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Scientific
article

Paper received: Dec 12 2022
Paper accepted: Apr 15 2023
Article Published: Jul 5 2023

Relations between Motor Abilities and Morphological Characteristics as Predispositions of Students for Sports

Extended summary

Physical growth and development, as a complex multidimensional process in the ontogenesis of children and young people, is defined by changes in morphological characteristics and motor status. Those changes, which are causally connected, it is necessary to simultaneously monitor and investigate the conditionality of their (inter)action. The monitoring of the physical abilities of children and young people should be continuous, and on the basis of that data, analyses should be carried out that would, among other things, lead to a connection with health, contributing to a better understanding of the health aspect and the factors that influence a poorer quality of life, as well as the role of physical activities in its preservation and improvement (Milanović and Radisavljević Janić, 2015). The special convenience of systematic monitoring, assessment, and evaluation of students' physical abilities could certainly be reflected in the possibility of an easier identification of students with specific predispositions for playing sports and their possible inclusion in an adequate way, either in the work of school sports sections or as a direction towards sports clubs (Sinobad, 2005; Pelemiš et al., 2012; Milanović and Radisavljević Janić, 2015; Milanović et al., 2016; Sindelić, 2019).

The aim of this paper is to examine the relationship between morphological characteristics and motor skills as a predisposition of students to play sports. A suitable sample consisted of 58 respondents from the population of male and female students aged 9 (± 0.5), who at the time of the measurement were at the end of the second grade of the elementary school "Sava Šumanović" from Belgrade. For the sample of variables used to define the morphological space (longitudinal dimensionality of the skeleton and volume and mass of the body), a set of two

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variables was applied, namely: to assess the longitudinal dimensionality of the skeleton: body height (cm); to estimate body volume and mass: body mass (kg). To evaluate the motor space, explosive power and motor speed, three variables were selected, out of which: jump distance from the place (cm); shuttle running 10 x 5 m (sec); hand tapping for 25 taps with a more dexterous hand (sec). The association between the variables was calculated using the Pearson correlation coefficient. The explanation of individual differences (variability) on the criterion variable based on a linear combination of a set of predictor variables was performed using multiple linear regression. Testing of the threshold levels of significance of all applied variables is expressed at the level of significance ($p \leq 0.05$). It was established that better results on the long jump motor test are achieved by those students who achieved better results on the 10 x 5 m shuttle running test and who have a lower body mass. Also, it can be confirmed that better results in the motor test of shuttle running 10 x 5 m will be achieved by those students who have a lower body mass and better results in the long jump and hand tapping tests. When it comes to the results in the hand tapping motor test, it can be stated that students who have a lower body height and a better/faster result in the 10 x 5 m shuttle running will achieve better results.

In accordance with that, and bearing in mind that certain individual and collective sports (gymnastics, athletics, football, handball, basketball) in the system of early primary school education are prescribed by the curricula, special attention should be paid to physical education and health education classes. the development of explosive strength and motor speed, as well as particularly important motor abilities in the identification and selection of children and young people for sports. With the identification of these, predominantly genetically determined motor abilities, it is necessary to start in the early stages, the moment when it is possible to determine the existence of motor abilities and the characteristics of children and young people (Kurelić et al., 1975). The results of this research can finally confirm the results of some previous findings, which state the connection between anthropometric characteristics and some motor abilities of students of younger grades of elementary school, but also the mutual influence of anthropomotor abilities (Martinović, 2002; Stojanović et al., 2006; Branković, 2011; Pelemiš et al., 2012; Prodanović et al., 2013; Ivanović and Ivanović, 2017; Smajić et al., 2017; Stojiljković and Piršl, 2017). It can be assumed, but due to the shortcomings of the research, it cannot be concluded with certainty, that the tested students, according to their characteristics and abilities, are more classified for team sports such as football, basketball, volleyball and handball, as indicated by their relations of explosive strength, agility and speed, which dominate in the motor analysis of the aforementioned sports activities. Although with a smaller and convenient sample of respondents, the results of this study can serve for further investigations of the relationship between the anthropometric characteristics and motor space of students, with an emphasis on the sports direction of the type of individual sports activity.

Keywords: morphological characteristics, motor abilities, younger school age, predispositions for sports

References

- Aivazidis, D. et al. (2019). Enhancing Motor Competence and Physical Activity in Kindergarten. *Journal of Physical Activity and Health*. 16 (3), 184–190. <https://doi:10.1123/jpah.2018-0260>
- Antunes, A. M. et al. (2015). Gross motor coordination and weight status of Portuguese children aged 6-14 years. *American Journal of Human Biology*. 27 (5), 681–689. <https://doi:10.1002/ajhb.22715>
- Branković, D., Martinović, D. i Ilić, J. (2012). Relacije između opštih motoričkih sposobnosti i testa „slalom s loptom” učenika IV razreda osnovne škole. *Sport Mont*. 10 (34–35–36), 188–193.
- Branković, D. (2011). *Uticaj izbornog sporta – rukometa na motoričke sposobnosti učenika IV razreda osnovne škole* (magistarski rad). Beograd: Fakultet sporta i fizičkog vaspitanja.
- D’Hondt, E. et al. (2011). Gross motor coordination in relation to weight status and age in 5- to 12-year-old boys and girls: A cross-sectional study. *International Journal of Pediatric Obesity*. 6 (2-2), e556–e564. <https://doi:10.3109/17477166.2010.50038>
- Džinović Kojić, D. i Pelemiš, V. (2016a). *Kvantitativne i kvalitativne karakteristike morfološkog i motoričkog prostora predškolske dece*. Beograd: Učiteljski fakultet
- Džinović Kojić, D. i Pelemiš, V. (2016b). *Monitoring fizičkog vaspitanja dece*. Beograd: Dra-slar partner.
- Grujić, S. (2016). *Modelne karakteristike mladih rukometaša u odnosu na morfološka i motorička obeležja* (doktorska disertacija). Sremska Kamenica: Fakultet za sport i turizam, Novi Sad.
- Hadžić, R. (2005). Prediktivna vrijednost bazičnih motoričkih sposobnosti na rezultate situaciono-motoričkih sposobnosti fudbalera uzrasta 14–16 godina. *Sport Mont*. 3 (8–9), 219–226.
- Ivanović, M., Milosavljević, S., i Ivanović, U. (2015). Latentna struktura antropometrijskih varijabli odbojkašica uzrasta 12–14 godina. *Fizička kultura*. 69 (1), 14–24.
- Ivanović, M. i Ivanović, U. (2017). Relacije antropometrijskih parametara i motoričkih umeća učenica u predadolescentnom periodu. *Glasnik Antropološkog društva Srbije*. 52, 17–28.
- Jakovljević, S. et al. (2016). Biological Maturity Status and Motor Performance in Fourteen-Year-old Basketball Players. *International Journal of Morphology*. 32 (2), 637–643. <https://doi:10.4067/S0717-95022016000200035>
- Janković, A. i sar. (2010). Godišnja dinamika razvoja motoričkih sposobnosti polaznika škole fudbala „DIF”. *Fizička kultura*. 64 (1), 26–34.
- Kurelić, N. i sar. (1975). *Struktura i razvoj morfoloških i motoričkih dimenzija omladine*. Beograd: Institut za naučna istraživanja Fakulteta za fizičko vaspitanje.
- Marković i sar. (2012). Uporedna analiza nastavnih programa fizičkog vaspitanja za mlađi školski uzrast nekih evropskih zemalja. *Sport Mont*. 10 (34–35–36), 194–200.

-
- Martinović, D. (2002). Relacije između postignuća u nastavi fizičkog vaspitanja, morfoloških i motoričkih karakteristika i osobina ličnosti učenika osnovne škole. *Fizička kultura*. 56 (1-4), 1–9.
 - Martinović, D. (2003). *Postignuća u nastavi fizičkog vaspitanja*. Beograd: Interprint.
 - Milanović, I., Radisavljević, S. i Pašić, M. (2010). Aktuelno stanje i odnos nastavnika prema praćenju fizičkog razvoja i motoričkih sposobnosti učenika u okviru nastave fizičkog vaspitanja. *Fizička kultura*. 64 (2), 76–88.
 - Milanović, I. i Radisavljević Janić, S. (2015). *Praćenje fizičkih sposobnosti učenika osnovne škole u nastavi fizičkog vaspitanja*. Beograd: Fakultet sporta i fizičkog vaspitanja.
 - Milanović, I. i Radisavljević Janić, S. (2018). Unapređivanje kvaliteta i efikasnosti nastave fizičkog vaspitanja u Republici Srbiji. U: Lazarević, E. i dr. (ur). *Unapređivanje kvaliteta i dostupnosti obrazovanja u Srbiji (279–292)*. Beograd: Institut za pedagoška istraživanja.
 - Milanović, I. i sar. (2016). *Priručnik za praćenje fizičkog razvoja i razvoja motoričkih sposobnosti učenika u nastavi fizičkog vaspitanja*. Beograd: Zavod za vrednovanje kvaliteta obrazovanja i vaspitanja.
 - Nemčić, T., Fiorentini, F. i Sporiš, G. (2013). Latentna struktura morfoloških varijabli na uzorku nogometaša kadeta. U: Findak, V. (ur). *Organizacijski oblici rada u područjima edukacije, sporta, sportske rekreacije i kineziterapije: zbornik radova (142–148)*. Zagreb: Hrvatski kineziološki savez.
 - Pavlović, S. (2018). Indeks telesne mase (ITM) kao značajan faktor u ispoljavanju motoričkih sposobnosti dece mlađeg školskog uzrasta. *Inovacije u nastavi*. 31 (2), 53–59. [https://doi: 10.5937/inovacije1802053P](https://doi.org/10.5937/inovacije1802053P)
 - Pelemiš, V. i sar. (2012). Uticaj motoričkog prostora na eksplozivnu snagu donjih ekstremiteta dečaka. *Sport i zdravlje*. VII (1-2), 77–83.
 - Pelemiš, V., Džinović-Kojić, D. i Živanović, V. (2018). Kakav uticaj ima dodatni program kinezioloških aktivnosti na morfološki status predškolske dece?. *Inovacije u nastavi*. 31 (2), 1–12. [https://doi: 10.5937/inovacije1802001P](https://doi.org/10.5937/inovacije1802001P)
 - Pelemiš, V., Zoretić, D. and Prskalo, I. (2023). Physical Performance and Morphological Characteristics of Young Basketball Players Before and After Covid 19. *Children*. 10 (3), 493. <https://doi.org/10.3390/children10030493>
 - Prodanović, Z. i sar. (2013). Differences in morphological characteristics and motor skills of boys and girls of first grade of elementary school. U: Jovanović, M. i Nićin, Đ. (ur). *Sports Science and Health (431–437)*. Treća međunarodna konferencija *Sportske nauke i zdravlje*, 15. 3. 2013. Banja Luka: Panevropski univerzitet „Apeiron”.
 - Sanader, A. (ur). *Fizička razvijenost i fizičke sposobnosti dece osnovnoškolskog uzrasta*. (2009). Beograd: Republički zavod za sport.
 - Sinđelić, N. (2019). Osnovni principi škole sporta u radu sa decom mlađeg osnovnoškolskog uzrasta. *Inovacije u nastavi*. 32 (4), 119–132. [https://doi: 10.5937/inovacije1904119S](https://doi.org/10.5937/inovacije1904119S)
 - Sinobad, M. (2005). Poređenje antropometrijskih karakteristika i telesnog sastava između školske dece i košarkaša istog uzrasta. *Sportska medicina*. 5 (2), 43–53.
-

-
- Smajić, M. i sar. (2017). Razlike u morfološkim karakteristikama i motoričkim sposobnostima devojčica i dečaka mlađeg školskog uzrasta. *Glasnik antropološkog društva Srbije*. 52, 83–93.
 - Spasić, M. (2013). *Morfološki i biomotorički prediktori agilnosti u pubertetu* (doktorska disertacija). Split: Kineziološki fakultet.
 - Srhoj, V. et al. (2006) A New Model of Selection in Women's Handball. *Collegium Antropologicum*. 3, 601–605.
 - Stoilković, D. i Piršl, D. (2017). Relacije između mehanizma za regulaciju intenziteta ekscitacije i eksplozivnosti. *Godišnjak Pedagoškog fakulteta u Vranju*. 8 (1), 311–318.
 - Stojanović, T., Nikolić, M. i Nešić, G. (2006). Uticaj antropometrijskih karakteristika na manifestaciju eksplozivne snage kod odbojkaša uzrasta 13 godina. *Acta Medica Medianae*. 45 (2), 53–57.
 - Višnjčić, D., Jovanović, A. i Miletić, K. (2004). *Teorija i metodika fizičkog vaspitanja*. Beograd: Fakultet sporta i fizičkog vaspitanja.