

Water Fitness for Athletes: Education and Performance Benefits
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The purpose of this article is to introduce all land sport coaches to the benefits of Water Fitness for athletes which will assist in an improved land performance. This article will inform coaches so they will know getting their team wet is absolutely worthy of a team's training time.

Water Fitness education is much more than a method to rehabilitate injuries due to land exercises (Aukerman, 2008; Reilly, Dowzer, & Cable, 2003). Water Fitness education is a bold application of physiological physics even greater than the sand workouts performed by Herchel Walker which transfer to land with benefits (Sanders, 2000).

Most athletic coaches have a solid base knowledge of the benefits of swimming. However, many confuse swimming with Water Fitness benefits. An understanding of the differences of benefits in Water Fitness and swimming are necessary. These are two entirely different methods of exercise with differences noted below:

1. They deliver different benefits.
2. They apply different water principles.
3. They involve different body alignments.
4. They utilize different equipment.
5. They require different water temperatures.

Kravitz and Mayo (1997) reported research continues to demonstrate what children experience, "more energy was needed to perform the same exercise in the water versus on land" (Cassady & Nielsen, 1992). In fact, "the resistance of water is twelve (12) times the density of air and up to eight hundred (800) times more resistance" (Snider-Copley, S.A.1999), depending upon an athlete's intensity, mass, and broadness of shoulders. Actually, Water Fitness in correct body alignment is a weight bearing exercise.

Combined training of Water Fitness and land, will aid athletic performance by initiating the efficient use of more muscle fibers throughout the athlete's body. A land based athlete may work the biceps performing curls then the triceps with a separate exercise; however, during a vertical water workout session with the body aligned correctly, "each pair of the athletes' muscles (agonist and antagonist) are fully engaged as designed" (Feineman, 1994).

Additional benefits for athletes on land as a result of bi-weekly Water Fitness:

1. **Explosive power.** Water Fitness, as a part of cross training, increases the action of fast twitch fibers in muscles (Aukerman, 1999). This occurs due to the fact that the athlete is working against constant resistance (fluid dynamics). The resistance of air does not engage muscle fibers in the same way. Each movement by the athlete under water in any direction is engaging large and small muscles. Research has demonstrated fast twitch fibers can double in size (Kravitz, 2009). Coaches, this translates to having a stronger, faster, quicker-off-the-line athlete to manage.
2. **Jumping.** An additional benefit of fast twitch muscle fiber strengthening is jumping height. Wallack (2007) interviewed and discussed the results that former Oakland Raiders conditioning coach, Marinovich, was having with NFL athletes. Marinovich explained the explosiveness resulting from Water Fitness; he said, “stretching a muscle right before it contracts fires more bundles of muscles at once and capitalizes on elastic energy produced by tendons and ligaments.” This can be accomplished safely in water and if attempted on land would most likely result in injury. As a result of combining Water Fitness and land, NFL free agent J.R. Lemon increased his vertical leap four (4) inches. (Aboarrage, 1999; Smith, P.L., Bizot, K, & Kennedy, D., 2004).
3. **Strength and flexibility** for muscles is maintained and improved, yet due to buoyancy (weighing approximately 1/5 of land weight with shallow water at mid-chest and being almost weightless while in deep water) the athlete experiences less stress and pressure on joints and ligaments while deeply working/conditioning muscles. In addition, all athletes can engage their cardiovascular system while limiting wear and tear as coaches prepare them for game day. (Raffaelli, Lanza, Zanolla, and Zamparo, 2010; Manjone & Mirandy, 1993).
4. **Enhanced endurance.** Water Fitness increases the team’s second half or 4th quarter performance. It conditions both slow and fast twitch muscle fibers and increases the endurance of the athlete, while the water principles help to deplete H⁺ proton (Kravitz, 2009). In fact, during an event, a Water Fitness trained athlete may still be increasing in performance; a solely land trained athlete may begin to experience fatigue quicker (Snider-Copley, 1999).
5. **Core conditioning.** Every movement in Water Fitness strengthens/conditions one’s core. Remember, the athlete is subjected to constant resistance due to water principles, so abs, lower back, and hip flexors are under a constant working load; this leads to constant strengthening (Kennedy, 1997).
6. **Muscle and bone density** are slightly increased since Water Fitness is a light weight bearing exercise (Kravitz & Waff, 2009; Sanders, 2009).

Athletes at Mississippi College improve their land performance when the Water Fitness benefits kick in within an estimated seven (7) weeks of bi-weekly interval training combined with their usual land workouts. These Water Fitness benefits are maintained for land performance as long as the athlete is continuing to mix both land and Water Fitness exercises. Dr. Ward and I have observed the athletes who have gained the Water Fitness benefits. However, when they stop coming to the pool, they lose the benefits they worked so hard to gain; then they notice a slack in their performance on land. They quickly return to mixing Water Fitness with their land training. Without question, Water Fitness is a year round necessity for athletes.

Often times it is difficult for a coach to arrange wet and dry training since NCAA rules/regulations determine how often a team can train. Mississippi College is NCAA III with limited times a team can practice. There are many items on the agenda for training athletes, and it is difficult to locate a time frame for Water Fitness. This is why I offer a specially designed Water Fitness program as a voluntary service to Mississippi College athletes. These Water Fitness exercises engage the muscles they will utilize to compete on land. As students experience the above benefits, they educate their peers, and the TEAM concept will grow (together everyone achieves more). The athletes who participate in bi-weekly Water Fitness plus continue their usual land training develop a higher level of physical fitness for performance on land. At some point within seven (7) weeks of Water Fitness, the athletes admit they are slightly faster on land, experience increased endurance, and recover faster. Mississippi College Offensive Senior Guard, Justin C. York, has been amazed at his increased explosive power in games during the 2010 fall season. York did not feel this level of explosiveness in his games until after several weeks of adding Water Fitness to his weekly land training.

Even an injured athlete can use Water Fitness; Evan Austin Erwin, distance runner for Mississippi College Track team is just one example. Evan first came to the deep water in mid August 2010. He was still dealing with a July 2010 foot injury. Two (2) weeks later, Evan tried his distance running on land with a time of eight (8) minutes per mile; but by the end of September 2010, Evan ran the mile in six forty five (6:45). Even though Evan is not back to his usual time prior to his July 2010 injury, he is showing improvement quicker than his Cross Country Coach, Butch Ard, expected.

Rob Ward, Ph.D., is employed at Mississippi College as a Counselor and fellow educator in the Psychology/Education Department. Approximately three (3) years ago, at age forty-two (42), Ward began engaging in Water Fitness. Since then, he has taken his five (5)k time from over thirty (30) minutes to less than twenty-four (24) minutes. He has experienced similar success in his ten (10)k's. During that time he lost and maintained a thirty-five (35) pound weight loss. Today while continuing Water Fitness, Ward's blood work has changed and improved, his body fat has decreased to less than fourteen (14) percent, and his

testosterone level has increased. The BMI had him placed in the red zone, and he was obese (weighing two hundred and four (204) pounds). Lately Ward has completed triathlons with a minimal amount of land training. Ward believes Water Fitness strengthens the muscles used in his triathlons; he cross trains by running in the deep end, using the hydro-bike, and walking in the shallow end. He has completed his first half-marathon as a direct result of Water Fitness. He has noticed that his energy output after a vigorous twenty (20) minute deep water run feels equivalent to running an hour on land. After age forty (40), Ward's body did not do well with all-land training five (5) times a week. However, his body does respond well (five (5) times a week) to the cross-training aspects of Water Fitness mixed with weight lifting, and running on land. As a way to encourage healthy lifestyles and set various goals, he challenges his twenty (20) year old students to compete in various events which consist of a one (1)-mile run, pull-ups, push-ups, timed planks, and dumb-bell presses thirty-seven (37) percent of body weight for men/twenty (20) percent of body weight for women. If they win, they earn exemption from exam questions; when he wins; his students become curious about Water Fitness. The results show the students Water Fitness really works, and Water Fitness is an efficient total body workout.

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