

Introduction to the Special Issue on Swim & Aquatic Activities

Swimming is the second Olympic sport and one of the most popular around the World. On top of that, it became very high-tech, as performance depends from marginal gains. Scientific evidences on swimming started to be published on regular basis in the 1960s. Since then, a very unique community dedicated to swimming research started to growth. Every four years, swimming scientists share their knowledge in the International Symposium on Biomechanics and Medicine in Swimming. This scientific meeting started in 1971 and already had eleven editions. Beyond the proceeding of these congresses, more than 2000 scientific articles have been published in peer-review journals since 1970. However these publications mostly concerned competitive swimming with various interests: physiology & energetics, biomechanics, training & testing, coaching, etc.

This special issue of Journal of Sport Science and Medicine attempted to enlarge the research spectrum beyond competitive swimming and the traditional domains presented previously in order to promote more broadly 'aquatic activities'. Therefore this special issue promotes research concerning Water Polo (see manuscripts of Uljevic et al., Meckel et al.), Synchronised Swimming (see manuscript of Mandic et al.), swimming start (Beretic et al., Garcia-Hermoso et al.) and turn (Veiga et al.).

This special issue was also the opportunity to bridge the gap between young and elite swimmers by reporting both longitudinal researches and studies regarding young swimmers (see manuscripts of Costa et al., Silva et al., Mezzaroba et al., Strzala et al.), which are very useful for talent detection and training, and studies about taper and overload in elite swimmers (see manuscript of Hellard et al.).

Moreover, physical activities are often associated to well-being and fitness. Therefore, interesting studies analysed the effect of water exercise (in particular S.W.E.A.T. water exercise which is a method of cues that coach individuals to changes in speed, surface area, impact, range of motion, planes of movement and travel through water; see manuscript of Sanders et al.), self-training procedures in leisure swimming (see manuscript of Potdevin et al.) and competitiveness in master categories (see manuscript of Medic et al.). Two other studies investigate the influence of training with reduced breathing frequency (see manuscript of Kapus et al.) and doing additional respiratory muscle endurance training (see manuscript of Lemaitre et al.).

Last, this special issue also highlighted the technological improvement to conduct research in swimming. For instance, Magalhaes et al. proposed a software for automatic tracking in underwater motion analysis, while Sato and Hino described computational fluid dynamics (CFD) analysis of hydrodynamic force acting on a swimmer's hand. Finally, Rossi et al. reported as Dual-energy X-ray absorptiometry (DXA) has the potential for direct measurement of body segmental inertial parameter.

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