Rehabilitation Guidelines for Conservative Management of Low Back pain with Mobility Deficits

These guidelines are intended to guide clinicians and patients through the conservative course for back pain- ICF classification of low back pain with mobility deficits. 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 low back pain with mobility deficits
Patients in this classification category present with restricted spinal range of motion and segmental mobility. Low back pain and related lower extremity symptoms are reproduced with provocation of the involved segments. Many different factors influence rehabilitation outcomes including chronicity of the condition, relevant comorbidities and psychosocial factors. It is recommended that clinicians collaborate closely with the referring physician regarding progression through the phases of the program.

PHASE I: ACTIVE REST (0-4 WEEKS), 4-6 PT visits

Rehabilitation Goals	• Control pain/inflammation • Participate safely in activities of daily living • Address mobility /flexibility limitations of the hip and lumbar spine • Promote hip and core muscle strength and stability • Maintain cardiovascular conditioning
Bracing/ Precautions	• Cessation of athletic activity may be recommended

Interventions	*Education*
	• Patient education: posture, positioning, body mechanics, activity modification
	• Utilize Oswestry Questionnaire to guide functional outcomes
	
	Pain Management
	• Modalities: heat/ice
	
	Mobility/Flexibility
	• Manual Therapy
	  ○ Soft Tissue Mobilization: paraspinals, quadratus lumborum, piriformis, gluteals
	  ○ Lumbar spine/thoracic spine/hip joint mobilization/manipulation
	• Hip and LE flexibility
	  ○ Supine hip flexor stretching
	  ○ Supine piriformis stretching
	  ○ Supine hamstring stretching
	  ○ Standing gastrocnemius stretching
	• Thoracic and Lumbar spine

	○ Supine single knee to chest ○ Supine pelvic tilt/pelvic clock ○ Supine lower trunk rotation (if low reactivity) ○ Quadruped/modified plantigrade cat and camel: spine flexion/extension *Stability/strength* • Local core muscle control (Transverse Abdominis (TA)/Multifidus (MF) in low load, spine-supported positions ○ Hook-lying isometric TA contraction ○ Hook-lying isometric TA contraction with march ○ Hook-lying isometric TA contraction with heel slides ○ Hook-lying isometric TA contraction with alternate UE elevation ○ Side-lying isometric multifidus contraction • Hip strengthening ○ Hook-lying gluteal set ○ Side-lying clam shell ○ Hooklying bridging progression with TA engaged/neutral spine) *Cardio/low impact exercise* • Walking on treadmill • Stationary bicycle • Nu-Step machine
Criteria to Progress	• Pain/inflammation controlled • Proper technique for transitional movements

PHASE II: EARLY STRENGTHENING (4-8 WEEKS), 4-6 PT visits

Rehabilitation Goals	• Monitor pain/inflammation • Address mobility/flexibility limitations • Improve scapular, trunk and hip muscle stability, strength, and endurance • Progress cardiovascular conditioning
Bracing/ Precautions	• Cessation of athletic activity may be recommended
Additional Interventions **Continue with Phase I interventions, as indicated*	*Stability/strength* • Scapular muscle strengthening ○ Prone I's, T's and Y's exercise ○ Prone push-up plus knees extended ○ Standing Wall push up ○ Standing "W" exercise • Neutral trunk stabilization ○ Front plank stabilization ○ Side plank stabilization ○ Supine dead bug ○ Hook-lying curl up ○ Hook-lying bridging progression with TA engaged/ neutral spine) ○ Quadruped bird dog with variations • Hip strengthening ○ Side-lying gluteus medius strengthening ○ Prone hip extensor strengthening • Close chain strengthening ○ Standing side-step band walk ○ Standing hip external rotation ○ Standing squat *Cardio* • Progress treadmill walking: time/speed • Progress stationary bicycle: cadence/resistance

	• Progress elliptical machine: time/resistance/incline

Criteria to Progress	• Full spinal ROM
	  ○ Pain-free repeated lumbar flexion/extension x 10 reps without aberrant motion
	• No pain with daily activities
	• Normal multifidus (MT) contraction
	  ○ Prone MT lift test
	• Transverse abdominis (TA) activation is good without compensatory strategies
	  ○ Prone pressure biofeedback test >10 seconds with 4 mm Hg drop

PHASE III: ADVANCED STRENGTHENING (8-12 WEEKS), 4 PT visits

Rehabilitation Goals	• Address mobility/flexibility limitations • Progress trunk and lower quarter strength and stability • Demonstrate lumbopelvic control with closed chain movement patterns • Progress cardiovascular endurance
Additional Interventions **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* • Reactive and perturbation training on stable and unstable surfaces • Spiral line chopping/lifting PNF diagonals • Begin plyometric exercise program *Cardio* • Begin return to run program

Criteria to Progress	• Full uncompensated spinal active ROM in all planes
	• No pain with initial phases of return to running program
	• Minimal to no pain or difficulty with integrated movements with load
	• Successful return to gym-based exercise program
	• Good local/global muscle performance
	  ○ Front plank test: 40 seconds
	  ○ Side-bridge activation without compensatory strategies: 40 seconds

PHASE IV: RETURN TO SPORT/RECREATIONAL EXERCISE (12 WEEKS +)

Rehabilitation Goals	• Maximize sport specific strength, endurance, and motor control, increasing intensity, volume, speed • Demonstrate lumbopelvic control with dynamic sports/ recreational specific activities • Establish appropriate training routine with independent management plan
Additional Interventions **Continue with Phase I-III interventions*	*Stability/Strength* • Standing dead lift • Standing loaded carry *Cardio* Progress return to run program *Neuromuscular re-education* • Progress plyometric exercise 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 • Compete 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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