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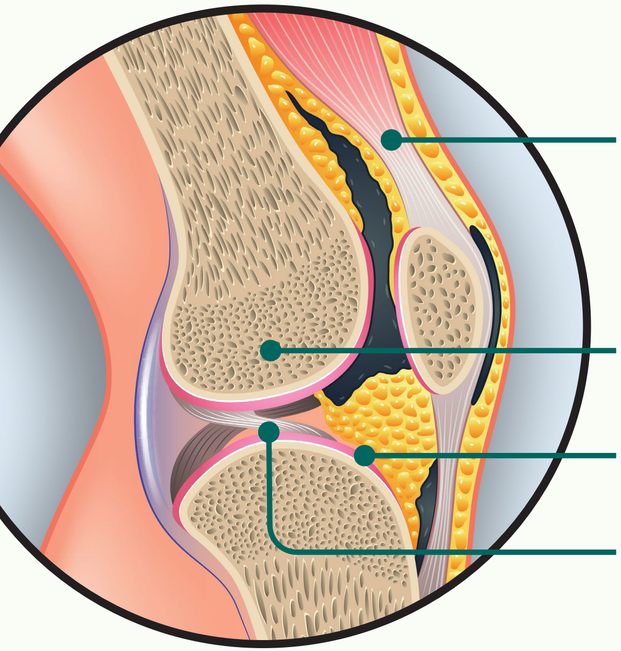
OSTEOARTHRITIS

A FOCUS ON EXERCISE

MARCH 2023

Exercise is a first-line treatment for people with osteoarthritis (OA)



Local benefits:

Strengthens muscles and benefits **cartilage health**; improving:

- Stability/falls risk
- Physical function/capacity

Decreases loading through joint with improved muscle control

Decreased pain and stiffness

In the longer-term can **reduce** local joint (and systemic) **inflammation**

Exercise type	Features	Examples
Aerobic	Generally improves cardiovascular fitness, reduces fatigue, promotes weight loss (alongside healthy diet)	Walking, jogging, exercise bike, swimming and other water-based activities
Strengthening	Exercises to improve and maintain muscle strength; often focuses on single muscle groups for non-weight bearing joints, or combinations of muscles for weight bearing joints	Bicep curls, tricep extensions, side lateral raises, wall push-up, squats, calf raises
Neuromuscular	Exercises that focus on limb alignment, balance, motor control; often involves weight bearing functional activities	Gentle stretching and movements that take joints through their full range of motion, tai chi

The wider benefits of exercise:

As effective/better than NSAIDs and intra-articular corticosteroids at reducing pain, without the adverse effects, and **has additional benefits such as reducing CVD risk**

Reduced dependence on opioids and analgesics in general

Delay need for surgery

Improved mental health and social engagement

Improved **sleep**

CVD, cardiovascular disease; NSAIDs, non-steroidal anti-inflammatory drugs.

1. Davis AM, Davis KD, *et al*. Curr Treat Options in Rheum. 2020;6:146–59.; 2. Osteoarthritis in over 16s: diagnosis and management. National Institute for Health and Care Excellence (NICE). 2022. Available at: https://www.nice.org.uk/guidance/ng226/resources/osteoarthritis-in-over-16s-diagnosis-and-management-pdf-66143839026373 (Accessed Mar, 2023); 3. Thorlund JB, Simic M, Pihl K, *et al*. J Orthop Sports Phys Ther. 2022;52:207–16.

The specifics of exercise

There is insufficient evidence to recommend one type of exercise or combination; a good exercise regimen incorporates a range of activities based on patient preferences, functional capacity and goals

- **Remember:** many exercise benefits are non-specific, e.g. patients with hand OA will still benefit from an aerobic programme

For examples of exercise for patients with osteoarthritis, see: **https://www.versusarthritis.org/about-arthritis/exercising-with-arthritis/**

Land-based exercises are the gold-standard activity; however, water-based activities, e.g. aqua jogging, may be a good stepping stone for some patients

As a general target, each week patients should aim for:*

1 **Daily "range of motion" exercises**	2 **150 minutes** (or more) of **cardiovascular exercise**	3 **Two sessions** of **resistance/strengthening training**
• Help warm-up for exercise and improves functional capacity, e.g. side bends, arm circles, torso rotations, shoulder shrugs	• Moderate-to-vigorous • Increase duration as endurance builds • Complete over multiple sessions, e.g. 5× 30 minute bike ride or walk	• 6–10 repetitions at moderate intensity or 10–15 repetitions at low intensity • 2–3 sets of repetitions per exercise • Resistance level is dependent on the patient's pre-existing level of strength; can be increased using dumbbells or exercise bands • Examples include bicep curls, squats, hip extensions, knee extensions, step ups

Spread activity out over the day/week as needed; **dedicated rest days are not usually required**

* Depending on disease severity and functional capacity. OA, osteoarthritis

1. Davis AM, Davis KD, *et al*. Curr Treat Options in Rheum. 2020;6:146–59; 2. Physical activity for arthritis. Centers for Disease Control and Prevention. Available at: https://www.cdc.gov/arthritis/basics/physical-activity-overview.html (Accessed Mar, 2023); 3. Rausch Osthoff A-K, Niedermann K, *et al*. Ann Rheum Dis 2018;77:1251–60.

The specifics of exercise

Physiotherapy input is often beneficial

Guided exercise and strengthening yields significantly better outcomes than unsupervised programmes

Studies suggest that **6–12 supervised exercise sessions** benefit patients the most

Physiotherapists can **help tailor programmes** for patients with severe disease or impairment, as well as **providing advice on appropriate footwear and orthotic devices**, such as shoe wedges, and the **use of walking aids, joint supports or bracing**

If physiotherapy cost or access is an issue, local mobility action programmes or other group-based activities (after a tailored discussion around exercise and OA) are alternatives

OA, osteoarthritis

1. Davis AM, Davis KD, *et al.* Curr Treat Options in Rheum. 2020;6:146–59; 2. Skou ST, Roos EM. BMC Musculoskelet Disord. 2017;18:72

knee

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1. Davis AM, Davis KD, *et al*. Curr Treat Options in Rheum. 2020;6:146–59; 2. Physical activity for arthritis. Centers for Disease Control and Prevention. Available at: https://www.cdc.gov/arthritis/basics/physical-activity-overview.html (Accessed Mar, 2023); 3. Rausch Osthoff A-K, Niedermann K, *et al*. Ann Rheum Dis 2018;77:1251–60.

Addressing patient concerns regarding exercise engagement

Can a patient do too much exercise?

Therapeutic levels of exercise does not wear down cartilage; exercise will usually reduce pain long-term

Discomfort during exercise is okay, but if it interferes with sleep or lasts into the next day then the intensity and/or duration of exercise should be reduced accordingly

What advice is there for patients reluctant to engage in exercise?

Identify barriers and re-emphasise the long-term benefits of exercise; these often outweigh short-term concerns

Small steps may be required to achieve bigger goals; improvements along the way may progressively increase positivity and encourage engagement over time

Is it okay to take NSAIDs and other analgesics before exercise?

While there is no evidence that NSAID use before exercise provides any physiological benefit, **if it encourages a patient with OA to more effectively engage in exercise then it is generally unlikely to be damaging**

The dose of an analgesic required for a patient to inadvertently damage joints through over-exertion is much higher than what is typically prescribed for OA

1. Davis AM, Davis KD, *et al*. Curr Treat Options in Rheum. 2020;6:146–59

2. Osteoarthritis in over 16s: diagnosis and management. National Institute for Health and Care Excellence (NICE). 2022. Available at: https://www.nice.org.uk/guidance/ng226/resources/osteoarthritis-in-over-16s-diagnosis-and-management-pdf-66143839026373 (Accessed Mar, 2023).

Patients already engaging in high level exercise that develop OA

The pathophysiology of OA is more than "wear and tear" – OA onset does not necessarily mean that physical activity was the cause

- For marathon runners, a decreased overall risk of OA has been reported ***(see below)***

Ponzio *et al*, 2018:

Investigated 675 marathon runners (mean age 48 years) → These runners **ran a mean distance of 58 km weekly** (over a mean time of 19 years) → **8.8% had OA** compared with **17.9% in a matched population** → **Prior joint surgery** was the strongest predictor of pain and OA in marathoners

Evidence suggests that for **long distance runners who develop OA**, stopping running does not influence disease progression

Ultimately, **this type of exercise engagement should be guided by pain experienced;** if pain doesn't limit engagement, don't quit

1. Ponzio DY, Syed UA, *et al*. J Bone Joint Surg Am. 2018;100:131-7.