

# Exercise, education or both?

Michael Skovdal Rathleff, PhD



# Questions to explore

- "Patient education" – what it is, and what it might not be
- Does the effect of "exercise therapy" depend on patient education?
- How do adolescents learn to self-manage? Is it different from adults?
- MSK focus but draw from other areas of chronic diseases



## Clinical Practice

My bias: focus in MSK research have been on exercises, and less so on self-management

# PATIENT EDUCATION IS HIGHLIGHTED AS FIRST LINE CARE FOR MANY CONDITIONS

## 1.3 Education and self-management

### Patient information

- 1.3.1 Offer accurate verbal and written information to all people with osteoarthritis to enhance understanding of the condition and its management, and to counter misconceptions, such as that it inevitably progresses and cannot be treated. Ensure that information sharing is an ongoing, integral part of the management plan rather than a single event at time of presentation. [2008]

### Patient self-management interventions

## 1.2 Non-invasive treatments for low back pain and sciatica

### 1.3.2 Non-pharmacological interventions

### 1.3.3 Self-management

- 1.2.1 Provide people with advice and information, tailored to their needs and capabilities, to help them self-manage their low back pain with or without sciatica, at all steps of the treatment pathway. Include:
- information on the nature of low back pain and sciatica
  - encouragement to continue with normal activities.



# What is patient "education"?



Third grade, 1957



# Keypoint

Improved knowledge does not necessarily lead to change (or ability to change) behaviour or make the best decisions

Patient education ≠ provide information and advice

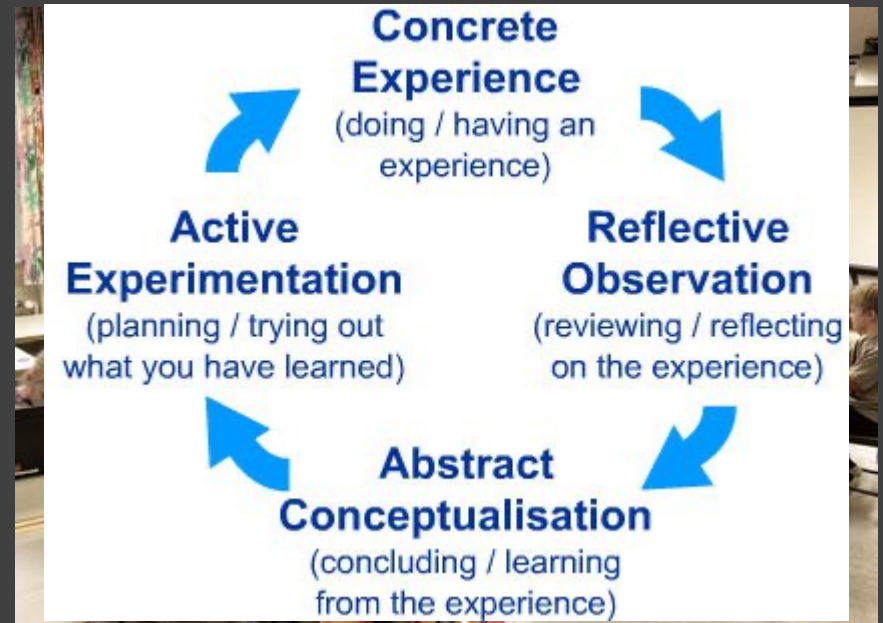
# How do we actually learn (to self-manage)?



School in Denmark in 2017



- Very structured/controlled
- Teacher in charge of control/structure
- Identical curriculum and exam plan for all
- The allmighty teacher that knows all
- "Tankpasser læring"
- Goal: qualification.



- Open learning environment
- Pupils take ownership of their learning
- Process oriented
- Teacher designs activities that stimulate learning
- Experimental learning
- Goal: build competences





- Patient education
- What do we do?
- Can we do better?
- Is it important we do better?



- Open learning environment
- Pupils take ownership of their learning
- Process oriented
- Teacher designs activities that stimulate learning
- Experimental learning
- Goal: build competences

## **Hvorfor patientuddanner vi:**

*"Formålet med patientuddannelsen er, at personer med kronisk sygdom tilegner sig kompetencer, der gør dem i stand til at håndtere deres kroniske sygdom bedre"*

*"Ligeledes er det en forventning at patient uddannelse resulterer i et nedsat forbrug af sundhedsydelser."*

## **Key words**

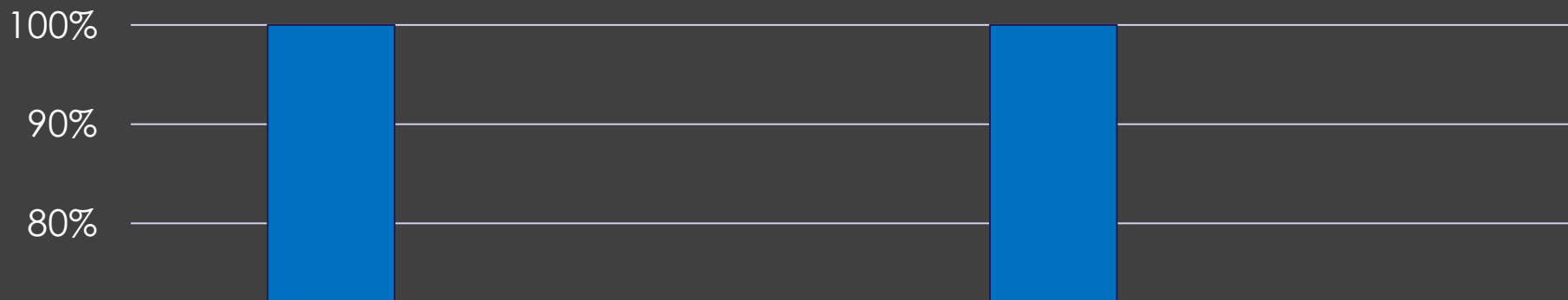
Develop competences that makes people capable of managing their chronic condition better

"Making decisions"

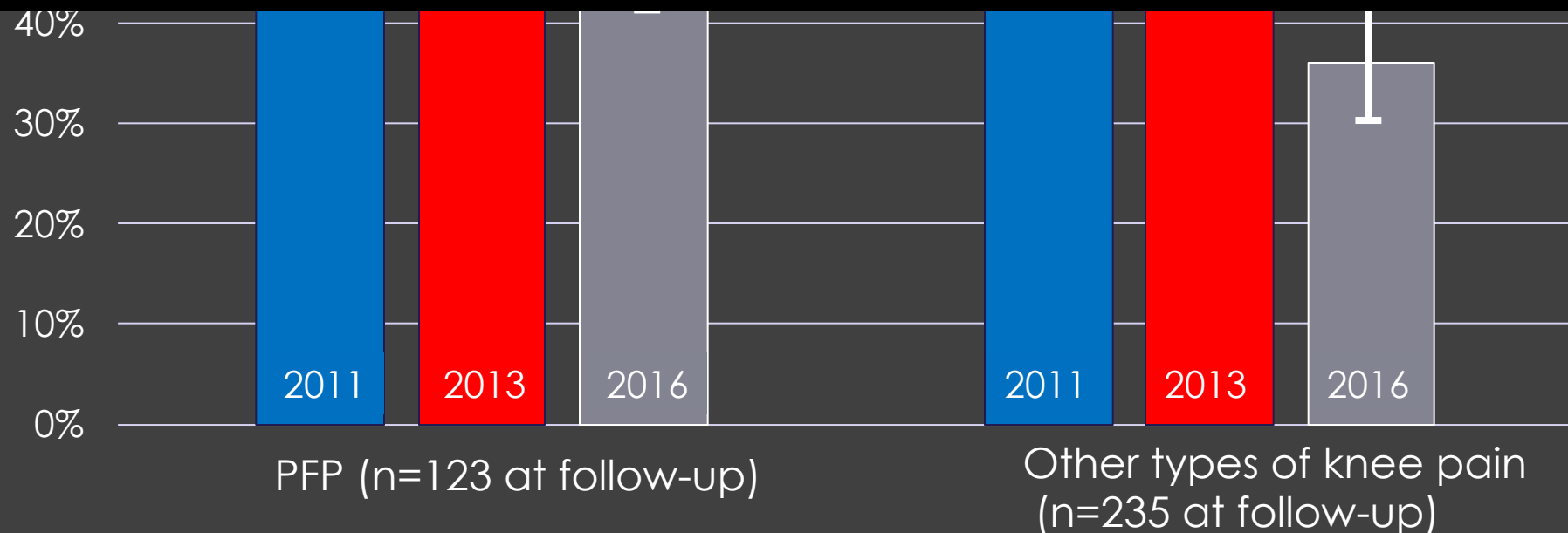
# A MODEL CASE: PATELLOFEMORAL **PAIN**

*(the power of self-management and how we learn to self-manage)*





15%: Influenced choice of job or career choices  
40%: reduced sports participation due to knee pain  
KOOS score: 30-45 points lower than pain free  
1/3 regularly used pain killers for their knee pain



**HOW SHOULD I MANAGE THE  
PATIENT IN FRONT OF ME?**



**Cochrane  
Library**

Cochrane Database of Systematic Reviews

## Exercise for treating patellofemoral pain syndrome (Review)

van der Heijden RA, Lankhorst NE, van Linschoten R, Bierma-Zeinstra SMA, van Middelkoop M

### Authors' conclusions

This review has found very low quality but consistent evidence that exercise therapy for PFPS may result in clinically important reduction in pain and improvement in functional ability, as well as enhancing long-term recovery. However, there is insufficient evidence to determine the best form of exercise therapy and it is unknown whether this result would apply to all people with PFPS. There is some very low quality evidence that hip plus knee exercises may be more effective in reducing pain than knee exercise alone.

van der Heijden et al. Cochrane, 2015



# 2018 Consensus statement on exercise therapy and physical interventions (orthoses, taping and manual therapy) to treat patellofemoral pain: recommendations from the 5th International Patellofemoral Pain Research Retreat, Gold Coast, Australia, 2017

Natalie J Collins,<sup>1,2</sup> Christian J Barton,<sup>2,3</sup> Marienke Michael J Callaghan,<sup>5</sup> Michael Skovdal Rathleff,<sup>6</sup> B Christopher M Powers,<sup>8</sup> Erin M Macri,<sup>9,10</sup> Harvi F H Kay M Crossley<sup>2</sup>

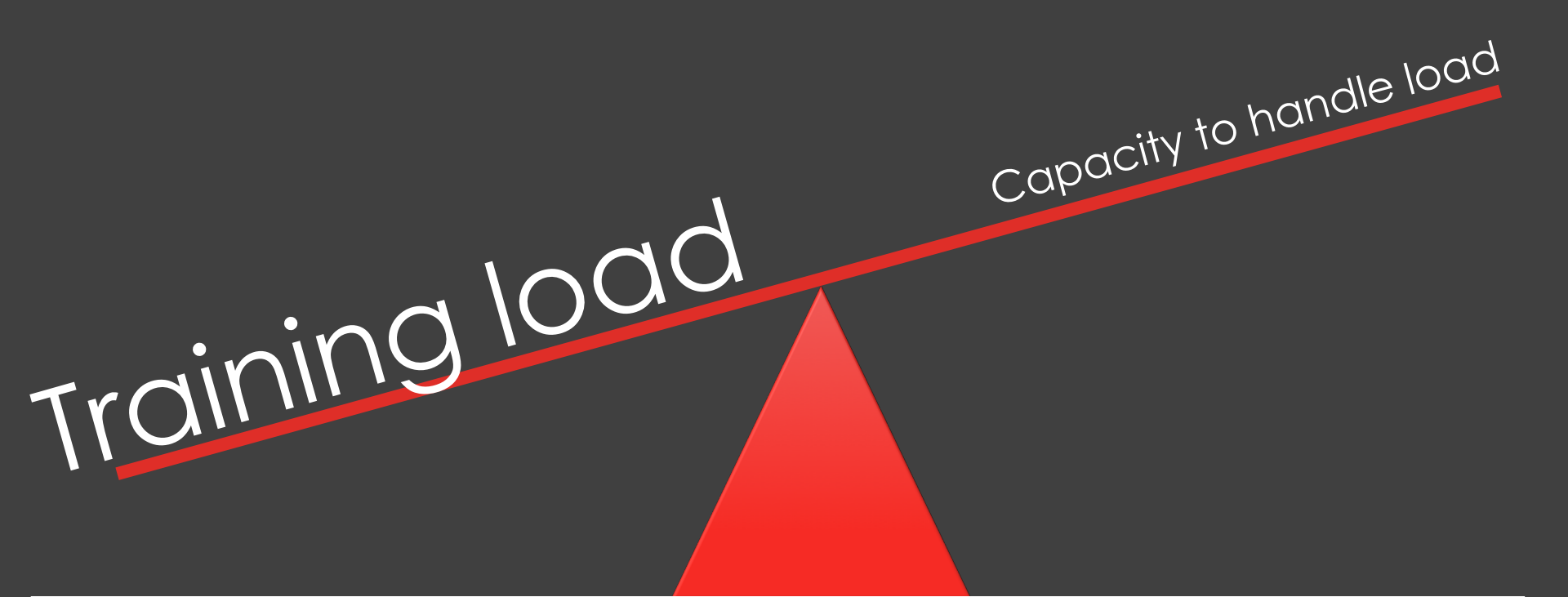
- Focus on "treatments" and what should be prescribed.
- Less so on how we can support the patient in managing their symptoms

1. Exercise therapy is recommended to reduce pain in the short, medium and long terms and improve function in the medium and long terms.
2. Combining hip and knee exercises is recommended to reduce pain and improve function in the short, medium and long terms, and this combination should be used in preference to knee exercises alone.
3. Combined interventions are recommended to reduce pain in adults with patellofemoral pain in the short and medium terms. Combined interventions as a management programme incorporates exercise therapy as well as one of the following: foot orthoses, patellar taping or manual therapy.
4. Foot orthoses are recommended to reduce pain in the short term.
5. Patellofemoral, knee and lumbar mobilisations are not recommended in isolation.
6. Electrophysical agents are not recommended.

**Why did she develop knee pain?  
Why did she develop X condition?**



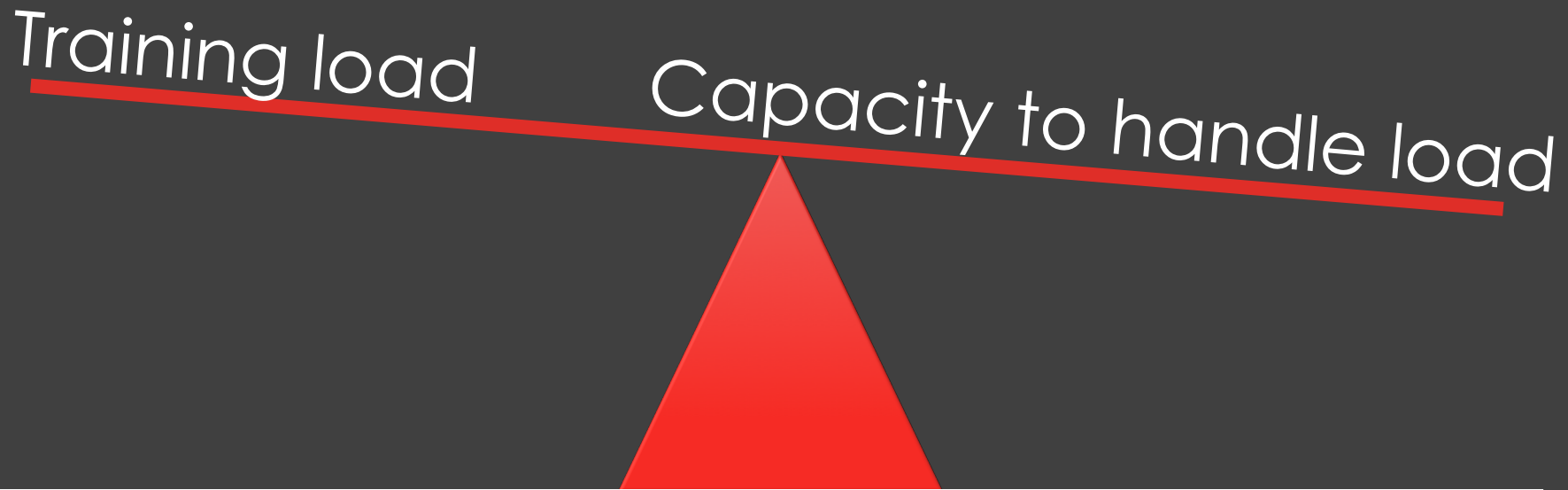
# Load versus capacity





# Load versus capacity

**Use visual with patients**  
**These visuals are not specific to PFP**



**More specific support tools are  
needed!**

**You can't teach patients a new  
language unless you give them the  
tools (and time) that is needed.**

# EDUCATION AND EXERCISE COME TOGETHER

## Week 0-4

- Activity modification
- Double limb bridge
- Static holds 10x 30sec(daily)

## Week 5-8

- Activity ladder
- Hip and knee exercises

## Week 9-12

- Return to sport after step 6 on activity ladder.
- Graded return to sport.
- Weightbearing exercises

- Why did I get PFP?
- Risk of PFP
- Load and sport
- Rationale for treatment

- Importance of adherence
- Proper exercise form
- Their own coach
- Monitor and progress

- Progression to competition
- Their own coach
- Monitor and progress
- Continued exercises

Increases in complexity of behaviour

- Empower, explain and understand
- Aim: getting the adolescents (and parents) to take ownership and give them the tools to self-manage
- → Increase their confidence and ability to self-manage (kids+parents)



## Kvit knæsmærterne



# "THE ACTIVITY LADDER"

- 1. Walking/bicycling
- 2. Fast walking/medium to hard bicycling
- 3. Slow running
- 4. Stairs
- 5. Running in medium pace
- 6. Running in high pace

No pain

Worst pain



OK

not OK

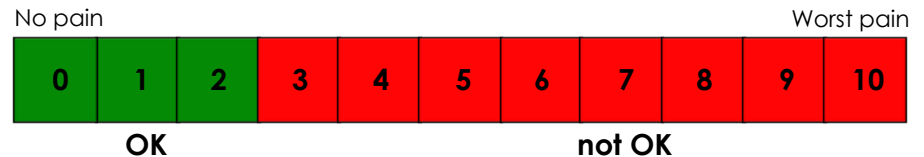
# FEEDBACK LOOP

Do it



## "THE ACTIVITY LADDER"

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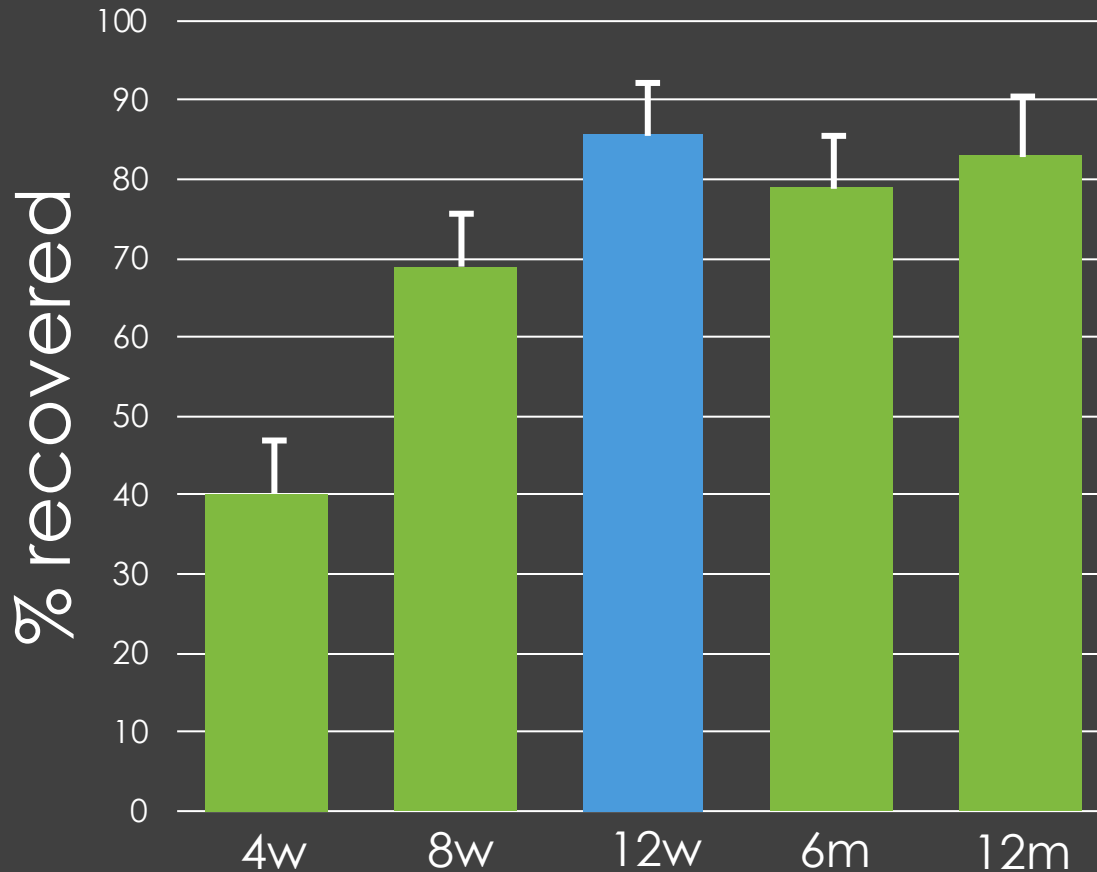


How does it feel?

# RESULTS

- 151 adolescents, all between 10 and 14 years of age
- 91% were sports active
- 49% had reduced their sports participation because of their knee pain
- Average duration of symptoms 18 months (approx 50% > 2 years)
- 24% regularly used pain killers for their knee pain
- Worst pain last week: 6.5 cm on a VAS scale

# RECOVERY



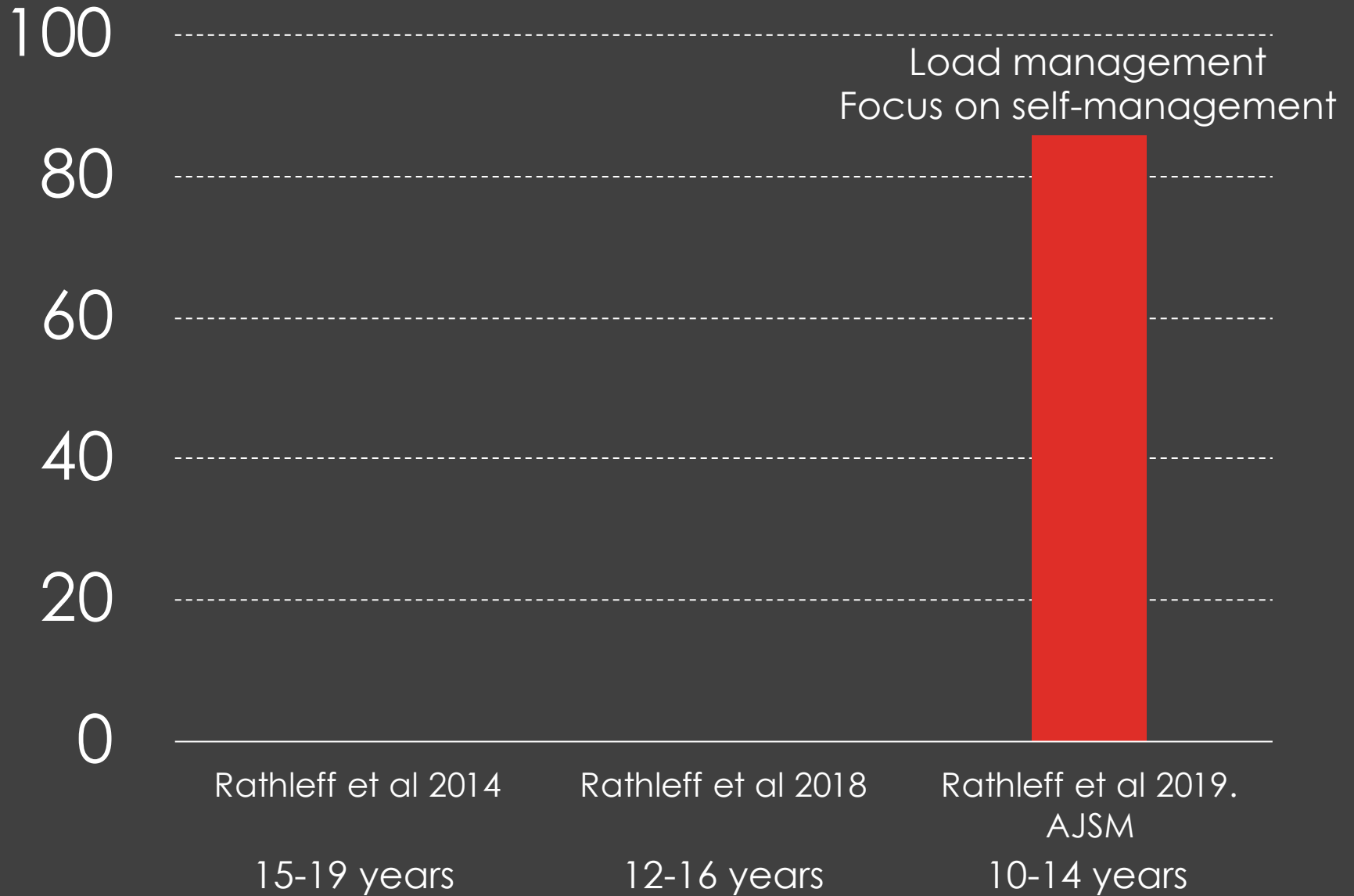
How is your knee pain now compared to before treatment?

- Much improved
- Improved
- Slightly improved
- The same
- Slightly worse
- Worse
- Much worse

75% was back playing sport after 3 months

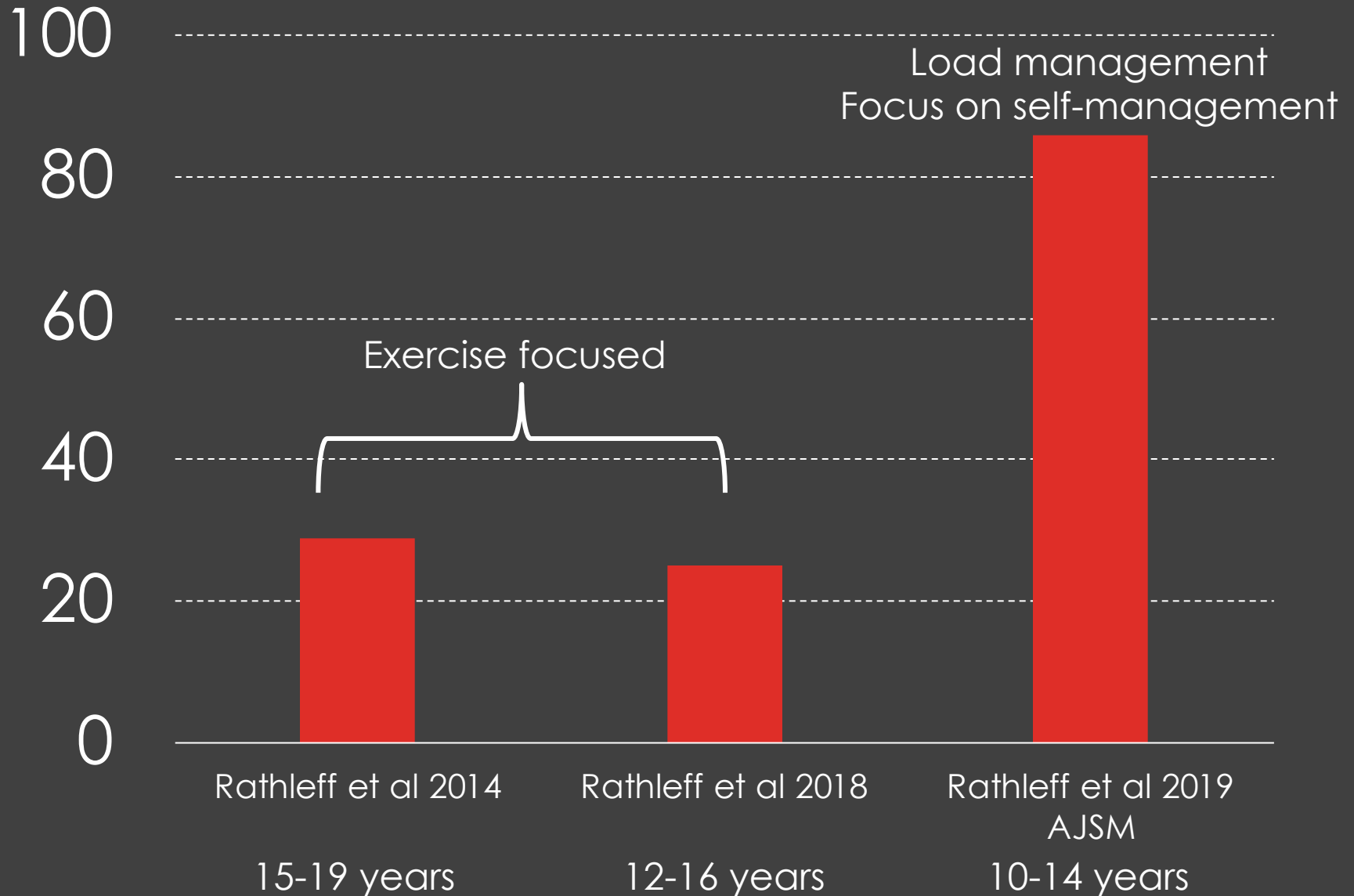
- 7% used pain killers at 3 month FU (24% at baseline)
- 90% was satisfied with the results of the treatment
- 95% would recommend the same treatment to a friend with knee pain

# Success rates after 3 months





# Success rates after 3 months





# EFFECT OF EXERCISE THERAPY IN CHRONIC KNEE PAIN (PATELLOFEMORAL PAIN)

**Delivery matters**

**Not theory driven**

**Is specific to patellofemoral pain or also other conditions?**

**Feel free to take the idea😊**

education material versus exercise-therapy on pain

(SMD = 1.12; 95%CI = 0.07 to 2.17)

Health professional (verbally delivered) education versus exercise-therapy plus health professional delivered education

(SMD = 0.14; 95%CI = -0.56 to 0.85)

# LOW AND HIGH INTENSITY EXERCISE VERSUS "EDUCATION"

Messier et al. *BMC Musculoskeletal Disorders* 2013, **14**:208  
<http://www.biomedcentral.com/1471-2474/14/208>

## STUDY PROTOCOL

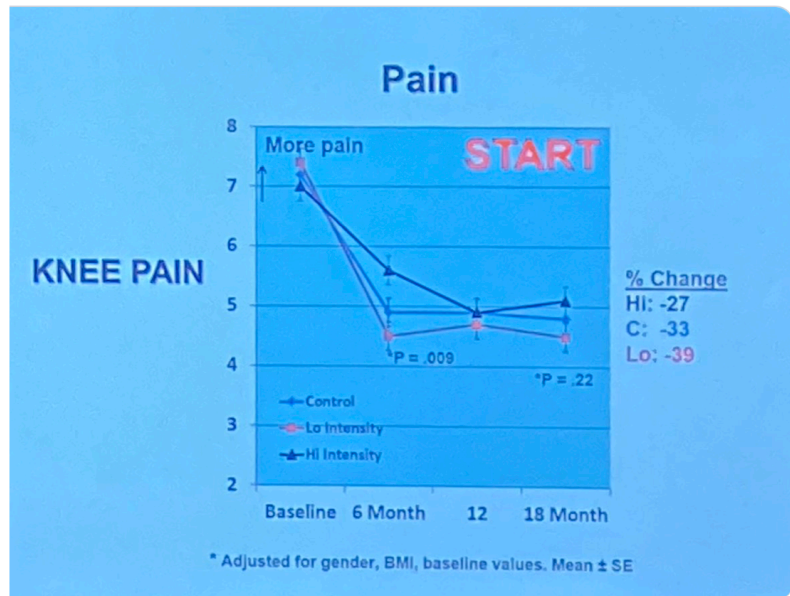
**Could the education component (comparator in RCTs) explain some of the heterogeneity between studies?**



Martin Englund  
@dr\_englund

START trial data presented by Steve Messier showed control intervention (education only) yielded similar pain reduction as both low intensity and high intensity exercise group in knee OA @ewa\_roos @STSkou @jbthorlund #ACR2019 The power of contextual effects...

Oversæt Tweet



# FUNCTIONAL THEORIES OF PAIN

290 Sports participation and objective physical activity

291 Almost all adolescents with PFP and OSD reported participating in sports prior to onset of their

292 knee pain (98% and 100%, respectively). More than 50% reported reducing their sports

293 participation, with the most common causes being “pain” and “I am afraid to damage my knee”.

294 Nine percent of adolescents with PFP reported a complete stop of sports due to knee pain,

295 compared with 26% of adolescents with OSD. All adolescents except one had a desire to return to

296 sport (Table 2). Using objective measure of physical activity from the ActiGraphs, there were no

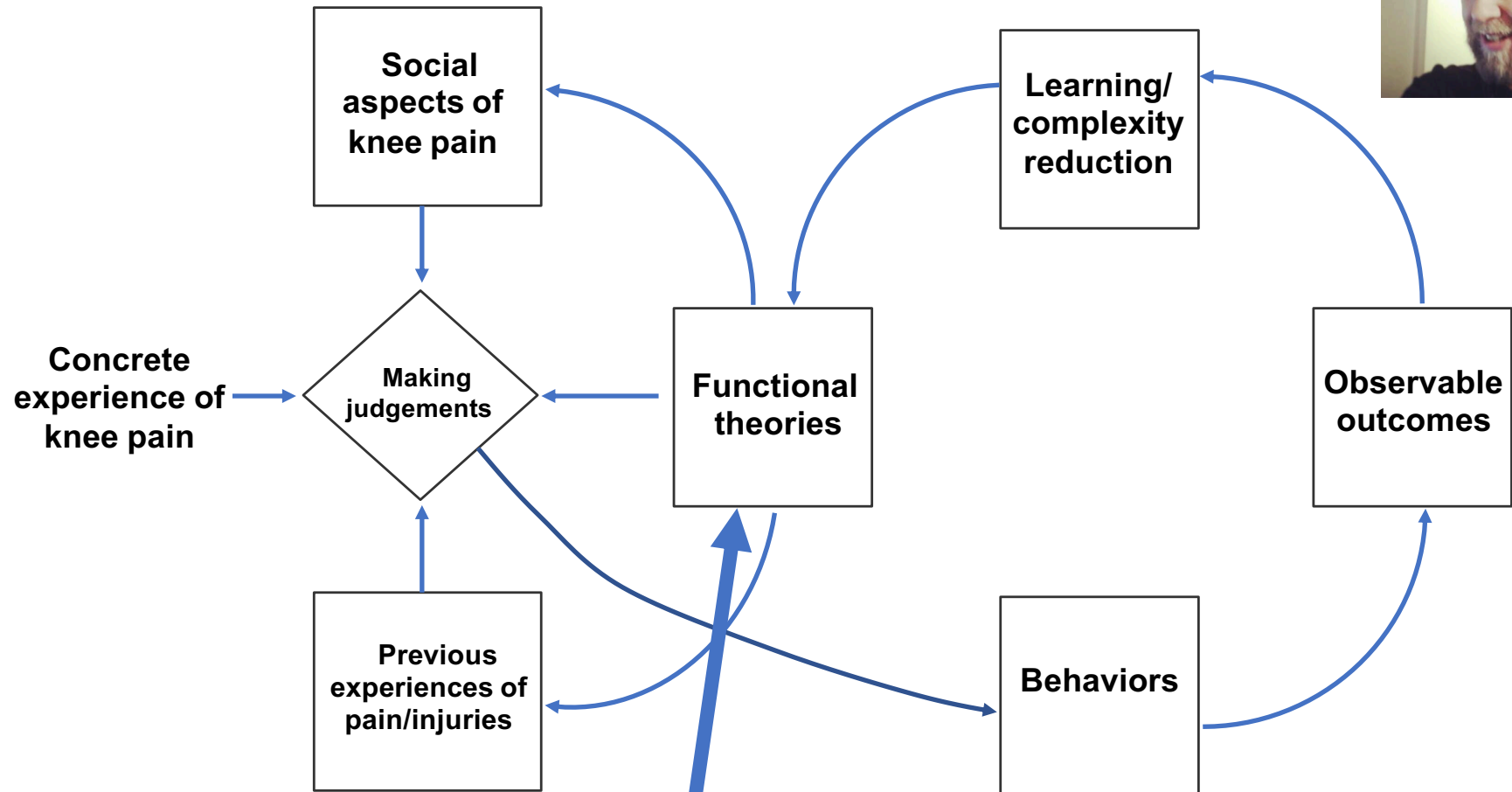
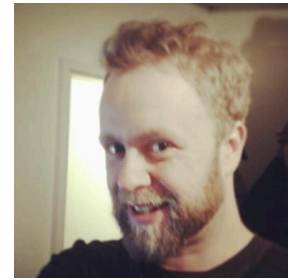
I am afraid to damage my knee?

Pain=injury?



# How do youth learn to self-manage?

Very smart guy



*"I have back pain because I have a weak back"*

Simon Johansen et al, in prep

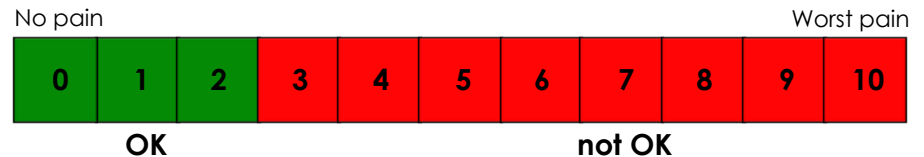
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How does it feel?

## Self management of arthritis in primary care: randomised controlled trial

Marta Buszewicz, Greta Rait, Mark Griffin, Irwin Nazareth, Anita Patel, Angela Atkinson, Julie Barlow, Andy Haines

### RESEARCH ARTICLE

### Open Access

"THE ACTIV

- 1. Walking/bicycling
- 2. Fast walking/med
- 3. Slow running
- 4. Stairs
- 5. Running in mediu
- 6. Running in high po

## GLA:D<sup>®</sup> Back group-based patient education integrated with exercises to support self-management of back pain - development, theories and scientific evidence -



Per Kjaer<sup>1,2\*</sup> , Alice Kongsted<sup>1,3</sup>, Inge Ris<sup>1</sup>, Allan Abbott<sup>4</sup>, Charlotte Diana Nørregaard Rasmussen<sup>5</sup>, Ewa M. Roos<sup>6</sup>, Søren T. Skou<sup>6,7</sup>, Tonny Elmoose Andersen<sup>8</sup> and Jan Hartvigsen<sup>1,3</sup>

# Osgood schlatter vs Patellofemoral pain



Kvit knæsmærterne

AALBORG SYGEHUS  
ÅRHUS UNIVERSITETSHOSPITAL



Kvit knæsmærterne  
- Osgood Schlatter

AALBORG SYGEHUS  
ÅRHUS UNIVERSITETSHOSPITAL

Rathleff et al. 2019. Am J Sports Med  
Rathleff et al. 2019, in review

# Exercise can also be part of the “education”

- Patient education is not about delivering information to the recipient
- It appears that patient education delivered during multiple sessions with a therapist is as effective as supervised exercise therapy and education
- Feedback loops seem important for kids with PFP, and maybe also other long-standing diseases
- A lot of research that use “patient education” are not theory driven – potential room for improvements
- The Chronic Disease Self-Management Program (CDSMP) of the Stanford University School of Medicine is the most widely known model for general patient education. CDSMP is implemented in Denmark as ‘Learn to live with chronic disease’.