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Patellofemoral Joint:
Therapy, Bracing, & Daily Activities

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OVERVIEW

- Objectives
- Basic Principles of Rehabilitation
- Anatomy of the Patellofemoral Joint Complex
- Functions of the Patellofemoral Joint
- Therapeutic Physical Agents
- Taping & Bracing
- Manual Therapy Techniques
- Aerobic Conditioning
- Therapeutic Exercises: ROM, Flexibility, Strength & Functional
- Things to Avoid
- Conclusion
- References

OBJECTIVES

- To recall the anatomy of the patellofemoral joint complex in order to formulate and implement an appropriate and effective patellofemoral rehabilitation program
- To attain the knowledge that a comprehensive patellofemoral rehabilitation program is vital and crucial to prevent injury and maximize function

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Basic Principles of Rehabilitation

(Andrews and Wilk 1994)

- The effects of immobility must be minimized.
- Healing tissue should never be overstressed.
- Rehabilitation protocol must be based on scientific and clinical research.
- The patient must fulfill specific criteria to progress from one stage of rehabilitation to the next (criteria based progression).
- The rehabilitation program must be adaptable to each patient, allowing for the desired goals of each patient.
- The rehabilitation process is a team effort with the physician, therapist, trainer, coach, patient and family.

Anatomy of the Patellofemoral Joint Complex

- 3 Bones: Patella, Femur, Tibia
- Muscles Involved: Quadriceps, Tensor Fascia Lata, Hamstring, Gastrocnemius, Hip Adductors, Popliteus, Iliotibial Band
- Bursae: Prepatellar, Superficial & Deep Infrapatellar
- Retinacula: Medial & Lateral

Functions of the Patellofemoral Joint

- Provide an articulation with low friction
- Protect distal aspect of femur from trauma and quadriceps from attritional wear
- Improve cosmetic appearance of knee
- Improve moment arm of the quadriceps
- Decrease amount of AP tibiofemoral shear stress on the knee

Therapeutic Physical Agents

- Moist Hot Pack/Cold Pack
- Electrical Muscle Stimulation
- Ultrasound
- Iontophoresis

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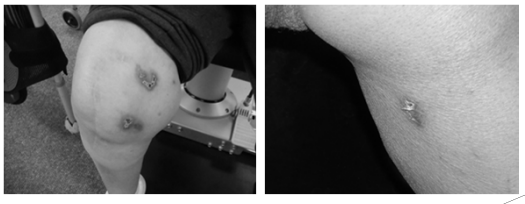
Electrical Muscle Stimulation Burns



Taping & Bracing

- McConnell Taping
- Patellofemoral Joint Kinesio Tape
- Patellofemoral Braces for Lateral Tracking

McConnell Taping

Patellofemoral Joint Kinesio

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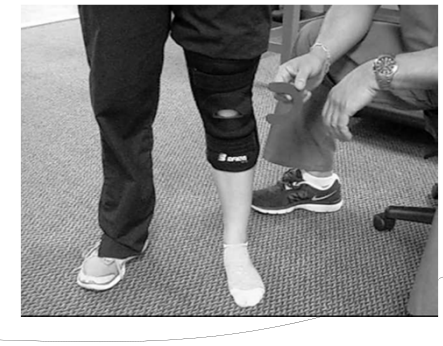
Patellofemoral Braces for Lateral Tracking

Patellofemoral Braces for Lateral Tracking



Manual Therapy Techniques

- Soft Tissue Mobilization
- Vastus Lateralis & Tensor Fascia Lata Release
- Medial Glides of the Patella
  - Open Pack Position: Full Extension of Knee

Manual Therapy Techniques

- Foam Rollers
- Rolling Stick
- Massage Ball
- The Steel

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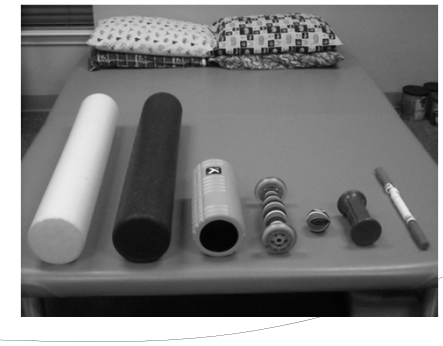
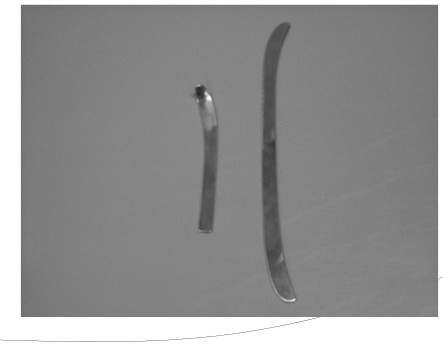
Manual Therapy Tools



Manual Therapy Tools



Aerobic Conditioning

- Recumbent Bike
- Upright Bike
- Elliptical Trainer
- Treadmill
- Total Gym Leg Press
- Slide Board

Therapeutic Exercises: ROM, Flexibility, Strength, Functional

- ROM Exercises
  - Heel Slides with tibia in internal rotation
  - Contralateral Knee Flexion & Extension
  - Supine LAQ's
  - TKE with Theraband

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Therapeutic Exercises: ROM, Flexibility, Strength, Functional

- Flexibility Exercises
  - Prone quadriceps with strap
  - Supine hamstring with strap
  - Tensor fascia lata
  - Gastrocnemius
  - Iliopsoas

Therapeutic Exercises: ROM, Flexibility, Strength, Functional

- Strength Exercises
  - QUAD sets with NMES & at 20° of knee flexion
  - Supine SLR's with hip ER & 20° of knee flexion
  - SAQ's with ball squeezes & hip ER from 50° to 20°
  - Sidelying hip ADD with hip IR & knee flexed at 20°
  - Sitting hip ER
  - Standing hip extension with QS
  - Standing QS with foot on slant board

Therapeutic Exercises: ROM, Flexibility, Strength, Functional

- Functional Phase Exercises
  - ¼ Step-ups & Step-downs
  - ¼ Swiss Ball wall squats
  - Forward & lateral lunges
  - Sports cord resisted walking X 4
  - Steamboats for strength & balance
  - Single leg ¼ squats
  - Slide board
  - Plyometrics
  - Agility Drills

Therapeutic Exercises: ROM, Flexibility, Strength, Functional

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Plyometrics

Agility Drills

Agility Drills

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Agility Drills

Things To Avoid

- Activities with knee flexion beyond 90°
- Prolonged kneeling on affected knee
- Sitting with legs bent for long periods of time
- Sitting with legs crossed
- Lifting heavy objects from a squatting position
- No full squatts
- Riding an exercise bike with seat too low or tension too high
- Minimize stairs
- No leg extension machines

Conclusion

- The patellofemoral joint is a complex articulation and is a challenging joint to rehabilitate. The goal of a comprehensive rehabilitation program should be to return the patient or athlete to their previous level of function, if not at an improved state.
- By incorporating the physical therapist's and athletic trainer's overall knowledge of the patellofemoral complex, the patient/athlete will be provided with a comprehensive program that will not only lead to a high level of function but also a prevention of further injury.

References

- Andrews, J.R., Harrelson, G.L., Wilk, K.E. (2004) *Physical Rehabilitation of the Injured Athlete,* Saunders, Philadelphia, PA
- Belanger, Alain- Yvan. *Evidence- Based Guide to Therapeutic Physical Agents*. Baltimore, MD 21201: Lippincott Williams & Wilkins, 2003. Print.
- Brewer, P., (2006). Anatomy I notes UTHSCSA; San Antonio, TX
- DeLee, J.C., Drez, D.,(*2003*). *Orthopaedic Sports Medicine, Principles and Practice,* Saunders, Philadelphia, PA,
- Dutton, M., (2004) *Orthopaedic Examination, Evaluation & Intervention.* McGraw-Hill, New York, Pgs. 735-806
- Geelhood, M., (2007) Orthopedic II Notes UTHSCSA; San Antonio, TX
- Neumann, D. *Kinesiology of the musculoskeletal system*. St. Louis: Mosby, Inc, 2002. Print.

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