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## THE DIFFERENCE BETWEEN TWO VOLLEYBALL TEAMS IN SOME ANTHROPOMETERIC AND MOTOR ABILITIS

### Introduction

Every sports team sports during the game aims to achieve the best results. To achieve high results it is required a rational and optimal training process. Such results cannot be achieved without the application of scientific methods of research. Only through high technology during the process of training can bring to the highest results.

Desired success in any sport, including the game of volleyball depends on many internal and external factors. Among the internal factors of assigning special importance in the game of volleyball are anthropometric parameters, psychomotor skills, cognitive skills and conative features of volleyball. It depends on the specifics of playing each sport which features and capabilities of anthropological have a specific influence in each sport.

The motor precision is defined and performance skill of movement oriented and dosage properly, to which as a dimension of vast spectrum belongs also the precision of situational volleyball (Strahonja, A. 1978). This wide field today is not thoroughly researched. Therefore, each research has a fundamental character, especially if the purpose is to verify the impact of each characteristic and anthropological ability in the performance of situational precision as very important skill in the game of volleyball.

The purpose of this research is oriented in confirming the differences in some anthropometric and motor parameters, and situational precision between the two best teams of the Super League of Kosovo in volleyball.

### Methods

To realize the goal of this research are involved a 12 volleyball players of the team KV "Pristina " and 12 volleyball players of the team KV "University AAB" as the two best teams at the end of the Kosovo Super League championship in volleyball. There have been applied 4 anthropometric variables such as: body weight (APESHA), body height (ALARTE), arm length (AGJKR), forearm length (AGJPK); 5 basic motor variables: long jump from the place (MKVGJ), jump high from the place (MKVL), taping hand (MTD), taping feet (MTK), running 20 meters from a fast start (MV20M) and 7 situational tests: pass the ball with the fingers on target vertical (SPTGR), pass the ball with the forearm (" hammer ") in target vertical (SPTGQ), pass the ball with the fingers on the horizontal target (SPTK), pass the ball with the forearm (" hammer ") in horizontal target (SPTÇM), pass the ball with the fingers jumping in the horizontal target (SPTÇR), tennis service in horizontal target (SPSHT), service to jump in the horizontal target (SPSHK).

For each variable were calculated applying these values : basic 1.parametrat central and dispersion, 2. Asymmetry coefficient ("skjunis") and height distribution ("kurtosis"), 3. Coefficient of variation, and 4.The verification of the arithmetic difference in averages between the two teams in anthropometric and motor parameters, as well as situational precision through applying the discriminatory analysis of t-test for independent variables.

## Results

Results of the basic parameters of central and statistical dispersion, the asymmetry and height distribution of anthropometric motor and variables, situational precision of volleyball Club "Pristina" are all presented in Table 1. The coefficient values of asymmetry ("skjunis") indicate that they are bipolar and low scores incline direction, because more than half of them are negative signs (hypo kurtosis). Volleyball players, in terms of morphological characteristics and performance of motor tasks appear as homogenous group. The variation coefficients in the test performance of the situational precision show the volleyball players as a heterogeneous group.

**Table 1.** Basic indicators of statistical anthropometric, motor and situational variables, to volleyball players of KV "Pristina"

	N	Min	Max	Ma	SD	Skew	Kurt	KV
AWEIGHT	12	67.50	97.68	81.058	9.738	0.052	-1.241	12.013
AHIGH	12	175.20	195.40	186.225	8.601	-0.061	-2.293	4.618
AGJKR	12	34.35	41.20	36.575	1.826	1.385	3.081	4.9931
AGJPK	12	24.90	33.20	27.658	2.194	1.332	3.067	7.9339
MKVGJ	12	201.70	296.84	268.21	27.718	-1.422	1.959	10.334
MKVL	12	39.10	48.30	45.5	2.687	-1.407	1.904	5.9069
MTD	12	22.00	37.00	29.25	5.610	-0.340	-1.642	19.181
MTK	12	22.00	28.00	25.666	2.059	-0.436	-1.037	8.024
MV20M	12	3.40	4.10	3.725	0.245	0.053	-1.431	6.588
SPTGR	12	35.00	80.00	56.916	13.194	0.107	-0.651	23.181
SPTGQ	12	28.00	44.00	36.25	5.276	-0.146	-1.244	14.555
SPTK	12	11.00	38.00	22.916	8.743	0.052	-1.040	38.152
SPTÇM	12	10.00	26.00	21.833	4.783	-1.755	2.764	21.907
SPTÇR	12	11.00	34.00	22.166	6.562	-0.213	0.026	29.603
SPSHT	12	5.00	12.00	8.416	2.108	0.105	-0.809	25.054
SPSHK	12	6.00	10.00	8.083	1.311	-0.181	-0.439	16.223

The results of the basic parameters of central and statistical dispersion, the asymmetry and height distribution of anthropometric and motor variables, and situational precision of volleyball Club "University AAB" are presented in Table 2. The values of the Asymmetry coefficients T ("skjunis") show that those in this table are bipolar and low scores incline direction; because more than half of them are negative

signs (hypo kurtosis). Even volleyball second team, regarding the morphological characteristics and motor tests are shown as a homogenous group. The coefficients of variation indicate that in the execution of the test of situational precision, the group has different results and that is as shown as a heterogeneous group.

**Table 2.** *The basic statistical indicators of anthropometric, motor and situational variables to volleyball players of the KV "University AAB"*

	N	Min	Max	Ma	SD	Skew	Kurt	KV
AWEIGHT	12	71.48	91.30	81.626	8.203	-0.105	-2.042	10.049
AHIGH	12	174.20	196.80	186.087	8.026	-0.074	-1.844	4.3131
AGJKR	12	33.10	40.40	35.958	2.114	0.626	-0.065	5.879
AGJPK	12	23.70	33.50	27.208	2.638	1.028	1.94	9.698
MKVGJ	12	121.00	280.10	227.890	43.583	-1.187	2.456	19.124
MKVL	12	37.60	46.70	40.658	2.285	1.737	4.33	5.6139
MTD	12	20.00	37.00	28.916	5.728	-0.411	-1.43	19.808
MTK	12	18.00	28.00	22.750	2.988	0.314	-0.559	13.136
MV20M	12	3.20	4.20	3.941	0.284	-1.733	3.709	7.2128
SPTGR	12	20.00	74.00	53.583	16.121	-0.718	0.211	30.086
SPTGQ	12	12.00	44.00	33.083	8.295	-1.472	3.29	25.073
SPTK	12	10.00	36.00	21.833	8.663	0.059	-1.098	39.681
SPTÇM	12	7.00	27.00	17.363	5.432	-0.3	0.312	31.343
SPTÇR	12	6.00	30.00	21.3343	7.036	-1.107	0.819	32.984
SPSHT	12	5.00	9.00	6.750	1.215	0.205	-0.406	18.006
SPSHK	12	4.00	8.00	5.416	1.240	0.743	0.189	22.894

To prove that there is a statistically significant difference between the volleyball players of KV "Pristina" and the volleyball players of KV "University AAB" as the two best teams at the end of the Kosovo Super League championship in volleyball, in some anthropometric and motor variables, and situational precision has been applied the T - test to both groups of variables independently.

The difference between the 12 volleyball of KV "Pristina" and the volleyball players of KV "University AAB" in the performance of motor tasks and situational precision was statistically significant for the variables: long jump from the place(MKVGJ) Mean Diff. - 40320, T- 2704, df - 22 ; sig. - 0013, the high jump from the place (MKVL) (Mean Diff. - 4841, T- 4757, DF - 22 ; sig. - 0000), taping feet (MTK) (Mean Diff. - 2916, t - 2, 90, df - 24 ; sig. - 0, 011), pass the ball with the forearm ("hammer") in horizontal target (SPTÇM) (Mean Diff. - 4500, T- 2154, DF - 22, sig. -0042), tennis service in horizontal target (SPSHT), (Mean Diff. - 1666, T- 2372, DF - 22 ; sig. - 0027), the target service with the jump in the horizontal (SPSHK), (Mean Diff. - 2666 ; t - 5118, DF - 22 ; sig. - 0000).

The results of the discriminative analysis show that the differences in arithmetic averages have been in favor of the volleyball players of KV "Pristina" where the results of T- test are presented in Table 3.

**Table 3.** The difference in anthropometric, motor and situational variables between volleyball players of KV "Pristina" and KV "University AAB"

	Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Diff.	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
AWEIGHT	.487	.493	-.155	22	.879	-.568	3.675	-8.191	7.054
AHIGH	1.054	.316	.040	22	.968	.137	3.396	-6.905	7.180
AGJKR	1.237	.278	.765	22	.453	.616	.806	-1.055	2.289
AGJPK	.598	.448	.454	22	.654	.450	.990	-1.604	2.504
MKVGJ	1.487	.236	2.704	22	<b>.013</b>	40.320	14.910	9.397	71.242
MKVL	.330	.571	4.757	22	<b>.000</b>	4.841	1.017	2.730	6.952
MTD	.003	.956	.144	22	.887	.333	2.314	-4.466	5.133
MTK	1.622	.216	2.784	22	<b>.011</b>	2.916	1.047	.743	5.089
MV20M	.012	.915	-1.998	22	.058	-.216	.108	-.441	.008
SPTGR	.239	.630	.554	22	.585	3.333	6.013	-9.138	15.805
SPTGQ	.395	.536	1.116	22	.277	3.166	2.838	-2.719	9.052
SPTK	.026	.874	.305	22	.763	1.083	3.553	-6.285	8.452
SPTÇM	.292	.594	2.154	22	<b>.042</b>	4.500	2.089	.166	8.833
SPTÇR	.027	.872	.300	22	.767	.833	2.777	-4.926	6.593
SPSHT	4.756	.040	2.372	22	<b>.027</b>	1.666	.702	.209	3.123
SPSHK	.017	.897	5.118	22	<b>.000</b>	2.666	.521	1.586	3.747

### Discussion

The basic statistical parameters of the asymmetry coefficients of variation show the situation of the team in terms of morphological status and also the current situation of conditional and technical preparation of volleyball players. The results obtained show that the morphological aspect of volleyball teams appear as homogenous dominated by body altitude.

Optimal morphological characteristics of athletes greatly depend on the sport of choice, however, looked at in general terms, we see that the overall best results are reached by those sportsman whose body building meets the specific requirements of a sport, in this case the game of volleyball. The need for such adjustments is more pronounced when the volleyball players are always in higher level of competitions. The success in the game of volleyball still depends on the morphological characteristics of volleyball players, of which the most important are the height and body weight, which

are valorized taking into account the current age of the volleyball players (Marelić, Djurkovic and Resetar 2008).

The results show that the selection in volleyball requires a special responsibility. It requires knowledge, skill and professionalism in information gathering, knowledge of specific and safer models for detection and objectivity of the information collected, which are related to the characteristics and skills required in the relevant sport (Paranosić and Savic, 1977). The formation of a player in the game of volleyball is a long and complicated process which means it takes both quantitative and qualitative learning.

When analyzing the differences in arithmetic averages we note that in the tests of explosive force and in some tests of situational precision of serving, the volleyball players of KV "Pristina" have had better results than volleyball players of KV "University AAB" and these differences were statistically significant  $p < 0,05$ . The training process of volleyball players of KV "Pristina" has affected more in the quantitative raise of some motor and technical skills of the volleyball players of KV "Pristina", which is manifested by better results at the end of the Kosovo Super League championship in volleyball.

The variables variance analysis of the difference between volleyball players of KV "Pristina" and KV "University AAB" in some motor and situational precision tests indicates that the kinesiological treatment of the volleyball players of KV "Pristina" has been more qualitative, where operators of anaerobic and aerobic sustainability and the situational training have induced higher quantitative changes.

The results of this study coincide with the findings of several authors of this nature (Čolakhodžić, et al., 2012) where has been proven the impact of the quality of situational training on the basic motor space structure.

### **Aknowledgement**

The paper is part and continuation of the project "The impact of qualitative training in condition, technical and tactical preparation of the players in the Super League of Kosovo in Volleyball. Without the support of the leadership of both clubs, KV "Pristina" and KV "University AAB" the completion of this work would have been impossible.

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#### *THE DIFFERENCE BETWEEN TWO VOLLEYBALL TEAMS IN SOME ANTHROPOMETRIC AND MOTOR ABILITIES.*

*Introduction: In this research we are deal with two teams of the super league of Kosovo in volleyball. The goal of this study is to verify the differences between the two teams in volleyball in some anthropometric characteristics, basic motor skills and situational tests. Methods: For the realization of this research, there were included 12 volleyball player from the team KV "Prishtina" and 12 from the team KV "Universiteti AAB". There are applied 4 anthropometric variables (body weight, body height, arm length, forearm length), 5 basic motor variables (long jump from place, high jump from the place taping hand, taping feet, jogging with 20 meters with a fast start), and 7 situational tests (pass the ball with the fingers on target vertical expulsion of the ball with the forearm ("hammer") in vertical target, passing the ball with the fingers in a horizontal target, the expulsion of the ball with the forearm ("hammer") in horizontal target, pass the ball with fingers to jump in the horizontal target, tennis service in horizontal target, the target service with the horizontal jump. For processing the obtained results from the measurements and proving the difference between the teams in anthrop motored parameters, was used the discriminatory analysis using the t-test for independent variables. Results: The results obtained show that the players of the two volleyball teams, involved in research do not distinguish between them in anthropometric characteristics ( $p > 0:05$ ). The team KV "Prishtina" has had better results in some explosive force motor variables and situational tests ( $p < 0:05$ ), which are also important for success in the game of volleyball. Discussion: To prove statistical differences between the two teams VC "Pristina" and VC. "AAB" in each variable is used T - test. Through this method can be verified the change between two*

arithmetic means. To achieve the statistical validity of differences between two groups in sample above 20 entities, the value of must be  $T > 1.97$ , at the statistical significance level of  $p < 0.05$ . Results from our sample showed that between VC. "Pristina" and VC. "AAB", important statistical changes were in those motoric tests. High jumping, foot tapping, Passing the ball with hammer to the wall, Tactical accurate Service, Accuracy of service with jump and Standing long jump length. References: Strahonja A, Jankovic V, Shnajder V (1982). Kineziologija, 14, 46-51. Forthomme B, Croisier JL, Ciccarone G, Crielaard JM, Cloes M (2005). Am J Sports Med, 33, 1513-9. Strahova A (1972). Kineziologija, 1, 24-36.

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У ПОДГОРИЦИ ОД 3. ДО 6. АПРИЛА 11. КОНФЕРЕНЦИЈА И  
10. КОНГРЕС ЦРНОГОРСКЕ СПОРТСКЕ АКАДЕМИЈЕ

# Организатори већ спремни

Иако је до почетка 11. Међународне конференције о трансформационим процесима у спорту „Спортска достигнућа“ и десетог Конгреса Црногорске спортске академије остало још десетак дана организатори су на јучерашњој конференцији за новинаре истакли да је све спремно и да би традиционални скупови могли почети већ данас. Као прошле, и ове године ће се Конгрес одржати у Подгорици, и то од 3. до 6. априла а окупиће научнике из 25 држава свијета. Предсједник приређивачког одбора и декан Факултета за спорт и физичко васпитање из Никшића Душко Ђелица је истакао да је прихваћено укупно 102 рада, који су штампани у Зборнику сажетака са адекватним ИСНБ бројем, док ће адекватно изложени радови стећи право да се нађу у репомираном часопису „Спорт Монт“, који излази на нашем, уз сажетака на енглеском језику.

— Поред великог броја пристиглих радова, рецензенти су прихватили и одабрали 102 адекватно припремљена рада чији аутори су се строго држали пренишно формулисаних пропозиција за припрему истих. Поред регистрованих учесника који ће презентовати своје радове, пријављено је још

учесника који ће пратити конференцију без пријављеног рада. Најбољи радови ће бити предложени за објављивање у часопису „Montegrin Journal of Sports Science and Medicine“, који, такође издаје Црногорска

На конференцији је још говорио ректор Предраг Мирановић, као и члан Организационог одбора Стево Поповић, који је истакао да ће уводна предавања имати проф. др Зорана Милошевић са Факултета спорта и физич-



Ђелица и Мирановић

спортска академија, а који се поред EBSCO цитатне базе, налази још у осам међународних цитатних база, док је код SCOPUS-а и THOMSON REUTERS-а у току евалуација истога, рекао је Ђелица.

ког васпитања Универзитета у Новом Саду и доц. др Селчук Акшинар са Департамана за спорт Невлехир Хали Бекташ Вели Универзитета у Анкари, са којим ће Факултет за спорт и ФВ из Никшића потписати протокол о сарадњи.

Т.Б.