

When Good Knees Go Bad

EXERCISE ETC. INC.



REMINDER:

Obtain medical clearance and physician's release prior to beginning an exercise program for clients with medical or orthopedic concerns.

Steps to Effectively Managing Knee Injuries or Conditions

1. Understand the condition
2. Avoid exercises or movements that cause pain or discomfort
3. Implement strategies to address the common causes of the condition
4. Refer to PT if new pain or progression occurs




Common Knee Conditions/Injuries

- Anterior Knee Pain
- Meniscus Injury
- Degenerative Arthritis



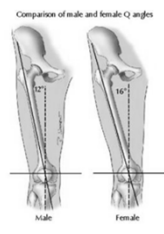
Anterior Knee Pain (AKP)



- Patellofemoral pain (PFPS)
 - *I.E. Runner's knee*
- Patellar tendinopathy
 - *I.E. Jumper's knee*
 - *Chronic degenerative condition*
- IT band syndrome (ITBS)

Proposed Causes of AKP

- Weak muscles
 - Quadriceps, hip abductors, hip flexors
- Tight areas
 - Psoas, IT band, quadriceps, hamstrings
- Altered lower extremity kinematics
 - Increased internal hip rotation



PREVENTIVE STRATEGIES

- Avoid or “modify” activities that worsen condition
- Foam rolling & stretching:
 - Quadriceps, IT band, psoas, hamstrings
- Strengthening:
 - Quadriceps, glutes, (esp. Glute medius) hip flexors
- Braces, Taping and Supports



Patella Loading with Activity

- Walking
 - 0.3 x body weight
- Climbing stairs
 - 2.5 x body weight
- Descending stairs
 - 3.5 x body weight
- Squatting
 - 7.0 x body weight



Avoid Aggravating Condition

- Runners
 - Evaluate technique, shoes, mileage, surfaces
- Cyclists
 - Check bike fit; avoid prolonged high gears and hill climbing
- Fitness
 - Avoid exercises with high impact stress, require excessive knee flexion, or excessively load the quads



Isometric Holds Decrease Pain

- Isometric exercise can reduce tendon pain for up to 45 min.
 - [Br j sports med.](#) 2015 oct;49(19):1277-83
- Use a 10 second ” isometric hold prior to quad-dominant lower body exercises



Role of Glutes

- Ability to control frontal and transverse plane hip motion impaired in those with PFPS



Strengthening Hip External Rotation and Abduction



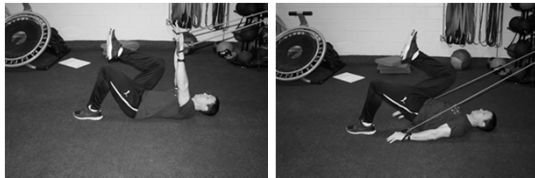
Clamshell



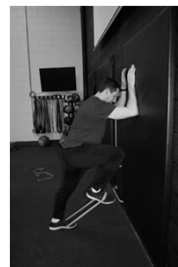
Side Bridge w/ Isometric Hip Abduction



Band Assisted Cook Hip Lift

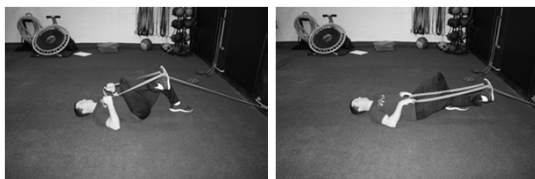


Band Resisted Hip Flexion



- Hip extension w/ opposing hip flexion increase focus on psoas

Eccentric Hip Flexion

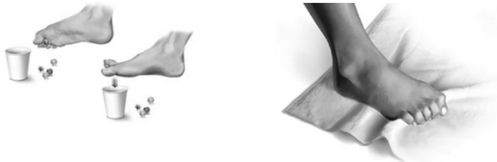


Role of Foot



- Increased pronation of subtalar joint along with arch collapse directly influence knee valgus

Improving Arch Strength

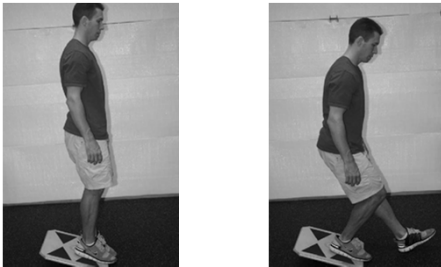


Band Resisted Arch Strengthening

- Go from neutral to high arch position, and hold for 10 seconds



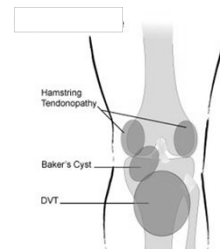
Eccentric Quad Strengthening



Exercise most frequently researched to treat patellofemoral pain & tendinopathy

Posterior Knee Pain

- Muscle | tendon injury
 - Popliteus
 - Hamstring
 - Gastrocnemius
- Posterior cruciate ligament injury
- Baker's (popliteal) cyst



Meniscus Tears



- Results from flexion and rotation of the knee as in cutting or changing direction
- Older adults are prone to tears due to degenerative weakness
- Low-level swelling following activity that causes friction is common

Managing Meniscus Injury



- Discuss inflammation management with physician
- Avoid deep knee bending
 - Deep squats and lunges
- Maintain a vertical shin
- Avoid locking out the knee
- Avoid or modify impact activities

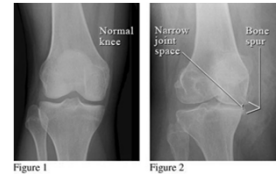
What is a Baker's Cyst?

- Fluid-filled sac
- Expressed as "tightness" behind the knee
- Pain is worsened by full flexion or extension, and by activity
- Scale back exercise as necessary to avoid increasing inflammation



Training Around Knee Arthritis

- Decrease BW
- Up to 80% reduction in pain with well-rounded exercise program
- Yoga/tai chi
- Hydro-aquatic exercise
- Strength/cardio



Stability Ball Wall Squats or Wall Sits



General Recommendations for Knee Post-Rehabilitation

- Progressive resistance
- Stable to unstable
- Strengthen hips and hamstrings
- Look to improve weak areas or movement patterns
- Train with support



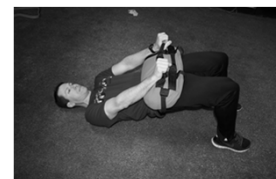
Increase Stability in Training



- Use bi-lateral exercises
 - Squat
 - Leg press
 - Knee extension
 - Leg curls
- Do hamstring and glute activation drills 1st


Glute + Hamstring Activation

- Mini-band lateral shuffle
- Hamstring bridges




Improve Proprioception

- Weight shifting
- Single leg balance
- Eyes closed
- Unstable surfaces
 - Barefoot on floor
- Perturbation training




Suitcase or Racked Kettlebell Carry with Balance Challenge

- Hold balance for 3-5 seconds
- Walk:
 - Forward
 - Laterally
 - Backwards




Cone Reach | SL Squat


Reach for cone(s) with foot



Reach for cone(s) with arms





Neuroreactive Training Methods



- Anchor bands to pull knee into valgus during squat | lunge movement
- Body will reflexively neutralize position
- May progress to simultaneous visual reaction w/ medicine ball toss

Directional Band-resisted Lunges

Adapting Cardio for Knee Pain

- Repetitive stress & chronic knee pain
- Recommendations
 - Cross-training
 - Interval training
 - Aquatics
- Recovery
 - Ice & massage

