

Swimming Injuries might be Prevented Through Correct Posture Consciousness

Nuno Serra^{1,2} and Ricardo J. Fernandes^{1,2*}

¹Centre of Research, Education, Innovation and Intervention in Sport, Faculty of Sport, University of Porto, Porto, Portugal

²Porto Biomechanics Laboratory, University of Porto, Porto, Portugal

*Corresponding author: Ricardo J. Fernandes, Centre of Research, Education, Innovation and Intervention in Sport, Faculty of Sport and Porto Biomechanics Laboratory, both at University of Porto, Porto, Portugal, Rua Dr. Plácido Costa, 91 4200-450 Porto, Portugal, Tel: +351 220425273; E-mail: ricfer@fade.up.pt

Received date: March 26, 2018; Accepted date: March 27, 2018; Published date: March 28, 2018

Copyright: © 2018 Serra N, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Editorial

Swimming training, as for other individual and cyclic sports (e.g. running, cycling and rowing), requires the repetition of the same gestures thousands of times per day, overloading swimmers muscles, joints and tendons in their daily routines [1]. It is known that, since the 1970s, swimmers are engaged in, at least, two training sessions per day, six (or even seven) days a week [2], sometimes not even stopping during their summer holidays due to their participation in recent and fashionable open water events.

This typical voluminous training happens worldwide and, nevertheless the existence of some alerts by some well-known researchers [3,4], swimming coaches persists in implementing large mileage workouts, frequently conducted at intensities lower than those used in competition. In their mind, “the much the better”, arguing that swimmers need to develop specific physiologic characteristics that are only possible to be obtained in-water, as well as their “feeling for the water”. As we have been alerting against this training philosophy all our academic (and coaching) life, we will focus in this Editorial on the new contributions that a therapist can implement to prevent the significant number of overuse injuries caused by extra-repeated movements and bad posture.

In general, body movements depend on the positioning of musculoskeletal structures that govern the muscle function. Muscle synergies depend not only on processes of self-organization, but also on the constraints (e.g. environmental) imposed on the neuro-musculoskeletal system [5]. Sacrum, hip and spine are functionally interrelated through muscular, fascial and ligamentous interconnections that also extend to the limbs and head [6]. It has been also suggested that inappropriate tension in some body parts might be transmitted to distant parts of the musculoskeletal system leading to overload and functional restrictions [7]. Therefore, if swimmers persist in maintain an excessive muscular tonus, the space between bones will diminish, leading to permanent articular compression that provokes a limited range of movement, inflammation and pain.

In fact, even if under-researched, the extra repeated movements in competitive swimming origins fatigue by structures overuse, causing musculoskeletal system malfunction [8]. This changes myofascial tensional integrity (a.k.a. tensegrity) that will constrain movement's effectiveness. At a primary intervention plan, therapists might use myofascial manual therapy to release constrained fascial tissue, rebalancing its tensegrity. In a very short number of interventions (usually up to three) it is advised to reprogram movement patterns, starting by better understanding coordination between agonist and antagonist muscles. We uphold exercises that start educate swimmers to control eccentric contraction of antagonist muscles.

For a greater functional control we propose swimmers to sustain a range of movements allowing joints to gain mobility instead of developing muscular flexibility. It should be privileged exercises requesting distant articulations that regulate each other than executing analytical exercises with heavy loads. It is well accepted that the horizontal position of the trunk when performing the four swimming conventional techniques (front crawl, backstroke, breaststroke and butterfly) has got primordial importance at improving performance [9] and preventing lower back, groin or shoulder pain by joint compression. However, maintaining this position depends on the ability to keep the thighs moving in flexion avoiding its extension. Therefore, to keep the right movement pattern swimmers should learn how to keep hip retroversion while moving the thighs in the correct way, keeping spine horizontal at or above water line.

To reach this body behavior control we are in favor of promoting exercises that require permanent hip retroversion either standing up, supine position or ventral decubitus. This exercises planning should include four important steps: (i) learn how to coordinate the spine, hip retroversion and thighs flexion position; (ii) exercise this proprioceptive work at a variety of movements preserving hip retroversion; (iii) transfer this pattern when performing different swimming technics and (iv) move fast but in the right way, preserving the swimming technical patterns. This overall work should be conceptualized and applied by both team therapist and coach.

References

1. Kammer CS, Young CC, Niedfeldt MW (1999) Swimming injuries and illnesses. *Phys Sportsmed* 27: 51-60.
2. Maglischo EW (2003) *Swimming Fastest*. Human Kinetics Publishers Champaign, Illinois.
3. Costill D (1999) Training adaptations for optimal performance. In: K Keskinen, P Komi, AP Hollander (editors) *Proceedings of the VIII International Symposium of Biomechanics and Medicine in Swimming*. University of Jyväskylä, Finland, pp: 381-390.
4. Salo DC (1993) *SprintSalo: A cerebral approach to training for peak swimming performance*. Sports Support Syndicate, Pittsburgh.
5. Newell KM (1986) Constraints on the development of coordination. In: MG Wade, HTA Whiting (editors) *Motor development in children: Aspects of coordination and control*. Martinus Nijhoff, Amsterdam, pp: 341-361.
6. Oleksy L, Mika A, Kielnar R, Twardowska M (2016) Lumbopelvic disorders - local or global dysfunction? *J Nov Physiother* 3: e001.
7. Myers T (2014) *Anatomy Trains: Myofascial meridians for manual and movement therapists*. Churchill Livingstone Elsevier, UK.
8. Fernández JJC, Verdugo RL, Feito MO, Rex FS (2012) Shoulder pain in swimmers. In: S Ghosh (editors) *Pain in perspective*, Intech, Chapters published, pp: 119-146

9. Zamparo P, Gatta G, Pendergast D, Capelli C (2009) Active and passive drag: the role of trunk incline. Eur J Appl Physiol 106: 195-205.