

RELATIONSHIP BETWEEN ANTROPOMETRIC, CORPORAL COMPOSITION AND PERFORMANCE IN YOUNG SWIMMERS, BOYS AND GIRLS

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INTRODUCTION

The young athlete is physiologically unique from the adult and must be considered differently. The growth and development of their bones, muscles, nerves, and organs largely dictate their physiological and performance capacities (Bar-Or, 1983; Costill & Wilmore, 1994; Stager et al., 2008).

Swimming performance, and the required times to reach a competition (TAC), should look for those differences and should be compatibles with them.

PURPOSE

The purpose of this study was to compare the differences on anthropometric and corporal composition (body mass (BM), height (H), body surface area (BSA), body fat percentage (%BF) and fat free mass (FFM)) between young swimmers, boys and girls, and analyse the relationship between those and the best times performed in 100/200 meters free style and 100/200 meters best stroke.

METHODS

Subjects:

Anthropometric measurements, body composition estimation, the lap of 100/200 meters free style and best stroke (25 meters swimming pool) were performed by sixteen young swimmers, seven girls (SG) ($12,57 \pm 0,54$ years of age) and nine boys (SB) ($12,99 \pm 0,33$ years of age).

Instruments:

Mean values for SG were compared with those for SB using t tests for unpaired data. Pearson product-moment correlation coefficient was calculated to evaluate the relationships between anthropometric and body composition data and the performance on freestyle and best style. Results of all statistical testes were considered significant if $p < 0.05$.

RESULTS

SG and SB were of similar age but different in their anthropometric and body composition characteristics. The SB group was significantly higher, had greater FFM, owing to significantly reduced %BF ($p < 0.01$) and showed greater BM, BSA and BMI, when compared to SG. SB had best performance on 100 and 200 meters free style ($p < 0,05$). BM, H, FFM and BSA correlated negatively and significantly ($p < 0,01$) with the performance on 100/200 meters.

References:

1. Bar-Or O (1983). Paediatric sports medicine for the practitioner from physiologic principles to clinical applications. New York: Spring – Verlag
2. Wilmore JH, Costill DL (1994). Physiology of sport and exercise. ChampaignIL: Human Kinetics Publishers.
3. Stager J, Tanner D (2008). Natação. Manual de medicina e ciência do esporte. Brasil: Manole.

Table 1. Age, physical characteristics, body composition, time at 100 and 200 freestyle and time at 100 and 200 best stroke of the young swimmers. Note: * $p < 0.05$

	SG	SB
Age	12.57 ± 0.54	13.11 ± 0.33
BM (kg)	48.33 ± 5.41	52.88 ± 6.96 *
H (m)	1.58 ± 0.06	1.67 ± 0.06 *
BSA (m ²)	1.46 ± 0.11	1.57 ± 0.12
%BF (%)	18.54 ± 2.95	12.47 ± 3.35 *
FFM (kg)	29.79 ± 5.51	40.40 ± 5.99 *
T100 F (s)	69.54 ± 3.03	64.77 ± 5.31 *
T200 F (s)	146.44 ± 3.00	139.50 ± 7.64 *
T100BS (s)	79.29 ± 7.93	75.36 ± 7.63
T200BS (s)	172.64 ± 13.44	168.65 ± 18.93

Table 2. Correlation coefficient between anthropometric and body composition data and the performance on freestyle and best stroke. Note: * $p < 0.05$; ** $p < 0.01$

	T100 F	T200F	BT100	BT200
BM	-0.848**	-0.808**	-0.763**	-0.583*
H	-0.695**	-0.640**	-0.675**	-0.546*
BSA	-0.879**	-0.833**	-0.844**	-0.686**
%BF	0.157	0.183	0.128	0.038
FFM	-0.879**	-0.743**	-0.721**	-0.571*

DISCUSSION

Swimmers, of this age and group, heavier, taller, with greater body surface area and FFM had better performance, better time during 100/200 meters freestyle and best stroke. The results are consistent with de literature, but the practice is far from it, and a lot of child quit.