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

Patient Name: _____

Diagnosis: _____

Lumbar Degenerative Spondylolisthesis 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).

Notes: Activities that involve rotations (example: Golf Swing, Throwing, Batting, Serving, etc.) will aggravate patients with lumbar degenerative spondylolisthesis, and facetogenic pain. Avoid aggressive endrange extension, and rotation activities if possible.

Goals:

- Improve core strength and stability. Do not worry about increasing range of motion with these patients.
- Talk to Dr. Anderson about bone health and weight loss strategies if indicated.

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 degenerative disc disease, all below could be indicated. 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 prevention of the patient's back pain

Phase I

Precautions

- 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, if present (extension or flexion).
- 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.

- Improve cardio endurance to at least 20 minutes, 3 to 5 days/week.
- Learn proper sitting posture with lumbar roll, and proper lifting mechanics.

Education

- **Posture Education:** Sitting Posture with Lumbar Roll at All Times; Frequent Change in Positions, Sleeping Positions. Teach how different body positions and postures affect the spine.
- **Body Mechanics:** Light lifting, transfers (include logrolling) positioning, lifting, vacuuming, yardwork, etc.

Stabilization Exercises

Emphasize achieving proper neuromuscular control of the transversus abdominis and multifidus muscle groups without compensation (use stabilizer biofeedback cuff if available).

- **Transversus Abdominis Bracing:** 10-20 second isometrics with normal breathing (without pelvic tilt) in supine, quadruped and prone.
- **Multifidus:** 10-20 second isometrics with normal breathing in prone position.
- **Glute sets:** 10-20 second isometrics with emphasis on proper gluteal muscle group firing in prone position (bilateral and unilateral).

Directional Preference Exercises (Repeated or Static Movements)

- If worse with flexion activities (sitting, bending, etc.), attempt extension exercises first and minimize flexion-based strengthening including pelvic tilts.
- If worse with extension activities (standing, walking, prone, etc.) attempted flexion exercises first and neutral spine stabilization.
- If both flexion and extension cause significant aggravation, work on exercises with a neutral spine and avoid end ranges.

Manual Therapy

- Sound assisted soft tissue mobilization/augmented soft tissue mobilization/myofascial release as needed for areas of soft tissue restrictions or muscle guarding.
- Address any positional faults with mobilization or contraction/relaxation techniques.
- Joint mobilizations as required.

Flexibility

- **Stretching:** Hip flexors, hamstrings, gastrocsoleus, quadriceps, iliopsoas
- **Hip Range Of Motion:** Restore normal extension, internal rotation, external rotation if not within normal limits (mobilizations as required)

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

- Walking
- Biking - Recumbent or hybrid/upright (avoid road bikes)
- Swimming

Aquatic Physical Therapy

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

Phase II

Goals

- Patient able to activate co-contraction of transversus abdominis and multifidus muscle groups regularly during daily activities, especially in situations where the anticipation of pain, they are experiencing pain, or feel unstable.
- Restore normal hip range of motion for extension, internal rotation, and external rotation (provided they were out of range of normal limits).
- Once patient is able to complete exercise and cardio below without aggravation of pain during or after exercise, progress to Phase III.

Transversus Abdominis/Multifidus Progressions (maintain a neutral spine)

Only initiate these once patient can complete Phase I exercises. Emphasize neutral spine position during each exercise and correct muscle firing of transversus abdominis.

- **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)
- **Side-lying:** Clams, hip abduction, etc.
- **Prone:** Hip extensions, alternating upper extremity/lower extremity lifts (avoid hyperextension)
- **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.)

Flexibility

- See above

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

Phase III

Only initiate Phase III once patient can complete Phase II exercises correctly and without aggravation of pain

Transversus Abdominis/Multifidus Progressions (maintain a neutral spine)

- **Strengthening:** Lower extremity strengthening with transversus abdominis bracing (lunges, squats, step ups, etc.)
- **Balance:** Progress with BOSU, dynamic balance, etc.
- **Swiss Ball:** Advanced exercises (continue extension and rotation precautions)

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

Return to Sports (must be cleared by Dr. Anderson first)

- In general, Golf is not recommended. If patients want to return, it is best to discuss with Dr. Anderson in order to ensure that hip, shoulder, and thoracic range of motion along with proper stabilization are addressed. Mechanics of the golf swing are important. Modifications need to be made, and clear expectations discussed.
- Gradual progressive return to sports following parameters outlined by Dr. Anderson.
- **Goal:** Reaching full participation over 4 to 6 weeks, provided there is no recrudescence of pain. **Do Not** start full practices or games right away.
- **Guideline:** Increase participation by 20 to 25 %/week, avoiding participation on consecutive days for the first 2 weeks. Example:
 - **Week 1:** 20-30 minutes of participation every other day
 - **Week 2:** 30-60 minutes of participation every other day
 - **Week 3:** 30-60 minutes of participation up to 5 days/week
 - **Week 4:** 60-120 minutes of participation up to 5 days/week
- Do not participate in sports activities that have risk of trauma from collisions or falling. Limit activities and repetitions of activities that require arching, twisting/rotation of the back (diving, throwing, serving, rebounding).