

WATER-BASED EXERCISE IN CHRONIC RESPIRATORY DISEASE

Rationale and suitability

Water-based exercise is an alternative mode of physical exercise training to land-based exercise that improves exercise capacity and health-related quality of life in people with chronic respiratory disease.

The unique properties of water, including buoyancy to support body weight and reduce mechanical impact on the body, water turbulence and resistance to increase muscle work when moving the body and limbs through the water, and warm water temperature which may improve blood flow to muscles, can enable a higher intensity and duration of exercise, especially in people who have difficulty completing a land-based exercise training program. These features of the water environment also mean that water-based exercise training may be more suitable and appealing for the older population, or people with comorbid physical and medical conditions, such as orthopaedic conditions, obesity, chronic pain, or neurological conditions.

Exercise assessment and prescription

A complete patient assessment including medical history, exercise capacity, health-related quality of life and shortness of breath should be performed. Additionally, screening of contraindications and consideration of precautions to aquatic therapy, including patients' fear of water is necessary. The primary mode of exercise training is lower limb endurance exercise.

Research findings

Water immersion and exercise in water can be performed safely without any adverse events and with maintenance of oxygen saturation even in those with severe COPD

McNamara et al Phys Ther Rev 2011

Forces in water to moving limbs leads to higher perception of effort

Cole & Becker 2004

Lower average heart rate when exercising in water compared to land

Wadell et al Resp Med 2004

Hydrostatic pressure of water on chest wall leads to higher perception of breathlessness

McNamara et al Eur Resp J 2013

TRANSLATING EVIDENCE INTO CLINICAL PRACTICE

- Supervised water-based exercise
- Method: structured group sessions
- Length: 4-12 weeks
- Frequency: 2-3 x week
- Duration: 35-90 minutes
- Intensity: 3-5 on BORG 0-10 dyspnoea and RPE scales
- Type: UL & LL endurance and strength training

McNamara et al Cochrane Db Syst Rev 2013

Water exercise options:

stationary, travelling, suspended

Increasing exercise intensity:

- ↑ turbulence
- ↑ surface area
- ↑ speed
- ↑ range of motion
- ↑ length of lever arm
- change direction
- alter water depth
- add floats or weights
- ballistic/plyometric movements

Adherence to water-based exercise is facilitated by:

- ⇒ Support from staff
- ⇒ Enjoyment
- ⇒ Sense of achievement
- ⇒ Noticeable improvements
- ⇒ Personal motivation
- ⇒ Support from other participants

McNamara et al Chron Resp Dis 2015



Group or circuit-based exercise sessions including upper limb, lower limb, whole body, swimming variations, tethered running, deep water running and cycling exercises +/- floatation or resistive equipment

Practical considerations and safety

- Staff require an understanding of the physiology of immersion, and training in the principles of exercise training in water
- Keep appropriate medication and oxygen tanks at poolside
- Warn that initially shortness of breath may increase; consider anxiety
- Initially well supervised exercise of short duration and appropriate rests; monitor
- Emergency and pool rescue procedures must be in place; staff adequately trained
- Consider collection/removal method for secretions
- Keep well hydrated

