

AQUAJOGGING: HIGH VALUE FITNESS

Part I of a Four Part Series, David K. Brennan M.Ed.

Aquajogging has become a popular alternative to land based running for athletes and fitness enthusiasts seeking a low impact training activity. It is a fact that 66% of all runners will experience a running related injury over any given 12 month period. [1] A significant amount of these injuries can be attributed to poor selection of training volumes and intensities (training errors). Research has show that running 30 miles per week increases the chance of injury by more than 55%. Depending on running speed and stride length, a runner will typically hit the ground between 800-2000 times per mile with ground reaction forces of up to 4 times their body weight. [2]

All runners appear to have a maximum amount of weekly mileage they run before beginning to breakdown. This "magic" number of miles is often referred to as one's "orthopedic limit". A runner's ability to withstand both the vertical force and repetitive motion associated with distance running is dependent on a number variables including present fitness level, inherent biomechanics, previous history of injury and genetics. If injury prone, it would make sense to gradually build weekly mileage by no more than 10% per week and set an upper limit of 25-30 miles per week. It is recommended that any increases in training volume beyond the "orthopedic limit" be in the form of low or non impact cross training activities.

Aquajogging permits the runner to increase weekly "mileage" yet eliminate the increased risk associated with repetitive impact during land based running. Many runners now use Aquajogging for low intensity "active recovery" between two land based workouts. [3]

Physiological Responses to Water Running

Significant differences exist in the physiological responses to water running and land based running. Several studies have compared maximal deep water running and treadmill running. They have concluded:

- Maximal oxygen consumption (VO2 Max) values during deep water running ranged from 83-89% of those maximum values obtained while running on a treadmill. [4-10]
- Heart rates during all out deep water running ranged from about 90-95% of maximal heart rates obtained during treadmill running. [11]
- Higher blood lactate measurements (2.4 mmol/L) for similar heart rates and VO2 values during maximal deep water running when compared with land based values. [12]
- For submaximal deep water running at similar levels of exertion, heart rates and oxygen consumption levels tend to be lower in the water compared to land based running. [11]
- Runners restricted to a deep water running regime for up to 8 weeks can maintain or even improve aerobic fitness. [13-16]

Aquarunning Form

It is very important to develop movement patterns in the water that closely resemble land based running form. To this end it is next to impossible to maintain

good running form in the deep water without the use of a flotation device. About 2-3 sessions are required to familiarize a runner to Aquarunning mechanics. Many runners do not take the time to develop the correct movement patterns and fail to maximize the benefits of this low impact highly specific cross training activity. [17]



Consider the motion that your head, arms, trunk, legs and feet naturally move through with each stride. View the running motion using three directions or planes of motion including horizontal (forward and back), vertical (up and down) and lateral (side to side).

Tips to help accomplish good form in the pool. Follow and execute these tips in the order listed:

- * Begin slowly performing less than 60 cadence: cycles per minute (cpm).
- * Always focus on maintaining the correct movement patterns for running.
- * Have a fellow runner or instructor observe the first few sessions, checking posture and providing verbal feedback.
- * Ensure the spine assumes a position slightly forward of vertical (2-3 degrees.)
- * Keep eyes looking out and ahead rather than down.
- * Position the head so that the ears are aligned vertically with the shoulders.

- * Keep the shoulders down and relaxed.
- * Move the arms close to the body line with most of the movement occurring at the shoulder joint.
- * Keep the elbows bent at 80-90 degrees.
- * Make a light fist with thumbs on top.
- * Start the movement of the hand at a point 5 cm from the water and 15-20 cm away from the chest.
- * Lead with the elbow and move the hand back and down so that the elbow, wrist and then thumb all pass the hip close to the body in a pendulum like action. Remember to maintain elbow flexion at 80-90 degrees.
- * Avoid any crossover or finning type motion (excessive shoulder or elbow internal/external rotation) with the forearm or hands while remaining relaxed smooth and streamlined.
- * Continue to focus on coordinating the arms with legs.
- * Start the leg motion with the thigh moved forward and up (approximately 70 degrees hip flexion) with the knee at a right angle (90 degrees).
- * Keep the foot flat using minor activation of the anterior tibialis.
- * Position the foot directly below the knee.
- * As the thigh moves downward and backward (hip extension) push the foot down with a "stomp like" action directly below the body.
- * Once the leg is fully extended (knee is almost straight) move the thigh behind the body (a slight hip hyper-extension).
- * Lift the heel toward the gluteals (buttocks), with the knee flexed.
- * Return the thigh to the forward and up starting position.
- * Avoid over striding (lower leg moving in front of the knee).
- * Focus on the up and down motion of the legs while maintaining an erect posture.
- * Ignore forward momentum through the water.
- * Focus on leg speed (cadence per minute) which is more important than horizontal speed (forward travel).
- * Imagine running on a treadmill.
- * Use a metronome or count leg turnover rate, (cycles per minute) to control leg speed.
- * Get in tune with the feeling of moving in the water.
- * Enjoy the multidirectional resistance and the non-impact workout!

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Biography of an interesting and knowledgeable individual

David Brennan M.Ed. is President of the Houston International Running Center. David competed for the University of Houston in track and cross-country accomplishing All-American Status for the 1500m run in 1976. He is an assistant professor at Baylor College of Medicine, Department of Physical Medicine and Rehabilitation and founder of the Aquarunning deep water exercise program. Brennan has a private practice in Aquatic Rehabilitation at The Houstonian in Houston, Texas and is a certified American College of Sports Medicine Health and Fitness Instructor.

An aside from Charlene: Things you need to know!

David is a valuable part of the team currently putting the finishing touches on the AquaJogger Training Program manual. David has used water running to train elite athletes including Carl Lewis and Leroy Burrell, to name a few. David will be co-presenting the AJTP Specialty Course at "CALA 2000:L'EAU ZONE", Dollard Des Ormeaux, June 9. Enrollment is limited in this training program. You will want to see David in action! He is brimming with valuable information coupled with a deep passion for water training that is wonderfully contagious. David is truly the expert in this field. I have had the sheer pleasure of working with David in Oregon while creating and writing the AJTP manual.