clinical examination and diagnostic classification of patellofemoral pain syndrome

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Introduction

Reviewing literature PFPS 2005

Inconsistent results

- conservative treatment

- etiology

(intrinsic & extrinsic risk factors)
Solution anno 2005:

meta-analysis of results in literature
Example of result of meta-analysis:

80%: decreased qeps strength observed in PFPS

Conclusion: treatment should focus on qceps training!!

Yes, but …will this be beneficial to all PFPS?

No! Since…

20%: NO decreased qceps strength in PFPS
Comparison between open & closed kinetic chain exercises in PFPS

Result: ckc group shows significantly better outcome!
ckc: 23 on 30 patients were good
Okc: 18 on 30 patients were good
(p<0.05)

Conclusion???

a) okc is no good, is inferieur to ckc
b) Yes, but 18 of 30 okc showed good outcome?
Conclusion:
Inconsistentencies may be partly due to:

Definition of **one** group of PFPS patients
(all patients have the same abnormalities and need the same treatment)

Need for a clinical PFPS classification
(with several subgroups of PFPS)
(and ultimately different treatment protocols)
Aim of this presentation

Present a “flowchart” for evaluation and rehabilitation of PFPS patients
Patellofemoral pain problems

- Muscular dysfunction
- Malalignment
- Cartilage defects
Patellofemoral pain problems

- Muscular dysfunction
- Malalignment
- Cartilage defects
Q-ceps strength deficit

neuromuscular dysfunction

flexibility disorder

muscular dysfunction
strength deficit quadriceps

whole Quadriceps

Cause of PFPS
Witvrouw et al 2000

result of PFPS
Thomée 1996
Werner et al 1993

assessment?

visual inspection
isokinetic
thigh measurements

one-legged hop test
Ross et al 2002
Jarvela et al 2002
high correlation isokinetic test

open vs closed chain ???
concentric vs eccentric ???

closed chain
0-50° knee flexion

open chain
90° - 50° knee flexion
strength deficit quadriceps

selective VMO atrophy


clinical assessment

no visual defect

visual inspection circumference measurement

EMG measurement VMO/VL disturbance decreased VMO activity
strength deficit quadriceps

selective VMO atrophy

E.S. four weeks with active contraction up to 8 weeks stop= if muscle balance = OK


use orthotic device control tracking

Werner 1993 (18s-25s 20') FU 3.5 years good functional results
Assessment???

EMG
Tactile ???

Voight 1991
Owings et al. 2002

exercises improve VMO control
(Biofeedback)
functional - excentric?

setting VMO
inhibition VL
uptraining
downtraining

Ingersoll et al. 1991
Doucette et al. 1996
improved patellar tracking

Neptune 2000
delayed timing
25% increase
lateral constrained force

taping - bracing
activator
Gillear et al 1998

epecially
closed chain
functional exercises

neuromuscular
dysfunction

altered reactionpattern
VMO/VL
Quadriceps  |  hamstrings  |  Iliotibial band

cause or effect?  
Witvrouw et al 2000  
Doucette 1996  
Smith et al 1991

flexibility disorder

stretching
Patellofemoral pain problems

- Muscular dysfunction
- Malalignment
- Cartilage defects
Malalignment

PF Joint

McConnell PF Joint Assessment

Technical Investigation
CT-NMR

Outsider PF Joint

Lower Extremity Static & Dynamic Alignment

Foot Evaluation
Eng & Pierreynowski 1993

Type 1

Muscular Origin

Non-Muscular Origin

Type 2

Bony Abnormality

Retinaculum Dysfunction

Type 3

Stretching Bracing Taping
Hypo-mobile patella (med. displacement < 12 / 10 mm)

Hyper-mobile patella (>25 / 23 mm) (> 38 / 36 mm)

Conservative treatment ???

Bony abnormality

Stretcher manually

Tape / Brace

Ice

Gentle friction

TENS

Decrease pat. mobility
Lower leg alignment

- Ot alignment (Klingmann 1997)

Hip evaluation (brindle 2003)

Knee alignment

- Genu varum/valgum

Rotation deficits (kissing patellae)

Abduction deficits

Strength deficit exorotation (iliacus, piriformis, obt.int & ext, gemelli) Gluteus maximus

Genu varum/valgum

Primary or secondary?

OKC & CKC

Foot alignment Effect of correction?

Difference static-dynamic alignment

- Weak abductors
- Foot alignment
- Coordination problem

Bony abnormality

Deficient flexibility endorotators

ROM exorotation

Bony abnormality
If you hold a hammer, everything looks like a nail!
cartilage abnormalities

- chondromalacia
- acute defects

- open & closed kinetic chain
  goal = improving strength of cartilage - scar tissue
Thank you!!