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Physical development of 10-year students from basic school No. 10 in Torun

Marcin Gorczyński[1], Marek Napierała[1], Jerzy Eksterowicz[1], Walery Zukow[2]

[1]Kazimierz Wielki University, Bydgoszcz, Poland
[2]Nicolaus Copernicus University, Torun, Poland

Key words: somatic features; motor skills; physical fitness.

Abstract

INTRODUCTION. In order to ensure proper functioning and functioning of the organism from an early age, the child should be encouraged to exercise positive habits of physical activity. It is important to continuously monitor the somatic and motor development of young people so that they can take timely action to improve the situation.
PURPOSE. The aim of the study was to investigate the level of motor and somatic features as well as sexual dimorphism of pupils from Primary School No.10 in Toruń.
MATERIALS AND METHODS. The study involved 60 students (30 boys, 30 girls) aged 10 from Primary School No.10 in Toruń. Body height and body weight were measured using somatic features, body slimness, and BMI. For the measurement of motor abilities, the International Physical Fitness Test was used. Statistical tests used the Student's t test for independent tests. Levene's test was used to determine equality of variance. For all analyzes, the maximum permissible error I of type $\alpha = 0.05$; Statistically significant $p < 0.05$. Statistical analysis was performed in IBM SPSS Statistics 24.
FINDINGS.
- students from Primary School No.10 in Toruń have higher somatic characteristics than their peers from regional studies
- among the studied group is the type of leptosomal structure
- almost all students have a normal body weight and fall into the normal range
CONCLUSION. Girls and boys from Primary School No.10 in Toruń are physically more fit than their colleagues in regional studies.

Admission

It is widely known definition of health as the most valuable of which is man. Physical development is its integral part. Physical fitness affects the quality of our lives, for all of its aspects. In the era of rapid development of civilization and the enormous technical progress, exercise is pushed into the background. To adulthood provide the body with the proper and efficient functioning, from an early age, the child should instill positive habits. Take care of its health education, encourage physical activity. In various works of contemporary scholars, there are signs of deterioration in the physical fitness of children and adolescents (Napierała 2000). Therefore, it is important to continuously monitor the development of somatic and motor development of young people to take action in time,

A study of children and young people from Kujawsko-Pomorskie conducted in 1932 by J. Mydlarski became a model for the development of physical meter youth in Poland. It was a measure of physical fitness depending on physical development, age and gender. In year 1935 M. Ćwirko-Godycki (Napierała 2008) conducted a measurement of height and weight in children of elementary schools in Bydgoszcz. During World War II, a broader study was suspended. Nowicki (2004) recalls initiated in 1946 by R. Trześniowski research in the 60s, which aimed to determine the biological value of young people after the war. It led them in the later years Z. Drozdowski (2000 Napierała). The precept was partially developed under the direction of H. Milicerowej (1969). Research and R. Trześniowskiego Przęwęda still continued in the following years 1990, 1992, 1996. Improving the living conditions meant that more began to think about the problem of preventing the adverse conditions of the child's development in America and Europe. Interesting experiments were carried out in France and Belgium. In Poland, these observations were quite modest and focused on assessing the role played by physical education program. Fortunately, in later years, increasingly they began to deal with the problem of ontogenesis. This issue dealt with on a large scale replaced sooner R. Trześniowski. And its successors Mydlarski work is L. Denisiuk, S. Pilicz, R. Przewęda, Z. Chromiński (Napierała 2000).

In 1966, the Commission on the basis of materials of Anthropology Sciences S. Górny developed "Standards of physical development of the young Polish (Napierała 2008). It is worth noting that the province. Kujawsko-Pomorskie stands out against the background of the research very successfully. In 60 years in the Department of Anthropology at the Nicolaus Copernicus University in Torun, under the direction of W. Stęślicka-Młynowska studied young people from secondary schools and Kujawy Pomerania, as well as students from Torun. The result of these studies was the work in which the background, stand out those developed by G. Kreisler. In the following years of research, he proved the impact of the living environment on the degree of sexual dimorphism (Napierała 2000). Studies and works, which were created against the background of our province showed a number of changes that have occurred in the development of youth and physical fitness,

In Torun studies relating to physical fitness he led J. Anyżewski (Napierała 2000). A very large part in the study of biological development of children Bydgoszcz had S. Strzyżewski, who studied, among others, the impact of physical activities for children on selected features of somatic and motor and advances in science and shaping the attitudes of the students. The study of children and adolescents Wloclawek led the team of anthropologists at the University of Lodz under the guidance of A. Malinowski (Napierała

2008). In the region of Bydgoszcz, today, Kuyavian-physical development of the broader study conducted G. Nowicki (Napierała 2008).

He took them 41000 pupils of all types. The conclusions that have emerged from the studies, initiated more widely taken examination, physical and motor development of pupils taking into account the environments inhabited. The results were the basis for the development of regional standards motor development. Nowicki estimated standards development, from kindergarten children to young people from urban and rural areas. In his work he captures the differences in the development of children and young people, depending on the place of residence, social origin, family structure and living conditions (Napierała 2008).

It should also mention the studies that were carried out in other Polish regions. They ran among them G. Stachowska, Z. Mroczyński, and H. W. Lewandowski and Berdychowski (Napierała 2000). From the area of lower Silesia B. Nowakowski J. Calico, Z. Skrocki. Also known are the names Z. Drozdowski and W. Osiński (Napierała 2000). Since 1995, by the Department of Physical Culture in Bydgoszcz WSP conducts research on the development of children in the region of Bydgoszcz. These studies resulted in numerous publications (Napierała 2008). Standards of physical development and motor skills of children with integrated education classes developed by M. Napierała, an aid for teachers. Research 1999 (Napierała 2005, 2008) showed regional differences in autogenezie young generations, depending on the conditions prevailing in different regions of the country, social and economic situation of the population. Therefore, in the constantly changing conditions of life, it is important to continuously monitor physical and motor development of our children and youth.

Objectives and hypotheses

The main objective of the research is to determine the level of somatic and motor skills of children from the Primary School No. 10 in Torun. In the paper attempts to answer the following questions, which are also specific objectives:

- What is the BMI of the test group
- what is the height and weight examined with respect to the nationwide research.
- what is their slim silhouettes,
- what is the level of motor skills in relation to the nationwide research,
- what is the level of dimorphism somatic and motor sample.

Hypotheses:

a) The study group of students from the Primary School No. 10 in Torun superior height and weight peers with regional and national research.

b) Most of the children in the group are properly nourished (BMI)

c) Students from Primary School No. 10 in Torun are characterized by higher than peers motoric abilities of regional research.

d) presents the largest number of respondents type leptosomatic

e) Comparing boys and girls with primary school 10 Torun girls have greater suppleness and strength and boys greater force and speed.

g) The study group of boys has increased somatic parameters and motor skills than a test group of girls.

Test methods

Somatic features determined by measuring height and weight. Body height was measured in the morning, in the school nurse's office in the company of a teacher of physical education. All students were dressed in sports attire (shirt, shorts).

The measurement was made at the height of the body examined in an upright position (not on guard) lowered his hands at your sides, without shoes, feet slightly apart from the head position in Frankfurt. Body height was measured with antropometru the nearest 0.5 cm. Body weight was measured with an electronic scale to the nearest 0.1 kg. The test was dressed in sports attire without shoes (Drozdowski 1998). All measurements are rounded to the nearest whole value and were used to calculate the slenderness ratio and BMI.
Using the slenderness ratio Rohrer system, and typological Kretschmer key Curtius specified types of construction of the respondents. Normal weight calculated by the BMI (Woynarowska 2008).

For the evaluation of motor abilities of pupils of Primary School No. 10 in Torun was used International test of fitness. All eight tests performed (Pilicz et al., 2005). The results were statistically processed, and converted into points according to the scale (Pilicz et al. 2005).

Statistical analysis of the results, the methods and methods of descriptive statistical inference. To characterize the average value for quantitative traits arithmetic mean, and as a measure of the dispersion assumed standard deviation (SD). Compliance distributions of quantitative traits with normal distribution were evaluated based on the analysis of indicators skewness and kurtosis and standard errors, as well as on the basis of a visual assessment of their histograms and using the Shapiro-Wilk test.

Due to the compliance of the distributions of the dependent variables in groups of normal distribution used in developing the statistical t-test cost per sample, and the t-test for independent samples. To determine the equality of variance was used in attempts to Levene's test. Was assumed for all analyzes is the maximum permissible error type I $\alpha = 0.05$; It was considered statistically significant for $p \leq 0.05$. Statistical analysis was performed in IBM SPSS Statistics 24.

The test site and characteristics of the study group

The study was conducted in the Team of Schools No. 7 them. The National Education Commission in Torun, and more specifically comprised in their Elementary School No. 10. The town itself is one of the larger and find myself in the Kuyavian-Pomeranian, in its central part. The school has about 400 students, divided into four classes, at every stage of learning. Conditions for teaching physical education at the school are very good, because the sports base is richly developed. In the area located between the other fields complex "Orlik", including a football pitch with artificial turf, as well as multi-purpose court for volleyball, basketball, tennis. The school has two gyms, one of which is a full-sized sports hall, in addition equipped with a climbing wall.

The research material is fourth grade students (10 years), attending Primary School No. 10 in Torun.

The study involved 60 children (30 boys and 30 girls) at the age of 10 who are students Primary School No. 10 in Torun.

Analysis of the test results

In order to check whether the children studied Primary School No. 10 in Torun They differed from peers test in terms of the regional body, applied t-test cost per sample. Table 1 shows the results obtained in the study.

Tab. 1. The average body height of boys and girls with Primary School No. 10 in Torun in relation to the values of the constants (regional standards)

Sex of the baby	Source	Body height [cm]	*t*	*df*	*p*
Girls	Own research (M)	143,60	0.05	29	0.968
	Regional studies (M)	143.55			
Boys	Own research (M)	144.37	0.07	29	0.945
	Regional studies (M)	144.29			

M average
t result of t-test cost per sample
df degrees of freedom
p level of significance for the test *t*

(Source: own - for all tables and figures)

Comparing the height of the students from the Primary School No. 10 in Torun with the results of regional research it should be noted that both girls and boys are slightly taller than his peers, because the differences are sequentially 0.05 and 0,08cm. The results of the measurement of body height of boys and ten girls from Primary School No. 10 in Torun has shown that girls are lower than their peers about 0,77cm. The resulting differences, however, do not show statistical significance.

In order to check whether the children studied Primary School No. 10 in Torun They differed from peer study regional terms of weight, applied t-test cost per sample. Table 2 shows the results obtained in the studies.

Tab. 2. The average weight of boys and girls with Primary School No. 10 in Torun in relation to the values of the constants (regional standards)

Sex of the baby	Source	Body weight [kg]	*t*	*df*	*p*
Girls	Own research (M)	34,90	0.09	29	0,932
	Regional studies (M)	34.82			
Boys	Own research (M)	35.20	0.10	29	0.923
	Regional studies (M)	35.10			

M average
t result of t-test cost per sample
df degrees of freedom
p level of significance for the test *t*

The surveyed students from Primary School No. 10 in Torun have a greater body mass than their peers of regional research. The girls are heavier and the boys about 0.08kg of 0,10kg. The results of the measurement of body weight of boys and girls from Primary School No. 10 in Torun have shown that boys are heavier than their peers of 0,30kg. Obtained results They showed no statistically significant differences.

Type physique surveyed students was determined based on the ratio of the body Rohrer (I = (body weight in grams x 100) / (body height in cm 3). Studies have shown that 81.6% of children have ten leptosomatic types of construction, the type of athletic 18.4%, and 0% picnic type.

In the group of thirty of girls it has been shown that as many as twenty-four of them have the leptosomatic type of construction. Six students are characterized by athletic type. Among the thirty boys surveyed it stated that in twenty-five of them occur leptosomatic type of construction, five athletic au. In any group there were no students from a picnic type of construction. The results are shown in Table 3.

Tab. 3. Description of numeric types slender silhouettes Primary School No. 10 in Torun

		Type of construction		
Sex	Number of subjects	Leptosomatic	Athletic	Picnic
Girls	Thirty	24	6	0
Boys	Thirty	25	5	0
100%		81.6%	18.4%	0%

(Source: own)

After the performed analysis, body weight ten students from the Primary School No. 10 in Torun, we can conclude that 91.6% of them have a normal weight. Among the thirty girls surveyed correct silhouette is characterized by as many as twenty seven of them. In the same large group of boys, a healthy weight is up twenty-eight of them. Underweight is found in one person from each study group, which represents 3.4% of the total. A similar result was obtained in the analysis of people who are overweight - this is a problem of two girls and one boy (5% of total). None of the subjects there was no obesity. The data shown in Table 4.

Tab. 4. Characteristics of the numerical BMI of the students from the Primary School No. 10 in Torun

BMI					
Sex	Number of subjects	Underweight	Normal body weight	Overweight	Obesity
Girls	Thirty	1	27	2	0
Boys	Thirty	1	28	1	0
60 people - 100%		3.4%	91.6%	5%	0%

(Source: own)

In order to check whether girls differ from boys in terms of the level of individual somatic parameters, analysis were performed Student t-test for independent samples. Table 5 shows the results obtained in the study.

Tab. 5. Characteristics of anthropometric females (n = 30) and boys (n = 30) (Source: own)

Variable	Sex of the baby	*n*	*M*	*SD*	*min*	*max*	*t*	*df*	*p*
Body height [cm]	Girls	Thirty	143,60	5.92	133	158	0.50	58	0.621
	Boys	Thirty	144.37	6.04	134	159			
Body weight [kg]	Girls	Thirty	34,90	5.13	27	51	0.22	58	0,830
	Boys	Thirty	35.20	5.62	25	50			
BMI [Section.]	Girls	Thirty	16.87	1.66	14	21	0.10	58	0.922
	Boys	Thirty	16.82	1.98	12.8	21.6			
Rohrer index [Section.]	Girls	Thirty	1.17	0.11	0.97	1.36	0.26	58	0.797
	Boys	Thirty	1.16	0.14	0.91	1.43			

n number
M average
SD standard deviation
min lowest value
max the highest value
t the result of t-test for independent samples
df degrees of freedom
p level of significance for the test *t*

Analyzes Student t-test for independent samples showed no statistically significant differences between the groups in a range of variables ($p > 0.05$) - means that the girls did not differ from boys in terms of levels somatic parameters (height and weight) and the level of BMI and Rohrer index.

Analysis of motor skills

Table 6 shows the distribution and descriptive statistics and normality test along with the degree of concentration and the level of asymmetry for the motor skills of the children with Primary School No. 10 in Torun.

Table 6. Characterization of the level of motor ability in the sample (N = 60)

Variable	*M*	*SD*	*min*	*max*	*skew*	*K*	*SW*	*p*
Cross 50m	9.98	0.71	8.9	12.2	0.72	0.26	0.94	0,004
Long jump	151.45	8.53	123	166	-1.09	1.93	0.93	0,002
Slope in front	4.14	2.72	-4.4	9.6	-0.80	1.72	0.94	0,004
The traces of lying	18.87	2.47	11	24	-0.53	1.19	0.96	0,045
Run 4x 10m	13.29	0.82	11.8	16.1	1.29	2.61	0.91	<0.001
Handgrip	18.02	3.14	12	26	0.48	-0.37	0.96	0.061
Overhang on bent arms	16.83	3.82	7	25	-0.55	0.59	0.96	0.051
Running at 600 m	169.65	9.85	154	205	1.11	1.77	0.93	0,002

M average SD standard deviationMin lowest valueMax the highest value
skew slantK curiosities, SW test Shapiro-Wilkp level of significance for the test SW

Differences in the level of motor abilities the surveyed boys and girls from Primary School No. 10 in Torun and peers from regional studies are shown in Table 7. The use of t-test cost per sample.

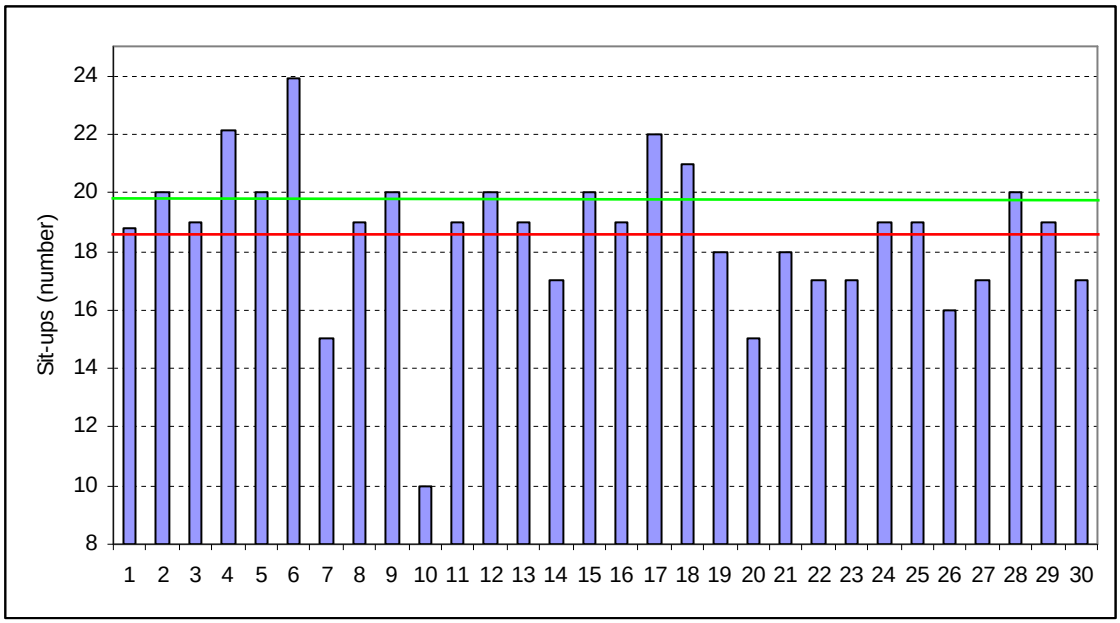
Tab. 7. The average level of motor skills of girls and boysPrimary School No. 10 in Torun in relation to the values of the constants (regional standards)

sex of the baby	Variable	Source		*t*	*df*	*p*
		Own research (M)	Regional studies (M)			
girls	Cross 50m	10.25	10.26	0.08	29	0,935
	Long jump	148.30	147.44	0.53	29	0.599
	Slope in front	5.43	4.58	1.72	29	0,095
	The traces of lying	18.57	19.69	**2.50**	**29**	**0,018**
	Run 4x 10m	13.37	13.57	1.46	29	0.155
	handgrip	16.50	16:19	0.59	29	0.558
	Overhang on bent arms	15.63	15.42	0.33	29	0.744
	Running at 600 m	173.77	175.85	1.17	29	0.252
Boys	Cross 50m	9.71	9.71	0.03	29	0.978
	Long jump	154.60	154.53	0.06	29	0.957
	Slope in front	2.86	2.53	0.85	29	0.404
	The traces of lying	19,17	21.39	**4.91**	**29**	**<0.001**
	Run 4x 10m	13.20	13.32	0.71	29	0.481
	handgrip	19.53	18,62	1.87	29	0.072
	Overhang on bent arms	18,03	17.53	0.73	29	0.470
	Running at 600 m	165.53	167.30	1.18	29	0.246

M average
t result of t-test cost per sample
df degrees of freedom
p level of significance for the test *t*

Analyzes Student t test One Sample showed statistically significant differences in terms of:

- neighbors of lying for girls: $t(29) = 2.50$; $p < 0.05$ - that is, that girls from Primary School No. 10 in Torun achieved significantly lower score than neighbors lying with their counterparts from regional research;

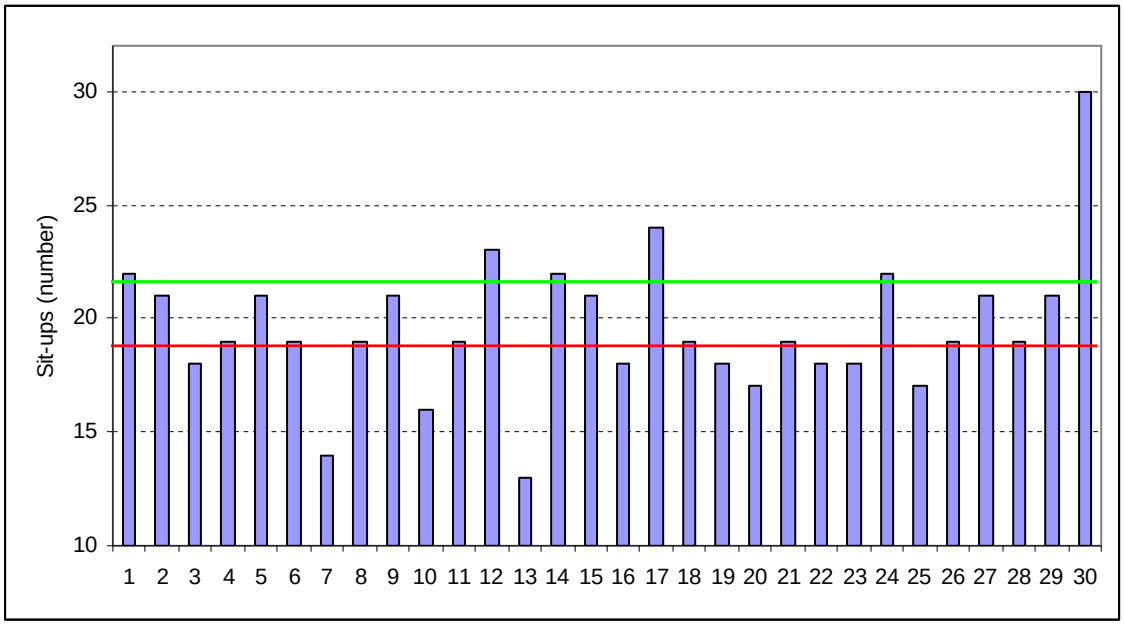


Dig. 1. The result of the neighbors of the lyinggirls from Primary School No. 10 in Torun in relation to regional standards

red - average results of girls from Primary School No. 10 in Toruń (18,57)

green color - average results of regional surveys (19,68)

- neighbors result of lying for boys: $t(29) = 4.91$; $p < 0.001$ - that is, thatBoys Primary School No. 10 in Torun scored significantly lower score neighbors lying with their peers than with regional research.



Dig. 2. Result of neighbors lyingwith boys Primary School No. 10 in Torun in relation to regional standards

red - average results of girls from Primary School No. 10 in Toruń (18,57)

green color - average results of regional surveys (19,68)

With respect to other variables of analysis Student t-test One Sample showed no statistically significant differences (p> 0.05) - this means that both girls and boys from the Primary School No. 10 in Torun, no different from their peers in terms of regional research result on the run 50m, stroke distance, slope in front, running 4 x 10m, dynamometer compression overhang on bent arms race and the 600m.

Table 8 shows the results obtained in studies of sexual dimorphism motor skills. In order to check whether the girls from the boys differed in their level motor skills, analysis were performed Student t-test for independent samples.

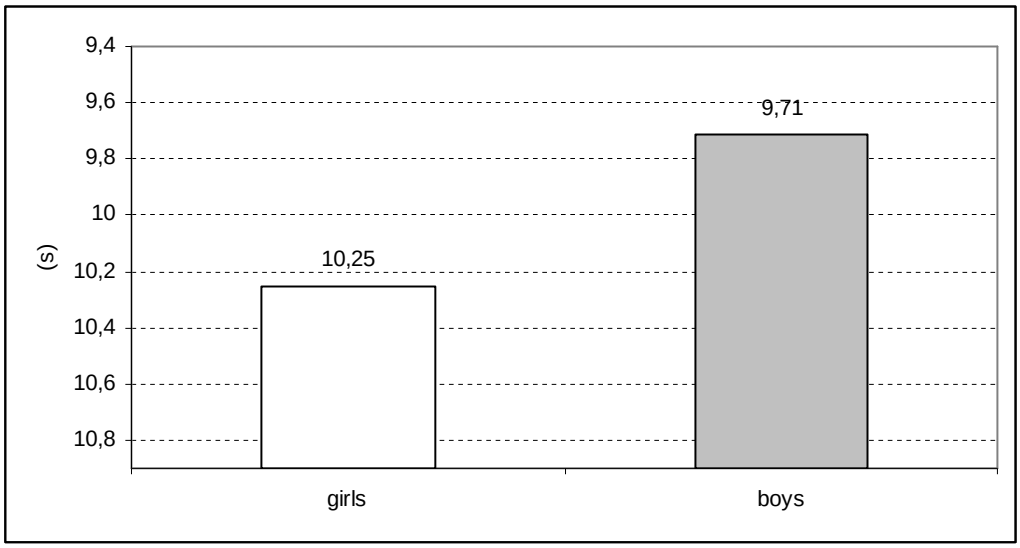
Tab. 8 Characterization of the level of motor abilities of females (n = 30) and boys (n = 30) (Source: own)

Variable	Sex of the baby	*n*	*M*	*SD*	*min*	*max*	*t*	*df*	*p*
Cross 50m	girls	thirty	10.25	0.67	9.3	12.2	3.18	58	0,002
	Boys	thirty	9.71	0.66	8.9	11.4			
Long jump	girls	thirty	148.30	8.86	123	160	3.06	58	0.003
	Boys	thirty	154.60	6.99	138	166			
Slope in front	girls	thirty	5.43	2.69	-2.1	9.6	4.12	58	<0.001
	Boys	thirty	2.86	2.11	-4.4	5.3			
The traces of lying	girls	thirty	18.57	2.46	11	24	0.94	58	0,350
	Boys	thirty	19,17	2.48	13	24			
Run 4x 10m	girls	thirty	13.37	0.74	12.2	16.1	0.80	58	0.426
	Boys	thirty	13.20	0.89	11.8	15.6			
handgrip	girls	thirty	16.50	2.86	12	24	4.24	58	<0.001
	Boys	thirty	19.53	2.67	15	26			
Overhang on bent arms	girls	thirty	15.63	3.55	7	21	2.54	58	0,014
	Boys	thirty	18,03	3.76	9	25			
Running at 600 m	girls	thirty	173.77	9.77	162	205	3.54	58	0.001
	Boys	thirty	165.53	8.17	154	185			

n number
M average
SD standard deviation
min lowest value
max the highest value
t the result of t-test for independent samples
df degrees of freedom
p level of significance for the test *t*

Analyzes Student t-test for independent samples showed significant differences between the groups in terms of:

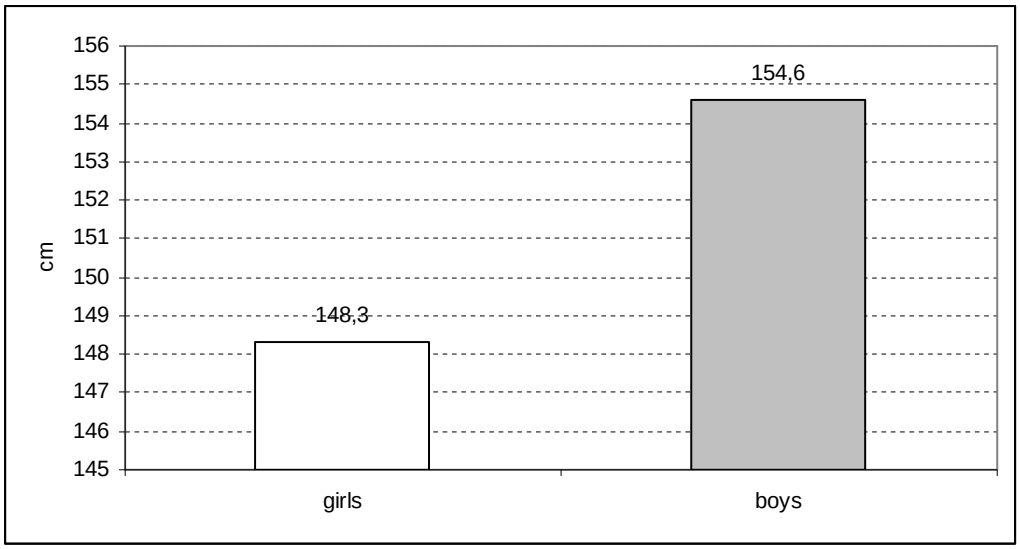
- running at 50m: $t(58) = 3.18$; $p < 0.01$; $d = 0.81$ - it means that boys obtain an improved result in the 50m race than girls;



Dig. 3. The mean score on the run 50m in girls and boys

(Source: own)

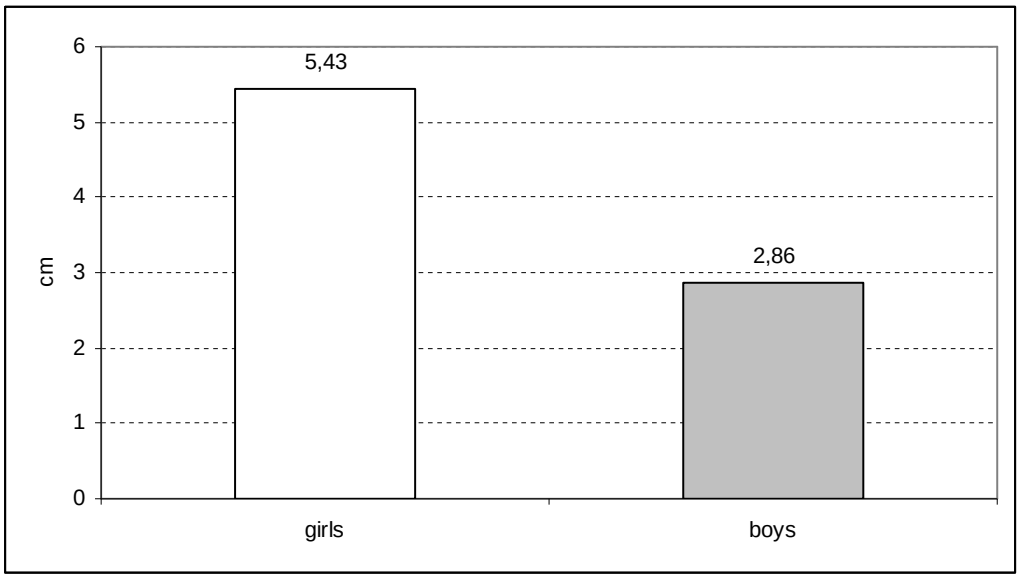
- long jump: $t(58) = 3.06$; $p < 0.01$; $d = 0.79$ - that is, the higher the score to obtain an boysjump than girls;



Dig. 4. The average score jump in girls and boys

(Source: own)

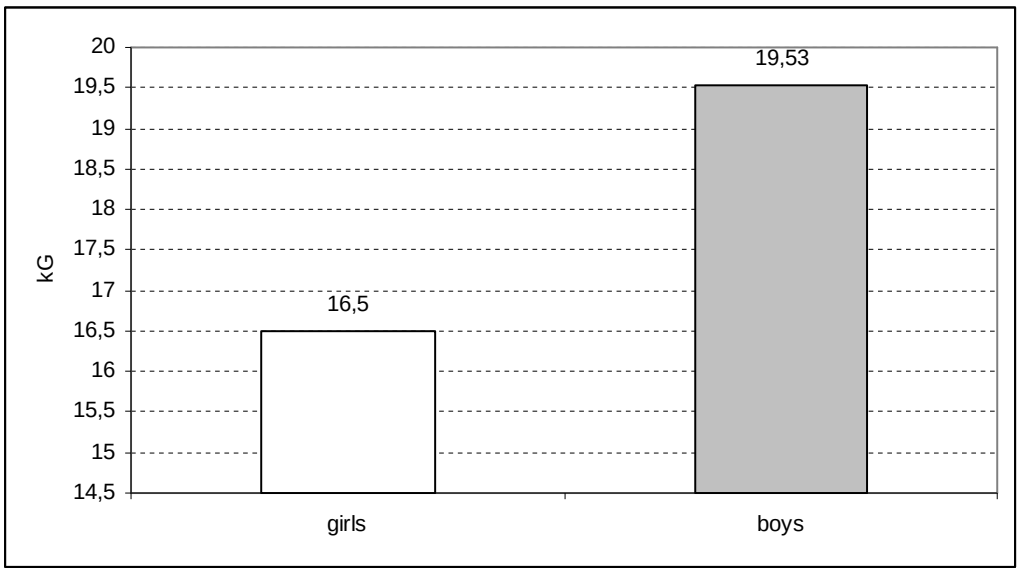
- slope in front: $t(58) = 4.12$; $p < 0.001$; $d = 1.06$ - that is, the higher score girls uzyskiwałyslope in front than boys;



Dig. 5. The average result of the slope in front of the girls and boys

(Source: own)

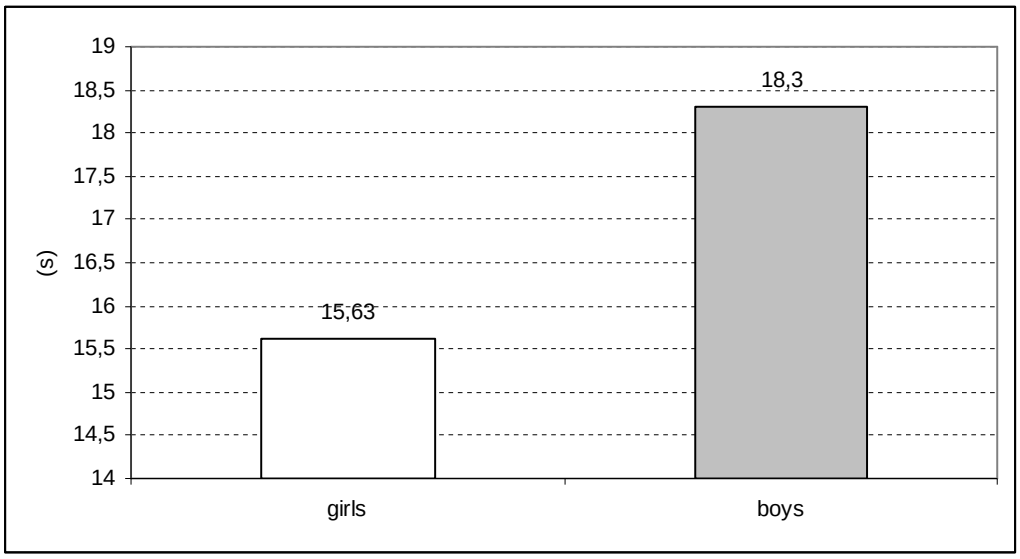
- handgrip:$t(58) = 4.24$; $p < 0.001$; $d = 1.10$ - that is, the higher the score to obtain an boyscompression dynamometer than girls;



Dig. 6. The average result of compression dynamometer in girls and boys

(Source: own)

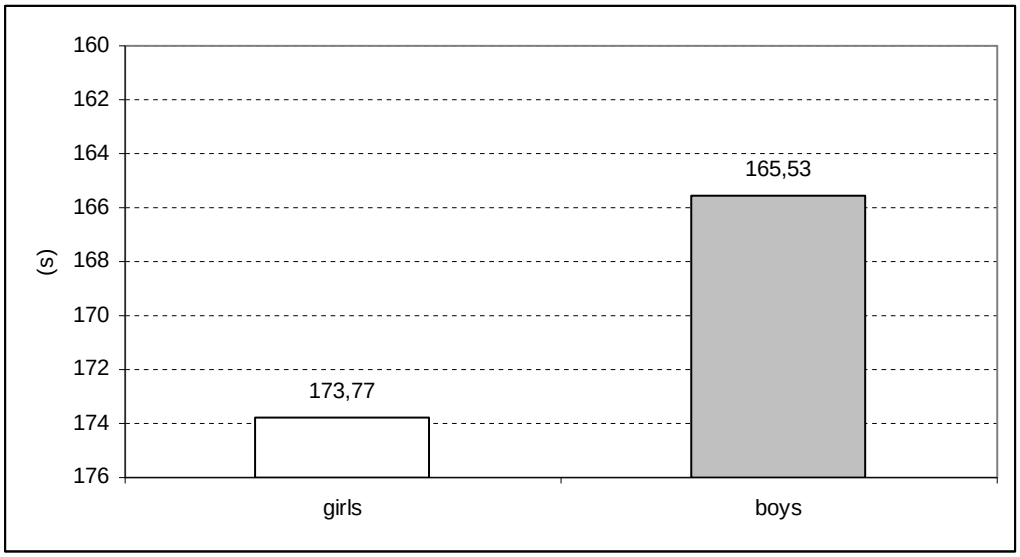
- overhang on bent arms: $t(58) = 2.54$; $p < 0.05$; $d = 0.66$ - that is, the higher the score to obtain an boysoverhang on bent arms than girls;



Dig. 7. The average result overhang on bent hands in girls and boys

(Source: own)

- running at 600m: $t(58) = 3.54$; $p < 0.001$; $d = 0.91$ - it means that boys obtain an improved result in the 600m race than girls;



Dig. 8. The average result of running the 600m in girls and boys

(Source: own)

In terms of other variables analysis Student's t test for independent samples did not show statistically significant differences between groups ($p > 0.05$) - means thatthe girls did not differ from boys in terms of lying as a result of neighbors and run 4 x 10m.

To illustrate the level of sexual dimorphism motor skills groups studied, translated results of the study, both boys and girls into points by T. scale

Tab. 9 based on the results of the scale points T boys

Attempt	own research		regional research	
	M	points	M	points
Running at 50 m	9.71	49	9.71	49
Standing long jump	154	53	154.5	53
Standing forward bend forward	2.85	53	2.53	45
The traces of lying	19.1	44	21.39	48
Heat 4 x 10 m	13.20	48	13.32	47
handgrip	19.5	57	18,62	55
Overhang on bent arms	18	51	17.53	51
Running at 600 m	165.5	54	167.3	53
Σ	The sum of 409		The sum of 401	

(Source: own)

After calculating the results of motor skills scale T, you will notice that the boys came out with their own research better than their peers of regional research. The sum of points obtained by the students from the Primary School No. 10 in Torun is 409 and is 8 points higher than the sum of points from regional studies (401). The greatest differences appeared in the test slope in front torso and lying in a kneeling position. In the first attempt to better turned out to students from Torun, scoring 53 points compared to 45 points scored by peers in regional studies, but further study improved by 4 points were the children of the region (48 compared to the 44 points scored by pupils from Primary School 10 Torun). In other trials ranged differences at the level of 1-2 points.

Tab. 10. The results converted into points according to the scale T girls

Attempt	own research		regional research	
	M	points	M	points
Running at 50 m	10.25	46	10.26	46
Standing long jump	148	54	147	53
Standing forward bend forward	5.42	54	4.58	52
The traces of lying	18.5	47	19.69	50
Heat 4 x 10 m	13.37	52	13.57	51
handgrip	16.5	55	16:19	54
Overhang on bent arms	15.63	59	15.42	59
Running at 600 m	173.7	56	175.8	55
Σ	The sum of 423		The sum of 420	

(Source: own)

The analysis of the results obtained, converted according to the scale T, it can be concluded that the differences between the results of the girls own studies and those of nationwide research are very small. The girls disappear from Torun rówieśniczkom study only regional neighbors in an attempt to lie down. Students from the region have achieved a better result by 3 points (50 points compared to 47 points scored by students from the Torun school). In tests such as standing long jump, running 4 x 10 m, handgrip and trunk slope in front, the differences were small and ranged from 1 to 2 points in favor of students from their studies. In other trials, both groups achieved the same result.

Tab. 11. Results converted into points according to the scale of boys and girls T

own research

Attempt	research boys own		Research your own girls	
	M	points	M	points
Running at 50 m	9.71	49	10.25	46
Standing long jump	154	53	148	54
Standing forward bend forward	2.85	53	5.42	54
The traces of lying	19.1	44	18.5	47
Heat 4 x 10 m	13.20	48	13.37	52
handgrip	19.5	57	16.5	55
Overhang on bent arms	18	51	15.63	59
Running at 600 m	165.5	54	173.7	56
Σ	The sum of 409		The sum of 423	

With the conversion own research results both boys and girls, the points obtained MTSF picture of the level of sexual dimorphism. It turns out that only two of the eight tests carried out physical boys are better than their girlfriends and are sequentially running at 50 m (49 points) and the handgrip (57 points). The differences are not significant because they are only 2 to 3 points MTSF. The greatest difference can be observed in the sample to sag bent arms. In this exercise, the girls from Primary School No. 10 in Torun achieved a better result MTSF by 8 points (59). In the other five trials, students from Torun also were better, but the differences were not significant (from 1 to 3 points MTSF).

Summary

The aim of the study was to determine the level of somatic and motor ten students from the Primary School No. 10 in Torun. Somatic features have been determined based on

anthropometric measurements, and the range of motor skills has been investigated using the International Physical Fitness Test.

The results were analyzed, which showed probably differences in both the level of motor skills, as well as somatic boys and girls. The study of somatic consisted of analysis of height, weight, body type and BMI. Hypotheses are as follows:

The first hypothesis, studied a group of students from the Primary School No. 10 in Torun superior height and weight peers from regional and national studies confirmed the. Although the differences are small, the boys from own research are taller than their peers by an average of 0.08 cm and 0.05 cm for girls. Differences in body weight of 0.08kg and were subsequently 0,10kg.

Second hypothesis, most of the children in the group is properly nourished (BMI) is confirmed. Normal weight is up to 91.4% of the subjects.

Third hypothesis, students from Primary School No. 10 in Torun are characterized by higher than peers motoric abilities of regional research is confirmed. Both boys and girls from Primary School No. 10 in Torun, obtained a better result than peers of regional research. The boys have achieved a better result by 8 points MTSF (409) and the girls by 3 points (423)

The fourth hypothesis, the largest number of respondents confirmed leptosomatic type presents itself. As many as 81.6% of the students from the Primary School No. 10 in Toruń can boast this type of construction.

Hypothesis fifth, comparing boys and girls from Primary School No. 10 in Torun, girls have greater strength and flexibility of boys and more strength and speed is confirmed. The girls from the Torun school achieved a better result by 1 point in an attempt to MTSF flexibility and by 2 points in an attempt to MTSF strength from the boys. Those, however, proved to be better by 3 points in the test and the Speed 2 points in an attempt to force from their peers.

The hypothesis of six, studied a group of boys has increased somatic parameters and motor skills than a test group of girls has not confirmed completely. Although the boys from the Primary School No. 10 in Torun are characterized by higher somatic parameters are about 0,77cm taller and heavier by about 0,30kg, in the measurement of losing motor skills with their friends. The girls from the Torun school achieved a score higher by as much as 14 points MTSF from the boys.

Conclusions:

1. Boys and girls from Primary School No. 10 in Torun are slightly taller and heavier than their peers in the region. The differences are not large, and are in girls 0,05cm 0.08kg and 0.08 cm for boys 0,10kg.
2. Among the students of Primary School No. 10 in Torun dominates leptosomatic type of construction. As many as 81.6% of all respondents have such a structure. Athletic type represents 18.4% of the surveyed children. It is worth mentioning that in the group studied showed no pyknicznego type of construction.
3. On the average BMI was found that primary school children in Torun 10 are in the normal range. The result is 16.9 girls and boys 16.8. It is worth noting that the average weight girls (34.90) is lower than the average weight of boys (35.20)
4. The statistical significance of differences between regional research and own research could be seen in an attempt to force the trunk. In the kneeling position from lying down, both boys and girls from their studies were worse than their peers in the region. Result of girls was 18.57 (19.67 regional studies), and the result of boys 19.17 (21.39 regional research).

5. The level of motor skills of the other sample was very similar. Both students from Primary School No. 10 in Torun, as well as their peers from regional studies have reached similar results and any of the other seven trials there were no statistically significant difference.
6. Conversion of points in the scale T showed that all the boys have done a better efficiency tests than their peers from the region (409 compared with 401 points obtained by children from regional research). Students Primary School No. 10 in Torun worse cope with the attempt to force the body, but have greater abilities to perform attempts flexibility. Other attempts to produce results similar to both groups.
7. The differences in the results of the girls own studies and those of regional studies are small. Schoolgirls Primary School No. 10 in Torun performed some attempts slightly better, or as well as counterparts from the region (running at 50 meters, standing long jump, bend the trunk forwards, running 4 x 10m, compression dynamometer overhang on bent arms, running at 600m). Trying to force the trunk, or Traces of lying, he was the only attempt, in which students from the Primary School No. 10 in Torun fared worse than girls with regional research. The difference is not large and is 3 points MTSF.

Declarations

Ethics approval and consent to participate

The research related to human use complied with all the relevant national regulations, institutional policies, and was in accordance with the tenets of the Helsinki Declaration. The study protocol was approved by the Ethical Committee of Nicolaus Copernicus University, Torun, Poland.

During realization of tests, all participants provided informed consent and used all measures for maintaining anonymity of participants.

Consent to publish

Not applicable

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

MG, MN participated in the design of this study. MG, MN performed the statistical analyses. MG, MN, JE, WZ drafted the manuscript. IG, MM, JE, WZ were involved in data collection and/or made important intellectual contributions to the interpretation of data and the writing of paper. All authors critically revised and approved the final version.

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References

1. Drozdowski Z. 1998. Antropologia w wychowaniu fizycznym, AWF, Poznań.
2. Napierała M. 2000. Dziecko z regionu kujawsko-pomorskiego Rozwój fizyczny i motoryczny dzieci z klas początkowych, Wydawnictwo Uczelniane Akademii Bydgoskiej im. Kazimierza Wielkiego w Bydgoszczy, Bydgoszcz.
3. Napierała M. 2005. Ważniejsze uwarunkowania rozwoju somatycznego i motorycznego dzieci i młodzieży z województwa Kujawsko-Pomorskiego, Wydawnictwo Akademii Bydgoskiej im. Kazimierza Wielkiego, Bydgoszcz.

4. Napierała M. 2008. Środowiskowe uwarunkowania somatyczne i motoryczne a wiek rozwojowy dzieci i młodzieży, Wydawnictwo Uniwersytetu Kazimierza Wielkiego, Bydgoszcz.
5. Nowicki G. 2004. Rozwój fizyczny dzieci i młodzieży w rodzinach wiejskich, Wydawnictwo KPSW, Bydgoszcz.
6. Pilicz S., Przewęda R., Dobosz J., Nowacka-Dobosz S., 2005, Punktacja sprawności fizycznej młodzieży polskiej wg Międzynarodowego Testu Sprawności Fizycznej, AWF, Warszawa.
7. Woynarowska B. 2008. Edukacja Zdrowotna, PWN, Warszawa.