

## Non-Operative Treatment of Osteoarthritis of the Knee

### THE REHABILITATION PROGRAM

#### I. The Acute Phase

**Goals:** Decrease pain and inflammation  
Improve ROM and flexibility  
Enhance lower extremity muscular strength  
Modification of activities  
Alter applied joint forces

#### **Decrease pain and inflammation**

- NSAIDS
- ROM exercises
- Cryotherapy

#### **Improve ROM and flexibility**

- Restore full passive knee extension
  - Overpressure into extension
  - Hamstring stretches
  - Gastrocnemius stretches
- Gradually increase knee flexion
  - AAROM knee flexion
  - Quadriceps stretches
  - PROM flexion

#### **Enhance lower extremity muscular strength**

- Quads, hamstrings, hip and calf
- Gradual program (moderate intensity exercise)
  - Quad sets
  - SLR flexion (use ankle weights when able)
  - Initiate leg extensions 0-90° (if painful, implement patellar protection program)
  - Hip abd/adduction
  - Knee extension
  - ¼ squats
  - Bicycle (high seat and low resistance)

#### **Modification of activities**

- No excessive joint compression forces
- No excessive joint shear forces
- No repetitive pounding activities (running)
- Use of pool for exercise

**Alter applied joint forces**

- Assess varus deformity
  - Lateral heel wedges
  - Osteoarthritis knee braces
  - Shoe insoles to control ground reaction forces
  - Shoe modifications walking shoe – jogging shoe

**Nutritional supplements**

- Proper nutrition
- Multi-vitamin
- Increase water consumption
- Supplements
- Glucosamine with chondroitin sulfate (may be beneficial)

**II. The Subacute Phase**

- Goals:** Improve ROM and flexibility  
Enhance lower extremity muscular strength  
Improve muscular endurance  
Gradual return to functional activities

**Improve flexibility**

- Continue stretching exercises
  - Hamstrings
  - Hip flexors, IT band
  - Quadriceps
  - Calf

**Enhance muscular strength**

- Gradually increase program
  - Quad sets
  - ¼ squats
  - Wall squats
  - Front lunges
  - Lateral steps-ups (low step)
  - Bicycle (gradually increase time)
- Enhance endurance
  - Bicycle (longer duration)
  - Increase repetitions
  - Pool program
- Gradual return to functional activities
  - Walking program
  - \*No running
  - Golf, tennis

### III. The Chronic Phase

**Goals:** Maintain/improve flexibility  
Gradually improve muscular strength  
Gradually return to functional activities

#### **Flexibility exercises**

- Continue stretches before/after exercise program
- Improve muscular strength
- Strengthening program without symptoms
  - Quad sets
  - ½ squats
  - Wall squats
  - Lunges
  - Bicycles

#### **Functional activities**

- Continue activities which are pain-free and asymptomatic
- Watch for swelling, morning stiffness
- Continue exercise program 3-4 times per week