

COORDINATION: HOW ELITE SWIMMERS DIFFER FROM SUB-ELITE

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In this talk the inter-limb coordination of elite and sub-elite swimmers are discussed with a view to informing coaches of the similarities and differences between these groups. In the past it has been reported that the inter-limb coordination should show an opposition mode, i.e. a propulsive continuity between the propulsion of one limb and those of the other limb, in order to minimize the intra-cyclic velocity variations. However, the research of our centre of research highlighted the fact that the inter-limb coordination mode adopted by the swimmers corresponds to three types of constraint defined by Newell (1986): organismic, task and environmental constraint. The skill level of the swimmers, the specialty, the gender, the handedness and the breathing laterality act as organismic constraints; the imposed race pace, the stroke frequency, the number of strokes, the breathing frequency and pattern could be considered as task constraints while the active drag and his correspondent velocity relate to the environmental constraints. Inter-limb coordination was found to vary from catch or glide coordination mode to superposition mode, showing that the opposition mode is only the best "theoretical" mode and the glide mode is not a technical mistake. Therefore it is advised for coaches to don't consider an ideal coordination mode in the absolute but to teach the swimmers in different ways when developing coordination.

This talk presents new information based on recent scientific research conducted at the CETAPS. The variables of interest were: average swim speed, stroke length, stroke frequency, intra-cyclic velocity variations, breathing laterality, relative duration of arm and leg stroke phases, time gap between propulsive actions assessed by total time gap (TTG) in the simultaneous strokes and by index of coordination (IdC) in the alternate strokes.

Interesting findings emerged that have implications for the both elite and sub-elite swimmers should be coached.