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The Benefits of Aquatic Exercise & Therapy for Individuals with Osteoarthritis of the Knee

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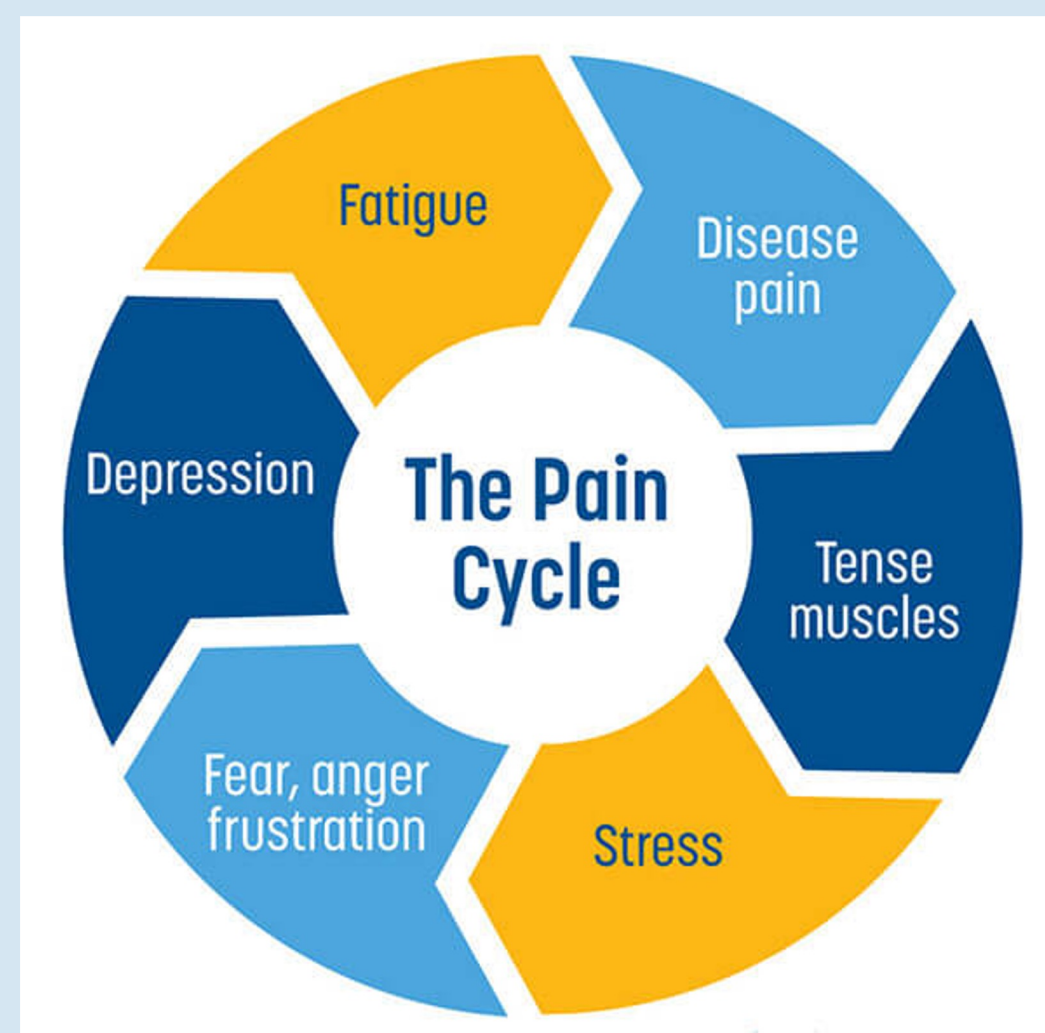


Introduction

Aquatic exercise is an excellent alternative for people who may not otherwise be able to perform land-based exercise. The geriatric population, identified as people over the age of 65, commonly presents with persistent pain in many areas, which is frequently associated with complications of aging. One of the most common causes of knee pain in elderly individuals is osteoarthritis. Knee osteoarthritis is the most frequent source of functional limitation of any disease. Many aquatic exercise techniques may assist in rehabilitation to combat this condition and its associated pain. A few modalities include aqua cycling, aqua aerobics, functional weight-bearing exercises, and strength training. Patients who have participated in aquatic exercise sessions have seen remarkable differences in their overall health. Moreover, current research suggests that improvements seen post-aquatic exercise/therapy include, but are not limited to, decreased pain, improved mobility, increased quality of life, and improved mental health.

Methods

All the evaluated studies assessed pain pre- and post-exercise prescription (1-4). Some studies also assessed physical function and quality of life (1,3), while other studies measured strength (3,4). Additional outcome measures included fear of movement (1), depression levels (2), self-efficacy (2), walking speed (4), body weight (2), and walking distance (4). Aquatic exercise modalities included aqua cycling (1), aqua aerobics (2), functional weight-bearing exercises (3), and strength training (4). Study duration ranged from 6 weeks (3,4) to 12 weeks (1,2), while session frequency ranged from twice a week (1,3) to three times per week (2,4). Session duration ranged from 45-60 minutes (1-3) or was not reported (4).



Outcomes

Decreased pain was seen across all studies regardless of exercise modality (1-4). Increased physical function and improved quality of life were reported in participants completing aqua cycling and functional weight-bearing exercises (1, 3). Similar to changes in physical function, individuals who completed the strength training protocol increased the speed and distance in which they could walk (4). Participants who completed the functional weight-bearing or strength training protocols demonstrated increased strength (3, 4). Following the completion of the aqua cycling program, participants were less fearful of movement (1). Reduced depression, reduced body weight, and increased self-efficacy were seen in participants following the aqua aerobic program (2). These results support aquatic exercise as an effective management strategy for knee osteoarthritis, regardless of aquatic exercise modality. These findings suggest that aquatic exercise prescriptions can be individualized based on the patient's needs and should include favored exercise modalities in order to achieve the best functional and mental outcomes.

Exercise Type	Frequency	Intensity	Benefits
Aqua Cycling (1)	2x per week 12 weeks 45 minutes	50% of HR max 12 on Borg Scale	• Decrease knee pain • Increased physical functioning • Reduced fear of movement • Increased quality of life
Aqua Aerobics (2)	3x per week 12 weeks 60 minutes	12-13 on Borg Scale	• Increased self-efficacy • Reduced pain • Reduced body weight • Reduced depression levels
Functional Weight Bearing Exercise (3)	2x per week 6 weeks 45-60 minutes	Weight-bearing 2-5 sets of 10 reps	• Reduced pain • Improved physical function • Increased strength • Increased quality of life
Strength Training (4)	3x per week 6 weeks	1-3 sets / 10-15 reps Aquatic equipment was used to increase intensity.	• Increased walking speed • Increased walking distance • Increased strength • Reduced pain

Conclusion

Incorporating aquatic cycling, aerobics, functional weight-bearing exercises, strength, training, or any combination of these modalities into an exercise prescription for individuals with osteoarthritis can lead to reduced pain, increased functionality, improvements in mental state, and improved quality of life (1-4).

Application

A prolonged warm-up and cool-down should be utilized when prescribing exercise for individuals with osteoarthritis. Patients should only move through a pain-free range of motion. Utilizing the 2-hour pain rule – if pain above pre-exercise level persists for 2 hours post-exercise, then the duration and intensity of the next session should be reduced – can help minimize pain. Exercising during specific time periods throughout the day and exercising in warm water (83-88°F) can also help to reduce pain. Overall, aquatic exercise can be individualized as a successful management technique for osteoarthritis of the knee and can lead to improvements in functional and mental outcomes.

To begin designing aquatic exercise prescriptions for patients with osteoarthritis, the following guidelines of the FITT principle can be used:

Frequency	Intensity	Time	Type	Progression
Aerobic: 3-5 days/week	Light to Moderate	Start with 10-minute bouts and progress to 150 minutes or more per week.	• Low-impact aerobic exercise targeting all major muscle groups. • Resistance exercises targeting all major muscle groups.	Progress gradually based on pain levels and other symptoms.
Resistance: 2-3 days/week				

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