Rehabilitation Guidelines for Conservative Management of Lumbar Spinal Disc Displacement

These guidelines are intended to guide clinicians and patients through the conservative course of care for acute to subacute disc herniation at a single level in a 25–55-year-old population. These guidelines are time based (dependent on tissue healing) as well as criterion based. Specific intervention should be based on the needs of the individual and should consider exam findings and clinical decision making. The timeframes for expected outcomes contained within this guideline may vary based on physician preference, additional procedures performed, and/or complications. If a clinician requires assistance in the progression of a patient, they should consult with the referring provider.

The interventions included within these guidelines are not intended to be an inclusive list of exercises. Therapeutic interventions should be included and modified based on the progress of the patient and under the discretion of the clinician.

Considerations for the lumbar disc herniation
Many different factors influence the disc herniation rehabilitation outcomes, including the degree and location of the disc displacement. It is recommended that clinicians collaborate closely with the referring physician regarding further medical or surgical interventions.

PHASE I: ACTIVE REST (0-6WEEKS), 6-8 PT visits

Rehabilitation Goals	• Control pain/inflammation • Reduce muscle spasm • Establish pain free positions/postures for sleeping, standing, sitting • Participate safely in activities of daily living • Promote safe return/modification to vocational and avocational duties • Improve neutral spine alignment • Improve core muscle engagement • Monitor neurologic signs/deficits; communicate with team for medical management if needed
Bracing/ Precautions	• Light bracing may be helpful in maintaining neutral spine alignment and providing support with necessary activities • Precautions: *limit sitting, avoid activities/positions that worsen symptom (flexion>extension)*
Intervention	*Education* • Patient education posture, body mechanics, activity modification to maintain neutral spine. • Sleeping positions, activities for the morning to minimize flexed/shifted posturing • Use reassuring and positive language when discussing imaging findings, emphasizing the body's ability to heal • Review red flags and maintain awareness to guide prescribed medication use • Perform activities and exercise that minimize pain and continue with activity as tolerated *Pain management* • Modalities: Ice initially, E-stim. • Review of medication dosage, timing • Decompression: self-traction, positions to unload spine • Controlled shift/extension to neutral *Mobility/Flexibility*

	• Manual Therapy
	  ○ Soft Tissue Mobilization: Lumbar paraspinals
	  ○ Manual/Mechanical Traction
	
	Stability/Strength
	• Local core muscle control (Transverse Abdominis (TA)/Multifidus (MF) in low load, spine-supported positions
	  ○ TA with heel slides
	  ○ TA with arm movements
	  ○ Hook-lying clamshell with band
	
	Cardio/ low impact
	• Recommend walking short distances frequently if in good symmetric pattern

Criteria to Progress	• Able to maintain relative spine neutral in supine, side lying and standing • Pain/inflammation controlled • Improved radicular symptoms that can be controlled during functional activities. Ideally little/no symptoms below knee • Palpation/observation for lack of global muscle substitution with TA/MF contractions

PHASE II: EARLY STRENGTHENING (6-12 WEEKS), 8-10 PT visits

Rehabilitation Goals	• Monitor pain/inflammation. • Consider requesting for consult for ESI: if unable to sit for short periods, maintain neutral spine/reduction of lateral shift and continued lower leg symptoms, having completed 10-day prescriptive dose of oral NSAID's • Advance daily vocational and avocational activities, considering load to spine • Address mobility/flexibility limitations in adjacent regions • Improve trunk and hip muscle strength and endurance • Progress cardiovascular endurance
Bracing/ Precautions	• Continue bracing, if support is helpful for pain relief and it allows for increasing activities • Monitor for any increase/change in neurologic symptoms • Changes in symptom progression/pain

Additional Intervention **Continue with Phase I interventions*	*Education*
	• Tissue healing, guidance through progressive loading/unloading, limiting flexion-based activities
	• Body mechanics to include neutral spine, hip hinge for function, and sitting with neutral spine
	
	Pain management
	• Manual/mechanical traction as indicated
	
	Mobility/Flexibility
	• Manual therapy
	  ○ Hip/Thoracic mobilization as indicated
	• Hip and LE flexibility
	  ○ Piriformis stretching
	  ○ Hip flexor stretching
	  ○ Quad stretching
	
	Stability/Strength
	• Neutral trunk stabilization
	  ○ Dead bug
	  ○ Supine over regular or half foam roller maintaining spine neutral
	• Closed chain strengthening
	  ○ Modified plantigrade bird dog
	  ○ Standing with foot on stool, controlled pelvis position, arm extension
	  ○ Standing wall support partial squats

	Cardio/low impact • Progress treadmill walking: time • Elliptical machine • Aquatics

Criteria to Progress	• Able to sit for 20 minutes with little to no symptoms, may need adapted chair/leg position to maintain neutral spine
	• Lumbar flexion 75% before onset of leg pain
	• Able to extend walking time
	• MT activation without compensatory strategies
	  ○ Prone MT lift test: 10 reps x 10 sec hold
	• TA activation without compensatory strategies
	  ○ Prone pressure biofeedback test >10 seconds with 4 mm Hg drop
	  ○ Neutral trunk stabilization exercises: 10 reps x 10 sec hold

PHASE III: ADVANCED STRENGTHENING (12-16 WEEKS), 4-6 PT visits

Rehabilitation Goals	• Monitor pain in response to activities • Address mobility/flexibility limitations • Improve trunk/core and hip muscle strength and endurance • Advance daily vocational and avocational activities considering load to the spine • No pain without brace for all activities, except sport/recreational exercise
Bracing/ Precautions	• Bracing discontinued • Monitor for any change in neurologic symptoms
Additional Intervention **Continue with Phase I-II Interventions*	*Stability/Strength* • Anti-rotation trunk exercises • Standing squat progression • Standing dead lift progression • Standing overhead press • Standing pull downs • Standing chest press • Standing loaded carry *Neuromuscular re-education* • Proprioceptive training on dynamic surfaces • Spiral line chopping/lifting PNF diagonals • Begin plyometric exercise program *Cardio* • Progress treadmill walking: time/speed • Progress elliptical machine: resistance/incline • Begin return to run program (if applicable)
Criteria to Progress	• Sit 30 minutes in neutral spine with some variability in chair surfaces • Lumbar flexion 75% with no radicular symptoms • Walk 30 minutes with little/absent radicular symptoms • Front plank test: 40 seconds • Side bridge activation without compensatory strategies: 40 seconds

PHASE IV: OPTIONAL RETURN TO SPORT/RECREATIONAL EXERCISE (16+ WEEKS)

Rehabilitation Goals	• Monitor pain in response to activities • Address mobility/flexibility limitations • Improve trunk/core and hip muscle strength and endurance • Advance sports activities considering load to the spine • Maximize sport specific strength, endurance, and motor control, increasing intensity, volume, speed

	• Demonstrate lumbopelvic control with dynamic sports-specific activities • Establish proper training routine and independent management plan
Additional Intervention **Continue with Phase I-III interventions*	*Stability/strength* • Consideration of triplanar control demand on trunk/unilateral stance. Design specific exercises to address with use of vary surfaces, speed and loads (i.e. weights, bands) • Consideration of maintaining neutral spine with optimally engaged core (i.e. deeper to superficial, segmental to global stabilizers) • Progress plyometric exercise program • Progress return to run program • Medicine ball toss progression • Reactive and perturbation training with dual task challenges *Education* • Monitor graded return to sport practice and competition/recreational exercise
Criteria to Discharge	• Proper mechanics during sports specific movement with full volume/intensity • Participate at pre-injury performance level without pain

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Contact	Please email MGHSportsPhysicalTherapy@partners.org with questions specific to this protocol

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