Kinematic parameters of crawl swimming in swimming athletes from images captured with the aid of home artifacts as a support of equipment for filming

Nadyson Clayton Abreu da Silva[1], Mauricio Rocha Calomeni[2], Anderson Pontes Morales[2], Flávio Thadeu Queiroz Rocha[3]

(1) Scientific Initiation Volunteer Student at PROVIC/ISECENSA – Physical Education Course; (2) Collaborating Researcher at the Human Motricity Biosciences Laboratory – LABIMH/ISECENSA; (3) Advisor Researcher LABIMH/ISECENSA – Physical Education Course – CENSA/ISECENSA Higher Education Institutes, Rua Salvador Correa, 139, Centro, Campos dos Goytacazes, RJ, Brazil.

Analysis of the underwater movements of a swimmer is of fundamental importance in sports, given that the characterization of the propulsion of swimming takes place in the submerged phase of the movements. Given this finding, this homemade artifact built from materials available on the market, such as PVC pipes and fittings; skateboard wheels and roller skates, and relatively low cost, may or may not positively influence the performance of professional and amateur athletes, to improve sports performance and prevent injuries. The objective of this pilot study, for possible collections for sample calculation, was to verify the effectiveness of a home model of support for the cameras during the capture of images for the analysis of movement, in swimming athletes. The study proposed as a method to couple two Go Pro Hero4 cameras to the homemade artifact, one submerged to capture underwater images and another above water level that served for observation of the aerial phase of the stroke, as well as for better framing during the capture of the real-time images, transmitted to the tablet placed on the artifact, which was conducted by an operator positioned on the edge of the pool and moved parallel to the athlete during the execution of the swim. One female swimming athlete from the city of Campos dos Goytacazes-RJ was selected, who performed a 25-meter crawl test, which consisted of two 25-meter shots, with an active range of five minutes between them. For the analyses, the angulations of the lower limbs (ankle, knee, and hip), hip leveling, and the time of the complete stroke cycle, as well as the time of the respective half-cycles, were taken into account. It is concluded that this home artifact model of support for biomechanical analysis of swimming was able to present its effectiveness relative to the purpose, with the obtainment of images subject to analysis. However, there is a need for additional studies, as in compliance with the decrees related to social isolation, it was not possible to film underwater a larger number of athletes, as well as their respective analyses.

Keyword: Swimming. Biomechanical Phenomena. Performance.