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GENDER-RELATED PECULIARITIES OF 7-YEAR-OLD SCHOOLCHILDREN'S MOTOR FITNESS

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Abstract

The purpose of the study was to identify gender-related peculiarities of 7-year-old schoolchildren's motor fitness.

Materials and methods. The study participants were 59 7-year-old schoolchildren (girls – 27, boys – 32). The children and their parents were informed about all the features of the study and gave their consent to participate in the experiment. The study used the following research methods: analysis of scientific and methodological literature, pedagogical observations, testing of motor fitness, probabilistic approach to assessing the learning process, methods of mathematical statistics. The study recorded the primary schoolchildren's level of proficiency in gymnastic exercises. The coefficient was determined by the formula: $p = (m/n) \times 100$, where p is the level of proficiency, m is the number of successfully performed exercises, n is the total number of attempts to perform the exercise. In the experiment, the study controlled the level of proficiency in the following exercises: forward roll; backward roll; shoulderstand with bent legs.

Results. The differences in the development level of movement coordination of individual parts of the body and vestibular stability are not statistically significant; in the 7-year-old girls and boys, there is a statistically significant difference in the development level of strength, speed strength, speed, endurance, and the level of proficiency in acrobatic exercises.

Conclusions. A canonical discriminant function can be used to classify and identify the indicators that have the greatest weight in assessing gender-related peculiarities of 7-year-old schoolchildren's motor fitness. In assessing gender-related peculiarities of 7-year-old schoolchildren's motor fitness, these indicators include the level of proficiency in acrobatic exercises, the level of relative strength of shoulder flexors, endurance, and speed strength.

Keywords: discriminant analysis, girls, boys, motor skills, motor fitness.

Introduction

The importance of studying gender-related peculiarities of motor fitness in physical education and sports is indicated in the studies by Cai, Qiu, Chen, Pan, Shen, and Kang (2019), Cañadas, Gómez, García-Rubio, and Ibáñez (2018), Čillík and Willwéber (2018). Gao, Zeng, Pope, Wang, and Yu (2019), Herrmann, Heim, and Seelig (2019) point out that gender-related peculiarities of motor fitness in children are observed as early as 6-8 years of age.

The analysis of scientific literature revealed the following gender-related peculiarities of motor function development in children: at 3-5 years, there are no gender-related differences in motor fitness (Hnatiuk, Lamb, Ridgers, Salmon, &

Hesketh, 2019); at the age of 6-8 years, gender-related differences are observed in movement control, motor activity (Herrmann, Heim, & Seelig, 2019; Kashuba, Futorny, Andrieieva, Goncharova, Carp, Bondar, & Nosova, 2018; Kondakov, Voloshina, Kopeikina, & Kadutskaya, 2020); at 7-10 years, there are statistically insignificant differences in the indicators of dynamic and static balance (Moseichuk, Zoriy, Kostashchuk, Kanivets, Nakonechnyi, Koshura, Potop, Yarmak, & Galan, 2020).

To identify the patterns of motor function development, modern research uses methods of multivariate statistics such as factor and discriminant analysis (Brusseau & Burns, 2018; Hohmann, Siener, & He, 2018; Ivashchenko, 2020). Discriminant analysis allows to obtain both a regression equation to classify schoolchildren by their motor fitness level, and to

identify the indicators that are key in the classification, which is important in assessing schoolchildren's gender-related peculiarities (Ivashchenko, 2020).

However, in the studied scientific sources, there are no results aimed at studying the priority of motor skills development in schoolchildren. Therefore, the problem of identifying key indicators in assessing primary schoolchildren's gender-related peculiarities requires additional research.

The purpose of the study was to identify gender-related peculiarities of 7-year-old schoolchildren's motor fitness.

Materials and methods

Study participants

The study participants were 59 7-year-old schoolchildren (girls – 27, boys – 32). The children and their parents were informed about all the features of the study and gave their consent to participate in the experiment.

Organization of the study

The study used the following research methods: analysis of scientific and methodological literature, pedagogical observations, testing of motor fitness, probabilistic approach to assessing the learning process, methods of mathematical statistics.

The study recorded the indicators of height (cm), body weight (kg), as well as the results in tests No. 3 “Standing long jump (cm)”, No. 4 “Middle- and long-distance running. 300 m running (s)”, No. 5 “30 m sprint running from a standing start (s)”, No. 6 “Seated forward bend (cm)”, No. 7 “Mixed hang rope pull-ups (times)”, No. 8 “Shuttle run 4×9 m (s)”, No. 9 “Combined movements of arms, torso and legs (points)”, No. 10 “Maintenance of stable posture – standing on one leg with closed eyes (s)”, No. 11 “Walking along straight line after 5 rotations (deviations in cm)”.

The study recorded the primary schoolchildren's level of proficiency in gymnastic exercises. The coefficient was determined by the formula: $p = (m/n) \times 100$, where p is the level of proficiency, m is the number of successfully performed exercises, n is the total number of attempts to perform the exercise. In the experiment, the study controlled the level of proficiency in the following exercises: forward roll; backward roll; shoulderstand with bent legs.

Statistical analysis

The study materials were processed using IBM SPSS 20 statistical analysis software. The study calculated: arithmetic mean, standard deviation. Discriminant analysis was performed.

The study protocol was approved by the Ethical Committee of the University. In addition, the children and their parents or legal guardians were fully informed about all the features of the study, and a signed informed-consent document was obtained from all the parents.

Results

Table 1 shows the results of testing the 7-year-old schoolchildren's motor fitness.

A comparison of testing results revealed that the 7-year-old schoolchildren differ statistically insignificantly by the anthropometric indicators. In test No. 9 “Combined movements of arms, torso and legs, points”, the girls and boys show high results, the difference in fitness is statistically insignificant. In the results of tests that characterize vestibular stability (No. 10 “Maintenance of stable posture – standing on one leg with closed eyes, s”, No. 11 “Walking along straight line after 5 rotations, deviations in cm”), the difference is statistically insignificant, the girls and boys show low results.

In the results of tests No. 3, 4, 5, 7, 8, 12, 13, 14, the difference between the girls and boys is statistically significant, the

Table 1. The results of testing the 7-year-old schoolchildren's motor fitness

No	Indicator	girls (n = 27)		boys (n = 32)		Δ	t	p
		X	s	X	s			
1	Height, cm	123.85	3.62	123.34	4.43	0.51	.476	.636
2	Body weight, kg	24.22	4.54	23.28	4.58	0.94	.790	.433
3	Standing long jump, cm	108.7	12.37	130.91	16.06	-22.21	-5.862	.000
4	300 m running, s	136.44	18.18	109.47	14.3	26.97	6.379	.000
5	30 m running from a standing start, s	6.79	0.48	6.22	0.29	0.57	5.658	.000
6	Seated forward bend, cm	7.11	3.68	3.47	3.37	3.64	3.964	.000
7	Mixed hang rope pull-ups, times	2.63	1.8	4.56	1.95	-1.93	-3.927	.000
8	Shuttle run 4×9 m, s	13.4	0.77	12.63	0.73	0.77	3.906	.000
9	Combined movements of arms, torso and legs, points	9.17	0.76	9.38	0.71	-0.21	-1.090	.280
10	Maintenance of stable posture – standing on one leg with closed eyes, s	17.54	14.05	18.59	13.14	-1.05	-.296	.768
11	Walking along straight line after 5 rotations, deviations in cm	90.07	66.24	80.84	63.85	9.23	.544	.589
12	Forward roll, level of proficiency	46.67	19.22	76.88	15.33	-30.21	-6.716	.000
13	Backward roll, level of proficiency	46.67	19.22	75.63	15.85	-28.96	-6.345	.000
14	Shoulderstand with bent legs, level of proficiency	46.67	19.22	80.63	14.8	-33.96	-7.664	.000

boys show better results. In test No. 6 “Seated forward bend, cm”, statistically significantly better results are shown by the 7-year-old girls (see Table 1).

Thus, the differences in the development level of movement coordination of individual parts of the body and vestibular stability are not statistically significant; in the 7-year-old girls and boys, there is a statistically significant difference in the development level of strength, speed strength, speed, endurance, and the level of proficiency in acrobatic exercises.

Tables 2-5 show the results of discriminant analysis, which make it possible to classify the 7-year-old girls and boys by the level of motor fitness.

The obtained canonical function explains the variation of results by 100% and is informative for classifying the 7-year-old schoolchildren's motor fitness (see Table 2).

The analysis of the canonical function shows its statistical significance ($\lambda = 0.178$; $p < 0.001$) (see Table 3).

Table 4 shows the standardized canonical discriminant function coefficients which allow to measure the ratio of contribution of variables to the function result. Variables No. 14 “Shoulderstand with bent legs, level of proficiency”, No. 13 “Backward roll, level of proficiency”, No. 7 “Mixed hang rope pull-ups, times” make the greatest contribution to the canonical function: the larger the values of these variables, the greater the value of the function. The above indicates that

the classification is based on the level of motor abilities and motor skills development (see Table 4, column 3).

Table 4 shows the structure coefficients of the canonical discriminant function, which are the coefficients of correlation between the variables and the function. Thus, the function is most closely connected with the level of proficiency in acrobatic exercises and general endurance: therefore, a significant difference between the girls and boys aged 7 is observed in the level of proficiency in acrobatic exercises.

Table 5 shows the centroid coordinates for the two groups. They make it possible to interpret the canonical function in terms of the role in classification. At the positive pole, there is a centroid for the 7-year-old boys, at the negative – a centroid for the 7-year-old girls (see Fig. 1, 2). This indicates a significant difference in the fitness of the 7-year-old girls and boys. The results of classification of the groups show that 98.3 % of the original grouped observations were classified correctly.

Thus, a canonical discriminant function can be used to classify gender-related peculiarities of 7-year-old schoolchildren's motor fitness.

Discussion

The study assumed that the identification of gender-related peculiarities of 7-year-old schoolchildren's motor fitness would reveal the cause-and-effect relationships that influence motor skills development in 7-year-old girls and boys.

It is well known that the level of coordination abilities development determines the success in developing motor skills (Khudolii, 2019; Marchenko & Dykhanova, 2019; Ivashchenko, 2020), but the results of testing coordination abilities showed that the girls and boys did not statistically significantly differ by these indicators (Table 1) and had a statistically significant difference in the level of proficiency in acrobatic exercises. For the girls, the proposed acrobatic exercises are difficult to perform.

Table 2. Canonical discriminant function. Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	4.617	100	100	0.907

Table 3. Canonical discriminant function. Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	0.178	87.156	13	0.001

Table 4. Canonical discriminant function coefficients

No	Indicator	Canonical discriminant function coefficients		
		Standardized	Structure matrix	Unstandardized
		Function	Function	Function
		1	1	1
1	Height, cm	0.154	-0.029	0.038
2	Body weight, kg	-0.415	-0.049	-0.091
3	Standing long jump, cm	0.165	0.361	0.011
4	300 m running, s	-0.123	-0.393	-0.008
5	30 m running from a standing start, s	–	-0.352	–
6	Seated forward bend, cm	-0.285	-0.244	-0.081
7	Mixed hang rope pull-ups, times	0.517	0.242	0.274
8	Shuttle run 4x9 m, s	-0.304	-0.241	-0.406
9	Combined movements of arms, torso and legs, points	-0.187	0.067	-0.256
10	Maintenance of stable posture – standing on one leg with closed eyes, s	-0.048	0.018	-0.004
11	Walking along straight line after 5 rotations, deviations in cm	0.770	-0.034	0.012
12	Forward roll, level of proficiency	-0.533	0.414	-0.031
13	Backward roll, level of proficiency	0.962	0.391	0.055
14	Shoulderstand with bent legs, level of proficiency	1.041	0.472	0.061
	(Constant)			-2.311

Table 5. Classification resultsa. Functions at group centroids. 7-year-old schoolchildren.

	1 - girls, 2 - boys 2 class	Predicted group membership		Total	Functions at group centroids
		1	2		
		1	2		
Original	Count	1	26	1	27
		2	0	32	32
	%	1	96.3	3.7	100
		2	0	100	100

a. 98.3% of original grouped cases correctly classified

Fig. 1. Classification resultsa. 7-year-old girls **Fig. 2.** Classification Resultsa. 7-year-old boys

The analysis of comparison of the girls' and boys' testing results indicates that the level of development of strength, speed strength, agility, and endurance has a positive effect

on the level of proficiency in acrobatic exercises. The results obtained supplement the data of Ivashchenko, Berezhna, and Cieřlicka (2020) who found that the level of proficiency in exercises determines the variation of testing results in 7-year-old boys by 28.437%, the development of "agility" and "movement coordination" ensures the formation of motor skills, and the development of arm strength and vestibular stability is the reserve in training 7-year-old boys that will increase the effectiveness of the educational process; and also the data of Ivashchenko and Sirichenko (2020), according to which the level of proficiency in exercises determines the variation of testing results in 7-year-old girls by 29.772%.

A discriminant analysis revealed the indicators that have the greatest weight in assessing gender-related peculiarities of motor fitness of 7-year-old schoolchildren. They include the level of proficiency in acrobatic exercises, the level of relative strength of shoulder flexors, endurance, and speed strength.

The results obtained supplement the data of Kapkan, Khudolii, and Bartík (2019a), Khudolii, Ivashchenko, and Chernenko (2015), Khudolii, Kapkan, Harkusha, Marchenko, and Veremeenko (2020) about the factors that influence the effectiveness of motor skills development in schoolchildren.

The study used a discriminant model to identify the cause-and-effect relationships that influence motor skills development in 7-year-old schoolchildren. The study confirmed the effectiveness of using a discriminant function to determine the indicators that have the greatest weight in assessing gender-related peculiarities of 7-year-old schoolchildren's motor fitness; supplemented the data on using discriminant analysis in physical education and sports (de Bruijn & Gardner, 2011; Arede, Esteves, Ferreira, Sampaio, & Leite, 2019; Brusseau & Burns, 2018). As in the study by Lovell, Fransen, Bocking, and Coutts (2019), discriminant analysis revealed the importance of motor skills development in school-age children for further improvement of motor fitness.

The data obtained highlight the need to develop separate educational programs for girls and boys, as well as conduct separate physical education classes for them.

Conclusions

A canonical discriminant function can be used to classify and identify the indicators that have the greatest weight in assessing gender-related peculiarities of 7-year-old schoolchildren's motor fitness.

In assessing gender-related peculiarities of 7-year-old schoolchildren's motor fitness, these indicators include the level of proficiency in acrobatic exercises, the level of relative strength of shoulder flexors, endurance, and speed strength.

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Conflict of Interest

The authors declare that there is no conflict of interest.

References

- Cai, G., Qiu, J., Chen, S., Pan, Q., Shen, X., & Kang, J. (2019). Hematological, Hormonal and Fitness Indices in Youth Swimmers: Gender-Related Comparisons. *Journal of Human Kinetics*, 70(1), 69–80. Scopus. <https://doi.org/10.2478/hukin-2019-0027>
- Cañadas, M., Gómez, M.-A., García-Rubio, J., & Ibáñez, S. J. (2018). Analysis of Training Plans in Basketball: Gender and Formation Stage Differences. *Journal of Human Kinetics*, 62(1), 123–134. Scopus. <https://doi.org/10.1515/hukin-2017-0164>
- Čillík, I., & Willwéber, T. (2018). Influence of an exercise programme on level of coordination in children aged 6 to 7. *Journal of Human Sport and Exercise*, 13(2), 455–465. Scopus. <https://doi.org/10.14198/jhse.2018.132.14>
- Gao, Z., Zeng, N., Pope, Z. C., Wang, R., & Yu, F. (2019). Effects of exergaming on motor skill competence, perceived competence, and physical activity in preschool children. *Journal of Sport and Health Science*, 8(2), 106–113. Scopus. <https://doi.org/10.1016/j.jshs.2018.12.001>
- Herrmann, C., Heim, C., & Seelig, H. (2019). Construct and correlates of basic motor competencies in primary school-aged children. *Journal of Sport and Health Science*, 8(1), 63–70. Scopus. <https://doi.org/10.1016/j.jshs.2017.04.002>
- Hnatiuk, J. A., Lamb, K. E., Ridgers, N. D., Salmon, J., & Hesketh, K. D. (2019). Changes in volume and bouts of physical activity and sedentary time across early childhood: A longitudinal study. *International Journal of Behavioral Nutrition and Physical Activity*, 16(1). Scopus. <https://doi.org/10.1186/s12966-019-0805-6>
- Kashuba, V., Futorny, S., Andrieieva, O., Goncharova, N., Carp, I., Bondar, O., & Nosova, N. (2018). Optimization of the processes of adaptation to the conditions of study at school as a component of health forming activities of primary school-age children. *Journal of Physical Education and Sport*, 18(4), 2515–2521. Scopus. <https://doi.org/10.7752/jpes.2018.04377>
- Kondakov, V. L., Voloshina, L. N., Kopeikina, E. N., & Kadutskaya, L. (2020). Daily assessment of physical activity in 6–11-year-old children. *Journal of Physical Education and Sport*, 20(4), 1673–1680. Scopus. <https://doi.org/10.7752/jpes.2020.04227>
- Moseichuk, Y., Zoriy, Y., Kostashchuk, O., Kanivets, T., Nakonechnyi, I., Koshura, A., Potop, V., Yarmak, O., & Galan, Y. (2020). Age peculiarities of the development of coordination abilities in children of primary school age in the process of physical education. *Journal of Physical Education and Sport*, 20(2), 630–634. Scopus. <https://doi.org/10.7752/jpes.2020.02092>
- Brusseau, T. A., & Burns, R. D. (2018). Physical Activity, Health-Related Fitness, and Classroom Behavior in Children: A Discriminant Function Analysis. *Research Quarterly for Exercise and Sport*, 89(4), 411–417. Scopus. <https://doi.org/10.1080/02701367.2018.1519521>
- Ivashchenko, O. (2020). Research Program: Modeling of Motor Abilities Development and Teaching of Schoolchildren. *Teoriâ ta Metodika Fizičnogo Vihovannâ*, 20(1), 32–41. <https://doi.org/10.17309/tmfv.2020.1.05>
- Hohmann, A., Siener, M., & He, R. (2018). Prognostic validity of talent orientation in soccer. *German Journal of Exercise and Sport Research*, 48(4), 478–488. Scopus. <https://doi.org/10.1007/s12662-018-0549-5>
- Khudolii, O. (2019). Research Program: Modeling of Young Gymnasts' Training Process. *Teoriâ ta Metodika Fizičnogo Vihovannâ*, 19(4), 168–178. <https://doi.org/10.17309/tmfv.2019.4.02>
- Marchenko, S., & Dykhanova, A. (2019). Motor Abilities: Peculiarities of Effects of Volleyball Training on Coordination Preparedness of Girls Aged 15. *Teoriâ ta Metodika Fizičnogo Vihovannâ*, 19(1), 23–28. <https://doi.org/10.17309/tmfv.2019.1.03>
- Ivashchenko, O., Berezhna, H., & Cieřlicka, M. (2020). Motor Skills in the Structure of Physical Fitness of 7-Year-Old Boys. *Journal of Learning Theory and Methodology*, 1(1), 14–19. <https://doi.org/10.17309/jltm.2020.1.02>
- Ivashchenko, O., & Sirichenko, D. (2020). Structure of Motor Fitness of 7-Year-Old Girls. *Journal of Learning Theory and Methodology*, 1(1), 20–25. <https://doi.org/10.17309/jltm.2020.1.03>
- Kapkan, O. O., Khudolii, O. M., & Bartík, P. (2019a). Motor skills development: Optimization of teaching boys aged 14. *Teoria ta Metodika Fizicnogo Vihovanna*, 19(3), 148–155. Scopus. <https://doi.org/10.17309/tmfv.2019.3.06>
- Kapkan, O. O., Khudolii, O. M., & Bartík, P. (2019b). Pattern recognition: Motor skills development in girls aged 15. *Teoria ta Metodika Fizicnogo Vihovanna*, 19(1), 44–52. Scopus. <https://doi.org/10.17309/tmfv.2019.1.06>
- Khudolii, O., Ivashchenko, O., & Chernenko, S. (2015). Simulation of junior schoolchildren's training to acrobatic exercises and vaults. *Pedagogics, Psychology, Medical-Biological Problems of Physical Training and Sports*, 19(7), 64–71. <https://doi.org/10.15561/18189172.2015.0709>
- Khudolii, O., Kapkan, O., Harkusha, S., Marchenko, S., & Veremeenko, V. (2020). Motor Skills Development: Optimization of Teaching Boys Aged 15 Press Headstand and Handstand. *Teoriâ ta Metodika Fizičnogo Vihovannâ*, 20(1), 42–48. <https://doi.org/10.17309/tmfv.2020.1.06>
- de Bruijn, G.-J., & Gardner, B. (2011). Active Commuting and Habit Strength: An Interactive and Discriminant Analyses Approach. *American Journal of Health Promotion*, 25(3), e27–e36. <https://doi.org/10.4278/ajhp.090521-QUAN-170>
- Arede, J., Esteves, P., Ferreira, A. P., Sampaio, J., & Leite, N. (2019). Jump higher, run faster: Effects of diversified sport participation on talent identification and selection in youth basketball. *Journal of Sports Sciences*, 37(19), 2220–2227. Scopus. <https://doi.org/10.1080/02640414.2019.1626114>
- Lovell, T. W. J., Fransen, J., Bocking, C. J., & Coutts, A. J. (2019). Factors affecting sports involvement in a school-based youth cohort: Implications for long-term athletic development. *Journal of Sports Sciences*, 37(22), 2522–2529. Scopus. <https://doi.org/10.1080/02640414.2019.1647032>
- Negasheva, M., & Godina, E. (2018). Regional patterns of gender differences in body build in modern human populations. *Collegium Antropologicum*, 42(3), 159–168.

ГЕНДЕРНІ ОСОБЛИВОСТІ РУХОВОЇ ПІДГОТОВЛЕНOSTІ ШКОЛЯРІВ 7 РОКІВ

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Авторський вклад: А – дизайн дослідження; В – збір даних; С – статаналіз; D – підготовка рукопису; Е – збір коштів

Реферат. Стаття: 6 с., 5 табл., 2 рис., 24 джерела.

Мета дослідження – визначити гендерні особливості рухової підготовленості школярів 7 років.

Матеріали і методи. У дослідженні прийняли участь 59 школярів 7 років (дівчаток – 27 чол., хлопчиків – 32 чол.). Діти та їхні батьки були інформовані про всі особливості дослідження і дали згоду на участь в експерименті. Були використані такі методи дослідження як аналіз наукової та методичної літератури, педагогічні спостереження, тестування рухової підготовленості, ймовірнісний підхід до оцінки процесу навчання, методи математичної статистики. У школярів молодших класів реєструвався рівень навченості гімнастичних вправ. Коефіцієнт визначався за формулою: $p = (m/n) \times 100$, де p – рівень навченості, m – кількість успішно виконаних вправ, n – загальна кількість спроб на виконання вправи. В експерименті контролювався рівень навченості таким вправам: перекид уперед; перекид назад; стійка на лопатках зігнувши ноги.

Результати. У рівні розвитку координації рухів окремими частинами тіла та вестибулярній стійкості розбіжності статистично не достовірні, у рівні розвитку сили, швидкісної сили, швидкості, витривалості та рівня навченості акробатичних вправ у дівчаток і хлопчиків 7 років спостерігається статистично достовірна різниця.

Висновки. Канонічна дискримінантна функція може бути використана для класифікації і визначення показників які мають найбільшу вагу в оцінці гендерних особливостей рухової підготовленості школярів 7 років. В оцінці гендерних особливостей рухової підготовленості школярів 7 років найбільшу вагу мають рівень навченості акробатичних вправ, рівень відносної сили згиначів плеча, витривалості і швидкісної сили.

Ключові слова: дискримінантний аналіз, дівчатка, хлопчики, рухові навички, рухова підготовленість.

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