

# REHABILITATION PROGRAM FOLLOWING HYALURONIC ACID INJECTIONS

***\*Note: Do not perform exercises other than stretching and ice until 24-hours following each injection***

## **PHASE I: INJECTION ONE**

- Goals:
- Reduce swelling and inflammation
  - Protection of healing articular cartilage
  - Restoration of full knee motion
  - Re-establish voluntary quadriceps control
- Inflammation Control:
- Use of ice and compression 15-20 min. (4 times daily)
  - Use elastic wrap or sleeve for swelling
- Flexibility: (2x a day)
- Immediate motion
  - Full motion as tolerated
  - Flexibility exercises: stretch hips, hamstrings, calf and quads
- Strengthening Exercises: (2x a day)
- Isometric quadriceps setting 2-3 x 10
  - Straight leg raises (Flex, abd, add) 2-3 x 10, weight as tolerated
  - Electrical muscle stimulation to quads during above exercises
  - Bicycle with low resistance and high seat
    - Begin with ~10-15 minutes and progress up to 20-30 minutes by end of week 1
    - Ride bike 1x a day
  - Proprioception and balance training (weight shifts, mini-squats)

## **PHASE II: INJECTION TWO**

- Goals:
- Continue to reduce swelling and inflammation
  - Protection of healing articular cartilage
  - Increase flexibility
  - Gradual increase strengthening exercises (emphasis on quad and hip strength)
- Inflammation Control:
- Use of ice and compression 15-20 minutes as needed
  - Use elastic wrap or sleeve for swelling
- Flexibility: (2x a day)
- Flexibility exercises: stretch hips, hamstrings, calf and quads
- Strengthening Exercises: (4x a week)
- Bicycles (1-2 times daily) for 30-40 minutes
  - Quads setting & straight leg raises with ESTIM daily
  - Mini-squats
  - Front lunges onto box
  - Weight machines:
    - Leg press (weight as tolerated)
    - Hamstrings
    - Calf

- Hip abd/add/flex/ext
- If access to pool, may perform exercises and light jogging

### **PHASE III: INJECTION THREE**

- Goals:
- Protect and promote articular cartilage healing
  - Gradually increase joint stresses and loading
  - Improve lower extremity strength and endurance

- Flexibility Exercises:
- Continue stretching hip, hamstrings, quadriceps, and calf 2x a day

- Strengthening Exercises:  
(4x a week)
- Continue quad sets & straight leg raises with ESTIM daily
  - Mini-squats
  - Mini-squats on tilt board or unstable surface
  - Front lunges onto box – begin to add dumbbells
  - Front lunge onto unstable surface (foam, bosu ball, etc)
  - Wall squats
  - Lateral step-ups
  - Bicycle or elliptical – work up tolerance to 45-60 minutes
  - Continue previous machine exercises – gradually increase weight
  - Progress pool running program

\*Progression based on monitoring swelling & pain

### **PHASE IV: POST-INJECTIONS (Week 4+)**

- Goals:
- Improve muscular strength/endurance
  - Increase functional activities
  - Gradually increase loads applied to joint
  - Gradual return to full unrestricted activities

- Exercises:  
(3x a week)
- Continue progressive resistance exercises
  - Continue bike and/or elliptical progression
  - Continue exercise progression
  - Gradually add dumbbells to lateral step-ups
  - Lateral step-ups on foam or unstable surface
  - Running and jumping exercises in pool
  - Initiate light jogging program as tolerated
    - Progression of time and intensity based on symptoms of pain and/or swelling
  - Continue all stretches to lower extremity daily