KNEE & ANKLE REGION

MUSCULOSKELETAL CONDITIONS

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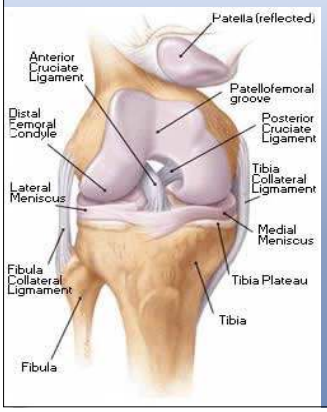
CHAPTER 1

Introduction To The Knee Region

INTRODUCTION TO THE KNEE REGION



(Brukner & Khan 2009)

KNEE REGION

- The knee region known as the patella femoral joint (PFJ) consists of the femur, tibia & patella.
- Ideal function of the PFJ is strongly dependant on ideal posture & biomechanics. This is only possible with ideal pelvic stability, hip stability & hip ROM, ideal ankle stability & ROM, & adequate passive extension of the big toe.

KNEE REGION

- Ideal function of the PFJ also relies on correct firing patterns of the VMO vs VL, & ideal tension of the ITB
- Ideal patella positioning & mobility also plays a significant role in ideal knee biomechanics.

CHAPTER 2

Introduction To The Ankle Region

ANKLE REGION

- Ideal ankle stability & ROM is important for correct knee biomechanics
- At least 10 degrees of ankle dorsi flexion is necessary to help prevent excessive pronation
- Passive big toe extension of 65-70 degrees is also necessary for ideal ankle biomechanics, otherwise excessive pronation can occur.

ANKLE REGION

- A functional lunge test measuring a minimum of 12cm of ankle dorsi flexion is also important for ideal knee & ankle biomechanics

CHAPTER 3

Altered Biomechanics Of The knee

& Ankle Region

ALTERED BIOMECHANICS OF THE KNEE & ANKLE REGION

- Poor VMO activation will lead to altered biomech of the knee
- Hypertonic RF will lead to altered biomech of the knee
- Hypertonic VL & ITB will lead to altered biomech of the knee

ALTERED BIOMECHANICS OF THE KNEE & ANKLE REGION

- A stiff patella will lead to altered biomech of the knee
- Pelvic instability will lead to altered biomech of the knee
- Poor hip ROM will lead to altered biomech of the knee

ALTERED BIOMECHANICS OF THE KNEE & ANKLE REGION

- Poor firing patterns of the gluteal complex will lead to altered biomech of the knee
- Torso instability will lead to altered biomech of the knee
- A stiff ankle complex will lead to altered biomech of the knee

CHAPTER 4

Musculoskeletal conditions of the

knee & ankle region

MUSCULOSKELETAL CONDITIONS OF THE KNEE & ANKLE REGION

- PTS
- Lateral pressure syndrome
- Patella Tendinopathy
- Lateral retinaculum Impingement

MUSCULOSKELETAL CONDITIONS OF THE KNEE & ANKLE REGION

- Fat Pad Impingement
- VMO TrP's – pain inhibition
- ITBFS? (Latest research)

MUSCULOSKELETAL CONDITIONS OF THE KNEE & ANKLE REGION

- Popliteal Syndrome
- Plica Syndrome

Remember to assess the hip region focusing on restricted ROM with /without local pain, discomfort & referred pain/altered sensation

MUSCULOSKELETAL CONDITIONS OF THE KNEE & ANKLE REGION

- Lateral ankle pain
- Lateral ankle pain with associated anterior/ lateral altered sensation
- Anterior ankle impingement/Posterior impingement

MUSCULOSKELETAL CONDITIONS OF THE KNEE & ANKLE REGION

- Calf complex TrP's & Achilles Tendinopathy
- Functional ankle dorsi flexion hypomobility
- PFITIS

CHAPTER 5

Musculoskeletal assessment & treatment of the knee & ankle region

MUSCULOSKELETAL ASSESSMENT & TREATMENT OF THE KNEE & ANKLE REGION

PTS - Patella femoral joint syndrome

- Standing **posture** assessment of the knee & ankle region
- Standing **posture** assessment of the lumbar pelvic region

MUSCULOSKELETAL ASSESSMENT & TREATMENT OF THE KNEE & ANKLE REGION

- Functional squat test
- Functional lunge test for restricted **ankle DF** (12cm displays ideal DF)
- Passive ankle DF (10-20 degrees)

MUSCULOSKELETAL ASSESSMENT & TREATMENT OF THE KNEE & ANKLE REGION

- Passive knee Ext & Flex repeated if required
- Passive patella mobility test – lateral to Medial
- Passive 1st toe extension (65-70 degrees MPJ)

MUSCULOSKELETAL ASSESSMENT & TREATMENT OF THE KNEE & ANKLE REGION

PTS - Special Test

Mc Connells Critical Test

- 0 -30 degrees
- 60 degrees
- 90 degrees
- 120 degrees

MUSCULOSKELETAL ASSESSMENT & TREATMENT OF THE KNEE & ANKLE REGION

PTS - Patella Femoral Joint Syndrome

- DNT VMO, VL, gluteal complex, TFL, calf complex
- Vacuum Cupping RF, VL, ITB, TFL, calf complex
- MFR RF, VL, ITB, popliteus, piriformis, GOGO's, glute min, poas & the calf complex

MUSCULOSKELETAL ASSESSMENT & TREATMENT OF THE KNEE & ANKLE REGION

- Mobs patella varying the angle of knee flex
- Mobs 1st MPJ
- Mobs ankle joint

MUSCULOSKELETAL ASSESSMENT & TREATMENT OF THE KNEE & ANKLE REGION

Lateral ankle pain with associated altered sensation

- Passive SLR + PF + Inv + Add + Int Rot
- Slump Test with PF + Inv

MUSCULOSKELETAL ASSESSMENT & TREATMENT OF THE KNEE & ANKLE REGION

- MFR peroneals, hamstrings, piriformis
- Vacuum cup peroneal region
- Mobilisation of the sciatic nerve & the superficial peroneal nerve

CHAPTER 6

Corrective exercises & stretching for

the knee & ankle region

CORRECTIVE EXERCISES & STRETCHING FOR THE KNEE & ANKLE REGION

PTS

- Stretch poas & quads
- Stretch hip external rotators
- Supine bridge + glute med co-contraction

CORRECTIVE EXERCISES & STRETCHING FOR THE KNEE & ANKLE REGION

Lateral ankle pain & altered sensation

- Stretch hip external rotators
- Stretch hamstrings
- Ankle balancing exercises

REFERENCES

1. Brukner and Khan 2012, *Clinical Sports Medicine, 4th* edn, McGrawHill, Sydney, Australia.
2. Butler, DS, 2000, *The sensitive nervous system* 2nd edn, NOI Group Publications, Adelaide, Australia.
3. McGill, S. 2009 *Ultimate Back Fitness and Performance* 4th edition, Backfitpro Inc, Waterloo, Ontario, Canada.

QUIZ QUESTIONS & T/F

1. PTS refers to patella tracking syndrome T/F
2. PFJS also refers to PTS T/F
3. Ideal patella tracking is dependant on multiple factors T/F
4. A thorough assessment of PTS needs to include the hip & ankle region as well T/F
5. Poor patella positioning & mobility plays an important role in PTS T/F

QUIZ QUESTIONS & T/F

6. Poor VMO activation does not contribute to PTS T/F
7. Decreased DF & big toe extension of the ankle region can contribute to PTS T/F
8. Ankle inversion injuries can lead to adverse neural tension of the superficial PN T/F
9. Altered biomechanics strongly contributes to achillies tendinopathy T/F
10. CEX plays an integral role in correcting PTS T/F