SPECIFICS IN THE MANIFESTATION OF SOME MOTOR QUALITIES IN 7–10-YEAR-OLD PUPILS

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ABSTRACT
An integral part of teaching and assessment in physical education in Bulgarian schools is the development of motor qualities. Identifying the specific characteristics of how these qualities manifest is fundamental to the correct selection of methods and tools for their development, taking into account age, gender, and individual differences. In addition, understanding their current state also supports the process of forming criteria for their evaluation. Based on these principles, the goal of this report is to reveal the specifics in the manifestation of the motor qualities of explosive strength and agility in pupils aged 7–10.
The study was conducted as part of the mandatory assessment in „Physical Education and Sport" over four consecutive school years. At the beginning of the experiment, 20 pupils were tested, but due to some leaving or transferring, by the end of the experimental period of the group consisted of 11 pupils, forming a single class. The pupils were tested at the beginning and end of each school year using the following tests: standing long jump, throwing a 1 kg medicine ball, and the T-test. The results were subjected to variation and comparative statistical analysis.
The results of the study show irregular changes in the dynamics of the development of the motor qualities under consideration. These changes can be considered insignificant, given the known sensitivity of this age group in terms of motor development. In conclusion, it is important to emphasize the need for systematic and purposeful work on the development of these motor qualities in primary school pupils, which would lead to more significant changes in their developmental dynamics.

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INTRODUCTION

Haywood and Getchell (2001, 2025) view motor development as a continuous process of changes in human movement, corresponding to age and influenced by the individual's developmental environment. In its essence, motor development is a complex and dynamic process, whose progression is determined not only by environmental conditions but also by the natural biological development of the individual and their unique characteristics, many of which are genetically predetermined. Moreover, a child's motor development serves as a foundation for other domains of development, such as cognitive and social, and is even considered a prerequisite for academic achievement. Similar conclusions have been reached by researchers studying children and school-aged populations from various perspectives, including Piek et al. (2012), Cameron et al. (2016), Katagiri et al. (2021), and Tsvetkova (2020). One of the main environmental factors determining the dynamics of motor development during adolescence is the amount and frequency of physical activity. The modern lifestyle of childhood and school-age pupils leads to a reduction in daily physical activity. This provides the basis for Fernandez-Jimenez et al. (2018) to conclude that adult behavior stems from the environment experienced during childhood and that habits formed in the early years are often retained into adulthood. In this context, Mihaylov & Dimitrova (2023) point out that a leading factor in the emergence of socially significant diseases in adulthood is physical inactivity during childhood and adolescence.

There is substantial evidence that engaging in the recommended amount of daily physical activity is beneficial for children and adolescents. According to Alvarez-Pitti et al. (2020), such activity contributes to improvements in physical and mental health, sleep quality, brain development, bone health, as well as social, psychological, and cognitive well-being. At the same time, there is growing evidence of significantly low levels of physical activity among children and adolescents. (Guthold et al., 2020) report that over 80% of school-aged children globally do not meet the recommended daily levels of physical activity. Studies conducted in Bulgaria by the

NCPHA (2018) and the WHO (2013) indicate that fewer than 30% of Bulgarian pupils in primary and lower secondary school meet the WHO guideline of 60 minutes of daily physical activity. According to Mihaylov and Dimitrova (2023), this figure increases to around 50% in upper secondary school pupils. In this context, they emphasize that physical inactivity during childhood and adolescence is a leading factor contributing to the development of socially significant diseases in adulthood.

Aim and Objectives

The findings and arguments presented by the authors prompted us to examine the dynamics of motor skill development in primary school pupils aged between 7 and 10 years. Based on this, the aim of the present report is to explore the specific characteristics of the manifestation of motor abilities, explosive strength, and agility in pupils aged 7 to 10.

To achieve this objective, the following main tasks were set:

1. Conduct a literature review on the topic.
2. Implement testing procedures with the same group of pupils over a four-year period.
3. Process and analyze the collected data.

METHODOLOGY

The study was conducted as part of the mandatory assessment in the subject "Physical Education and Sport" over four consecutive academic years. Pupils are informed about the testing procedure at the beginning of each school year. At the beginning of the experiment, 20 pupils were tested. However, due to student transfers to other schools, the final sample consisted of 11 pupils from a single class. The pupils were tested at the beginning and end of each academic year by the physical education teacher, using the following tests: Standing Long Jump, 1 kg Ball Throw, and the T-test. The testing procedures were carried out in accordance with the requirements established by the Ministry of Education and Science, as outlined in Ordinance No. 11 of September 1, 2016, on the assessment of student learning outcomes, and the System for Assessing the Physical Fitness of Students developed by Miladinov et al. (2019). Both documents define the mandatory nature of these assessments for every student, and pupils are informed about them at the beginning of each school year. Compliance with the requirements of both documents proves adherence to ethical standards. As part of the preliminary study, we examined the presence of statistically significant differences between the performance of boys and girls. No such differences were identified. To avoid further overloading the present work, these results are not presented, and the data for boys and girls were analyzed jointly.

The results were subjected to descriptive statistics and two hypothesis testing methods. The parametric Student's t-test was applied to reveal the specifics of changes between each pair of ages, and repeated measures analysis of variance (RM ANOVA) was used to examine the effect of age-related changes. Statistical data processing was performed using the IBM SPSS software, v. 23.

RESULTS

The analysis and interpretation of the data from the conducted study are carried out separately for each of the three tests. Considering the sample size, results for both genders will be processed together. Table 1 and Figure 1 presents the results of the variation and variance analysis for the Standing Long Jump test.

Table 1. *Descriptive statistics and RM ANOVA of the test "Standing Long Jump"*

Indicator	*N*	R	X min	X max	*Mean*	*SD*	V%	As	Ex
I class_1	11	38.00	92.00	130.00	106.63	11.21	10.51	0.58	0.51
I class _2	11	54.00	96.00	150.00	122.36	14.79	12.08	0.01	0.33
II class _1	11	70.00	82.00	152.00	120.18	21.43	17.83	-0.25	-0.32
II class _2	11	60.00	95.00	155.00	123.72	19.39	15.67	0.14	-1.03
III class _1	11	60.00	100.00	160.00	132.00	18.84	14.27	-0.36	-0.68
III class _2	11	89.00	77.00	166.00	120.00	27.39	22.82	-0.11	-0.41
IV class _2	11	67.00	115.00	182.00	138.72	22.02	15.87	0.92	-0.11
				F	9.938				
				P(F)	100				
				eta²	0.498				

The results presented in Table 1 illustrate the values of individual indicators from the variation analysis. Of particular importance for the study are the coefficients of variation (V%), skewness (As), and kurtosis (Ex), as well as the dynamics of changes in the mean values, which will be discussed further in

the analysis. The skewness and kurtosis coefficients shown in the table, with a few exceptions, indicate a normal distribution of values, which in turn allows us to apply parametric tests for hypothesis testing in subsequent analyses. Regarding the coefficient of variation, there is a clear trend of increasing values with age among the subjects. Practically, this indicates a growing individual differentiation in explosive lower limb strength between ages 7 and 10. Additionally, a negative skewness coefficient was observed in three of the measurements. This provides a basis to suggest that the 8 and 9-year-old subjects exhibit an underdeveloped reserve concerning the motor quality under study.

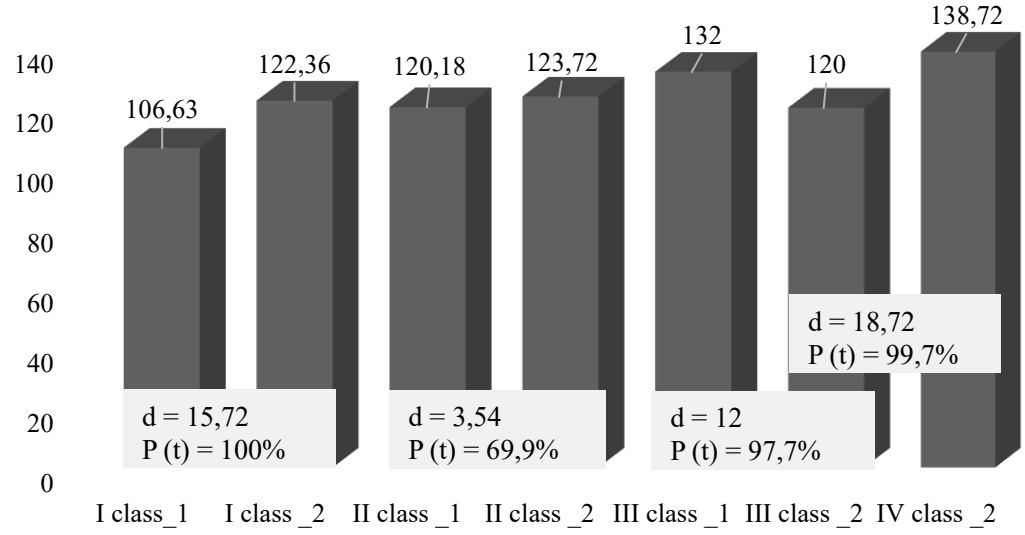

Figure 1. *Average achievements, differences, and guarantee probability of the test „Standing Long Jump"*

The above statement is further supported by the data presented in Table 2 an uneven dynamic in the changes of the pupils' average performance is observed, with a total increase of 32.09 cm over the entire period, supported by a significance level of P(F) = 100%. The high partial eta squared value of 0.498 provides strong evidence of the substantial impact of age-related changes on explosive lower limb strength. Comparing the initial and final data for each grade allows for a more detailed description of the dynamics of explosive strength development in the studied group of pupils over the research period. In the first grade, a 15.53 cm increase was recorded, supported by a significance level of P(t) = 100%. In the second year, a decrease of over 3 cm was observed, but it did not reach the necessary significance level. However, the decline in average performance in the third grade was more pronounced, at 12 cm, with a significance level of P(t) = 97.7%. The greatest increase was observed between the end of the third and the end of the fourth grade, with an improvement of 18.72 cm and a corresponding significance level of P(t) = 100%. This represents a relative increase of 15.16% over the one-year period between ages 9 and 10.
Overall, regarding the explosive strength of the lower limbs in the studied group, the period between ages 7 and 10 can be characterized as one of dynamic changes, without a clearly defined trend of continuous increase between individual age points.

Table 2. *Descriptive statistics and RM ANOVA of the test „1 kg Ball Throw"*

Indicator	*N*	R	X min	X max	*Mean*	*SD*	V%	As	Ex
I class_1	11	200.00	150.00	350.00	268.63	69.53	25.88	-0.36	-1.14
I class _2	11	225.00	195.00	420.00	329.54	66.68	20.23	-0.90	0.29
II class _1	11	250.00	180.00	430.00	328.63	69.03	21.00	-0.98	1.23
II class _2	11	165.00	285.00	450.00	377.27	59.09	15.66	-0.30	-1.14
III class _1	11	400.00	220.00	620.00	431.81	117.77	27.27	0.13	0.003
III class _2	11	390.00	140.00	530.00	379.09	119.87	31.62	-0.90	0.04
IV class _2	11	285.00	300.00	585.00	482.27	103.01	21.35	-0.83	-0.62
				F	14.523				
				P(F)	100				
				eta²	0.592				

The results of the 1 kg Ball Throw test, which provides information on the explosive strength of the upper limbs, are presented in Table 2 and Figure 2. Like the previous test, we observe coefficient of variation (V%) values above 12%, indicating heterogeneity within the studied group. The skewness and kurtosis coefficients indicate a normal distribution of the data. However, unlike the test assessing explosive strength of the lower limbs, the skewness coefficient here, with only one exception, is negative, suggesting that the performances of the tested individuals fall below the mean. This gives us grounds to assert that the explosive strength of the upper limbs in the pupils studied is insufficiently developed, and target intervention is necessary to improve this motor quality.

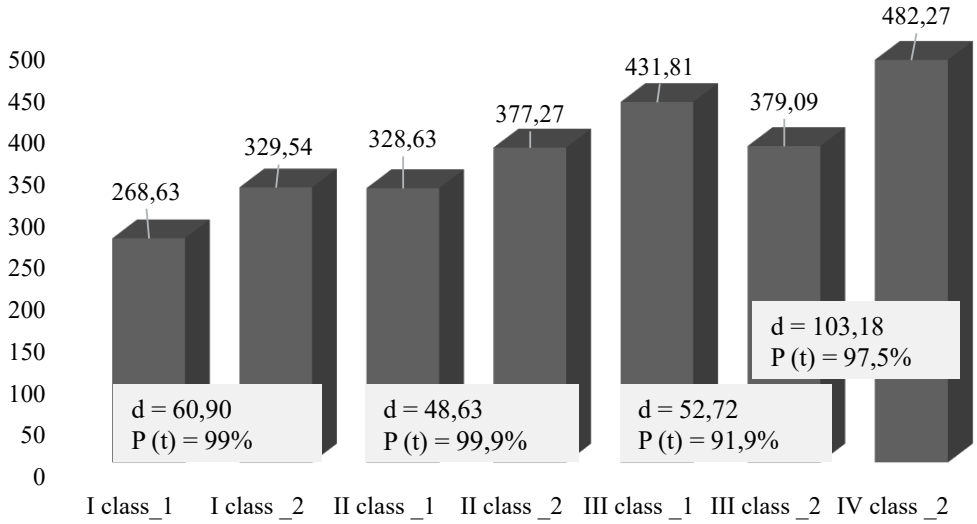

Figure 2. *Average achievements, differences, and guarantee probability of the test „1 kg Ball Throw"*

Tracking the dynamics of changes, we note that, like the previously discussed test, there is no clear trend of improvement in results. The total increase over the entire period is 159.64 cm, representing a relative increase of 100%, supported by a significance level of P(F) = 100%. Considering the eta squared coefficient value of 0.592, we can fully attribute this increase to age-related changes and the physical education teacher's work.

To reveal the dynamics of these changes over the period, we calculated the Student's t-test values for paired samples. Between the first and second grades, increases of 60.91 cm and 48.64 cm, respectively, were observed, both of which are statistically significant, given that the confidence levels in both cases exceed 99%. However, no such significance was found for the decrease in performance of 52.42 cm in the third grade. An increase in performance of 27.21%, with an absolute value of 103.18 cm, was observed between the end of the third and the end of the fourth grade.

Table 3. *Descriptive statistics and RM ANOVA of the test „T-test"*

Indicator	*N*	R	X min	X max	*Mean*	*SD*	V%	As	Ex
I class_1	11	4.09	15.66	19.75	18.23	1.64	8.99	-0.58	-1.53
I class _2	11	5.90	15.32	21.22	17.58	1.83	10.40	0.99	0.25
II class _1	11	6.61	15.21	21.82	17.95	1.97	10.97	0.62	0.05
II class _2	11	5.80	14.33	20.13	17.00	1.59	9.35	0.34	0.43
III class _1	11	5.72	13.14	18.86	16.55	1.67	10.09	-0.96	0.46
III class _2	11	5.70	12.39	18.09	15.89	1.73	10.88	-0.71	-0.15
IV class _2	11	5.33	13.87	19.20	16.89	1.61	9.53	-0.57	-0.41
				F	6.054				
				P(F)	96.6				
				eta²	0.377				

The results of the examined pupils on the T-test, presented in Table 3, and Figure 3 show a continuous improvement trend over the studied 4-year period. Unlike the two previously discussed tests, here we observe coefficient of variation values ranging between 8.99% and 10.97%, indicating high homo-

geneity of individual pupils' performances within the group. The skewness and kurtosis coefficients indicate a normal distribution. Considering the specifics of scoring in this test, it is important to note that, given the positive skewness coefficients at the end of first and entire second grade, there is a significant reserve concerning the motor quality of agility.

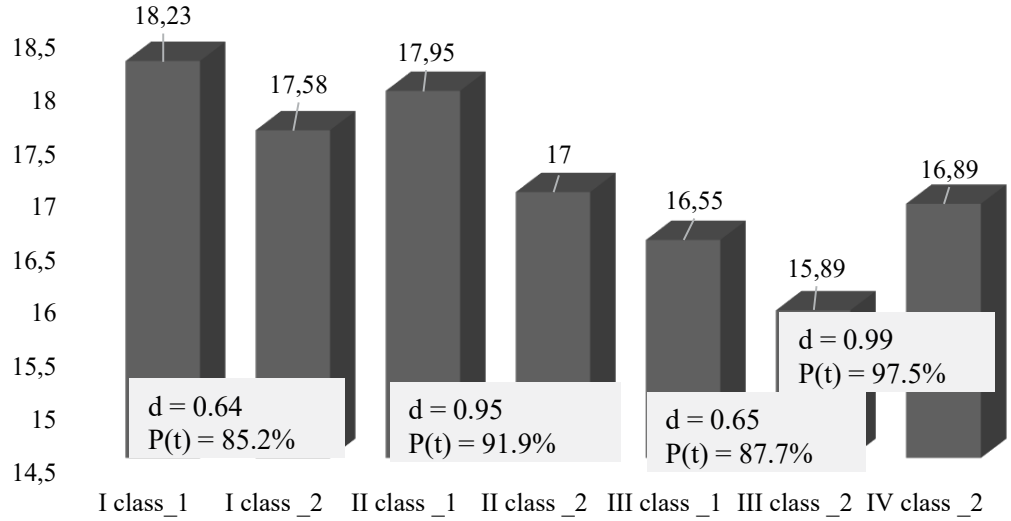

Figure 3. *Average achievements, differences and guarantee probability of the test "Standing Long Jump"*

The data from the analysis of variance indicates a statistically significant improvement in the average performance of the examined pupils over the studied period, with a large age effect reflected by an eta squared value of 0.377. Unlike the tests measuring explosive strength, here we observe continuous improvement in average performance throughout the entire period. However, applying the Student's *t*-test for paired samples, we found that the only statistically significant difference occurs in the increase of average performance between the end of third grade and the end of fourth grade. This improvement of 1 second, or 5.92%, is confirmed by a confidence level of P(t) = 97.5%.

DISCUSSION

Similar to the analysis of the results obtained, we will apply the same approach in the discussion, addressing the results test by test, beginning with the Standing Long Jump test. Regarding the measurement and assessment of individual motor abilities, this test is one of the most objectively validated in practice. This assertion is supported by authors such as Castro-Piñero et al. (2010), Artero et al. (2012), Ramírez-Vélez et al. (2017. The results of our study first indicate that between the ages of 7 and 10, the explosive strength of the lower limbs undergoes continuous changes. However, the curve of these changes does not show a clear trend of improvement; rather, it has a wave-like character. Statistically significant positive changes are evident at ages 7, 8, and 10, while around age 9, there is a decline in average performance, which is statistically insignificant. This contradicts findings reported by authors such as Yanev et al. (1965, 1982), Slanchev et al. (1992), Nacheva et al. (2002), and Thomas et al. (2020), who observed continuous positive changes in explosive strength of the lower limbs between the ages of 7 and 10. Considering the specifics of the work with the studied group of pupils, we attribute these differences to two factors. The first is undoubtedly the dynamics of age-related development and anatomical-physiological changes, which are very intense between 7 and 10 years of age. The second factor is related to the physical education lessons, specifically the lack of a specialist teacher in the second and third grades, which significantly delays the motor development of the pupils under study.

A similar delay is observed in the performance of children in the "1 kg Ball Throw" test, where we notice the exact same development dynamics of the motor quality explosive strength, but manifested in the upper limbs. The presence of negative skewness values and high percentage values of the coefficient of variation in both tests measuring explosive strength leads us to conclude that the studied pupils possess a significant reserve regarding the motor quality of explosive strength. This reserve should be developed through individually dosed and targeted interventions within the physical education curriculum.

The average performance of the pupils in the

"T-test," which provides information on the motor quality of agility, shows continuous improvement on an annual basis. Considering that the pupils do not engage in targeted sports or physical activities outside of their physical education classes, it is necessary to acknowledge the negative impact of the three-month summer vacation on the manifestation of this motor quality. At the same time, the positive values of the skewness coefficient indicate a significant reserve regarding the motor quality of agility.

CONCLUSION

Analyzing and discussing the results of the conducted study, we can summarize that the period between 7 and 10 years of age is crucial regarding changes in both explosive strength of the lower and upper limbs, as well as agility in the examined group. The revealed changes are more pronounced for the motor quality of explosive strength, with a relative increase of 30% in the manifestation of this quality in the lower limbs and 79% in the upper limbs. Regarding agility, the relative increase is only 7.93%. The observed levels of improvement in the motor qualities studied are supported by the required significance levels and result from two main factors. The first and most influential factor is the biological age of the subjects, as the anatomical and functional changes occurring in the child's body largely determine the changes in motor qualities. The second factor, which we derive based on conducted observations and taking into account the fact that the pupils who are studied do not participate in organized physical activities, is the physical education teacher and the impact of their instruction during lessons.

REFERENCES

Álvarez-Pitti, J.; Casajús-Mallén, J.A.; Leis-Trabazo, R.; Lucía, A.; de Lara, D.L.; Moreno-Aznar, L.A.; Rodríguez-Martínez, G. (2020). Exercise as medicine in chronic diseases during childhood and adolescence. *Anales Pediatría*, *92,* 173. https://doi.org/10.1016/j.anpede.2020.01.001

Artero EG, España-Romero V, Castro-Piñero J, Ruiz J, Jiménez-Pavón D, Aparicio V, Gatto-Cardia M, Baena P, Vicente-Rodríguez G, Castillo MJ, Ortega FB. (2012). Criterion-related validity of field-based muscular fitness tests in youth. *J Sports Med Phys Fitness 52*. PMID: 22648464

Cameron, C.E., E.A. Cotton, W.M. Murrah, D.W. Grissmer. (2016). How Are Motor Skills Linked to Children's School Performance and Academic Achievement? *Child Dev Perspect*, *10*, 93–98. https://doi.org/10.1111/cdep.12168

Castro-Piñero J, Ortega FB, Artero EG, Girela-Rejón MJ, Mora J, Sjöström M, Ruiz JR. (2010). Assessing muscular strength in youth: Usefulness of standing long jump as a general index of muscular fitness. *J Strength Cond Res 24,* 1810–1817. https://doi.org/10.1519/JSC.0b013e3181ddb03d

Fernandez-Jimenez, R.; Al-Kazaz, M.; Jaslow, R.; Carvajal, I.; Fuster, V. (2018). Children present a window of opportunity for promoting health: ACC review topic of the week. *J. Am. College Cardiol*., *72*, 3310–3319. https://doi.org/10.1016/j.jacc.2018.10.031

Guthold, R., Stevens, G. A., Riley, L. M., & Bull, F. C. (2020). Global trends in insufficient physical activity among adolescents: a pooled analysis of 298 population-based surveys with 1.6 million participants. *The Lancet Child & Adolescent Health*, *4*(1), 23–35. https://doi.org/10.1016/S2352-4642(19)30323-2

Haywood, K.M. N.Getchell. (2025). Life Span Motor Development. Champaing, 8th edition, IL: *Human Kinetics.*

Haywood, K.M., Getchell, N.(2001). Life Span Motor Development. Champaign, Il: *Human Kinetics.*

Katagiri M., H. Ito, Y. Murayama, M. Hamada, S. Nakajima, N. Takayanagi, A. Uemiya, M. Myogan, A. Nakai, M. Tsujii. (2021). Fine and gross motor skills predict later psychosocial maladaptation and academic achievement. *Brain Development, May, 43*(5), 605–615. https://doi.org/10.1016/j.brai

Mihaylov, P., Traykova, Ts. (2023). *Dvigatelna aktivnost na uchenitsi ot gimnazialen etap – nivo, otnoshenie i motivatsiya* [Motor activity of high school students – level, attitude, and motivation]. *Godishnik na NSA*, *2*, 291–301.

Miladinov, O. et al. (2019). Sistema za otsenyavane na fizicheskata deesposobnost na uchenitsite. MON.

Nacheva, A., Kondova, N., Yordanova, L., & Lazarova, Ek. (2002). *Fizichesko razvitie, kravno nalyagane i puls pri 7–14 godishni uchenitsi ot Sofia* [Physical development, blood pressure and pulse in 7–14-year-old students from Sofia]. *Sport i nauka*, (2), 113–121./

NCOZA. (2018). *Fizicheska aktivnost i hranene na uchenitsi v Balgariya – doklad po proyekta COSI* [Physical activity and nutrition of schoolchildren in Bulgaria – report under the COSI project]. Sofia

Naredba № 11 ot 1 Septemvri, 2016 za oceniavane na rezultatite ot obuchenieto, Available

at: https://www.mon.bg/obshto-obrazovanie/darzhavni-obrazovatelni-standarti/darzhavni-obrazovatelni-standarti-2/ (accessed 28 July 2025).

Piek, J.P., Hands, B. & Licari, M.K. (2012). Assessment of Motor Functioning in the Preschool *Period. Neuropsychol Rev,* 22, 402–413. https://doi.org/10.1007/s11065-012-9211-4

Ramírez-Vélez, R., Martínez, M., Correa-Bautista, J., Lobelo, F., Izquierdo, M. I., Rodríguez-Rodríguez, F., Cristi-Montero, C. (2017). Normative Reference of Standing Long Jump for Colombian Schoolchildren Aged 9–17.9 Year: The FUPRECOL Study. *Journal of Strength and Conditioning Research*, *31*(8), p 2083-2090. https://doi.org/10.1519/JSC.0000000000001633

Slantchev, P., Yanev, B., & others. (1992). *Fizichesko razvitie, fizicheska deesposobnost i nervno-psihicheska reaktivnost na naselenieto na Balgariya* [Physical development, physical working capacity and neuro-psychic reactivity of the Bulgarian population]. Sofia: NSA – IPB.

Tsvetkova, V. (2020). *Prouchvane mnenieto sred roditelite na uchastvashti deta v zanimaniya po tenis na masa v detskata gradina* [Survey of parents' opinions on the participation of children in table tennis activities in kindergarten]. In *Savremenni tendentsii na fizicheskoto vuzpitaniye i sporta; Dvanadeseta mezhdunarodna nauchna konferentsiya* (pp. 144–151). Sofia: Universitetsko izdatelstvo "Sv. Kliment Ohridski".

Thomas, E, Petrigna, L, Tabacchi, G, Teixeira, E, Pajaujiene, S, Sturm, D, Şahin, F.N, Gómez-López, M, Paušić, J, & Paoli, A, Alesi, M, Bianco, A. . (2020). Percentile values of the standing broad jump in children and adolescence aged 6-18 years old. *European Journal of Translational Myology*. *30*(2). https://doi.org/10.4081/ejtm.0.9050, 240-246.

WHO. (2018). HBSC international report – Bulgaria chapter.

Yanev, B., & Genov, F. (1982). *Fizicheskoto razvitie, fizicheskata deesposobnost i nervno-psihicheskata reaktivnost na naselenieto* [Physical development, physical working capacity, and neuro-psychic reactivity of the population]. Sofia: Meditsina i fizkultura.

Yanev, B., Shterev, P., Boev, P., Semerdzhieva, R., & Sepetliev, D. (1965). *Fizichesko razvitie i deesposobnost na naselenieto na Balgariya ot razhdaneto do dvadeset i shest godini* [Physical development and working capacity of the Bulgarian population from birth to twenty-six years]. Sofia: Balgarska akademiya na naukite

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