

atrophy.⁵ Muscle balance and conditioning are important aspects of physical activity because they provide joint stabilization and help the patient remain functional and independent with ADL.³⁷ In OA, regular exercise has been shown to decrease joint pain and disability.⁵⁷ Exercise in patients with RA increases muscle strength and functional capacity.⁴⁶ Gentle resistive training can improve muscle disability, physical performance, and pain. Strong muscles can help absorb shock through a joint, whereas weak muscles cannot provide stability or control.⁴⁷ Strengthening is important but is more effective when using the correct resistance for the phase of disease. During an acute phase, resistive exercises need to be gentle with little pressure on the joints so that symptoms are not increased. Isometric exercises—exercises during which muscles are contracted without joint movement—are recommended because of the minimal increase in joint pressure. Increased strength can also occur with isometric contractions held 6 seconds at 70% maximum effort and repeated 5 to 10 times a day.⁴⁷ Placing the joint at midrange during contractions allows for safer exercise. If symptoms increase, intensity should be decreased to avoid joint irritation; if pain does not subside 1 to 2 hours after exercise, the exercises should be stopped until the patient is past the acute phase of an arthritis flare.

When a patient reaches the subacute phase, isotonic exercises—exercises during which the muscle contracts against a constant load resulting in joint movement—should be implemented.⁴⁷ The exercises should be performed through a pain-free ROM; the American College of Sports Medicine states that three sets of 8 to 10 repetitions should be performed for each exercise.¹ If the patient is older than 50 years, 10 to 15 repetitions are recommended.⁴⁷ The appropriate amount of resistance is determined when the patient is able to perform all repetitions with no increase in symptoms but a minor feeling of fatigue at the end of each set. When a patient can perform all repetitions easily, resistance should be increased slightly (1 to 2 pounds).³⁷ When working with larger muscle groups, such as the chest, back, or leg, an increase of 5 pounds should not aggravate symptoms. Although the joint is not in an acute flare, precautions should be taken to avoid exacerbation of symptoms. Open chain exercises are less stressful on the joint because the weight of the body is not sustained by the joint. All major muscle groups should be addressed during exercise, but focus should be placed on muscles crossing the joint or joints affected by arthritis.

Patients in the chronic phase of arthritis should be able to perform more progressive activity without increasing joint symptoms. During this phase, physical therapy should challenge the patient with increased intensity and repetitions. Exercises should be performed through the full available ROM of each joint; incorporating proprioceptive neuromuscular facilitation patterns allows for more muscles to be recruited for each motion and helps prepare the patient for more functional movements. Balance activities should also be performed to decrease risk of falls and train the body further functionally. Strength training should be performed two to three times a week and not repeated 2 days in a row to allow for proper recovery. When performing any exercises, the

patient should always be positioned for optimal joint protection.

Aerobic Exercise

Aerobic activities are beneficial to all individuals for overall health and to decrease the risk of disease. Patients with arthritis often believe that rest is the only answer to decrease joint pain, but inactivity may exacerbate arthritic symptoms.³⁷ RA has many extraarticular manifestations, so aerobic exercise is an especially important part of management. Aerobic activity should be performed three to five times a week for 20 to 30 minutes continuously.¹ If the patient cannot tolerate 30 minutes of continuous exercise, the patient should be encouraged to perform several shorter activities throughout the day that add up to 30 minutes. As the patient's cardiovascular endurance improves, the amount of time spent in continuous exercise may increase. The intensity of exercise should be 70% to 85% of the patient's maximum heart rate (calculated as 220 minus age). The therapist should also explain to the patient that any hobby or activity that increases the heart rate can be considered exercise.

Aquatic Therapy

Water is an excellent medium to allow for an increase in pain-free movement, while decreasing the stress on the joints. Aquatic exercise is unique because it can support, resist, or assist with exercises depending on the motion. Decreased joint compression, muscle relaxation, and sensory input from the pressure and temperature in the water help to decrease pain,⁴⁷ so aquatic therapy programs can increase strength, flexibility, and aerobic fitness in patients with knee or hip OA.⁶⁶ The resistance of water provides a means to strengthen muscles: The faster a patient moves through the water, the more resistance the patient experiences. Fins or water weights can be used to provide more resistance and progress strengthening. The buoyancy of the water helps unload the body's weight-bearing joints, which can decrease stress and pain. As the patient's pain decreases and strength and endurance improve, the water level can be decreased to allow for more weight bearing. Recommendations from Minor⁴⁵ are as follows:

- Select a pool with a water temperature of 84°F to 92°F (29°C to 33°C).
- Exercise in sufficiently deep water to minimize joint compression (midchest to shoulder level).
- Use nonslip, padded footwear to reduce foot discomfort.
- Perform aquatic exercise programs specifically designed for people with arthritis.
- Receive instruction in proper technique before starting a swimming or deep water running program.

Important Concept

The management of rheumatic disease will include the trial of many forms of modalities that may include but not be limited to heat, cold, or electrical modalities. Range of motion and strengthening will also be used as indicated based on the degree and or acuteness of pathology.