

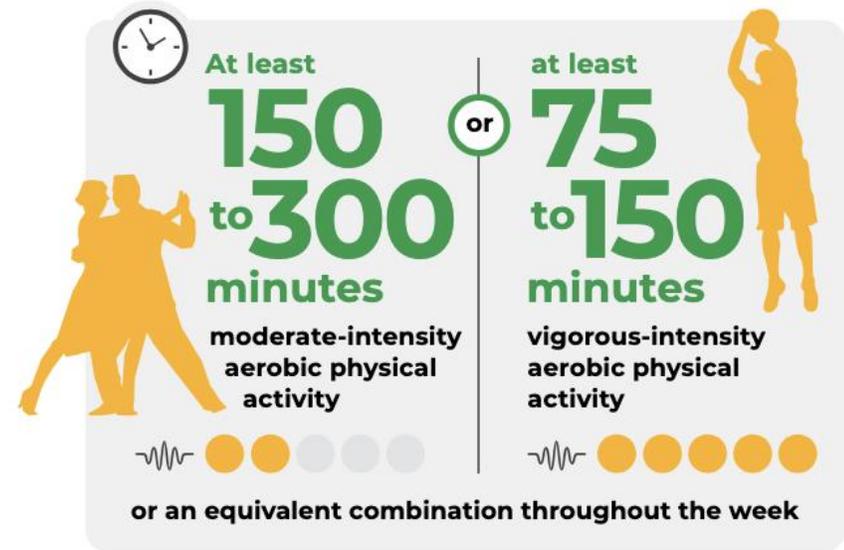
Physiotherapy in patients with knee pain: state of the art

Suzanne Gard

Key message

› Adults should do at least 150–300 minutes of moderate-intensity aerobic physical activity; or at least 75–150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week, for substantial health benefits.

Strong recommendation, moderate certainty evidence



For additional health benefits:

On at least



2
days
a week

muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups.

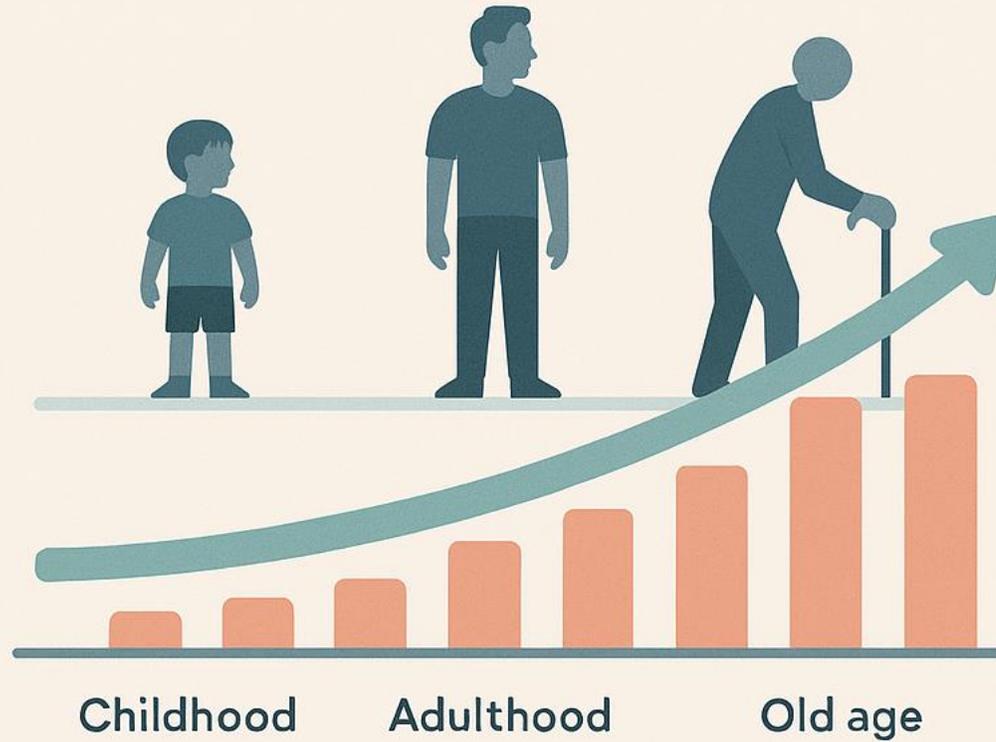


› Adults should also do muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups on 2 or more days a week, as these provide additional health benefits.

Strong recommendation, moderate certainty evidence



STRENGTHSPAN



Childhood

Adulthood

Old age



**THE EARLIER AND LONGER MUSCLE
STRENGTH IS MAINTAINED, THE BETTER
THE QUALITY AND DURATION OF LIFE**

(Faigenbaum et al., 2024)

Sort by:

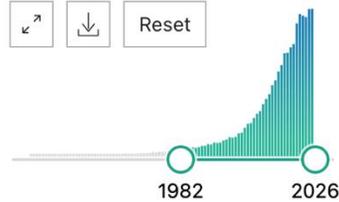


MY CUSTOM FILTERS

52,221 results

 << < Page of 5,223 > >>

RESULTS BY YEAR



PUBLICATION DATE

- 1 year
- 5 years
- 10 years
- Custom Range

TEXT AVAILABILITY

 Abstract

 1 [Relationship Between **Knee** Biomechanics and **Pain** in People With **Knee** Osteoarthritis: A Systematic Review and Meta-Analysis.](#)

Cite Hutchison L, Grayson J, Hiller C, D'Souza N, Kobayashi S, Simic M.

Arthritis Care Res (Hoboken). 2023 Jun;75(6):1351-1361. doi: 10.1002/acr.25001. Epub 2022 Dec 28.

PMID: 35997473

OBJECTIVE: Our primary aim was to determine the cross-sectional relationship between **knee** biomechanics during gait and **pain** in people with medial **knee** osteoarthritis. Our secondary aim was to evaluate differences in **knee** biomechanics between symptomatic ...

 2 [Knee pain and swelling.](#)

Cite Smith RDJ, Smith KN, Shanmugam V, Beltran LS.

Skeletal Radiol. 2023 Sep;52(9):1777-1779. doi: 10.1007/s00256-023-04344-1. Epub 2023 Apr 18.

PMID: 37071190 No abstract available.

 3 [Patellofemoral **Pain** Syndrome Risk Associated with Squats: A Systematic Review.](#)

Meta-Analysis

Best practice guide for patellofemoral pain based on synthesis of a systematic review, the patient voice and expert clinical reasoning



Systematic Review



Patient Voice



Expert Clinical Reasoning

1. Initial Assessment

- Patient history
- Risk factors
- Main symptoms
- Functional limitations

2. Core Interventions

- Targeted exercise (knee ± hip)
- Patient education

3. Adjunctive Treatments

- Prefabricated foot orthoses
- Manual therapy (not in isolation)
- Movement/running retraining
 - Patellar taping

4. Evidence Integration

- High-quality RCTs and meta-analyses
- Patient perspectives
- Expert clinical reasoning

5. Patient Themes

- Importance of clear diagnosis
- Individualized care
- Education for empowerment

Home-based exercise program and Health education in patients with patellofemoral pain: a randomized controlled trial

Health Education & No exercise



Health education & home exercises

warm-up by cycling or walking for 10 min

single leg squat against the wall

leg extension

hip exercises

core muscles exercises



intensity of each exercise : perception between 6 and 7



Function
Muscle strength



Pain

A Systematic Review of Clinical Practice Guidelines for Physical Therapist Management of Patellofemoral Pain

Examination

- Diagnosis of PFP using these 3 criteria:
 - Presence of retropatellar or peripatellar pain
 - AND
 - Reproduction of pain with squatting, stair climbing, prolonged sitting, or other functional activities loading PFJ in flexed position
 - AND
 - Exclusion of all other conditions that may cause AKP, including tibiofemoral pathologies.

Evaluation

- Appropriate clinical tests that reproduce pain and assess lower-limb movement coordination, such as squatting, step-downs, and SLS.
- AKPS, KOOS-PF, or **VAS for activity** (EPQ) questionnaires to measure pain and function.
- VAS for worst pain, VAS for usual pain, or NPRS to measure pain.



KOOS PATELLOFEMORAL SUBSCALE (KOOS-PF)

This survey asks for your view about your knee. This information will help us keep track of how you feel about your knee and how well you are able to do your usual activities.

Please answer every question by ticking the appropriate box, only one box for each question.

If you are unsure about how to answer a question, please give the best answer you can.

Stiffness

The following question concerns the amount of joint stiffness you have experienced during the **last week** in your knee. Stiffness is a sensation of restriction or slowness in the ease with which you move your knee joint.

		None	Mild	Moderate	Severe	Extreme
PF01	How severe is your knee stiffness after exercise?	<input type="radio"/>				

Pain

The following questions concern your knee pain over the **past week**.

		Never	Monthly	Weekly	Daily	Always
PF02	How often do you experience knee pain after stopping activity?	<input type="radio"/>				
PF03	How often does pain limit your activity?	<input type="radio"/>				

What amount of knee pain have you experienced in the **last week** during the following activities?

- Please give the best answer you can, even if you are unsure about an item
- If you haven't done this activity because of medical advice or pain, please tick "EXTREME"

		None	Mild	Moderate	Severe	Extreme
PF04	Rising from sitting (including getting out of the car)	<input type="radio"/>				
PF05	Kneeling	<input type="radio"/>				
PF06	Squatting	<input type="radio"/>				
PF07	Heavy household activities (including carrying and lifting)	<input type="radio"/>				
PF08	Hopping/jumping	<input type="radio"/>				
PF09	Running/jogging	<input type="radio"/>				
PF10	After sport and recreational activities	<input type="radio"/>				

Quality of life

		Not at all	Mildly	Moderately	Severely	Totally
PF11	Have you modified your sport or recreational activities due to your knee pain?	<input type="radio"/>				

KOOS PJ



Clinicians' experience of the diagnosis and management of patellofemoral pain: A qualitative exploration

"I think a lot of PFP (patients) have this fear avoidance behaviour.

"I'm looking to image not to clarify my diagnosis, but to clarify if it's actually something else" (P19)

"For me patellofemoral pain is just a collection of symptoms. So, it's not really a diagnosis" (P17)

"In a similar way that best practice guidelines might suggest that you, for example, treat low back pain. So, avoiding a structural diagnosis, addressing prognostic factors from a mental health (and) psychological point of view, and trying to improve the general health of the person with physical activity" (P3)

"I think there's good evidence now that we know hip and knee strengthening improves patellofemoral pain outcomes" (P6)

"If the patient knows more about what they need, how the pain comes on through loading, then they can unload it, they're in more control of it" (P2)



Clinicians' experience of the diagnosis and management of patellofemoral pain: A qualitative exploration

A detailed subjective history is imperative to rule in PFP.

Diagnostic imaging should be used only to screen for concomitant pathology.

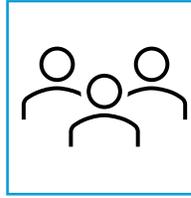
Provide information people with PFP to control symptoms & action behaviour change.

Active rehabilitation should be provided and include hip-and-knee exercises.

Treatment adjuncts can be used selectively to modify symptoms when indicated.

Patient experience of the diagnosis and management of patellofemoral pain: A qualitative exploration

“Now I realise that having a name is not that important to get better, it's more understanding what's wrong and a more holistic kind of view”



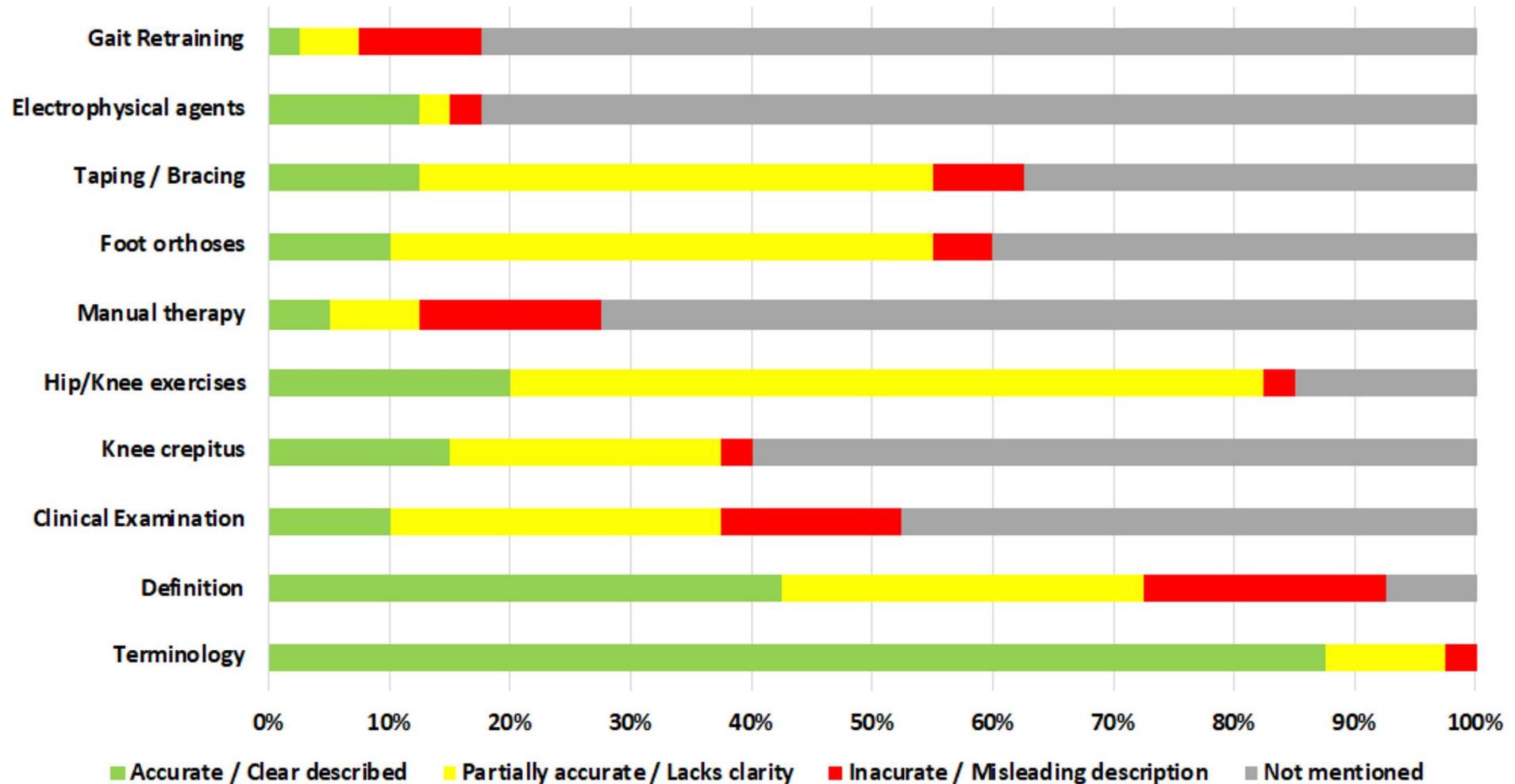
“It was confusing at the time; I knew what I felt. I know when it's not in my head...I know that sometimes MRIs look perfectly fine, but pain is there”

“If I'd have been given more information, I think I'd know how to deal with it more, cope with it, then I wouldn't feel so worthless”

“He took the time to kind of sit down and really talk to me and explain what was going on with my knee and what my options were, and he did a very good job”

“He was able to adjust the programme and then we took it down for one week to give me a break, and then built it up again slowly »

Patients and clinicians managing patellofemoral pain should not rely on general web-based information



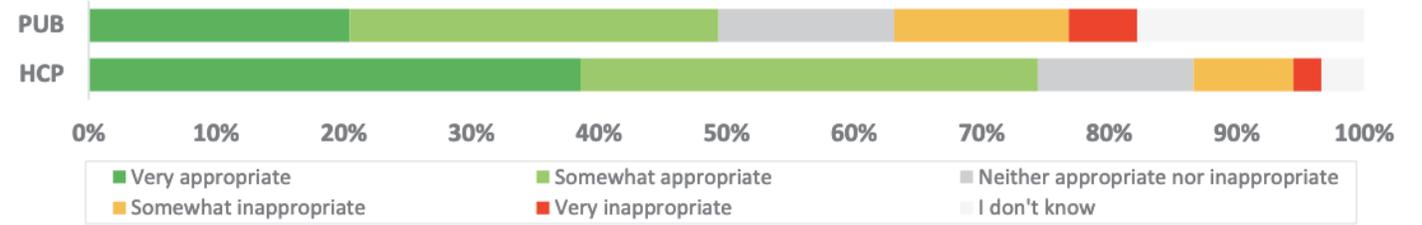
(de Oliveira Silva et al., 2020)

Do the General Public and Health Care Professionals Think That Running Is Bad for the Knees? A Cross-sectional International Multilanguage Online Survey

(Esculier et al., 2022)

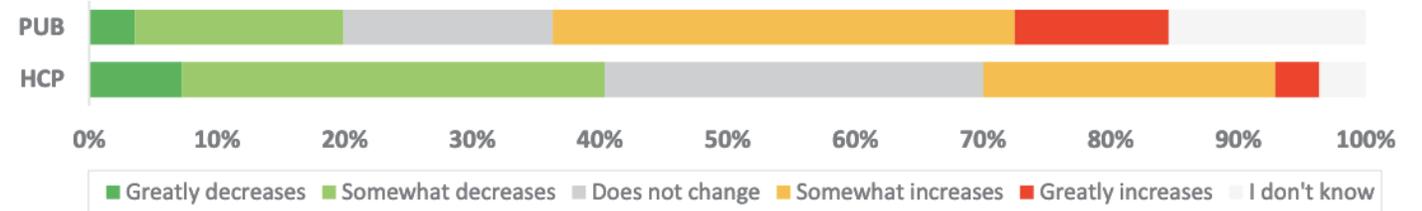
It is _____ for a nonrunner with KOA to start a running program if one doesn't have symptoms before or after going running:

$\chi^2 (3, n = 4521) = 383.02; P < .001; \text{Cramer } V = 0.29$



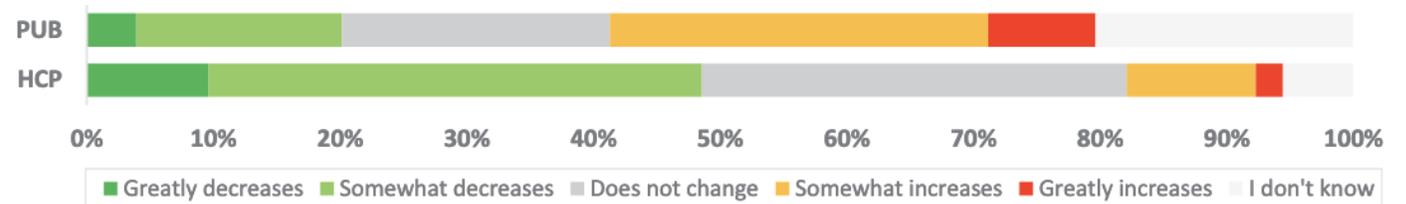
People with knee osteoarthritis who continue to run will _____ their risk of getting more knee pain:

$\chi^2 (3, n = 4521) = 541.21; P < .001; \text{Cramer } V = 0.35$



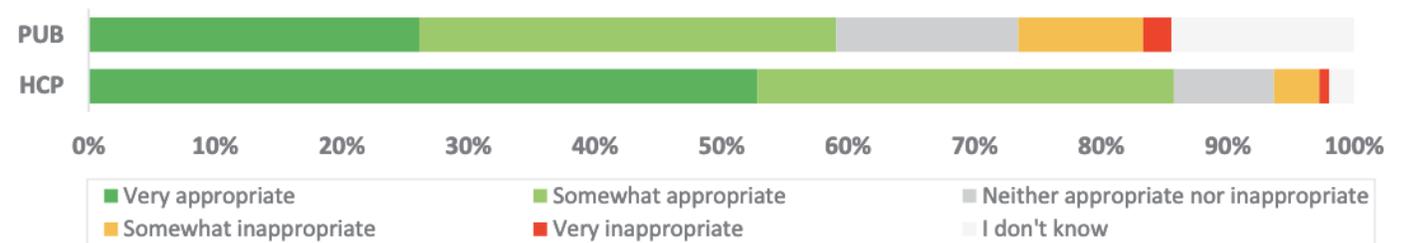
People with knee osteoarthritis who keep running regularly will _____ the need for joint replacement surgery:

$\chi^2 (3, n = 4521) = 654.40; P < .001; \text{Cramer } V = 0.38$



It is _____ for runners who have knee osteoarthritis to continue if they don't have symptoms before or after they go running:

$\chi^2 (3, n = 4521) = 425.11; P < .001; \text{Cramer } V = 0.31$



WHO recommends

CHILDREN AND ADOLESCENTS

WHO guidelines on physical activity and sedentary behaviour

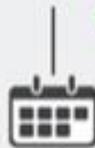


At least

60
minutes a day



moderate- to vigorous-intensity physical activity across the week; most of this physical activity should be aerobic.



On at least

3
days a week



vigorous-intensity aerobic activities, as well as those that **strengthen muscle and bone** should be incorporated.



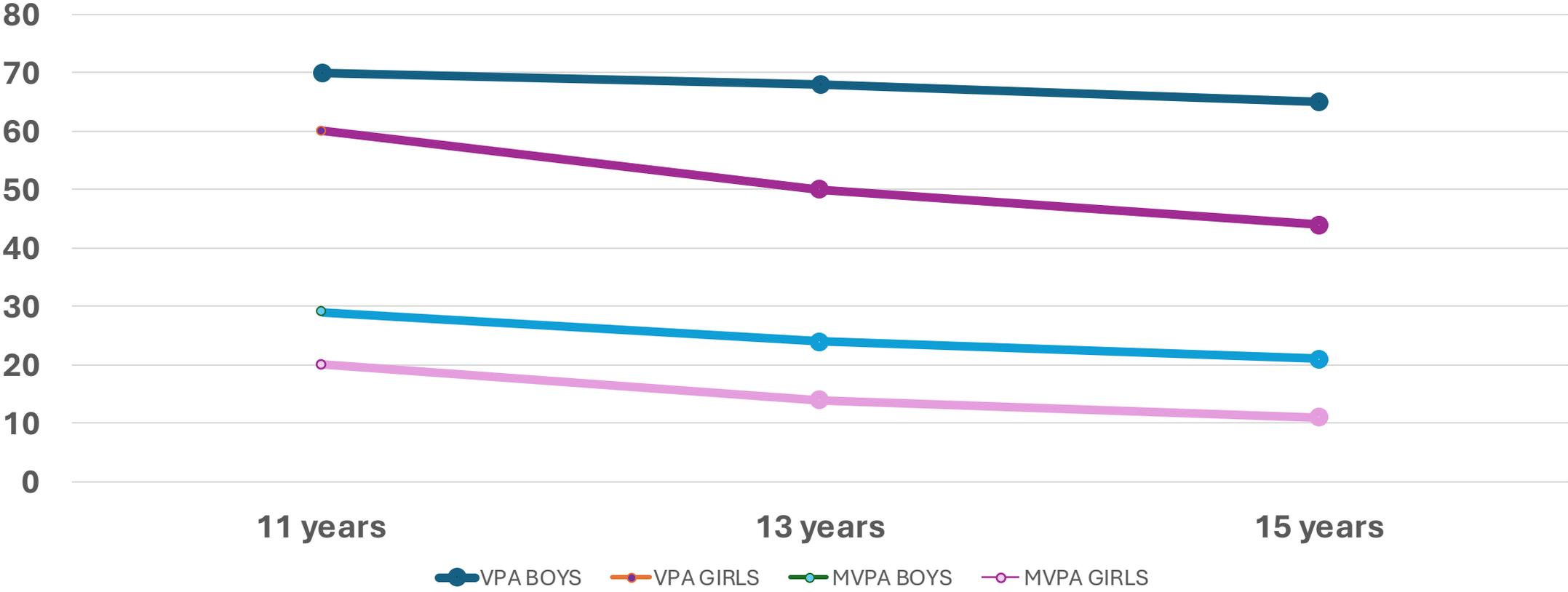
LIMIT

the amount of time spent being sedentary, particularly recreational screen time.



Activity declines with age

% of recommended Vigorous PA (VPA) and Mild to Vigorous PA (MVPA) during the previous week



Musculoskeletal pain in adolescents is often overlooked and labeled as growing pain



Prognostic factors for adolescent knee pain: an individual participant data meta-analysis of 1281 patients

Non-specific anterior knee pain is more common among females and has a high propensity for chronicity

Being sports active at baseline did tend to be associated with better function in the long-terms.

Pain characteristics (especially frequency), lower health related QoL and female sex associated with increased pain and lower function at 12-months.

BEWARE with adolescent knee pain!

Tumor
Osteochondritis dissecans
Ligament injury
Patellar instability



1/4 of adolescents experiences knee pain

21 M Average duration of knee pain

7/10 Pain intensity

25% Take painkillers

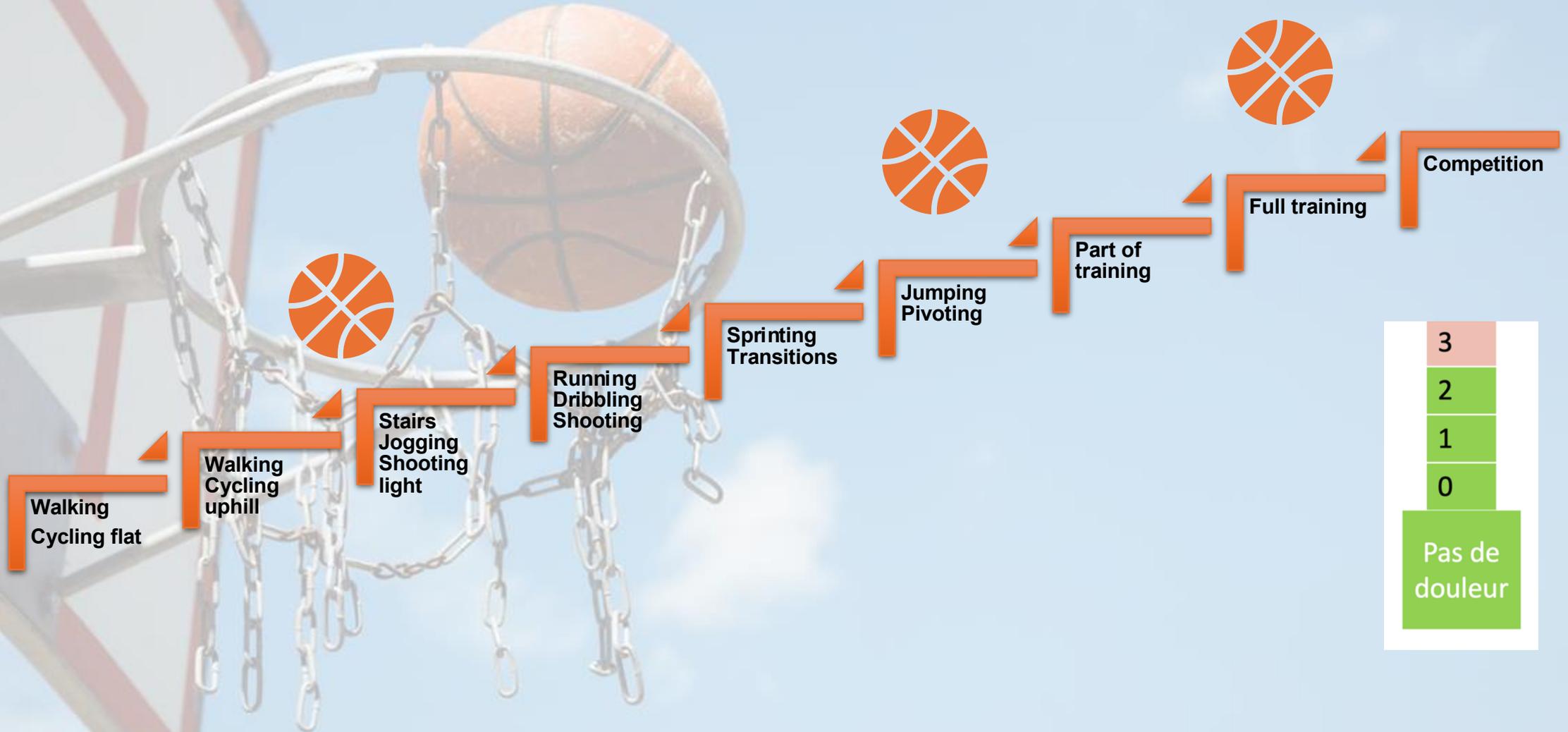
40% Risk of chronic pain

1/3 Lack confidence in their knee

2/10 Say they are sad, worried or unhappy

(Rathleff et al., 2019, Holden et al., 2021;
Djurtoft et al., 2023)

Activity ladder



Study with 151 adolescents experiencing non sinister knee pain

4 physio consults during 12 W

(Rathleff et al., 2019)

Plausible explanation
Contributing factors
Load and sport

Importance of adherence
Following progress

Progression activity ladder sport

Modified activity
Exercise level 1

Exercise level 2

Specific exercises

Creation of activity ladder

FU on activity ladder

Progressive RTS

DOES IT WORK?



- 86% success at 3 months, 81% at 12 months
- KOOS 
- Knee and hip muscle strength up 20%-33%
- 68% RTS at 3 months, 81% at 12 months
- The majority were satisfied with the treatment (90%) and would recommend it to a friend (95%).

(Rathleff et al., 2019)



PAINSTORIES

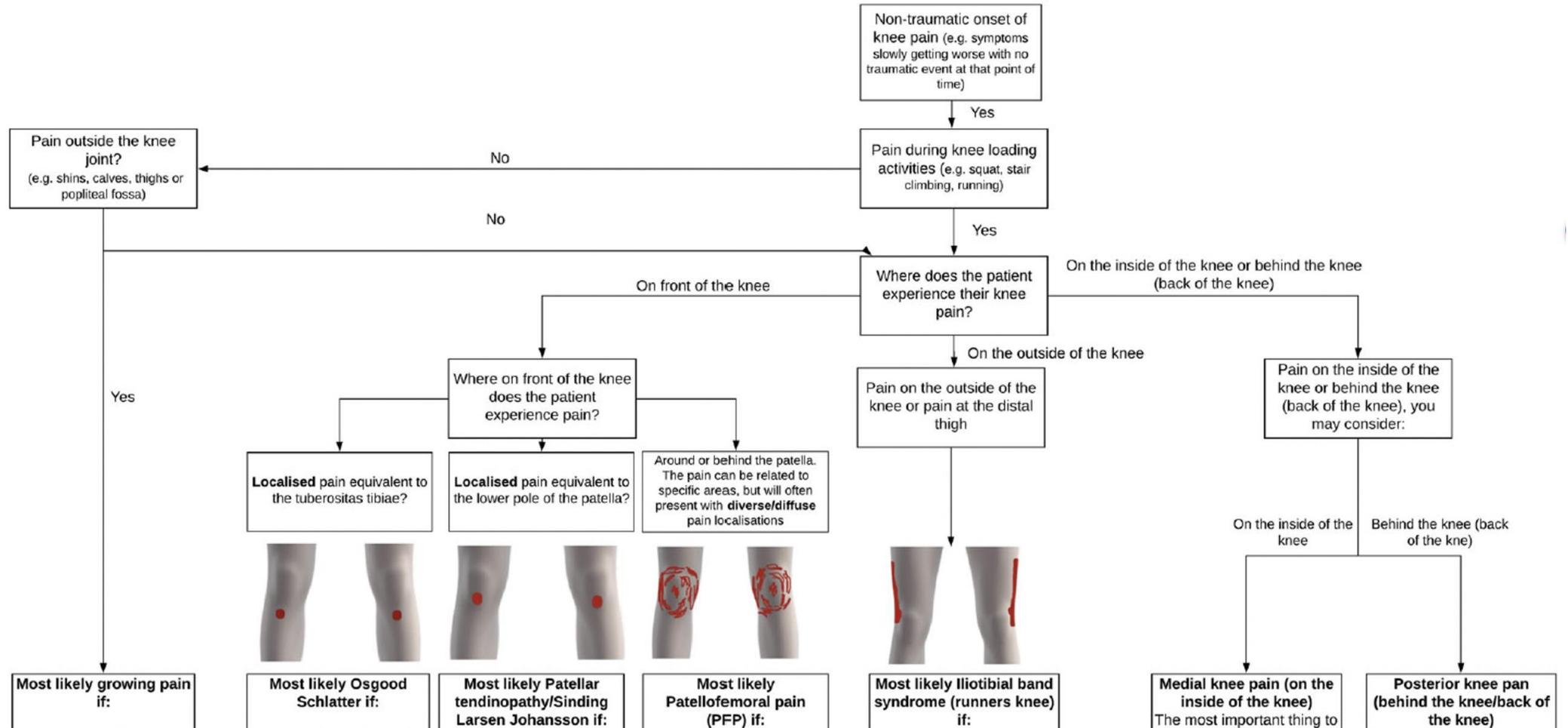
Exploring the Temporal Developments in the Challenges, Barriers, and Self-Management Needs of Adolescents with Long standing Knee Pain (Johansen et al., 2022)

“It will get better”

“ You can control certain elements but not everything”



The SMILE tool is intended to be a support tool, to support diagnosis of adolescents with non-traumatic knee pain. The tool starts from the top moving down to potential tentative diagnoses. The tool includes the most common non-traumatic knee diagnoses seen in adolescents. The tool should not be used or considered as a recipe for full diagnostic workup, but should always be considered together with a workflow ensuring inflammatory or oncological etiologies are not missed - see the **red** box in the bottom of the tool for more information.



Most likely growing pain if:

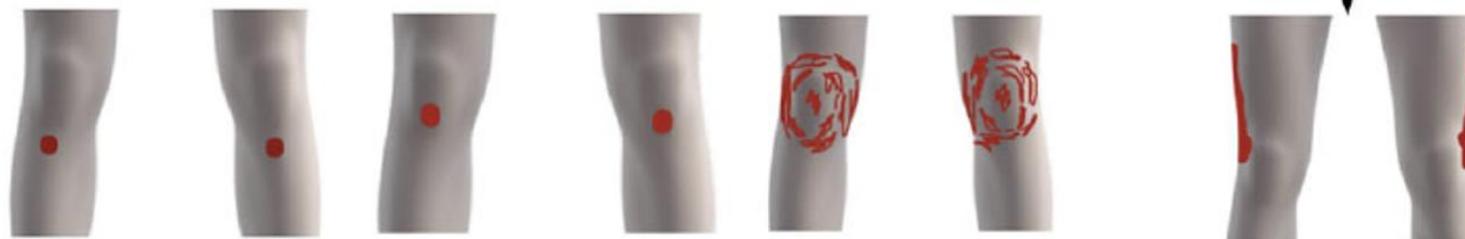
Almost always bilateral pain

The pain usually appears late in the day or is nocturnal* - often awaking the child

Deep pain originating from long bones - often episodic with pain free intervals from days to months

Sex: No sex difference

Age: Most common from 3-12 years



Most likely Osgood Schlatter if:

On palpation: Pain and tenderness of the tuberositas tibia - patients can present with a bony prominence at the tubercle

More common in sports active children/adolescents

Sex: More common in boys than girls

Age: Most common in boys from 12-15 years and girls from 8-12 years

Most likely Patellar tendinopathy/Sinding Larsen Johansson if:

On palpation: Pain and tenderness to the inferior/lower pole of the patella

More common in athletes in jumping sports

Sex: More common in boys than girls

Age: Sinding Larsen Johansson is most common from 10-13 years

Patellar tendinopathy most common > 16 years

Most likely Patellofemoral pain (PFP) if:

On palpation: No clear physical finding e.g. no localised joint line pain or tenderness

The pain localisation can be very diverse and present in different areas of the knee

Can present with characteristic pain around or behind the patella with prolonged position with the knee flexed

Sex: More common in girls than boys

Age: Wide age range

Most likely Iliotibial band syndrome (runners knee) if:

On palpation: Pain and tenderness 2-3 cm superior to the lateral joint line and may radiate to the distal thigh

Often gets worse over time if loading on the knee maintained

More frequent in running athletes - especially long runs are a risk factor

Sex: More common in girls than boys

Age: Age > 16 years



Managing non-traumatic Adolescent knee Pain: feasibility of using the MAP-Knee Tool in secondary care

Malene K. Bruun ^{a b}  , Chris Djurtoft ^{a b}, Ole Rahbek ^c, Michael S. Rathleff ^{a b}, Henrik Riel ^{b d}

Show more 

 Add to Mendeley  Share  Cite

<https://doi.org/10.1016/j.msksp.2025.103373>

[Get rights and content](#)

Under a Creative Commons [license](#)

 [Open access](#)

Highlights

- The MAP-Knee Tool was developed to support the consultation between clinician and adolescent with non-traumatic knee pain
- Clinicians found the tool acceptable, but its comprehensiveness may hinder use; clearer instructions may support adherence.
- The tool is feasible to use in secondary care; future research should assess its long-term impact.



TAKE home

Maintain physical activity level

Adress impairments

Identify Knee pain

Load management

Exclude sinister causes

Education to empower



Centre romand de **chirurgie** et
médecine du **sport** et des **arts**
pour les **10-20+** ans



*Thank you for
your attention*

Suzanne.gard@ehc.vd.ch