

Quadriceps Strain

Diagnosis Explanation:

A **quadriceps strain** is a **partial or complete tear** of the **quadriceps muscle** (front thigh), often caused by **sudden acceleration, sprinting, jumping, or overuse**.

Symptoms include **pain in the front of the thigh, swelling, bruising, weakness, and difficulty bending the knee or extending the leg**. Severity is classified as:

- **Grade 1 (Mild):** Minor stretching, slight pain, no significant strength loss.
- **Grade 2 (Moderate):** Partial tear, swelling, weakness, difficulty walking.
- **Grade 3 (Severe):** Complete tear, significant weakness, possible **bruising and severe pain**, may require surgery.

Specific Work Modifications:

- **If your job requires standing or walking:** Take **frequent breaks** to sit and use **compression sleeves** to reduce swelling.
- **If your job involves lifting:** Avoid **sudden knee bending or heavy lifting** that puts stress on the quadriceps.
- **If your job is desk-based:** Keep the leg **elevated** when sitting and perform **gentle mobility exercises**.
- **Avoid:** Sudden movements, prolonged standing, heavy lifting, deep squats, and excessive stair climbing.

Specific Activity Modifications:

- **If you run or play sports:** Avoid sprinting, jumping, and sudden direction changes. Switch to **low-impact exercises** like swimming or cycling.
- **If you hike:** Use **trekking poles** and avoid steep inclines.
- **If you do weightlifting:** Avoid **deep squats, leg presses, and lunges**. Focus on **upper-body workouts** until pain decreases.
- **Avoid:** Sprinting, explosive movements, sudden stops, and heavy lower-body lifting.

Recommended Supplements:

- **Collagen Peptides** - 10g daily for muscle and tendon repair.
- **Magnesium** - 300-400mg daily to aid muscle relaxation and prevent cramping.
- **Vitamin C** - 500mg daily to support collagen synthesis.
- **Omega-3 Fatty Acids** - 1000mg daily to reduce inflammation.
- **Protein Supplement (if needed)** - 20-30g post-exercise to support muscle healing.

Recommended Nutrition and Hydration:

- **Increase Lean Protein** (chicken, fish, eggs, tofu) to aid muscle recovery.

- **Eat Anti-Inflammatory Foods** (berries, leafy greens, turmeric, nuts) to reduce swelling.
- **Consume Potassium-Rich Foods** (bananas, sweet potatoes, spinach) to prevent cramps.
- **Limit Processed Foods & Excess Sugar** to reduce inflammation.
- **Hydration:** Drink **8-10 cups of water daily**, and consider **electrolyte drinks** if sweating frequently.

Home Exercise Prescription (Quadriceps Strain Rehabilitation)

Early Phase (0-2 Weeks, Reducing Pain & Swelling):

- **RICE Protocol** - Rest, Ice (15-20 min, 3x/day), Compression (with a wrap or sleeve), Elevation.
- **Quadriceps Sets** - Tighten thigh muscles, hold for 5 seconds, repeat **10 reps, 3x/day**.
- **Ankle Pumps** - Move ankle up and down to improve circulation, **10 reps, 3x/day**.
- **Seated Knee Extensions (Pain-Free Range)** - Slowly extend knee, hold for 5 seconds, repeat **10 reps, 2x/day**.

Strengthening Phase (2-6 Weeks, Improving Strength & Stability):

- **Straight Leg Raises** - Keep knee straight, lift leg, hold 5 seconds, repeat **10 reps, 2x/day**.
- **Glute Bridges** - Lie on back, lift hips while keeping hamstrings relaxed, **10 reps, 2x/day**.
- **Mini Squats (No Deep Bending)** - Slight knee bends while keeping weight on heels, **10 reps, 2x/day**.

Advanced Phase (6+ Weeks, Strengthening & Return to Activity):

- **Step-Ups** - Step onto a low platform, push through the heel, repeat **10 reps, 2x/day**.
- **Eccentric Quad Strengthening** - Slowly lower into a squat position, **10 reps, 2x/day**.
- **Stationary Cycling** - Low resistance for **10-15 minutes/day** to improve mobility.

Helpful Books:

1. *The Running Injury Recovery Program* - Dr. Paul Hobrough.
2. *Peak Performance: Elevate Your Game, Avoid Burnout, and Thrive with the New Science of Success* - Brad Stulberg & Steve Magness.

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Contact a Key West orthopedic clinic or reach out to Dr. Jason Pirozzolo.