ID 439

SPORT INFLUENCE ON FOOTPRINTS OF COLOMBIAN'S POWERLIFTERS, SWIMMERS AND FIELD ATHLETES

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The aim of this study was to establish the influence of sports on the characteristics of the footprint in sport practitioners of Powerlifting, Swimming and Field Athletics. The research was conducted in a population of 280 athletes, which were classified according to foot type, the type of forefoot and some anthropometric variables such as length and width of the footprint. The results showed a tendency to a cavus foot type, regardless of sport practiced, with a higher prevalence of these in practitioners of field athletics and swimming. It also showed a high percentage of asymmetric (right and left foot) and differences in the forefoot type, length and width of the footprint.

KEY WORDS: Foot, anthropometry, biomechanics, sport.

ID 103

BIOMECHANICAL ANALYSIS AND FUNCTIONAL ASSESSMENT OF D. ROBLES, WORLD RECORD HOLDER AND OLYMPIC CHAMPION IN 110 M HURDLES

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ABSTRACT: A biomechanical analysis of the athlete Dayron Robles' hurdle race was carried out using state-of-the-art technology, along with the Spanish record holder Jackson Quiñónez. Robles is a world record holder and an Olympic champion in the 110 metre hurdles. Kinematic data is provided, which offers a detailed analysis of Robles' hurdle race and is related to his performance in strength tests. We reach the conclusion that the high levels of reactive strength, with very short ground contact times, are Robles' main characteristics in comparison with Quiñónez. In addition, an excessive flight time over the hurdle was noted which his trainer, on being made aware of the results of this research, has managed to correct.

KEY WORDS: Athletics, race, kinematics, strength, performance.

ID 184

THE EFFECT OF WEARING A CAP ON THE SWIMMER PASSIVE DRAG

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The purpose of this study was to analyse the effect of wearing a cap on swimmer passive drag. A computational fluid dynamics analysis was carried-out to determine the hydrodynamic drag of a female swimmer's model: (i) wearing a swimming cap and; (ii) with no cap. The three-dimensional surface geometry of a female swimmer's model with cap and with no cap was acquired through standard commercial laser scanner. Passive drag force and drag coefficient were computed with the swimmer in a streamlined position. Higher hydrodynamic drag values were determined when the swimmer was with no cap in comparison with the situation when the swimmer was wearing a cap. In conclusion, one can state that wearing a swim cap may positively influence swimmer's hydrodynamics.

KEY WORDS: CFD, swimming, model, sports equipment.

ID 512 (NIA)

TETHERED SWIMMING AS AN USEFUL TOOL TO MEASURE UNBALANCE BETWEEN ARMS AND FORCE PRODUCTION DECREASE

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Our aim of present study was to investigate the differences in force production between arms during front crawl tethered swimming (TS). Firstly, 14 young male swimmers (14.2 ± 1.09 yrs; 168.3 ± 2.22 cm; 59.9 ± 4.77 kg) undertook a 30 s maximum front crawl TS test. It was observed that preferred arm (P_Fmax) produces a maximum force higher than non-preferred arm (NP_Fmax). Additionally, was verified that the decrease in maximum force was higher for P_Fmax than NP_Fmax. In the second part of the study, 6 elite male swimmers (19.8 ± 2.23 yrs; 183.6 ± 3.64 cm; 77.3 ± 3.64 kg) replicated the methodology, being the individual curves assessed trough polynomial curves, which allowed identifying the unbalance between arms. This methodology may detect a limiting factor of performance being a useful tool for coaches training prescription.

KEY WORDS: biomechanics, strength, training, front crawl.