

Rehabilitation of Quadriceps Strains

PHASE I: ACUTE PHASE (24-48 hours)

Goals: Diminish pain and inflammation
 Gradually improve flexibility and ROM
 Retard muscular atrophy and strength loss
 Enhance healing of muscular strain

Immediately following injury:

- RICE – Rest, Cryotherapy, compression wrap, and elevation
- High voltage stimulation to control swelling
- Light massage when tolerable (day 2-3)
- ROM exercises:

PHASE II: SUBACUTE PHASE

- Range of motion
- Cryotherapy
- NSAIDS
- Electrical stimulation
- Isometrics then isotonics
- Initial isometrics with quadriceps contractions done with the knee fully extended and in different positions at 20 degree increments as knee flexion improves
- May discontinue isometrics when can sit comfortably, perform straight leg raises at 0 degrees, 20 degrees, and 40 degrees
- Isotonics – begin with the lightest free weight that athlete can lift; three sets of 10 repetitions up to three times per day
- Terminal knee extensions instituted at 20 degree increments as comfort and knee flexion allow
- Once terminal knee extensions are done properly without extensor lag, free weights are added to the SLRs and terminal knee extensions
- Increase weight by no more than 2-3 pounds at any given time and increase no sooner than every two consecutive work days
- As athlete approaches his or her maximum weight, somewhere around 15 -20 pounds, isokinetic exercises are tried
- Conditioning via upper body workouts, swimming, treadmill walking
- Biking okay when knee ROM greater than 100 degrees of flexion

PHASE III

- Athlete should have 90 degrees of knee flexion
- Gentle active stretches before and after exercise ie active stretching against gravity in prone position
- Isokinetics at high speed and low resistance
- As improvements occur, gradually slower speeds with higher forces are used
- Perform concentrically (avoid eccentric work too early)

PHASE IV

- Eccentric exercises
- Ice massage
- Circular wraps or sleeves
- Passive stretching okay

PHASE V

- Return to sports when pain free, normal ROM of knee within 10 degrees of opposite knee
- Isokinetic testing 10% within contralateral leg
- Three 50-yard sprints and three figure-of-eight runs at full speed within 15 yards