

Move to improve: Building an exercise program for arthritis and musculoskeletal conditions

Professor Kim Bennell PhD

**Centre for Health, Exercise and Sports Medicine
Department of Physiotherapy
University of Melbourne
Australia**





**I would like to
acknowledge the
traditional owners of the
land of Australia where I live
and work and pay my
respects to elders past and
present**



By the end of this talk, you should:

- **Understand why exercise is essential for Arthritis/Musculoskeletal health**
- **Know the types of exercise you can be doing**
- **Feel confident starting or adjusting an exercise program**
- **Learn how to modify safely for pain and flare-ups**
- **Have some strategies to help you stick to an exercise program**

Why should I exercise?

**Exercise is GOOD for
arthritis and
musculoskeletal health**

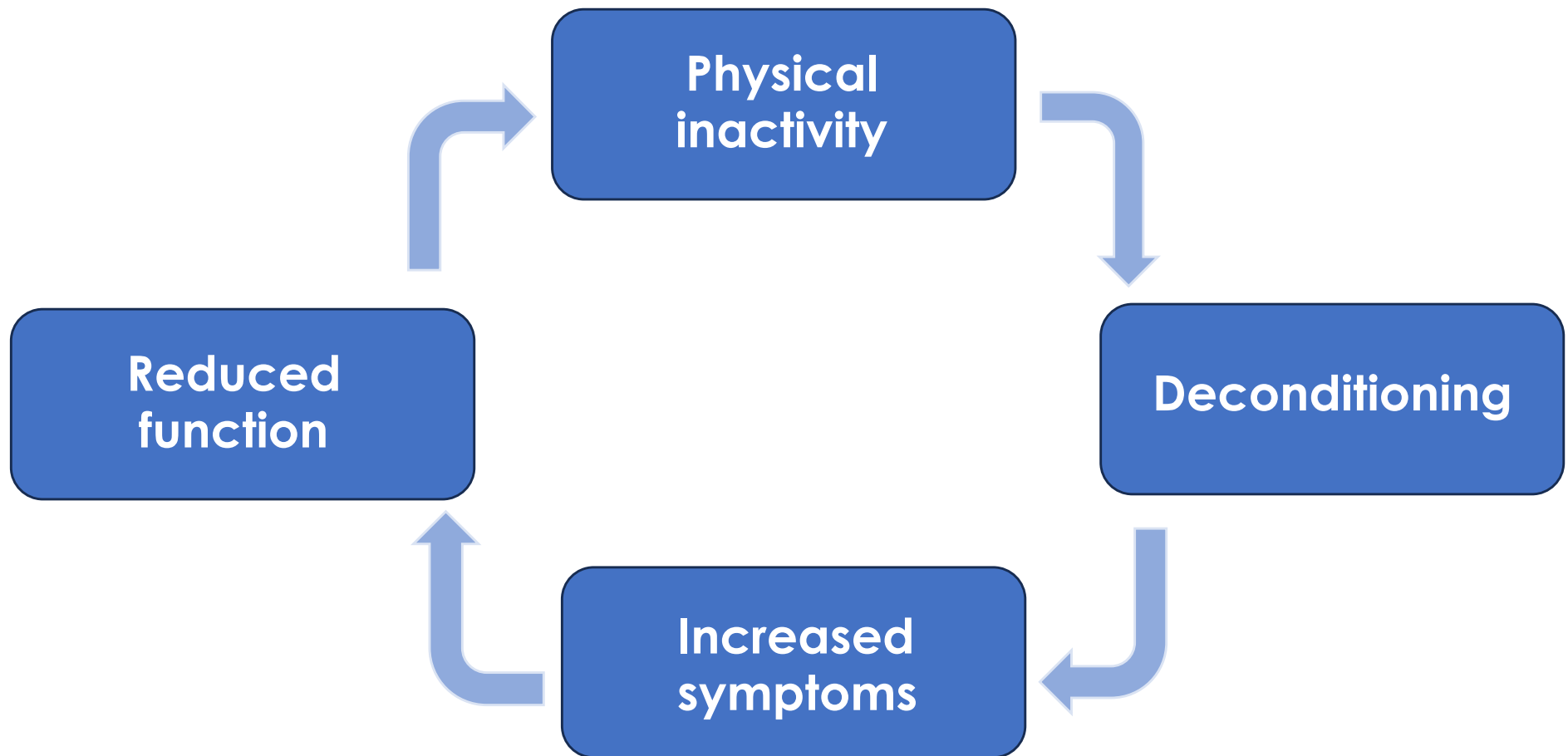


**MOVEMENT
IS
MEDICINE**



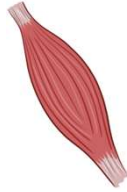
**MOVE IT
OR
LOSE IT**

Vicious cycle of physical inactivity in people with arthritis and musculoskeletal conditions





Pain



**Muscle
weakness**



**Poor
sleep**



Fatigue



**Reduced
function**

Arthritis + Musculoskeletal conditions



Overweight



**Impaired
balance/falls**



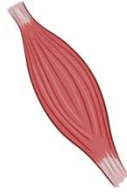
**Joint
stiffness**



**Other
health
conditions**



Pain



**Muscle
weakness**



**Poor
sleep**



Fatigue



**Reduced
function**

Exercise



Overweight



**Impaired
balance/falls**



**Joint
stiffness**



**Other
health
conditions**

Evidence for exercise-based interventions across 45 different long-term conditions: an overview of systematic reviews



Grace O. Dibben,^{a,*,} Lucy Gardiner,^b Hannah M. L. Young,^{c,d} Valerie Wells,^a Rachael A. Evans,^b Zahira Ahmed,^b Shaun Barber,^e Sarah Dean,^f Patrick Doherty,^g Nikki Gardiner,^c Colin Greaves,^h Tracy Ibbotson,ⁱ Bhautesh D. Jani,^j Kate Jolly,^j Frances S. Mair,^j Emma McIntosh,^k Paula Ormandy,^l Sharon A. Simpson,^o Sayem Ahmed,^k Stefanie J. Krauth,^j Lewis Steel,^j Sally J. Singh,^{k,n} and Rod S. Taylor,^{a,m,n} on behalf of the PERFORM research team

^aMRC/CSO Social and Public Health Sciences Unit, University of Glasgow, Glasgow, UK

^bDepartment of Respiratory Sciences, University of Leicester, Leicester, UK

^cUniversity Hospitals of Leicester NHS Trust, Leicester, UK

^dDiabetes Research Centre, University of Leicester, Leicester, UK

^eLeicester Clinical Trials Unit, University of Leicester, Leicester, UK

^fUniversity of Exeter Medical School, University of Exeter, Exeter, UK

^gDepartment of Health Sciences, University of York, York, UK

^hSchool of Sport, Exercise and Rehabilitation Sciences, University of Birmingham, Birmingham, UK

ⁱGeneral Practice & Primary Care, University of Glasgow, Glasgow, UK

^jInstitute of Applied Health Research, University of Birmingham, Birmingham, UK

^kHealth Economics & Health Technology Assessment, University of Glasgow, Glasgow, UK

^lSchool of Health and Society, University of Salford, Salford, UK

^mRobertson Centre for Biostatistics, University of Glasgow, Glasgow, UK

Summary

Background Almost half of the global population face significant challenges from long-term conditions (LTCs) resulting in substantive health and socioeconomic burden. Exercise is a potentially key intervention in effective LTC management.

Methods In this overview of systematic reviews (SRs), we searched six electronic databases from January 2000 to October 2023 for SRs assessing health outcomes (mortality, hospitalisation, exercise capacity, disability, frailty, health-related quality of life (HRQoL), and physical activity) related to exercise-based interventions in adults (aged >18 years) diagnosed with one of 45 LTCs. Methodological quality was assessed using AMSTAR-2. International Prospective Register of Systematic Reviews (PROSPERO) ID: CRD42022319214.

Findings Forty-two SRs plus three supplementary RCTs were included, providing 990 RCTs in 936,825 people across 39 LTCs. No evidence was identified for six LTCs. Predominant outcome domains were HRQoL (82% of SRs/RCTs) and exercise capacity (66%); whereas disability, mortality, physical activity, and hospitalisation were less frequently reported ($\leq 25\%$). Evidence supporting exercise-based interventions was identified in 25 LTCs, was unclear for 13 LTCs, and for one LTC suggested no effect. No SRs considered multimorbidity in the delivery of exercise. Methodological quality varied: critically-low (33%), low (26%), moderate (26%), and high (12%).

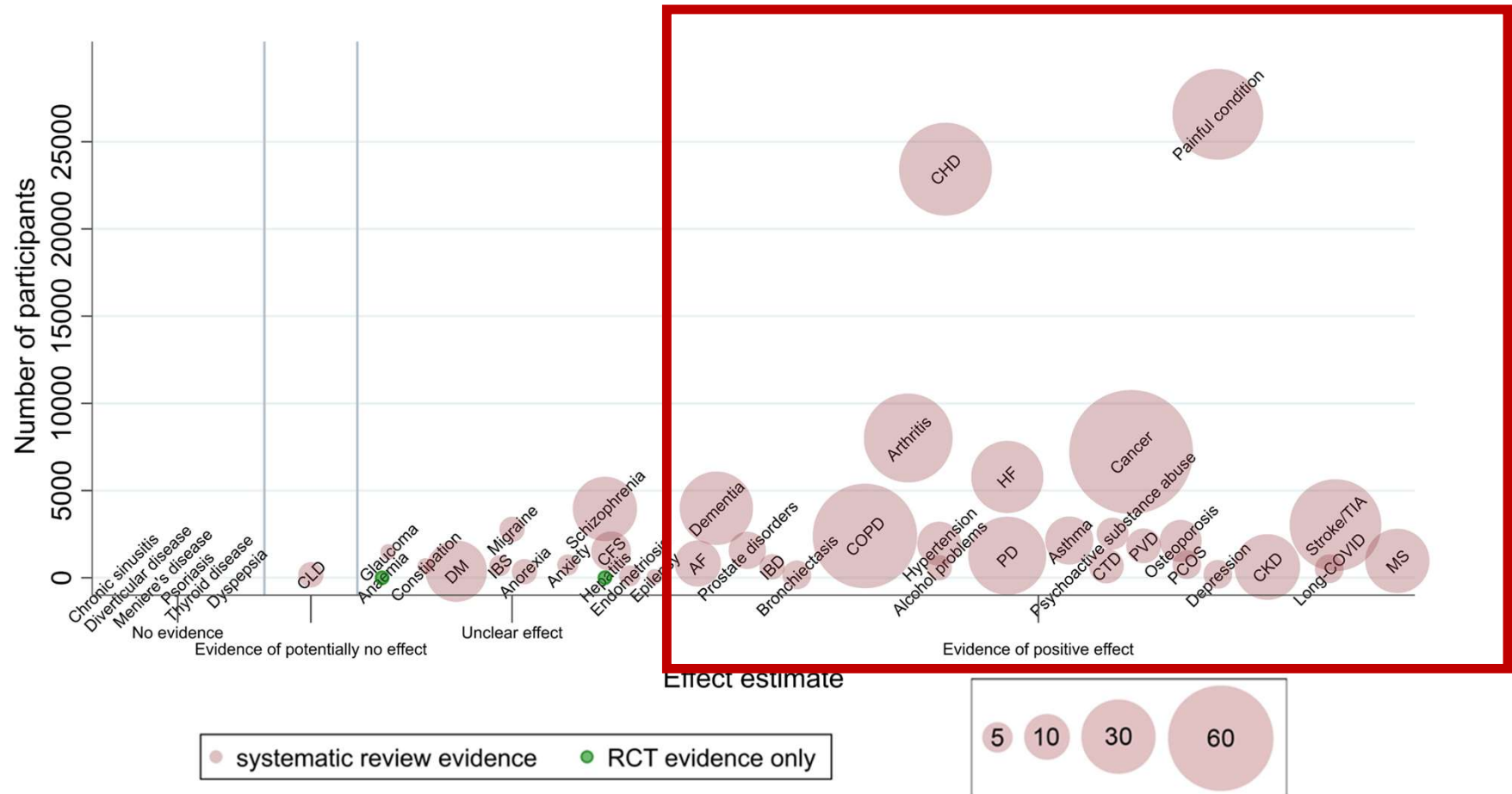
Interpretation Exercise-based interventions improve HRQoL and exercise capacity across numerous LTCs. Key evidence gaps included limited mortality and hospitalisation data and consideration of multimorbidity impact on exercise-based interventions.

Funding This study was funded by the National Institute for Health and Care Research (NIHR; Personalised Exercise-Rehabilitation FOR people with Multiple long-term conditions (multimorbidity)—NIHR202020).

Copyright © 2024 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

Keywords: Long-term conditions; Exercise; Physical activity; Systematic review; Overview

eClinicalMedicine
2024;72: 102599
Published Online 30 April
2024
<https://doi.org/10.1016/j.eclim.2024.102599>



Effects of Pharmacologic and Nonpharmacologic Interventions for the Management of Sleep Problems in People With Fibromyalgia: Systematic Review and Network Meta-Analysis of Randomized Controlled Trials

Jemma Hudson,¹ Mari Imamura,¹ Clare Robertson,¹ Daniel Whibley,² Lorna Aucott,¹  Katie Gillies,¹ Paul Manson,¹ Debra Dulake,¹ Abhishek Abhishek,³  Nicole K. Y. Tang,⁴ Gary J. Macfarlane,¹  and Miriam Brazzelli¹ 

[Review](#) > [Sleep Med Rev.](#) 2023 Oct;71:101832. doi: 10.1016/j.smrv.2023.101832.

Epub 2023 Aug 7.

The effectiveness of exercise and physical activity programs on fatigue and sleep in people with arthritis – A systematic review with meta-analysis

N Runge¹, A Arribas-Romano², C Labie³, O Mairesse⁴, Z Goossens⁵, J Nijs⁶, A Malfliet⁷, S Verschueren⁸, D Van Assche⁹, K de Vlam¹⁰, L De Baets¹¹

Benefits of exercise



Access provided by: NHMRC National Cochrane Australia

Trusted evidence.
Informed decisions.
Better health.

Title Abs

Cochrane reviews ▾

Searching for trials ▾

Clinical Answers ▾

About ▾

Help ▾

Cochrane Database of Systematic reviews | [Review - Intervention](#)

[New search](#) [Conclusions changed](#) [Full access](#)

Exercise for osteoarthritis of the knee

 Belinda J Lawford^a, Michelle Hall^a, Rana S Hinman, Martin Van der Esch, Alison R Harmer, Libby Spiers, Alex Kimp, Andrea Dell'Isola, Kim L Bennell [Authors' declarations of interest](#)

Version published: 03 December 2024 [Version history](#)

<https://doi.org/10.1002/14651858.CD004376.pub4> 

[Meta-Analysis](#) > [Musculoskeletal Care.](#) 2022 Dec;20(4):758–771. doi: 10.1002/msc.1641.

Epub 2022 Apr 18.

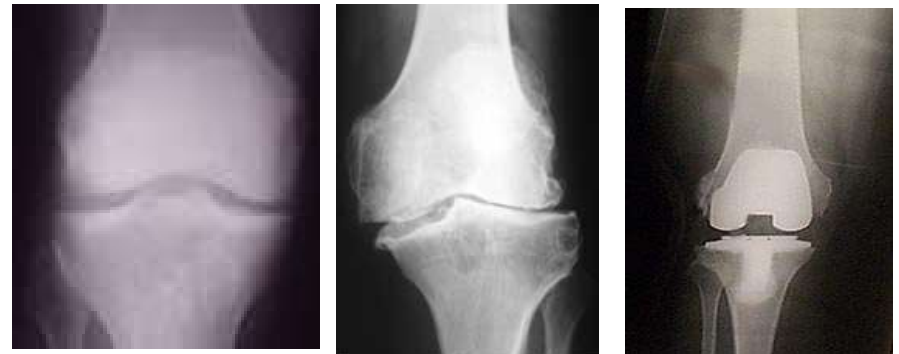
The effectiveness of group and home-based exercise on psychological status in people with ankylosing spondylitis: A systematic review and meta-analysis

Brian Lane¹, Ruth McCullagh¹, Jefferson R Cardoso², Joseph G McVeigh¹

Benefits of exercise

- Pain
- Function
- Quality of life
- Depression, anxiety, stress
- Fatigue
- Sleep
- Stiffness

Exercise is **SAFE** for people with arthritis and musculoskeletal conditions





VS



**Exercise is as
effective or
even more
effective as
common pain-
relieving drugs**

**.....but with
fewer side
effects**

Before you start



ADULT PRE-EXERCISE SCREENING SYSTEM (APSS)



This screening tool is part of the **Adult Pre-Exercise Screening System (APSS)** that also includes guidelines ([see User Guide](#)) on how to use the information collected and to address the aims of each stage. No warranty of safety should result from its use. The screening system in no way guarantees against injury or death. No responsibility or liability whatsoever can be accepted by Exercise & Sport Science Australia, Fitness Australia, Sports Medicine Australia or Exercise is Medicine for any loss, damage, or injury that may arise from any person acting on any statement or information contained in this system.

Full Name: _____

Date of Birth: _____ Male: ☐ Female: ☐ Other: ☐

STAGE 1 (COMPULSORY)



AIM: To identify individuals with known disease, and/or signs or symptoms of disease, who may be at a higher risk of an adverse event due to exercise. An adverse event refers to an unexpected event that occurs as a consequence of an exercise session, resulting in ill health, physical harm or death to an individual.

This stage may be self-administered and self-evaluated by the client. Please complete the questions below and refer to the figures on page 2. Should you have any questions about the screening form please contact your exercise professional for clarification.

Please tick your response

	YES	NO
1. Has your medical practitioner ever told you that you have a heart condition or have you ever suffered a stroke?		
2. Do you ever experience unexplained pains or discomfort in your chest at rest or during physical activity/exercise?		
3. Do you ever feel faint, dizzy or lose balance during physical activity/exercise?		
4. Have you had an asthma attack requiring immediate medical attention at any time over the last 12 months?		
5. If you have diabetes (type 1 or 2) have you had trouble controlling your blood sugar (glucose) in the last 3 months?		
6. Do you have any other conditions that may require special consideration for you to exercise?		
IF YOU ANSWERED 'YES' to any of the 6 questions, please seek guidance from an appropriate allied health professional or medical practitioner prior to undertaking exercise.		

Consult an exercise professional if needed

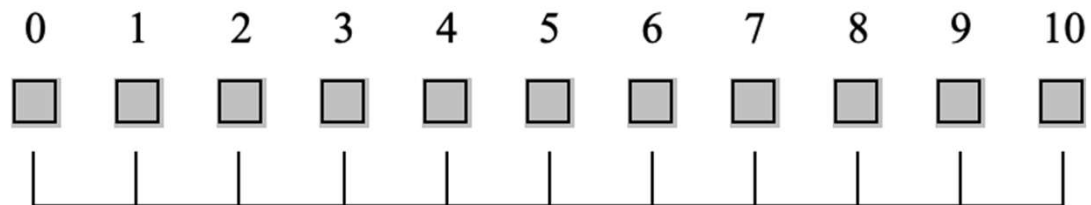
- **Physiotherapist**
- **Exercise physiologist**
- **Sports and exercise physician**



**Take some baseline
measures before you start**



0-10 Numeric Rating Scale



**No pain/
fatigue/
stiffness**

**Maximal pain/
fatigue/
stiffness**

30-second sit to stand test



Count the number of sit to stands you can perform in 30 seconds

Stair climb test



Time how long it takes you to ascend and descend a set of stairs



6 minute walk test

How far you can walk in 6 minutes

20 m walk test

How long it takes you to walk 20 m

One leg balance test



Time how long you can balance on one leg – can make it harder by closing your eyes

Do near wall or table for safety

Designing an exercise program

Physical activity guidelines recommend



Doing any physical activity is better than doing none. If you currently do none, start doing some and build up slowly



Be active on most, preferably all, days every week



Accumulate **150 to 300 minutes** (2.5 to 5 hours) of **moderate intensity** physical activity or **75 to 150 minutes** (1.25 to 2.5 hours) of **vigorous intensity** physical activity or a combination **each week**



Do muscle strengthening activities on at least 2 days each week

10,000

Steps per day

7,000 steps a day linked to reduced risk of chronic disease and death, study finds

By health reporter Olivia Willis and science reporter Jacinta Bowler

ABC Health & WellbeingExercise and Fitness

Fri 25 Jul



Research shows even 4,000 steps per day is linked to better health when compared with very low activity. (Getty: Airo)

Health outcome	Risk reduction from 7,000 daily steps (compared with 2,000)
All-cause mortality	47 per cent
Dementia	38 per cent
Cancer mortality	37 per cent
Falls	28 per cent
Cardiovascular disease	25 per cent
Depression	22 per cent
Type 2 diabetes	14 per cent

Ding et al Lancet Public Health 2025

Designing an exercise program

Individual factors

Type of condition
Joints affected
Pain levels
Functional capacity
Other health conditions
Preferences

Exercise goals

Reduce pain
Improve function
Improve joint mobility
Increase muscle strength
Improve aerobic fitness
Reduce falls risk

Exercise type

- Strengthening
- Stretching and flexibility
- Aerobic exercise – Walking, Cycling, Stepper
- Tai Chi
- Yoga
- Aquatic exercise
- Balance training
- Dancing



Exercise delivery

- Individual (one-on-one)
- Class-based (group)
- Home-based
- Gym
- Combination



Similar benefits for
pain and function





Exercise for knee osteoarthritis
Your 6-month research based knee exercise program

EXERCISE 2: Small Wall Squat



Starting position:
Gently lean your back against a wall.
Step your feet away from the wall (about 40cm).
Keep your shoulders, back, buttocks resting against the wall.
Place your feet hip width apart.
Slightly turn your feet outwards.



The exercise:
Slowly slide down the wall. Stop before your knees go past your toes (or less if it is painful).
Hold for 5 seconds.
Slowly slide back up the wall.

"Slowly down, hold 2, 3, 4, 5, slowly up"



During the exercise:
Keep your buttocks, back & shoulders resting against the wall.
Keep your knees over your feet. Don't let them collapse in.
Keep your heels on the ground.



Increase the challenge:
1: Split leg position: Move your exercising leg slightly closer to the wall. Move your non-exercising leg slightly further away from the wall. Take more weight through the leg closest to the wall.
2: Hold ankle weights. Add 1 kg at a time.

PROGRAM ONE | My Knee Exercise

www.mykneexercise.org.au



My Hip Exercise is a free 6-month exercise program to help people with hip pain and hip osteoarthritis manage their symptoms. The program is evidence-based and designed by researchers at the University of Melbourne.



Watch the short welcome video to help you start the program



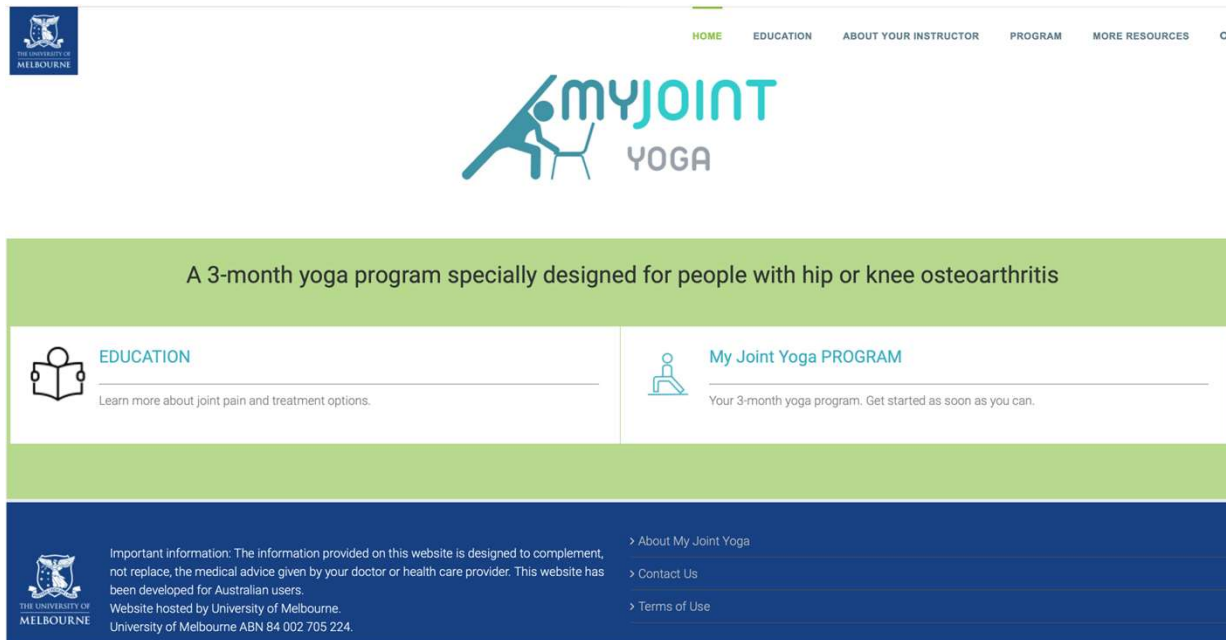
Exercise 2: Squat



- + STARTING POSITION
- + THE EXERCISE
- + DURING THE EXERCISE
- + MAKE IT EASIER
- + INCREASE THE CHALLENGE
- + WATCH THE VIDEO



www.myhipexercise.org.au



<https://myjointyoga.com.au>

MyJoint Tai Chi is a free 12-week Tai Chi exercise program to help people with knee pain and knee osteoarthritis manage their symptoms.

The program is evidence-based and designed by researchers at the University of Melbourne, physiotherapists, Tai Chi experts and people with lived experience of knee pain. The program is based on the 10 Form Yang Style Tai Chi and involves slow and graceful movements with a focus on breathing and mindfulness.

It is important that you:

- Read the educational information about Tai Chi and osteoarthritis on this website
- Do the Tai Chi exercise program on this website 3 times each week for 12 weeks
- Download and use a free mobile app to help you stick to the program



Watch the short welcome video to help you start the program



Read:
About Tai Chi



Do:
MyJoint Tai Chi Program



Download:
Tai Chi Support App



Read:
About Osteoarthritis



<https://myjoint-taichi.org>



My Knee Exercise

www.mykneexercise.org.au

Self-directed online 6-month home-based strengthening and physical activity program plus educational information



My Hip Exercise

<https://myhipexercise.org.au/>

Self-directed online 6-month home-based strengthening and physical activity program plus educational information



My Joint Tai Chi

<https://myjoint-taichi.org/>

Self-directed 3-month online Tai Chi program plus educational information for people with hip/knee osteoarthritis



My Joint Yoga

<https://myjointyoga.com.au/>

Self-directed 3-month online modified yoga program plus educational information for people with hip/knee osteoarthritis



Exercise dosage

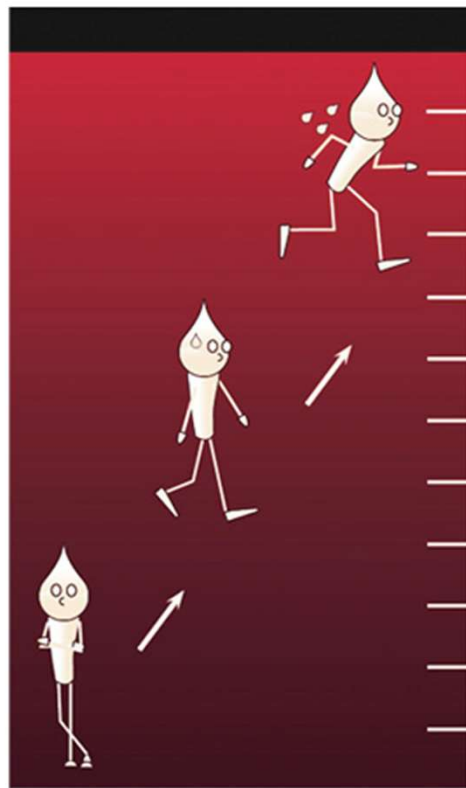
Intensity – how hard

Start low, go slow

low long

Exercise intensity – how hard you are working

1 - 10 Borg Rating of Perceived Exertion Scale	
0	Rest
1	Really Easy
2	Easy
3	Moderate
4	Sort of Hard
5	Hard
6	
7	Really Hard
8	
9	Really, Really, Hard
10	Maximal: Just like my hardest race

	LEVEL	DESCRIPTION
	10	Extremely strong (almost maximum)
	9	
	8	
	7	Very strong
	6	
	5	Strong (heavy)
	4	Somewhat strong
	3	Moderate
	2	Weak (light)
	1	Very weak
	½	Extremely weak (just noticeable)
	0	Nothing

Type of exercise	How much?	How often?
------------------	-----------	------------



Type of exercise	How much?	How often?
Aerobic (cardio)	150 mins of moderate activity or 75 mins of vigorous activity per week	Spread across at least 3 days (Break into 10-30 min sessions)



Type of exercise	How much?	How often?
Aerobic (cardio)	150 mins of moderate activity or 75 mins of vigorous activity per week	Spread across at least 3 days (Break into 10-30 min sessions)
Strength (resistance training)	8-12 repetitions of 8-10 different exercises (major muscle groups)	2-3 days per week (non consecutive)



Type of exercise	How much?	How often?
Aerobic (cardio)	150 mins of moderate activity or 75 mins of vigorous activity per week	Spread across at least 3 days (Break into 10-30 min sessions)
Strength (resistance training)	8-12 repetitions of 8-10 different exercises (major muscle groups)	2-3 days per week (non consecutive)
Flexibility (stretching)	Hold each stretch 15-30 seconds, repeat 2-4 times	Focus on major muscle groups



Type of exercise	How much?	How often?
Aerobic (cardio)	150 mins of moderate activity or 75 mins of vigorous activity per week	Spread across at least 3 days (Break into 10-30 min sessions)
Strength (resistance training)	8-12 repetitions of 8-10 different exercises (major muscle groups)	2-3 days per week (non consecutive)
Flexibility (stretching)	Hold each stretch 15-30 seconds, repeat 2-4 times	Focus on major muscle groups
Balance	10-15 mins of balance activities	2-3 days per week

**What do I do if I have pain
during exercise or am
having a flare of my
condition?**



OPEN ACCESS

Should exercises be painful in the management of chronic musculoskeletal pain? A systematic review and meta-analysis

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

¹Department of Physiotherapy, Derby Teaching Hospitals NHS Foundation Trust, Derby, UK

²Division of Rehabilitation and Ageing, School of Medicine, University of Nottingham, Nottingham, UK

³Division of Physiotherapy and Rehabilitation Sciences, School of Health Sciences, University of Nottingham, Nottingham University Hospitals (City Campus), Nottingham, UK

⁴University of East Anglia, Norwich, UK

⁵Research Unit for General Practice in Aalborg, Department of Clinical Medicine at Aalborg University, Aalborg, Denmark

⁶Department of Occupational Therapy and Physiotherapy, Department of Clinical Medicine, Aalborg University Hospital, Aalborg, Denmark

⁷Manchester Metropolitan University, Manchester, UK

Correspondence to Benjamin E Smith, Department of Physiotherapy, London Road Community Hospital, Derby Teaching Hospitals NHS Foundation Trust, Derby DE1 2QY, UK; benjamin.smith3@nhs.net

Accepted 1 April 2017
Published Online First
8 June 2017

ABSTRACT

Background Chronic musculoskeletal disorders are a prevalent and costly global health issue. A new form of exercise therapy focused on loading and resistance programmes that temporarily aggravates a patient's pain has been proposed. The object of this review was to compare the effect of exercises where pain is allowed/encouraged compared with non-painful exercises on pain, function or disability in patients with chronic musculoskeletal pain within randomised controlled trials.

Methods Two authors independently selected studies and appraised risk of bias. Methodological quality was evaluated using the Cochrane risk of bias tool, and the Grading of Recommendations Assessment system was used to evaluate the quality of evidence.

Results The literature search identified 9081 potentially eligible studies. Nine papers (from seven trials) with 385 participants met the inclusion criteria. There was short-term significant difference in pain, with moderate quality evidence for a small effect size of -0.27 (-0.54 to -0.05) in favour of painful exercises. For pain in the medium and long term, and function and disability in the short, medium and long term, there was no significant difference.

Conclusion Protocols using painful exercises offer a small but significant benefit over pain-free exercises in the short term, with moderate quality of evidence. In the medium and long term there is no clear superiority of one treatment over another. Pain during therapeutic exercise for chronic musculoskeletal pain need not be a barrier to successful outcomes. Further research is warranted to fully evaluate the effectiveness of loading and resistance programmes into pain for chronic musculoskeletal disorders.

PROSPERO registration CRD42016038882.

Conclusion Protocols using painful exercises offer a small but significant benefit over pain-free exercises in the short term, with moderate quality of evidence. In the medium and long term there is no clear superiority of one treatment over another. Pain during therapeutic exercise for chronic musculoskeletal pain need not be a barrier to successful outcomes. Further research is

using and physical activity were mediating factors. Experimental studies have also demonstrated that stimulus context and the emotional response to pain affect the experience of pain,^{26–28} and have led to the development of desensitisation interventions for chronic musculoskeletal disorders.^{29–31}

It has been proposed that modern treatment therapies for chronic musculoskeletal pain and disorders should be designed around loading and resistance programmes targeting movements and activities that can temporarily reproduce and aggravate patients' pain and symptoms.^{31–33} Pain does not correlate with tissue damage,³⁴ and psychological factors such as catastrophising and fear avoidance behaviours play an important role in the shaping of the physiological responses to pain, and therefore the development and maintenance of chronic pain.³⁵ It is

“Acceptable” pain

- Severity that is rated no more than 6 out of 10
- Pain that settles within a few hours after exercise

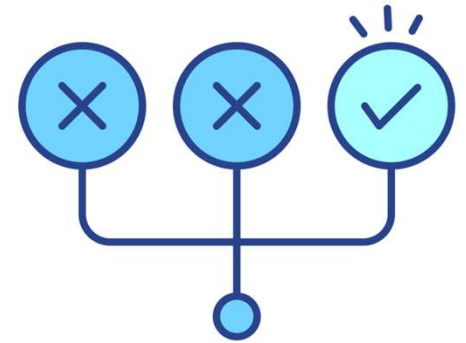


May have aggravated

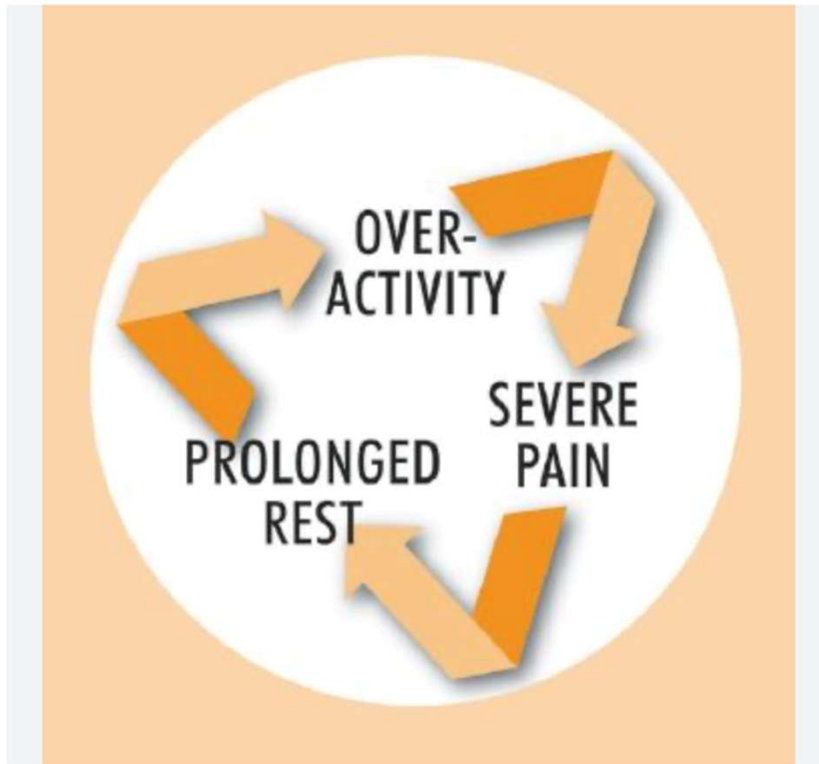
- Severe pain
- Increased night pain
- Pain that is worse the next day
- Increased swelling of the joint

Strategies

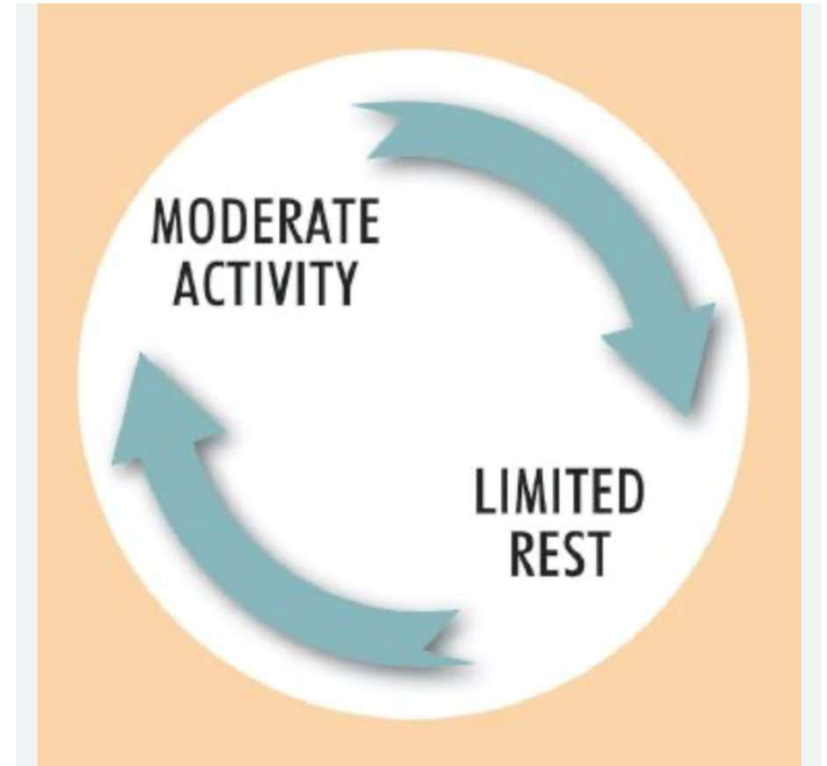
- Trial and error
- Cut back the program
- Modify the program
- Change the program
- Take Panadol 20 mins before exercise or after
- May apply ice after exercises or heat



Over-activity cycle

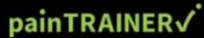


Activity pacing



- **Think about your tendency to overdo it**
- **Set a time limit that is a little less than you think you can do and set an amount of time to rest**
- **Try the plan. When you reach the activity goal, stop and rest for the allotted time**
- **Record time on task, rest time, and how the exercise felt (eg, 10 minutes activity, 10 minutes rest, feeling good)**
- **If delayed pain occurs, adjust your activity (eg, decrease activity time, intensity, or pace, or increase rest time)**

Learn strategies to help cope with pain

HOMEABOUTREGISTERLOGIN

I have learned from painTRAINER you can actually deal with pain, whereas, before I was scared of pain.

Mary, 62

REGISTER

What is painTRAINER?

painTRAINER is an interactive, online program based on scientific research that teaches you effective strategies to manage your pain.

Who may benefit from painTRAINER?

painTRAINER is designed for adults over the age of 18 who experience pain. Caregivers may also find the program useful in helping them support someone experiencing pain.

How to access painTRAINER?

painTRAINER is free of charge. Click register and complete the registration pages. The information you provide will be securely handled and participation is anonymous and confidential.



Produced by the Centre of Health, Exercise and Sports Medicine at the University of Melbourne in collaboration with Duke University and Hackensack Meridian Health



painTRAINER
www.paintrainer.org/

8-week online program that teaches people with chronic pain different strategies to help manage their pain



**How can I stick to an
exercise program?**



What things
make it **HARD**
for you to stick
to exercise?

What things
HELP you stick
to exercise?

BARRIERS TO PHYSICAL ACTIVITY FOR ADULTS WITH ARTHRITIS

41% of people with arthritis are inactive, due in large part to 4 barriers:



1 PHYSICAL
(pain and fatigue)



2 PSYCHOLOGICAL (lack of motivation and fear of pain)



3 SOCIAL (lack of a support system)

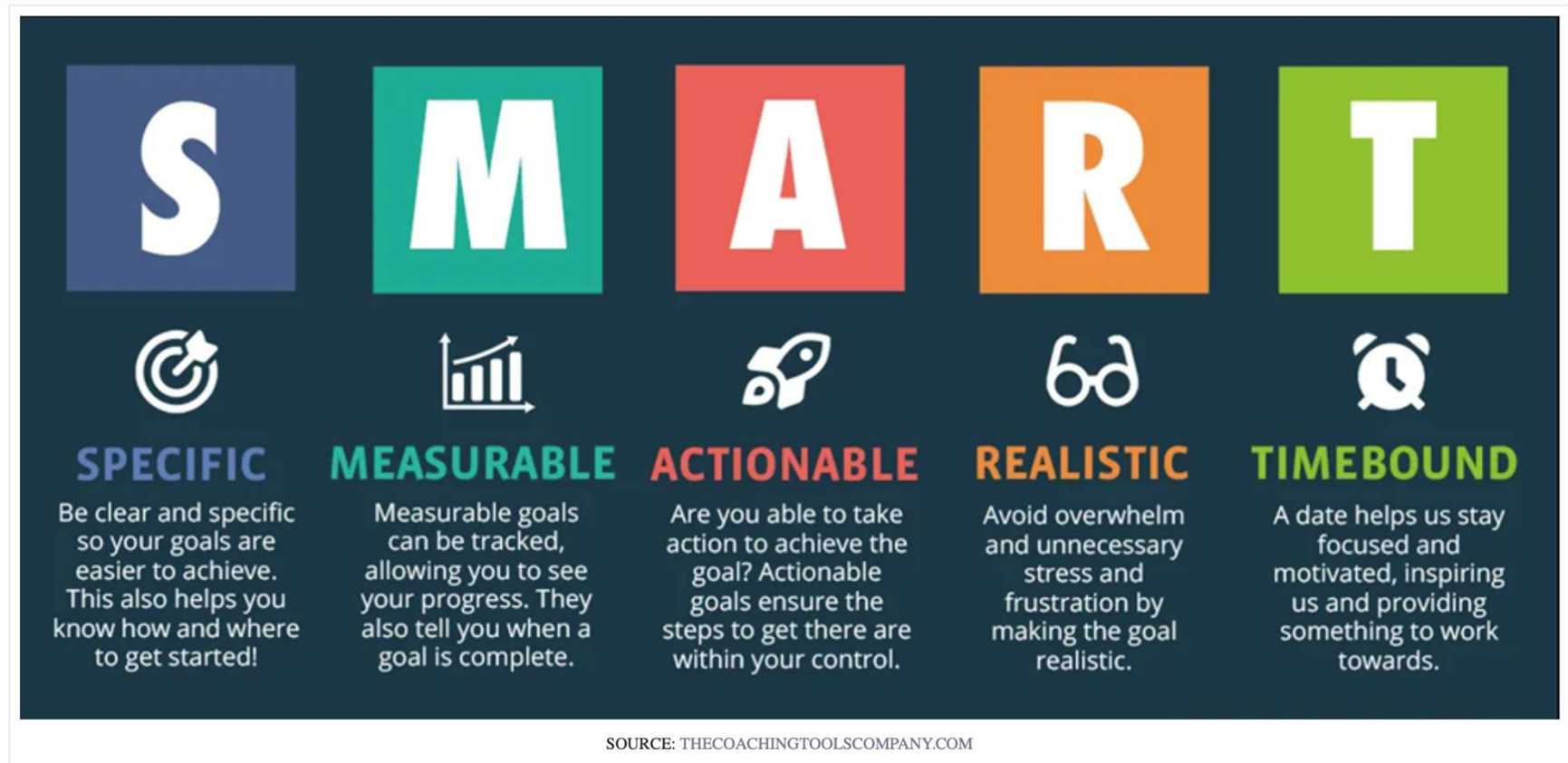


4 ENVIRONMENTAL (costly fees, no transportation and lack of access to safe places to exercise)

<https://oaaction.unc.edu>



Goal setting



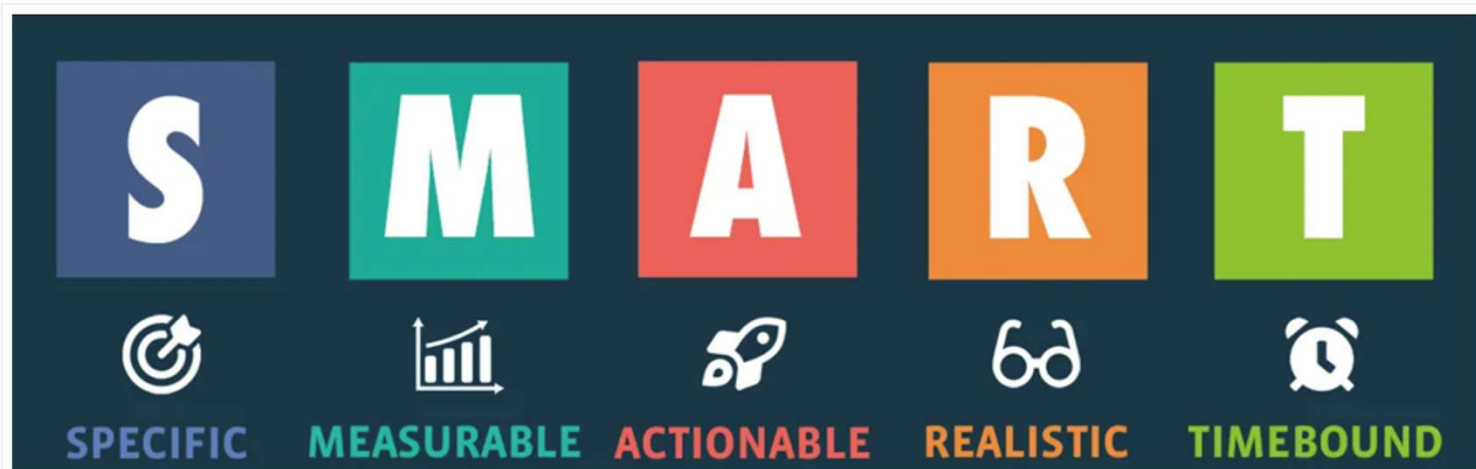
<https://lifetimeinternalmedicine.com/setting-fitness-goals/>



“I want to get in shape and get stronger”



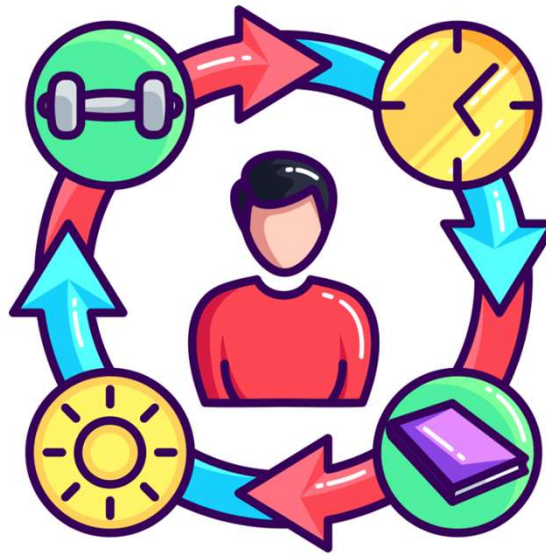
“For the next month I will walk 3 miles at a brisk pace on Monday, Wednesday, and Friday at 8 am”





Build routine and consistency

- Link exercise to daily habits (eg. walk after breakfast)
- Schedule sessions at same time of time to form a habit



Monitor your progress

- Exercise progress
 - Exercise diaries or log books – paper or app
 - Activity trackers
 - Pedometers



Wearables



Mobile apps

Monitor your progress

- Exercise progress
 - Exercise diaries or
 - Activity trackers
 - Pedometers



Smart Finger



Smart Glasses



Smart Watch

Wearables



Smart Pants



Smart Shoes



Smart Shirt

Mobile apps



Smart Bracelet



Smart Belt



Smart Socks

Monitor your progress

- Exercise progress

- Exercise diaries or log books – paper or app
- Activity trackers
- Pedometers

- Symptoms



Wearables



Mobile apps

From sources across the web

 My Pain Diary	 Curable	 PainScale - Pain Tracker Diary
 Pathways Pain Relief	 CareClinic	 Manage My Pain
 Bearable - Symptom Tracker	 Flaredown	 Migraine Buddy

- Exercise
- Exerc
- Activ
- Pedometer
- Symptom



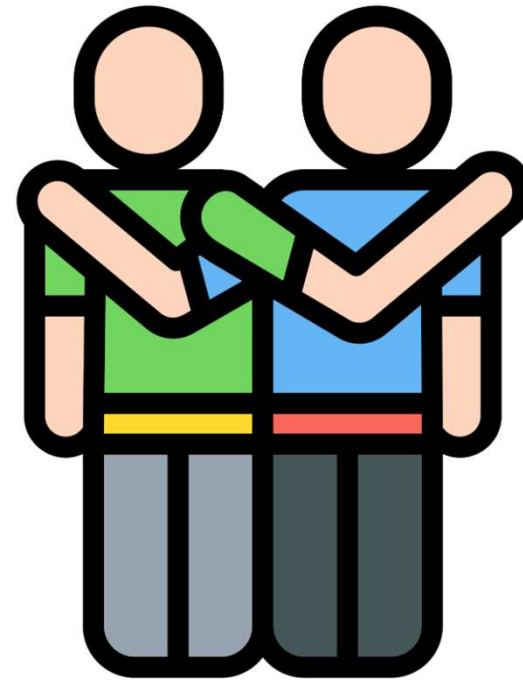
Wearables



Mobile apps

Support and accountability

- Supervised program
- Group classes
- Exercise buddy
- Regular check ins



Problem solve barriers

- Plan alternatives for bad weather, busy schedules, or flare-ups



App - My Exercise Messages



Welcome to
My Exercise

Here's a quick tutorial of the app

12:59 Optus 1:00 PM
My Exercise Messages

WEEK 1 OF

09 Feb 2021 to 15 Feb 2021

3 of your 4 exercise days



Click the days you exercised



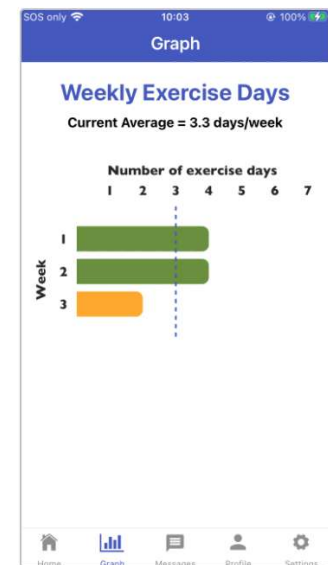
Week

What made it hard for you to stick to your 4 exercise days this week?

- ☐ ? Forgot
- ☐ zzz Too tired
- ☐ Pain limited me
- ☒ ⚠ Worried the exercise might hurt
- ☐ Exercises aren't helpful
- ☐ Exercises are boring
- ☐ Lack of time
- ☐ Life stress/personal issues

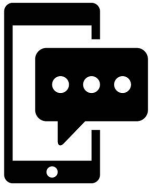


Sticking to an exercise program is hard. Common concerns are common. If you have severe joint concerns, such as swelling or an injured joint. These are concerns you should reduce, but your exercise advice from a professional might help.



**Track with
My Exercise Messages**

The graph tab allows you to monitor and view your progress



Behaviour change app increased home exercise adherence over 6 months in 182 people with knee osteoarthritis

Home
strengthening
exercise
3 x per week



VERSUS

Home
strengthening
exercise
3 x per week



My Exercise
Messages App



Hinman et al unpublished data

Take home messages



- Exercise is beneficial and safe for people with arthritis and musculoskeletal conditions
- Determine what you want to achieve from exercise
- Consult a health professional if needed
- Set some SMART goals
- Pick exercise that is appropriate and fits in with your goals and preferences
- Monitor progress
- Set into place strategies to help you stick to your exercise program