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Relationships between head-out aquatic exercise kinematics and musical cadence: Analysis of the side kick

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Abstract

Background: Head-out aquatic exercises became one of the most popular physical activities within the health primarily and thirdly prevention system. Music is seen as one of the most important aspects when conducting head-out aquatic exercise sessions. **Research question:** Is there any relationship between musical cadence and the kinematic behaviour when performing aerobic head-out aquatic exercises? It was hypothesized that an increase in music cadence will would impose a decrease of the segment range of motion. **Type of study**: Experimental, prospective. **Methods:** Six young and clinically healthy women with at least one year of experience conducting head-out aquatic classes were videotaped in the frontal plane, with a pair of cameras providing a double projection (above and below the water surface). Subjects performed an incremental protocol of five bouts (120b.min^{-1}, 135b.min^{-1}, 150b.min^{-1}, 165b.min^{-1} and 180b.min^{-1}) with 16 full cycles of the "side kick" exercise. Data processing and calculation of segmental (i.e. hands and feet) and anatomical landmark (i.e. centre of mass) were performed using the software *Ariel Performance Analysis System* and applying the *DLT* algorithm. **Results:** There was a decrease in the cycle period during the incremental protocol. The relationships between the segmental lateral and vertical displacements with the musical cadence were not significant. The segmental velocities on the lateral and vertical components showed significant increases throughout the incremental protocol. **Conclusions:** The data suggest that segmental velocity increases with increasing cadence, reducing the cycle period and maintaining the segmental displacements. **Keywords:** basic aquatic exercise, music rhythm, range of motion, segmental velocity, aquatic therapy

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