ST open

RESEARCH ARTICLE

Anthropometric characteristics and motor abilities of youth futsal players

Ante Prgomet, Jakov Marasović, Ante Rađa, Marko Erceg

Faculty of Kinesiology, University of Split, Split, Croatia

Aim: The main aim of this study was to determine the differences in anthropometric characteristics, as well as basic and specific motor skills between young futsal players grouped by quality based on expert evaluations from their coaches. We also investigated the relationship between basic anthropological characteristics and motor and sport-specific tests.

Methods: The sample of participants consisted of 20 young futsal players. The players were grouped into two categories based on expert evaluations from coaches, considering their previous performances and games: one group of higher-quality players (n = 10) and one group of lower-quality players (n = 10). Body height, weight, and body mass index (BMI) were used to assess morphological measures. Basic motor abilities were assessed using the standing long jump, medicine ball throw, 20–meter sprint, and slalom without a ball. Specific motor abilities were evaluated using 20–meter sprint with the ball and slalom with the ball. Mann-Whitney U test was used to test the differences between the observed groups of players. A correlation analysis was used to examine the relationships between anthropological characteristics and motor and sport-specific tests.

Results/Findings: Statistically significant differences ($P \leq 0.014$) were found between higher-quality and lower-quality players in standing long jump, 20–meter sprint, and 20–meter sprint with the ball. Significant correlations were found between chronological age and the following variables: standing long jump (r = 0.53), medicine ball throw (r = 0.50), 20–meter sprints with and without the ball (r = -0.53 and r = -0.52, respectively), and slalom with the ball (r = -0.45). Body height significantly correlated with the standing long jump (r = 0.69), medicine ball throw (r = 0.74), and 20–meter sprint without the ball (r = -0.47). Body weight significantly correlate with the standing long jump (r = 0.45) and medicine ball throw (r = 0.60).

Conclusions: Higher-quality young futsal players have somewhat better-developed basic and specific motor abilities compared to lower-quality players (standing long jump, 20–meter sprint with and without the ball). The results may provide deeper insights into the importance of certain motor abilities that can be crucial for the selection and identification of young talents, as well as for planning training programs.

Keywords: futsal, quality, basic motor abilities, specific motor activities, young players

Correspondence to:
Marko Erceg
University of Split, Faculty of Kinesiology
Teslina 6, 21000, Split, Croatia
E-mail: marko.erceg@kifst.eu

Cite as:
Prgomet A, Marasović J, Rađa A, Erceg M. Anthropometric characteristics and motor abilities of youth futsal players. ST-OPEN. 2025;6:e2025.2507.26.

DOI:
https://doi.org/10.48188/so.6.10

Introduction

futsal originated in the 1930s in Uruguay, borrowing the rule of 5 players per team and a match duration of 40 minutes from basketball, and the goal dimensions from handball (*1*-*3*). The name futsal comes from the Portuguese *futebol de salão* or the Spanish *fútbol sala* and *fútbol de salón*, which means "indoor soccer" (*4*, *5*). The width of the field for international matches must be between 20 and 25 meters, and the length between 38 and 42 meters (*6*). For non-international matches, the width must be between 16 and 25 meters, and the length between 25 and 42 meters. The small space suggests that players must have excellent technical skills and ball-handling abilities (*4*). Quick ball possession changes and the potential for more goals make the game attractive and exciting, but its dynamics and speed require great physical and technical-tactical readiness (*7*). In addition to being a professional sport with national and international championships, futsal is also used as a complementary game for the development of standard soccer (*4*).

Milanović and colleagues (*9*) demonstrated that futsal players and soccer players differ in the intensity of effort during the game, but not in motor abilities, specifically agility. This suggests that agility is an important component in both futsal and soccer (*10*). These findings can serve as a good indicator for coaches, considering that more and more players are switching from soccer to futsal after trying both. Children who are successful in futsal exhibit a specific anthropological profile, characterized by various anthropometric features associated with their athletic performance. (*12*, *13*). The most important aspects of the anthropological status of successful young futsal players include an optimal body composition with a low percentage of body fat and a pronounced volumetric component (*9*, *14*), while the analysis of basic motor skills provides a better insight into the anthropological status of top futsal players (*8*). Burdukiewicz and colleagues (*5*) found that futsal players have lower body weight, shorter lower limbs, but a higher percentage of body fat compared to professional soccer players. On the other hand, Nikolaidis and colleagues (*11*) observed a trend of increased body mass and fat with chronological age.

The issue addressed by our study is related to the selection and identification of athletes, especially in younger age categories (*15*, *16*). In youth categories, selection often depends on indicators such as speed, strength, or height, while technical skills and mental attributes (such as creativity and decision-making under pressure) are often overlooked (*17*). Coaches frequently choose physically dominant players without considering long-term development and technical potential. This may result in overlooking talented individuals who, despite noat being physically dominant, possess outstanding technical skills and game intelligence. Besides basic motor abilities and physical attributes, ball-handling skills also play a crucial role (*3*, *10*, *15*) and may further differentiate more successful from less successful futsal players. Consequently, we aimed to determine the differences in anthropometric characteristics, as well as both basic and specific motor skills between young futsal players of different qualities who play for the Academic Futsal Club Universitas (AFCU). A partial aim was to determine the correlation between basic anthropological traits and motor and sport-specific tests.

Methods

Sample

The study sample included 20 young futsal players from the AFCU Split club, with an chronological age (median, interquartile range) of 13.5, 12–14.2 years. The criteria for the inclusion in the study were: a) participation in at least 85% of training sessions, b) regular participation in previous competitive seasons, c) possession of a valid sports medical certificate, and d) being free from pain or injuries at the time of testing.

Defining player success

Before conducting the analysis, the coaches categorized the players into higher-quality and lower-quality groups. This division was made with the purpose of gaining a deeper understanding of the specific abilities and skills that significantly distinguish the more successful players from the less successful ones. By doing so, the coaches aimed to identify key factors that contribute to performance differences within the team. Three coaches assessed the development of players in three technical-tactical elements of futsal (receiving and passing, anticipation, and the speed and quality of decision-making under pressure), as well as an assessment based on their previous games and performances. The coaches evaluated the quality of the players through parameters of competitive success in attack, defense, and transition. A Likert scale from 1 to 5 was used, where 1 represented the most negative and 5 the most positive attitude (*18*). Thus, the participants in the study were divided into two groups: those who were higher-quality players (n = 10) and those who were lower-quality players (n = 10).

Variables

The participants refrained from consuming caffeinated beverages for 24 hours and did not eat for 2 hours before testing to minimize potential disturbances to the experiment. Each participant completed all tests during the same time period of the testing day and under the same climatic conditions (4–7 PM, temperature 25.6 ± 0.8˚C, and 36.3 ± 2.5% relative humidity). The participants were asked to avoid any stressful activities during the testing or between training sessions.

We used a battery of 9 tests (**Table 1**), including 3 tests to measure anthropometric characteristics and 6 tests to assess motor skills. Prior to assessing motor skills, measurements for height and body weight were taken, and the body mass index (kg/m^2) was calculated. Before beginning the motor skills testing, the players performed a 15–minute warm-up, including 8 minutes of dynamic warm-up, 5 minutes of ball possession, and 2 minutes of reaction and acceleration drills. To assess upper limb strength, a medicine ball throw

Table 1. Description of all anthropometric, motor, and sport-specific variables

Variables
Chronological age (years)
Body height (cm)
Body weight (kg)
Body mass index (kg/m^2)
Standing long jump (cm)
Medicine ball throw (cm)
20–meter sprint (s)
Slalom without the ball(s)
20–meter sprint with the ball(s)
Slalom with the ball(s)

was conducted, while lower limb strength was assessed using a standing long jump. The 20–meter sprint and 20–meter sprint with the ball were used to measure explosive sprint speed and the technique of controlling the ball. For non-reactive agility, both a slalom test without the ball and with the ball were used (*19*, *20*). For all running tests, without and with the ball, a stopwatch was used, and the participants started running at the signal of the timer. The medicine ball throw was performed from a seated position with the back against a wall, and the goal was to throw the 3-kilogram medicine ball as far as possible with both hands.

Ethical issues

The Ethics Committee of the Faculty of Kinesiology approved the study (approval number: 2181-205-02-05-23-018 Split, Croatia), in accordance with the ethical standards of the Helsinki Declaration of 1964. All players had a valid membership card from the Croatian Futsal Association, were fully healthy, and were examined by a local sports medicine specialist. All participants consented to the examination, and their anonymity was guaranteed.

Statistical analysis

All results were obtained using the Statistica, v.14.01 (Dell Inc., Palo Alto, CA, USA). Descriptive statistics parameters were calculated for all measured variables, and since the data distribution, tested using the Kolmogorov-Smirnov test, was not normal, non-parametric data analysis was applied. To determine the differences between the higher and lower quality groups, the non-parametric Mann-Whitney U test was used, with parameters of median and interquartile range (IQR). The level of statistical significance in this study was set at $P < 0.05$. Pearson's correlation coefficient was used to examine the relationship between basic anthropometric characteristics and motoric as well as sport-specific tests, with the level of statistical association in this study set at $P < 0.05$.

Results

No statistically significant differences were observed in anthropometric measurements (body height, body weight, and body mass index) between higher- and lower-quality players (**Table 2**).

Table 2. Physical characteristics (median, interquartile range) of higher-quality (n = 10) and lower-quality players (n = 10) in the variables of chronological age and anthropometry

Variables	Higher-quality players	Lower-quality players	*P**
Chronological age (years)	13.7 (13.4-14.4)	13.4 (11.9-13.8(	0.471
Body height (cm)	169.5 (163.0-175.0)	166.0 (155.0-172.0)	0.325
Body weight (kg)	54.3 (50.6-65.6)	52.5 (48.0-64.0)	0.571
Body mass index (kg/m^2)	19.2 (17.1-21.4)	20.1 (18.0-21.5)	0.472

*Mann-Whitney test.

Statistically significant differences were observed in three out of six motor ability variables. The variables that most effectively discriminated between the groups, in favor of the higher-quality players, were standing long jump (median 200 vs. 176 cm), 20–meter sprint (median 3.8 vs. 4.3 s), and 20–meter sprint with a ball (median 4.1 vs. 4.3 s) (**Table 3**).

Table 3. Motor ability assessment (median, interquartile range) in higher-quality (n = 10) and lower-quality players (n = 10) in motor and sport-specific variables

Variables	Higher-quality players	Lower-quality players	P*
Standing long jump (cm)	200 (175–210)	176 (154–183)	0.002
Medicine ball throw (cm)	900 (780–980)	780 (660–910)	0.227
20–meter sprint (s)	3.8 (3.7–3.95)	4.3 (4.1–4.6)	0.014
Slalom without a ball (s)	8.2 (7.8–8.6)	9.0 (8.7–9.2)	0.059
20–meter sprint with a ball (s)	4.1 (4.0–4.2)	4.3 (4.3–5.1)	0.012
Slalom with a ball (s)	12.1 (11.0–12.3)	13.8 (11.6–15.2)	0.076

*Mann-Whitney test.

In correlation analysis (**Table 4**), chronological age was significantly correlated with all motor ability variables, with the exception of the slalom without the ball (r = -0.41). Body height demonstrated significant correlations with the standing long jump (r = 0.69), medicine ball throw (r = 0.74), and 20–meter sprint (r = -0.47). Body weight was also significantly correlated with performance in the standing long jump and medicine ball throw. In contrast, body mass index (BMI) did not exhibit any significant correlations with the assessed motor ability variables.

Table 4. Correlation analysis between anthropometric characteristics and motor tests in young futsal players

Variables	Standing long jump (cm)	Medicine ball throw (cm)	20–meter sprint (s)	Slalom without a ball (s)	20–meter sprint with a ball (s)	Slalom with a ball (s)
Chronological age (years)	0.53*	0.50*	-0.53*	-0.41	-0.52*	-0.45*
Body height (cm)	0.69*	0.74*	-0.47*	-0.15	-0.40	-0.42
Body weight (kg)	0.45*	0.60*	-0.15	0.01	-0.05	-0.16
Body mass index (kg/m^2)	0.04	0.25	0.24	0.20	0.32	0.16

*Pearson's test, P<0.05.

Discussion

the main aim of this study was to determine the differences in anthropometric characteristics, as well as both basic and specific motor skills between young futsal players grouped by quality based on expert evaluations from their coaches. Out of three motor indicators, two basic ones (standing long jump, 20–m sprint), and one out of three sport-specific (20–m sprint with the ball) indicator showed significantly higher values in higher-quality play-

ers. Among the other variables, there were no significant differences among the three anthropometric variables (body height, weight, and body mass index). However, a significant correlation was found between some anthropological characteristics (chronological age, body height, and body weight) with motor and sport-specific tests. The difference in body mass index was not statistically significant. Additionally, we did not find a significant correlation of body mass index with any motor or sport-specific variable.

Casanova et al (*6*) found that body mass index was inversely correlated with horizontal and vertical jumps, while the waist-to-hip ratio was positively correlated with 20–m sprint performance. This suggests a correlation between higher BMI and waist-to-hip ratio with lower levels of physical fitness. Ayarra et al (*1*) concluded that first-league players ("higher quality") had a lower BMI compared to the second-league players ("lower quality"). These results suggest a possible higher amount of subcutaneous fat in lower-quality players, which may affect their results in some motor skills. Adults cannot be directly compared to children and adolescents due to significant differences in developmental stages, as confirmed by Tavares et al. (*21*), which found significantly better motor performance results in senior players compared to younger athletes. During and after puberty, a marked increase in physical performance occurs as a result of muscular, neuronal, hormonal, and biomechanical factors (*22*). These developmental changes, particularly in body composition and growth, often influence anthropometric indicators. Therefore, BMI differences among adolescents often reflect developmental processes rather than differences in nutritional status or physical activity. This is especially relevant when interpreting physical performance outcomes, as body height and weight in our study significantly correlated with the medicine ball throw test. Several studies have shown a positive correlation between body height and weight and some tests for assessing upper body explosiveness (*23*, *24*).

Although no statistically significant differences in body height were found between the players, the results indicate that higher-quality players (on average slightly taller) achieved better results than lower-quality players (on average slightly shorter). On the other hand, the standing long jump was used to assess the latent dimension of lower body explosiveness (*25*), which also significantly correlated with body height and weight. This variable showed a significant difference between the observed groups, with better results recorded in higher-quality players. It is well-known that lower body explosiveness is one of the most important abilities for energy regulation in elite futsal players and serves as a discriminator between more successful and less successful players (*26*, *27*).

Significantly better results in the 20–m sprint variable among higher-quality players compared to lower-quality ones correspond to the findings of previous studies (*13*, *25*). It is possible that step length influenced speed, which tended to be higher in higher-quality players compared to lower-quality players, potentially due to their slightly greater body height (median 169.5 vs. 166 cm) and more pronounced skeletal longitudinality (*15*, *28*). This thesis is supported by the finding of this study that a significant correlation was found between body height and the 20–m sprint.

Significant differences in this study in favor of higher-quality players were found in the 20–m sprint with a ball, which was classified as a sport-specific parameter. The assessment of sport-specific parameters in all sports, including futsal, is one of the most important indicators of player potential (*3*, *10*). Speed-explosive properties of the lower body and energy capacities, especially anaerobic phosphagen and glycolytic types (*4*), are essential prerequisites for participating in this sport. However, as in any polystructural complex sport with a ball, technical or sport-specific skills are the main predictors of achievement that distinguish players of different success levels (*15*).

Selection is often based on a player's current form rather than their potential for further development (*2*, *26*, *29*). One of the main mistakes in selection can be excessive competitive orientation at the expense of player development (*30*). To improve the selection and identification process of young futsal players, coaches must consider all aspects of the game and personality, not just physical abilities, and develop a comprehensive approach that includes technical, tactical, physical, and mental characteristics. It is also important to create an environment where players are given the opportunity to grow and learn without too much focus on current results.

There are several limitations to this study that may have influenced the results. The sample size is relatively small, so the results may reflect the specific characteristics of the observed participants. Additionally, the specific consideration of training age, or time spent training futsal, was not taken into account. While some players may have started by training football before switching to futsal, others may have started with futsal as their first sport. Since the players are relatively young, the duration of their involvement in the sport could play a significant role in developing their motor skills. Future research should primarily focus on a larger sample size and the training age of players to eliminate "outliers" and draw more general conclusions about the young futsal population.

Conclusions

the research confirmed that higher-quality players have more developed basic and specific motor skills with the ball compared to lower-quality futsal players. This can also be a good indicator in the selection of children who will engage in futsal, thus improving the overall quality of futsal players. However, it does not necessarily have to be the only decisive factor in developing high-quality players in futsal. The main limitations of this study are the small sample size, the subjective assessment of coaches in group selection, and the athletes' background regarding the duration of their involvement in the sport. Future studies should expand the sample size and observed variables and conduct a survey on the duration of their involvement in the sport.

Provenance: This manuscript is based on the master's thesis by Ante Prgomet, deposited in the Dabar repository (https://urn.nsk.hr/urn:nbn:hr:221:205273)

Received: 2 April 2025 / **Accepted:** 28 August 2025 / **Published online:** 31 October 2025.

Peer review: Externally reviewed.

Data availability statement: The raw data for this study can be made available on request to the corresponding author.

Funding: No funding was received for this study.

Authorship declaration: Study design: AP and AR. Analysis: AR and ME. Preparation and translation: JM, AR and ME. Manuscript writing and reviewing: FD, JM, AR and ME.

Disclosure of interest: The authors completed the ICMJE Disclosure of Interest Form (available upon request from the corresponding author) and declare no conflicts of interest.

ORCID

Jakov Marasović https://orcid.org/0009-0001-5419-0319

Ante Rađa https://orcid.org/0000-0003-4869-3347

Marko Erceg https://orcid.org/0000-0002-4115-2022

References

1. Ayarra R, Nakamura FY, Iturricastillo A, Castillo D, Yanci J. Differences in physical performance according to the competitive level in futsal players. J Hum Kinet. 2018;64:275–85. https://doi.org/10.1515/hukin-2017-0201
2. Balcıoğlu A, Biçer B. The effect of futsal training on the speed, agility, and anaerobic power of male children aged 12-14 years old. Turk J Sport Exerc. 2022;24(2):164–70.
3. Barbieri RA, Zagatto AM, Milioni F, Barbieri FA. Specific futsal training program can improve the physical performance of futsal players. Sport Sci Health. 2016;12:247–53. https://doi.org/10.1007/s11332-016-0283-z
4. Belo J, Valente-dos-Santos J, Pereira JR, Duarte-Mendes P, Gamonales JM, Paulo R. Study of body composition and motor skills of futsal athletes of different competitive levels. Sports. 2024;12:137. https://doi.org/10.3390/sports12050137
5. Burdukiewicz A, Pietraszewska J, Stachoń A, Chromik K, Goliński D. The anthropometric characteristics of futsal players compared with professional soccer players. Human Mov. 2014;15(2):93–9. https://doi.org/10.2478/humo-2014-0008
6. Casanova N, Willig R, Soares D, Marconcin P, Goncalves AS, Vieira F, et al. Relationship between anthropometric attributes and physical fitness levels in young male portuguese futsal players. Open Sports Sci J. 2024;17(1):e1875399X290477.
7. Milanović Z, Sporiš G, Trajković N, Fiorentini F. Differences in agility performance between futsal and soccer players. Sport Sci (Travnik). 2011;4(2):55–9.
8. Reis M, Santos J, Matos M, Cruz T, Vasconcellos F, Almeida M. Assessment of the performance of novice futsal players in the execution of futsal-specific motor skills. Human Mov. 2019;20(3):29–37. https://doi.org/10.5114/hm.2019.83994
9. Čađavčan A. Usporedba vrijednosti rezultata morfoloških osobina i motoričkih sposobnosti između juniora i seniora u futsalu [dissertation]. Osijek: Josip Juraj Strossmayer University of Osijek, Faculty of Kinesiology Osijek; 2022.
10. Sekulic D, Gilic B, Foretic N, Spasic M, Uljević O, Veršić Š. Fitness profiles of professional futsal players: identifying age-related differences. Biomed Hum Kinet. 2020;12(1):212–20. https://doi.org/10.2478/bhk-2020-0027

11. Nikolaidis PT, Chtourou H, Torres-Luque G, Rosemann T, Knechtle B. The relationship of age and BMI with physical fitness in futsal players. Sports (Basel). 2019;7(4):87. https://doi.org/10.3390/sports7040087
12. Toni M. Analiza motoričkih sposobnosti futsal igrača mješovitim linearnim modelima: razlike između juniora i seniora. In: Dvanaesta međunarodna konferencija "Sportske nauke i zdravlje"; 2022. p. 73-8.
13. Nakamura FY, Pereira LA, Rabelo FN, Ramirez-Campillo R, Loturco I. Faster futsal players perceive higher training loads and present greater decreases in sprinting speed during the preseason. J Strength Cond Res. 2016;30(6):1553–62. https://doi.org/10.1519/JSC.0000000000001257
14. Junior MAF, Del Conti Esteves JV, de Moraes SMF, de Souza EA, de Jesus Pires de Moraes A, Andreato LV. Comparison of anthropometric and physical profiles of futsal athletes from under-17 and adult categories. Sport Sci Health. 2017;13:107–12. https://doi.org/10.1007/s11332-016-0317-6
15. Kartal R. Comparison of Speed, Agility, Anaerobic strength and anthropometric characteristics in male football and futsal players. J Educ Train Stud. 2016;4(7):47–53. https://doi.org/10.11114/jets.v4i7.1435
16. Mendes D, Travassos B, Carmo JM, Cardoso F, Costa I, Sarmento H. Talent identification and development in male futsal: a systematic review. Int J Environ Res Public Health. 2022;19(17):10648. https://doi.org/10.3390/ijerph191710648
17. Söğüt M, Yapici H, Luz LG, Giudicelli B, Clemente FM, Doğan AA. Maturity-associated variations in anthropometry, physical fitness, and sport-specific skills among young male and female futsal players. Human Mov. 2022;23(4):70–6. https://doi.org/10.5114/hm.2022.108321
18. Arnold WE, McCroskey JC, Prichard SV. The Likert-type scale. 1967.
19. Mijalković S, Mladenović K, Ilić T. Body Composition And Motor Abilities Of Young Football Players. Journal of Anthropology of Sport and Physical Education. 2023;7(2):19–22. https://doi.org/10.26773/jaspe.230405
20. Yunefri M, Juita A, Haryani M. (2020, August). The Comparison Between Dribble Exercise and Race Slalom Dribble Exercise on Junior Football Players at SSB Pekanbaru. In: 1st Progress in Social Science, Humanities and Education Research Symposium (PSSHERS 2019);2020 Aug; Atlantis Press(pp. 341-345).
21. Tavares F, Mendes B, Driller M, Freitas S. Do young elite football athletes have the same strength and power characteristics as senior athletes? J Funct Morphol Kinesiol. 2017;2(4):48. https://doi.org/10.3390/jfmk2040048
22. Beunen G, Malina RM. Growth and physical performance relative to the timing of the adolescent spurt. Exerc Sport Sci Rev. 1988;16:503–40. PubMed
23. Griffiths B, Grant J, Langdown L, Gentil P, Fisher J, Steele J. The effect of in-season traditional and explosive resistance training programs on strength, jump height, and speed in recreational soccer players. Res Q Exerc Sport. 2019;90(1):95–102. https://doi.org/10.1080/02701367.2018.1563276
24. Ikeda Y, Kijima K, Kawabata K, Fuchimoto T, Ito A. Relationship between side medicine-ball throw performance and physical ability for male and female athletes. Eur J Appl Physiol. 2007;99:47–55. https://doi.org/10.1007/s00421-006-0316-4
25. Wang X, Qin XM, Ji S, Dong D. Effects of resistance training with blood flow restriction on explosive power of lower limbs: A systematic review and meta-analysis. J Hum Kinet. 2023;89:259–68. https://doi.org/10.5114/jhk/168308
26. Kocić M, Joksimović A, Stevanović M. Differences in explosive strength of legs between football and futsal players. Facta Univ Ser Phys Educ Sport. 2016;269-78.
27. Sekulic D, Pojskic H, Zeljko I, Pehar M, Modric T, Versic S, et al. Physiological and anthropometric determinants of performance levels in professional futsal. Front Psychol. 2021;11:621763. https://doi.org/10.3389/fpsyg.2020.621763
28. De Matos JAB, Aidar FJ, Mendes RR, de Malaquias Lômeu L, Santos CA, Pains R, et al. Acceleration capacity in futsal and soccer players. Fit Perform J. 2008;7(4):224–8. https://doi.org/10.3900/fpj.7.4.224.e
29. Galy O, Zongo P, Chamari K, Michalak E, Dellal A, Castagna C, et al. Anthropometric and physiological characteristics of Melanesian futsal players: a first approach to talent identification in Oceania. Biol Sport. 2015;32(2):135–41. https://doi.org/10.5604/20831862.1140428
30. Dantas PMS, Fernandes Filho J. Identificação dos perfis, genético, de aptidão física e somatotípico que caracterizam atletas masculinos, de alto rendimento, participantes do futsal adulto, no Brasil. Fit Perform J. 2002;1(1):28–36. https://doi.org/10.3900/fpj.1.1.28.p