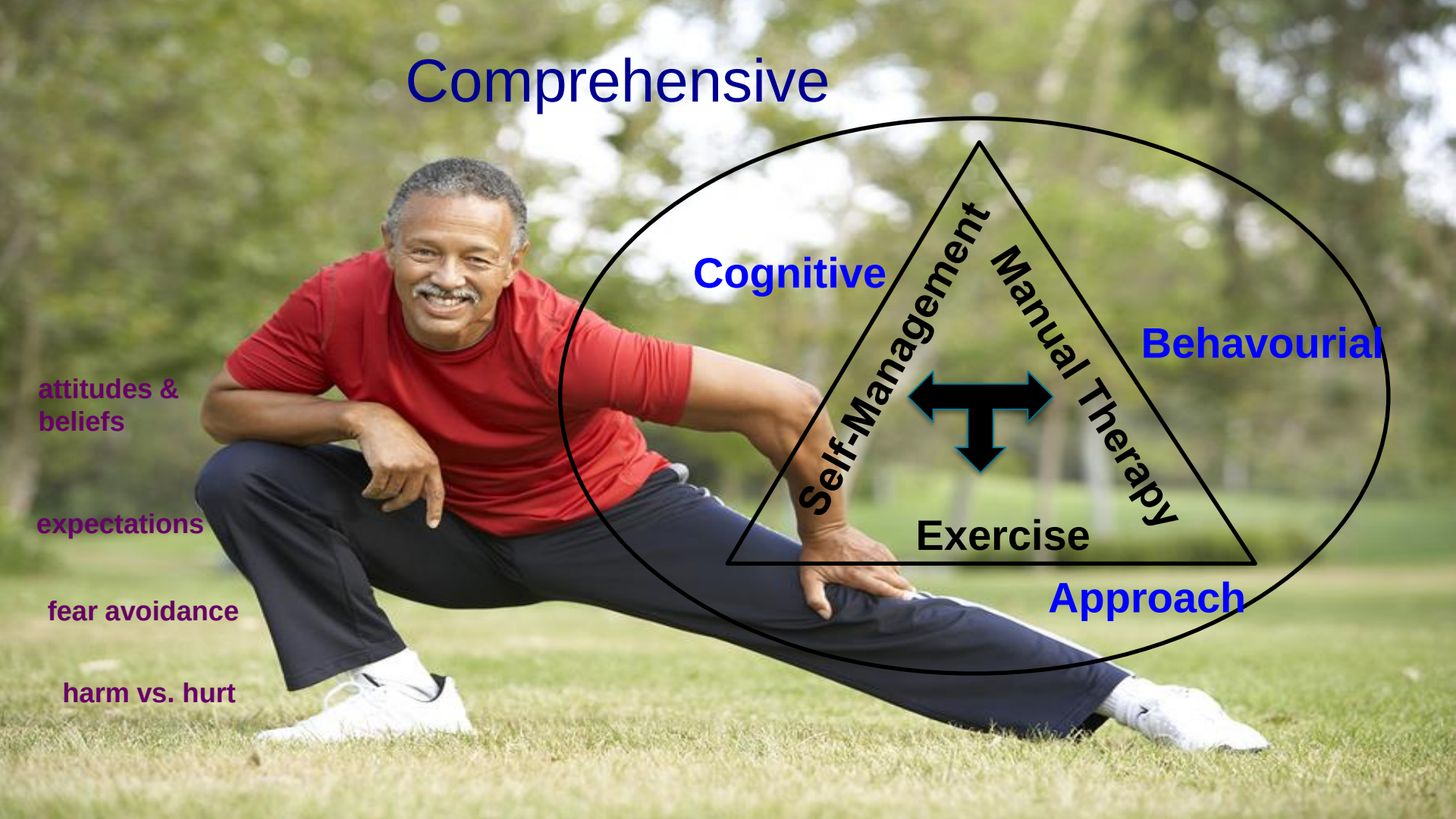


Comprehensive

knowledge

skills

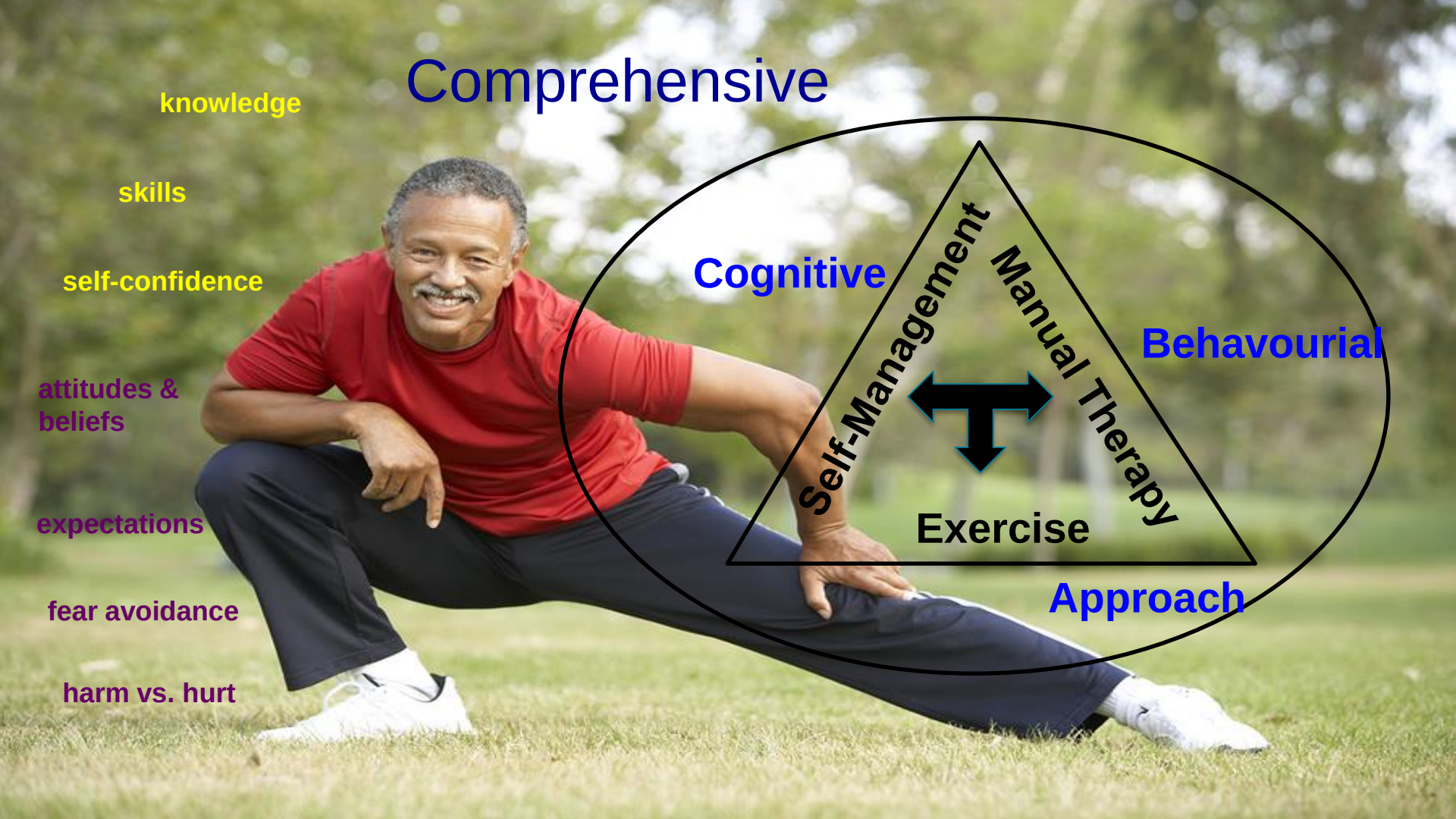
self-confidence

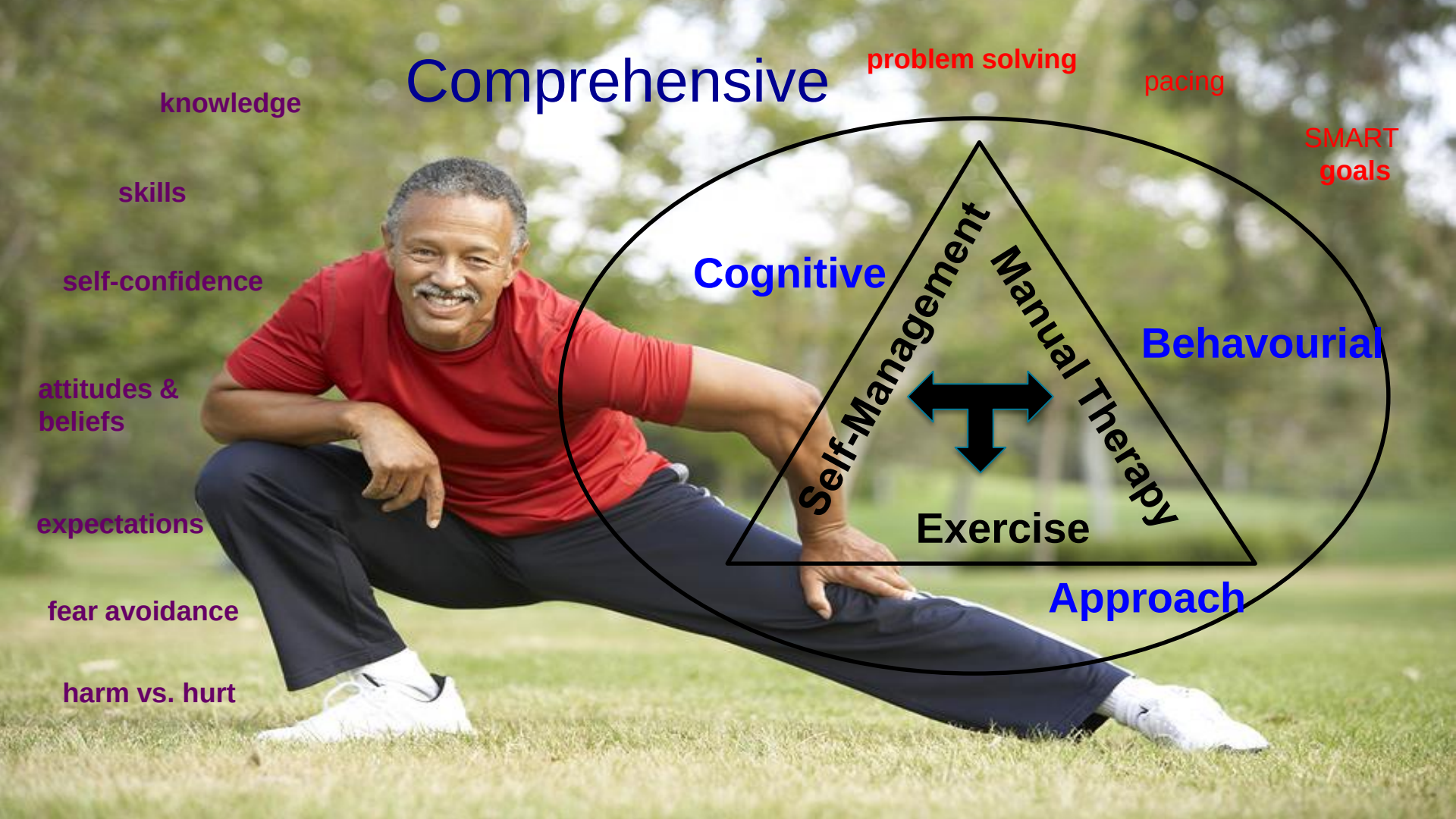
attitudes & beliefs

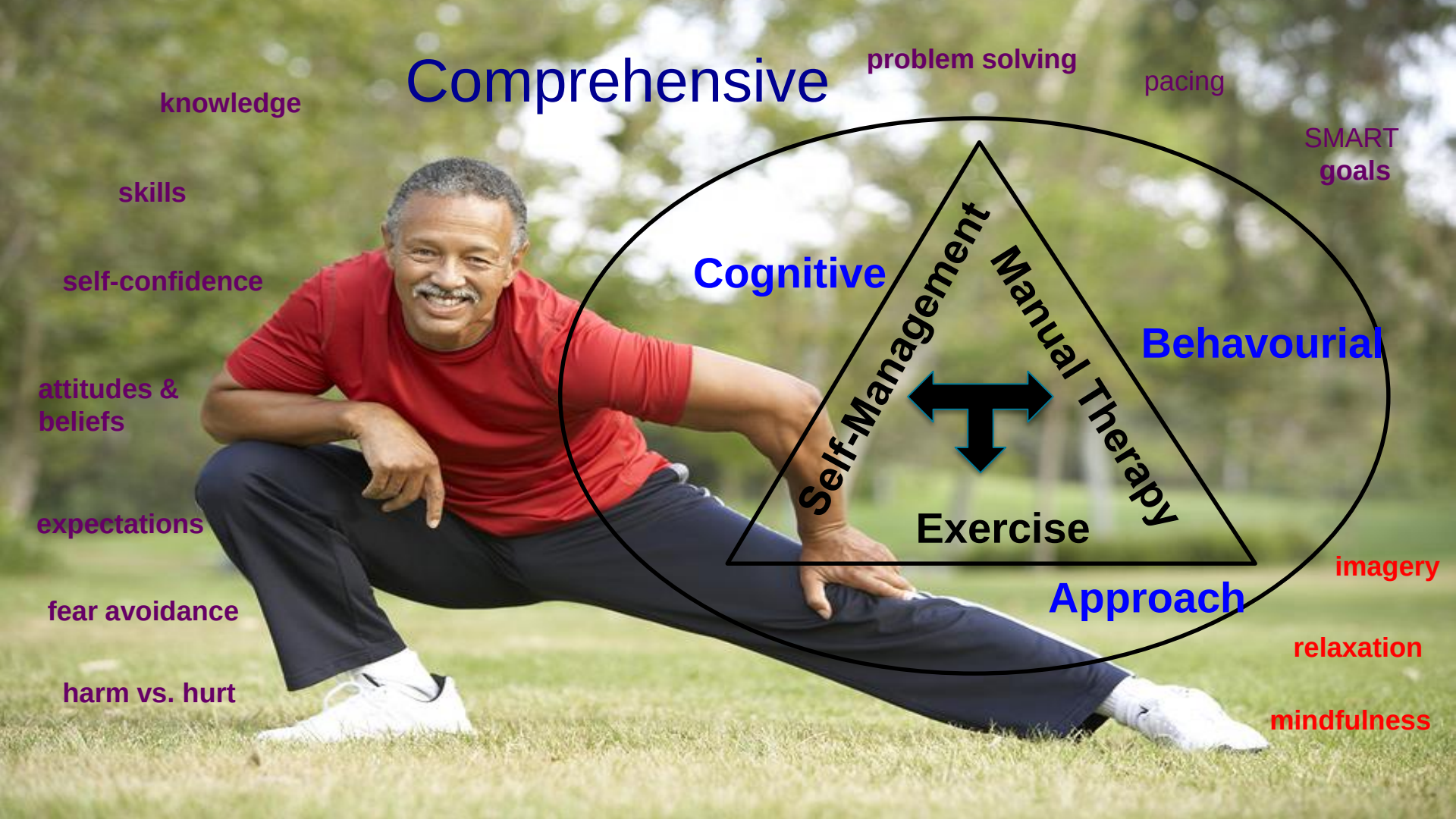
expectations

fear avoidance

harm vs. hurt




Comprehensive
knowledge
skills
self-confidence
attitudes & beliefs
expectations
fear avoidance
harm vs. hurt
problem solving
pacing
SMART goals
Cognitive
Behavourial
Approach
Self-Management
Manual Therapy
Exercise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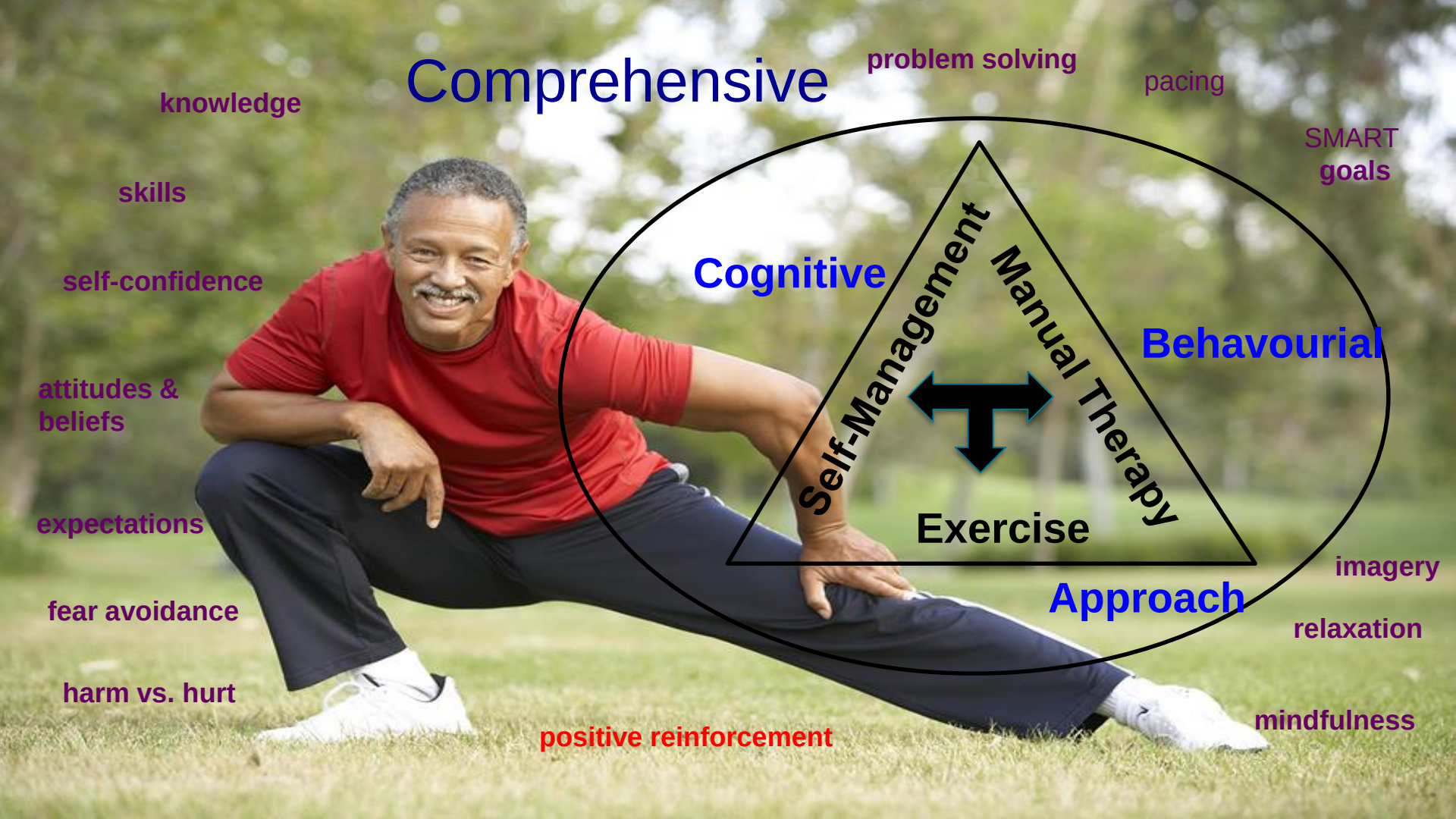
Approach
Self-Management
Manual Therapy
Exercise
imagery
relaxation
mindfulness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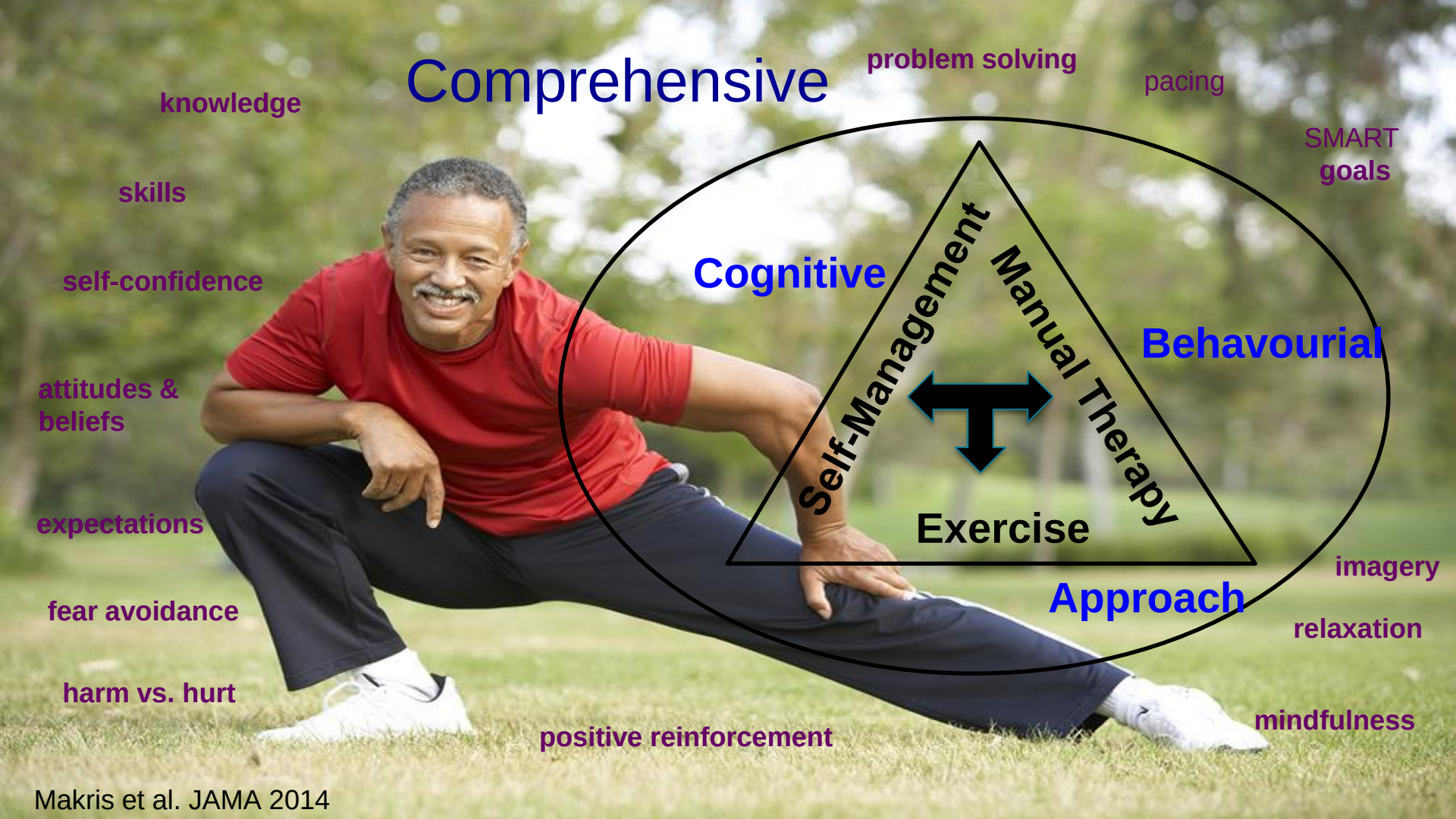
harm vs. hurt
mindfulness
positive reinforcement



Makris et al. JAMA 2014

Positive Health

“ ability to adapt and to self-manage in the face of social, physical and emotional challenges”

Huber et al BMJ 2011

- ✧ **Contextual Factors**
- ✧ **Living well with chronic pain**
- ✧ **Positive expectations**

Buchbinder et al Lancet 201

Translating Exercises

Activities of Daily Living

Recreational Activities

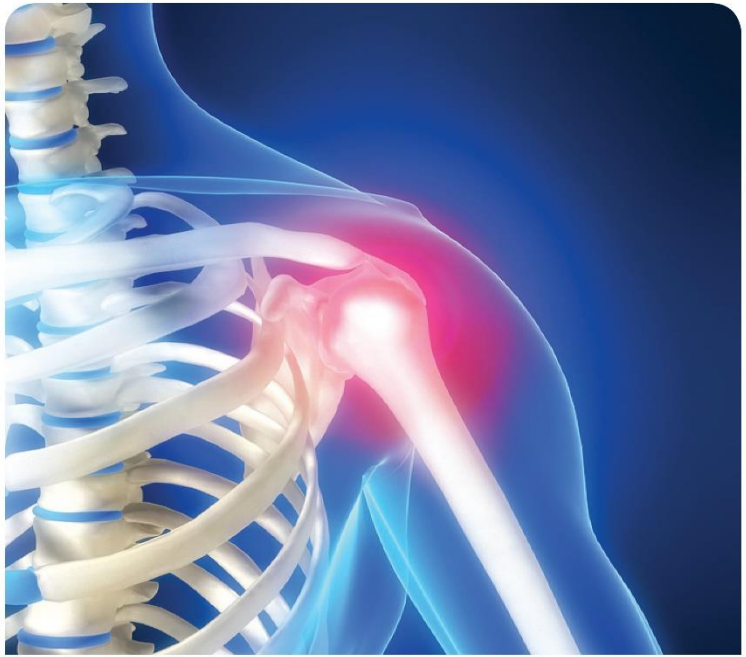
spinemobility

Boot Camp Program

PERSISTENT NECK PAIN

Dr. Carlo Ammendolia

2nd Edition



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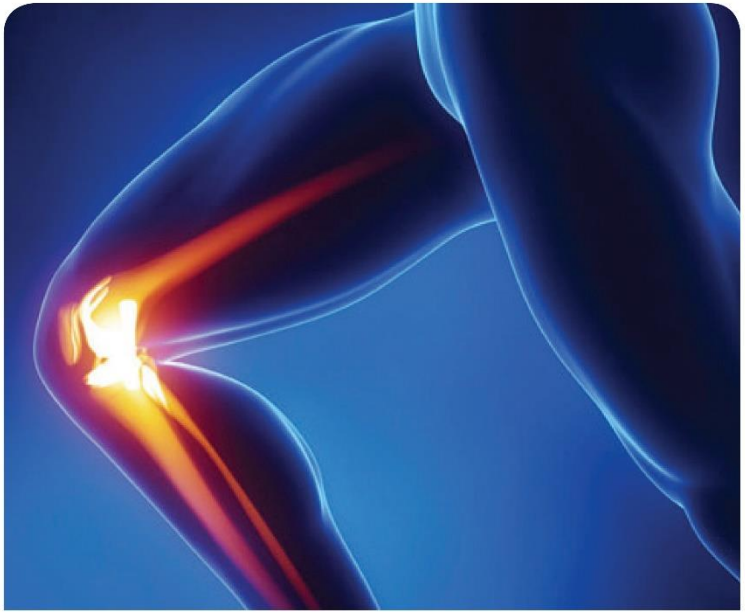
Boot Camp Program

PERSISTENT SHOULDER PAIN

Dr. Carlo Ammendolia

1st Edition



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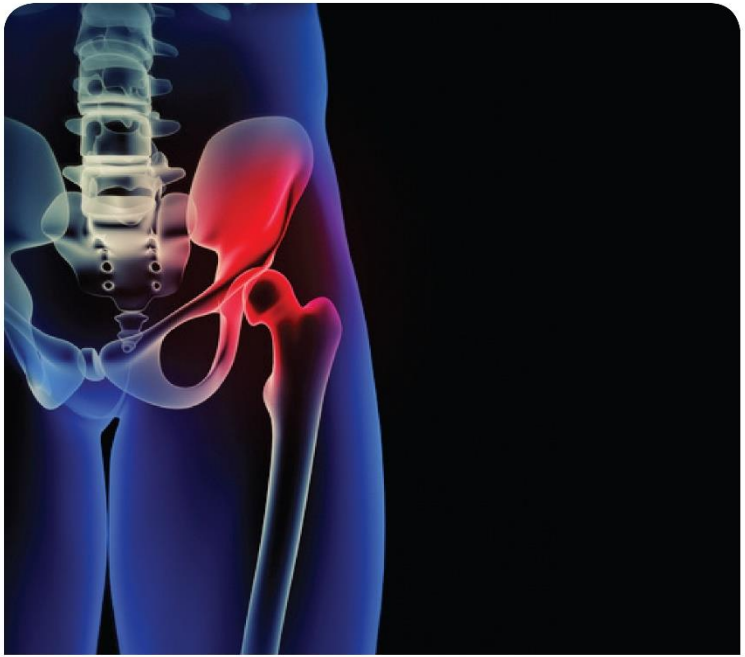
Boot Camp Program

KNEE OSTEOARTHRITIS

Dr. Carlo Ammendolia

1st Edition



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Boot Camp Program

HIP OSTEOARTHRITIS

Dr. Carlo Ammendolia

1st Edition

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Boot Camp Program

FIBROMYALGIA

Dr. Carlo Ammendolia

1st Edition

Fibromyalgia: The Facts

Fibromyalgia affects up to 2% of people worldwide.

80%–90% of those afflicted are women.

Fibromyalgia can present early, but is more common during middle age.

Those with fibromyalgia often suffer from abnormalities in stage 4 deep sleep.

Fibromyalgia commonly co-presents with IBS, RLS, memory deficits, and migraines.

The average patient does not receive an accurate diagnosis until 5 years after onset of symptoms.

Sources: http://www.niams.nih.gov/hi/topics/fibromyalgia/fibrofs.htm#fib_i and http://www.fmaware.org/fminfo/brochure.htm

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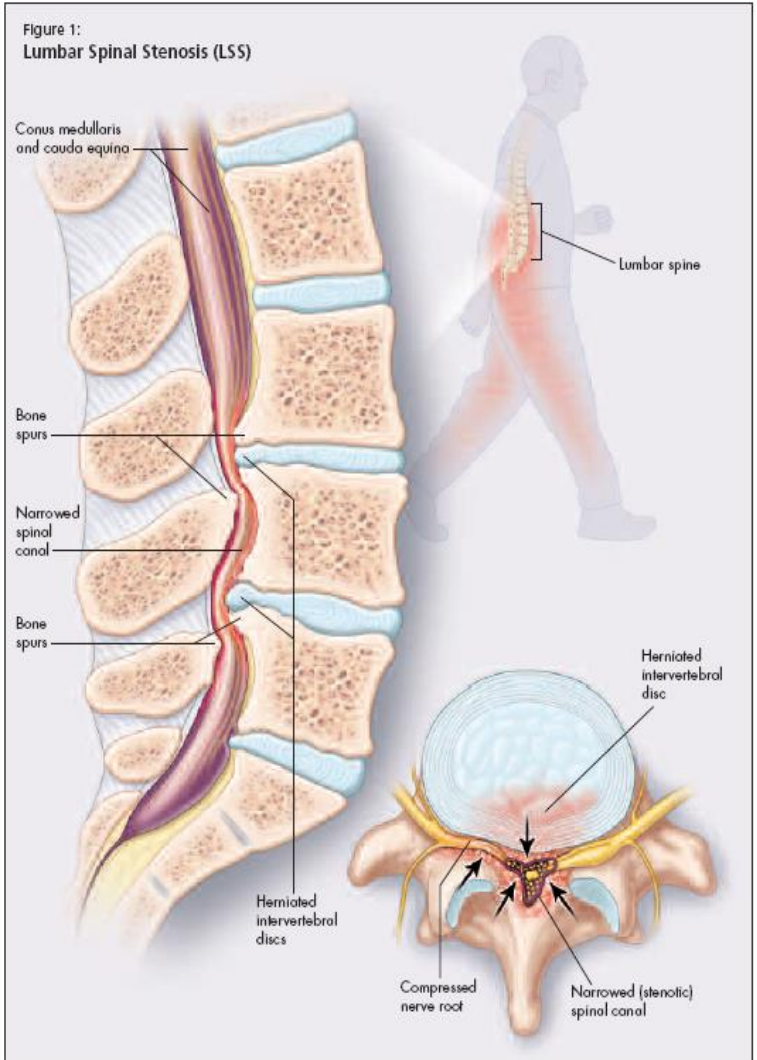
Boot Camp Program

LUMBAR SPINAL STENOSIS

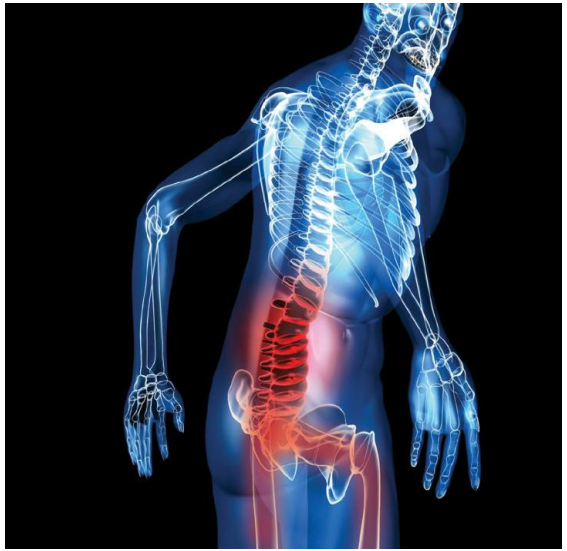
Dr. Carlo Ammendolia

3rd Edition

Figure 1:
Lumbar Spinal Stenosis (LSS)



Boot Camp Program Lumbar Spinal Stenosis



- Self management
- Self monitoring
- Flexion exercises
- Strength training
- Manual therapy
- Body re-positioning
- 2x w- 6weeks

Cognitive Behavioural Approach
Emphasis on standing/walking/functional abilities

ACRM
AMERICAN CONGRESS OF REHABILITATION MEDICINE

Archives of Physical Medicine and Rehabilitation

journal homepage: www.archives-pmr.org

Archives of Physical Medicine and Rehabilitation 2018;99:2408-19

ORIGINAL RESEARCH

Comprehensive Nonsurgical Treatment Versus Self-directed Care to Improve Walking Ability in Lumbar Spinal Stenosis: A Randomized Trial

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From the [a]Institute of Health Policy, Management and Evaluation, University of Toronto, Toronto, Ontario, Canada; [b]Rebecca MacDonald Centre for Arthritis & Autoimmune Disease, Mount Sinai Hospital, Toronto, Ontario, Canada; [c]Dalla Lana School of Public Health, University of Toronto, Toronto, Ontario, Canada; [d]Faculty of Health Sciences, University of Ontario Institute of Technology and UOIT-CMCC Centre for Disability Prevention and Rehabilitation, Toronto, Ontario, Canada; [e]Occupational and Industrial Orthopaedic Centre, Department of Orthopaedic Surgery, NYU Langone Health, New York, NY; [f]Department of Physical Therapy, University of Pittsburgh, Pittsburgh, PA; [g]Canadian Memorial Chiropractic College, Toronto, Ontario, Canada; [h]Department of Medicine, Division of Rheumatology, University of Toronto, Toronto, Ontario, Canada; [i]Department of Medicine, University of Toronto, Toronto, Ontario, Canada; and [j]Department of Orthopedics, Toronto Western Hospital, University Health Network, Toronto, Ontario, Canada.

Abstract

Objectives: To compare the effectiveness of a comprehensive nonsurgical training program to a self-directed approach in improving walking ability in lumbar spinal stenosis (LSS).

Intervention & Control

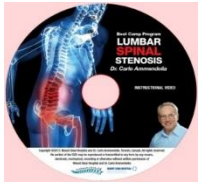
Comprehensive (Boot Camp Program)

vs.

Self Directed Program (Control)

Comprehensive Boot Camp Program

Surgery
UNIVERSITY OF TORONTO
Spine Program



- 2x w- 6weeks
- Manual therapy
- Home flexion exercises
- Home Strength training
- Self management
- Self monitoring
- Body re-positioning
- Emphasis standing & walking abilities

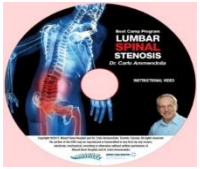
Self-Directed Boot Camp Program

Surgery
UNIVERSITY OF TORONTO
Spine Program









- One educational session
- Home flexion exercises
- Home Strength training
- Self management
- Self monitoring
- Body re-positioning
- Emphasis standing & walking abilities

Outcomes & Analysis

Primary Outcome

- Self-Paced Walk Test
  - -mean difference in distance

Secondary Outcomes

- ZCQS, ZCQF, ODI, ODI walk, NPS back, NPS leg, SF36

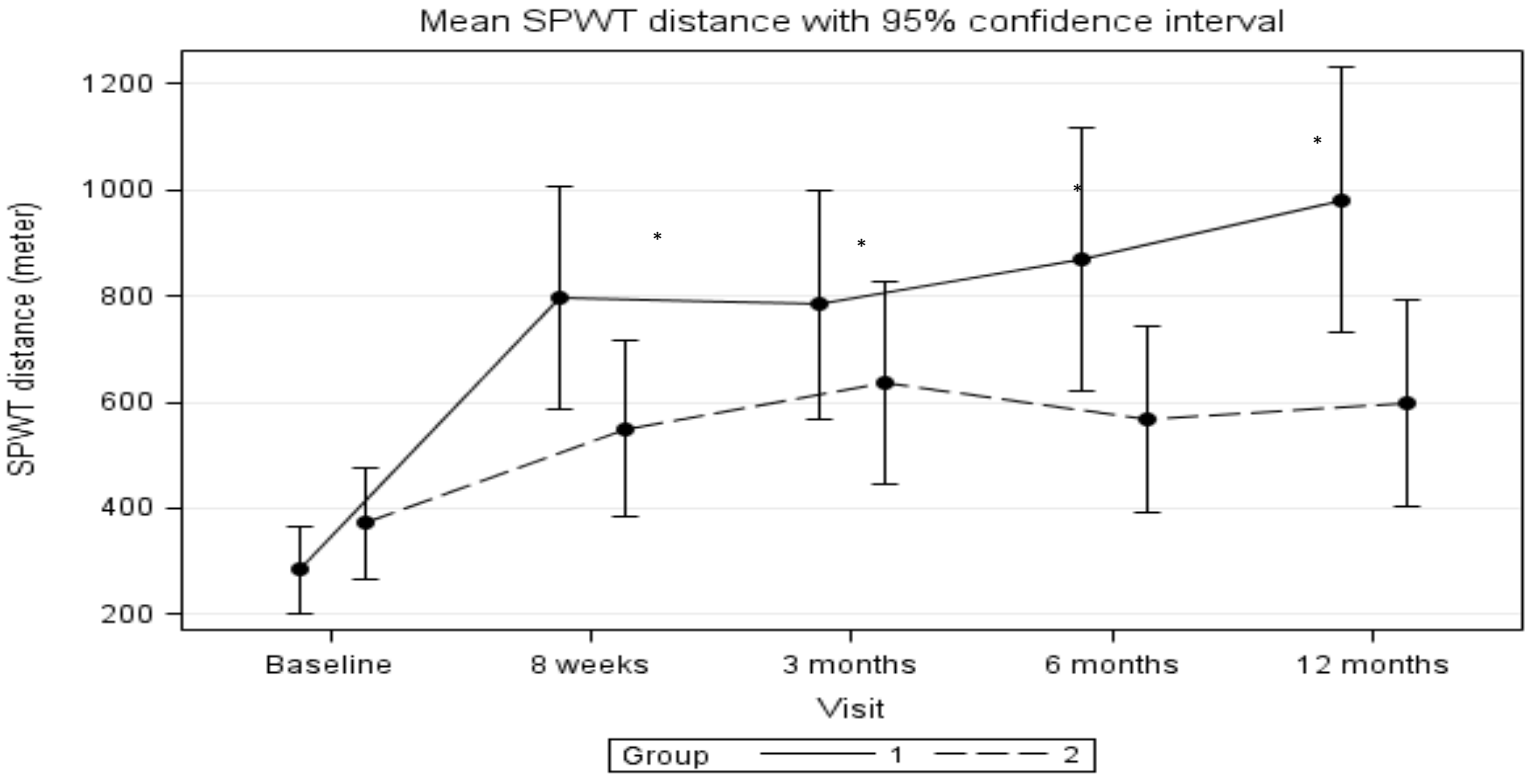
Follow-up

- 8w, 3m, 6m and 12m

Responder Analysis

- ≥ 30% and ≥ 50% improvement in SPWT

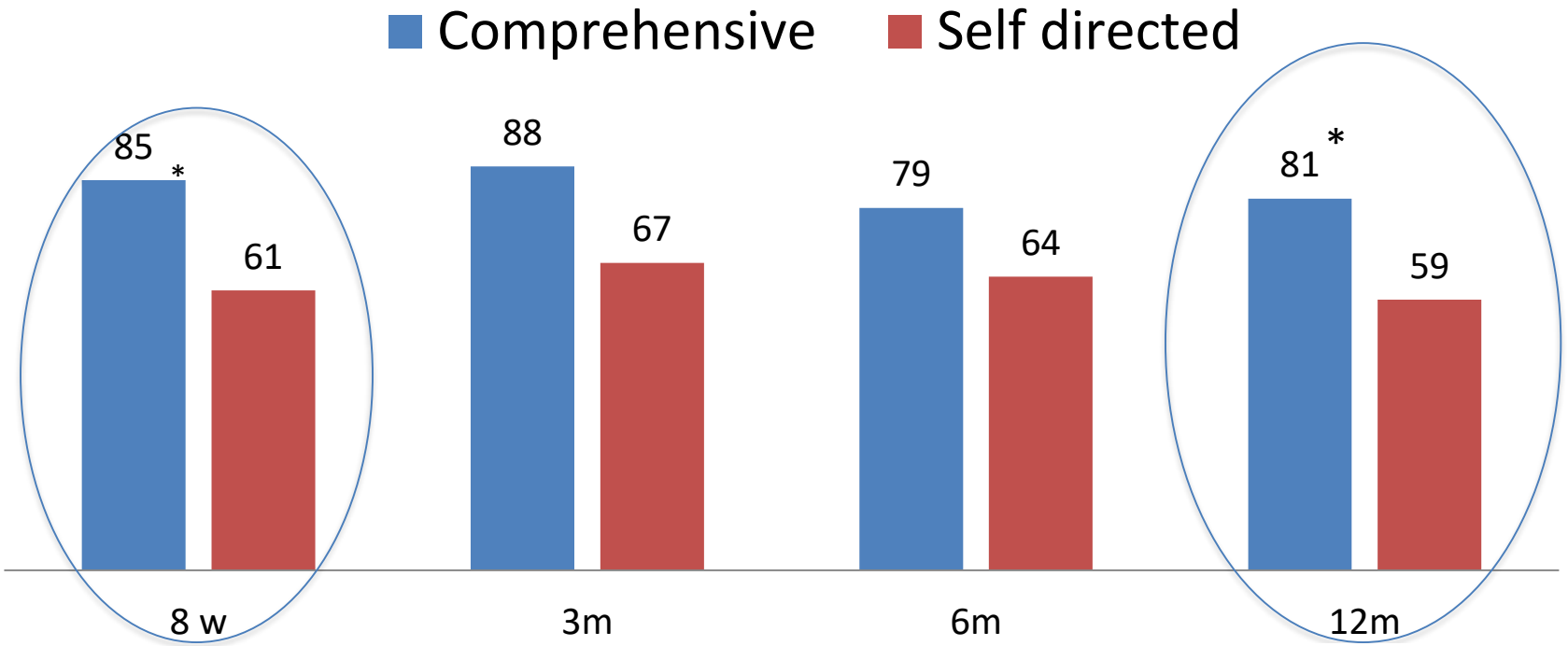
Primary Outcome (SPWT)



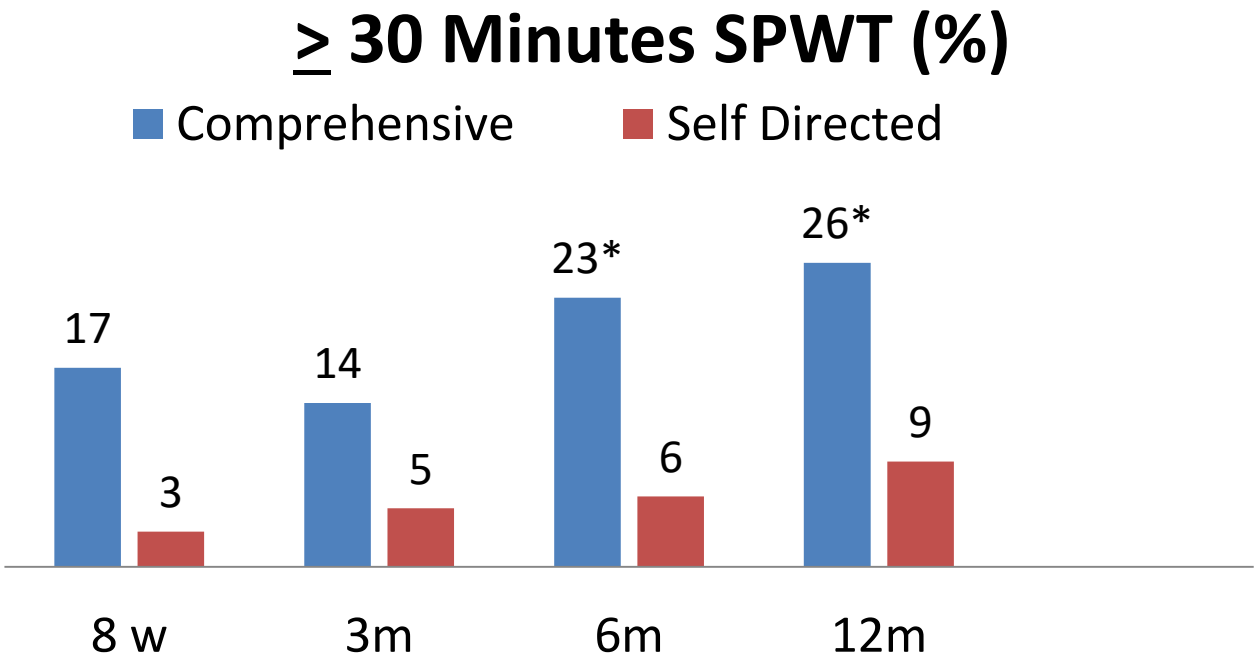
Group 1 = comprehensive, Group 2 = self-directed

Primary Outcome

≥ 30% Improvement SPWT Distance (%)



Secondary Outcomes



Summary

- Comprehensive Program- Superior benefit
  - walking ability, symptoms and function
  - large magnitude and long-term sustainability of the benefit
  - Highly relevant findings in this population with limited walking ability

JAMA Network Open

Original Investigation | Physical Medicine and Rehabilitation

Comparative Clinical Effectiveness of Nonsurgical Treatment Methods in Patients With Lumbar Spinal Stenosis
A Randomized Clinical Trial

Michael J. Schneider, DC, PhD; Carlo Ammendolia, DC, PhD; Donald R. Murphy, DC; Ronald M. Glick, MD; Elizabeth Hile, PhD, PT; Dana L. Tudorascu, PhD; Sally C. Morton, PhD; Clair Smith, MS; Charity G. Patterson, PhD, MSPH; Sara R. Piva, PhD, PT

Abstract

IMPORTANCE Lumbar spinal stenosis (LSS) is the most common reason for spine surgery in older US adults. There is an evidence gap about nonsurgical LSS treatment options.

OBJECTIVE To explore the comparative clinical effectiveness of 3 nonsurgical interventions for patients with LSS.

DESIGN, SETTING, AND PARTICIPANTS Three-arm randomized clinical trial of 3 years' duration (November 2013 to June 2016). Analysis began in August 2016. All interventions were delivered during 6 weeks with follow-up at 2 months and 6 months at an outpatient research clinic. Patients older than 60 years with LSS were recruited from the general public. Eligibility required anatomical evidence of central canal and/or lateral recess stenosis (magnetic resonance imaging/computed tomography) and clinical symptoms associated with LSS (neurogenic claudication; less symptoms with flexion). Analysis was intention to treat.

INTERVENTIONS Medical care, group exercise, and manual therapy/individualized exercise. Medical care consisted of medications and/or epidural injections provided by a physiatrist. Group exercise classes were supervised by fitness instructors in senior community centers. Manual therapy/individualized exercise consisted of spinal mobilization, stretches, and strength training provided by chiropractors and physical therapists.

MAIN OUTCOMES AND MEASURES Primary outcomes were between-group differences at 2 months in self-reported symptoms and physical function measured by the Swiss Spinal Stenosis questionnaire (score range, 12-55) and a measure of walking capacity using the self-paced walking test (meters walked for 0 to 30 minutes).

RESULTS A total of 259 participants (mean [SD] age, 72.4 [7.8] years; 137 women [52.9%]) were allocated to medical care (88 [34.0%]), group exercise (84 [32.4%]), or manual therapy/individualized exercise (87 [33.6%]). Adjusted between-group analyses at 2 months showed manual therapy/individualized exercise had greater improvement of symptoms and physical function compared with medical care (−2.0; 95% CI, −3.6 to −0.4) or group exercise (−2.4; 95% CI, −4.1 to −0.8). Manual therapy/individualized exercise had a greater proportion of responders (≥30%

Key Points

Question What is the comparative effectiveness of 3 types of nonsurgical treatment options for patients with lumbar spinal stenosis (LSS)?

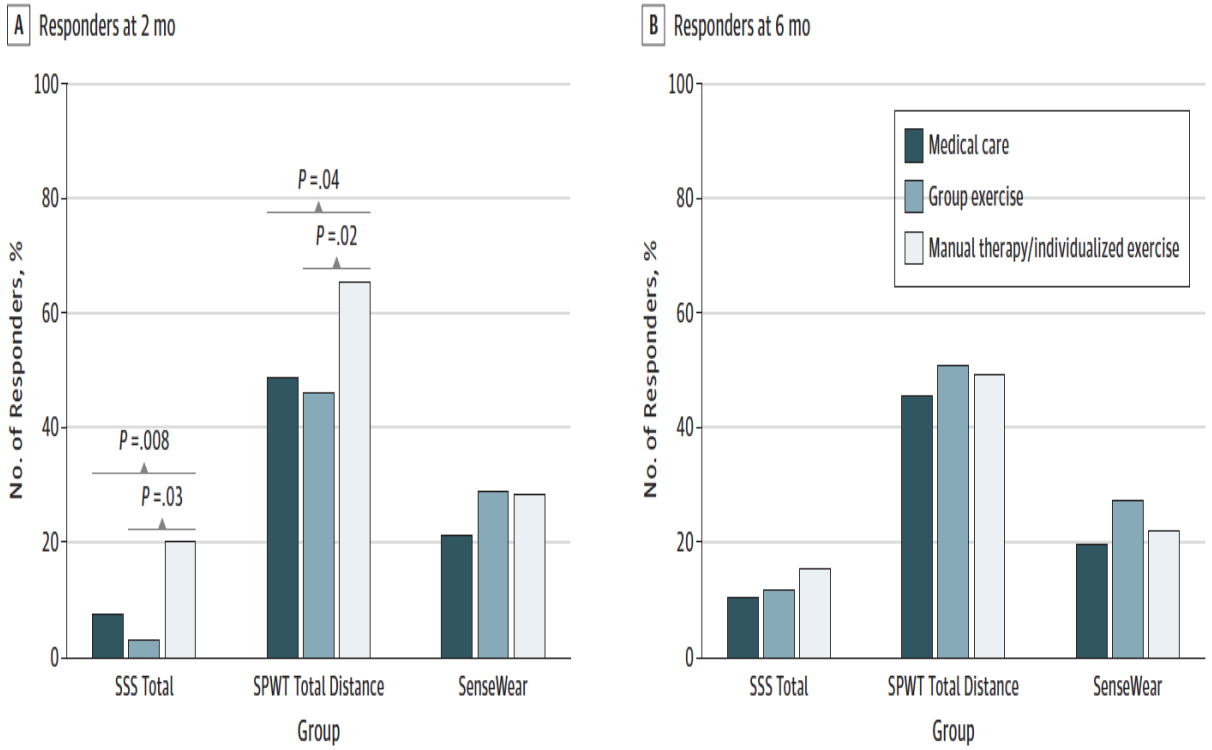
Findings In a randomized clinical trial of 259 patients with LSS, all groups (medical care, group exercise, and manual therapy/individualized exercise) showed improvement in self-reported pain/function and walking capacity at 2 months and 6 months. The manual therapy group had a greater proportion of responders at 2 months, but there were no between-group differences in responder rates at 6 months.

Meaning Although LSS is a chronic degenerative condition, patients with LSS can show improvement in walking capacity with nonsurgical approaches.

Supplemental content

Author affiliations and article information are listed at the end of this article.

Figure 2. Responder Analyses (≥30% Improvement From Baseline) by Group and Time



Schneider et al, JAMA Networks 2019

Clinical Outcomes in Neurogenic Claudication Using a Multimodal Program for Lumbar Spinal Stenosis: A Study of 49 Patients With Prospective Long-term Follow-up

Ngai W. Chow, DC,[a,b,c] Danielle Southerst, DC,[d] Jessica J. Wong, DC, MPH,[c,e] Deborah Kopansky-Giles, DC, MSc,[c,f,g] and Carlo Ammendolia, DC, PhD[h,i,j]

Abstract

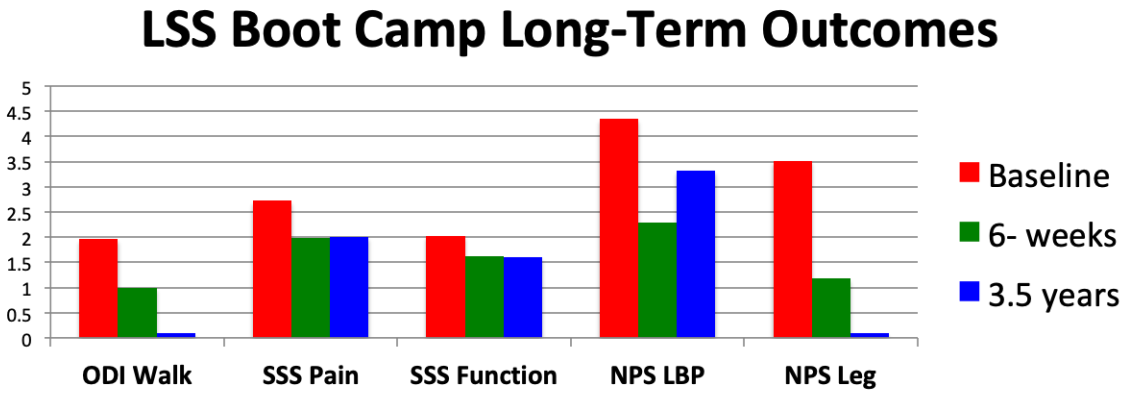
Objective: The purpose of this study was to assess long-term outcomes of a 6-week multimodal program (manual therapy, exercises, and self-management strategies) in patients with neurogenic claudication due to degenerative lumbar spinal stenosis.

Methods: This study evaluated 49 patients with neurogenic claudication who completed a 6-week multimodal program between 2010 and 2013. Outcomes included Oswestry Disability Index (ODI), Zurich Claudication Questionnaire (ZCQ), and Numeric Rating Scale. Mean differences, paired *t* tests, and the Wilcoxon rank-sum test were used to compare outcomes at baseline, 6 weeks, and long-term follow-up.

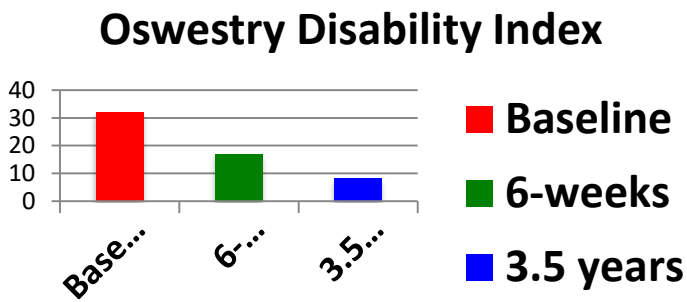
Results: Twenty-three patients completed the follow-up questionnaire (47% response rate). Median follow-up was 3.6 years (interquartile range: 3.3-4.6). The mean age was 73.5 years (standard deviation: 8.5). Between baseline and long-term follow-up, there were statistically significant and clinically important improvements in disability (ODI: -23.7 [95% confidence interval (CI): -15.7 to -31.6]; ODI walking item: -1.96 [95% CI: -1.34 to -2.57]; ZCQ function

Ontario Chiropractic Association

Retrospective Study Findings



**All differences in outcomes were both clinically and statistically significant at 3.5 years except NPS LBP



Chow et al, JMPT in press

Agenda

Definitions/prevalence & burden/complexity

Key principles/components for assessment & management

Practical tips for management

New evidence for effectiveness

Not-for-Profit Research & Resource Centre

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Funded by the Canadian Chiropractic Research Foundation
and The Arthritis Society

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