An Evaluation of Anthropometric and Conditional Indicators for Specific Positions in Youth Women's Volleyball Played as a School Sport

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Introduction

The present study aimed to identify anthropometric and functional characteristics of female volleyball players according to their specific positions in the match.

Methods

The subjects were 17 female athletes (13.88±0.33 years) from a school volleyball team who were included in one of the following groups, according to their specific positions: setter (n=3), middle player (n=5), outside player (n=5), and opposite player (n=4). Subjects were characterized according to their height, total body mass, arm span, reach of the dominant limb (RDL), explosive strength of the lower limbs (Squat Jump, SJ), countermovement jump with block (CMJB) and with attack (CMJA), explosive strength of upper limbs (throwing a medicine ball standing, MB), and speed at 10m (S10m). To verify the existence of statistically significant differences among athletes according to their different specific positions, a one-way ANOVA with Tukey's Post Hoc test was used.

Table I. Mean, SD and p-value of the assessments of overall dimensions of the body distributed by position specific.

Anthropometric Characteristics	Setter (n=3) Mean ± SD	Middle player (n=5) Mean ± SD	Outside player (n= 5) Mean ± SD	Opposite player (n= 4) Mean ± SD	*p*
Height (cm)	163.33 ± 5.86	162.60 ± 7.23	155.20 ± 6.42	162.25 ± 2.75	.188
Body mass (kg)	58.00 ± 5.64	47.42 ± 3.20	49.10 ± 4.86	58.78 ± 8.07	.019*
Wingspan (cm)	171.67 ± 1.16	170.60 ± 11.28	159.20 ± 8.76	171.50 ± 1.92	.092
RDL (cm)	211.67 ± 3.79	213.20 ± 11.12	202.80 ± 7.76	212.50 ± 3.87	191

* $P \leq 0,05$

Results

Average values for anthropometric measures were 160.47±6.44 cm and 52.45±7.20 kg; for arm span, they were 167.65±9.14 cm; and for RDL, 209.71±8.48 cm. Our results revealed significant differences in total body mass among players in different specific positions ($p<0.05$), with the opposite players presenting higher values (58.78±8.07 kg) and the middle players presenting lower values (47.42±3.20 kg). No significant differences were observed in the remaining anthropometric variables.

Figure I. Comparison of average body mass in relation to the specific position. * Statistically significant differences ($p < 0.05$).

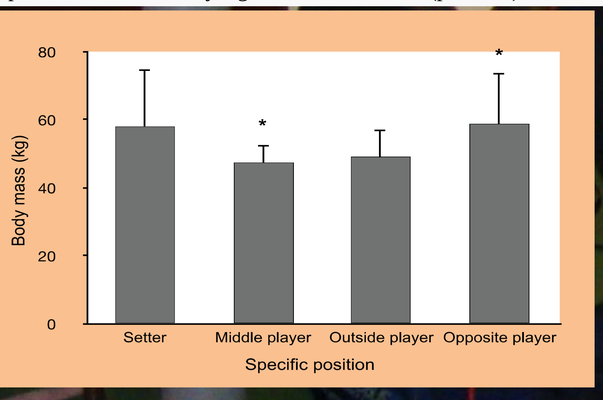

Table II. Mean, standard deviation and p-value of the conditional Indicators depending on the specific position.

Conditional components	Setter (n=3) Mean ± SD	Middle player (n=5) Mean ± SD	Outside player (n= 5) Mean ± SD	Opposite player (n= 4) Mean ± SD	*p*
SJ (cm)	25.93 ± 0.95	27.46 ± 6.28	27.58 ± 7.57	26.15 ± 5.93	0.971
CMJ/bl (cm)	34.17 ± 4.11	37.64 ± 6.04	34.38 ± 9.98	35.00 ± 11.84	0.925
CMJ/at (cm)	35.23 ± 3.01	39.58 ± 5.63	37.28 ± 6.66	35.73 ± 8.60	0.764
MB (m)	5.62 ± 0.55	5.40 ± 0.28	5.49 - 0.91	6.40 ± 1.11	0.273
S10m (s)	2.13 ± 0.13	2.10 ± 0.24	2.34 ± 0.30	2.28 ± 0.24	0.449

* $P \leq 0,05$

Discussion

The opposite players revealed higher values in the MB test and the middle players presented the highest values in the CMJ both with block and with attack. The middle players, according to statistics (Riggs and Sheppard, 2009), are those responsible for a greater number of vertical jumps during a game due to constant blocking action and jumps performed in tackling offensive actions, factors that may be strictly correlated with the results obtained in our study.

Conclusion

These results revealed a high level of homogeneity in the sample, mainly in all studied variables, delaying the possibility of discriminating players by position. However, an analysis focused on each player's maturation status may have produced different results.

References

Riggs, M., & Sheppard, J. (2009) The relative importance of strength and power qualities to vertical jump height of elite beach volleyball players during the counter-movement and squat jump. *Journal of Human Sport and Exercise*, *4*(3), 221-236.