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# COMPARISON OF DIFFERENT REGRESSION MODELS BETWEEN COORDINATION AND SELECTED VARIABLES OF ANTHROPOLOGICAL STATUS

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## Abstract

The aim of this study was to apply and compare linear, parabolic and logarithmic regression models between coordination as criteria and the selected variables of anthropological status. The subject sample included 40 male fourth grade primary school pupils (age 10.3±0.5 years) who were measured in the following variables: obstacle course backwards (MPOL), seated straddle stretch (MPRR) and triceps skinfold (ANN). All the applied regression models indicate a positive correlation between the ANN variable and the MPOL variable, with the MPOL variable being negatively scaled. In the parabolic model, the regression parameter of ANN variable, although non-significant, has negative sign. Also the MPRR variable has a negative coefficient only in the parabolic model, more precisely in the linear term, while it has a positive coefficient in all other models. Finally, the results indicate the fact of complex and non-linear correlations between the selected variables and point to the necessity of development and application of non-standard methodological tools as a very important aspect of kinesiological science.

## Introduction

In various scientific areas, there have been numerous studies with the aim of thoroughly analysing and understanding the complex processes of functioning and development of the human organism as a whole as well as of its integral parts. In the area of kinesiology, the analysis of transformational effects of physical activity on some human characteristics as well as the analysis of correlation between different biomotor dimensions is an important scientific problem (Malina & Bouchard, 1991). The aforementioned especially refers to motor abilities and morphological traits. An important motor ability, "motor intelligence" yet, is coordination. Movement coordination is often considered as fast and efficient performance of complex and various motor tasks in complicated and unpredictable situations (Malacko & Doder, 2008). Furthermore, in scientific and professional literature movement coordination is often defined as the ability to efficiently solve complex motor problems in terms of synchronising reciprocal, non-linear and interactive relations between cognitive and motor abilities (Kirkendall & Gruber, 1970). Furthermore, coordination is considered one of the most complex motor abilities and in most sports, research on correlation between coordination abilities, morphological characteristics and basic motor abilities is of great importance. It is important to emphasize that a certain type of body build may directly interfere with the realisation of a kinetic programme in a certain motor situation, while the same body build can be extremely advantageous in another motor situation (Hošek-Momirović, 1981). The aforementioned additionally indicates the complexity of the problem of correlation of morphological variables and variables manifesting coordination. On the other hand, regression models, whether linear or non-linear, are one of the most effective methodological tools of applied sciences (Rencher, 2002; Jelaska, Maleš & Kuna, 2011). Thus, the main aim of this study was to compare the appropriateness and limitations of different regression models between coordination and the selected variables of anthropological status. More precisely, variables of seated straddle stretch and triceps skinfold, as appropriate representatives of latent dimensions of flexibility and subcutaneous fat tissue, were selected as predictors.

## Methods

In the present study the subject sample included 40 male fourth grade primary school pupils (10.3±0.5 years) who were measured in the following variables: obstacle course backwards (MPOL), seated straddle stretch (MPRR) and triceps skinfold (ANN). All measurements were taken 3 times. The following descriptive statistics parameters were calculated for all variables and items: mean, standard deviation, coefficient of variation, minimum and maximum result and coefficients of skewness and kurtosis; while significance of the Kolmogorov-Smirnov test was calculated to test the normality of distribution of the variables. Also, regression models were presented graphically. Three regression models (parabolic, logarithmic and linear) between the criterion variable (MPOL) and predictor variables MPRR and ANN were calculated.

Parabolic model: $MPOL = b_1MPRR^2 + b_2MPRR + b_3ANN^2 + b_4ANN$

Logarithmic mode (natural logarithm): $MPOL = b_0 + b_1Log(MPRR) + b_2Log(ANN)$

Multiple regression –linear model: $MPOL = \beta_1Log(MPRR) + \beta_2Log(ANN)$

Proportion of variance accounted for was calculated for non-linear models, while the coefficient of multiple correlation and the coefficient of multiple determination were calculated for the linear model. The Gauss-Newton method was used to calculate the model parameters.

## Results

The results of descriptive statistics and the results of distribution normality testing are presented in Table 1.

*Table 1: Results of descriptive statistics. Mean±standard deviation (M±σ), Median (Med), minimum result (Min), maximum result (Max), skewness ($\alpha_3$), kurtosis ($\alpha_4$), significance of Kolmogorov-Smirnov test (KS-p)*

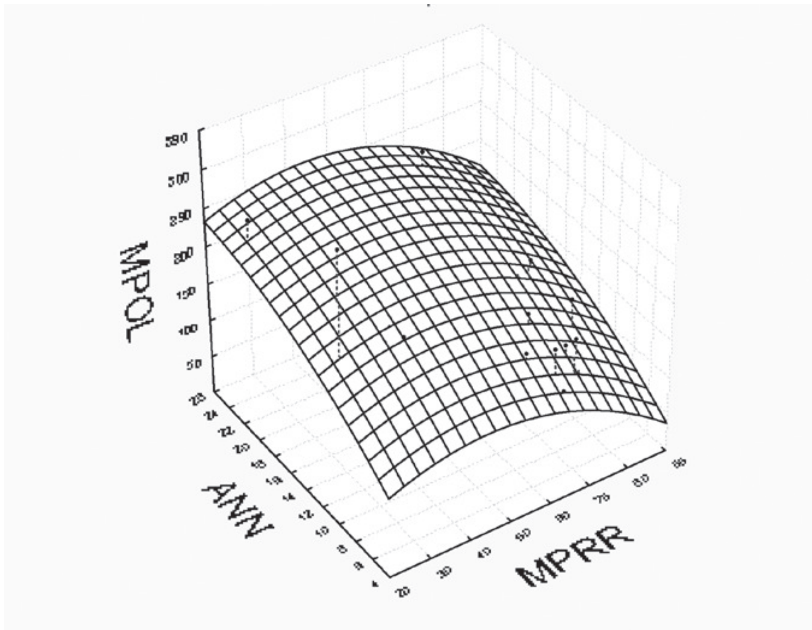
| | M±σ | Med | Min | Max | CV. | $\alpha_3$ | $\alpha_4$ | KS-p |
|---|---|---|---|---|---|---|---|---|
| **ANN** | 11.23±4.88 | 9.50 | 5.00 | 24.00 | 43.48 | 1.16 | 0.72 | <0.20 |
| **MPOL** | 173.88±44.95 | 170.50 | 120.00 | 330.00 | 25.85 | 1.35 | 2.61 | >0.20 |
| **MPRR** | 58.05±16.35 | 62.50 | 23.00 | 80.00 | 28.16 | -0.58 | -0.82 | >0.20 |

By reviewing the results in Table 1 it can be concluded that this is a relatively homogenous sample. Furthermore, it is clear that all the variables have normal distribution. By examining the relative variability of variables of the observed sample described by the coefficient of variation, it can be seen that the ANN variable had the highest variability. Furthermore, parameters of regression models of correlation between the selected variables are presented in Table 2.

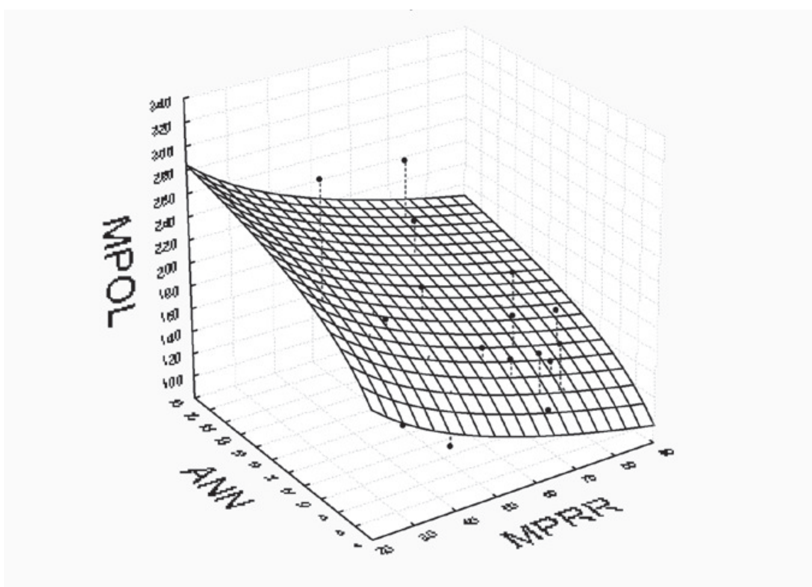
*Table 2: Coefficients β of the applied regression models, related significance and proportion of variance accounted for: $MPOL=\beta_1MPRR+\beta_2ANN$, $MPOL=b_1*MPRR^2+b_2*MPRR+b_3*ANN^2+b_4*ANN$ and $MPOL=b_0+b_1*Log(MPRR)+b_2*Log(ANN)$*

| **Model: $MPOL=\beta_1MPRR+\beta_2ANN$** | | | |
|---|---|---|---|
| | β | t | p |
| **MPRR** | -0.44 | -3.79 | 0.00 |
| **ANN** | 0.50 | 4.26 | 0.00 |
| **Intercept** | | 8.08 | 0.00 |
| | $R=0.70$ $R^2=0.49$ $p=0.00$ | | |
| **Model: $MPOL=b_1*MPRR^2+b_2*MPRR+b_3*ANN^2+b_4*ANN$** | | | |
| | b | t | p |
| **MPRR** | 4.08 | 2.76 | 0.01 |
| **ANN** | 12.01 | 2.10 | 0.04 |
| **$MPRR^2$** | -0.05 | -3.04 | 0.00 |
| **$ANN^2$** | -0.21 | -0.99 | 0.32 |
| | $R=0.59$ $R^2=0.35$ | | |
| **Model: $MPOL=b_0+b_1*Log(MPRR)+b_2*Log(ANN)$** | | | |
| | b | t | p |
| **Log(MPRR)** | -62.65 | -3.89 | 0.00 |
| **Log(ANN)** | 50.71 | 3.80 | 0.00 |
| **Intercept** | 306.85 | 3.98 | 0.00 |
| | $R= 0.70$ $R^2=0.49$ | | |

Graphic presentations of applied non-linear models are presented in Graph 1 and 2.




*Graph 1:* $MPOL=b_1*MPRR^2+b_2*MPRR+b_3*ANN^2+b_4*ANN$




*Graph 2:* $MPOL=b_0+b_1*Log(MPRR)+b_2*Log(ANN)$



## Discussion and conclusion

First of all, it must be noted that all parameters except for square in the ANN variable in the parabolic model were statistically significant and the applied logarithm and linear models had equal amount of the explained variability of the criterion variable. The aforementioned unambiguously indicates the appropriateness of applying all regression models. As expected, all regression models indicate a positive correlation between the ANN and the MPOL variable, with the MPOL variable being negatively scaled. In the parabolic model, the parameter standing by the ANN variable, although non-significant, indicates a negative correlation, which further indicates structural complexity of the observed correlation between the criterion variable and the predictors. Given the known effect of the logarithm function, the logarithm model had the highest coefficients in absolute value. Additionally, the correlation of different shape than that in the parabolic model can be seen in the graph. The MPRR variable had a negative coefficient only in the parabolic model, namely in the linear term, while in all other models it had a positive coefficient. Also from Graph 1 and Graph 2 it can be seen that obtained model are geometrically different. That is probably due to latent and complex interaction between used set of variables. Finally, the results indicate the fact of complex and non-linear correlations between the selected variables and point to the necessity of development and application of non-standard methodological tools as a very important aspect of kinesiological science. Surely, the fact that coordination as a prominent motor ability is conditioned by various variables of morphological status is very significant for clearer and deeper understanding of complex biomechanical systems responsible for manifestation of different motor abilities and skills.

## References

1. Hošek-Momirović, A. (1981). *Correlation between morphological taxa and manifest and latent dimensions of coordination* [In Croatian] *Kineziologija* 4(11), 5-108.
2. Jelaska, I., Maleš, B., & Kuna, D. (2011). Influence of learning process on the relation between chosen anthropometric dimensions via linear, parabolic and cubic relation model. *Croatian Journal of Education* 13(1), 76-98.
3. Kirkendall, D.R., & Gruber, J.J. (1970). Canonical relationships between the motor and intellectual achievement domains in culturally deprived high school pupils. *Research Quarterly* 41(4), 496-502.
4. Malacko, J., & Doder, D. (2008). *Technology of sport training and recovery* [In Serbian]. Novi Sad: Pokrajinski zavod za sport.
5. Malina, R.M., & C. Bouchard (1991). *Growth, maturation and physical activity*. Human Kinetic Books.
6. Rencher, A.C. (2002). *Methods of Multivariate Analysis*. 2nd ed. John Wiley & Sons, Inc.