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COMPREHENSIVE ADULT SPINE, ADULT TOTAL HIP AND KNEE RECONSTRUCTION, AND ORTHOPAEDIC TRAUMATOLOGY/FRACTURE MANAGEMENT

Patient Name:____

Diagnosis: ____

Lumbar Disc Herniation Physical Therapy Prescription

Therapy should occur 2-3 times per week for 6 weeks, or as long as needed in order to reach functional goals, and to develop an independent Home Exercise Program (HEP).

Treatment options listed below are not all-inclusive nor absolute. Rather, individual patient needs based upon appropriate clinical decision making should guide therapy. For patients with Lumbar Radiculopathy and/or Lumbar Disc Herniation, all below could be indicated. Please use tests/evaluate the patient and utilize clinical decision-making to individualize the appropriate treatments to the patient. If the patient demonstrates radicular symptoms, address these first. Ensure to develop a long-term home exercise program, and emphasized need for a home exercise program as a maintenance for stabilization of the symptom complex.

Phase I: Protective Phase

Precautions

- Avoid flexion and flexion/rotation based exercises.
- Keep spine in neutral for all strengthening and make sure to achieve proper neuromuscular control of transversus abdominis, and multifidus before progressing strengthening exercises.
- If leg symptoms are present, focus on centralizing pain out of the leg, **Do Not** progress strength exercises until achieved.

Goals:

- Determine patient's directional preference, and provide home exercise program with exercises in that direction.
- Centralize symptoms out of lower extremity (if present) then work to abolish if possible.
- Achieve proper muscle firing of transversus abdominis and multifidus muscles 10-20 second isometrics to start.
- Achieve proper muscle firing of gluteus medius without substitution from hamstrings or lumbar paraspinous muscles, 10-20 second isometrics to start.
- Learn proper sitting posture with lumbar roll, and proper lifting mechanics.
- Diminish pain/inflammation and minimize lower extremity radiating symptoms (ice, modalities as needed).

- Improve cardio endurance to at least 20 minutes, 3 to 5 days/week.
- Focus on walking program, increasing tolerance to 10 minutes, 2 times a day.

Education

- **Posture Education:** Upright sitting posture with Lumbar Roll at all times; Frequent changes in positions, and sleeping positions. Teach how different body positions and postures affect the spine.
- **Body Mechanics:** Light lifting, transfers (include logrolling), positioning, etc.
- Explain what centralization and peripheralization are and how to monitor this to no if what the patient is doing is helping or aggravating his/her symptoms.
- Teach patient to avoid/minimize activities that aggravate his/her symptoms.

Directional Preference Exercises (repeated or static movements)

- **Walking Program:** Begin 1-2 times a day for 10 minutes, progress as tolerated
- **Transversus Abdominis Bracing:** 10 second isometrics with normal breathing (without pelvic tilt) in supine position.
- **Multifidus:** 10 second isometrics with normal breathing in prone position (if able).
- **Glute sets:** 10 second isometrics with emphasis on proper gluteal muscle group firing in prone position (bilateral and unilateral).
- **Light stretching:** Hip flexors, quadriceps, hamstrings, and gastrocsoleus.

- **Driving:** When off narcotic pain medications, and patient feels that they are safe enough to drive, able to react to avoid accidents/drive defensively without hesitation. Dr. Anderson does not clear patients to drive, this is an individual decision for each patient.

Phase II (2-6 Weeks): Initial Strengthening Phase

Therapy

- Starting at week 2, 1-2 times per week, 4 or more weeks

Precautions

- Keep spine in neutral and good posture for strengthening with focus on proper neuromuscular control, do not progress without good neuromuscular control.
- **Lifting Restrictions:** Lifting, pushing and pulling less than **5-10 pounds** until 6 weeks.

Goals

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- Patient to have proper neuromuscular control and posture with stabilization and strength exercises
- Complete light strengthening, with a neutral spine and correct firing of stabilizers.
- Release soft tissue restriction/muscle spasm/scar
- Independent with body and lifting mechanics - review
- Increase aerobic endurance to more than 30 minutes

Cardiovascular (as long as it does not aggravate or increase symptoms, let pain be your guide)

- Walking Progression: Gradually progress to 30 minutes a day.
- Biking – Recumbent Stationary Bike (avoid road bikes) initiate at 2 weeks postop
- Stationary Bike Upright - Can initiate at 4 weeks (no resistance), 6 weeks (resistance)

Strength

Only initiate Phase II strength conditioning once patient can complete Phase I exercises. Then begin light resistance and slowly progress. Emphasize achieving proper neuromuscular control of the transversus abdominis and multifidus muscle groups without compensation (use stabilizer biofeedback cuff if available).

- **Transversus Abdominis/Multifidus Progression:** 10-20 second isometrics with normal breathing (without pelvic tilt) in supine, quadruped and prone. Must maintain neutral spine.
  - Progress with upper extremity/lower extremity movements (example marches, straight leg raises, upper extremity lift and lowers, planks, etc.)
  - **Supine:** Add upper extremity/lower extremity movements (example: Marches, straight leg raises, upper extremity lift and lowers, etc.)
  - **Quadruped:** Alternating upper extremity, alternating lower extremity, alternating upper extremity/lower extremity (bird-dog)
  - **Bridging:** Bridges, Side Leg Bridges, on Swiss ball, etc.
  - **Balance:** Static (example: Single-Leg Stance, Tandem, etc.)
  - **Swiss ball:** No Sit Ups, No Twisting (example wall squats, seated exercises, bridges, bird-dog, etc.)
  - **Multifidus:** 10-20 second isometrics with normal breathing in prone position.
- **Glute Activation Exercises:** 10-20 second isometrics with emphasis on proper gluteal muscle group firing in prone position (bilateral and unilateral).
  - **Prone:** Hip extensions, alternating upper extremity/lower extremity lifts (avoid hyperextension)
  - **Side-lying:** Clams, hip abduction, etc
  - 90/90 leg lifts, side-lying abduction, quadruped hip extension, bird-dog
  - **Bridging:** Bridges, Side Leg Bridges, on Swiss ball, etc.
- **Upper Extremity/Lower Extremity Strength Training**
  - **Step ups, leg press, wall squats, body weight squats, etc.**

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- **Balance:** With transversus abdominis bracing): Single-leg stance, tandem, foam, etc.
- **Upper extremity light resistive exercises** (machines, Thera-Band, free weights).

Flexibility

- **Lumbar spine:** 4 weeks or less to improve lumbar extension range of motion (prone lying, prone on elbows, press ups, then stand extension (if no peripheralization))
- **Stretching:** Hamstrings, gastroc/soleus, quadriceps, hip flexors, piriformis, etc.
- **Neural mobilization:** Performed as needed, gentle with caution not to flareup nerve roots

Aquatic Physical Therapy (At 4 weeks if available once incision is healed)

- No rotation and transversus abdominis bracing during all exercises
- Walking all directions, balance, upper extremity/lower extremity strengthening

Phase III (6-8 weeks): Progression to Advanced Strengthening

Therapy

- 1-2 times a week (as needed for return to sport or work)

Goals

- Independent home exercise program for advance strengthening, return to sport and work.
- Increased lower quarter flexibility and strength with focus on proper transversus abdominis and gluteal activation.
- Anticipate release to full activities without restrictions at 6 to 8 weeks. Pending approval by Dr. Anderson.
- Possible referral to work hardening/reconditioning program.

Education

- Ensure patient understands that once they have been primed with a lower back pain episode, there predispose to future episodes, so we will monitor for future warning signs.
- The first sign of an exacerbation is stiffness. As soon as patient notices stiffness, resume repeated movement exercises every 2 hours and proper direction as initially prescribed on day 1.
- Continue use of lumbar roll long-term preventatively.

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- Explained the risk of prolonged static positions (such as sitting on a plane, car) and repeated bending/lifting all day long.

Cardiovascular

- As long as it does not aggravate or increase symptoms, let pain be your guide
- Walking - The best exercise for these patients!
- Biking - Recumbent or hybrid/upright (avoid road bikes)
- Swimming
- Elliptical
- Hiking
- Pilates
- Emphasize correct form and equipment set up (example: Elliptical, bike, walking training, etc.)
- Preference of Pilates or yoga, if returning to yoga, and sure it is with an experienced instructor. Same goes for Pilates.
- When initiating running and sports below, slowly increase in the 8 to 12-week timeframe.
- Time frames may vary per patient, and based upon the sport/activity, consult with Dr. Anderson if you have questions.

	No Earlier Than:
Walking Progression	At least 30 mins/day, continue progress
Stationary Bike	Gradual increase in resistance at 4 weeks
Pilates (neutral spine)	6 weeks
Outdoor Biking	6 weeks
Hiking	6 weeks
Elliptical	6 weeks
Skiing	8 weeks

	No Earlier Than:
Yoga	8 weeks
Swimming	6-8-week progression
Running	8-12 wk progression
Soccer	8-12 wk progression
Basketball	8-12 wk progression
Golf	8-12 wk progression

Strength

- Advance core strength and stabilization exercises (**Highly Recommend Pilates**)
    - Progress to weightbearing, balance, Swiss ball, reformer, etc.
    - Progressed to multiplanar exercises with lower extremity and upper extremity
- Progress lower extremity/upper extremity strengthening
- Begin running, agility and plyometrics for return to sport at 8 to 12 weeks (if symptoms stable and cleared by Dr. Anderson).