


Kinematical Comparison of the 200 m Backstroke Turns between National and Regional Level Swimmers

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ABSTRACT

The aims of this investigation were to determine the evolution of selected turn variables during competitive backstroke races and to compare these kinematic variables between two different levels of swimmers. Sixteen national and regional level male swimmers participant in the 200 m backstroke event at the Spanish Swimming Championships in short course (25 m) were selected to analyze their turn performances. The individual distances method with two-dimensional Direct Linear Transformation (2D-DLT) algorithms was used to perform race analyses. National level swimmers presented a shorter "turn time", a longer "distance in", a faster "underwater velocity" and "normalized underwater velocity", and a faster "stroking velocity" than regional level swimmers, whereas no significant differences were detected between levels for the "underwater distance". National level swimmers maintained similar "turn times" over the event and increased "underwater velocity" and "normalized underwater velocity" in the last (seventh) turn segment, whereas regional level swimmers increased "turn time" in the last half of the race. For both national and regional level swimmers, turn "underwater distance" during the last three turns of the race was significantly shorter while no significant differences in distance into the wall occurred throughout the race. The skill level of the swimmers has an impact on the competitive backstroke turn segments. In a 200 m event, the underwater velocity should be maximized to maintain turn proficiency, whereas turn distance must be subordinated to the average velocity.

Key words: Swimming, biomechanics, motor skills, repeated measures

Key Points

- The underwater turn velocity is as a critical variable related to the swimmers' level of skill in a 200 m backstroke event.
- Best swimmers perform faster but no longer turn segments during a 200 m backstroke event.
- Best swimmers maintain their turn performance throughout the 200 m backstroke event by increasing the underwater velocity during the final part of the race.
- The turn distance out seems to be subordinated in order to maximize the average velocity during a 200 m backstroke event.

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