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TENDENCIES IN ENDURANCE DEVELOPMENT AMONG CHILDREN AND YOUTH FROM EASTERN POLAND

INTRODUCTION

An important issue in children's and young people's biological development of children is controlling changes in their physical abilities. Endurance is one of such basic abilities. The Cooper test is a special research tool measuring aerobic abilities, used for assessment of the body's functioning [6]. For the first time, research on general endurance carried out with the use of the Cooper test in Poland was performed by Raczek [7] in three consecutive decades (1965, 1975, 1985) and on children and young people from Silesia. The research showed negative trends in the development of this important physical condition ability. The first nationwide research carried out with the use of the Cooper test was performed in Poland in 1999 and it became an essential tool in investigating this phenomenon [5].

The results achieved over a longer period of time, however, are of special significance. This paper discusses data concerning endurance dynamics among children and young people from eastern Poland over the last 20 years (1985-2005).

METHODS

The study was carried out in 2005 on 1001 boys and 1062 girls, aged 8-16 from selected administrative districts of the Lubelskie Province in Poland. To assess the children's endurance, the Cooper test was used, i.e. running for a set time of 12 min [4]. The results of the research on the children's and young people's endurance from the previous years had been also taken into consideration [1, 2, 3].

RESULTS

The results achieved with the use of the Cooper test have enabled us to make an assessment of the general endurance level as well as its changes over the last 20 years.

The results of the study show a considerable diversity of endurance results among boys and girls. The girls' endurance develops up to the age of 13 (reaching the distance of 1900 m) and remains at that level in the following years of life (Table 1).

The boys' endurance is, however, characterized by a steady dynamics up to the age of 16, and reaches the distance of 2400 meters. The difference between boys and girls is less noticeable at the age of 11, and amounts to 150-200 m in boys' favour. In the following years the boys achieved better results than the girls in the range of 250-500 m (Table 1).

To assess the subjects' general endurance, their results were compared with the national standards [6]. A comparative analysis of the girls' endurance shows its similar level to the national standards in the range of several dozen meters, but in some age groups the results were the slightly different. A greater difference can be noted only in the group of 10-11-year-old subjects (Table 2).

The level of boys' endurance is also similar to the results of the national research, only slightly higher. The distance covered by the group of 10-11-year-olds was a bit longer in the national research (Table 3).

Generally, we can state that the current level of endurance among boys as well as girls from the eastern parts of Poland corresponds to the average national standards.

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Table 1. General endurance (running for 12 min) of children from eastern Poland (in meters)

Girls			Age	Boys			Difference
X	SD	N		X	SD	N	
1486	298	105	8	1632	301	102	–146
1560	284	104	9	1761	310	103	–201
1617	295	105	10	1852	306	106	–235
1699	318	116	11	1903	362	112	–204
1833	311	117	12	2087	351	109	–254
1924	328	122	13	2194	376	118	–270
1913	332	139	14	2275	372	124	–362
1907	327	121	15	2372	401	110	–465
1922	343	132	16	2406	409	116	–484

Table 2. Results of the Cooper test among girls compared with the national standards (in meters)

Age	Region	Country	Difference
8	1486	1491	–5
9	1560	1579	–19
10	1617	1673	–56
11	1699	1792	–93
12	1833	1844	–11
13	1924	1918	6
14	1913	1937	–24
15	1907	1925	–18
16	1922	1915	7

Table 3. Results of the Cooper test among boys compared with the national standards (in meters)

Age	Region	Country	Difference
8	1632	1612	20
9	1761	1740	21
10	1802	1863	–61
11	1903	1994	–91
12	2097	2080	17
13	2194	2163	31
14	2275	2250	25
15	2372	2355	17
16	2406	2411	–5

A long-term research is of great value because it enables to define the existing developmental tendencies. Unfortunately, the children's endurance level has deteriorated over the last 20 years. This difference among girls is about 100-200 m in particular age groups (Table 4).

Table 4. Trends in endurance development in girls from eastern Poland (1985-2005) (in meters)

Age	Research from 1985	Research from 2005	Difference
8	1674	1496	–178
9	1741	1560	–181
10	1821	1617	–204
11	1919	1699	–220
12	2043	1833	–210
13	2045	1924	–121
14	2071	1913	–158
15	2007	1907	–100
16	1985	1922	–63

Table 5. Trends in endurance development in boys from eastern Poland (1985-2005) (in meters)

Age	Research from 1985	Research from 2005	Difference
8	1762	1632	–130
9	1849	1761	–88
10	1943	1802	–141
11	2209	1903	–306
12	2366	2087	–279
13	2428	2194	–234
14	2565	2275	–290
15	2485	2372	–113
16	2541	2406	–135

The difference in boys' endurance is even greater and amounts to about 100-300 m (Table 5). It is beyond question that – although the endurance among children from the Lubelskie Province is similar to the average national standards – it has deteriorated over the last 20 years. Thus, we can concur with the opinion of most

theorists and practitioners of physical education on the unsatisfactory state of physical endurance of children in Poland.

Conclusions

1. The endurance level of girls under study increased up to the age of 13, and the endurance level of boys increased up to the age of 16.
2. The level of endurance among boys and girls under study corresponds to the average national standards.
3. Alarming deterioration trends in the level of endurance among boys and girls from the eastern parts of the country can be observed.
4. It can be concluded that the deterioration of general endurance level is accompanied by the worse functioning of the body.

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