

## Athletic Rehab

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Athletic and Personal Training in the aquatic environment is one of the toughest activities a person can engage in if it's done correctly. The aquatic environment is not just for rehabilitation. It is also a viable option for fitness training for persons of all ages and abilities. Aquatic training and conditioning are as effective as traditional, land-based weight training, and it opens people up to a variety of new exercises to enhance performance and improve quality of life. The aquatic environment provides support and resistance and allows people to engage different muscle groups by improving overall flexibility and strength. A well-crafted aquatic training program can improve flexibility, cardiovascular/cardiorespiratory, strength, body composition, and balance and coordination. It reduces the perception of pain and decreases the risk of injury and finally improves the quality of life.

Core and muscular strength are the keystone of balance and movement necessary for activities of daily living. Beginning in our 30's, we lose muscle mass and strength that accelerates in our 50's impacting bone density. Strength training can compensate this loss with participation in an active strengthening program. Most people believe that the "weight room" is where strength training occurs. Juan Colado did a study comparing compliance with land weight training and aquatic weight training. In his study, the land weight training group had a 50% drop out rate while the aquatic group maintained participation in the program. Weight training interventions on the land are more static and therefore did not challenge neuromuscular activity that occurs with water strength training. In conclusion, Colado found improvement in muscle capacity and physical functioning using drag equipment in the water to be a viable alternative to improve muscular strength.

Colado used Perceived Exertion that he termed the Omni-Resistance Scale for improving resistance during in-water exercise to control and progress aquatic resistance intensity (overload) to improve muscle strength and endurance. Resistance training in the water must consider the length of the limb, drag surface area, velocity/speed of movement and control of range of motion – important for progressive overload. In order to achieve progressive overload, we speed up the movement and the execution becomes more difficult resulting in an upsurge of cardiovascular endurance and muscular strength.

Recommended drag equipment includes Aqualogix, AquaStrength, Hydrotone and Speedo bells and fins and rubberized tubing. You should monitor pace with beats per minute because the resistance provided by the water is always the same. The variables that help to control the focus of the exercises are: Intensity – perceived exertion, Power – the rate of doing work, Speed – movement as part of the power calculation, Angles – working all the muscle fibers by changing the angle of movement, or adding rotation to change the effect, and Range of Motion – selection of appropriate surface drag that allows performance through the full range of motion without sacrificing form. These are affected by viscosity of the water and action/reaction. Since all movement initiates in the core, a strong core provides the strength to maintain the stable alignment to perform and achieve the benefits of each exercise. Six important roles that the core plays in your body include: decompression of the spine, improvement in balance, increased joint

mobility and functional movement gains, increased ability to relax tonic muscles, increased fluidity of movement, and increased performance gains.

Resistance training considers the following factors to create progressive overload:

1. The exercise being performed
2. The length of the limb
3. Equipment factors: surface (drag) area
4. The velocity or speed of movement.
5. Control of the range of motion to achieve progressive overload.

These steps are recommended to determine intensity of aquatic resistance exercises:

1. Determine desired rep range based on participant goals and training history.
2. Determine desired level of exertion using Perceived Exertion. Water temperature influences the speed at which an exercise can be performed correctly, and repetitions increased
3. Choose appropriate devices that improve drag force.
  - Based on the participant's reps and exertion level.
  - Cadence should be the maximal possible allowing the exerciser to complete targeted reps at the targeted exertion level.
  - Explain form and technique for each exercise.
  - Determine the number of repetitions per set.
4. Cadences in the water use a tempo commonly between 44 and 64 beats per minute, often measured by time or a metronome – the exercise determines the lever length
5. Variables to control when planning a program, should include:
  - All movement planes of the body
  - Lever length adaptations
  - Intensity – perceived exertion – think power, not speed

An aquatic training program may also be just the thing to change up a person's athletic or fitness routine. This certificate program will examine the current scientific evidence for application of and effects of aquatic experience in the adult population to improve fitness and athletic ability.

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