Patellofemoral Pain
Pain & psychological impairments

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Patellofemoral Pain

Local:
  local/peripheral sensitization

Central:
  mechanisms / sensitization

Referral:

Patellofemoral Pain

Local:
  local/peripheral sensitization

Central:
  mechanisms / sensitization

Referral:

Local/peripheral sensitization

Rathleff et al Pain Med 2015
Local/peripheral sensitization

Mechanical hyperalgesia:


Local PPT not different (Rathleff et al in prep)

Mechanical algometry

Rathleff MS et al (2013)
Local/peripheral sensitization

Mechanical hyperalgesia:

Local PPT reduces with loading (1.35 body mass): (Pazzinatto et al 2016)

Local PPT and Pain ratings associated with frontal plane knee angle on step down task (r=0.5 to 0.7) (Noehren et al 2016)

Patellofemoral Pain

Local: local/peripheral sensitization

Central: mechanisms / sensitization

Referral:

Central mechanisms/sensitization

Mechanical hyperalgesia:


Remote PPT not different: (Rathleff et al, 2015 & In prep)

Central mechanisms/sensitization

Dynamic QST:

Conditioned Pain Modulation:
(Rathleff et al 2015 but not in Rathleff et al In prep.)

Conditioned Pain Modulation*:
(Rathleff et al 2015 <19-21yr old females, 72 month duration, 7/10 pain NRS>

but not in Rathleff et al In prep. <28yr old, females (70%/33), 24 month duration, 5/10 pain NRS>

* different CPM paradigms used
Central mechanisms/sensitization

**Dynamic QST:**

Conditioned Pain Modulation: (Rathleff et al 2015 but not in Rathleff et al in prep.)

No temporal summation: (Rathleff et al 2015)

Central mechanisms/sensitization

**Sensory detection:**

Light touch detection threshold elevated (Jensen 2007, Noehren et al 2016)

Light touch & warmth* detection threshold elevated bilaterally (Jensen 2007)

*cold unilaterally

Central mechanisms/sensitization

Exclusion of other pains:


Not exclude other pains:


Central mechanisms/sensitization

**Cold hyperalgesia:**

Not present in Jensen et al (2007) cohort (but remember they had detection issues!)

Central mechanisms/sensitization

**Cold hyperalgesia:**

Not present in Jensen et al (2007) cohort (but remember they had detection issues!)

Cold knees:

Self et al...

‘Do your legs feel cold even in warm surroundings?’ 14/77 (18%) of PFP patients referred to a UK hospital:

- Reported higher pain levels and less tolerance to physical activity
- Less improvement to a standardized rehabilitation program

Sample*, Questions#

<table>
<thead>
<tr>
<th></th>
<th>Cold (14)</th>
<th>Not Cold (25)</th>
<th>Mean temperature difference: -1.2^ (2, -0.4)°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold weather affects your knee</td>
<td>11/12 (92%)</td>
<td>3/10 (30%)</td>
<td>P 0.006</td>
</tr>
<tr>
<td>Prefer ice pack rather than hot water bottle</td>
<td>0/9 (0%)</td>
<td>5/8 (63%)</td>
<td>P 0.009</td>
</tr>
</tbody>
</table>

* Female only as male number too small for this analysis (N=58, M=19)
# no differences for: Do you get night pain? & Do you wear extra tight/long johns in winter? Not all participants asked all questions.
^ Baseline without correction for ambient temperature

**Cold knees/sensitivity:**

Useful clinically & in research for identifying those who might be more severely afflicted & difficult to manage?

**Patellofemoral Pain**

**Local:**
- local/peripheral sensitization

**Central:**
- mechanisms / sensitization

**Referral:** ...later

**Liam Maclachlan**

Non-physical features of patellofemoral pain: a systematic review
LIMIT IMPROVEMENT WITH REHABILITATION

SIGNIFICANT BARRIERS TO RECOVERY

INTRODUCTION

METHODS

RESULTS

DISCUSSION

STUDY SELECTION

10617 > 6772 title & abs > 54 full text > 25 ELIGIBLE & INCLUDED

PFP: 1357 (891 female: 66%), age range 14.1 to 46.6
Sourced from clinical sites, athletics clubs, exercise programs and population-based cohorts

HEALTHY CONTROLS: 349 (168 female: 48%). Matched to corresponding PFP groups
Sourced from student cohorts and local community

STUDY 1: systematic review

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PAIN

PSYCHOLOGICAL FACTORS

DISABILITY

SEARCH STRATEGY

• Patellofemoral pain OR
• Patellofemoral pain syndrome OR
• Anterior knee pain OR
• Chondromalacia patellae

ELIGIBILITY CRITERIA

Inclusion

• Patellofemoral pain
• Patient-reported psych measure

Exclusion

• Case-studies
• Abstracts
• Non-published
• Non-primary

DATA EXTRACTION

• Patient characteristics
• PFP characteristics
• Psychological results

QUALITY APPRAISAL

• 2 independent reviewers
• Epidemiological Appraisal Instrument

STUDY 1: systematic review

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PFP CHARACTERISTICS

DIAGNOSIS

Criteria and diagnosing health professional = 14
Criteria only = 6
Health professional only = 6

PAIN

Duration: 1 month to 8 yrs
Severity: mild to severe
Measures: VAS, NPRS, WOMAC, KOOS

PHYSICAL FUNCTION

Kujala patellofemoral score
Lysholm knee scale
ADLS-KOS
MFIQ
KOOS

PARTICIPANT CHARACTERISTICS

PFP: 1357 (891 female: 66%), age range 14.1 to 46.6
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HEALTHY CONTROLS: 349 (168 female: 48%). Matched to corresponding PFP groups
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PSYCHOLOGICAL FACTORS

18 DIFFERENT MEASURES
CONSTRUCT GROUPINGS:
Mental health, cognitive, behavioural, other factors

5 x studies with pain-free comparators

9 x studies exploring the relationships
Non-physical features of patellofemoral pain: a systematic review.
Liam Maclachlan

General mental health and cognitive differences between those with and without PFP

A range of psychological factors are associated with PFP and physical function

Results from a limited number of studies with small samples

Take home message...

Heterogeneity

Some will have central sensitization and psychosocial factors (might influence outcome)

Some indicators might be:
- widespread pain
- young female
- chronic PFP
- catastrophization
- poor mental health
- stress

Thank you