

Getting education and exercise right

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OUTLINE

- Knee, starting with patellofemoral pain
- Pain-related fear (kinesiophobia)
- Tailoring exercise-therapy
- GLA:D
- Running with osteoarthritis
- The importance of combining education and exercise-therapy





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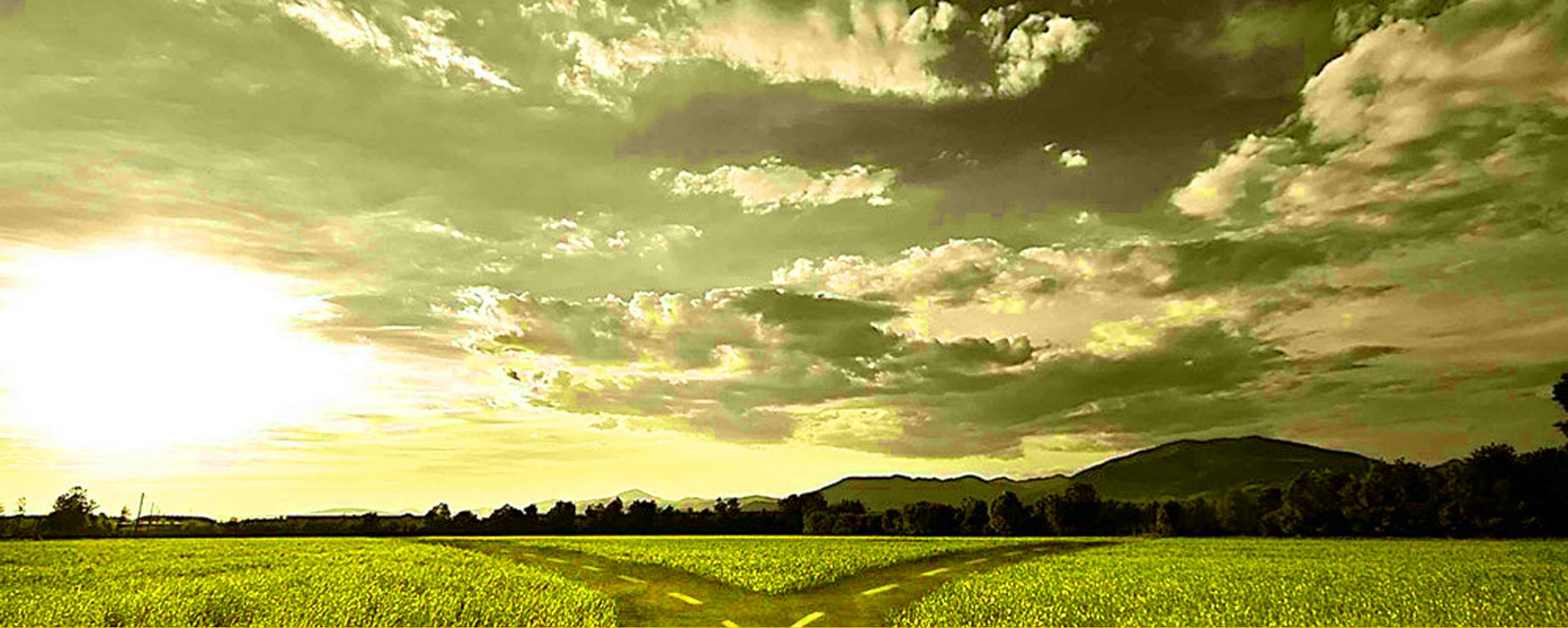
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#choosephysio?





Vicious cycle of persistent knee pain

adapted from the *'fear-avoidance model'*



Pain 85 (2000) 317-332

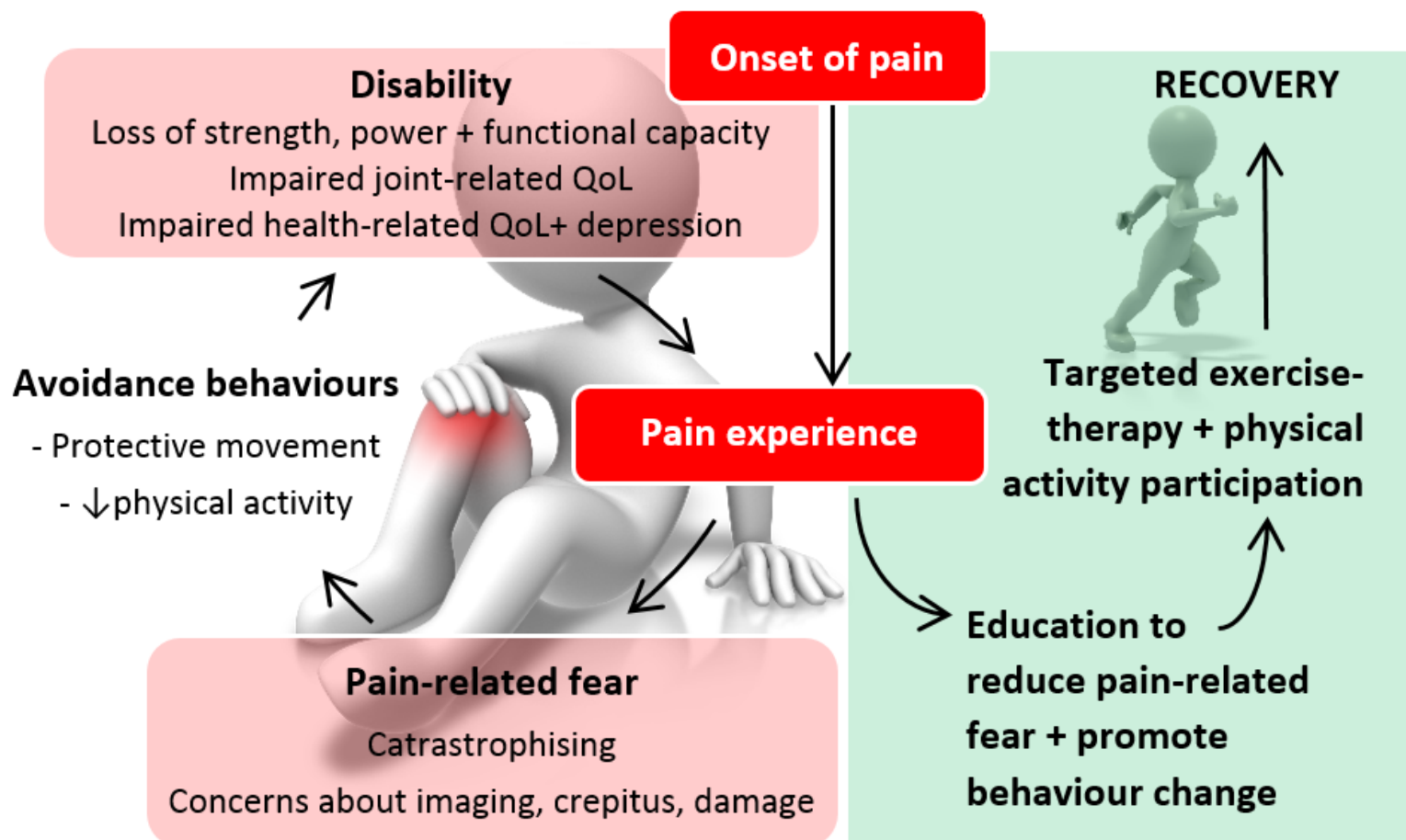
Review article

Fear-avoidance and its consequences in chronic musculoskeletal pain: a state of the art

Johan W.S. Vlaeyen^{a,b,*}, Steven J. Linton^c

PAIN

www.elsevier.nl/locate/pain





“When I did get the physiotherapy it kinda didn’t really do anything anyway. She did say your knees will feel sore, but it went back to how it was anyway, so, it just seemed like a pointless process.”

57% of people with PFP are likely to report unfavourable outcomes 5-8 years after being enrolled in a clinical trial (Lankhorst 2016)

BMJ Open The experience of living with patellofemoral pain – loss, confusion and fear-avoidance: a UK qualitative study

Benjamin E Smith,^{1,2} Fiona Moffatt,³ Paul Hendrick,³ Marcus Bateman,¹ Michael Skovdal Rathleff,^{4,5} James Selfe,⁶ Toby O Smith,⁷ Pip Logan²



“When I started the physio at work and he told me that I shouldn’t walk or that I shouldn’t swim because he just wanted to obviously manipulate it and get me pain-free before I did anything that could possibly aggravate it. So I stopped.”





BMJ Open The experience of living with patellofemoral pain – loss, confusion and fear-avoidance: a UK qualitative study

Benjamin E Smith,^{1,2} Fiona Moffatt,³ Paul Hendrick,³ Marcus Bateman,¹ Michael Skovdal Rathleff,^{4,5} James Selfe,⁶ Toby O Smith,⁷ Pip Logan²

“My heels have maybe gone in which has then pulled my kneecap out of alignment. So instead of going smoothly over the joint where it’s supposed to, that it’s probably moving over the bone and that’s the sharp pain that I’m feeling.”

“I don’t know if he [doctor] was trying to scare me into doing some exercise or something, but he basically said the only thing they could do is break both of my thighs and twist them a bit and then heal them back together.”

“They’re saying that I’m a grandma. They say, ‘Yeah. If you were a horse, they’d put you down.’”



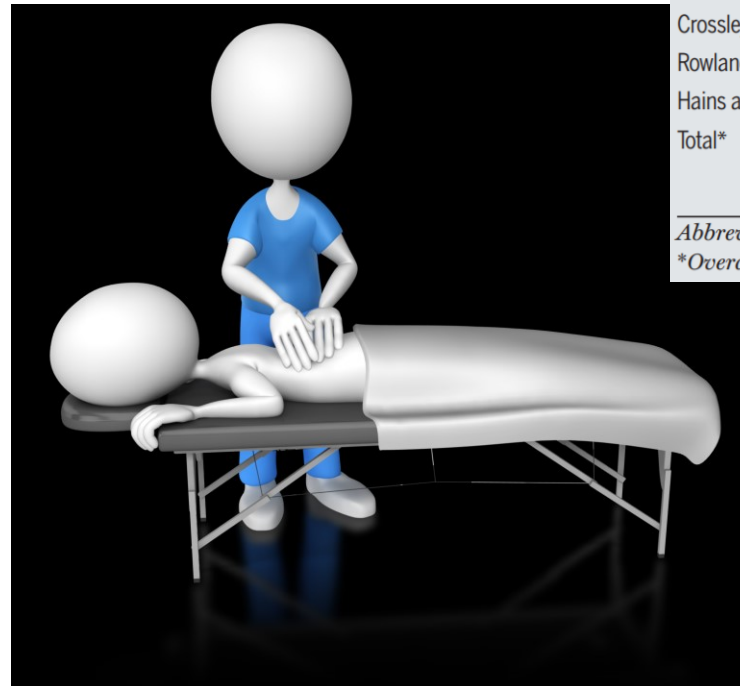
LETTER TO THE EDITOR-IN-CHIEF



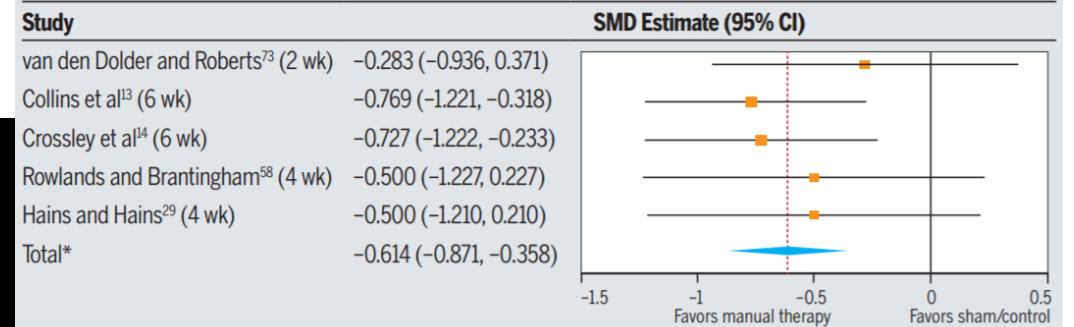
Letters to the Editor are reviewed and selected for publication based on the relevance, importance, appropriateness, and timeliness of the topic. Please see submission guidelines at www.jospt.org for further information. *J Orthop Sports Phys Ther* 2018;48(7):598-599. doi:10.2519/jospt.2018.0203

NO EVIDENCE EXISTS TO SUPPORT MANUAL THERAPY IN PHYSICAL THERAPY PRACTICE FOR PATELLOFEMORAL PAIN

We read with great interest the recent systematic review published in *JOSPT* titled “Effectiveness of Manual Therapy for Pain and Self-reported Function in Indi-



Pain: Manual Therapy Versus Sham/Control at 2 to 6 Weeks



Abbreviations: CI, confidence interval; SMD, standardized mean difference.

*Overall: $I^2 = 0\%$, $P = .766$.



BMJ Open The experience of living with patellofemoral pain – loss, confusion and fear-avoidance: a UK qualitative study

Benjamin E Smith,^{1,2} Fiona Moffatt,³ Paul Hendrick,³ Marcus Bateman,¹ Michael Skovdal Rathleff,^{4,5} James Selfe,⁶ Toby O Smith,⁷ Pip Logan²



“I just hate it. Do an operation. Get rid of it. In my head, and obviously not being from the medical profession, but I’m just like, ‘Just get rid of the pain however it can be done.’”



“I’ve missed out of things over the years, spending time with friends, spending time with family and that kind of thing, because I’ve not been able to do it.”



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Observational study

Liam R. Maclachlan, Mark Matthews, Paul W. Hodges, Natalie J. Collins and Bill Vicenzino*

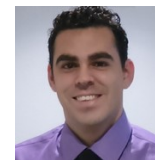
The psychological features of patellofemoral pain: a cross-sectional study

- Those with more-severe PFP-related disability have higher levels of psychological impairment (kinesiophobia, catastrophising, anxiety and depression)

Kinesiophobia (pain-related fear)

- Elevated in the PFP group
- Differs between high and low disability subgroups
- Helps explain level of disability





Gait & Posture 68 (2019) 1–5

Contents lists available at ScienceDirect

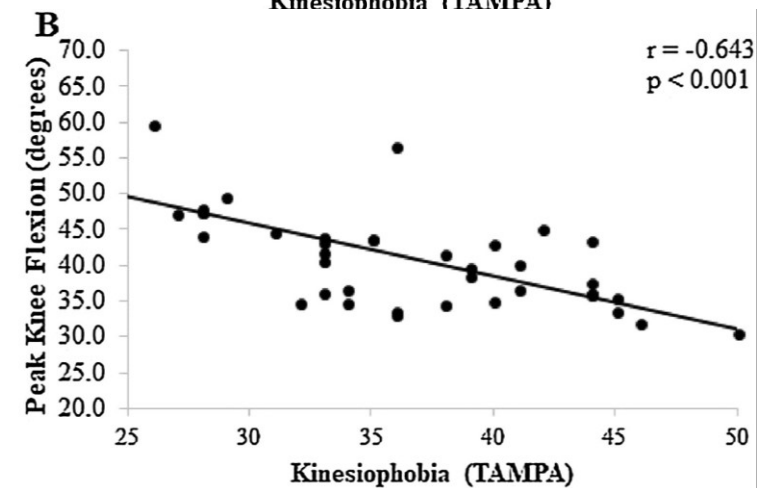
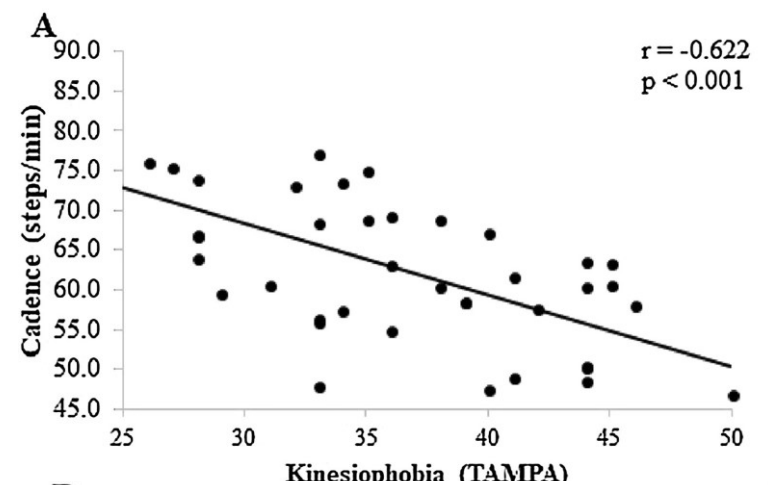
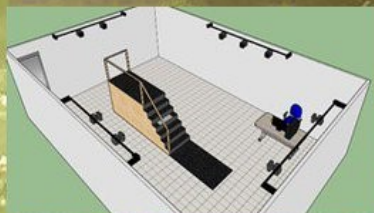
Gait & Posture

Journal homepage: www.elsevier.com/locate/gaitpost

Full length article

Kinesiophobia, but not strength is associated with altered movement in women with patellofemoral pain

Daniilo de Oliveira Silva^{a,b,c,d,1}, Christian John Barton^{b,c,1}, Ronaldo Valdir Briani^{e,f,2}, Bianca Taborda^{a,g}, Amanda Schenatto Ferreira^{a,g}, Marcella Ferraz Pazzinato^{a,h,2}, Fábio Micolis de Azevedo^{a,2}





Meet Frankie



Manage my knee

Diagnosis

Why does it hurt?

How much pain is
Ok?

How common is
knee cap pain?

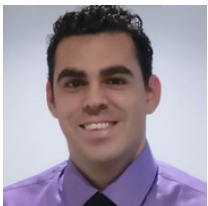
When will my pain
stop?

Fear of movement

Knee crepitus

Manage your
exercise load to
manage your pain

Are you a runner?



This information portal is k
with input from patients a
[Medicine Research Centre](#)

ge your knee cap pain, and has been developed
[La Trobe University's Sport and Exercise](#)
[University \(UNESP\).](#)

The information is not intended to replace consultation with a physiotherapist or doctor.

5 TIPS TO REDUCE KNEE CAP PAIN DURING RUNNING

It is recommended that you keep your knee cap pain at no more than 2/10 during exercise



How do you do this during running?
We have 5 tips for you (based in a randomized controlled trial)

1 INCREASE TRAINING FREQUENCY TO DECREASE EACH SESSION'S DURATION

For example:



Instead of running 5km, 3 times in a week



Run 3km, 5 times in a week

2 DECREASE YOUR RUNNING SPEED BY APPROXIMATELY 10-20%

For example:



If you run at 5 minutes per km pace. Try running at 6 minutes per km pace instead

3 TRY USING A RUN-WALK PROGRAM

For example:

You can run 4 minutes

Walk 1 minute



AND



4 AVOID STAIRS AND DOWNHILL RUNNING



Gradually reintroduce once pain has settled to an acceptable level (no more than 2/10)

5 TRY INCREASING THE NUMBER OF STEPS YOU TAKE PER MINUTE, WITHOUT RUNNING FASTER

- Try using a metronome. How?

Set it at 5-10% greater than your natural step rate



- Try listening music. How?

Create a playlist with songs at a set tempo (beats per minute) 5-10% greater than your natural step rate

One leg squats:

How to progress exercise:

- Option 1: increase depth, start with a squat to 30° knee bend. Then gradually increase to 90° when ready

Phase 3

- Option 2: increase weight, start at 5kgs and gradually increase to 15kgs when ready

- If you are unable to access a gym use weights/house hold heavy items at home and complete single leg exercises

Instructions:

- Try and keep knee in line with your foot
- Don't drop or rotate hips
- Try and keep trunk / core straight without twisting or bending
- Keep even pressure on foot without lifting up heels or toes
- Complete for both left and right leg



- Exercise

Free squats



MULTIMEDIA RESOURCES

your knee cap pain, but, some are better than others.

cases.

basics for knee cap pain

Combining hip and knee strength exercises

is more effective than

knee exercises alone

MORE VIDEOS

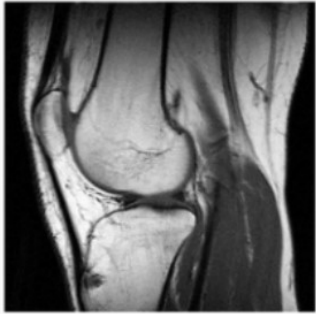
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YouTube



Addressing pain-related fear

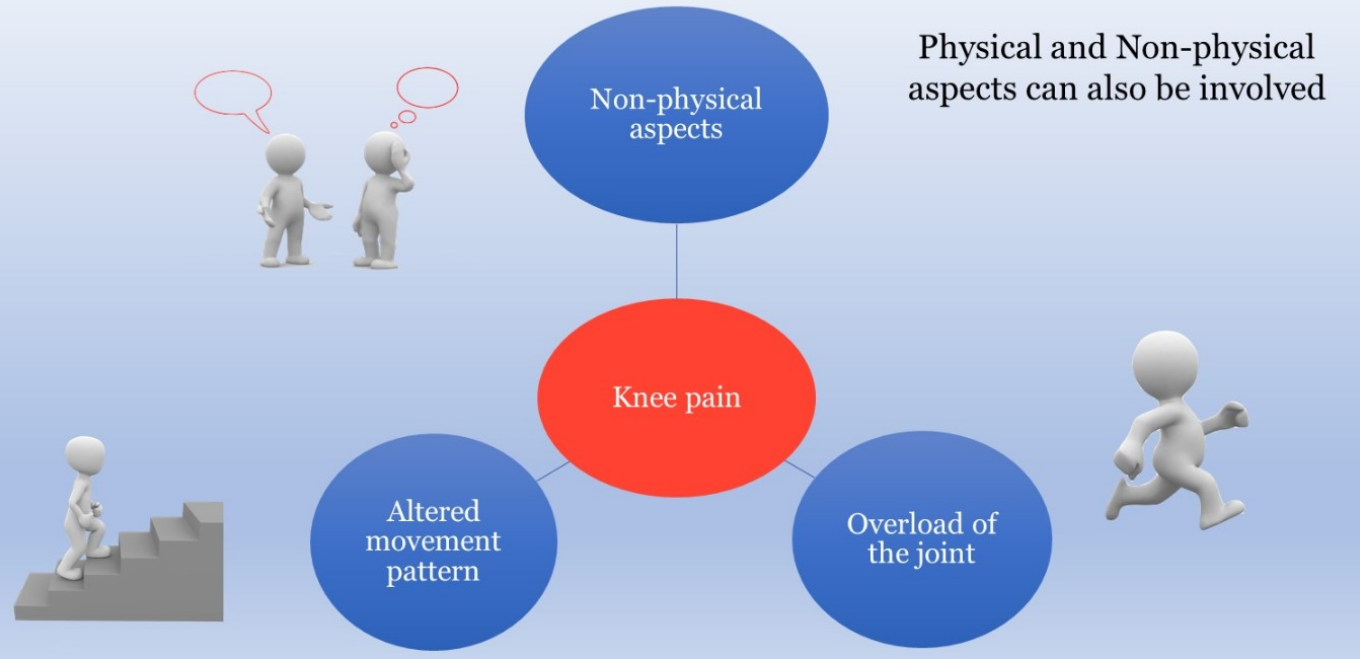
NO DIFFERENCES BETWEEN KNEE CAP PAIN AND HEALTHY KNEES ON MRI OR X-RAY!



TAKE HOME MESSAGE

Scans can be costly and may not assist health professionals to reach a diagnosis or treat knee cap pain better

Pain is complex



FOR MORE INFORMATION READ:

[HTTPS://WWW.NCBI.NLM.NIH.GOV/PUBMED/26471209](https://www.ncbi.nlm.nih.gov/pubmed/26471209)

[HTTPS://WWW.NCBI.NLM.NIH.GOV/PUBMED/27206691](https://www.ncbi.nlm.nih.gov/pubmed/27206691)



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Proximal muscle rehabilitation is effective for patellofemoral pain: a systematic review with meta-analysis

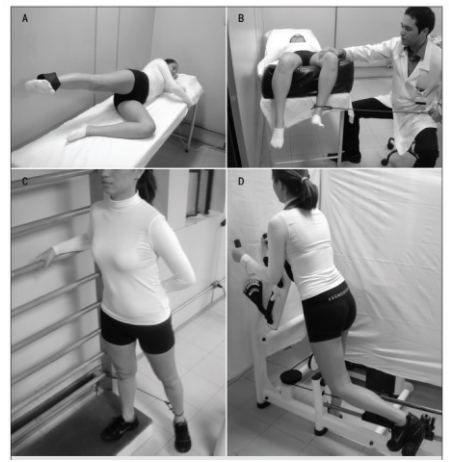
Simon Lack,¹ Christian Barton,^{1,2,3,4} Oliver Sohan,¹ Kay Crossley,⁵ Dylan Morrissey^{1,6}

How can we implement exercise therapy for patellofemoral pain if we don't know what was prescribed? A systematic review

Sinead Holden,^{1,2} Michael Skovdal Rathleff,^{1,3} Martin Bach Jensen,¹ Christian J Barton⁴

Hip and knee focused exercise seems to help

Hip targeted more beneficial in short term



What prescription principles?





What is





What is exercise?



Physical activity
“Beneficial for everybody”

- Pain-related fear
- Neuromuscular
- Functional
- Endurance
- Strength
- Power
- Flexibility
- Aerobic



Exercise-therapy

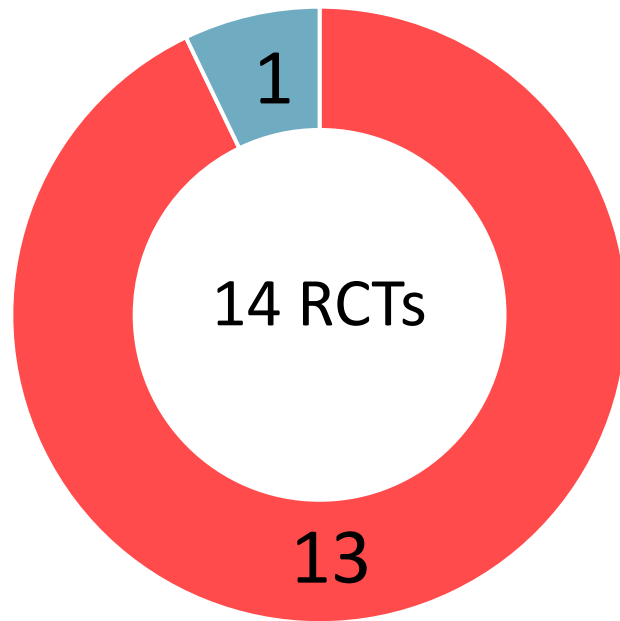


Proximal muscle rehabilitation is effective for patellofemoral pain: a systematic review with meta-analysis

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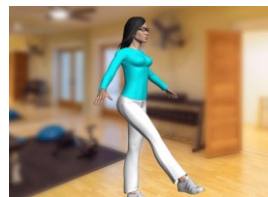
Type of exercise reported according to studies' titles



■ Neuromuscular ■ Strength ■ Endurance ■ Power ■ Undetermined

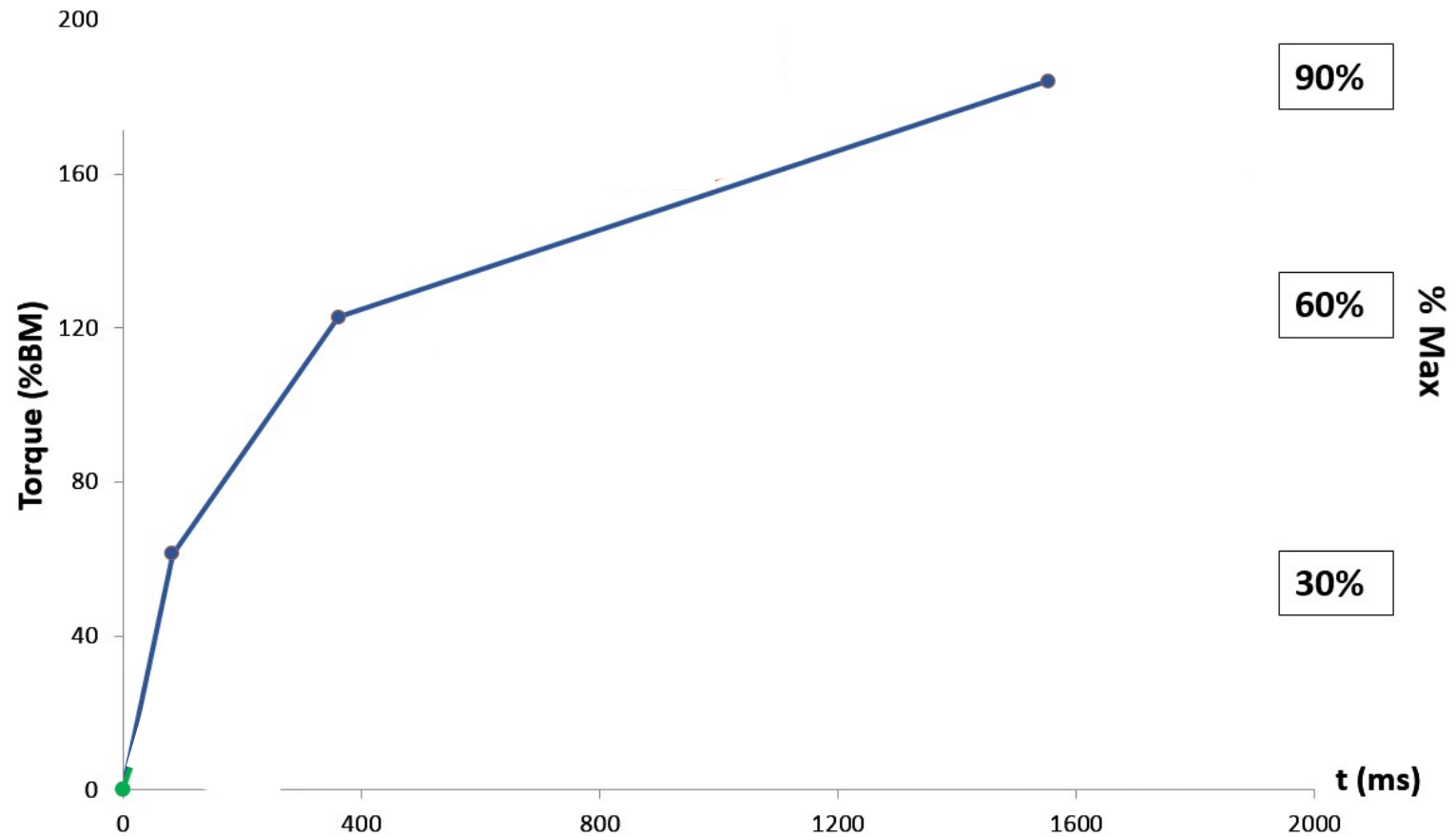


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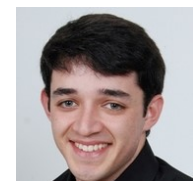
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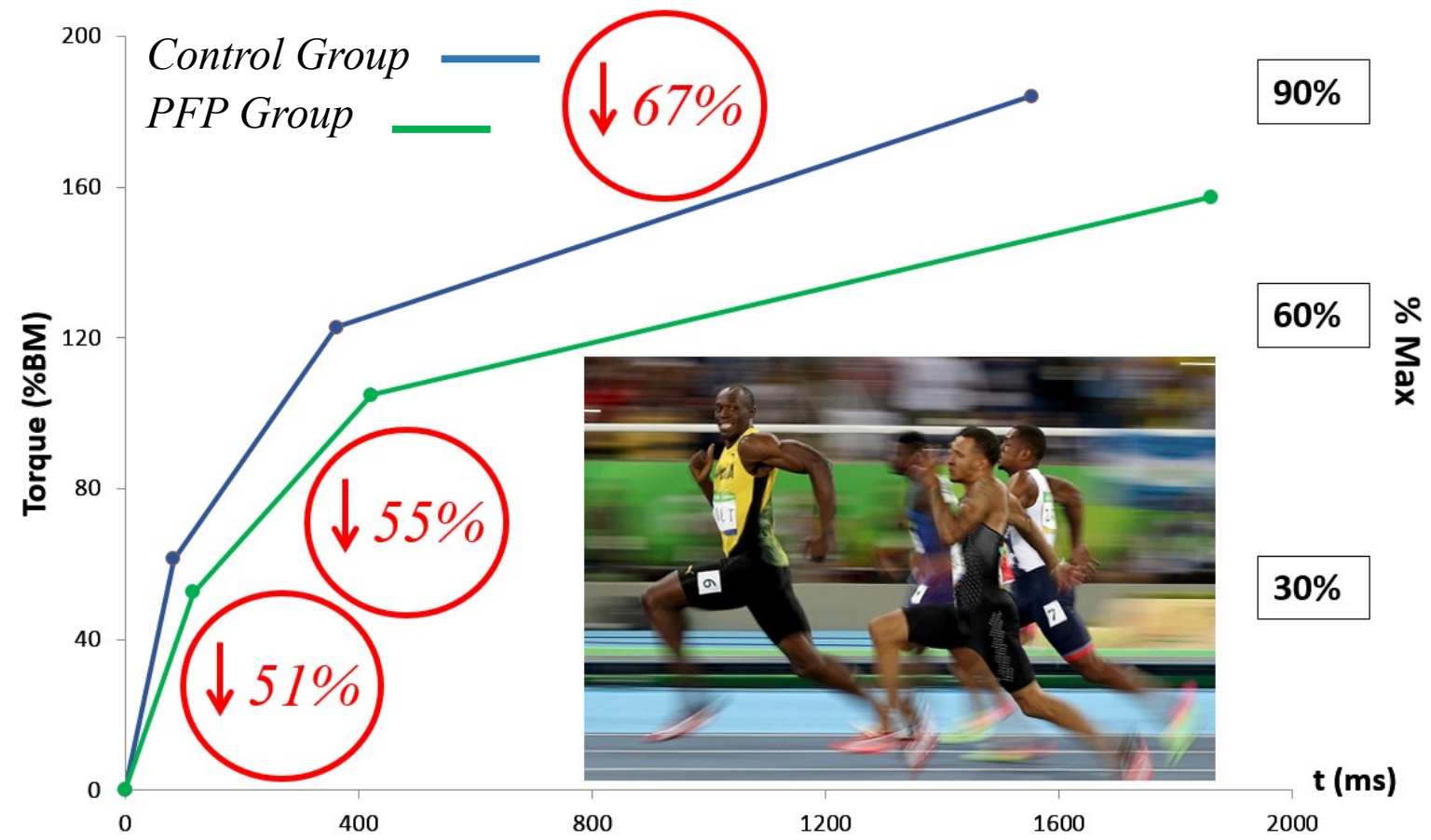


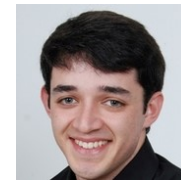
Original research
 Hip rate of force development and strength are impaired in females with patellofemoral pain without signs of altered gluteus medius and maximus morphology

Guilherme S. Nunes^{a,b,*}, Christian John Barton^b, Fábio Viadanna Serrão^a
^a Department of Physiotherapy, São Carlos Federal University, Brazil
^b Sport and Exercise Medicine Research Centre, School of Allied Health, La Trobe University, Australia



Hip extensor rate of force development

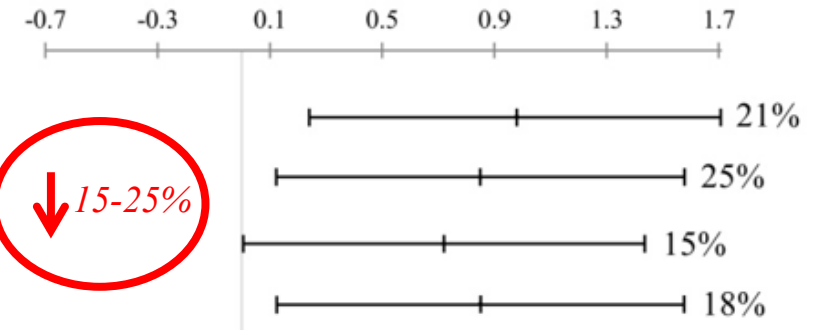


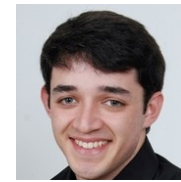


Original Research
 Clinically measured hip muscle capacity deficits in people with patellofemoral pain

Guilherme S. Nunes ^{a, b, *}, Danilo de Oliveira Silva ^{a, c}, Tania Pizzari ^a, Fábio Viadanna Serrão ^b, Kay M. Crossley ^a, Christian John Barton ^{a, d}

	PFP group (n=16)	Control group (n=16)	Mean difference (95% CI)	p value	Effect size (95% CI) and % of difference*
Strength (%BM)					
Isometric – hip abductors	117.9 (23.4)	149.9 (38.7)	32.0 (8.9 to 55.1)	<0.01	21%
Isometric – hip extensors	82.3 (33.1)	110.3 (31.0)	28.0 (4.9 to 51.1)	0.02	25%
10 RM – hip abductors	53.1 (13.9)	62.1 (10.3)	9.0 (0.2 to 17.9)	0.05	15%
10 RM – hip extensors	58.2 (14.7)	70.8 (14.1)	12.6 (2.2 to 23.0)	0.02	18%





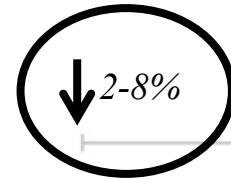
Original Research

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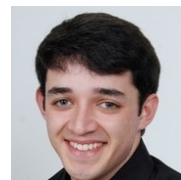
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<i>Endurance</i>					
Hip abductors (log-transf)	1.7 (0.2)	1.9 (0.3)	0.2 (-0.01 to 0.3)	0.06	8%
Hip extensors (log-transf)	1.9 (0.3)	2.0 (0.3)	0.1 (-0.2 to 0.2)	0.71	2%
Bridge (minutes)	1.1 (0.5)	1.1 (0.3)	0.1 (-0.3 to 0.3)	0.88	2%





Original Research

Clinically measured hip muscle capacity deficits in people with patellofemoral pain


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10 RM – hip abductors	53.1 (13.9)	62.1 (10.3)	9.0 (0.2 to 17.9)	0.05	↓ 15-25% (15%)
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Hip extensors (log-transf)	1.9 (0.3)	2.0 (0.3)	0.1 (-0.2 to 0.2)	0.71	↓ 2-8% (2%)
Bridge (minutes)	1.1 (0.5)	1.1 (0.3)	0.1 (-0.3 to 0.3)	0.88	↓ 2-8% (2%)
Power (W/kg)					
Squat	14.2 (4.0)	18.6 (5.4)	4.4 (1.0 to 7.8)	0.01	↓ 24-31% (24%)
Hip abduction	1.9 (0.8)	2.6 (0.9)	0.8 (0.2 to 1.4)	0.02	↓ 24-31% (31%)
Hip extensors	2.9 (1.2)	4.1 (1.3)	1.2 (0.3 to 2.1)	0.01	↓ 24-31% (29%)





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Addressing muscle power?

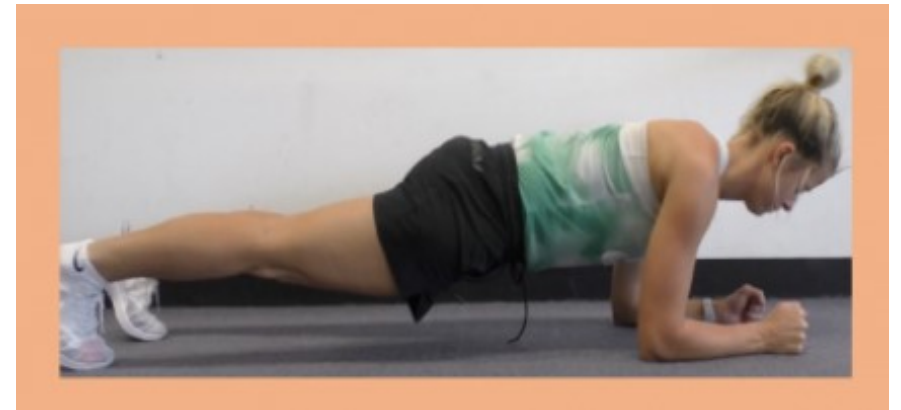
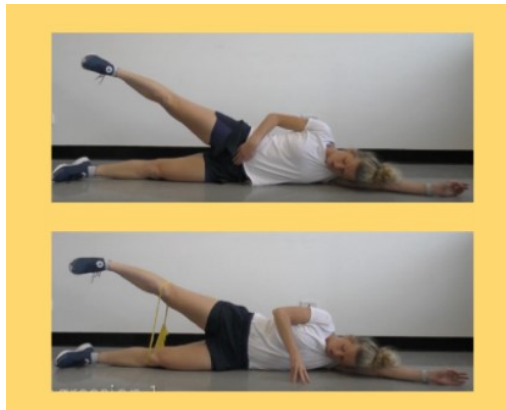
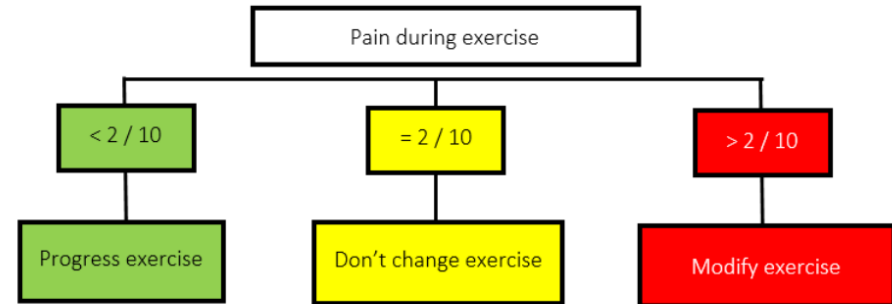
1. Feasibility of a 12-week progressive resistance training program targeting proximal muscle strength and power
2. Clinical outcomes and changes in hip strength and power



Exercise program

- 12-week (3 x per week)
- 3-5 exercises targeting hip and trunk and tailored to individual
- 5-8 physiotherapy consultations (exercise only)

GUIDANCE RELATED TO PAIN MONITORING



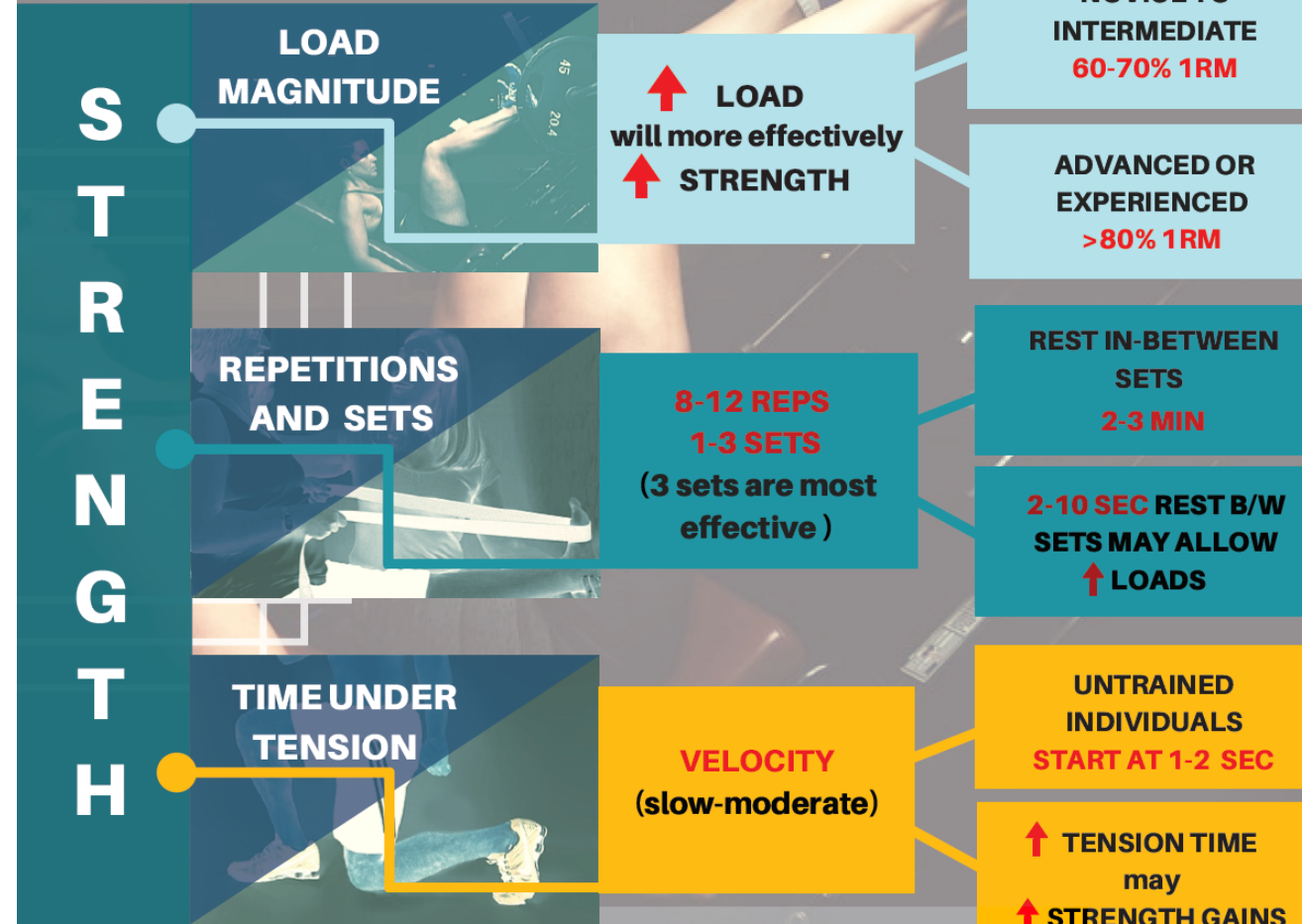
EXERCISE PRESCRIPTION



The muscles ability to move against resistance

Greater resistance is needed for about 8-12 repetitions in a slower controlled manner

Generally the rest time is about 2-3 minutes between sets



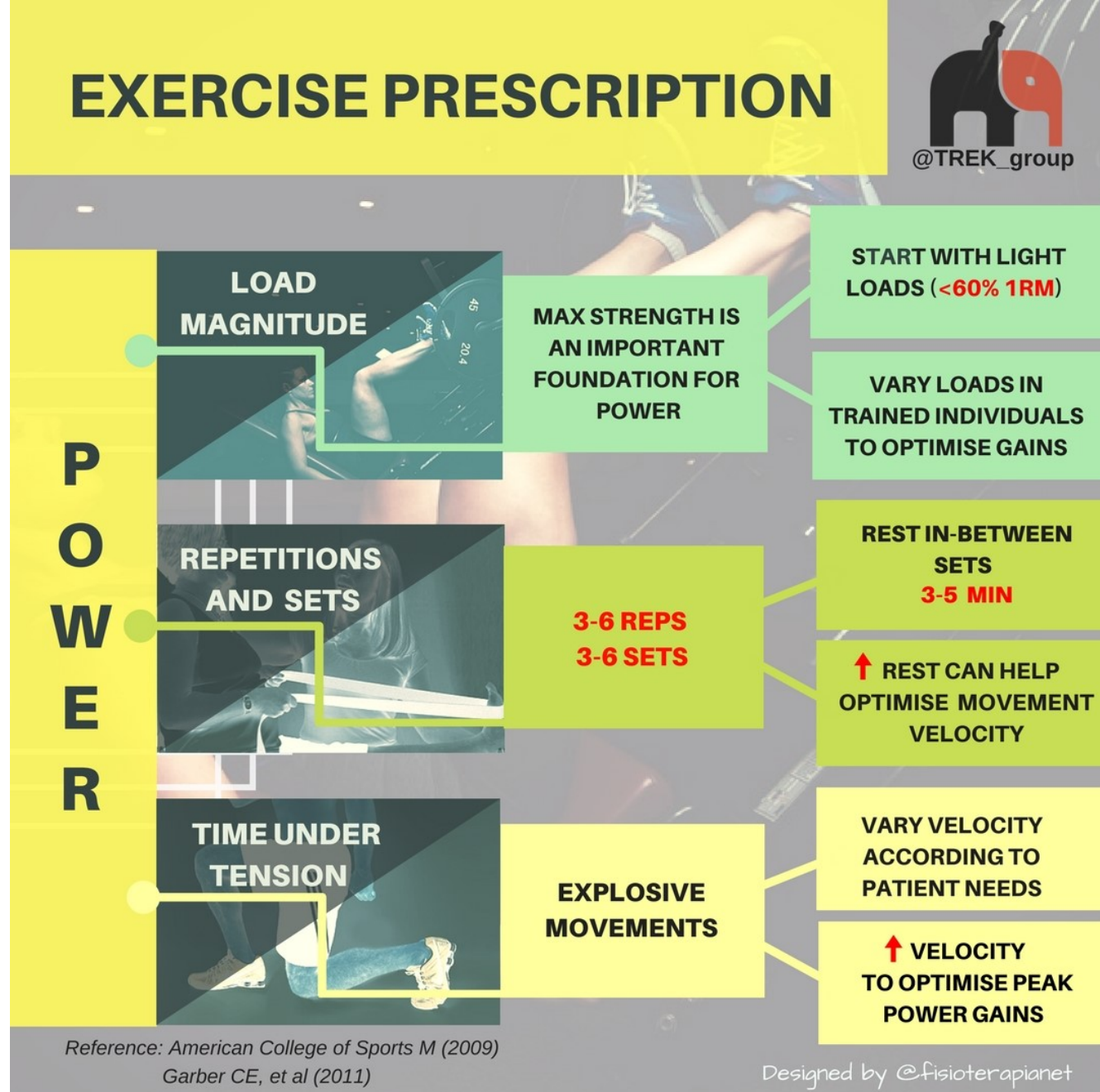
Reference: American College of Sports M (2009)
Garber CE, et al (2011)

Designed by @fisioterapienet

How quickly a given load can be moved or force generated

Exercise against heavy resistance in an explosive manner for a low number of repetitions and 3-6 sets

An extended rest (3-5 minutes) is often needed to fully recover





Original Research

A proximal progressive resistance training program targeting strength and power is feasible in people with patellofemoral pain

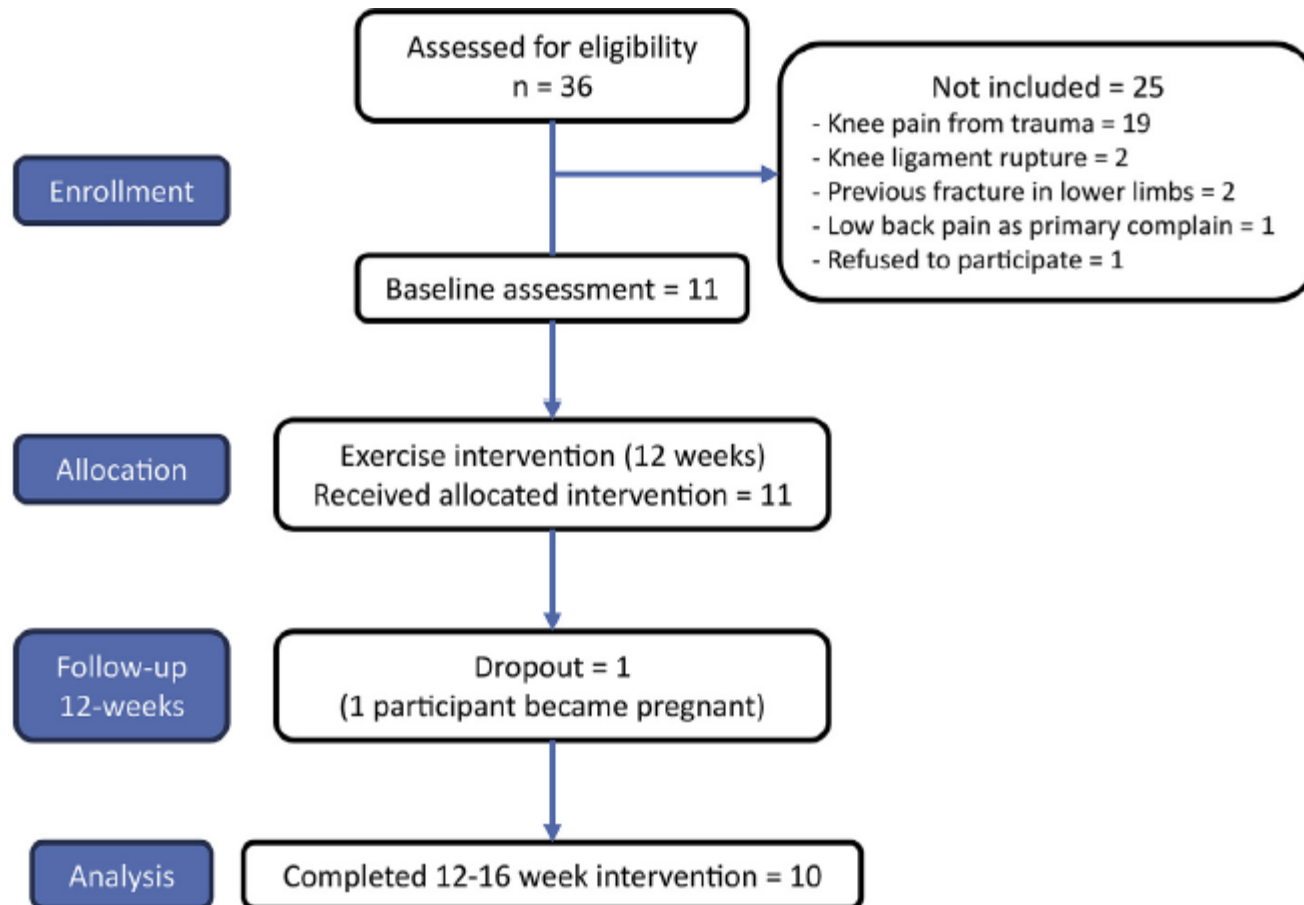


Christian J. Barton ^{a,b,*}, Danilo de Oliveira Silva ^{a,c}, Brooke E. Patterson ^a, Kay M. Crossley ^a, Tania Pizzari ^a, Guilherme S. Nunes ^{a,d}

	All sample (n = 11)	Men (n = 5)	Women (n = 6)
Age (y)	33 (10)	35 (9)	32 (11)
Height (m)	1.69 (0.13)	1.80 (0.05)	1.59 (0.09)
Body Mass (kg)	66 (16)	79 (9)	56 (12)
BMI (kg/m ²)	23.0 (3.0)	24.3 (1.5)	21.9 (3.6)

1 Adverse outcome (pain flare)
– settled within 1 week

Typically progressed well
(strength 3-5 weeks; power 4-8 weeks)





Original Research

A proximal progressive resistance training program targeting strength and power is feasible in people with patellofemoral pain

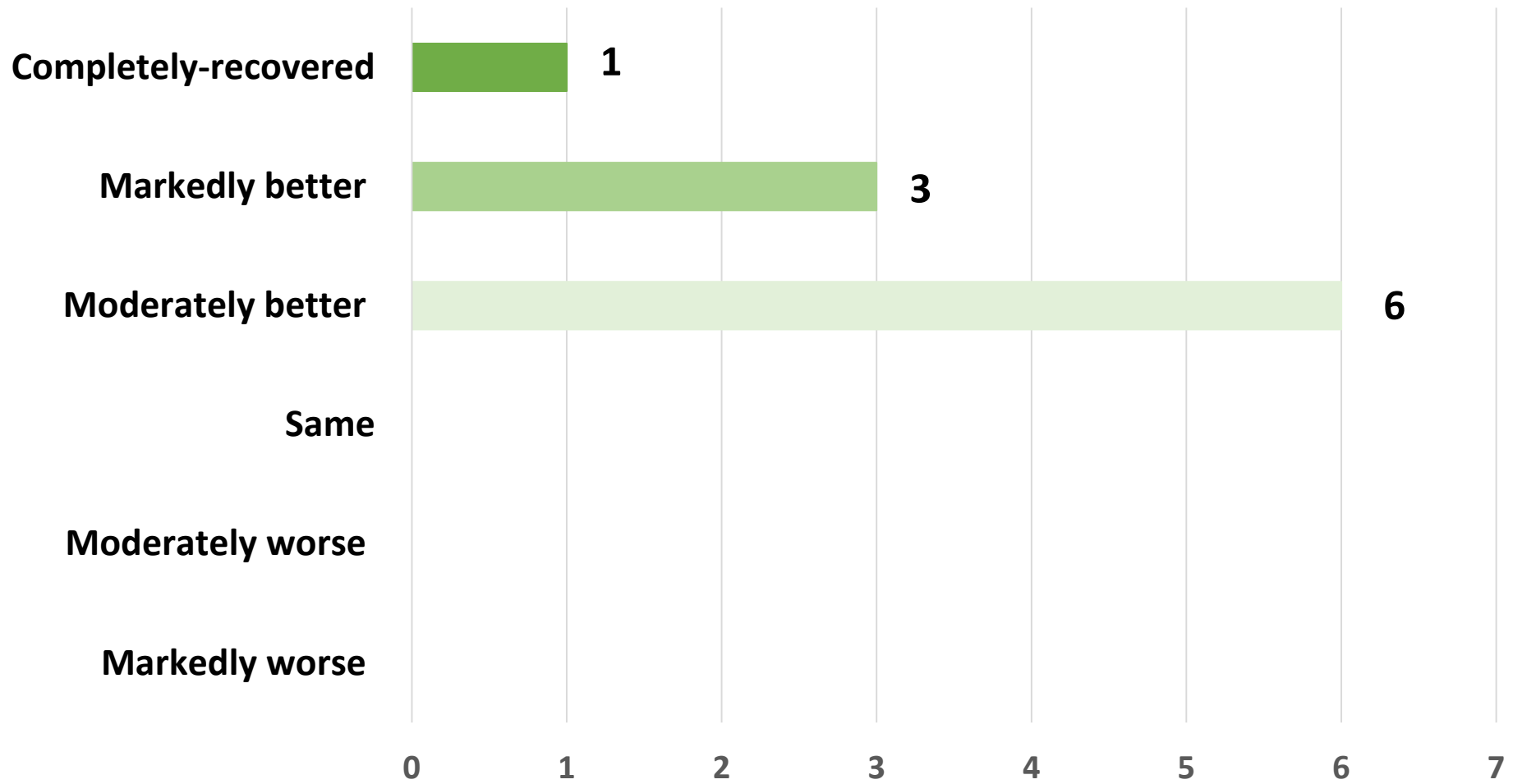


Christian J. Barton ^{a,b,*}, Danilo de Oliveira Silva ^{a,c}, Brooke E. Patterson ^a, Kay M. Crossley ^a, Tania Pizzari ^a, Guilherme S. Nunes ^{a,d}

	Pre	Post	Mean difference	Effect size (95%CI)	
	Mean (SD)	Mean (SD)	(95%CI)	Favours improvement	Favours worsening
Isometric strength					
<i>Hip abduction</i>	123 (20)	136 (31)	-13 (-26; -1)*		
<i>Hip extension</i>	83 (34)	96 (34)	-13 (-28; 1)		
10 Repetition Maximum					
<i>Hip abduction</i>	54 (14)	72 (12)	-19 (-25; -12)*		
<i>Hip extension</i>	55 (15)	74 (7)	-19 (-28; -10)*		
Power					
<i>Hip abduction</i>	2.0 (0.9)	2.5 (1.2)	-0.6 (-1.1; -0.1)*		
<i>Hip extension</i>	3.0 (1.4)	3.6 (1.2)	-0.65 (-1.3; 0.00)*		

	Pre	Post	Mean difference	Effect size (95%CI)	
	Mean (SD)	Mean (SD)	(95%CI)	Favours improvement	Favours worsening
<i>Worst pain last week</i>	5.7 (1.57)	1.0 (1.3)	4.7 (3.7; 5.7)*		
<i>AKPS</i>	76 (12)	90 (9)	-14 (-20; -8)*		
<i>KOOS-PF</i>	74 (18)	89 (10)	-15 (-24; -5)*		
<i>Kinesiophobia</i>	34 (8)	29 (6)	5 (-1; 10)		
<i>Physical activity level</i>	3,567 (5,092)	5,944 (5,955)	-2,376 (-6,606; 1,853)		

Global scale of perceived recovery



TAKE HOMES, for now

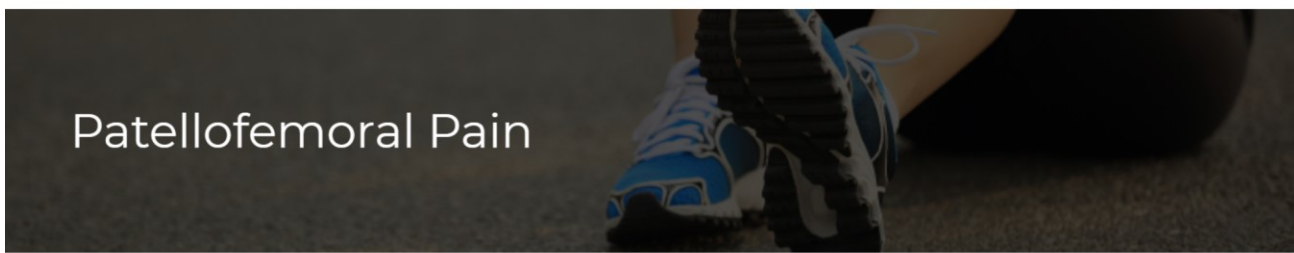
1. Address pain-related fear (education is powerful)
2. Prescribing strength and power is feasible
3. Moderate-large improvements in strength and power
4. Associated with large improvements in pain and function





Bridging the gap related to the principles of exercise prescription in clinical practice

Exercise therapy, including resistance and aerobic exercise is included in most clinical practice guidelines.



Back to Rhys



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Research Centre

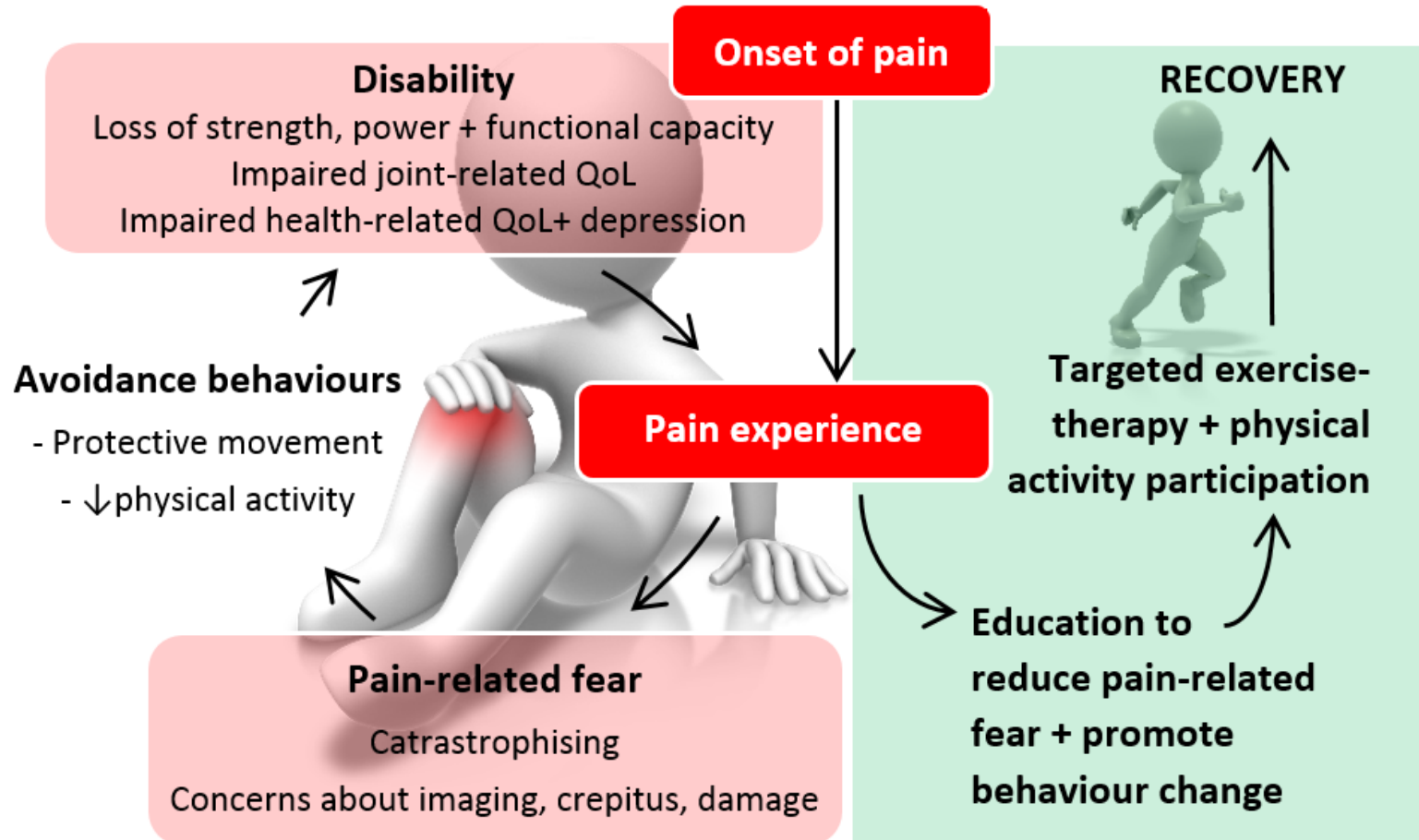


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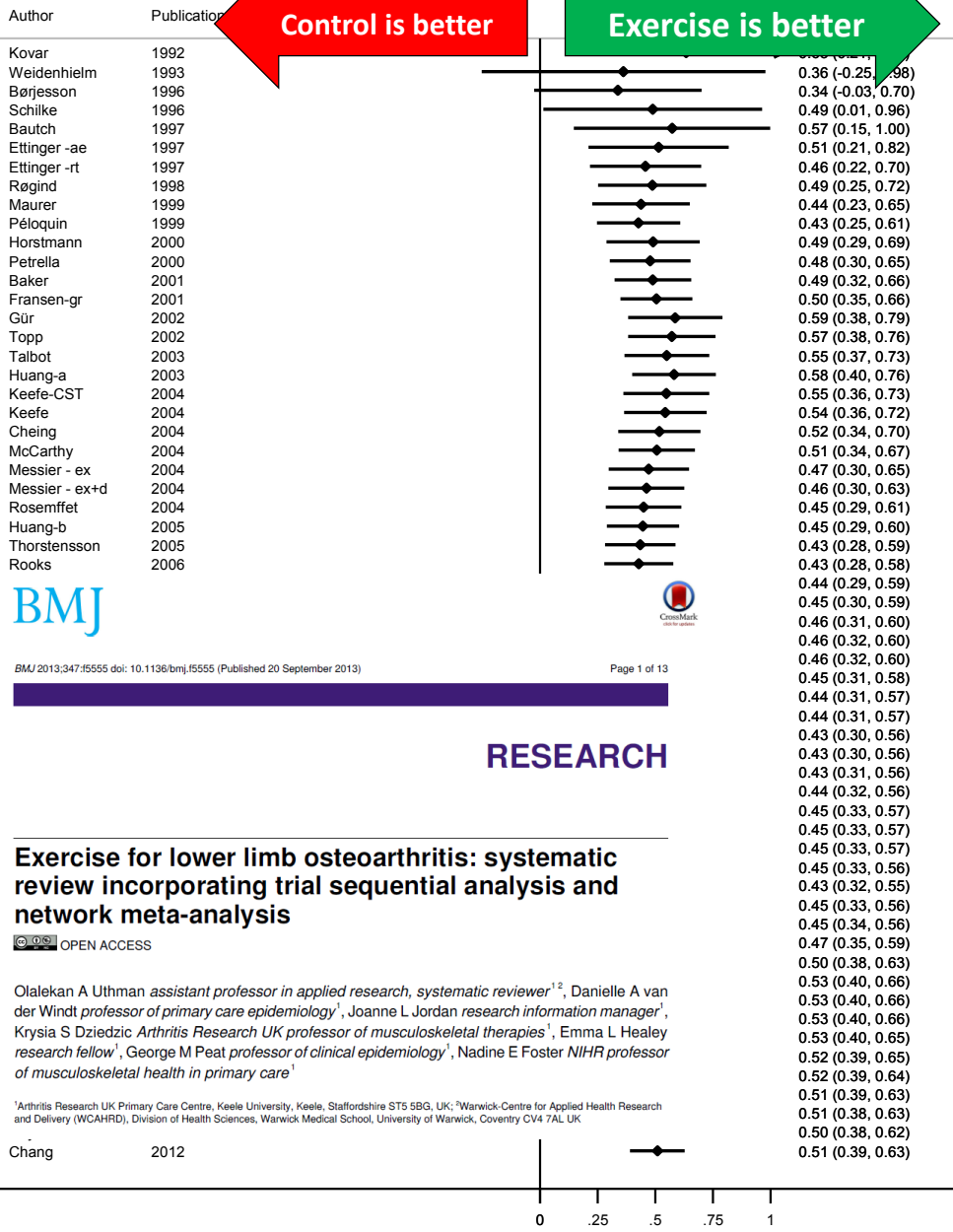
Address the vicious cycle of persistent knee pain





Knee Osteoarthritis briefly





“As of 2002 sufficient evidence had accumulated to show significant benefit of exercise over no exercise in patients with osteoarthritis, and further trials are unlikely to overturn this result.”

BMJ

BMJ 2013;347:f5555 doi: 10.1136/bmj.f5555 (Published 20 September 2013) Page 1 of 13

RESEARCH

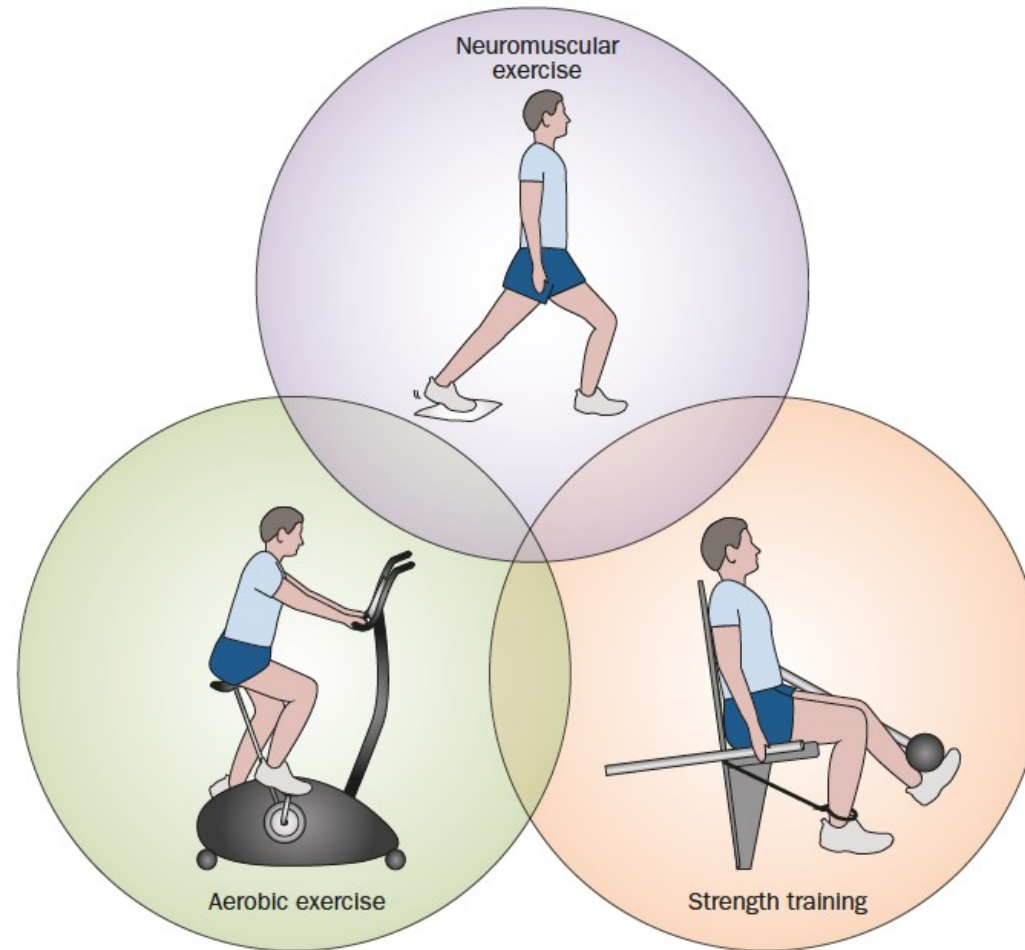
Exercise for lower limb osteoarthritis: systematic review incorporating trial sequential analysis and network meta-analysis

OPEN ACCESS

Olalekan A Uthman *assistant professor in applied research, systematic reviewer*^{1,2}, Danielle A van der Windt *professor of primary care epidemiology*¹, Joanne L Jordan *research information manager*¹, Krystia S Dziedzic *Arthritis Research UK professor of musculoskeletal therapies*¹, Emma L Healey *research fellow*¹, George M Peat *professor of clinical epidemiology*¹, Nadine E Foster *NIHR professor of musculoskeletal health in primary care*¹

¹Arthritis Research UK Primary Care Centre, Keele University, Keele, Staffordshire ST5 5BG, UK; ²Warwick-Centre for Applied Health Research and Delivery (WCAHRD), Division of Health Sciences, Warwick Medical School, University of Warwick, Coventry CV4 7AL UK

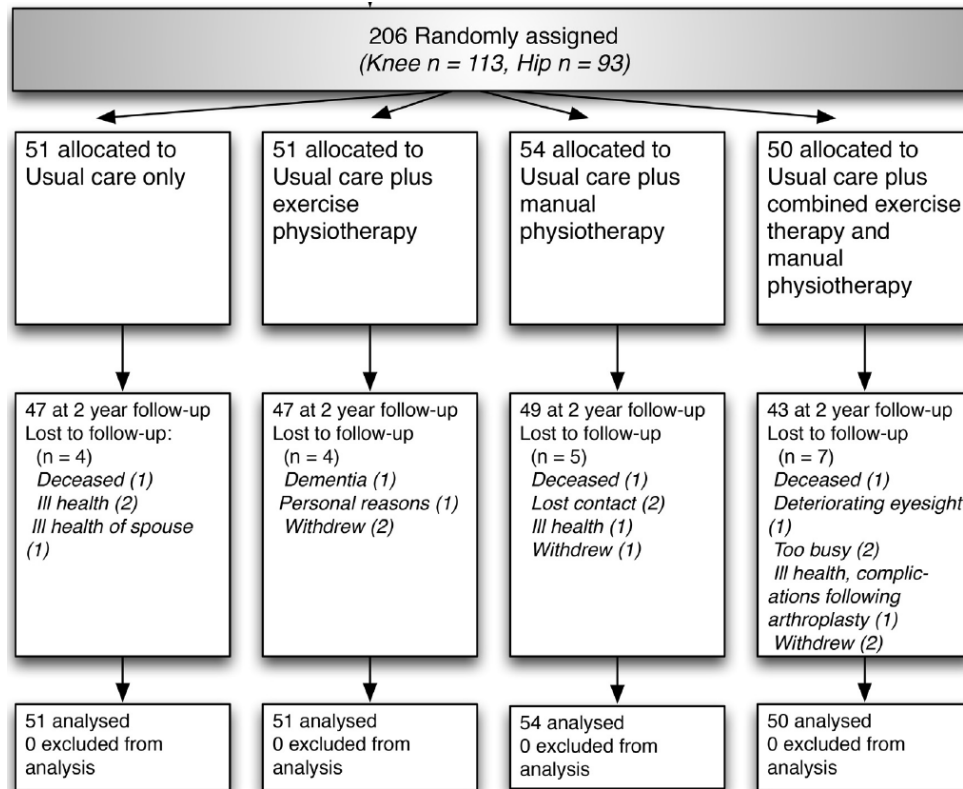
What form of exercise is best?





Incremental clinical effectiveness and cost effectiveness of providing supervised physiotherapy in addition to usual medical care in patients with osteoarthritis of the hip or knee: 2-year results of the MOA randomised controlled trial

J.H. Abbott †*, R. Wilson †, D. Pinto ‡, C.M. Chapple §, A.A. Wright ||, For the MOA Trial team^a

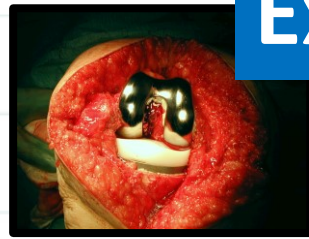
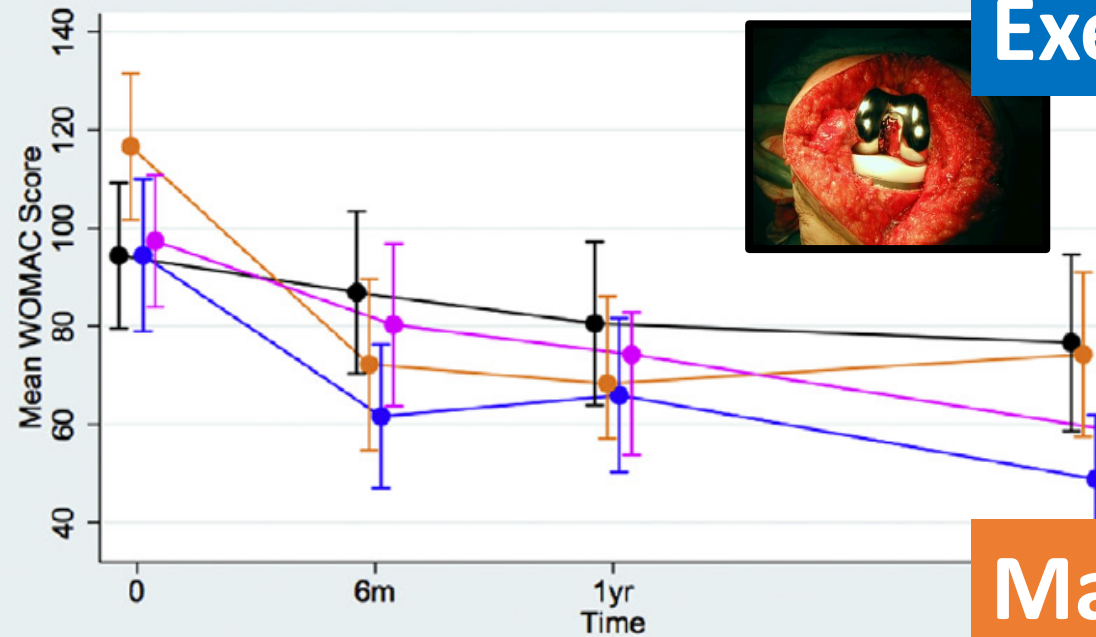




Incremental clinical effectiveness and cost effectiveness of providing supervised physiotherapy in addition to usual medical care in patients with osteoarthritis of the hip or knee: 2-year results of the MOA randomised controlled trial

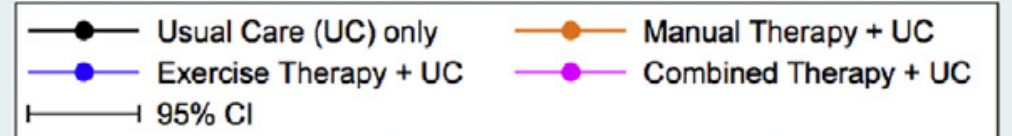
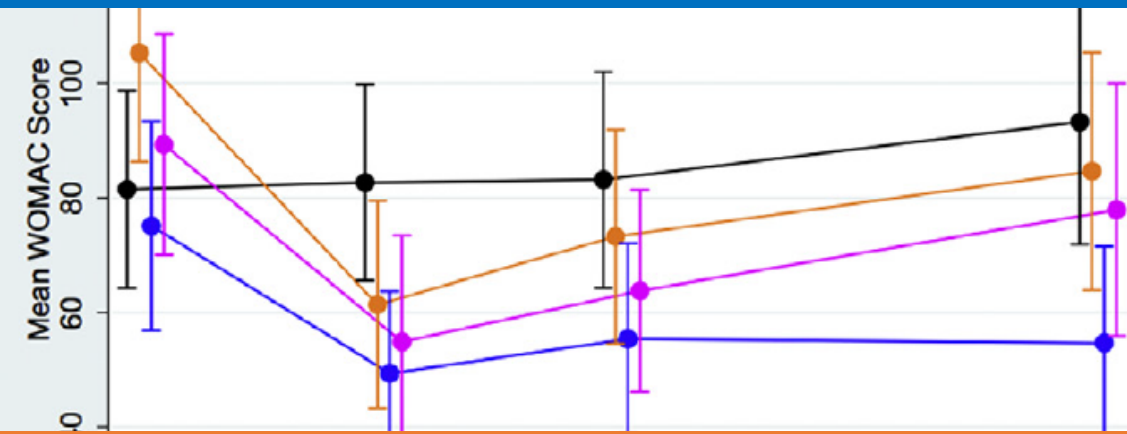
J.H. Abbott †*, R. Wilson †, D. Pinto ‡, C.M. Chapple §, A.A. Wright ||, For the MOA Trial team^a

a

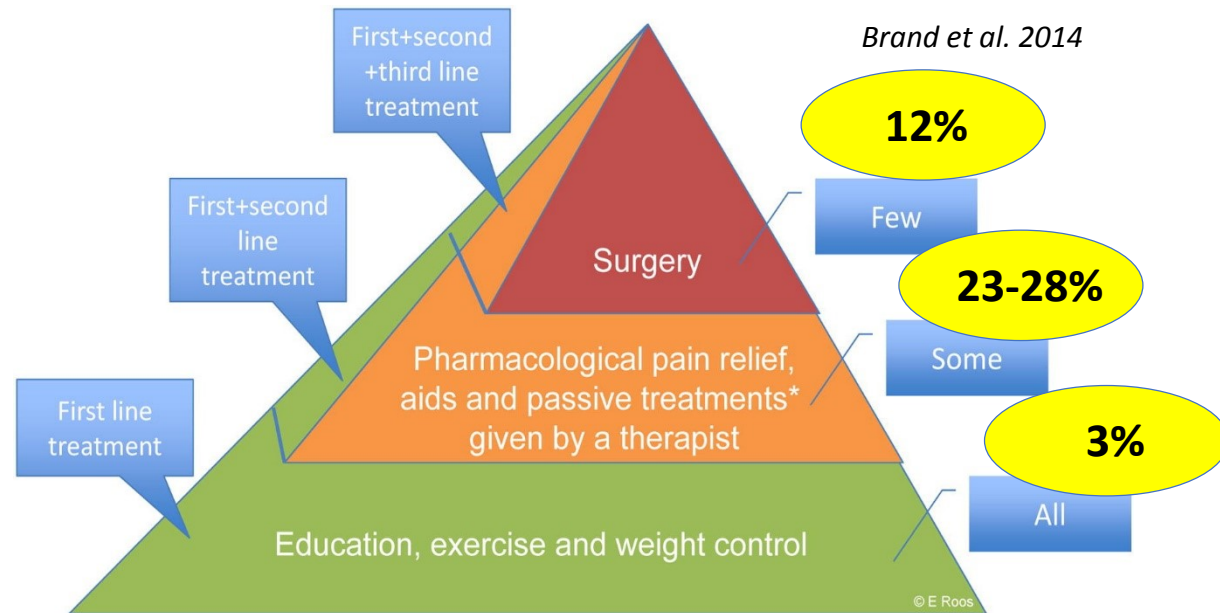
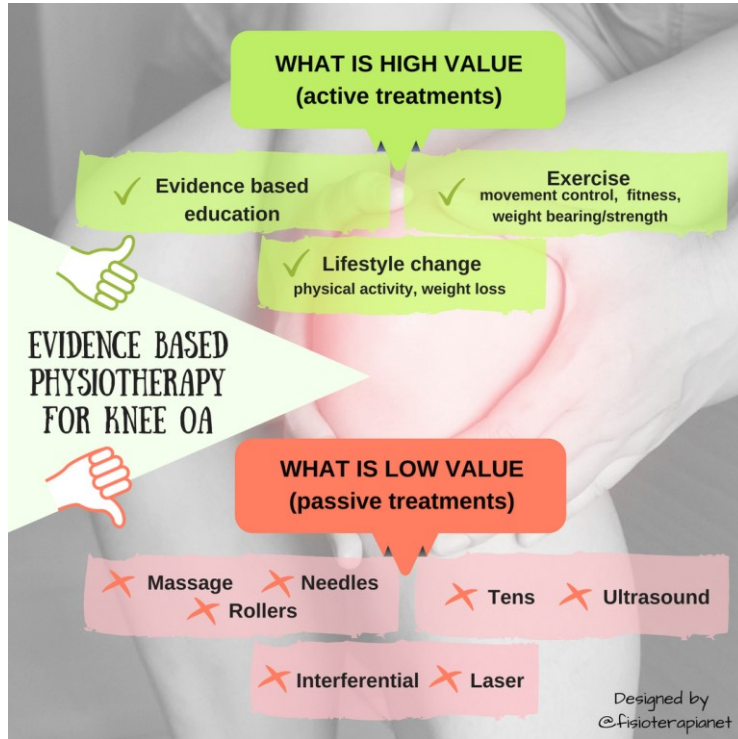


Exercise-therapy is cost-effective

Manual therapy is not cost-effective



Does Australia have a problem?



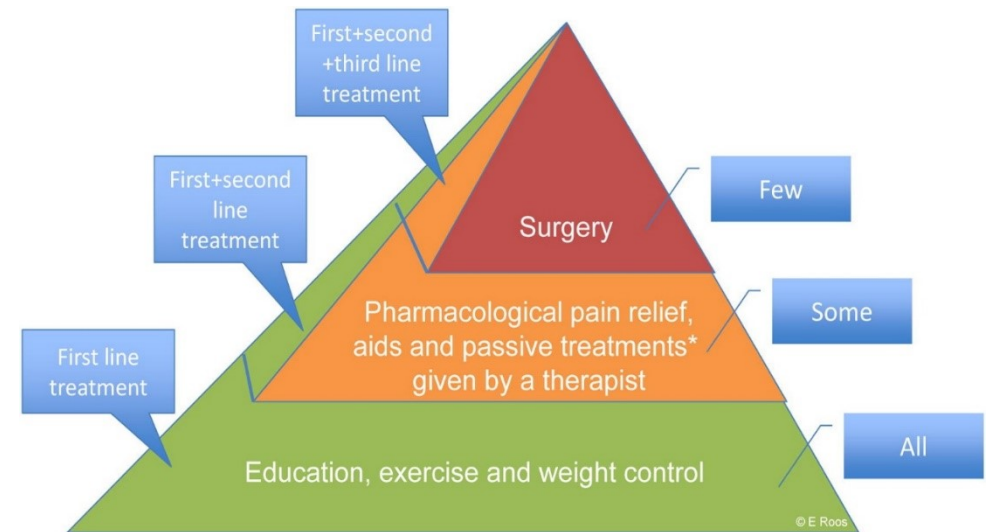
Imaging referred for 22% of the time!



The GLA:D™ Australia Program

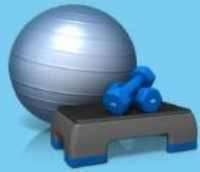
GLA:D = **Good Living with osteoArthritis from Denmark**

- Ensure you receive evidence-based education and exercise
- 2 education sessions about osteoarthritis and how to manage it
- Exercises for your hip and knees to improve joint function and confidence



THERAPEUTIC EXERCISE RELIEVES PAIN AND DOES NOT HARM KNEE CARTILAGE NOR TRIGGER INFLAMMATION

FIRST LINE TREATMENTS IN OSTEOARTHRITIS



THERAPEUTIC EXERCISE

+



WEIGHT CONTROL

+



PATIENT EDUCATION

HOWEVER...

THE BELIEF THAT THERAPEUTIC EXERCISE MAY **HARM** THE KNEE JOINT CARTILAGE IS STILL COMMON AMONG PEOPLE WITH KNEE OSTEOARTHRITIS AND HEALTH PROFESSIONALS TREATING THE CONDITION

CONTRARY TO THIS COMMON BELIEF...



THERAPEUTIC EXERCISE IS SAFE FOR ARTICULAR CARTILAGE


CLINICAL IMPLICATIONS

PATIENTS CAN BE REASSURED THAT THERAPEUTIC EXERCISE DOES **NOT** HARM ARTICULAR CARTILAGE

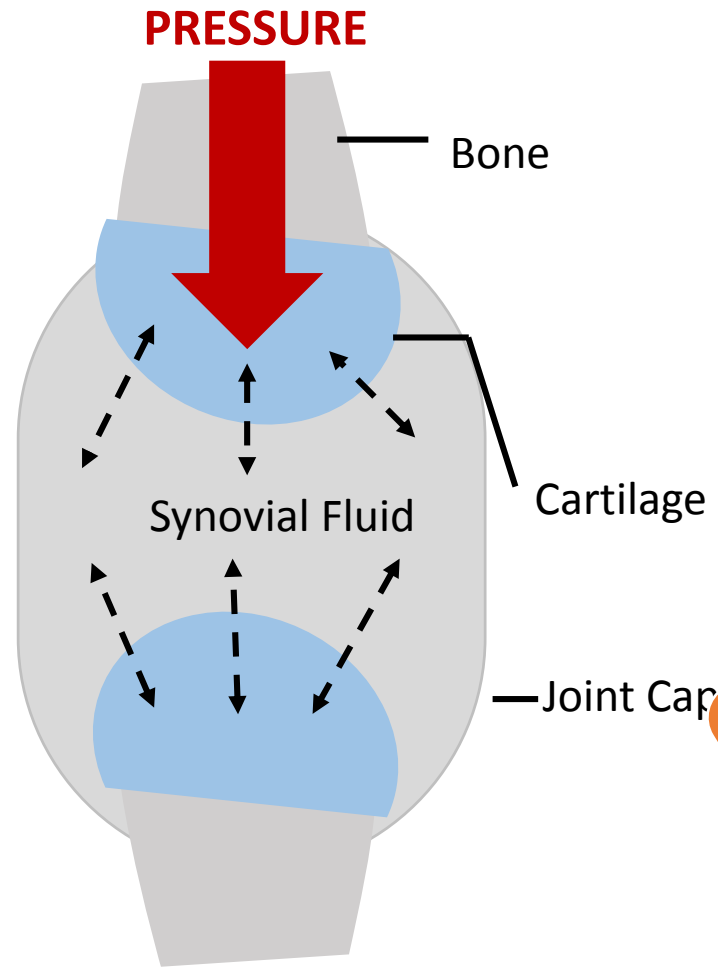


 IF ANYTHING, THERAPEUTIC EXERCISE MAY **IMPROVE** ARTICULAR CARTILAGE HEALTH

AND...

HAS COMPELLING EVIDENCE FOR HELPING TO:
 PREVENT AT LEAST 35 CHRONIC CONDITIONS
TREAT AT LEAST 26 CHRONIC CONDITIONS

Normal Articular Cartilage



- Smooth surface lets bones slide easily when pressure is applied
- Absorb shock and distribute load (reduce pressure)
- No blood supply
 • Nutrients from synovial fluid
 • via **dynamic load**
 • e.g. Walking/physical activity

Most people with severe knee OA can walk 70 minutes per week (Wallis et al 2017)

What about pain during exercise?

Osteoarthritis and Cartilage



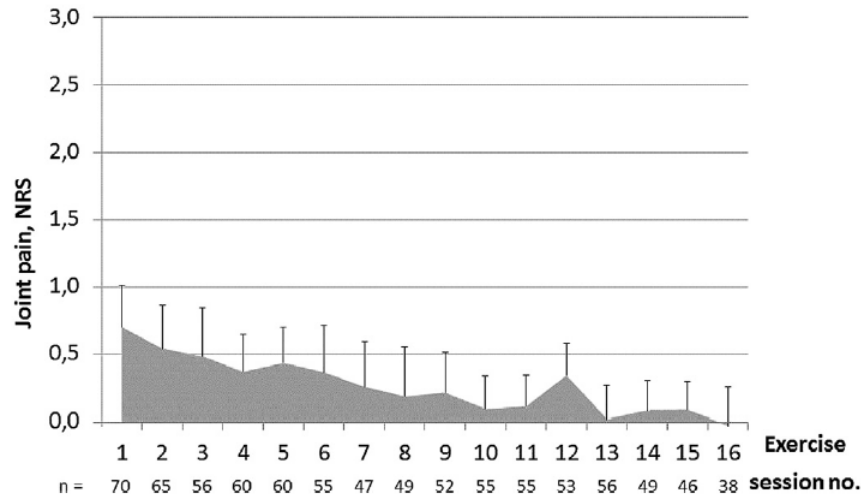
Brief Report

Pain trajectory and exercise-induced pain flares during 8 weeks of neuromuscular exercise in individuals with knee and hip pain



L.F. Sandal*, E.M. Roos, S.J. Bøgesvang, J.B. Thorlund

Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, Denmark



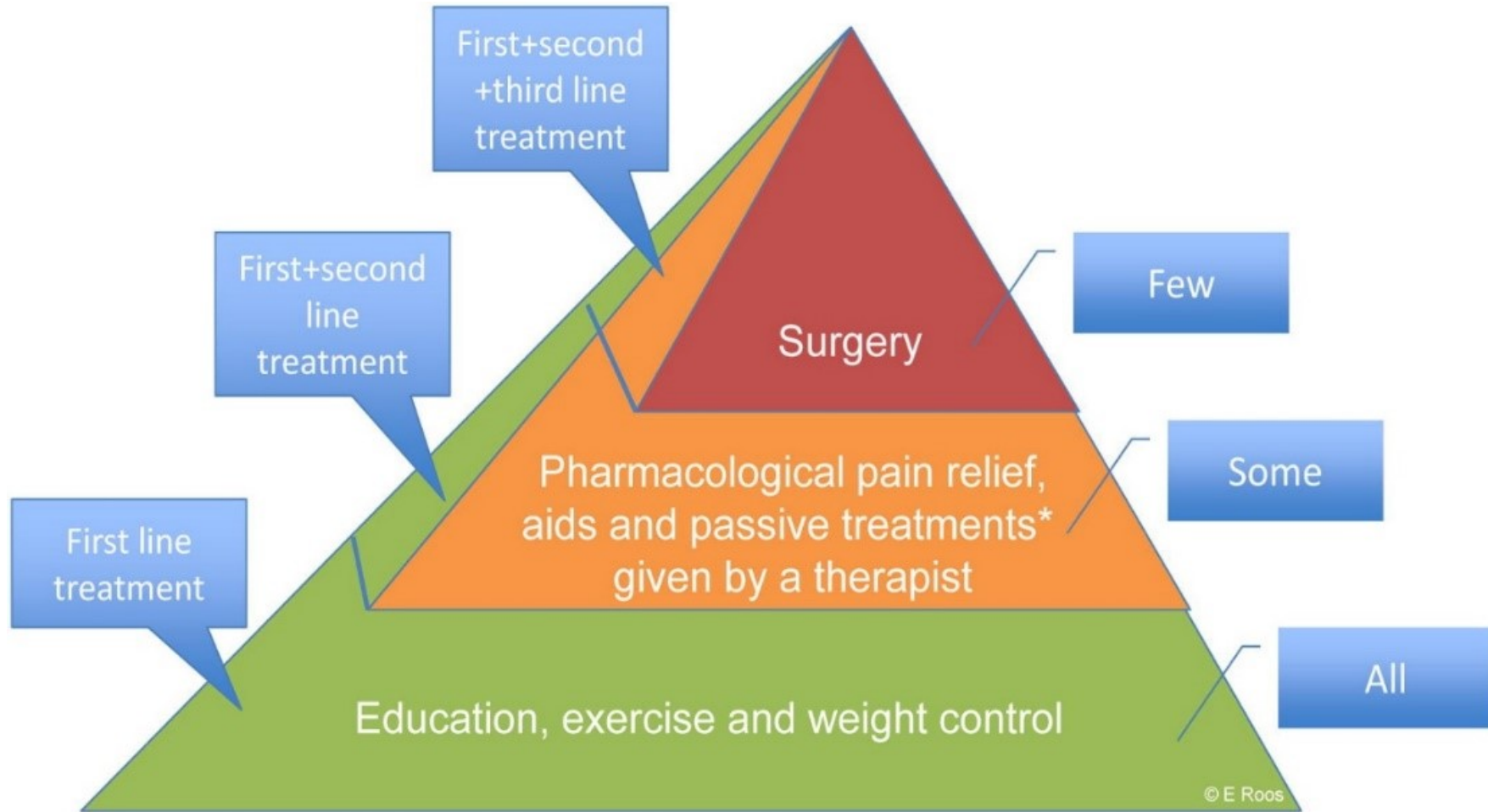
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7 KEY EXERCISE THERAPY RECOMMENDATIONS FOR HIP AND KNEE OSTEOARTHRITIS

1

Provide exercises tailored and targeted to individual patient needs and preferences



2

Consider aquatic exercise in patients who are unable to complete land based exercise



3

Provide a minimum of 12 supervised exercise sessions (30-60 minutes per session) over six weeks (i.e. 2 sessions per week)



4

Encourage an additional 1-2 sessions per week to optimize outcomes



5

Extending programs to a minimum of 12 weeks to optimize outcomes (e.g. strength)



6

Include patient education and consider booster sessions to enhance adherence and progression



7

Provide education and reassurance about managing potential pain flares and inflammation, including how to modify exercise and physical activity

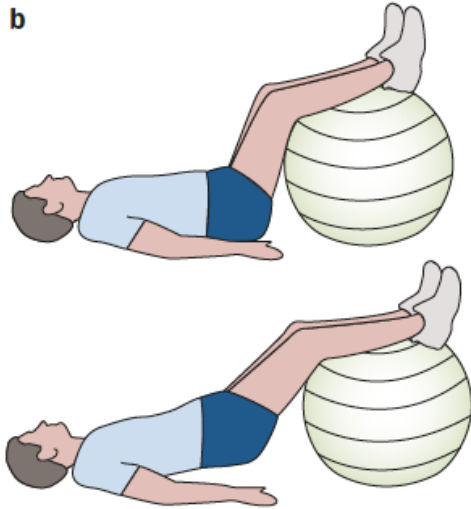


GLA:D[®]

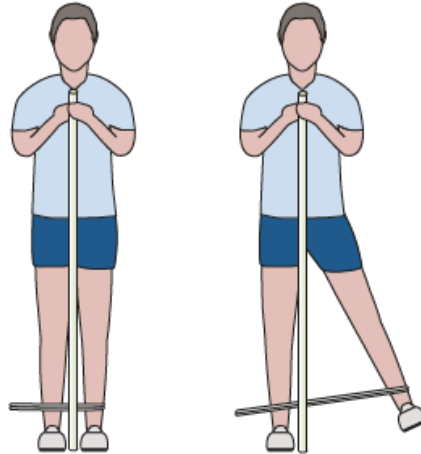
Designed by @fisioterapienet



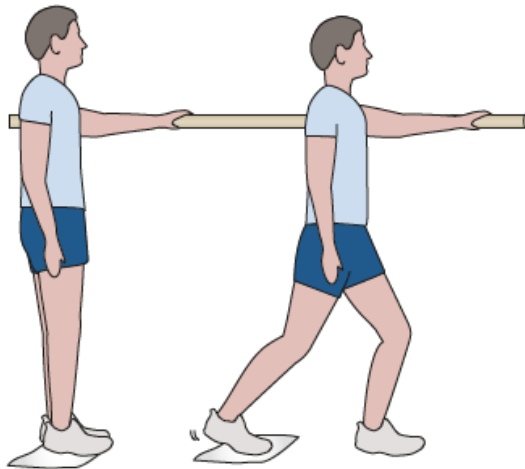
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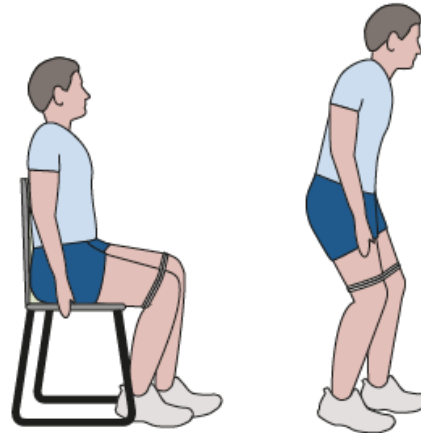
Core stability/postural function



Lower extremity muscle strength



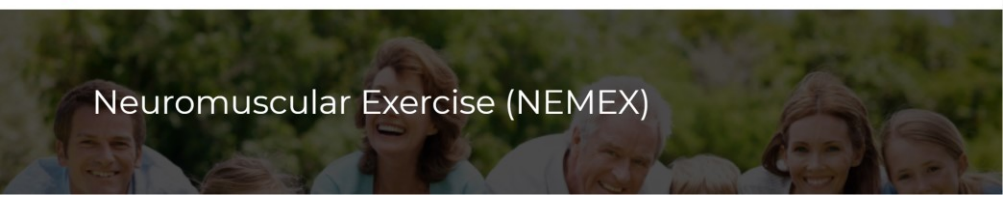
Knee-over-foot position



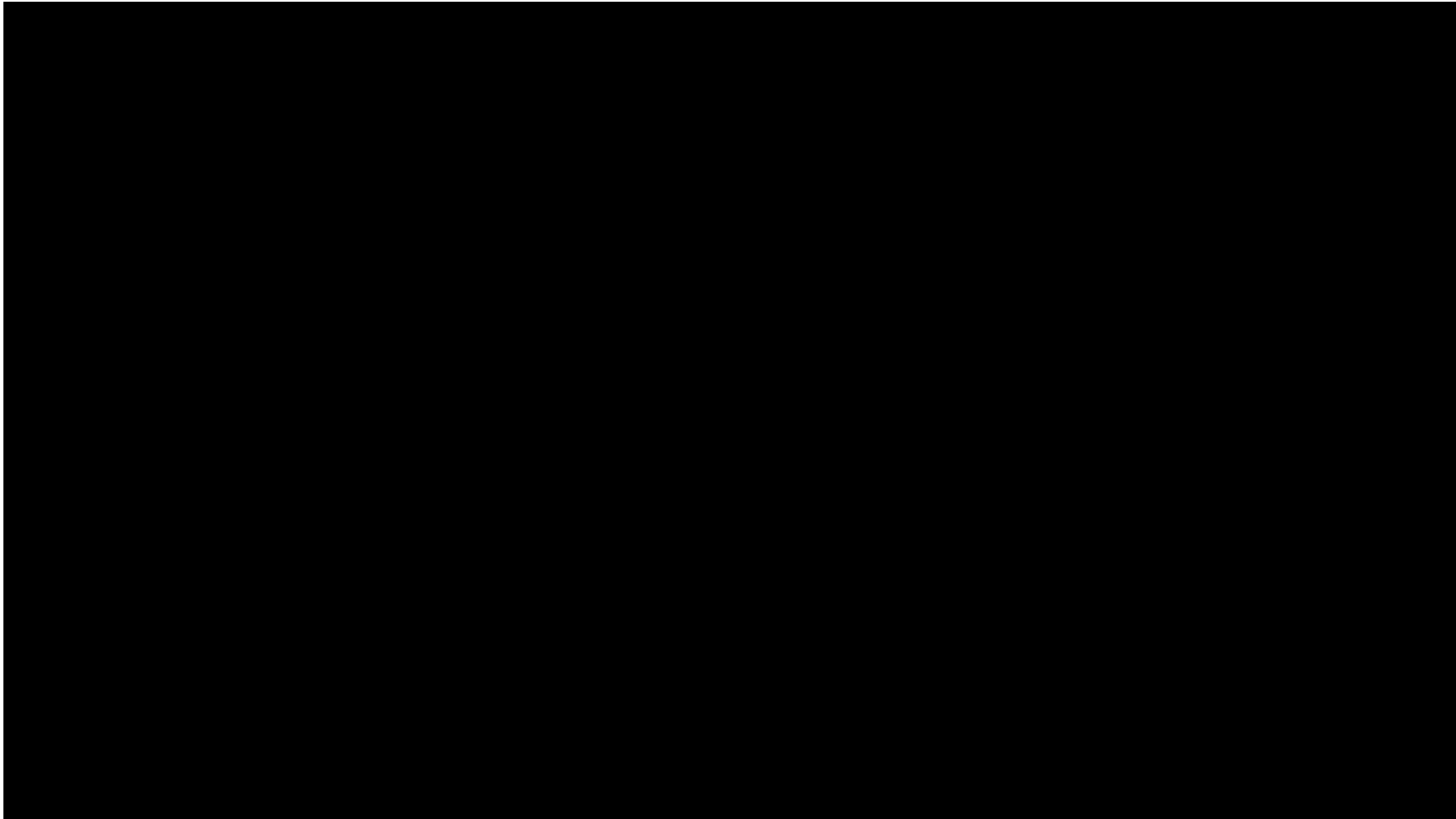
Functional exercises

**2-3 sets,
10-15 repetitions
30-60 second breaks**





<http://nemex.trekeducation.org/>



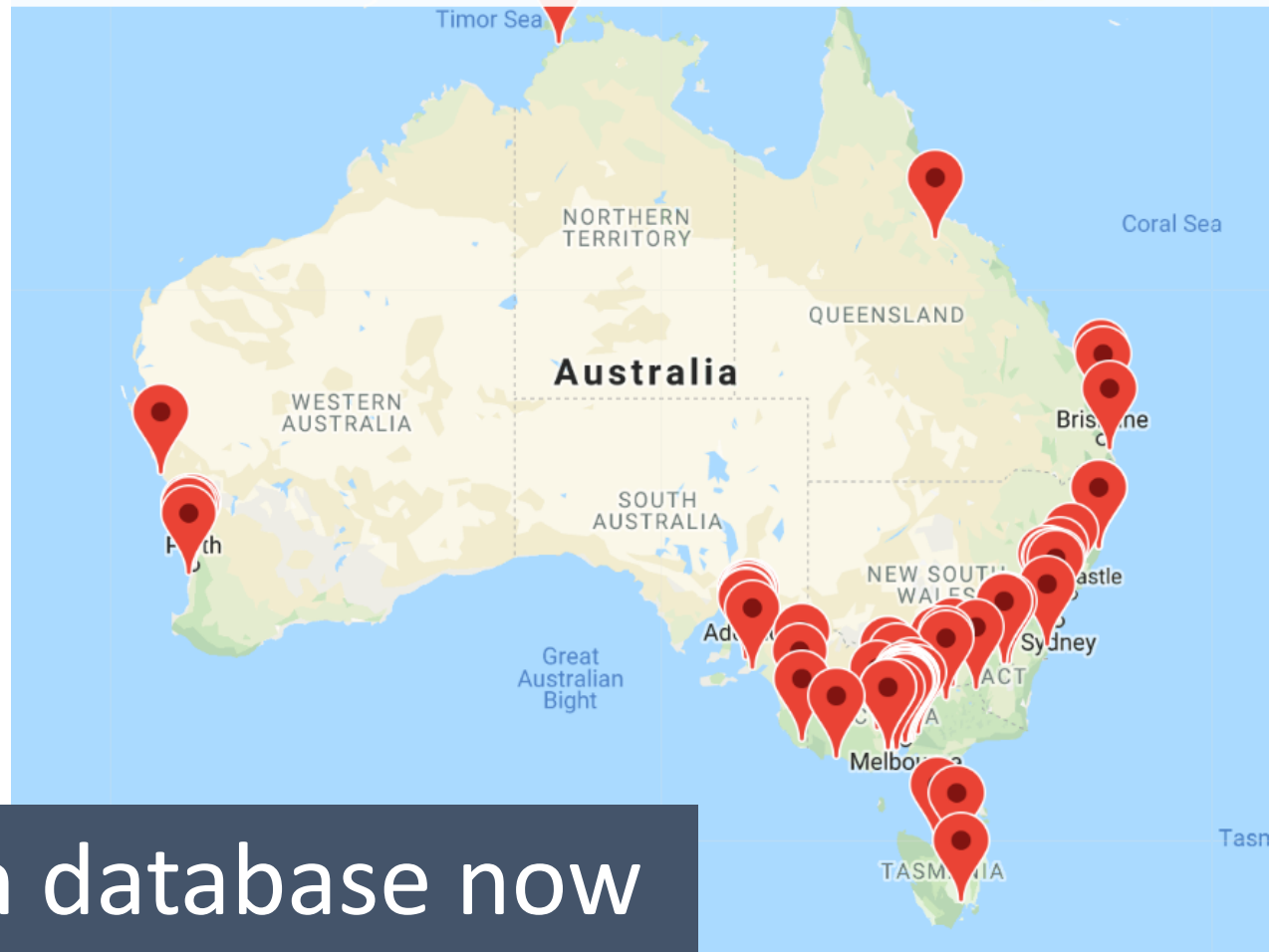
250+ sites in Australia



> 3,500 on database now

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HOME OUR TEAM NEWS LOCATIONS PHYSIO EDUCATION



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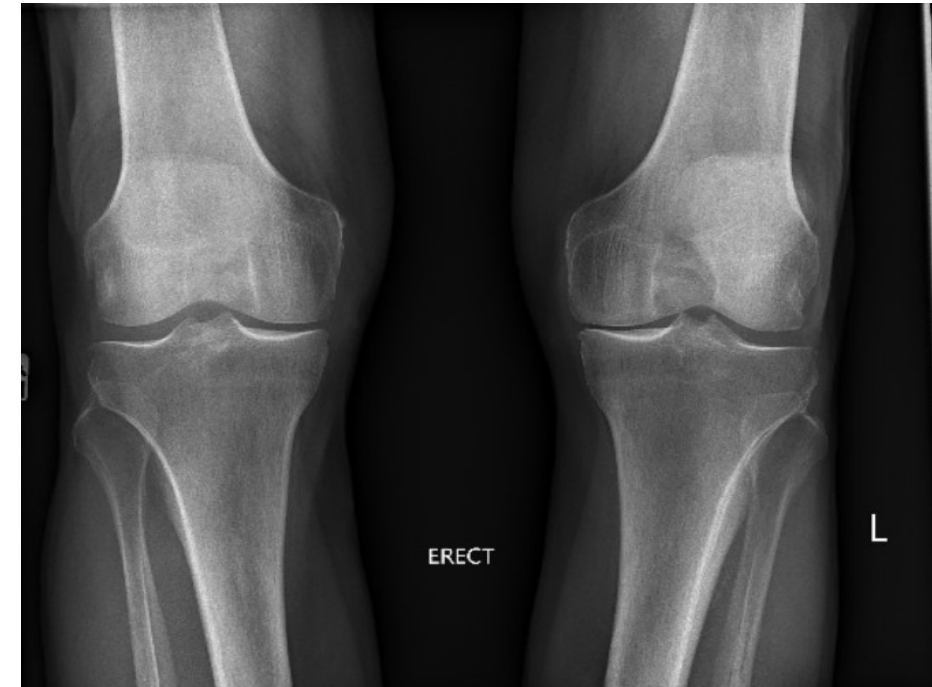
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78 y/o self referrer to GLA:D™ Australia

“This will be a waste of time unless you can get me back to running a half marathon”

Exercises – home gym with weights 3 x week, cycling instead of running





Outcomes after GLA:D™

Outcome	Baseline	3 months
Average Pain /10	70	26
Worst pain /10	80	70
30s chair stand test	14	16
40m fast walk test	21.2	20.2



Outcomes after GLA:D™

Outcome	Baseline	3 months
Average Pain /10	70	26
Worst pain /10	80	70
30s chair stand test	14	16
40m fast walk test	21.2	20.2
Joint QOL /100	56	56
Beliefs - It's terrible, and I think it's never going to get any better!	Agree	Disagree



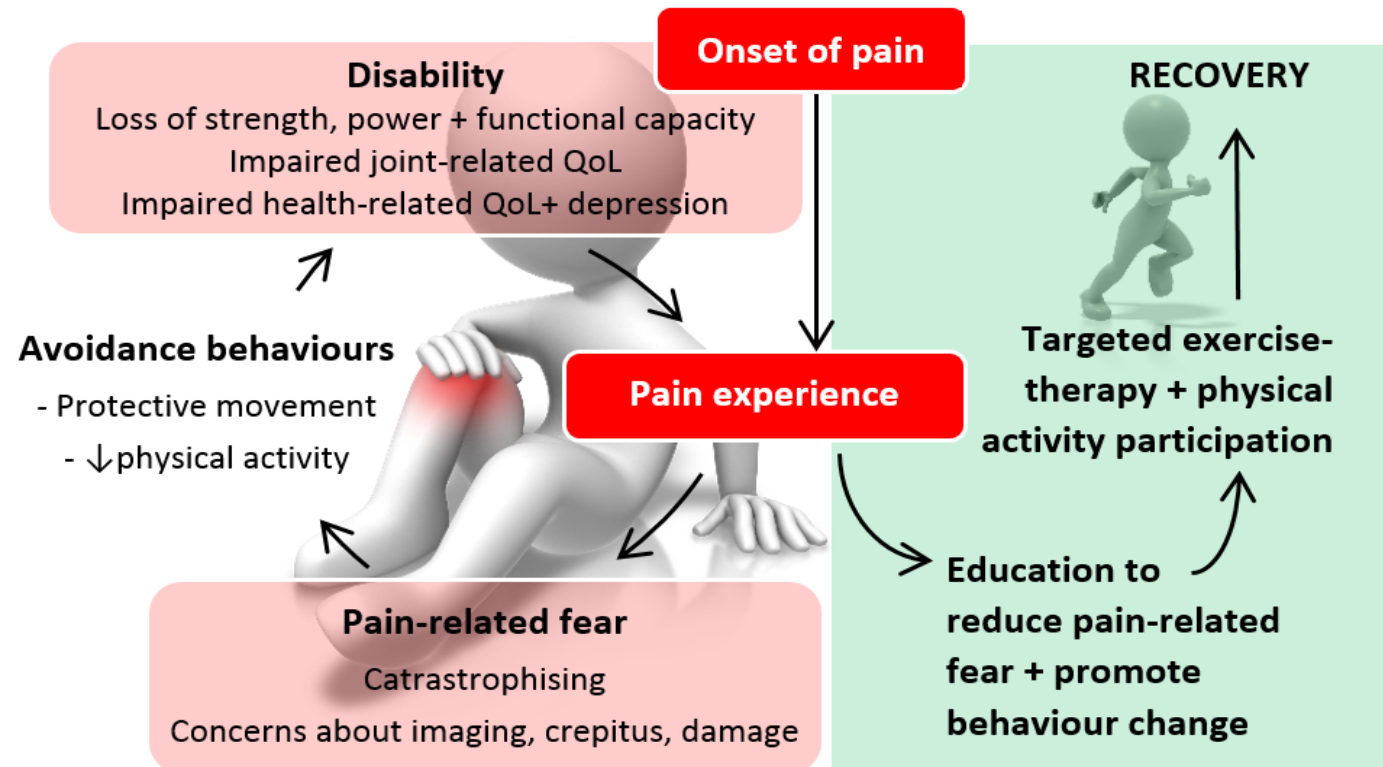
Outcomes after GLA:D™

- GLA:D helped address impairments, symptoms, and negative beliefs etc.
- Began to improve muscle capacity + confidence to try running
- **Did GLA:D™ alone get him back to running?**
- NO it didn't!he flared up again.....

1. Exercise-therapy progressed
(strength +power)

2. Gait assessment + retraining

3. Sensible return to running plan





Manage 'RISK' in the injured runner

Reduce overall load

Improve capacity to attenuate load

Shift the load away from painful/pathological tissue

Keep adapting to the capacity and goals of the runner

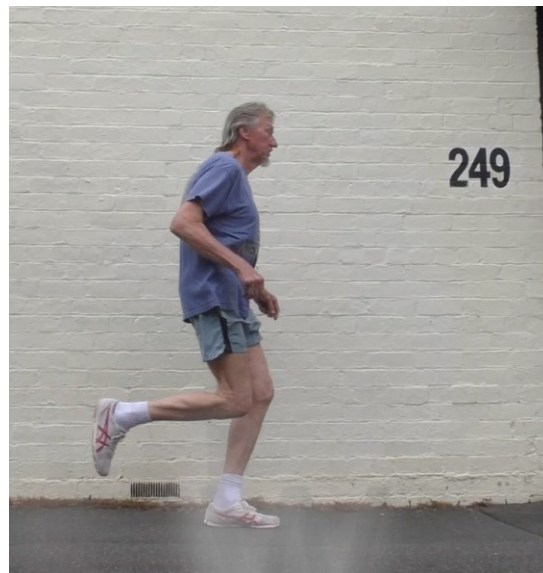


Managing RISK when treating the injured runner with running retraining, load management and exercise therapy





Running mechanics/strategies



Foot strike

COM further distance from foot increases ground reaction force

Strategies:

Increase cadence to shorten stride length
“shorter faster steps”

Mid stance

-increase knee flexion
increase knee loads

Strategies

“run up tall”
“tuck bottom under”



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Other strategies used

1. Modified GLA:D exercises for home
 - Added speed, resistance, power
 - Hip extensors – faster, use chair instead of ball, dumbbells on stomach
 - Planks for trunk strength

2. Walk/run.....gradual increase to 5km

3. Continued education for flare ups....pain flares and fluctuations common in OA, will settle



5 parkruns Total

Visit [Berwick Springs results page](#)

[View stats for all parkruns by this parkrunner](#)

Most recently ran in VM75-79 age category



Summary Stats

	Fastest	Average (mean)	Slowest
Time	32:31	33:26	34:58
Age Grading	63.15 %	61.44 %	58.72 %
Overall Position	78	96.80	124
Gender Position	48	69.00	95

Best Annual Achievements

Year	Best Time	Best Age Grading
2018	00:32:57	62.32%
2019	00:32:31	63.15%



All Results

Run Date	Run Number	Pos	Time	Age Grade	PB?
26/01/2019	282	124	32:31	63.15%	PB
12/01/2019	280	81	33:15	61.75%	
29/12/2018	277	78	32:57	62.32%	PB
15/12/2018	275	99	33:31	61.26%	PB
08/12/2018	274	102	34:58	58.72%	



Running again with knee osteoarthritis at 79 years old

I have previously contributed to the topic of running with osteoarthritis in many posts on other platforms – [here](#), [here](#) and [here](#).

In short, **it is a myth that you cannot run with knee osteoarthritis.**

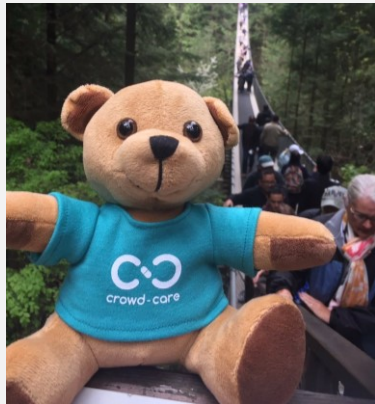
Some facts:



Shameless plugs:

Running courses

LOCATION	DATE
Newcastle (Warners Bay)	September 7-8
Sydney (Balmain)	September 21-22



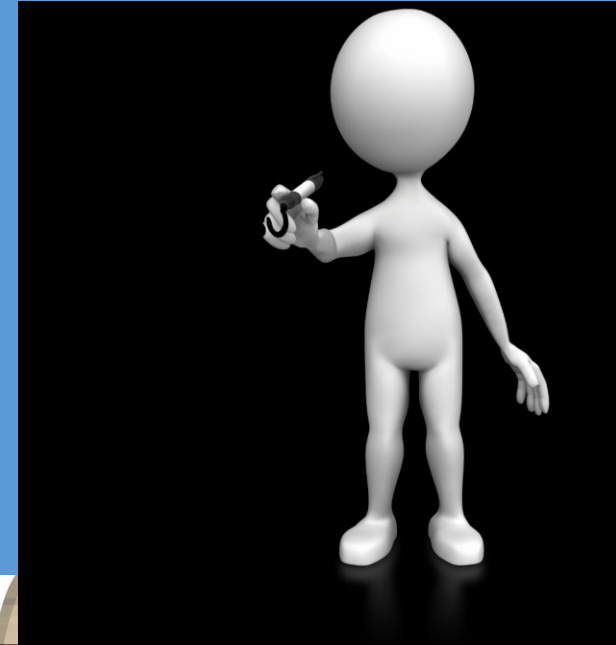
Learn how to critically appraise literature



TAKE HOMES

Today's slides: <http://bit.ly/barton-act>

1. EDUCATION ++++
2. Address pain-related fear
3. Tailor exercise to individual needs
4. EDUCATION – you and your patients



GLA:D: www.gladaustralia.com.au

Patellofemoral pain: www.patellofemoral.trekeeducation.org

Exercise prescription: www.exercise.trekeeducation.org

Clinic + Running courses: www.completesportscare.com.au



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