

EFFECT OF ANTHROPOMETRIC CHARACTERISTICS AND MOTOR ABILITIES ON THE EXPLOSIVE FORCE AND COORDINATION IN STUDENT ATHLETES

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Abstract

With the aim of examining the influence of anthropometric characteristics and motor skills on the manifestation of specific motor skills of explosive strength and coordination, an experimental study was organized on a sample of 160 student athletes in Prizren. For the purposes of this research, 18 variables (8 anthropometric and 10 motor) were applied, which made up the predictor system of variables, and 4 specific motor ability tests that made up the criteria system of variables. The data were processed with descriptive and regression analyses. Based on the results of the research, it can be concluded that the anthropometric characteristics that were applied in the research did not have a significant impact on motor skills, coordination, while the applied predictor anthropometric variables showed that they had a significant impact on the criteria system of motor abilities of explosive power in student athletes, the results of the research also show that the predictor system of motor variables applied in the research has a significant impact on the criterion system of motor skills of coordination and explosive strength in student athletes.

Key words : Regression analysis, anthropometric characteristics, motor abilities, student athletes.

INTRODUCTION

We know that sport, by its structure, is a very complicated and complex kinesiological activity in which success depends on the influence of a large number of anthropological characters and abilities, which are interconnected. Sport is any physical and mental activity that a person performs according to an established set of rules, in order to compete with an opponent or an opposing team, with the application of a prescribed scoring system on the basis of which the winner is determined. Sport is an integral part of the social needs of the individual; it is a universal means of understanding and cooperation between people, with the aim of physical and spiritual education, vitality and health, social relations and attitudes, defensive readiness and quality of life. Sport is any physical and mental activity that a person performs according to an established set of rules, in order to compete with an opponent or an opposing team, with the application of a prescribed scoring system on the basis of which the winner is determined. Sport is a global phenomenon by nature, its language is universal, it unites people all over the planet, regardless of skin color, age and gender" (Jackson and Haigh, 2008). Sport and sports activity, as an important component of sports and sports activities represent: factors of strengthening people's health; an important element for rest and recreation; and a basic tool for raising the working and defense living conditions of citizens (Anastasovski, I. 2003). Seen as a whole, the phenomenon of sport is extremely

ambiguous, ie we can deal with it from a physical motor point of view, but at the same time we can observe it as a wider social and humanistic phenomenon (Mataja, Ž. 1984). Sport is an integral part of the social needs of the individual, universal is a means of understanding and cooperation between people, with the aim of physical and spiritual education, vitality and health, social relations and attitudes, defensive readiness and quality of life (Memić M. 2005). The main goal in sports is to achieve the best result possible at all levels of competition through competition and competitiveness. Today, children have greater opportunities to participate in various forms of organized, programmed exercise. (Ibri L., Shala S., 2012). Sport, as an activity and as a vocation, represents a specific type of orientation of young people with the aim of cultivating knightly games, all with the aim of shaping health and achieving results. However, these are not the only goals, through sports a large number of socializing, getting to know each other, and creating friendships are achieved. In addition, the cultivation of the best traditions of social life comes to the fore. Through sport, people get to know each other more quickly, then develop their physical and moral qualities, because sport, as is known, refines people. Athletes are mostly cosmopolitans, borders bother them. Through sports, they preserve the cultural heritage of the people and country they belong to. (Memić M., 2005). Relation certification between motoric abilities and anthropometric characteristic presents basic problem which still is actual practical and

theoretical problem which has big importance because of possibility formation of rational procedure for optimum orientation and young sportiest selection, planning controlling programming, training and the efficient tracking, of developing ethnic anthropometric characteristic (Gredelj, M., Hošek, A., Metikoš, D., & Momirović, K., 1975). Modern sports and the achievement of top sports results increasingly depend on the results of scientific research and their application in practice. There are fewer and fewer athletes who manage to achieve results in major competitions thanks solely to their athletic talent or some other random factors. Modern sports and the achievement of top sports results depend more and more on the results of scientific research and their application in practice, there are fewer and fewer athletes who manage to achieve a high desired result in major competitions thanks solely to their sports experience, talent or some other random factors.

PROBLEM, SUBJECT AND OBJECTIVE RESEARCH

Research problem

The problem of this research is to determine the influence of anthropometric characteristics and motor ability and motor ability as predictors on motor coordination ability; drumming with arms and legs and agility in the air, and motor skills of explosive power; with a hip to a distance from a place and lifting the trunk in 30 seconds, as criteria, in 160 high school students who play sports aged 15-16 .

Subject of research

The subject of the research is the anthropometric characteristics and motor skills of high school students in Prizren who are in the process of regular physical education classes and regularly engage in sports at the age of 15-16.

The aim of the research

The aim of the research is to determine the relationship between anthropometric characteristics and motor skills (as a predictor system) on explosive strength and coordination (as a criterion system) in student athletes aged 15-16 years. In accordance with the set problem and subject of the research, as well as the goal of the research, the following hypotheses were set:

H1 - Is expected significant influence of anthropometric characteristics on the motor abilities of coordination in student athletes.

H2 - Is expected significant influence of anthropometric characteristics on the motor abilities of explosive power in student athletes.

H3 - Is expected significant influence of motor abilities on the motor coordination abilities in student athletes.

H4 - Is expected significant influence of motor abilities on the motor abilities explosive power in student athletes.

RESEARCH METHODS

Sample of respondents

They made up the sample of respondent's high school students in Prizren, who were actively involved in sports, aged 15-16. The sample included 160 male student-athletes, aged 15-16. The only conditions used in determining the sample were: that the students were included in regular physical education classes and that they have been actively involved in sports for at least a year, and that they were healthy on the days of the measurements.

Sample of variables

The research used a battery of tests from a total of 18 variables, from including 8 anthropometric characteristics and 10 motor characteristics abilities.

Sample of predictor variables

Predictor variables in this research represent anthropometric characteristics; body height (ABHE), body mass (ABMA), body mass index (ABMI), chest circumference in inspiration (ACHC), abdominal skinfold (AABS), upper arm skinfold (AUAS), back skinfold (ABSK) and skinfold lower legs (ASLL), and motor abilities; hand tapping (MHTA); foot tapping (MFTA); hand and foot drumming (MHFD); turn in the air (MTIA) steps to the side (MSTS), high jump from place (MHJP); long jump from place (MLJP); palm grip (MPAG); throwing medical ball lying down (MTHM); and trunk raising in 30 seconds (MTRA).

• Sample criterion variables

Criterion variables for defining coordination ability are made up of tests:

- Hand and foot drumming (MHFD),
- Turn in the air (MTIA).

Criterion variables for defining the ability of explosive power consist of tests:

- Standing long jump (MSLJ),
- Throwing the medical ball from lying down (MTHM).

In line with the objectives of this research, the data processing system included several phases, which were related to solving the following tasks: Determination of basic statistical parameters such as arithmetic mean (Mean), standard deviation (Std. Dev.), minimum (Min.) value of results,

maximum (Max.) value of results, standardized coefficient of curvature (Skew) and elongation (Kurt). Regression analysis in the manifest space

was applied to determine the relationships between predictor (anthropometric and motor) variables and criterion variables.

RESULTS AND DISCUSSION

Table 1. Basic descriptive parameters

| | Variables | N | Minimum | Maximum | Mean | SD | Skewness | Kurtosis |
|----|-----------|-----|---------|---------|----------|----------|----------|----------|
| 1 | ABHE | 160 | 155.00 | 192.00 | 173.3687 | 8.88049 | .359 | -.812 |
| 2 | ABMA | 160 | 41.70 | 105.40 | 64.4681 | 11.30443 | .986 | 1,785 |
| 3 | ABMI | 160 | 15.30 | 29.20 | 21.2413 | 2.26275 | .554 | .602 |
| 4 | ACHC | 160 | 79.00 | 100.00 | 91.2094 | 4.73561 | -.287 | -.513 |
| 5 | AABS | 160 | .70 | 5.50 | 1.5037 | .74436 | 2.242 | 6,770 |
| 6 | AUAS | 160 | .40 | 2.50 | 1.0619 | .40311 | 1.615 | 2,620 |
| 7 | ABSK | 160 | .50 | 5.10 | 1.3444 | .88280 | 2.332 | 6.153 |
| 8 | ASLL | 160 | .40 | 1.80 | .8350 | .24983 | .950 | 1.367 |
| 9 | MHTA | 160 | 29.00 | 85.00 | 52.7625 | 13.93583 | .037 | -1.045 |
| 10 | MFTA | 160 | 24.00 | 104.00 | 56.5563 | 14.98374 | .036 | .293 |
| 11 | MHFD | 160 | 5.00 | 17.00 | 10.7250 | 2.64206 | .298 | -.760 |
| 12 | MTIA | 160 | 3.25 | 6.13 | 4.3660 | .51060 | .596 | .761 |
| 13 | MSTS | 160 | 18.75 | 27.03 | 23.5279 | 1.45081 | -.299 | .475 |
| 14 | MHJP | 160 | 35.00 | 72.00 | 54.7812 | 7.49899 | -.364 | -.039 |
| 15 | MLJP | 160 | 168.00 | 263.00 | 216.5875 | 16.40539 | -.089 | .291 |
| 16 | MPAG | 160 | 60.00 | 130.00 | 83.5313 | 12.68383 | .068 | .318 |
| 17 | MTHM | 160 | 4.20 | 10.30 | 6.8044 | 1.32144 | .305 | -.750 |
| 18 | MTRA | 160 | 17.00 | 32.00 | 25.2500 | 3.30047 | -.447 | -.325 |

Table 1 shows the basic descriptive parameters of the applied variables of the examined athletes. The results shown in table 1, for this group of respondents in the space of anthropometric characteristics and motor abilities, when it comes to measures of asymmetry, show that the measures of asymmetry are within the limits of normal distributions and that there are no significant deviations from the normal distribution, given that the values of skewness do not exceed 1.00, except for the variable (AABS 2.242), (AUAS 1.615), (ABSK 2.332), which have increased asymmetry, out of 8 variables, it is noted that only one variable (MCHC -.287) has negative asymmetry, the others variables have a positive asymmetry, while in motor skills out of 10 variables, it is observed that, except for three variables (MSTS -.299), (MHJP -.364), (MLJP -.089) and (MTRA -.447) which have a negative asymmetry, the other variables have positive

asymmetry. The kurtosis results are below the normal distribution value of 2.75, which makes the distribution platykurtic, except for the variable (AABS 6.770) and (ABSK 6.153). From this it can be concluded that the results of the research of anthropometric characteristics and the results of motor tests are distributed within the limits of normality. Table's 2-5 show regression analyzes of criterion variables in the system of predictor variables in the form of numerical information. U according to with goal research regression analysis is should have yes it will show in what are relationship motor skills with variables that define mass and subcutaneous fat tissue in athletes aged 15-16 years.

Regression analysis of criteria defining variables motor coordination ability and explosive power in the system anthropometric predictors' variables.

Table 2. Influence of anthropometric predictor variables on criterion variables

| Model 1 | Variables | R | R Square | Adjusted R Square | Std. Error of the estimate | df1-df2 | F | Sig. |
|---------|-----------|------|----------|-------------------|----------------------------|---------|-------|------|
| 1 | MHFD | .227 | .051 | .001 | 2.64060 | 8-151 | 1.022 | .422 |
| 2 | MTIA | .215 | .046 | -.004 | .57992 | 8-151 | 4,912 | .508 |
| 3 | MLJP | .455 | .207 | .165 | 14.99304 | 8-151 | 4,921 | .000 |
| 4 | MTHM | .476 | .227 | .186 | 1.19242 | 8-151 | 5,533 | .000 |

Table 2 shows the regression analysis of the system of predictor variables on the criterion system in the form of numerical information. The connection of the entire system of motor abilities with anthropometric variables, show that the motor variable of coordination; hand and foot drumming (MHFD) gives a coefficient of multiple correlation $RO = .23$, showing that the influence of the predictor variables on the criterion is 23% ($DELTA = .23$), while the other 73% percent depends on other factors that were not considered in this research. This confirms that the coordination variable; drumming with hands and feet (MHFD) has no significant influence on the applied anthropometric variables, the significance of which is $Sig. = .422$. The results show that the second coordination variable; agility in the air (MTIA) with multiple correlation coefficient $RO = .22$, and significant $Sig. = .508$ has no significant influence on the applied anthropometric variables. The results show that the coordination variables; hand and foot drumming (MHFD) and agility in the air (MTIA) do not have a significant effect on the applied anthropometric variables. The

results show that the variable that defines explosive power (long jump from place - MLJP) has a multiple correlation coefficient $RO = .46$, showing that the influence of predictor variables on the criterion is 46% ($DELTA = .46$), while the other 54% percent it depends on other factors that were not considered in this research. This confirms that the variable: long jump from place (MLJP) has a significant influence on the applied anthropometric variables, the significance of which is $Sig. = .005$. The results show that the variable of explosive power: throwing the medicine ball lying down (MTHM) has a multiple correlation coefficient $RO = .48$, showing that the influence of the predictor variables on the criterion is 48% ($DELTA = .48$), while the other 52% percent depends on other factors that were not considered in this study, in the applied anthropometric variables, the significance of which is $Sig. = .000$. The results show that the variables of explosive power, long jump from place (MLJP) and throwing the medicine ball lying down (MTHM) have a significant influence in the applied anthropometric variables.

Table 3. Influence of anthropometric predictor variables on criterion variables

| | | <i>Statistical spatial influence of predictor anthropometric variables on specific motor skills of coordination and explosive power.</i> | | | |
|---------|-----------|--|------|------|-------|
| Model 1 | Variables | MHFD | MOUZ | MDLJ | MTHMB |
| | | Sig. | Sig. | Sig. | Sig. |
| 1 | ABH | .275 | .697 | .012 | .025 |
| 2 | ATM | .375 | .430 | .135 | .087 |
| 3 | ABMI | .463 | .372 | .006 | .005 |
| 4 | ACHC | .788 | .117 | .016 | .352 |
| 5 | AASF | .851 | .151 | .133 | .000 |
| 6 | AUAS | .411 | .239 | .002 | .000 |
| 7 | ABSF | .310 | .394 | .420 | .037 |
| 8 | AKNP | .115 | .536 | .216 | .699 |

In Table 3, we see what effect each anthropometric variable has on the criterion variables separately; hands and feet drumming (MHFD), turning in the air (ATIA), long jump from place (MLJP), and the variable throw the medicine ball lying down (MTHM), at the level of significance $p < 0.05$. Based on the regression analysis, it can be concluded that the anthropometric predictor variables do not have a statistically significant influence on the criterion variables of coordination; hand and foot drumming (MHFD) and turning in the air (ATIA), at a significance level of $p < 0.05$. While, the anthropometric predictor variables have shown to have a statistically significant influence on the criterion variables of explosive power; long jump from place (MLJP), and throwing the medicine ball (MTHM), at the level of significance $p < 0.05$. The results show that the statistically significant impact

on the criterion variable; standing long jump from place (MLJP), have anthropometric variables: body height (ABHE) with a coefficient $sig. = .012$, body mass index (ABMI) with a coefficient $sig. = .006$, chest circumference (ACHC) with a coefficient $sig. = .016$ and the variable upper arm skinfold (AUAS) with a significant coefficient $sig. = .002$, other anthropometric variables do not show a statistically significant influence on the criterion variable standing long jump from place (MLJP). The results show that the statistically significant impact on the criterion variable; throwing medical ball lying down (MTHM) at the level of significance $p < 0.05$ have variables; body height (ABHE) with coefficient $sig. = .025$, body mass index (ABMI) with coefficient $sig. = .005$, abdominal skinfold (AASF) with significant coefficient $sig. = .000$, upper arm skinfold (AUAS) with coefficient $sig. = .000$, and back skinfold

with significant coefficient $\text{sig.}=.000$), other anthropometric variables do not show a statistically significant influence on the criterion the variable throwing medicine ball lying down (MTHM), at the level of significance $p < 0.05$. The research shows that athletes who have better results in body height (ABH), body mass index (MBMI), chest

circumference (MCHC), upper arm skinfold (AUAS), abdominal skinfold (AABS) and back skinfold (ABSK) perform better in explosive movements. While in this research it was not established that anthropometric variables have an influence on the applied coordination criterion variables.

Table 4. Influence of motor predictor variables on criterion variables

| Model 1 | Variables | R | R Square | Adjusted R Square | Std. Error of the estimate | df1-df2 | F | Sig. |
|---------|-----------|------|----------|-------------------|----------------------------|---------|--------|------|
| 1 | MHFD | .496 | .246 | .201 | 2.36232 | 9-150 | 5,432 | .000 |
| 2 | MTIA | .493 | .243 | .198 | .51831 | 9-150 | 5.351 | .000 |
| 3 | MLJP | .758 | .574 | .549 | 11.01848 | 9-150 | 22,497 | .000 |
| 4 | MTHM | .740 | .547 | .520 | .91578 | 9-150 | 20.118 | .000 |

Table 4 shows the regression analysis of the system of predictor variables on the criterion system in the form of numerical information. The connection of the entire system of specific motor coordination abilities with motor variables shows that the motor variable is coordination; hand and foot drumming (MHFD) gives a multiple correlation coefficient $RO=.50$, showing that the influence of the predictor variables on the criterion is 50% ($DELTA=.50$), while the other 50% percentage depends on other factors not taken into account in this research. This confirms that coordination; drumming with hands and feet (MHFD) has a significant impact on the applied motor variables, the significance of which is $\text{Sig.}=.000$. The results show that the second variable that defines coordination, turning in the air (MTIA) has a multiple correlation coefficient $RO=.49$, showing that the influence of predictor variables on the criterion is 49% ($DELTA=.49$), while the other 51% percent depends on other factors that were not taken into account in this research. This confirms that the variable turn in the air (MTIA) has a significant influence on applied and motor variables, the significance of which is $\text{Sig.}=.000$. The

results also show that the motor variable that defines explosive power (long jump from place - MLJP) has a multiple correlation coefficient $RO=.76$, which shows that the influence of predictor variables on the criterion is 76% ($DELTA=.76$), while the other 24% depends on other factors that were not taken into account in this research. This confirms that explosive power; standing long jump from place (MLJP) has a significant impact on the applied motor variables, the significance of which is $\text{Sig.}=.000$. The results show that the second variable that defines explosive power has a multiple correlation coefficient $RO=.74$, showing that the influence of predictor variables on the criterion is 74% ($DELTA=.74$), while the other 26% depends on other factors that were not taken into account in this research. This confirms that the variable throwing medicine ball lying down (MTHM) has a significant influence on the applied motor variables, the significance of which is $\text{Sig.}=.005$. Therefore, we can claim that the applied variables that define explosive power have a significant influence on the applied motor variables at the $\text{Sig.}=.000$ level.

Table 5. Influence of motor predictor variables on criterion variables

| <i>Statistical spatial influence of predictor motor variables on specific motor abilities of coordination and explosive power.</i> | | | | | | |
|--|-----------|------|------|------|------|--|
| Model 1 | Variables | MHFD | MTIA | MLJP | MTHM | |
| | | Sig. | Sig. | Sig. | Sig. | |
| 1. | MHTA | .045 | .393 | .962 | .001 | |
| 2. | MFTA | .217 | .710 | .162 | .703 | |
| 3. | MHFT | // | .001 | .491 | .030 | |
| 4. | MTIA | .001 | // | .012 | .482 | |
| 5. | MSIS | .978 | .326 | .006 | .000 | |
| 6. | MHJP | .134 | .005 | .000 | .019 | |
| 7. | MLJP | .491 | .012 | // | .010 | |
| 8. | MPAG | .295 | .923 | .037 | .000 | |
| 9. | MTHM | .030 | .000 | .010 | // | |

| | | | | | |
|-----|------|------|------|------|-----|
| 10. | MTRA | .136 | .001 | .151 | 767 |
|-----|------|------|------|------|-----|

In Table 5, we see which of the ten motor abilities have a statistically significant influence with the criterion variable; hand and foot drumming (MHFD), turn in the air (ATIA), long jump from place (MLJP) and medicine ball throw (MTHM). The results show that a significant statistical impact with the criterion variable; hands and feet drumming (MHFD), at the level of significance $p < 0.05$, have variables: hand tapping (AHTA) with a significant $\text{sig.} = .045$, turn in the air (ATIA) with a significant $\text{sig.} = .001$, and throwing the medical ball lying down (MTHM) with a significant $\text{sig.} = .030$), other motor variables, did not show a significant correlation at the level of significance $p < 0.05$. The results show that the significant statistical influence of the predictor variables on the criterion variable; turn in the air (ATIA) at the level of significance $p < 0.05$, have variables: hands and feet drumming (MHFD) with coefficient $\text{Sig.} = .001$, high jump from place (MHJP) with coefficient $\text{Sig.} = .005$, long jump from place (MLJP) with significant coefficient $\text{Sig.} = .000$, and variable throwing medicine ball lying down (MTHM), with a significant $\text{Sig.} = .001$, other motor variables did not show a significant correlation with this criterion variable at the level of significance $p < 0.05$. The results show that the significant statistical influence of the predictor variables on the criterion variable; long jump from place (MLJP), at the level of significance $p < 0.05$, have variables: turn in the air (ATIA) at the level of significance $p < 0.05$, steps to the side (MSTS), with coefficient $\text{Sig.} = .006$, high jump from place (MHJP) with coefficient $\text{Sig.} = .000$, palm grip (MPAG) with coefficient $\text{Sig.} = .037$, and variable throwing medicine ball lying down (MTHM), with a significant $\text{sig.} = .010$, other motor variables did not show a significant correlation with this criterion variable at the level of significance $p < 0.05$. The results of motor abilities show that there are variables with a significant statistical impact with the criterion variable throwing a medicine ball (MTHM), at the level of significance $p < 0.05$; and those are: hand tapping (MHTA) with a coefficient of $\text{Sig.} = .001$, hand and foot drumming (MHFD) with a coefficient of $\text{Sig.} = .030$, steps to the side (ASTS) with a coefficient of $\text{Sig.} = .000$, high jump from place (MHJP) with coefficient $\text{Sig.} = .019$), long jump from place (MLJP) with significant coefficient $\text{Sig.} = .010$, and variable palm grip (MPAG) with coefficient $\text{Sig.} = .000$, other motor variables did not show a significant correlation with this criterion variable at the level of significance $p < 0.05$. Research shows that athletes who had better results in taping hands (MHTA), turn in the air (ATIA), throw medicine ball lying (MTHM), hand and foot drumming (MHFD), high jump from place

(MSHJ), long jump from place (MSLJ), and trunk raising in 30 seconds (MTRA), achieve better results in coordination movements. The research shows that athletes who had better results in the variable turn in the air (ATIA), steps to the side (ASTS), high jump from place (MHJP), long jump from place (MSLJ), palm grip (MPAG), throwing a medicine ball (MTHM), hand tapping (MHTA), and hand and feet drumming (MHFD), achieve better results in explosive abilities.

CONCLUSION

The aim of this research was to determine the degree of correlation between anthropometric characteristics and motor skills with the skills of coordination and explosive strength in student athletes. The research was conducted on a sample of 160 respondents, average age 15-16 years. The sample of respondents consisted of high school students in Prizren. 18 variables were applied (8 anthropometric characteristics and 10 motor skills). Relationships between the predictor system of anthropometric characteristics and criterion motor variables of coordination; hand and foot drumming (MHFD), and turn in the air (ATIA), and criterion variables of explosive power; long jump from place (MSLJ) and throw medicine ball lying down (MTHM), were determined by regression analysis. Based on the regression analysis, it can be concluded that the anthropometric predictor variables do not have a statistically significant influence on the criterion variables of coordination; hand and foot drumming (MHFD) and turning in the air (ATIA), at a significance level of $p < 0.05$. Therefore, the first hypothesis (H1), which reads: It is expected that the system of predictor anthropometric characteristics will have a statistically significant influence on criterion motor skills of coordination in athletes, it has not been confirmed. No statistically significant influence of predictor anthropometric characteristics on the motor coordination ability criterion was observed. The results showed that the anthropometric predictor variables have a statistically significant influence on the criterion variables of explosive strength; long jump (MLOJ), and throw medicine ball (MTHM), at the level of significance $p < 0.05$. Therefore, the second hypothesis (H2), which reads: a statistically significant influence of the system of predictor anthropometric characteristics on criterion motor ability is expected was confirmed. The research shows that athletes who have better results in body height (ABH), body mass index (MBMI), chest circumference (MCHC), upper arm

skinfold (AUAS), abdominal skinfold (AABS) and back skinfold (ABSK) perform better in explosive movements. While in this research it was not established that anthropometric variables have an influence on the applied coordination criterion variables. Results of the predictor system of motor variables and criterion motor variables of coordination; drumming with arms and legs (MBRN), and turning in the air (MTIA), showed a significant effect at the $p < 0.05$ level of significance. Therefore, the third hypothesis (H3); it is expected that a statistically significant influence of the system of predictor motor characteristics on criterion motor coordination abilities in athletes has been established. Research shows that athletes who had better results in taping hands (MHTA), turning in the air (ATIA), throw medicine ball lying (MTHM), hand and foot drumming (MHFD), high jump from place (MSHJ), long jump from place (MSLJ), and trunk raising in 30 seconds (MTRA), achieve better results in coordination movements. Results of the predictor system of motor variables and criterion

motor variables of explosive power; standing long jump (MLOJ), and lying medicine throw (MTHM), showed that they have a significant effect at the level of significance $p < 0.05$. Therefore, the fourth hypothesis (H4); a statistically significant influence of the system of predictor motor characteristics on the criterion abilities of explosive motor power in athletes is expected. The research shows that athletes who had better results in the variable turn in the air (ATIA), steps to the side (ASTS), high jump from place (MHJP), long jump from place (MSLJ), palm grip (MPAG), throwing a medicine ball (MTHM), hand tapping (MHTA), and hand and feet drumming (MHFD), achieve better results in explosive abilities. Motor efficiency in athletes is extremely important for their regular sports, work and life activities, that is why systematic sports activities are an important factor in raising the level and maintaining the state of their motor efficiency, based on modern scientific knowledge and experiences of good practice .

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