ANALYSIS OF THE ANTHROPOMETRIC PROFILE IN HIGH-PERFORMANCE SWIMMERS DURING CORE MUSCLE STRENGTHENING TRAINING: A PRELIMINARY STUDY

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ABSTRACT

Swimming, with its growing popularity and professionalization, requires detailed physical preparation to optimize performance. This study aimed to investigate the importance of anthropometric profile during core muscle strengthening training in high-performance swimmers. A randomized study was conducted with an experimental group and a control group, involving athletes from the Evangelical Educational Association of Anápolis, aged between 10 and 22 years. The study included measurements of age, weight, height, BMI, wingspan, and foot size in three phases: pre-training, detraining, and post-training. Of the 28 athletes evaluated, 13 were in the Experimental Group and 15 in the Control Group. The analyses showed differences in anthropometric characteristics between the groups. Preliminary results suggest the need for further research on the correlation between anthropometric profile and core strengthening training. These data aim to support future investigations and training practices to improve swimmers' performance.

Keywords: Anthropometry, Swimming, Core Strengthening**.**

INTRODUCTION

Over the years, with the widespread popularity of swimming, the sport has expanded increasingly and is now practiced by all social classes. Nowadays, swimming competitions have become increasingly well organized and professionalized, reaching a high level and importance in the sports world. In this competitive context, it is extremely noteworthy that any difference in an athlete's preparation influences their results, so it is essential to highlight the importance of core muscle strengthening in high-performance swimmers. Core muscles are essential for trunk stability and functionality. The core encompasses not only the abdominal muscles, but also those surrounding the spine and pelvis. These muscles play a crucial role in maintaining posture, protecting the spine, and facilitating efficient movements (SOBOTTA).

The anthropometric profile is also an important selective factor for success in numerous sports (BAXTER-JONES; THOMPSON; MALINA, 2002). Early studies with Olympic competitors revealed that the biotype of athletes is related to a high level of performance in certain sports (DE GARAY; LEVINE; CARTER, 1974). Among swimmers, high values for the length and surface area of body segments (forearms, hands, feet, and legs) are decisive for better results (FERNANDES ; BARBOSA; VOLAS-BOAS, 2002). However, regarding measurements of weight, height, and body composition, data are still scarce and conflicting.

In this sense, anthropometric references enable the identification of a high-level athlete, as well as reflecting their level of training. As the number of studies on anthropometry available is still quite limited, mainly due to the great qualitative advance in the preparation of these athletes for competition, the purpose of this study was to characterize the anthropometric profile of high-performance swimmers during core muscle strengthening training.

METHODOLOGY

This is a randomized study with an experimental arm and a control arm. It was conducted with federated athletes practicing high-performance swimming (front crawl stroke) representing the Evangelical Educational Association (UniEvangélica) in the city of Anápolis. Athletes between the ages of 10 and 22, affiliated with the Goiás Aquatic Federation (FAGO), with a history of participating in state and regional competitions, and whose parents/guardians agreed to participate in the study were included. The exclusion criteria were athletes with acute respiratory disease (sinusitis, bronchial asthma) or heart disease reported by the athlete, and athletes who reported recent osteneuromuscular injuries. The first part of the study consisted of a meeting between the research team and all athletes during their training hours at the water park, with the cooperation and authorization of the manager. Athletes who expressed interest in participating were invited to a private room (the water park's assessment office) with two researchers present to read and sign the Informed Consent Form (FICF). Minors received the minor's FICF and the parent/guardian's FICF for their

parents to read and contact the researcher to answer any questions about their child's participation.

The study will consist of three stages: pre-training (referring to the period when athletes are in daily training, but without the intervention), detraining (referring to the phase when athletes return from vacation to resume daily training and begin the intervention), and post-training (referring to the period after the intervention). In the first stage, the following variables were collected and analyzed: sex, age, weight, height, BMI, wingspan, and foot size.

PRELIMINARY RESULTS

Of the total of 28 athletes evaluated, 13 are part of the Experimental Group and 15 are part of the Control Group. Among them, 18 are male and 10 are female. The information collected can be seen in Tables 1 and 2 below.

Table 1. Anthropometric characteristics of high-level swimmers in the Control Group. Values expressed as mean and standard deviation.

Characteristics	Average	SD (n=15)	Variation
Age	15.93	6.09	10
Weight (kg)	62.52	12.98	37.3-83.9
Height (cm)	166.53	13.43	138
Wingspan (cm)	172.26	13.22	139-198
Foot size (cm)	24.33	3.03	21
BMI	22.33	2.24	17.3

Table 2. Anthropometric characteristics of high-level swimmers in the Experimental Group. Values expressed as mean and standard deviation.

Characteristics	Mean	SD (n=13)	Variation
Age	14.2	2	10-18
Weight (kg)	58.62	13.58	34.9-80.6
Height (cm)	166.07	13.16	136
Wingspan (cm)	171.07	18.19	134
Foot size (cm)	23.23	1.39	20
BMI	2	2.48	16

FINAL CONSIDERATIONS

Based on the above, the objective of this study was to characterize the anthropometric profile of high-performance swimmers during core muscle

strengthening training. The first step of the study was to identify, through studies and interventions, the anthropometric profiles of the athletes and the characteristics that can be considered relevant in the construction of this study.

Through this view, it is suggested that future research further investigate the anthropometric profile of swimmers and its correlation with core muscle strengthening training, broadening the understanding of the topic.

Finally, it is hoped that the findings of this research will serve as basis for practical implications, promoting reflection and actions that contribute to the development and continuity of new related research.

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