

Costa, M., Bragada, J., Mejias, J., Louro, H. & Barbosa, T. (2011). Anthropometrical, energetical and biomechanical contribution for the elite swimming performance during the peak form period of the summer season. 2nd International Symposium of Sports Performance. Research Centre in Sports, Health and Human Development, University of Beira Interior, Covilhã.

#### Abstract :

The aim of this study was to identify the contribution of several anthropometrical, bioenergetical and biomechanical parameters for the 200 m front crawl performance (Perf200m) during the peak form of the summer season. Eight Portuguese male swimmers from international and national level were analyzed in a period coincident with important competitions (july of the 2010-2011 season). Anthropometrical assessment included the body mass (MC), height (Est) and arm span (Env). An incremental set of 7 x 200 m front crawl was applied to obtain: i) the velocity of the maximal lactate equilibrium estimated to the 4 mmol (V4), maximal blood lactate concentration ([La-.sub.pico]), maximal oxygen consumption ([VO.sub.2]max), minimum velocity where the maximal oxygen consumption is reached (v[VO.sub.2]max) maximal metabolic power ([E.sub.tot]) and energy cost (C), as energetical parameters and ii) stroke distance (DC), stroke frequency (FG), stroke index (IN) and propelling efficiency ([eta]p), as biomechanical indicators. The results demonstrated that the V4 ( $r = -.75$ ,  $p = .03$ ), v[VO.sub.2]max ( $r = -.83$ ,  $p$  Keywords: prediction, performance, elite swimmers, linear regression, summer season O presente estudo procurou determinar o contributo dos factores antropometricos, bioenergeticos e biomecanicos para a performance dos 200 m crol (Perf200m) no pico de forma na epoca de verao. Foram analisados oito nadadores portugueses num periodo coincidente a competicoes importantes (julho da epoca de 2010-2011). A avaliacao antropometrica incluiu a determinacao da massa corporal (MC), a estatura (Est) e envergadura (Env). Recorreu-se a aplicacao de um teste incremental de 7 x 200 m crol de modo a determinar: i) velocidade de lactato estimado as 4 mmol.[L.sup.-1] (V4), maxima concentracao de lactato apos esforco ([La-.sub.pico]), consumo maximo de oxigenio ([VO.sub.2]max), velocidade minima de obtencao do [VO.sub.2]max (v[VO.sub.2]max), dispendio energetico total (Etot) e custo energetico (C), como parametros bioenergeticos e ii) frequencia gestual (FG), distancia de ciclo (DC), indice de nado (IN), e a eficiencia propulsiva ([eta]p) como variaveis biomecanicas. A Perf200m associou-se significativamente com a V4 ( $r = -.75$ ,  $p = .03$ ), v[VO.sub.2]max ( $r = -.83$ ,  $p$  Palavras-chave: predicao, performance, nadadores de elite, regressao linear, epoca de verao