Педагогическо списание на
Великотърновския университет
„Св. св. Кирил и Методий“

ПЕДАГОГИЧЕСКИ АЛМАНАХ

Брой 2, 2020

СПОРТНА ПЕДАГОГИКА

SPORT EDUCATION

THE DIFFERENCE IN SOME ANTHROPOMETRIC CHARACTERISTICS, MOTORIC AND SPECIFIC MOTORIC SKILLS BETWEEN THE STUDENTS AND ATHLETES OF THE AGE 15

Arben Maliqi*, Nazim Myrtaj, Blerim Sylejmani***, Armend Xhemajli******

Abstract: *To deal with sport activities, concretely with athletics, initially there should take place an early selection of children. Our search included 35 students' athletes and 35 non athlete students. The overall number of 70 students of the age 15 were included in this research. There were applied 7 anthropometric variables, 6 motor tests and 2 motor specific tests as well. The main goal of this research was to determine the scale of difference between the two groups, respectively between the group of the non-athlete students and the one of the athlete students in some anthropometric characteristics, motor and specific motor as well. This work results show that training process within the frame of the athletics frame effects generally positively in positive development and transformation of human body in the aspect of morphological development, motor and specific motor aspects. All of it has been proved through reached changes of the students' athletes group.*

Keywords: *Athletics; athletes'; students; discrimination analyses.*

INTRODUCTION

Athletics according to their characteristics belong to cyclic mono-structural movement or acyclic, and it is counted in the category of attractive sports. Success in all sports, including athletics, depends on many factors related to one another such as: motor skills, cognitive abilities, conative characteristics,

* **Arben Maliqi –** PhD In the Field of Sports and Physical Education, Assistant Professor of Athletics, Sports Nutrition and Sociology of sports at the Faculty of Physical Culture and Sports, AAB College in Pristina, Republic of Kosovo, e-mail: arben.maliqi@aab-edu.net

** **Nazim Myrtaj –** PhD of Kinesiology, Assistant Professor of Handball, Fitness and Aerobic at the Faculty Physical Culture and Sports, AAB College in Pristina, Republic of Kosovo, e-mail: nazim.myrtaj@aab-edu.net

*** **Blerim Sylejmani –** PhD In the Field of Sports and Physical Education, Assistant Professor of Football, Statistical research methodology and Sports Managements and Marketing at the Faculty Physical Culture and Sports, AAB College in Pristina, Republic of Kosovo, e-mail: blerim.sylejmani@aab-edu.net

**** **Armend Xhemajli –** Master of Science of Physical Culture and Sports (Msc), Assistant of Athletics at the Faculty Physical Culture and Sports, AAB College in Pristina, Republic of Kosovo, e-mail: armend.xhemajli@aab-edu.net

motivational structure, physiological-functional characteristics, dynamics of micro social circle, tactical-technical elements as well as the morphological structure of the athlete. It is known that anthropometric characteristics are variables that can be measured with anthropometric instruments. They can be measured objectively such as (body height, body weight, leg length, chest circumference and others).

The running techniques should be adapted to the individual's innate speed, and to the development of all other motor skills that are important in the structure of certain sports activities, until the removal of excessive movements (Vuksanović 1999; Nićin 2000; Stefanović, Lilić 2008). For the improvement and development of motoric speed, the most favourable are the sensitive stages immediately before puberty and after the accelerated phase of growth and development (Gambetta, Winckler 2001; Pavlović 2008; Rashiti et al. 2010). All of these coincides with a common structure responsible for the best result in the athletics. In this context, it is possible to determine the role of morphological dimensions and situational-motor skills as a sub-system of sport (as a system), and as a program component of the transformation process (Demir 1998). And flexibility is described as a factor of movement amplitude and joint mobility (Zivković, Lazarević 2011).

MATERIAL AND METHODS

Subjects

Samples of the tested individuals consisted of two groups of students, the first group is composed of 35 regular students of the ninth grade of "Don Bosko" college in Gjilan, males, 15 years old, and the second group is composed of 35 regular students of the ninth grade of the "Don Bosko" college in Gjilan, males, 15 years old, athletes involved in the department of athletics. In total were trained 70 students of the ninth grade, of the age around 15.

Instrument for Assessing

In this paper 7 anthropometric variables were applied: body height – BH, body weight – BW, arm length – AL, foot length – FL, perimeter of arm – PA, pelvic perimeter–PP and lower leg perimeter (lower leg) LLP, 6 basic motor variables: standing long jump – SLJ, standing long jump with the right – SLJR, standing long jump with the left – SLJL, taping by hand – TH, taping with leg –TL, flexibility bending forward – FBF, and 2 specific motor variables: running at 40m from high start – R40HS and running at 60m from high start – R60HS.

Statistical Analysis

For all three variables system groups, the basic statistical and distribution parameters for each variable, as well as the asymmetric and normal distribution measures are calculated. For verification of differences between groups in anthropometric parameters, motor-basic and specific motor tests, variance analysis was applied, i.e., the distinction between groups was done through discriminative analysis of Independent Samples Test. For statistical processing is applied the version of the SPSS statistical program, version 23.0 for windows.

RESULTS AND DISCUSSION

In table 1 and 2, are presented the values of differences in arithmetic averages between athletes and students in anthropometric variables. Differences between students and athletes in the treated variables almost exist in all anthropometric variables, which are expressed with the probability level ($p < 0.01$), except foot length FL ($p > 0.05$) and arm length AL ($p > 0.05$). Significant differences in almost all anthropometric variables are in favour of student athletes.

Table 1. Differences for each anthropometric variable between students and athletes

	GROUP	N	Mean	Std. Deviation	Std. Error Mean
BH (cm)	STUDENTS	35	163.09	9.12	1.54
	ATHLETES	35	169.26	9.41	1.59
BW (kg)	STUDENTS	35	51.22	9.64	1.63
	ATHLETES	35	58.05	8.68	1.46
AL (cm)	STUDENTS	35	75.31	5.02	.84
	ATHLETES	35	77.33	3.84	.64
FL (cm)	STUDENTS	35	96.73	5.76	.97
	ATHLETES	35	95.14	4.72	.79
PA (cm)	STUDENTS	35	23.80	2.43	.41
	ATHLETES	35	25.22	2.17	.36
PP (cm)	STUDENTS	35	47.28	4.34	.73
	ATHLETES	35	51.12	4.46	.75
LLP (cm)	STUDENTS	35	33.34	2.73	.46
	ATHLETES	35	35.09	2.29	.38

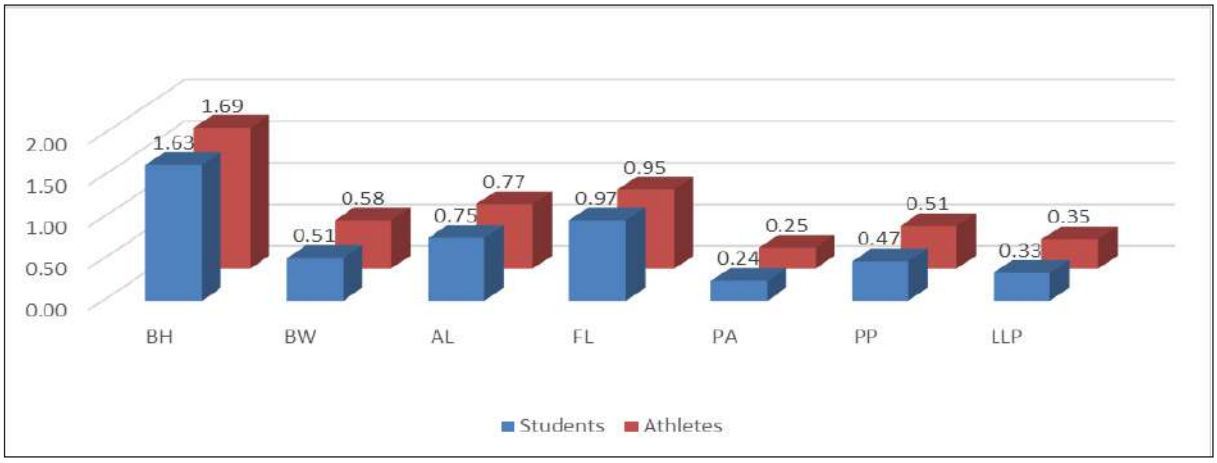
Note: BH – body height (cm); BW – body weight (kg); AL – arm length (cm); FL – foot length (cm); PA – perimeter of arm (cm); PP – pelvic perimeter (cm); LLP – lower leg perimeter (cm)

Table 2. Differences for each anthropometric variable between students and athletes

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
BH (cm)	.07	.78	-2.78	68	.007	-6.17	2.21	-10.59	-1.75
			-2.78	67.935	.007	-6.17	2.21	-10.59	-1.75
BW (kg)	.22	.63	-3,11	68	.003	-6.83	2.19	-11.21	-2.45
			-3.11	67.271	.003	-6.83	2.19	-11.21	-2.45
AL (cm)	2.75	.10	-1.89	68	.063	-2.02	1.06	-4.15	.10
			-1.89	63.659	.063	-2.02	1.06	-4.15	.11
FL (cm)	.41	.52	1.26	68	.212	1.58	1.25	-.925	4.10
			1.26	65.495	.212	1.58	1.25	-.927	4.10
PA (cm)	.36	.54	-2.58	68	.012	-1.42	.551	-2.52	-.32
			-2.58	67.127	.012	-1.42	.551	-2.52	-.32
PP (cm)	.07	.78	-3.64	68	.001	-3.84	1.05	-5.94	-1.73
			-3.64	67.954	.001	-3.84	1.05	-5.94	-1.73
LLP (cm)	.94	.33	-2.89	68	.005	-1.74	.60	-2.95	-.544
			-2.89	66.037	.005	-1.74	.60	-2.95	-.544

Note: BH – body height (cm); BW – body weight (kg); AL – arm length (cm); FL – foot length (cm); PA – perimeter of arm (cm); PP – pelvic perimeter (cm); LLP – lower leg perimeter (cm)

The significant differences for each anthropometric variable between students and athletes are shown in Graph 1.



Graph 1. The significant differences for each anthropometric variable between students and athletes

In table 3 and 4, are presented all the results of motor and motor-specific tests where there are significant and statistically significant differences between athletes and students, which is expressed with a high probability in all the variables treated and namely: In the standing long jump (SLJ) between athletes and students there is a statistically significant difference at level (p<0.000) because the difference is at – 25,97 cm, athletes have been better. There was a statistically significant difference at level (p<0.000) in the standing long jump with right (SLJR) between athletes and students because the difference is at – 24,40 cm, athletes have been better. In the standing long jump with left (SLJL) between athletes and students there is a statistically significant difference at level (p <0.000) because the difference is at-20,02cm, athletes have been better. There was a statistically significant difference at level (p <0.000) in the taping by hand (TH) between athletes and students because the difference is at – 8,20score, athletes have been better. In the taping by foot (TF) between athletes and students there is a statistically significant difference at level (p <0.000) because the difference is at – 5,02 score, athletes have been better. There was a statistically significant difference at level (p <0.000) in the flexibility bending forward (FBF) between athletes and students because the difference is at – 6,91 cm, athletes have been better. As well as in specific-motor tests: running at 40m from high start (R40HS) between athletes and students there is a statistically significant difference at level (p <0.000) because the difference is at 0.32 sec, athletes have been better. There was a statistically significant difference at level (p <0.000) in the running at 60m from high start (R60HS) between athletes and students because the difference is at 0,48 sec, athletes have been better. Results achieved in all basic motor variables are in favour of athlete students.

Table 3. Differences for each motor and specific variable between students and athletes

	GROUP	N	Mean	Std. Deviation	Std. Error Mean
SLJ (cm)	STUDENTS	35	167.22	18.56	3.13
	ATHLETES	35	193.20	15.14	2.55
SLJR (cm)	STUDENTS	35	142.28	17.08	2.88
	ATHLETES	35	166.68	14.88	2.51
SLJL (cm)	STUDENTS	35	144.94	14.24	2.40
	ATHLETES	35	164.97	17.12	2.89
TH (score)	STUDENTS	35	24.80	3.13	.52
	ATHLETES	35	33.00	4.60	.77

TF (score)	STUDENTS	35	21.60	2.64	.44
	ATHLETES	35	26.62	3.29	.55
FBF (cm)	STUDENTS	35	26.22	7.59	1.28
	ATHLETES	35	33.14	4.86	.82
R40HS (sec)	STUDENTS	35	6.63	.55	.09
	ATHLETES	35	6.31	.44	.07
R60HS (sec)	STUDENTS	35	9.52	.75	.12
	ATHLETES	35	8.98	.54	.11

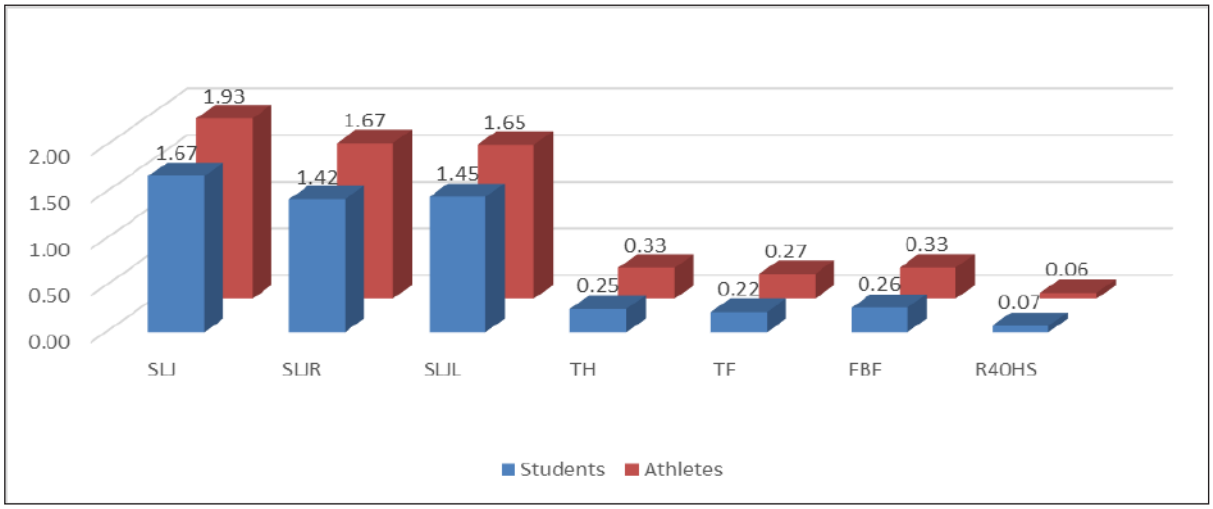
Note: SLJ – standing long jump (cm); SLJR – standing long jump with the right (cm); SLJL – standing long jump with the left (cm); TH – taping by hand (score); TL – taping with leg (score); FBF – flexibility bending forward (cm); R40HS – running at 40m from high start (sec); R60HS – running at 60m from high start (sec)

Table 4. Differences for each motor and specific variable between students and athletes

	Levene's Test for Equality of Variances		*t-test for Equality of Means*						
	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
SLJ (cm)	1.00	.319	-6.41	68	.000	-25.97	4.04	-34.05	-17.89
			-6.41	65.360	.000	-25.97	4.04	-34.05	-17.88
SLJR (cm)	2.80	.098	-6.37	68	.000	-24.40	3.83	-32.04	-16.75
			-6.37	66.754	.000	-24.40	3.83	-32.04	-16.75
SLJL (cm)	.53	.468	-5.31	68	.000	-20.02	3.76	-27.54	-12.51
			-5.31	65.808	.000	-20.02	3.76	-27.54	-12.51
TH (score)	4.02	.049	-8.71	68	.000	-8.20	.94	-10.07	-6.32
			-8.71	59.938	.000	-8.20	.94	-10.08	-6.31
TF (score)	.59	.444	-7.03	68	.000	-5.02	.71	-6.45	-3.60
			-7.03	64.955	.000	-5.02	.71	-6.45	-3.60
FBF (cm)	5.45	.023	-4.53	68	.000	-6.91	1.52	-9.95	-3.87
			-4.53	57.881	.000	-6.91	1.52	-9.96	-3.86
R40HS (sec)	.89	.346	2.72	68	.000	.32	.11	.08	.56
			2.72	64.970	.000	.32	.11	.08	.56
R60HS (sec)	3.081	.084	2.95	68	.000	.48	.16	.15	.81
			2.95	65.608	.000	.48	.16	.15	.81

Note: SLJ – standing long jump (cm); SLJR – standing long jump with the right (cm); SLJL – standing long jump with the left (cm);TH – taping by hand (score); TL – taping with leg (score); FBF – flexibility bending forward (cm); R40HS – running at 40m from high start (sec); R60HS – running at 60m from high start (sec)

The significant differences for each motor and specific variable between students and athletes are shown in Graph 2.



Graph 2. The significant differences for each motor and specific variable between students and athletes

From the analysis of the results of the tables we can emphasize that there is a significant and important difference between athletes (students who undertake additional exercises within the department of athletics after regular physical education classes) and students who, beside regular physical education classes do not deal with other sports activities. However, it is important to underline that everyone who works in all sports with the possibility of two – three times a year to make exercises in anthropological and to find spaces to exercises in order to follow the psycho-sociological situation of students and sportsman, and to achieve better results in the framework of the school, why not also in professional sports (Myrtaj et al. 2010; Asllani et al. 2017). For improvment and development of motoric speed, the authors are of the opinion that more favorable are sensitive phases, immediately before puberty and after the accelerated phase of growth and development. (Gambetta, Winckler 2001; Pavlovi 2008). Speed is innate ability, but we can influence it if we understand its most sensitive phases and mechanisms correctly (Babi 2006). Findings of the relationship between motor skills and some sports activities are basic factors in the formation of cyber models and the compilation of programs, transformational processes (Bompa 2006). This distinction in all anthropometric characteristics can be understood as timely division of students who have had the talent in running on short distances, which are presented as quite homogeneous group but also selective in terms of physical development. The changes in motor and specific-motor skills at the athletes we see in the impact of regular physical exercises (within training processes) in the positive transformation of students' health.

CONCLUSIONS

In general, early school age represents an extremely sensitive period in relation to the transformation of the anthropometric and motor characteristics of children, especially when it comes to learning and acquiring a wide range of motor skills. It is extremely important not to miss this period, respectively the advantages that this age can bear in forming a motor base. For the development of the child at this age, but also at the younger age the selection of proper motion activities is of great importance. One of the main features of this research is the confirmation of the difference in some anthropometric, motor and specific motor characteristics between athletes and students. The results obtained in all basic and specific motor variables are in favour of athlete students. Differences in the motor and motor-specific skills of athletes are seen in the impact of regular physical exercises (within the training process) towards positive transformation of the anthropological status of students.

The results obtained by their processing show that:

– Although morphological development is under the influence of the genetic factor, it can be influenced by exercises to have better development.

– The importance of the early start of engaging children actively in sports with children showing good results in their motor tests that are significantly better than their non-athletic peers.

– Although the development of speed or running is under the influence of the inheriting factor, positive impact on growth can be achieved with organized exercises and training processes.

ACKNOWLEDGEMENTS

The authors would like to thank all the ninth grade students and athletes involved in the athletics section of "Don Bosko" College in Gjilan, who were part of this research, as well as the professors of Physical Education for providing assistance and interest expressed for scientific research.

BIBLIOGRAPHY

Asllani, I. et al. (2017). The influence and relationship of anthropometric features and motor abilities of sprint running in 60–100 meters of 16 years old students. *Research in Kinesiology*, 45(1), 14 – 16.

Babič, V. (2006). *Utjecaj motoričkih sposobnosti i morfoloških obilježja na sprintersko trčanje.* Doktorska disertacija. Zagreb: Fakultet za fizičku kulturu, Sveučilišta u Zagrebu.

Bompa, T. O. (2006). *Total Training for Coaching Team Sports: A Self-help Guide*. Sport Books Publisher.

Demir, M. (1998). Rast rukometaša kadetskog uzrasta i fleksibilni grupni pristup u razvoju i usmjeravanju njihove opšte fizičke pripreme, *Sport u teoriji i praksi,* 2, 37 – 43.

Gambetta, V., G. Winckler (2001). *Sport specific speed*. Sarasota, FL: Gambetta Sports Training Systems.

Myrtaj, N. et al. (2010). Influence of the different kinesiologys treatments in development of some motor abilities of youth. *Zbornik: Научни трудове Vol. 49, book 8.2.* Physical Education and Sport, 75 – 82.

Nićin, Đ. (2000). *Antropomotorika (teorija).* Novi Sad: Fakultet fizičke kulture.

Pavlović, R. (2008). Relacije varijabli brzine sa rezultatom trčanja 100m. *Sport Mont,* 4(15), 522 – 527.

Rashiti, N. et al. (2010). Characteristics anthropometric and motor tests for short running on 100 meters (females). Zbornik: Научни трудове. *Physical Education and Sport,* 49(8.2), (63 – 68).

Stefanović, R., Lj. Lilić (2008). Struktura trčanja na kratkim stazama. *Sport Mont,* 4, (15,16,17), 198 – 202.

Vuksanović, M. (1999). Utvrđivanje *efikasnosti nastave fizičkog vaspitanja u odnosu na postignute rezultate u atletici,* Doktorska disertacija. Novi Sad, Fakultet Fizičke Kulture.

Živković, M., V. Lazarević (2011). Influence of the flexibility and explosive power on the results in sprint disciplines. *Activities in Physical Education and Sport, 1*(2), 123 – 127.