



## SOMATIC DEVELOPMENT AND PHYSICAL FITNESS OF SCHOOLGIRLS WITH MILD INTELLECTUAL DISABILITIES - A COMPARATIVE STUDY

Justyna Charaśna-Blachucik<sup>1</sup>, Janusz Blachucik<sup>2</sup>

<sup>1</sup> Faculty of Physical Education and Physiotherapy at the Opole University of Technology

<sup>2</sup> Secondary Grammar School no. 3 in Kędzierzyn-Koźle

---

### Abstract

*This paper presents the results of a study into somatic development and physical fitness among schoolgirls with mild intellectual disabilities and their able-bodied peers. Comparative analysis of the height and weight of the children was carried out, and results from 60m and 600m runs, long jump, palant ball throw and medicine ball throw were obtained.*

*Analysis of the data, which were collected from 2012 to 2015, revealed no statistically significant differences in somatic development and physical fitness between schoolgirls with mild intellectual disabilities and their able-bodied peers, who constituted a control group. The results obtained indicate that there is a possibility of integrating schoolgirls with this type of disability with their able-bodied peers during physical education lessons and school sports competitions. A comparative study involving team sports would be very important for school practice.*

**Key words:** intellectual disabilities, integration, sport, rehabilitation, education.

---

### Introduction

The importance of an active lifestyle is obvious and familiar in contemporary society. Many papers and studies have already been presented concerning fitness activity, its role and influence on health. This article touches on the subject of physical activity among people with mild intellectual disabilities.

Contemporary methods of therapy for people with intellectual disabilities, integration trends that allow for such people to actively participate in social life, and the development of sport and leisure aim at rehabilitation through sport. Current research has proved groundbreaking with respect to intellectual disability<sup>1</sup>. Awareness in state schools and educational facilities of this issue has resulted in a higher level of interest in the needs of people

with intellectual disability within scientific, sporting and educational environments<sup>2</sup>.

There are many more papers concerning the physiological characteristics of people with intellectual disabilities, their causes, symptoms, state, and qualification<sup>3</sup> than papers concerning the assessment and description of physical and motor development among people with intellectual disabilities over the course of a few years. People with a disability are very often perceived as weaker, less physically-able, or inferior. This attitude particularly concerns children and young people with mild intellectual

---

<sup>1</sup> I. Chrzanowska, *Pedagogika specjalna. Od tradycji do współczesności*, Impuls, Kraków 2015r. s. 9

<sup>2</sup> J. Charaśna – Blachucik, K. Piechota, *Interdyscyplinarność i transdyscyplinarność w procesie kształcenia w szkole wyższej*, Adam Marszałek, Toruń 2015r. s. 205

<sup>3</sup> I. Chrzanowska, *Pedagogika specjalna.....*  
I. Obuchowska, *Dziecko niepełnosprawne w rodzinie*, Warszawa 1995, s. 199-228.  
W. Dykcik, *Pedagogika specjalna*, Poznań 2003 r. s. 137-147.  
Z. Sękowska, *Wprowadzenie do pedagogiki specjalnej*, Warszawa 2001r. s. 214-218.

disabilities. This could not be further from the truth, since people with mild intellectual disabilities do not differ in terms of physical and visual appearance from their able-bodied peers<sup>4</sup>, which is shown through observation and time spent with such people. Naturally, they differ in terms of behaviour, perception, memory range, speech, or thought processes. However, such people's emotional and motivational processes develop in an interesting fashion<sup>5</sup>. In reference to attention processes, research conducted shows that people with mild intellectual disabilities demonstrate bottom-up and top-down attention abilities. However, top-down attention is mainly focused on concrete material. Attention divisibility, span, and scope are weaker. The quality of top-down attention (span and divisibility) increases along with an increase in experience. However, the differences in this sphere between people with mild intellectual disabilities and able-bodied people (e.g. at school) are noticeable<sup>6</sup>. Top-down attention is used to perform any tests on motor skills because it is based on the performance of instructions and tasks.

Physical fitness among young people and adults is significant not only in the personal life of an individual, but also in society as a whole. It is strongly tied to health status, efficiency and the readiness to put effort into various activities. The need to improve physical fitness at school age results from a biological and cultural rationale. At this age physical fitness develops naturally, so it encourages its stimulation and correction. It is also the educational period on which the future depends: desired attitudes are adopted, motivation and needs are awakened, a healthy, physically-active lifestyle is encouraged. Therefore, at school age, there is a great chance of enriching physical fitness and forming a desired lifestyle. Consequently, physical education classes should stimulate a process leading to:

- the improvement of students' physical fitness
- students' acquisition of mobility skills specified in the curriculum (technique and tactics)
- the expansion of students' knowledge about physical culture
- students' acquisition of models of such behaviours, physical activities, "life-long sports" that may be used in leisure, arranging free time, so as to allow for life-long participation in physical culture<sup>7</sup>

Physical development of children is very individual, but usually follows a certain pattern. Regular and frequent development control of a child, especially a one-year-old, is vital because it allows for the early detection of possible dysfunctions.

Proper physical development in early childhood is extremely important in terms of intellectual, cognitive, emotional, social, aesthetic, and health development.

People with mild intellectual disabilities can be fully self-dependent. They can play different social roles in adulthood. Most of them do not require continuous care but only support and advice, especially in difficult situations. The progress in terms of rehabilitation, as well as through sport, and the idea of support through activation of people with mild intellectual disabilities provide an optimistic basis for their functioning and development. Nowadays, the prognosis concerning the capabilities and competence regarding the self-dependence of people with mild intellectual disabilities in everyday life is much better than it was assumed to be 20 years ago<sup>8</sup>.

Based on existing literature, the studies that have been carried out so far do not state clearly whether physical fitness of children and young people with mild intellectual disabilities differs in relation to their able-bodied peers.

The study that was carried out in the 1980s by Pańczyk<sup>9</sup> concluded that there are no

<sup>4</sup> J. Charańska-Blachucik, Współczesna szkoła a kształcenie integracyjne w gimnazjum, w: *Nauki społeczne a kształtowanie osobowości*, red. L. Sadownicowa, J. Charańska-Blachucik, Politechnika Opolska, Opole 2015r. s. 113-116

<sup>5</sup> I. Chrzanowska...s. 275

<sup>6</sup> Tamże....s 272

<sup>7</sup> J. Dębinny, Dymorficzne różnice budowy somatycznej i sprawności motorycznej dzieci szkoły wiejskiej, *Lider* 11/2005r., s. 12-13.

<sup>8</sup> I. Chrzanowska ...s 275

<sup>9</sup> J. Pańczyk, Poziom rozwoju cech motorycznych uczniów szkół dla lekko upośledzonych umysłowo

differences between a group with mild intellectual disabilities and a control group with normal intellectual capacity. The survey carried out by Baranowski 2003 concerning the physical activity of secondary grammar school students with intellectual disabilities showed that their level of physical activity is much lower than that of their peers with normal intellectual capacity<sup>10</sup>. Another study into physical fitness by Wieczorek 2008<sup>11</sup> shows statistically significant differences between the groups to the benefit of people with normal intellectual capacity. All studies were carried out once and did not span a longer period.

As far as intellectual development is concerned, physical fitness is vital, and it in turn can be monitored by various tests or exams. Appropriate physical fitness tests, the proper interpretation of their results and the provision of students with information concerning the objective and method of testing are indispensable conditions in order to control this process consciously. However, these tests should also be useful in a rationally organised physical education process, which is a wide and perceptive diagnosis in reference to a person, team, or environment. This diagnosis is especially important when starting to work with a new group or class, especially at the beginning and end of a school year.

Carrying out physical fitness tests and the analysis of their results are an inherent aspect of the work of a physical education teacher. In the era of a modern and individual approach to the issues associated with physical education at school, the teacher has an opportunity to design their own physical education program, taking into account learning facilities, as well as the capabilities and interests of students. In-depth analyses such as this, provide data on the basis

of which one's own vision of controlling the physical education process can be developed.

Therefore, it seems compelling to carry out a study concerning the comparison of physical fitness tests between people with mild intellectual disabilities and people with normal intellectual capacity of the same age, from the same school, and over a course of a few years<sup>12</sup>. The study shows that the students with mild intellectual disabilities, as far as tests including 60m and 600m runs, long jump, palant ball throw, and medicine ball throw are concerned, achieved similar results to students with normal intellectual capacity.

Various analyses may be carried out and compared with others by doing extensive studies of somatic development and physical fitness of all students, both able-bodied and disabled, and by comparing the results obtained over the course of a few years.

The possibility of observing the record of one's own physical development over many years – not in the form of grades from physical education, but in the form of specific sport results – motivates physical activity in adulthood and at an older age. In such a case, it is possible to compare the progress or regress of one's own physical fitness<sup>13 14</sup>

This study was carried out at Secondary Grammar School no. 3 in Kędzierzyn-Koźle by its physical education teachers based on the teachers' own physical fitness tests.

---

na tle ich rówieśników ze szkół normalnych, Warszawa 1979r.

<sup>10</sup> J. Baranowski, Aktywność fizyczna niepełnosprawnych intelektualnie stopnia lekkiego, Zeszyty Naukowe AWF Katowice, 2003r., s. 7-14

<sup>11</sup> M. Wieczorek, Sprawność fizyczna młodzieży niepełnosprawnej intelektualnie jako czynnik warunkujący ich zdrowie, *Prob..Hig. Epidemiol* 2008, 89(2): 235-240.

---

<sup>12</sup> J. Charaśna – Blachucik, J. Blachucik, Analiza porównawcza cech somatycznych sprawności motorycznej uczniów z niepełnosprawnością intelektualną w stopniu lekkim a uczniami w normie intelektualnej, [w]; pod red. J. Charaśnej - Blachucik przy współpracy M. Migąły, *Niepełnosprawność i jej interdyscyplinarność podstawy – badania – wieloaspektowość*, OW Politechnika Opolska, Opole 2016r s. 117

<sup>13</sup> Tamże, s. 14-15

<sup>14</sup> J. Charaśna – Blachucik, J. Blachucik, Analiza porównawcza cech somatycznych sprawności motorycznej uczniów z niepełnosprawnością intelektualną w stopniu lekkim a uczniami w normie intelektualnej, [w]; pod red. J. Charaśnej Blachucik przy współpracy Mariusza Migąły, *Niepełnosprawność i jej interdyscyplinarność podstawy – badania – wieloaspektowość*, OW Politechnika Opolska, Opole 2016r s. 117

## Aim of the study

The aim of the study is to assess somatic development and physical fitness of 20 schoolgirls with mild intellectual disabilities and 20 schoolgirls with normal intellectual capacity. The schoolgirls tested attend four physical education classes per week, and their age was 13 during the first test in September 2012.

## Research questions

The following questions were posed before the study:

1. Are there any differences in physique between the schoolgirls with mild intellectual disabilities and the control group?
2. Which physical fitness tests show the largest differences between the groups tested?

## Research data and methods

The study was carried out from 2012 to 2015. A three-year observation of the schoolgirls taking part in the project yielded research data which, after performing a statistical analysis, may contribute to conclusions concerning changes in somatic development and the physical fitness of schoolgirls, both able-bodied and with mild intellectual disabilities.

Physical fitness tests were used as a research technique. They did not change throughout the research. All tests were carried out twice per school year, i.e. in September and May.

To carry out the study, the approval of parents and the management of Secondary Grammar School no. 3 in Kędzierzyn-Koźle was given. The study is regarded as a pilot and preliminary.

### TEST 1. 60M RUN

Place: a track on the sport pitches of secondary grammar schools.

Equipment: a stopwatch capable of measuring two times.

Method: the tested schoolgirls run in pairs using a standing start position after a starter (teacher, trained student) who stands near the starting place gives an aural and visual signal. After the start, they run to the finish line in their own lane as fast as possible. The measurement

of times, with a precision of 1/10 of a second, is taken by a teacher who stands at the finish line. The test is conducted two times at an interval of about 10 minutes.

Test result: the best time to finish the 60m run, expressed in seconds with a precision of 1/10 of a second.

### TEST 2. 600M RUN

Place: a track on the sport pitches of secondary grammar schools.

Equipment: a stopwatch that is capable of measuring ten times.

Method: a group of 10 schoolgirls starts after an acoustic signal is given and runs on the track marked out around the sports pitches in order to run 600 metres as fast as possible. The test is only conducted once.

Test result: the time to finish 600 metres, expressed in seconds with a precision of 1 second.

### TEST 3. LONG JUMP

Place: a long jump runway on the sport pitches of secondary grammar schools.

Equipment: a tape measure, a marker used to mark the edges of a footprint on the landing area.

Method: the schoolgirls tested take a run-up of any length. The jump is initiated by a one leg jump from a 1-metre zone. The test is conducted three times at an interval of a few minutes.

Test result: the length of the best jump, counted in centimetres, measured from the edges of toes initiating the jump to the edges of a footprint on the landing area which is the nearest to the edges of toes initiating the jump.

### TEST 4. PALANT BALL THROW

Place: a throwing area marked out on the sport pitches of secondary grammar schools.

Equipment: 150g palant balls, markers used to indicate the place where the palant ball falls, a tape measure.

Method: the schoolgirl tested takes a run-up of any length and throws the ball before the edge of the throwing area. After the throw, the line that marks the edge of the throwing area can be crossed. This throwing test is conducted three times in a row.

Test result: the length of the best throw measured from the edge of the throwing area to the place where the ball falls, counted in metres with a precision of 10 centimetres.

**TEST 5. MEDICINE BALL THROW**

Place: a throwing area marked out on the sport pitches of secondary grammar schools.

Equipment: 3kg medicine ball, markers used to mark the place where the medicine ball falls, a tape measure.

Method: the schoolgirl tested stands with her back to the throwing direction before the edge of the throwing area. While holding the ball with both hands, the schoolgirl swings the ball and does a half-crouch three times. Then she swings the ball energetically above her head with both hands and throws the ball once her body is fully upright and her arms are in a vertical position. After the throw, the line that marks the edge of the throwing area can be crossed. This throwing test is conducted three times in a row.

Test result: the length of the best throw measured from the edge of the throwing area to

the place where the ball falls, expressed in metres with a precision of 10 centimetres.

**Methods for evaluating the study results**

The weight and height of the body were measured, the body mass index (BMI) and Rohrer's index were calculated. The arithmetic mean, standard deviation, and the basic parameters of descriptive statistics were calculated. The t test of the Student was applied to assess the statistical significance of the differences between the average results in the groups compared. Statistical calculations were achieved by means of Microsoft Excel and Statistica programs. The study results were shown on graphs and in tables. In order to interpret the t Student test results, the significance level for independent variables was set at 0.05. In case of independent variables, if  $t^p > 2.00$  the difference is statistically significant, and if  $t^p < 2.00$  the difference is interpreted as random.

**Study results**

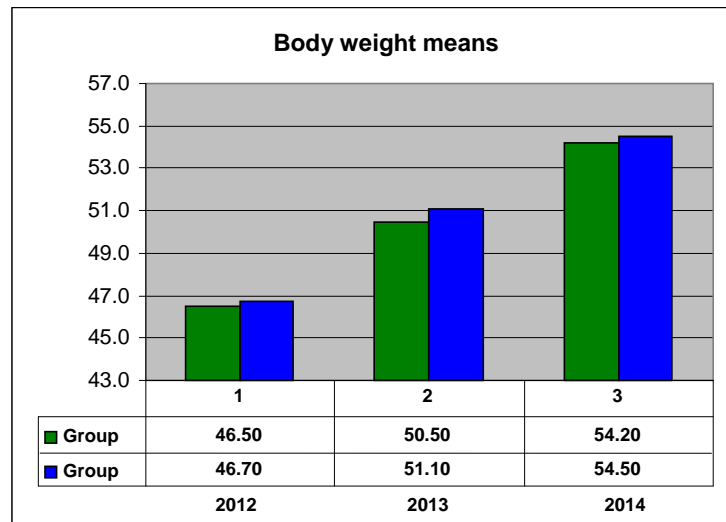
**1. Analysis of somatic characteristics**

**BODY WEIGHT**

**Table 1.** The body weight of the schoolgirls: A - schoolgirls with mild intellectual disabilities - N=20, B - control group - N=20

Parameters	Groups	Body weight		
		09.2012	09.2013	09.2014
Results [min]	A	43	45	49
	B	45	47	51
Results [max]	A	51	52	55
	B	55	56	59
$\bar{X}$	A	46.5	50.5	54.2
	B	46.7	51.1	54.5
S	A	1.84	1.96	1.94
	B	1.95	1.94	1.99
$t^p$	A	0.81	0.72	0.79
	B			

p > 0.05 – the difference is statistically significant



**Graph 1.** Body weight mean of the group A and B schoolgirls from 2012 to 2014

Based on the data in Table 1, it can be noticed that very similar results were obtained in both groups tested. The results of group B are slightly better in every test but the differences are minimal. Throughout the whole secondary grammar school education cycle, group A and B schoolgirls have a very similar body weight and

only differ slightly. This may mean that the group A and B schoolgirls have a similar physique type.

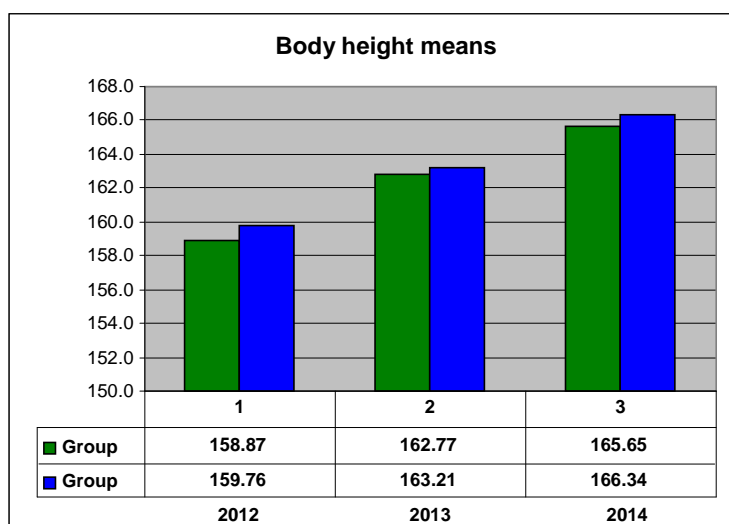
Based on the analysis using the t test of the Student, it is shown that at the significance level of 0.05 the differences between the body weight yearly mean of the group A and B schoolgirls are not statistically significant ( $t^0 > 2.00$ ).

### **BODY HEIGHT**

**Table 2.** The body height of the schoolgirls: A - schoolgirls with mild intellectual disabilities N=20, B - control group N=20

Parameters	Groups	Body height		
		09.2012	09.2013	09.2014
Results [min]	A	152	157	162
	B	154	160	164
Results [max]	A	167	174	181
	B	166	172	180
$\bar{X}$	A	158.87	162.77	165.65
	B	159.76	163.21	166.34
S	A	2.56	2.78	2.86
	B	2.79	3.35	2.98
$T^0$	A	1.32	1.21	1.42
	B			

\*  $p > 0.05$  – the difference is statistically significant



**Graph 2.** Body height mean of the group A and B schoolgirls from 2012 to 2014

Based on the data in Table 2, it can be noticed that very similar results were obtained in both groups. As in the case of the body weight measurements, the results of group B are slightly better in every test. The mean increase in the

body height is at a similar level in group A and B throughout the whole of secondary grammar school education. The differences between the values are not statistically significant in all tests ( $t^{\circ} > 2.00$ ).

**BMI, ROHRER'S INDEX**

**Table 3.** Body weight to body height ratio:

A - schoolgirls with mild intellectual disabilities N=20, B - control group N=20

Parameters	Groups	Body weight and height		
		09.2012	09.2013	09.2014
Weight	A	46.5	50.5	54.2
	B	46.7	51.1	54.5
Height	A	158.87	162.77	165.65
	B	159.76	163.21	166.34
BMI	A	18.02	19.05	19.70
	B	18.24	19.28	19.81
Rohrer's index	A	1.15	1.16	1.18
	B	1.14	1.18	1.19

Based on the data in Table 3, the BMI reveals that the mean of each group, i.e. group A and group B, has a proper physique according to the obesity classification (WHO). There is a gradual increase in the results in both groups

throughout the research period (from 2012 to 2014). The Rohrer's index indicates that all schoolgirls tested are leptosomatic.

## 2. Physical fitness analysis

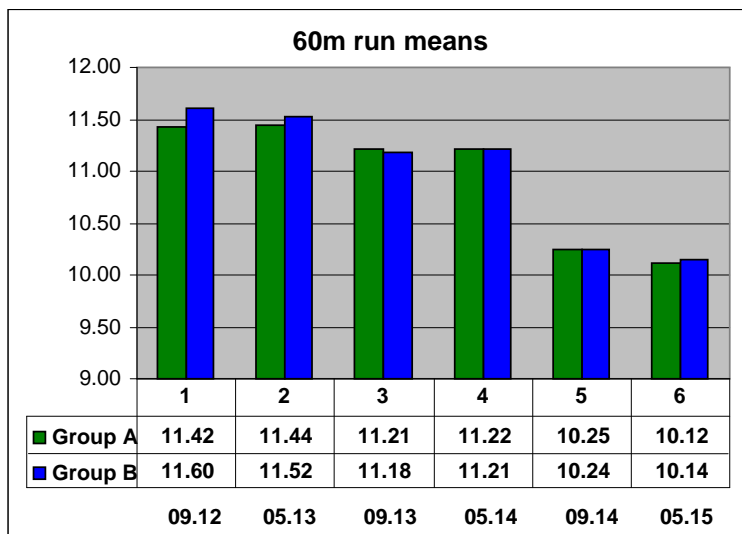
### 60m run test

**Table 4.** 60m run results

A - schoolgirls with mild intellectual disabilities N=20, B - control group N=20

Statistical Data	60m run											
	09.2012		05.2013		09.2013		05.2014		09.2014		05.2015	
	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B
Result [min]	10.1	10.1	9.9	9.8	9.7	9.8	9.6	9.7	9.5	9.6	9.5	9.5
Result [max]	14.3	15.1	13.2	13.5	13.1	13.4	12.9	12.7	11.1	11.2	10.8	10.6
$\bar{X}$	11.42	11.60	11.44	11.52	11.21	11.18	11.22	11.21	10.25	10.24	10.12	10.14
S	0.74	0.53	0.84	0.49	0.57	0.84	0.69	0.66	0.76	0.59	0.93	0.78
$t^p$	0.29		0.26		0.20		0.19		0.18		0.15	

$p > 0.05$  – the difference is statistically significant



**Graph 3.** 60m run means of the group A and B schoolgirls from 2012 to 2015

Table 4 illustrates the increase in the 60m run mean in September and May of a school year over the course of three years for each of the groups. The results of each group are very similar in every test. The same applies to the increase in the 60m run mean every year.

As in the case of the body height test, the mean results of groups A and B, in tests in particular years, do not differ statistically significantly ( $t^p > 2.00$ ).



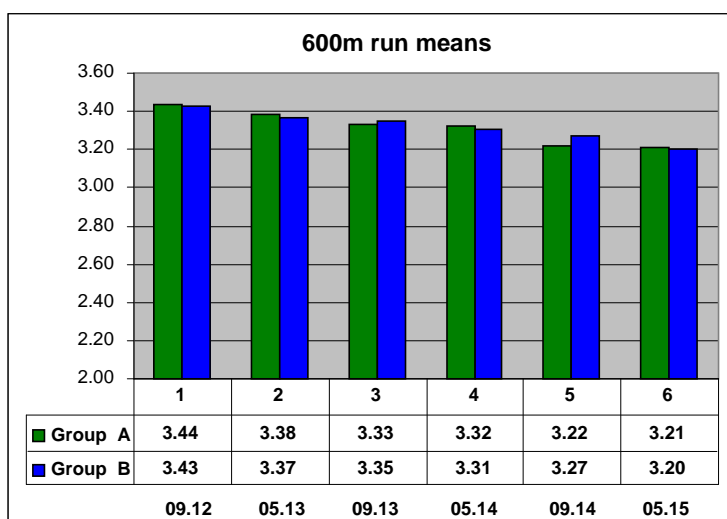
**600m run test**

**Table 5.** 600m run results:

A - schoolgirls with mild intellectual disabilities N=20, B - control group N=20

Statistical Data	600m run											
	09.2012		05.2013		09.2013		05.2014		09.2014		05.2015	
	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B
Result [min]	2.59	2.54	2.58	2.51	2.47	2.49	2.41	2.40	2.37	2.35	2.21	2.20
Result [max]	4.15	4.01	4.06	4.02	3.59	3.50	3.58	3.46	3.44	3.45	3.41	3.29
$\bar{x}$	3.44	3.43	3.38	3.37	3.33	3.35	3.32	3.31	3.22	3.27	3.21	3.20
S	1.08	0.96	0.95	0.79	0.93	0.77	1.13	0.97	1.32	1.18	1.23	1.06
$t^{\circ}$	0.33		0.36		0.27		0.26		0.32		0.28	

\*  $p > 0,05$  – the difference is statistically significant



**Graph 4.** The mean 600m run results of the group A and B schoolgirls from 2012 to 2015

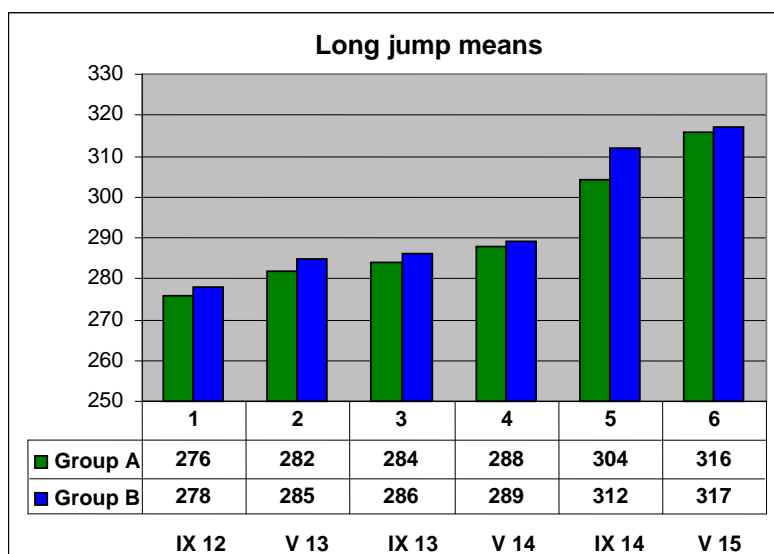
As in previous cases, the analysis of the 600m run results in Table 5 allows for the observation that the results in both groups are similar in all tests over the course of three years, and the result means are also very similar. Both groups make progress in results in each test.

The mean results of groups A and B, in tests in particular years, show no statistically significant differences in any phase of the study ( $t^{\circ} > 2.00$ ).

**Long jump test****Table 6.** Long jump results:

A - schoolgirls with mild intellectual disabilities N=20, B - control group N=20

Statistical data	Long jump											
	09.2012		05.2013		09.2013		05.2014		09.2014		05.2015	
	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B
result [min]	210	256	225	268	234	274	245	278	252	285	255	286
result [max]	313	321	319	323	326	331	331	330	338	336	343	346
$\bar{X}$	276	278	282	285	284	286	288	289	304	312	316	317
S	29.54	27.54	32.64	30.37	31.14	33.32	31.43	33.45	34.58	31.04	32.66	31.12
$t^{\circ}$	0.19		0.29		0.28		0.43		0.41		0.23	

\*  $p > 0,05$  – the difference is statistically significant**Graph 5.** The mean results of long jump of the group A and B schoolgirls from 2012 to 2015

As in the case of the 600m run, the results in Table 6 clearly show that both groups make progress in each test and year. The results of group B are slightly better in each test, but the

mean results of both groups in tests and particular years show, again, no statistically significant differences ( $t^{\circ} > 2.00$ ).

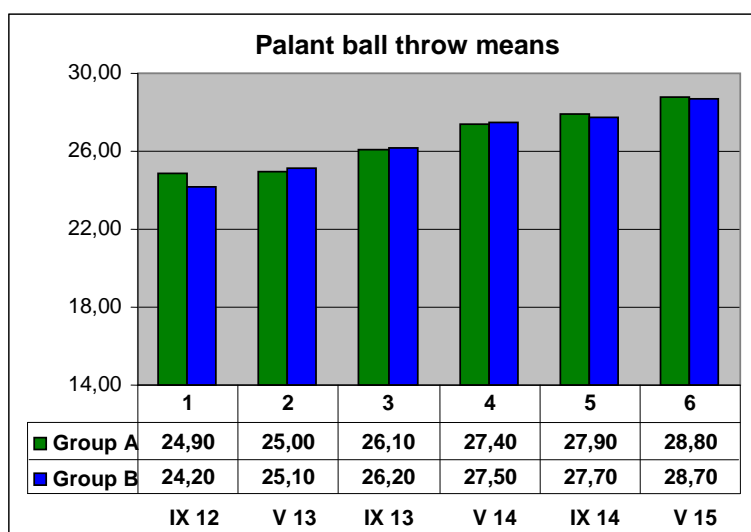
**Palant ball throw test**

**Table 7.** Palant ball throw results

A - schoolgirls with mild intellectual disabilities N=20, B - control group N=20

Statistical data	Palant ball throw											
	09.2012		05.2013		09.2013		05.2014		09.2014		05.2015	
	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B
result [min]	16.5	17.2	18.8	18.9	18.4	19.4	20.6	21.1	22.5	23.5	23.2	24.2
result [max]	31.5	30.9	31.5	31.2	32.0	32.8	32.4	32.5	33.7	34.0	34.8	35.5
$\bar{X}$	24.9	24.2	25.0	25.1	26.1	26.2	27.4	27.5	27.9	27.7	28.8	28.7
S	5.56	5.61	5.91	5.42	6.52	5.38	6.15	6.11	6.17	6.37	6.72	6.34
$t^{\circ}$	0.66		0.71		0.65		0.76		0.77		0.46	

\*  $p > 0,05$  – the difference is statistically significant



**Graph 6.** The mean results of palant ball throw of the group A and B schoolgirls from 2012 to 2015

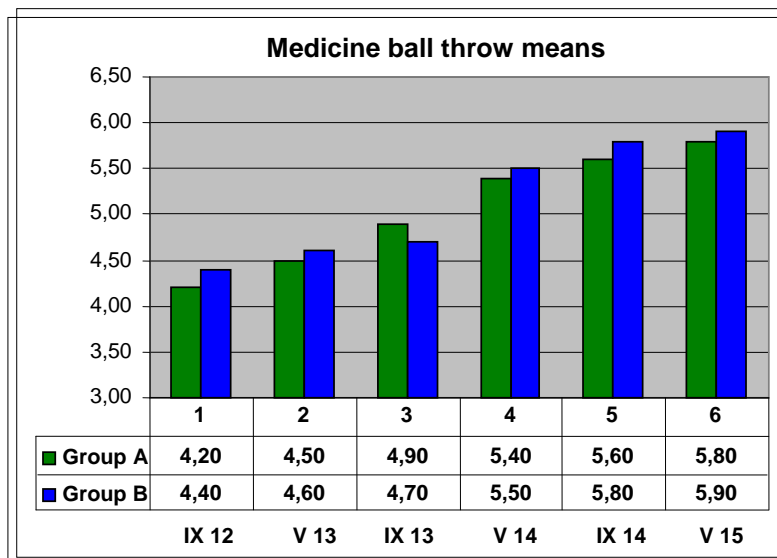
Given the results in Table 7, it is noticeable that the increase in the distance of the palant ball throws is constant throughout the research period in groups A and B. All research results are very similar in both groups.

The mean differences between the groups are not statistically significant in any phase of the study ( $t^{\circ} > 2.00$ ).

**Medicine ball throw test****Table 8.** Medicine ball throw results

A - schoolgirls with mild intellectual disabilities N=20, B - control group N=20

Statistical data	Medicine ball throw											
	09.2011		05.2012		09.2012		05.2013		09.2013		05.2014	
	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B
result [min]	2.4	2.2	3.5	3.4	3.8	3.8	3.9	4.0	4.1	4.2	4.3	4.3
result [max]	5.1	5.4	5.3	5.5	5.7	5.9	5.9	6.2	6.3	6.5	6.7	6.8
$\bar{X}$	4.2	4.4	4.5	4.6	4.9	4.7	5.4	5.5	5.6	5.8	5.8	5.9
S	0.91	0.93	0.96	0.83	0.71	0.75	0.77	1.02	1.03	0.89	0.92	1.04
$t^{\circ}$	0.56		0.47		0.76		0.79		0.68		0.57	

\*  $p > 0,05$  – the difference is statistically significant**Graph 7.** The mean results of medicine ball throw of the group A and B schoolgirls from 2012 to 2015.

The results in Table 8 clearly state that there is a constant increase in results between September 2012 and May 2015 for groups A and B during the whole secondary grammar school education. All mean results achieved by both groups are very similar. Except for September 2013, the results in each test are slightly better in group B.

The medicine ball throw results show that there are no statistically significant differences between the results in groups A and B ( $t^{\circ} > 2.00$ ).

**Summary**

The aim of the paper was to analyse the results of the study carried out over the course of a three years' study of the schoolgirls at Secondary Grammar School no. 3 in Kędzierzyn-Koźle. The study was focused on somatic development and physical fitness.

The research group consisted of schoolgirls with mild intellectual disabilities and able-bodied schoolgirls. The schoolgirls were not

divided into particular groups according to somatic and physical development.

Analysis of the yearly mean increase in body weight and height reveals that there is a constant increase in both in both groups. The differences of the yearly mean increase, both of body weight and height, are not statistically significant in groups A and B.

The BMI clearly indicates that the mean of each group, i.e. group A and group B, has a proper physique according to the obesity classification (WHO). There is a gradual increase in the results in both groups throughout the research period.

Similar conclusions can be drawn from the physical fitness tests. In each physical fitness test, the group A schoolgirls achieve very similar results to the group B schoolgirls, who show no statistical differences.

In the case of the 60m run, both groups achieve very similar results in each test. The mean results of group A and B, in tests in particular years, show no statistically significant differences ( $t^0 > 2.00$ ).

By analysing the 600m run tests, it can be noticed that the schoolgirls tested achieve better results in all tests during a school year. The result differences between the groups are not statistically significant.

As far as the long jump test results are concerned, it can be noticed that all groups tested make progress in their results, but also that the results of group B are better than those of group A. However, the mean differences in all tests are not significantly significant.

During the palant ball throw test, as was shown earlier, all results are at a similar level

over the course of all years. The mean result differences in group A and B are not statistically significant.

In the last medicine ball throw test, the progress in the results was constant in both groups throughout the whole of secondary grammar school education. All mean results achieved by groups A and B are very similar.

The results of the continuous research conducted from 2012 to 2015 show that the schoolgirls with mild intellectual disabilities achieve similar results to their able-bodied peers. This is reinforced by the fact that there are no statistically significant differences between both groups at a 95% confidence level.

## Conclusions

1. There are no statistically significant differences in somatic development (body weight, body height) of the tested schoolgirls with mild intellectual disabilities and their peers with normal intellectual capacity from the control group.
2. None of the five physical fitness tests showed any statistically significant differences between the schoolgirls with mild intellectual disabilities and the schoolgirls with normal intellectual capacity.

The results obtained indicate that there is a possibility of integrating schoolgirls with this type of dysfunction with able-bodied peers during physical education lessons and school sports competitions. A comparative study including team sports would be very important for school practice.

## BIBLIOGRAPHY

1. Baranowski J., Aktywność fizyczna niepełnosprawnych intelektualnie stopnia lekkiego, Zeszyty Naukowe AWF Katowice 2003, s. 7-14
2. Charaśna – Blachucik J., Blachucik J., Analiza porównawcza cech somatycznych sprawności motorycznej uczniów z niepełnosprawnością intelektualną w stopniu lekkim a uczniami w normie intelektualnej, [w]; pod red. J. Charaśnej - Blachucik przy współpracy Mariusza Migąły, Niepełnosprawność i jej interdyscyplinarność podstawy – badania – wieloaspektowość, OW Politechnika Opolska, Opole 2016 r s. 117
3. Charaśna – Blachucik J., Piechota K., Interdyscyplinarność i transdyscyplinarność w procesie kształcenia w szkole wyższej, Adam Marszałek, Toruń 2015r. s. 205
4. Charaśna-Blachucik J., Współczesna szkoła a kształcenie integracyjne w gimnazjum, w: Nauki społeczne a kształtowanie osobowości, red. L. Sadownicowa, J. Charaśna-Blachucik, Politechnika Opolska, Opole 2015r. s. 113-116
5. Chrzanowska I., Pedagogika specjalna. Od tradycji do współczesności, Impuls, Kraków 2015r. s. 9
6. Dębiny J., Dymorficzne różnice budowy somatycznej i sprawności motorycznej dzieci szkoły wiejskiej, Lider 11/2005r., s. 12-13.
7. Dykcik W., Pedagogika specjalna, Poznań 2003r. s. 137-147.
8. Obuchowska I., Dziecko niepełnosprawne w rodzinie, Warszawa 1995r, s. 199-228.
9. Pańczy J., Poziom rozwoju cech motorycznych uczniów szkół dla lekko upośledzonych umysłowo na tle ich rówieśników ze szkół normalnych, Warszawa 1979r.

10. Sękowska Z., Wprowadzenie do pedagogiki specjalnej, Warszawa 2001r. s. 214-218.
11. Wieczorek M., Sprawność fizyczna młodzieży niepełnosprawnej intelektualnie jako czynnik warunkujący ich zdrowie, *Probl..Hig. Epidemiol* 2008, 89(2): 235-240.

**Received:** August 2016

**Accepted:** November 2016

**Published:** December 2016

## Correspondence

**Justyna Charańska–Blachucik**

Faculty of Physical Education and Physiotherapy at the Opole University of Technology