



SPECIFICITY OF THE MOTOR POTENTIAL FOR ACHIEVING SCHOLAR WELLNESS

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ABSTRACT

Purpose: The aim of this study is to establish and evaluate the presence of scholar wellness in the primary school education system, by applying objective tools for evaluating and comparing the degree of development of motor skills, speed and explosive strength in the lower limbs.

Methods: The research is based on a measurement of motor potential in primary school children and was focused on indicators that demonstrated harmonization and individualization of motor potential, based on the differences displayed from the time of entering and exiting primary school education. The value of specific indicators was gained via objective measurement and validation tools, and systemized analysis of their results.

Results: The analysis of indicators will establish the presence or absence of Scholar Wellness in the modern education system. To understand the relationship between the indicators, an analysis of the dynamics was applied by mathematical and statistical processing of the data, to determine coefficient variation and correlation.

Conclusions: We found a tendency of disharmony in the motor potential of 1st-grade scholars, which is determined by the peculiarities of the ontogenetic development of children at this age.

Keywords: motor potential, assessment tests, physical capacity in children, primary scholar wellness.

INTRODUCTION

Several physical activity and sport programs for school education were developed for the needs of the modern school (1). Methodological programs and standards have been approved in the state regulatory documents (2). The lesson plan in Physical Education and Sports determines the content of the classes intended for physical activity (3, 4). Our research interests are focused on the initial stage of the education (5). A reliable and objective tool for diagnosing the level of motor potential in first-grade students has been selected and applied (6, 7). The dynamics in the governmental requirements traditionally allow for change according to the social

conditions and current needs, in accordance with legislative changes in the field of physical culture and sport, as per several research studies and analyses (8-12). The teacher can select diagnostic tests to evaluate the level of motor potential. This selection is in direct interdependence with the control and evaluation of the pedagogical progress of the students at the initial stage of the educational degree. Leading factors in the selection of tools include environmental conditions, the possibility of easy, fast, and operational assessment, comparability of results, and intervals adapted by gender and age. The information received from the control and evaluation is an objective reference point for the status and dynamics of the motor potential. The balanced health of adolescents is a determining indicator of effectiveness in the future social realization of the individual. Increasingly, leading authors identify innovative social methods, programs and

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exercises aimed at balanced physical activity, and effective motivation of young people around the world in socially significant Recreational and Wellness (13, 14). The dynamics of modern global society presuppose personal motivation to apply a healthy lifestyle from an early age (15-17).

METHODS

The study aimed to establish and assess the existence of Scholar¹ Wellness in the primary school stage of the Bulgarian education system, by applying objective tools for its assessment, comparing the degree of development of motor skills, speed, and explosive power of lower limbs in 1st grade students. The subject of the analysis is the indicators for motor activity, allowing individualization of the differences in the motor potential at the beginning and the end of the conducted research, following the sexual ontogenesis of the motor development of the children. The object of the study is specific indicators measured through objective and validated tools, as well as their systematization and analysis. In the period from 01.09. 2020 to 15.04.2021 a measurement of the motor potential of children from primary school education was carried out. To derive the relationship between the indicators, a dynamic analysis was applied using mathematical-statistical processing to determine coefficient variation and correlation. The correlation coefficient of the studied indicators was obtained using Microsoft Excel's Corel function. We express the correlation coefficient by the Pearson-Brave index, as the most widely used index for rectilinear dependence - a single, summarized index for the degree to which two variables are linearly

related or dependent on each other. The diagnostic examination was organized and conducted with children of the primary school age, regularly attending classes at the 97th secondary school "Bratya Miladinovi", Sofia. The total number of children, included in the study was 22, of which 12 boys and 10 girls were surveyed in the beginning of the academic year, September 2020, and the data from the surveys was compared with that from the end of the academic year, in April 2021. Thus, two unambiguous stages were formed in the pedagogical research of the determined target group of 22 students' first graders.

RESULTS

Mathematical-statistical processing of the results through the diagnostic tools (variation and correlation analysis) allowed us to analyze the interdependencies determining the specifics of the motor potential. The established trends in the values of the correlation coefficient (R standard symbol) determine the presence of scholar Wellness. The results of the regression analysis were illustrated by a scatter diagram. The abscissa show the values of the independent variable (X) and the ordinate shows the dependent variable (Y). The graph shows a field of plotted points with coordinates from observations X_i and Y_i for each subject. We determined the form of interdependence by the configuration of the points in the field. If it resembles an ellipse - the dependence is linear. Results and analysis of a test to measure speed - running 30m – boys.

Table 1. Speed measurement in boys by 30m running test

Students	Age-beginning	September	Age-end	April	Difference
1	7 yrs., 4m.	6.9	7 yrs.11m.	6.5	-0,4
2	7 yrs., 1m.	6.1	7 yrs., 8m.	6	-0,1
3	6 yrs., 8m.	7	7 yrs., 3m.	6.6	-0,4
4	7 yrs., 1m.	6.2	7 yrs., 8m.	6	-0,2
5	7 yrs., 3m.	5.8	7 yrs.10m.	5.8	0
6	7 yrs., 1m.	6.8	7 yrs., 8m.	6.2	-0,6
7	7 yrs., 4m.	5.7	7 yrs.11m.	5.6	-0,1
8	7 yrs., 6m.	6.8	8 yrs., 1m.	6.50	-0,3
9	7 yrs., 1m.	6.1	7 yrs., 8m.	5.90	-0,2
10	7 yrs., 2m.	6	7 yrs., 9m.	5.80	-0,2
11	6 yrs. 10m.	7	7 yrs., 5m.	6.60	-0,3
12	7 yrs., 1m.	7.2	7 yrs., 8m.	6.90	-0,3

¹ Scholar Wellness: In this particular term, we place content for a healthy lifestyle at all levels of the education system: from kindergarten to doctoral studies. "School

Wellness" is found in some publications, but we think this term is narrow for our research interests.

Only one of the students had the same result in the fall and spring, and all the others had an increase in the range of 0.1 seconds to 0.6

seconds. The percentages are grouped in accordance with obtained verbal estimates.

Table 2. Verbal estimates of speed in girls in the 30m running test.

Score	Evaluation	Boys	
1-5	Unsatisfactory	0	0%
6-10	Average	0	0%
11-15	Good	3	25%
16-20	Very good	3	25%
21-25	Excellent	6	50%

The analysis of the results in girls for the 30 meters running test is presented in **Table 3**:

Table 3. Measurement of speed in girls by a 30m running test.

Student	Age-start	September	Age-end	April	Difference
1	7 yrs., 2m.	6.6	7 yrs., 9m.	6.4	-0,2
2	7 yrs., 3m.	6.1	7 yrs.10m.	5.8	-0,3
3	7 yrs., 3m.	6.5	7 yrs.10m.	6.1	-0,4
4	7 yrs., 1m.	7.5	7 yrs., 8m.	7	-0,5
5	7 yrs., 4m.	8	7 yrs.11m.	7.6	-0,4
6	6 yrs., 6m.	7.3	7 yrs., 1m.	7	-0,3
7	7 yrs., 1m.	7.2	7 yrs., 8m.	6.8	-0,4
8	7 yrs., 3m.	6.6	7 yrs.10m.	6.7	+0,1
9	6 yrs., 8m.	7.6	7 yrs., 3m.	7	-0,6
10	6 yrs., 9m.	7.3	7 yrs., 4m.	6.8	-0,5

Nine of the girls improved their performance with a result of between 0.2 – 0.6 seconds, only one child presented a decrease in the

result by 0.1 sec. The percentages by groups, according to the received verbal assessments are as follow:

Table 4. Verbal estimates of speed in girls in the 30m running test.

Score	Evaluation	Girls	
1-5	Unsatisfactory	0	0%
6-10	Average	1	10%
11-15	Good	3	30%
16-20	Very good	5	50%
21-25	Excellent	1	10%

There were zero unsatisfactory grade results, one student achieved an average grade (10%), three achieved a good grade (30%), five achieved a very good grade (50%) and only

one student gained an excellent grade (10%). Comparison between the results for running 30 meters - boys and girls.

Table 5. Comparative analysis of verbal evaluations of speed scores in girls and boys

Score	Evaluation	Girls		Boys	
		Count	Percentage	Count	Percentage
1-5	Unsatisfactory	0	0%	0	0%
6-10	Average	1	10%	0	0%
11-15	Good	3	30%	3	25%
16-20	Very good	5	50%	3	25%
21-25	Excellent	1	10%	6	50%

Zero unsatisfactory grades were recorded in either boys or girls. An average grade was only observed in girls. Good grades account for 30% (three for each gender). Very good grades were recorded, 5 to 3 in favor of the girls. There is a significant difference in the

excellent grades - six (50%) in favor of the boys, whilst only one record was noted in girls (10%). These differences are explained by the peculiarities of gender development. Comparison between the results - long jump from a place – boys.

Table 6. Measurement of speed in boys by a long jump test from a place

Student	Age-beginning	September	Age- end	April	Difference
1	7 yrs., 4m.	162	7 yrs.11m.	160	+2
2	7 yrs., 1m.	160	7 yrs., 8m.	158	+2
3	6 yrs., 8m.	159	7 yrs., 3m.	155	+4
4	7 yrs., 1m.	152	7 yrs., 8m.	150	+2
5	7 yrs., 3m.	140	7 yrs.10m.	132	+8
6	7 yrs., 1m.	143	7 yrs., 8m.	140	+3
7	7 yrs., 4m.	133	7 yrs.11m.	130	+3
8	7 yrs., 6m.	142	8 yrs., 1m.	140	+2
9	7 yrs., 1m.	140	7 yrs., 8m.	136	+4
10	7 yrs., 2m.	145	7 yrs., 9m.	140	+5
11	6 yrs. 10m.	145	7 yrs., 5m.	142	+3
12	7 yrs., 1m.	155	7 yrs., 8m.	150	+ 5

The percentages by groups, according to the received verbal estimates.

Table 7. Verbal grades and percentages in boys by test „long jump “.

Score	Evaluation	Boys	
1-5	Unsatisfactory	0	0%
6-10	Average	0	0%
11-15	Good	0	0%
16-20	Very good	7	58%
21-25	Excellent	5	42%

There were high values in the results and percentages for verbal assessments in boys for the test "long jump". There are zero "unsatisfactory, average or good" grades. Good grades prevail – seven in number (58%), and five in number (42%) achieved excellent grades. All students lowered the results measured in the fall from 2 to 5 centimeters, with one boy jumping 8 cm less.

This finding is due to limited physical activity during the winter season, during which no games or outdoor activities take place. Winter classes are held in a small hall, which is not

suitable for many children, and includes 28 students, from one class in one activity. Under these conditions, it is almost impossible to fully develop motor skills through exercise for each child. During this season, children are deprived of movement. Their physical activity during the cold days is very limited, which has a negative impact on their motor potential. We argue zero results according to the emotional instability caused by the age characteristics of the organism in growth.

Results and analysis in the „long jump“- girls.

Table 8. Measurement of speed in girls by „long jump“ test

Student	Age- beginning	September	Age-end	April	Difference
1	7 yrs., 2m.	130	7 yrs., 9m.	128	+2
2	7 yrs., 3m.	155	7 yrs.10m.	152	+3
3	7 yrs., 3m.	145	7 yrs.10m.	141	+4
4	7 yrs., 1m.	135	7 yrs., 8m.	130	+5
5	7 yrs., 4m.	144	7 yrs.11m.	138	+6
6	6 yrs., 6m.	148	7 yrs., 1m.	142	+6
7	7 yrs., 1m.	135	7 yrs., 8m.	129	+6
8	7 yrs., 3m.	136	7 yrs.10m.	132	+4
9	6 yrs., 8m.	142	7 yrs., 3m.	136	+6
10	6 yrs., 9m.	148	7 yrs., 4m.	142	+6

According to the State Educational Standards, for each participant, the points according to the norms, reported for the separate indicators are summed up and an individual assessment is

made on a five-point scale. The percentage by groups, according to the received verbal assessments based on the type of test.

Table 9. Verbal scores and percentages in girls by „long jump“ test

Score	Evaluation	Girls	
1-5	Unsatisfactory	0	0%
6-10	Average	0	0%
11-15	Good	0	0%
16-20	Very good	5	50%
21-25	Excellent	5	50%

According to the analysis of the test results in girls, we recorded grades in the upper range, from „very good“ to „excellent“, whereas zero "unsatisfactory, average, or good" results were recorded. There were five „very good“ grades - five in number (50%) and „excellent“ grades -

50%. Five of the girls increased the result in the spring, compared to autumn by 6 cm, one by 5 cm. Two by 4 cm and one by 3 cm, respectively, and 2 cm. A comparison between the results for the „long jump“- boys and girls showed the following trends:

Table 10. Verbal grades and percentages for boys and girls

Score	Evaluation	Girls		Boys	
		Number	Percentage	Number	Percentage
1-5	Unsatisfactory	0	0%	0	0%
6-10	Average	0	0%	0	0%
11-15	Good	0	0%	0	0%
16-20	Very good	5	50%	7	58%
21-25	Excellent	5	20%	5	42%

In both boys and girls, no scores of "unsatisfactory, average or good" were found. Excellent grades were equal for boys and girls (5 in number). Very good grades account for seven out of five in favor of the boys. We

performed a correlation analysis of the registered primary data. The results of the test are presented on the abscissa – „long jump“, and the ordinate shows the results of the test – „running 30 meters“:

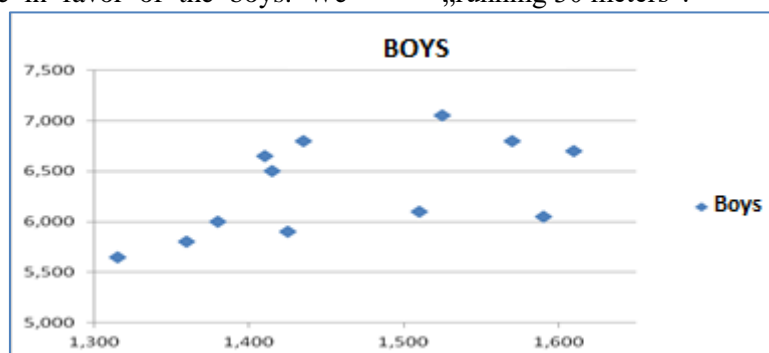


Figure 1. Correlation - long jump - running 30 m. - boys at R = 0.5

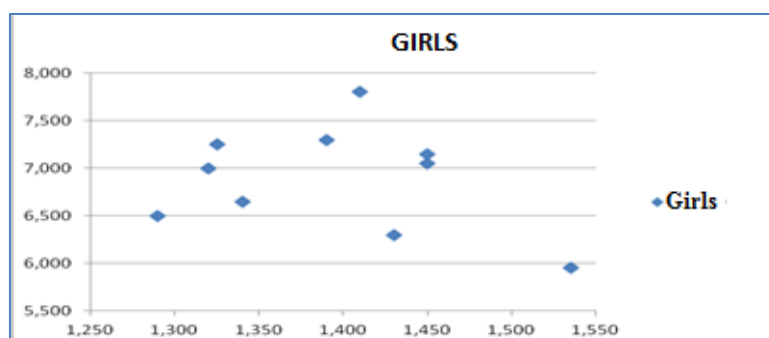


Figure 2. Correlation long jump - running 30 m. Girls at R = -0.3

In boys, a significant correlation of 0.5 was found. There is a positive dependence in the development of the studied motor potential through zone targeting in the diagnosis of motor qualities. A direct proportional dependence has been established, expressed by an increase of one index, the other index increases in direct connection with the assessment of the motor potential. A negative correlation of -0.3 was found in girls.

This difference is explained by established gender differences related to both motor potential and differences in the manifestations of the studied zone indicators, diagnosing the complexity of motor potential of first-grade students. On this basis, we define that ontogenetic sensitivity and differences in gender dynamics affect growth/retention / in boys and girls. The specific differences found in our study, registered when measuring the specificity of motor potential, scientifically argue the existence and achievement of scholar wellness (Wellness), through which our working hypothesis is confirmed.

DISCUSSION

The summarized results show that boys have a better-developed motor potential compared to girls, which is a natural trend of the ontogenetic development of both sexes, and the peculiarities related to the specifics of development at this age. There is a dynamic of uneven and uncompelled development of some zonal indicators in boys and girls, often directly related to the implementation of a healthy lifestyle. A significant imbalance in the development of the motor qualities of the studied children was revealed. On the one hand, this trend is related to and determined by the peculiarities of the ontogenetic development of children at this age, and on the other hand, with weaker and inconsistent work for the complex development of all motor skills as a consequence of excessive immobility and use of smart devices. To confirm these results, it is necessary for the future to include a larger number of students in the tests, respectively with a larger representative sample.

CONCLUSION

The results obtained from the author's diagnostic research give grounds for the following conclusions:

- An increase was established according to the research for the time interval: September-April

regarding the development of the zone indicators, determining the level of motor potential, for both sexes.

- The established differences in the dynamics of uneven and non-complex development of some zonal indicators in boys and girls is directly related to the implementation of a healthy lifestyle.
- The specific differences established in our study, registered when measuring the specifics of motor potential, scientifically argue the existence and achievement of scholar wellness.

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An agreement for publishing data was signed

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