

## LUMBAR SPINE LOW BACK PAIN NON-OPERATIVE GUIDELINES

The following Low Back Pain (LBP) Non-operative Guidelines were developed by HSS Rehabilitation and are categorized into levels of irritability and further divided into treatment sub-groups. These guidelines are intended to assist the clinician in structuring an appropriate criteria-based and individualized treatment plan. While based on the most current evidence and clinical experience, they are not meant to substitute for clinical reasoning and decision making. Most patients will not fit perfectly into one phase, category, or group. It is the clinician's responsibility to determine the most reasonable treatment model based on sound clinical judgement and assessment of objective clinical findings. For appropriate utilization of these guidelines, it is imperative that the clinician be familiar with the current clinical practice guidelines and treatment-based classifications systems, in order to make the most appropriate evidence-based decisions.

It is further noted that the language used by the clinician during the evaluation and throughout all treatments has a substantial impact on the patient's outcome. The clinician must always use a patient-centered approach to promote function and healthy lifestyle decisions. As the goals and plan of care are developed, it is important that the patient take an active role in making informed decisions about their health behavior. It is recommended that the clinician de-emphasizes pathoanatomical explanations and empower the patient to make behavioral and lifestyle changes to achieve functional goals.

### **If any of these symptoms are present in conjunction with LBP, refer for medical work up:**

- Include Review of Systems / Red Flag Screening, for example:
  - New or recent trauma
  - Cauda Equina - new onset of bowel and bladder dysfunction (retention/incontinence)
    - Back and/or sciatic pain plus
      - Any disturbance in bladder or bowel function (new)
      - Saddle or genital sensory disturbance
      - Bilateral leg pain
      - Severe or progressive bilateral neuro deficit of legs
      - Altered sexual function – new onset
      - RISK FACTORS:
        - Large herniated lumbar disc
        - History of spinal stenosis/malignancy/osteoporosis
        - Congenitally narrow spinal canal
        - Spina bifida

- Recent change in neurological status (new onset of saddle anesthesia)
- Severe loss of coordination
- Discitis / Infection - LBP associated with constitutional symptoms
  - Severe localized low back pain
  - Gross loss of movement
  - Difficulty walking
  - Fever (not always particularly when the infection has localized within the disc)
  - Weight loss
  - Muscle spasms
  - RISK FACTORS:
    - Recent bacterial/fungal/viral infection
    - Recent spinal surgery/injection
    - Immunosuppressed – diabetes mellitus/rheumatological arthritis/HIV/malignancy
    - Alcoholism/smoker/intravenous drug user
    - Renal impairment
    - Poor living conditions
    - Can occur in cervical/thoracic commonly lumbar
    - Age: children or over 50 more commonly affected
    - Males > Female
- Abdominal Aortic Aneurysm
  - Severe low back pain/flank pain worse on exertion
  - Groin or abdominal pain – band like pain
  - Blood pressure may have started to drop
  - Palpable, pulsatile abdominal mass left of umbilicus
  - Syncope, shortness of breath, dizziness
  - RISK FACTORS:
    - Male over 50
    - Smoker or have smoked
    - Hypertension/Hypercholesterolemia
    - Cardiovascular history: ischemic heart disease
- Previous history of cancer
  - Age < 20 years or > 50 years (malignancy), > 70 years (fracture)
  - Past Medical History: prostate/lung/breast/thyroid/kidney most commonly have affinity to metastasize to bone especially spine
    - Most common site is thoracic spine but can occur lumbar/cervical (essential to do whole spine MRI)
    - 30% go on to develop metastases
- Compression fracture
  - > 70 years, prolonged corticosteroid use, trauma, female

- Failure to improve with conservative care
- Inflammatory back pain
  - Morning stiffness of >30 minutes' duration
  - Improvement in back pain with exercise but not with rest
  - Awakening because of back pain during the second half of the night only
  - Alternating buttock pain
  - Hand swelling
  - Enthesitis
  - Uveitis
  - Psoriasis
  - Axial: ankylosing spondylitis/reactive/psoriatic/RA
  - Recent infection (bowel/genitourinary)
  - Risk factors:
    - Family History: Inflammatory conditions
    - Caucasian>Afro-Caribbean/Asian

**If any of these yellow / orange flag risk factors are present in conjunction with back pain, consider the impact on patient progression:**

- Depression/anxiety
- Psychosocial issues (secondary gain issues, No-Fault cases)
- Work related conditions (i.e., job dissatisfaction, worker's compensation)
- Substance abuse or chronic opioid use
- Sleep disorders
- Chronic pain
- Somatoform disorder

### **Post-Partum LBP**

- Post-partum care for this patient population with low back pain is very similar as treatment for nulliparous patients
- Most women will not be seen until 6 weeks post-delivery by their obstetrician unless they have delivered via cesarian section in which case may see their obstetrician as soon as 1-2 weeks post-delivery
- Intake is most important, discuss the following:
  - Delivery vaginal or C-section
  - Any complications
  - Breast feeding/positions
  - Discuss possibility of post-partum depression
  - Help at home
  - \*\* If any pain with intercourse / incontinence may need referral to a pelvic floor PT
- Objectively observe for any pelvic obliquities that may be presenting as LBP

- Also screen for:
  - Diastasis recti
  - Pelvic girdle pain
- After taking all of these points into consideration, proceed as you would for any LBP musculoskeletal initial evaluation

**FOLLOW REFERRING PROVIDER MODIFICATIONS AS PRESCRIBED.**

## LUMBAR SPINE LOW BACK PAIN NON-OPERATIVE GUIDELINES

### Phase 1: Activity Modification (High to Moderate Irritability)

#### PRECAUTIONS

- Red, yellow, orange flags
- Avoid exacerbating recurring symptoms

#### ASSESSMENT

- Patient Reported Outcome Measures (PROM)
  - Use appropriate patient reported outcomes measure to stratify risk and identify individuals with high likelihood of poor prognosis
    - Willingness to change
    - Optimal Screening for Prediction Referral and Outcome for Musculoskeletal Pain conditions (OSPRO)
    - Orebro Musculoskeletal Pain Questionnaire
    - Oswestry Disability Index (ODI)
    - Fear-Avoidance Belief Questionnaire (FABQ)
    - STarT Back Tool: central sensitization inventory
- Numeric Pain Rating Scale (NPRS)
- Observation
- Static / Dynamic posture
  - Kyphotic deformity
  - Lateral shift
  - Scoliosis
- Gait
- Palpation
  - Hypertonicity, tenderness, swelling, temperature
- ROM (Active / Accessory / Physiologic ROM)
  - Lumbar spine
  - Lower quadrant
- Function based assessment of impairments
  - Squat
  - Single leg stance (SLS)
  - Tandem stance

- Neurologic and neurodynamic examinations
  - Sensory
  - Deep tendon reflexes (DTR)
  - Upper motor neuron (UMN)
  - Manual muscle testing (MMT)
    - Heel and toe walking
- Cluster testing for differential diagnosis
  - Stenosis
    - Bilateral symptoms
    - Leg greater than back pain
    - Back during walking and stand
    - Pain relief upon sitting
    - Age greater than 48 years old
  - Stabilization
    - (+) Prone instability test
    - Aberrant motions
    - Less than 40 years old
    - Straight leg raise (SLR) greater than 91 degrees
  - Manipulation
    - FABQ – Work Score < 19
    - Symptoms less than 16 days
    - No symptoms distal to the knee
    - Presence of at least 1 hypomobile segment
    - Prone hip internal rotation (IR) greater than 35 degrees
  - Specific Exercise
    - Centralize symptoms with 2 or more movements
    - Centralize in 1 direction, peripheralize in the opposite direction
  - Sacroiliac (SI) patient does not centralize with repeated motions
    - Thigh thrust
    - Distraction
    - Compression
    - Gaenslen
    - Sacral thrust

## TREATMENT RECOMMENDATIONS

- Assignment to Treatment Based Classification
- *SYMPTOM MODULATION - PAIN CONTROL*
- Educate patient regarding episodic nature of low back pain and likelihood to improve, encourage patient to continue movement and daily activities
- Address impairments found on evaluation
  - Provide proper posture modification at home / work
  - Soft tissue mobilization

- Mobilization/Manipulation (consider lumbar clinical predication rule (CPR) or mobilization/manipulation of adjacent areas such as thoracic spine)
- Neuromuscular re-education
- Specific exercise with regard to directional preference

### **CRITERIA FOR ADVANCEMENT**

- Ability to manage symptoms throughout activities of daily living (ADL) without increasing disability
- Patient demonstrates within and in-between session improvement

### **EMPHASIZE**

- Importance of being an active participant in recovery process
- Provide posture modification/use of modalities
- Reduction of fear; re-conceptualize beliefs on fear, tissue damage and disability

## LUMBAR SPINE LOW BACK PAIN NON-OPERATIVE GUIDELINES

### Phase 2: Addressing Impairments (Moderate Progressing to Low Irritability)

#### PRECAUTIONS

- Avoid exacerbating recurrent symptoms
- Any activity that increases signs and symptoms  $\geq$  1 day
  - Consider reverting to a previous phase if exacerbation is in excess of 1 day
- Avoid activities that result in symptom exacerbation / decline in neurological status

#### ASSESSMENT

- Use appropriate PROM to objectively monitor patient
- Continue to assess patient's psychological status, fears, beliefs and willingness to change progress
- Continue to assess and monitor relevant impairments, flags, neurological and functional status
- Test and re-test familiar symptoms and functional impairments to determine intervention effectiveness

#### TREATMENT RECOMMENDATIONS

- Assignment to Treatment Based Classification
- Independent symptom modulation
- Impairment based approach
  - Mobility
    - Manual interventions
      - Mobilization
      - Manipulation
      - Soft tissue mobilization
  - Stability
    - Proper neuromuscular activation
    - Back/core/lower extremity (LE)
    - Consider crossed patterns and kinetic chains
    - Aerobic conditioning for activity tolerance, conditioning, decreased pain pressure threshold
  - Functional
    - Movement dissociation
    - Movement education for work related activity
    - Progress functional activities that are meaningful to patients, in multiple planes with varying speeds, direction and resistance



## **CRITERIA FOR ADVANCEMENT**

- Independent symptom modulation
- No increase in recurring symptoms with active ROM

## **EMPHASIZE**

- Patient education regarding recurrence rates with acute LBP
- Normalize mobility and ADL function
- Symptom modulation

## LUMBAR SPINE LOW BACK PAIN NON-OPERATIVE GUIDELINES

### Phase 3: Restoration of Function (Low to No Irritability)

#### PRECAUTIONS

- Avoid exacerbating recurrent symptoms
- Any activity that increases signs and symptoms

#### ASSESSMENT

- Use appropriate PROM to objectively monitor patient progress
- Continue to assess patient's psychological status, fears, beliefs, and willingness to change
- Continue to assess and monitor relevant impairments, flags, neurological and functional status
- Test and re-test familiar symptoms and functional impairments to determine intervention effectiveness

#### TREATMENT RECOMMENDATIONS

*Progress from Phase 2 and consider increasing intensity, duration, load, and frequency of activity  
Encourage patient to perform general exercise in conjunction with specific physical therapy-based exercises*

#### CRITERIA FOR DISCHARGE OR ADVANCEMENT

- Independent symptom management
- Minimal pain with functional activities
- Independent with ADL
- Independent with progressive home/community-based activity programs
- ROM within functional limits
- Adequate strength and neuromuscular control of upper extremity (UE) and LE
- Discharge or move onto phase 4 if the goal is to return to sport or advanced functional activities

#### EMPHASIZE

- Advanced functional mobility
- Graded return to activity/work

## LUMBAR SPINE LOW BACK PAIN NON-OPERATIVE GUIDELINES

### Phase 4: Return to Sport (if applicable)

#### PRECAUTIONS

- Monitor exercise dosing

#### ASSESSMENT

- Use appropriate PROM to objectively monitor patient progress
- Continue to assess patient's psychological status, fears, beliefs and willingness to change
- Continue to assess and monitor relevant impairments, flags, neurological and functional status
- Test and re-test familiar symptoms and functional impairments to determine intervention effectiveness

#### TREATMENT RECOMMENDATIONS

- Agility and coordination drills as necessary for sport
- Activity specific training
- Sport specific warm up and activities

#### CRITERIA FOR DISCHARGE

- Independent symptom management
- Full activity participation

#### EMPHASIZE

- Self-monitoring volume of exercise and load progressions
- Functional progressions
- Speed and accuracy
- Communication with appropriate Sports Performance expert

## LUMBAR SPINE LOW BACK PAIN NON-OPERATIVE GUIDELINES

### References

1. Alrwaily M, Timko M, Schneider M et al. Treatment-based classification system for low back pain: revision and update. *Phys Ther.* 2016;96(7):1057-1066.
2. Alshehri MA, Alzahrani H, Alotaibi M, et al. Physiotherapists' pain attitudes and beliefs towards chronic low back pain and their association with treatment selection: a cross-sectional study. *BMJ Open.* 2020;10:e037159. doi:10.1136/bmjopen-2020-037159
3. American Physical Therapy Association. Orthopaedic Section (2011). *Current concepts of orthopaedic physical therapy.* LaCrosse, Wis : Orthopaedic Section, APTA.
4. Burns SA, Mintken PE, Austin GP, et al. Short-term response of hip mobilizations and exercise in individuals with chronic low back pain: a case series. *J Man Manip Ther.* 2011;19(2):100-107. doi:10.1179/2042618610Y.0000000007.
5. Cook CE, Showalter C, KabbazV, et al. Can a within/between-session change in pain during reassessment predict outcome using a manual therapy intervention in patients with mechanical low back pain? *Man Ther.* 2012;17(4):325-329.
6. Cruz EB, Canhão H, Fernandes R, et al. Prognostic indicators for poor outcomes in low back pain patients consulted in primary care. *PLoS ONE.* 2020;15(3):e0229265.
7. Delitto A, George SZ, Van Dillen L et al. Low Back Pain: Clinical practice guidelines linked to the International Classification of Functioning, Disability, and Health from the Orthopaedic Section of the American Physical Therapy Association. *J Orthop Sports Phys Ther.* 2012;42(4):A1-57. doi:10.2519/jospt.2012.42.4.A1.
8. Ehrlich-Jones L, Mallinson T, Fisher H et al. Increasing physical activity in patients with arthritis: a tailored health promotion program. *Chronic Illn.* 2010;12;6(4):272–281. doi:10.1177/1742395309351243.
9. Fritz J. Disentangling classification systems from their individual categories and the category-specific criteria: an essential consideration to evaluate clinical utility. *J Man Manip Ther.* 2010;18(4):205-208. doi:10.1179/106698110X12804993427162.
10. George SZ, Beneciuk JM, Lentz TA, Wu SS. The Optimal Screening for Prediction of Referral and Outcome (OSPRO) in patients with musculoskeletal pain conditions: a longitudinal validation cohort from the USA. *BMJ Open* 2017;7:e015188. doi:10.1136/bmjopen-2016-015188

11. Ladeira CE. Physical therapy clinical specialization and management of red and yellow flags in patients with low back pain in the United States. *J Man Manip Ther.* 2018 May;26(2):66-77. doi: 10.1080/10669817.2017.1390652. Epub 2017 Nov 20. PMID: 29686480; PMCID: PMC5901428.
12. Lewis J, Ridehalgh C, Moore A, et al. This is the day your life must surely change : Prioritising behavioural change in musculoskeletal practice. *Physiotherapy.* 2021;112:158-162. doi:10.1016/j.physio.2021.05.007
13. Medeiros FC, Pena Costa LO, Added MAN et al. Longitudinal monitoring of patients with chronic low back pain during physical therapy treatment using the STarT Back Screening Tool. *J Orthop Sports Phys Ther.* 2017; 47:314-323.
14. Meyer GD, Kushner AM, Brent JL et al. The back squat: a proposed assessment of functional deficits and technical factors that limit performance. *Strength Cond J.* 2014;2;36(6):4–27. doi:10.1519/SSC.000000000000103.
15. Meyer GD, Kushner AM, Brent JL et al. The back squat part 2: a proposed assessment of functional deficits and technical factors that limit performance. *Strength Cond J.* 2015;37(2):13–60. doi:10.1519/SSC.000000000000130
16. Nijs J, Mairesse O, Leysen L, et al. Sleep disturbances in chronic pain: neurobiology, assessment, and treatment in physical therapist practice. *Phys Ther.* 2018;98(5):325-335.
17. O’Leary CB, Cahill CR, Robinson AW, Barnes MJ, Hong J. A systematic review: the effects of podiatric deviations on nonspecific chronic low back pain. *J Back Musculoskelet Rehabil.* 2013;26(2)117-123. doi: 10.3233/BMR-130367.
18. Reiman MP, Manske RC. The assessment of function. part II: clinical perspective of a javelin thrower with low back and groin pain. *J Man Manip Ther.* 2012;20(2):83-89. doi:10.1179/2042618611Y.0000000018.
19. Rudwaleit M, Metter A, Listing J, Sieper J, Braun J. Inflammatory back pain in ankylosing spondylitis: a reassessment of the clinical history for application as classification and diagnostic criteria. *Arthritis Rheum.* 2006 Feb;54(2):569-78. doi: 10.1002/art.21619. PMID: 16447233.
20. Van Dillen, LR; Lanier, VM; et al. Effect of Motor Skill Training in Functional Activities vs Strength and Flexibility Exercise on Function in People With Chronic Low Back Pain A Randomized Clinical Trial. *JAMA Neurol.* 2021;78(4):385-395. doi:10.1001/jamaneurol.2020.4821
21. Warren N, Keightley E, Lewis A, et al. Serious Pathology Guide For Clinicians In Primary Care. 2021;(September 2020):1-25.

Created: 7/2018

Revised: 9/2019, 9/2021