

DIFFERENCES IN FUNCTIONAL CAPACITIES AMONG UNIVERSITY OF TUZLA

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(Original scientific paper)

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Abstract

This study analyzes the differences between groups within the domain of variables used to assess functional abilities in male students aged 20 to 22 at the University of Tuzla. For the purposes of this research, a total of 156 male students were tested. The sample of variables in this study includes two indicators for the assessment of functional abilities. The selection of variables was based on the research problem, aiming to identify relevant differences between groups within the domain of functional abilities. Data analysis was conducted using MANOVA, Multivariate Analysis of Variance.

Key words: group differences, aerobic endurance, VO₂max

Introduction

The positive impact of physical activity on health has been well-documented in numerous scientific studies, leading to the emergence of the term *health-related fitness*. This term encompasses those components of fitness that can be positively or negatively influenced by physical activity and, as such, directly affect an individual's health status (Heimer & Mišigoj-Duraković, 1999). Fitness training programs are commonly defined as various motor activities aimed at achieving positive transformations in anthropological dimensions. These types of program content can rightfully be classified among activities that are particularly beneficial for the development and maintenance of functional and motor abilities, as well as for the positive transformation of morphological characteristics. These dimensions are fundamentally linked to overall health status, as they determine the body's capacity for energy intake, transfer, and storage—processes essential for the functioning of each cell, organ, and physiological system. Physical activities dominated by the aerobic component help maintain energy balance in the body and thus prevent the accumulation of excess body weight (Hill & Wyatt, 2005).

Methods

The sample in this study consisted of second- and third-year students from the University of Tuzla. The participants were between 20 and 22 years of age, and only those who were in good health at the time of testing were included. The total sample comprised 156 participants. The selection of variables was guided by the issues concerning the transformation of functional abilities addressed in this study, which provided the basis for identifying relevant differences between groups within the domain of functional abilities. The variable sample in this research included two indicators for assessing functional capacities.

Results and Discussion

The results of the multivariate analysis of variance (MANOVA) for functional abilities indicate that there is a statistically significant difference within the entire set of variables ($p = .00$). Based on the results of the multivariate analysis of variance (MANOVA), it can be concluded that students classified in the first group demonstrated the lowest values in the variables used to assess functional abilities among all three groups. Compared to the second group, the first group ran 28.08 fewer shuttle segments (approximately 280 meters), indicating a lower predicted oxygen uptake (VO₂max) by 14.35 ml/kg/min. When comparing the first and third groups (see Table 2), differences are also evident: the first group ran 10.46 fewer segments, which corresponds to a 200-meter difference and a lower predicted oxygen uptake by 10.99 ml/kg/min. These results suggest that the first group exhibited the lowest level of functional ability in the selected assessment tests, indicating a very low VO₂max prediction for males aged 20 to 22.

Table 1. Multivariate Significance of Differences (MANOVA) in the Variables Used to Assess Functional Abilities

MAIN EFFECT: GRUPA (manfunkc.sta)	Value	p-level
Wilks' Lambda	0,16	
Rao R Form 3 (4,inf)	555,50	0,000
Pillai-Bartlett Trace	0,88	
V (4,1498)	292,35	0,000

	VARIJABLE	F	P	Funkc.	Funkc.	Funkc.
				X1	X2	X3
1	SHURUN	1825,51	0,00	26,24	54,32	36,70
2	VO2MAX	1827,10	0,00	25,68	46,03	36,67

Based on the obtained MANOVA results, students classified in the second group achieved the highest values in the variables assessing functional abilities among all three groups. Compared to the first group, the second group ran 28.08 more segments, reflecting a higher predicted oxygen uptake by 20.35 ml/kg/min. When comparing the second and third groups (Table 2), the second group ran 17.62 more segments and showed a higher VO₂max prediction by 9.36 ml/kg/min. These findings suggest that the second group demonstrated the highest level of functional ability according to the tests used in this study.

Based on the results of the MANOVA, students classified in the third group achieved intermediate values in the variables used to assess functional abilities. Compared to the first group, the third group ran 10.46 more segments, with a higher VO₂max prediction by 10.99 ml/kg/min. However, when compared with the second group (Table 2), the third group ran 17.62 fewer segments and had a lower predicted oxygen uptake by 9.36 ml/kg/min. It can be concluded that the third group exhibited a moderate level of functional ability among the three groups tested in this study.

Conclusion

This study analyzed differences between groups within the domain of variables used to assess functional abilities in students aged 20 to 22 at the University of Tuzla. Based on the results of the SHUTTLE RUN test, selected to evaluate functional capacity in this research, it is possible to identify and interpret group differences in the values of functional ability variables among students in this age group. The results of the multivariate analysis of variance (MANOVA) and their interpretation indicate that there are significant differences between groups across the entire system of variables used to assess functional abilities selected for this study.

References

- Milanović, D., (1997.). Osnove teorije treninga. Fakultet za fizičku kulturu, Zagreb.
- Heimer, S., Mišigoj-Duraković, M. (1999). Fitnes i zdravlje
- Mišigoj-Duraković, M. i suradnici. Tjelesno vježbanje i zdravlje. Zagreb. Fakultet za fizičku kulturu.
- Hill, O. and Wyatt, R. (2005). Role of physical activity in preventing and treating obesity applied Physiology 99, 765-770.
- Zahirović J., (2011): Magistarski rad „Kriteriji za tipsku identifikaciju studentica u području fitnesa od 19 – 21 godine i kreiranje fitnes pasoša“, Tuzla.
- Zahirović J., (2015) : „Kreiranje kriterijskih tablica antropoloških dimenzija i izrada elektronskog fitnes pasoša studentica u Bosni i Hercegovini“, Mostar.