

## **UNDERWATER DOLPHIN KICKING IN STARTS AND TURNS**

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Our studies related with underwater dolphin kicking helped us to understand the complexity of this propulsive action (applying kinematic analysis and flow visualization) to develop more appropriate prescriptive information to be applied in application of this technique in the performances of national and international swimmers.

Under the rules limitations (15m), the swimmers can apply properly this technique and reduce the starting time until times close to 5 s. (considered impossible in the past). New swimsuit technology improves particularly the performance in this technique.

Some aspects need to be considered based on our research in this technique: a) when start the dolphin kick after the start or turn [how long should glide]; b) influence of the previous gliding velocity; c) undulating or oscillating; d) influence of the morphological factors; e) different models and variables to measure its efficiency; f) how long should keep the dolphin kick and; g) when to finish the dolphin kicking.

In our talk we will try to advice on the aspects mentioned and to show the kind of methodology we are applying to improve the use of this technique to the Spanish swimmers.