

Abstract

Topic: The Transfer of Strength Prerequisites to Execution of Crawl Swimming Technique Movements

Goals: The aim of the work was to verify whether the controlled intervention, which contains nonspecific and specific strengthening of the upper limbs in the dry and in the water, positively affects the transfer of the muscular force into the swimming technique and the swimming performance.

Methods: To determine the strength of the upper limbs, we used the Biokinetic device. To ensure maximum swim performance, we performed a 50-m test, from which we calculated the frequency and length of the swimming stroke. The data was processed in SPSS 21.0 program using the variance analysis (ANOVA), the pair t-test was used to evaluate the difference between the monitored parameters.

Results: We found that the Dry Group which did the strength exercises on dry land significantly influenced the overall performance, the swimming frequency, the length of the stroke and the strength of the upper limbs of swimmers without swimming career.

The Dry/Water Group that exercised in water and also on land significantly influenced the overall performance of the upper limbs of swimmers without swimming career. Results of the other controlled variables were not statistically significant.

We also found that the W Group which did the strength exercises only in the water significantly influenced the overall performance and strength of the upper limbs. These results were confirmed by a high degree of effect size. Other results were not statistically significant, but the degree of size effect confirmed a positive shift in crawl technique. The frequency of the stroke was 2.7% lower than in the pretest, and the length of the stroke was extended by 5.6%. When comparing the Water Group results with the Dry Group and Dry/Water Group results, we found that the Water Group had the highest positive transfer rate, both in swimming performance and in swimming technique of swimmers without swimming career.

Keywords: transfer, upper limb strength, swimming performance, swimming technique