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Recommendations for Prescribing Exercise to Patients with Osteoarthritis



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Effects of Exercise

Although pain and functional limitations can result in challenges to physical activity among patients with osteoarthritis, regular exercise is essential for managing this condition.

Studies conducted in recent years provided evidence that supports the assumption that muscle weakness and muscle atrophy contribute to the disease process (1-4). Thus, rehabilitation and physiotherapy are often prescribed with the intention to alleviate pain and increase mobility. However, to counteract muscle atrophy, exercise has to be performed on a regular basis as health benefits do not persist if exercise programmes are discontinued (5). Therefore, people with degenerative joint disease should be put on continuous exercise programmes (5).

Evidence from a large systematic review and a large randomised controlled trial for knee osteoarthritis demonstrated the beneficial effects of exercise compared with no exercise (6-7). Exercise in this context included aerobic walking, home quadriceps exercise, strengthening and home exercise, aerobic exercise with weight training, and diet with aerobic and resistance exercise. These studies showed that exercise was associated with reduced pain and disability, medication intake, as well as improved physical functioning, stair climbing, walking distance, muscle strength, balance, self-efficacy and mental health and physical functioning (6-7). Majority of these beneficial outcomes were observed during follow up at 18 months post-randomisation (6-7). Risk of adverse events is considered low if exercise recommended for the individual has been appropriately assessed by a trained health professional (8). While some individuals may experience an exacerbation of symptoms, the vast majority (including those severely affected) will neither develop adverse reaction to controlled exercise nor experience an increase in the severity of arthritis (9-10). For example, patients with significant osteoarthritis can ride a bicycle, go swimming or exercise in a gym with often no or minimal discomfort.



Recommendations for Exercise Prescription

Although management guidelines for osteoarthritis recommend exercise therapy, specifics – such as the frequency, intensity, duration and mode – have not been addressed.

In general, the recommendations for exercise participation for apparently healthy adults mentioned in previous chapters could also be followed. The following table summarises the salient points of the FITT framework for patients with osteoarthritis:

	Recommendations*
Frequency	<ul style="list-style-type: none"> • At least 3 days per week of aerobic exercise is recommended (11), or follow the recommendations for healthy adults as tolerated. • Resistance exercise should be performed 2 to 3 nonconsecutive days per week (11). • Stretching exercise should be emphasised and performed at least daily (11).
Intensity	<ul style="list-style-type: none"> • General recommendations for exercise intensity apply for aerobic exercises. Initial aerobic exercise should begin at lower levels of moderate intensity (e.g. about 40% heart rate reserve) for individuals who have been sedentary or limited by pain (11-12). • For resistance exercise, start with a relatively low amount of load (e.g. 10% 1-repetition maximum (1-RM) for individuals with severe arthritis) and progress at a maximal rate of 10% increase per week as tolerated to the point of pain tolerance and/or low to moderate intensity (i.e. 40–60% 1-RM) (11).
Time	<ul style="list-style-type: none"> • Start engaging in aerobic exercise in short bouts of 5 to 10 mins to accumulate 20 to 30 mins per day as tolerated, with a goal of progressing to a total of 150 mins per week of moderate-intensity activity (11). • Perform at least 1 set of resistance exercise involving 10 to 15 repetitions per exercise (11).
Type	<ul style="list-style-type: none"> • Aerobic exercise: activities having low joint stress, such as walking, cycling or swimming are recommended (11). Studies have shown that jogging would neither increase the risk of developing osteoarthritis nor result in increased severity of the disease (13). • Resistance exercise: Individuals with significant joint pain or muscle weakness may benefit from beginning with maximum voluntary isometric contractions around the affected joint (e.g. partial squat) and progressing to dynamic training (11). Training all major muscle groups as recommended in healthy adults is the ultimate goal. • Stretching exercises for stretching all major muscle groups are recommended (11).

- Incorporate functional exercises such as sit-to-stand and step-ups as tolerated to improve neuromuscular control and maintenance of activity of daily living (11).
- There is some encouraging evidence suggesting that tai chi may reduce pain and improve physical function, self-efficacy, depression, and health-related quality of life for people with knee osteoarthritis (14-15).

* As many patients may present with comorbidities, it may be necessary to tailor the exercise prescription accordingly.

Special Considerations

- Avoid strenuous exercises during acute flare-ups and periods of inflammation (11).
- Progression in duration of activity should be emphasised over increased intensity (11).
- Adequate warm-up and cool-down periods of 5 to 10 mins are critical for minimising pain (11).
- Inform individuals with osteoarthritis that some discomfort during or immediately after exercise may be expected. However, if joint pain persists for 2 hours after exercise and exceeds the level of pain before exercise, the duration and/or intensity of exercise should be reduced in future sessions (11).
- Many patients suffering from osteoarthritis refuse to start exercising due to joint pain. In such cases, the use of painkillers during the first weeks of an exercise programme might not only facilitate joint movement but can also drastically improve patient compliance (5). Encourage patients to exercise during the time of day when pain is typically least severe and/or in conjunction with peak activity of pain medications (11).
- In case of severe joint pain or in obese patients, an initial period of water-based exercise may be helpful (5). As swimming or aqua-jogging provides a muscle workout without joint loading, further pain and weight-related joint destruction can be avoided.
- Appropriate shoes that provide shock absorption and stability are particularly important for people with knee osteoarthritis (11).
- Because it is common for patients with osteoarthritis of lower extremities to be overweight and obese, healthy weight loss and maintenance should be encouraged (11).

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