

## SPECIFICITY OF AQUATIC TREADMILL RUNNING

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### ISSUE

Endurance runners often use deep water running (DWR) and shallow water running (SWR) to decrease repetitive impact forces. However, both modes have notable limitations (Dowzer, Reilly, Cable, & Nevill, 1999; see Table 1). Aquatic treadmill (ATM) running is a new alternative to DWR and SWR. Aquatic treadmill running has several unique aspects that may improve training specificity. Specificity considerations for ATM running include cardiorespiratory responses, gait kinematics, and lower extremity muscle activation.

DWR & SWR Limitations
<ul style="list-style-type: none"><li>• Reduced control over exercise workload</li><li>• Decreased peak exercise responses compared to land</li><li>• Abnormal gait kinematics</li></ul>

Table 1. Limitations of DWR and SWR explain the recent popularity for ATM running.

### OVERVIEW

Oxygen consumption and heart rate responses during ATM running are reportedly comparable to land running responses (Rutledge, Silvers, Browder, & Dolny, 2007; Silvers, Dolny, & Rutledge 2007). Also, anecdotal (Rutledge et al., 2007) and empirical (Keuhler, Dolny, & Browder, 2006) assessments of gait kinematics during ATM running have noted similarities to land running. Silvers (2009) compared lower extremity muscle activation between ATM and land treadmill running. General trends, such as the order of muscle recruitment and total muscle activation, were similar between both modes of running.

### CONSIDERATIONS

Aquatic treadmills can balance buoyancy and drag forces via water depth and treadmill speed (Rutledge et al., 2007; Silvers et al., 2007; Silvers, 2009). Manipulating these factors apparently improves the specificity of ATM running (Silves, 2009). However, the presented research observations were from an acute context. A thorough evaluation of specificity requires further investigation of training adaptations and run performance following chronic ATM running. Consequently, the lack of longitudinal evidence for ATM specificity necessitates that coaches carefully consider the unique needs of each athlete when prescribing ATM running exercise.

### REFERENCES

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