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Comparative analysis of the physique of volleyball players selected from different volleyball clubs

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Summary

In recent years we have seen a steady increase in interest in sport among the public. This is due primarily to the deepening of knowledge about the health-promoting aspects for people who practice it regularly. Considerable interest primarily characterized by team games, which due to their accessibility, clearly defined rules, the variety of forms of movement, or finally, the interaction between human are the most popular sport disciplines. In Poland, one of the most popular team sports of football is next to volleyball. From year to year, this form of recreation is more and more supporters.

For many years, extremely important for researchers from around the world was to find the factors that determine the achievement of high results volleyball. This problem is steadily gaining in importance, because modern training methods contribute to maximizing the potential of each player. Many researchers believe that making attempts to find factors that are of potential players is one of the few areas where you can find the reserves to increase results. The aim of this study is to compare intergroup somatic athletes practicing volleyball, playing and trainees in four different teams in Lower Silesia. The study enrolled 54 men aged 12-15 years with a group of four volleyball players representing the same level of sports preparation. The study used data measuring 17 somatic features. The results show that the somatic features of individual players in all four teams are similar and homogeneous.

Keywords: Body, volleyball, sports level

1. Introduction

Striving to be better and better accompanied by any person in sport every day. Improvement of the result, deposits, and sometimes only reach the finish line of success for many who are motivated to workout. In recent years we have seen a steady increase in interest in sport among the public. This is due primarily to the deepening of knowledge about the health-promoting aspects for people who practice it regularly. Considerable interest primarily characterized by team games, which due to their accessibility, clearly defined rules, the variety of forms of movement or the last human interaction are the most popular sport disciplines. Of course, it not without significance is the fact that the sport is shaped in a versatile personality, stimulates the development of physical and mental fitness and improves overall physical fitness. In Poland, one of the most popular team sports of football is next to volleyball. From year to year, this form of recreation is more and more supporters. Applicants initially enroll in small clubs to the city, where they learn the basic principles and train. The level of technical preparation of such players is increasing and is extremely balanced. Therefore, victory often make seemingly insignificant trinkets. One of them may be differences in the construction of somatic players [1,2].

For many years, extremely important for researchers from around the world was to find the factors that determine the achievement of high results volleyball. This problem is steadily gaining in importance, because modern training methods contribute to maximizing the potential of each player. Many researchers believe that making attempts to find factors that are of potential players is one of the few areas where you can find the reserves to increase results. Having such knowledge may be particularly useful before being a professional athlete training, because on the one hand, this will allow the selection of a targeted type of training and on the other hand, indicates strongest competitor. The importance of individual factors to achieve the best possible result is the subject of research of many scientists who undergo a careful analysis of the structure of physical activity volleyball. Published studies suggest it for granted that determine the characteristics of somatic development of physical preparation volleyball. On the other hand, they emphasize the need for further research in order to detect differences and factors that may contribute to enhancement of performance [3,4,5,6].

The aim of this study is to compare intergroup somatic athletes practicing volleyball, playing and trainees in four different teams in Lower Silesia.

2. Material and methods

The study was conducted during the period starting 2017 years. Four groups were tested volleyball representing the same level of sports preparation. The study enrolled 54 men aged 12-15 years. The first group consisted of 12 volleyball with Team Sycamore. Age of the drivers was 14.08 ± 0.69 years. The second group of 12 qualified volleyball team Milicz age 13.5 ± 0.67 years. The third group consisted volleyball team Walbrzych. All the players in this group are characterized by the age of 14 years. The number of participants in this group was 13. The fourth group consists of volleyball Wroclaw at 14 each. This group consisted of 17 players.

The study used data measuring 17 somatic features. For the evaluation of the overall height (Bv), the body length of the body (B-VS) and spans the arms (DA3-da3) was used antropometr manual GPM Anthropological Instruments. For the evaluation of the width of the shoulders (aa) and hips (c-c) of the stirrup used calipers manual GPM Anthropological Instruments. A digital scale was measured body weight. While the tape was measured anthropometric circuits body: the chest, hip, thigh, leg, arm, both in tension and in the rest. Tissue-measure, which is characterized by a constant pressing force of 10g / mm2 was measured folds of skin-fat under the lower angle blades, the triceps, as well as on the abdomen and lower leg.

For statistical analysis, basic statistical methods were used. Before performing the calculations examined distributions analyzed variables Shapiro-Wilk test, and no significant deviations from the normal distribution. Differentiation of individual variables between groups was determined by ANOVA. Moreover, for each parameter calculated mean value and standard deviation. All measurements were performed using a computer program to calculate the STATISTICA 6.0 PL.

3. Results

Table 1 shows the characteristics of the characteristics of height, arm span, shoulder and hip width. It is worth emphasizing that all measurements were carried out in static and repeated three times to obtain the most objective results. There were no statistically significant differences between the groups.

Table 1. Characteristics of the statistical characteristics of height, arm span, shoulder and hip width in the two groups

Variable	Group 1	Group 2	Group 3	Group 4	ANOVA
	x (s)	*x (s)*	*x (s)*	*x (s)*	p level
Body height [cm]	179.1 (6.26)	174.66 (6.49)	176.74 (9.49)	178,16 (7.66)	0.502
Seat, the height [cm]	91.53 (3.27)	90.66 (3.34)	90.58 (4.60)	91.95 (3.52)	0.708
Arm span [cm]	180.53 (8.00)	175.28 (8.40)	176.92 (9.90)	180.29 (9.63)	0.379
Shoulder width [cm]	40.45 (2.33)	39.81 (2.05)	39.75 (2.63)	40.66 (2.87)	0.714
Hip width [cm]	28.85 (1.75)	27.78 (1.67)	27.66 (1.57)	28.28 (2.5)	0 430

Table 2 shows the results circuit body. In this case, none of the results are not achieved statistical significance titers. Nevertheless it demonstrated significant differences in the circuit leg between the second group (35,44mm) and the other team players (38.67; 37.08; 37.29 mm). This situation may be due to the fact that volleyball players from this group were characterized by the lowest average age (13.5 years) and may be a three-headed calf muscle is not yet developed as much as older players. A similar dependence can be observed in the results of body weight, which is shown in Table 3. Here again, despite the lack of statistical significance can be observed at a significantly lower value in the second group of players. On the other hand, such results may provide a better retraining in this team, which translates into less body fat.

Table 2. Statistical characteristics of circuits of the body in the two groups

Variable	Group 1	Group 2	Group 3	Group 4	ANOVA
	x (s)	*x (s)*	*x (s)*	*x (s)*	p level
Circuit chest at rest [cm]	86.95 (5.68)	84.05 (7.71)	88.06 (4.74)	87.87 (8.54)	0.452
Circuit thoracic inspiratory [cm]	92.81 (5.98)	91.31 (6.01)	93.19 (5.07)	93.76 (8.05)	0.794
Circuit chest expiratory [cm]	84.73 (5.79)	82.04 (5.54)	83.98 (4.18)	84.26 (8.65)	0.749
Buried in arm circumference. [cm]	27.31 (1.99)	26.72 (2.78)	27.81 (2.29)	27.86 (3.56)	0,700
Arm circumference in the drive. [cm]	29.63 (2.11)	29.08 (3.34)	28.89 (1.88)	28.55 (7.13)	0.861
Circuit thigh [cm]	58.66 (5.1)	56.05 (5.83)	60.6 (4.13)	58.72 (7.05)	0.282
Circuit crus [cm]	38.67 (3.56)	35.44 (3.14)	37.08 (2.57)	37.29 (2.83)	0.088

Table 3 shows the results for body fat, which was assessed on the basis of the thickness of skinfolds. In this case, most closely matches a statistically significant rate

obtained for evaluating a fatty folds on the lower leg. The biggest difference compared to the other groups can be observed in the first group, where the average value was only 7.03 mm. The fourth group was the result while until 10.55 mm.

Table 3. Statistical characteristics of skinfolds, and body weight between groups

Variable	Group 1	Group 2	Group 3	Group 4	ANOVA
	x (s)	*x (s)*	*x (s)*	*x (s)*	p level
Folds on the arm [mm]	11.66 (3.98)	11.78 (4.27)	13.06 (3.56)	13.25 (4.87)	0.669
Folds on the stomach [mm]	13.90 (5.28)	14.51 (6.33)	14.46 (5.26)	16.41 (7.27)	0,700
Folds subscapular [mm]	8.26 (2.5)	7.70 (3.06)	7.75 (1.84)	9.43 (4.18)	0.398
Folds on the lower leg [mm]	7.03 (1.84)	9.74 (3.21)	9.1 (3.19)	10.55 (4.87)	0.068
Body weight [kg]	65.76 (8.65)	60.21 (9.22)	62.61 (8.69)	67.24(12.70)	0.085

4. Discussion

The aim of the study was to compare the characteristics of somatic volleyball players in four different teams in Lower Silesia. The data represent an overall picture of the characteristics of the players in relation to the clubs where they train. Proper selection of the training will affect the results achieved and varies considerably in different teams due to the fact that often is a concept developed individually specific coach. Personalization training may influence the development of physical and anthropometric characteristics in volleyball. Nevertheless, in the present study did not show statistically significant differences in the construction of somatic players in relation to the club they represent.

The results show that the somatic features of individual players in all four teams are similar and homogeneous. Perhaps this is due to the fact that to be a volleyball player must have certain predispositions already before training. Gualdi-Russo and Zaccagni [7] in their research compared the physical characteristics of the players playing in the national team that participated in the Olympic Games and World Championships. The results obtained by them showed that regardless of the place in the final classification of physical characteristics are similar teams, and key success factor is the age of pointing to the experience of the players. Reilly et al. [8] evaluated in their study, anthropometric characteristics that influence the development of athletes in various sports. It was found in the case of the volleyball large muscle mass is not necessary for effective game and often may even weaken the performance of jumps. Sheppard Gabbett [9] showed that also the excess subcutaneous tissue may adversely affect the frequent jumps and changes of direction which are present during the game. Milić et al. [10] of the study concluded that excess body fat may be a risk factor for injuries to the lower back or knee particularly during landing frequent and sudden changes in speed and direction. It has been found that some players reduction of subcutaneous adipose tissue is essential, and should be implemented with diet and exercise.

Another physical feature that is especially important in volleyball is the height of the body. According Jaszczanin et al. [11] in terms of this parameter volleyball second only basketball players. Kuczynski et al. [12] in their work compared with the height of the body of the university volleyball team AZS Opole University of Technology with a parameter other students of this university. The results showed that volleyball players are taller on average about 12 cm from the other students. On the other hand Eider [13] conducted a survey among volleyball players taking part in the European Championships in volleyball in 2003. He noted that the average body height of 12 players team was in the range of 194.08 to 202.08 cm.

Studies show that although between the various players there are differences in body structure and so it oscillate within certain ranges medium.

Summary

Differences physique competitors and the quantity and quality of training that occur between the teams likely to affect their competitive effectiveness. This study shows no differences between the somatic features players from different teams. Nevertheless, it is providing reference data that can be used when selecting players. It also indicates to achieve what parameters amateur volleyball players should strive to become a professional volleyball players.

Players who were enrolled in the study are part of the full profile morphological volleyball player, which is mainly characterized by a predominance of the body in relation to other sports athletes. Due to the strong determination of the genetic characteristics must be taken into account at the pre-selection in order to ensure the optimization of athletic performance.

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