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*Original scientific paper*

# INFLUENCE OF MORPHOLOGICAL CHARACTERISTICS AND MOTOR ABILITIES ON THE SITUATIONAL EFFICIENCY OF JUDOKA

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**Abstract**

The basic goal of this research is to determine the level of significance of the influence of the predictor system of variables (morphological characteristics and motor abilities) on the criterion variables (situational movement structures of judokas). The research was performed on a sample of 92 respondents aged 16 - 18 years who were in the training process for at least three years. Eleven (11) variables of morphological characteristics, fourteen (14) variables of motor abilities and five (5) variables of situational movement structures in judo were applied in this research. The variables used in this study were determined by standard descriptive procedures, where the basic central and dispersion parameters were calculated to determine the functions of their distributions and the basic parameters of the functions, thus determining that none of the applied variables statistically significantly deviated from the normal distribution. Based on the results of regression analyzes, the influence of the predictor system of variables (morphological characteristics and motor abilities) on the criterion variables (situational movement structures in judo) was confirmed. This research found that special technical preparation (situational movement structures in judo) is largely conditioned by certain motor skills and morphological characteristics, which judo trainers must keep in mind when training and applying situational movement structures in judo.

*Keywords:* judo, morphological characteristics, motor skills, influence, situational movement structure

## 1. Introduction

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. These coincidences are less likely in sports that have greater complexity. Wrestling sports (freestyle and classical wrestling, judo, sambo, etc.) belong to the group of such sports in which only the number of basic elements of technique ranges from one hundred to several hundred with defenses, countermeasures, and combinations. Unfortunately, the fact is that spontaneity and traditionalism still prevail in the work of most Judo clubs. Only recently has there been a positive trend in scientific research and the acceptance and application of research in everyday practice. According to the structural analysis of movement, judo belongs to the polystructural acyclic activities (Mikić et al., 1995; Rađo et al., 2000; Mraković, 1997), the result of which is a binary variable: won - lost. The goals of judo training are the improvement of skills performed in competition with a rival and sports in which the dominant role is played by motor skills balance, coordination, strength, speed endurance (Mikić et al., 1995). In judo, the good functioning of the senses and the ability to perceive and act quickly under the constant change of opponent's activities are of great importance and where speed of reaction and accuracy of perceiving the opponent's intentions can prevent rivals from successfully performing a tactical maneuver (Bompa, 2000). From the functional aspect, judo is a sport in which the technique is characterized by open and closed kinetic chains of moving structures.

Judo techniques are applied in direct conflict with the opponent, all in an effort to perform symbolic destruction, ie efforts are made to disrupt the homeostasis (balance) of the opponent, both physical and mental. (Mikić et al., 1995).
This research was conducted with the aim to determine the influence of morphological characteristics and motor abilities on the success of performing situational movement structures in judo.

## 2. Research methodology

*2.1. Sample of respondents:* The study was performed on a sample of 92 respondents aged 16-18 who were in the training process for at least three years. The sample of respondents consisted of competitors from judo clubs from the Republic of Croatia (Istria County).

*2.2. Sample variables:* In this research, anthropological dimensions were measured in three areas:

- for measuring morphological characteristics (11 variables)
- for measuring motor skills (14 variables)
- to measure the situational movement structures of judokas (5 variables).

*2.2.1. Variables for the assessment of morphological characteristics (according to JBP)*

| | |
|---|---|
| Body height | (ATLVIS) |
| Leg length | (ADUENO) |
| Arm length | (ADUZRA) |
| Body weight | (ATLMAS) |
| Shoulder width | ASHIRRA) |
| Pelvic width | (AŠIRKA) |
| Chest circumference | (AOBGRU) |
| Upper arm circumference | (AOBNAD) |
| Thigh circumference | (AOBNAD) |
| Leather fold of the back | (ANABLE) |
| Abdominal skin fold | (ANABTR) |

*2.2.2. Variables for the assessment of motor skills (Recommended Mikić, 1999)*

| | |
|---|---|
| Hand taping | (MBFTAP) |
| Foot Taping | (MBFTAN) |
| Deep Tilt | (MFLPRK) |
| Bend twist | (MELISK) |
| Long jump from place | (MFESDM) |
| High jump | (MFESVM) |
| Throwing a medic from a supine position | (MFEBML) |
| Lifting the torso from lying on the back | (MREPTL) |
| Hull lifting - shelters | (MRCZTL) |
| Hemisphere balance internal static | (MBAPLU) |
| Hemisphere balance external dynamic | (MBAPLV) |
| Air agility | (MTKOZR) |
| Stick agility | (MTKOSP) |
| Agility on the ground | (MAGONT) |

*2.2.3. Variables for the assessment of situational movement structures of judokas (Kajmović et al., 2006).*

a) to evaluate manual techniques
1) Ipon-seoi-nage (MEANING)
b) to assess lateral techniques
2) Uki-goshi (SMUGSH)
c) To evaluate foot techniques
3) O-soto-gari (SMOSG)
d) to evaluate sacrificed techniques
4) Tomoe-nage (SMTNG)
e) for holding techniques (coma axis four positions in the transition)
5) Kesa-gatame, kata gatame, kami shiho gatame, jokoshiho gatame (SMKKG).

## 3. Results and discussion

*3.1. Regression analysis:* In this research, regression analysis was applied to determine the significance of relations and the magnitude of the influence of predictor systems (morphological characteristics and motor abilities) on criterion variables in the space of situational movement structures of judokas.

*3.1.1. Influence of the system of predictor variables of morphological characteristics and motor abilities on the criterion variable SMISN - Ipon seoi nage:* Based on the data presented in the attached tables, the system of predictor anthropological variables, which in this study are represented by variables of morphological characteristics and motor skills, has a statistically significant impact on the criterion variable SMISN - Ipon seoi nage at significance level p = 0.00.
The multiple correlation coefficient is R = 0.72 (Table 1.), which explains the common variability of 52% (R Square = 0.52).

**Table 1.** Model Summary

| | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| Model | | | | |
| 1 | 0,72 | 0,52 | 0,33 | 0,59 |

**Table 2.** ANOVA[b]

| Analysis of Variance; DV: SMISN (ilic.sta) | | | | | |
|---|---|---|---|---|---|
| | Sums of | | Mean | | |
| | Squares | Df | Squares | F | p-level |
| Regress. | 24,75 | 25,00 | 0,99 | 2,83 | 0,00 |
| Residual | 23,11 | 66,00 | 0,35 | | |
| Total | 47,86 | | | | |

Based on the analysis of the influence of individual anthropological predictor variables on a given criterion (Table 3), it can be concluded that the statistically most significant influence on the criterion variable have variables ATLMAS - body weight, ADUZRU - arm length, space, and variables MBFTAN - taping with the foot, MBAPLV - balance on the hemisphere external dynamic, MFEBML - throwing the medic from a lying position and MFLPRK - deep forward bend. Thus, for the realization of throwing over the upper arm, the most important are body weight, length of the upper extremities, skin fold of the abdomen and pelvic width, speed of frequency movements of the lower extremities, explosive power, balance and flexibility of the torso.

**Table 3.** Coefficients

| | | St. Err. | | St. Err. | | |
|---|---|---|---|---|---|---|
| | BETA | of BETA | B | of B | t(66) | p-level |
| Intercpt | | | 7,86 | 3,00 | 2,63 | 0,01 |
| ATLMAS | 0,07 | 0,35 | 0,00 | 0,02 | 0,20 | 0,04 |
| ATLVIS | -0,21 | 0,27 | -0,02 | 0,02 | -0,79 | 0,43 |
| ADUZNO | -0,19 | 0,22 | -0,02 | 0,03 | -0,85 | 0,40 |
| ADUZRU | 0,31 | 0,25 | 0,04 | 0,03 | 1,96 | 0,05 |
| ASIRRA | -0,30 | 0,17 | -0,06 | 0,04 | -1,70 | 0,09 |
| ASIRKA | -0,27 | 0,16 | -0,07 | 0,04 | -2,71 | 0,03 |
| ANABLE | 0,00 | 0,21 | 0,01 | 0,70 | 0,02 | 0,99 |
| ANABTR | -0,17 | 0,24 | -0,35 | 0,49 | -0,71 | 0,05 |
| AOBGRU | 0,27 | 0,25 | 0,02 | 0,02 | 1,11 | 0,27 |
| AOBNAD | 0,11 | 0,24 | 0,02 | 0,05 | 0,45 | 0,65 |
| AOBNAT | -0,01 | 0,18 | 0,00 | 0,02 | -0,06 | 0,95 |
| MBFTAP | 0,04 | 0,13 | 0,01 | 0,02 | 0,30 | 0,77 |
| MBFTAN | 0,00 | 0,12 | 0,00 | 0,03 | -2,16 | 0,04 |
| MRCZTL | -0,10 | 0,16 | 0,00 | 0,00 | -0,61 | 0,54 |
| MREPTL | 0,09 | 0,16 | 0,00 | 0,01 | 0,53 | 0,60 |
| MBAPLV | -0,18 | 0,14 | -0,03 | 0,02 | -2,12 | 0,02 |
| MBAPLU | 0,01 | 0,14 | 0,00 | 0,03 | 0,06 | 0,95 |
| MFEBML | 0,05 | 0,14 | 0,03 | 0,08 | 2,08 | 0,03 |
| MKTOZR | -0,17 | 0,15 | -0,22 | 0,20 | -1,12 | 0,27 |
| MKTOSP | 0,02 | 0,12 | 0,01 | 0,05 | 0,19 | 0,85 |
| MAGONT | -0,12 | 0,15 | -0,04 | 0,05 | -0,77 | 0,44 |
| MFESDM | 0,10 | 0,15 | 0,00 | 0,00 | 0,66 | 0,51 |
| MFESVM | 0,01 | 0,16 | 0,00 | 0,02 | 0,07 | 0,95 |
| MFLPRK | 0,18 | 0,12 | 0,02 | 0,01 | 2,46 | 0,02 |
| MFLISK | -0,01 | 0,12 | 0,00 | 0,01 | -0,05 | 0,96 |

*3.1.2. Influence of the system of predictor variables of morphological characteristics and motor abilities on the criterion variable SMUGS - Uki-goši:* Based on the data presented in the attached tables, the system of predictor anthropological variables of morphological characteristics and motor abilities has a statistically significant impact on the SMUGS - Uki-goši criterion variable at the significance level p = 0.02. The multiple correlation coefficient is R = 0.66 (Table 4), which explains the common variability of 42% (R Square = 0.42).

**Table 4.** Model Summary

| | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| Model | | | | |
| 1 | 0,66 | 0,42 | 0,19 | 0,65 |

**Table 5.** ANOVA[b]

| Analysis of Variance; DV: SMUGS (ilic.sta) | | | | | |
|---|---|---|---|---|---|
| | Sums of | | Mean | | |
| | Squares | Df | Squares | F | p-level |
| Regress. | 20,12 | 25,00 | 0,80 | 1,88 | 0,02 |
| Residual | 28,29 | 66,00 | 0,43 | | |
| Total | 48,41 | | | | |

Based on the analysis of the influence of individual anthropological predictor variables on a given criterion (Table 6), it can be concluded that statistically the most significant influence on the criterion variable has variables ATLMAS - body weight, ASHIRKA - pelvic width, ANABTR - skin fold, AOBNAT - thigh circumference, MBFT thigh circumference, - foot taping, MKTOZR - agility in the air and MFLPRK - deep forward bend.

Therefore, for the realization of the uki - goši technique, the most important are body weight, pelvic width, skin fold of the abdomen, thigh circumference, speed of frequency movements of the lower extremities, agility in the air and flexibility of the torso.

**Table 6.** Coefficients

| | | St. Err. | | St. Err. | | |
|---|---|---|---|---|---|---|
| | BETA | of BETA | B | of B | t(66) | p-level |
| Intercpt | | | 9,49 | 3,31 | 2,86 | 0,34 |
| ATLMAS | 0,34 | 0,38 | 0,02 | 0,02 | 0,89 | 0,04 |
| ATLVIS | -0,46 | 0,29 | -0,04 | 0,02 | -1,56 | 0,12 |
| ADUZNO | -0,09 | 0,24 | -0,01 | 0,03 | -0,35 | 0,73 |
| ADUZRU | 0,46 | 0,27 | 0,06 | 0,04 | 1,68 | 0,10 |
| ASIRRA | -0,29 | 0,19 | -0,06 | 0,04 | -1,50 | 0,14 |
| ASIRKA | -0,11 | 0,17 | -0,03 | 0,05 | -2,20 | 0,02 |
| ANABLE | -0,01 | 0,23 | -0,02 | 0,78 | -0,03 | 0,98 |
| ANABTR | -0,12 | 0,26 | -0,24 | 0,54 | -0,45 | 0,04 |
| AOBGRU | -0,04 | 0,27 | 0,00 | 0,02 | -0,14 | 0,89 |
| AOBNAD | 0,16 | 0,26 | 0,04 | 0,06 | 0,63 | 0,53 |
| AOBNAT | -0,08 | 0,19 | -0,01 | 0,03 | -2,13 | 0,04 |
| MBFTAP | 0,02 | 0,14 | 0,00 | 0,03 | 0,12 | 0,90 |
| MBFTAN | 0,03 | 0,13 | 0,01 | 0,03 | 2,27 | 0,04 |
| MRCZTL | -0,23 | 0,18 | -0,01 | 0,00 | -1,29 | 0,20 |
| MREPTL | 0,03 | 0,18 | 0,00 | 0,01 | 0,18 | 0,86 |
| MBAPLV | -0,18 | 0,15 | -0,03 | 0,02 | -1,15 | 0,26 |
| MBAPLU | 0,05 | 0,16 | 0,01 | 0,03 | 0,34 | 0,73 |
| MFEBML | 0,01 | 0,15 | 0,01 | 0,08 | 0,09 | 0,93 |
| MKTOZR | -0,26 | 0,17 | -0,34 | 0,22 | -2,46 | 0,01 |
| MKTOSP | -0,07 | 0,13 | -0,03 | 0,05 | -0,54 | 0,59 |
| MAGONT | -0,04 | 0,17 | -0,01 | 0,06 | -0,21 | 0,04 |
| MFESDM | 0,16 | 0,16 | 0,00 | 0,00 | 0,95 | 0,35 |
| MFESVM | 0,05 | 0,18 | 0,01 | 0,02 | 0,30 | 0,77 |

| | | | | | | |
|---|---|---|---|---|---|---|
| MFLPRK | 0,00 | 0,14 | 0,00 | 0,02 | 2,06 | 0,05 |
| MFLISK | -0,05 | 0,13 | 0,00 | 0,01 | -0,39 | 0,70 |

*3.1.3. Influence of the system of predictor variables of morphological characteristics and motor abilities on the criterion variable SMTNG - Tome nage:* Based on the data presented in the attached tables, the system of predictor anthropological variables of morphological characteristics and motor abilities has a statistically significant impact on the criterion variable SMTNG - Tome nage at the significance level p = 0.00. The multiple correlation coefficient is R = 0.78 (Table 7.), which explains the common variability of 61% (R Square = 0.61).

**Table 7.** Model Summary

| | R | | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| Model | | | | |
| 1 | 0,78 | 0,61 | 0,46 | 0,62 |

**Table 8.** ANOVA[b]

| Analysis of Variance; DV: SMTNG (ilic.sta) | | | | | |
|---|---|---|---|---|---|
| | Sums of | | Mean | | |
| | Squares | Df | Squares | F | p-level |
| Regress. | 39,53 | 25,00 | 1,58 | 4,11 | 0,00 |
| Residual | 25,41 | 66,00 | 0,38 | | |
| Total | 64,93 | | | | |

Based on the analysis of the influence of individual anthropological predictor variables on a given criterion (Table 9.), it can be concluded that statistically the most significant influence on the criterion variable have variables ATLMAS - body weight, ADUZRU - arm length, ASHIRKA - pelvic width, ANABTR - skin fold, MBAPLV - equilibrium on the hemisphere external dynamic, MKTOZR - agility in the air and MAGONT - agility on the ground, MFLPRK - deep tilt of the hull. Thus, for the realization of throwing over the head in the arch, the most important are body weight, length of the upper extremities, pelvic width, skin fold of the abdomen, dynamic balance and agility in the air, agility on the ground and flexibility of the torso.

**Table 9.** Coefficients

| | | St. Err. | | St. Err. | | |
|---|---|---|---|---|---|---|
| | BETA | of BETA | B | of B | t(66) | p-level |
| Intercpt | | | 10,74 | 3,14 | 3,42 | 0,00 |
| ATLMAS | 0,43 | 0,31 | 0,03 | 0,02 | 2,18 | 0,05 |
| ATLVIS | -0,29 | 0,24 | -0,03 | 0,02 | -1,21 | 0,23 |
| ADUZNO | 0,03 | 0,20 | 0,00 | 0,03 | 0,15 | 0,88 |
| ADUZRU | -0,11 | 0,22 | -0,02 | 0,04 | -2,16 | 0,03 |
| ASIRRA | -0,05 | 0,16 | -0,01 | 0,04 | -0,35 | 0,73 |
| ASIRKA | 0,00 | 0,14 | 0,00 | 0,05 | -0,02 | 0,05 |
| ANABLE | -0,21 | 0,19 | -0,82 | 0,74 | -1,11 | 0,27 |
| ANABTR | -0,04 | 0,22 | -0,11 | 0,51 | -0,21 | 0,05 |
| AOBGRU | 0,07 | 0,22 | 0,01 | 0,02 | 0,30 | 0,77 |

| | | | | | | |
|---|---|---|---|---|---|---|
| AOBNAD | 0,04 | 0,21 | 0,01 | 0,06 | 0,20 | 0,85 |
| AOBNAT | -0,04 | 0,16 | -0,01 | 0,03 | -0,28 | 0,78 |
| MBFTAP | -0,13 | 0,12 | -0,03 | 0,03 | -1,09 | 0,28 |
| MBFTAN | 0,10 | 0,10 | 0,03 | 0,03 | 0,92 | 0,36 |
| MRCZTL | 0,02 | 0,14 | 0,00 | 0,00 | 0,11 | 0,91 |
| MREPTL | -0,12 | 0,15 | -0,01 | 0,01 | -0,78 | 0,44 |
| MBAPLV | -0,23 | 0,12 | -0,04 | 0,02 | -1,96 | 0,04 |
| MBAPLU | -0,04 | 0,13 | -0,01 | 0,03 | -0,32 | 0,75 |
| MFEBML | 0,15 | 0,13 | 0,10 | 0,08 | 1,19 | 0,24 |
| MKTOZR | -0,30 | 0,14 | -0,45 | 0,20 | -2,20 | 0,03 |
| MKTOSP | -0,12 | 0,10 | -0,06 | 0,05 | -1,14 | 0,26 |
| MAGONT | -0,25 | 0,14 | -0,10 | 0,06 | -2,06 | 0,04 |
| MFESDM | 0,00 | 0,13 | 0,00 | 0,00 | -0,01 | 0,99 |
| MFESVM | 0,09 | 0,14 | 0,01 | 0,02 | 0,63 | 0,53 |
| MFLPRK | 0,01 | 0,11 | 0,00 | 0,02 | 0,11 | 0,04 |

*3.1.4. Influence of the system of predictor variables of morphological characteristics and motor abilities on the criterion variable SMOSG - O sotogari:* Based on the data presented in the attached tables, the system of predictor anthropological variables of morphological characteristics and motor abilities has a statistically significant impact on the criterion variable SMOSG - O sotogari at the level of significance p = 0.00. The multiple correlation coefficient is R = 0.68 (Table 10.), which explains the common variability of 46% (R Square = 0.46).

**Table 10.** Model Summary

| | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| Model | | | | |
| 1 | 0,68 | 0,46 | 0,26 | 0,63 |

**Table 11.** ANOVA[b]

| Analysis of Variance; DV: SMOSG (ilic.sta) | | | | | |
|---|---|---|---|---|---|
| | Sums of | | Mean | | |
| | Squares | Df | Squares | F | p-level |
| Regress. | 22,64 | 25 | 0,91 | 2,29 | 0,00 |
| Residual | 26,09 | 66,00 | 0,40 | | |
| Total | 48,73 | | | | |

Based on the analysis of the influence of individual anthropological predictor variables on a given criterion (Table 12), it can be concluded that statistically the most significant influence on the criterion variable has variables ATLMAS - body weight, ASIRKA - pelvic width, ANABTR - skin fold, MBFTAN - foot tapping, MBAPLV - hemisphere equilibrium external dynamic and MKTOZR - agility in air.
Therefore, for the realization of large external mowing, the most important are body weight, pelvic width, subcutaneous adipose tissue of the abdomen, speed of frequent movements of the lower extremities, dynamic balance and agility in the air, agility on the ground and flexibility of the torso.

**Table 12.** Coefficients

| | | St. Err. | | St. Err. | | |
|---|---|---|---|---|---|---|
| | BETA | of BETA | B | of B | t(66) | p-level |
| Intercpt | | | 9,574174 | 3,18277 | 3,008127 | 0,003718 |
| ATLMAS | 0,5179 | 0,36653 | 0,03 | 0,02 | 1,41 | 0,05 |
| ATLVIS | -0,42 | 0,28 | -0,03 | 0,02 | -1,51 | 0,14 |
| ADUZNO | -0,02 | 0,23 | 0,00 | 0,03 | -0,10 | 0,92 |
| ADUZRU | 0,10 | 0,26 | 0,01 | 0,04 | 0,37 | 0,71 |
| ASIRRA | -0,16 | 0,18 | -0,03 | 0,04 | -0,84 | 0,40 |
| ASIRKA | -0,26 | 0,16 | -0,07 | 0,05 | -2,04 | 0,05 |
| ANABLE | -0,06 | 0,22 | -0,19 | 0,75 | -0,25 | 0,80 |
| ANABTR | -0,43 | 0,25 | -0,88 | 0,52 | -2,06 | 0,04 |
| AOBGRU | 0,29 | 0,26 | 0,03 | 0,02 | 1,10 | 0,28 |
| AOBNAD | 0,23 | 0,25 | 0,05 | 0,06 | 0,94 | 0,35 |
| AOBNAT | -0,17 | 0,19 | -0,02 | 0,03 | -0,93 | 0,36 |
| MBFTAP | -0,10 | 0,13 | -0,02 | 0,03 | -0,74 | 0,46 |
| MBFTAN | 0,13 | 0,12 | 0,03 | 0,03 | 2,09 | 0,03 |
| MRCZTL | -0,06 | 0,17 | 0,00 | 0,00 | -0,33 | 0,74 |
| MREPTL | 0,03 | 0,17 | 0,00 | 0,01 | 0,20 | 0,84 |
| MBAPLV | -0,24 | 0,15 | -0,04 | 0,02 | -2,12 | 0,04 |
| MBAPLU | 0,12 | 0,15 | 0,02 | 0,03 | 0,77 | 0,44 |
| MFEBML | -0,06 | 0,15 | -0,03 | 0,08 | -0,41 | 0,68 |
| MKTOZR | -0,16 | 0,16 | -0,21 | 0,21 | -2,11 | 0,04 |
| MKTOSP | -0,15 | 0,12 | -0,06 | 0,05 | -1,22 | 0,23 |
| MAGONT | -0,05 | 0,16 | -0,02 | 0,06 | -0,31 | 0,04 |
| MFESDM | 0,12 | 0,16 | 0,00 | 0,00 | 0,76 | 0,45 |
| MFESVM | -0,11 | 0,17 | -0,01 | 0,02 | -0,63 | 0,53 |
| MFLPRK | 0,14 | 0,13 | 0,02 | 0,02 | 1,04 | 0,03 |
| MFLISK | 0,15 | 0,13 | 0,01 | 0,01 | 1,16 | 0,25 |

*3.1.5. Influence of the system of predictor variables of morphological characteristics and motor abilities on the criterion variable SMKKG - Kesa gatame 4:* Based on the data presented in the attached tables, the system of predictor anthropological variables of morphological characteristics and motor abilities has a statistically significant impact on the criterion variable SMKKG - Kesa gatame 4 at the level of significance p = 0.00. The multiple correlation coefficient is R = 0.80 (Table 13), which explains the common variability of 65% (R Square = 0.65).

**Table 13.** Model Summary

| | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| Model | | | | |
| 1 | 0,80 | 0,65 | 0,51 | 0,57 |

**Table 14.** ANOVA[b]

| Analysis of Variance; DV: SMKKG (ilic.sta) | | | | | |
|---|---|---|---|---|---|
| | Sums of | | Mean | | |
| | Squares | Df | Squares | F | p-level |
| Regress. | 39,41 | 25,00 | 1,58 | 4,85 | 0,00 |
| Residual | 21,43 | 66,00 | 0,32 | | |
| Total | 60,84 | | | | |

Based on the analysis of the influence of individual anthropological predictor variables on a given criterion (Table 15), it can be concluded that statistically the most significant influence on the criterion variable have variables ATLMAS - body weight, ATLVIS - body height, ASIRRA - shoulder width, ANABTR - abdominal skin fold, MRCZTL - hull lifting - shelters, MFEBML - throwing the medic from a lying position, MKTOZR - maneuverability in the air, MAGONT - maneuverability on the ground, MFLPRK - deep forward bend and MFLISK - stick twist.

So, for the realization of the basic triangular posture, gripping the collar, the most important are body weight, body height, shoulder width, skin fold of the abdomen, repetitive torso strength, explosive strength of the upper extremities, agility in the air, agility on the ground, flexibility of the torso and shoulder girdle.

**Table 15.** Coefficients

| | | St. Err. | | St. Err. | | |
|---|---|---|---|---|---|---|
| | BETA | of BETA | B | of B | t(66) | p-level |
| Intercpt | | | 9,52 | 2,88 | 3,30 | 0,00 |
| ATLMAS | 0,33 | 0,30 | 0,02 | 0,02 | 2,13 | 0,03 |
| ATLVIS | -0,65 | 0,23 | -0,06 | 0,02 | -2,86 | 0,01 |
| ADUZNO | 0,11 | 0,19 | 0,02 | 0,03 | 0,59 | 0,56 |
| ADUZRU | 0,28 | 0,21 | 0,04 | 0,03 | 1,32 | 0,19 |
| ASIRRA | -0,30 | 0,15 | -0,07 | 0,03 | -2,02 | 0,05 |
| ASIRKA | -0,03 | 0,13 | -0,01 | 0,04 | -0,20 | 0,84 |
| ANABLE | -0,03 | 0,18 | -0,10 | 0,68 | -0,15 | 0,88 |
| ANABTR | -0,16 | 0,20 | -0,37 | 0,47 | -0,79 | 0,04 |
| AOBGRU | -0,01 | 0,21 | 0,00 | 0,02 | -0,04 | 0,97 |
| AOBNAD | 0,20 | 0,20 | 0,05 | 0,05 | 1,00 | 0,32 |
| AOBNAT | 0,02 | 0,15 | 0,00 | 0,02 | 0,16 | 0,87 |
| MBFTAP | -0,02 | 0,11 | 0,00 | 0,02 | -0,17 | 0,86 |
| MBFTAN | 0,06 | 0,10 | 0,02 | 0,03 | 0,63 | 0,53 |
| MRCZTL | -0,26 | 0,14 | -0,01 | 0,00 | -2,06 | 0,03 |
| MREPTL | 0,02 | 0,14 | 0,00 | 0,01 | 0,13 | 0,90 |
| MBAPLV | -0,16 | 0,12 | -0,03 | 0,02 | -1,33 | 0,19 |
| MBAPLU | -0,11 | 0,12 | -0,02 | 0,03 | -0,89 | 0,38 |
| MFEBML | 0,16 | 0,12 | 0,10 | 0,07 | 2,30 | 0,04 |
| MKTOZR | -0,23 | 0,13 | -0,32 | 0,19 | -2,24 | 0,02 |
| MKTOSP | 0,00 | 0,10 | 0,00 | 0,05 | 0,04 | 0,97 |
| MAGONT | -0,27 | 0,13 | -0,10 | 0,05 | -2,03 | 0,04 |
| MFESDM | 0,07 | 0,13 | 0,00 | 0,00 | 0,59 | 0,05 |
| MFESVM | 0,15 | 0,14 | 0,02 | 0,02 | 1,06 | 0,29 |

| | | | | | | |
|---|---|---|---|---|---|---|
| MFLPRK | 0,10 | 0,11 | 0,01 | 0,01 | 2,08 | 0,04 |
| MFLISK | 0,21 | 0,10 | 0,01 | 0,01 | 2,03 | 0,05 |

## 4. Conclusion

The main goal of this research is to determine the level of significance of the influence of the predictor system of variables (morphological characteristics and motor abilities) on the criterion variables (situational movement structures of judokas). The research was performed on a sample of 92 respondents aged 16-18 who were in the training process for at least three years. Eleven (11) variables of morphological characteristics, fourteen (14) variables of motor abilities and five (5) variables of situational movement structures in judo were used in this research. The variables used in this study were determined by standard descriptive procedures, where the basic central and dispersion parameters were calculated to determine the functions of their distributions and the basic parameters of the functions.

In relation to the projections, ie the orientation of the factors within both spaces, we can conclude that the combination of those motor abilities that are responsible for the realization of situational tasks during judo is responsible for the result level in performing situational movement structures in judo.

Based on the results of regression analyzes examining the influence of the predictor system of variables (morphological characteristics and motor abilities) on criterion variables (situational movement structures in judo), it can be concluded that a statistically significant influence of predictor system, morphological characteristics and motor abilities on criterion variables moving structures of judokas.

This research has shown that special technical preparation (situational movement structures in judo) is largely conditioned by certain motor skills that judo trainers must keep in mind when training and applying situational movement structures in judo.

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