

Students' attitudes towards physical culture, physical education classes and exercises

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Original article

Abstract

Introduction: The notion of the attitude towards physical culture covers many terms with narrower meanings. A more precisely defined meaning includes all its various elements such as the attitude towards one's body, its physique, hygiene, fitness, various forms of rest and activity, etc. The aim of the research was to define the attitudes of youngsters graduating from secondary schools towards physical culture, physical education lessons and exercises.

Material and methods: The research covered the senior year students from Tarnów who attended grammar schools, secondary technical schools and first degree vocational schools. The survey covered 751 students, 413 (55.0%) males and 338 (45.0%) females. The basic research method was a diagnostic survey. In order to obtain the necessary data which served to verify the hypotheses a survey technique was used with the following research tool: Questionnaire for testing the attitudes of young people towards physical culture S. Strzyżewski's.

Results: As the research showed each index of students' attitudes towards physical culture was at the medium level, and the values ranged from 2.06 to 2.55 points. The average value of the global index of attitude amounted to 2.28 points. The highest result regarded the cognitive component (2.55), and the lowest average value was recorded in the case of the behavioural component (2.06). The greatest diversity of data was noticed in the behavioural component. Males obtained higher average values of the tested indices of attitudes than females.

Conclusions: The obtained data show that the attitudes towards physical culture among the surveyed youngsters are shaped at a satisfying, although medium, level. The surveyed males obtained higher values both in individual components of the attitude and the global index. Secondary technical school students dominated over the other types of school.

Keywords

- student attitudes
- lesson
- exercises
- physical culture

Contribution

- A – the preparation of the research project
- B – the assembly of data for the research undertaken
- C – the conducting of statistical analysis
- D – interpretation of results
- E – manuscript preparation
- F – literature review
- G – revising the manuscript

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Introduction

The notion of the attitude towards physical culture covers many terms with narrower meanings. A more precisely defined meaning includes all its various elements such as the attitude towards one's body, its physique, hygiene, fitness, various forms of rest and activity, etc. The attitude towards a widely understood physical culture is determined by external and internal factors.¹ The biological (internal) factors include mainly motor skills, whereas the environmental (external) factors cover the influence of peer group, family or school.²

At the first stage of education in particular most children still remain under the educational influence of their parents. The smallest social group, i.e. a family, recognizes certain norms, attitudes and values, which are realized with both direct and indirect methods and techniques.³ The process of interaction between parents and children is recognized both in pedagogy and psychology.^{4,5} It was empirically proved that parents have a considerable educational impact on their children, and as a result children identify their attitudes with those of their parents'.⁶ It is believed that the first initiation with physical activity occurs in the family environment, which is particularly true among the parents of ex-athletes.⁷ Therefore, the values regarding physical culture recognized within a family will definitely foster shaping a proper emotional attitude towards physical activity, forms of active leisure time, physical education lessons, health, etc.⁸ Moreover, the stimulation of children by parents and parents by children fosters the sport and family atmosphere and constitutes a model to follow.⁹

Over the years the influence of family gradually decreases.¹⁰ On the other hand, the impact of school on student personality is possible, however it needs to be noted that the said process is long and often complicated.^{11,12}

Shaping attitudes towards effort, health, lessons, motor activity, etc. has become an obligatory aim of physical education [13]. It is fostered by lessons as well as a specific relation between the teacher and the student.^{14,15,16} It is particularly important in secondary schools, which for some students are the last stage of education.

What determines the results of the said tasks is the empathetic attitude of the teacher, which facilitates getting to know students' needs. "Teachers with great empathy are sensitive to student psychological needs [...]",¹⁷ and thanks to this personality trait they can have an impact on students' emotions during a lesson.¹⁸ Empathy, trust, competence, passion, social status or the teacher's attractiveness and fitness make him/her an authority for the students as well as a role model to follow.²⁰⁻²¹

Emotions are considered to be a strong motivator for activity, also during physical education lessons, which direct the physical activity of children and youngsters.²²⁻²⁴

Students' attitudes towards physical culture (motor activity, rest, psychophysical condition, etc.) when properly shaped determine their care for health also when the family or school influence is over.

The aim of the research

The aim of the research was to define the attitudes of youngsters graduating from secondary schools towards physical culture, physical education lessons and exercises.

Research questions

The research aimed at providing answers to the following questions:

1. What is the level of the attitudes of youngsters graduating from secondary schools towards physical culture, physical education lessons and exercises?
2. What is the level of physical culture in its individual components?
3. Is there any correlation between the tested variables and the students' gender and the type of school they attend?

Research methods and tools

The basic research method was a diagnostic survey. In order to obtain the necessary data which served to verify the hypotheses a survey technique was used with the following research tool:

Questionnaire for testing the attitudes of young people towards physical culture

S. Strzyżewski's questionnaire for testing the attitudes of young people towards physical culture included 67 questions and was used to define the attitudes of the responders towards physical culture in terms of three components: cognitive (CC) – 26 questions, emotional (EC) – 21 questions and behavioural (BC) – 20 questions. The students participating in the test were supposed to answer questions using the 5-point Likert scale. The answers scored from 0 to 4 points:

- strongly agree – 4 points;
- agree – 3 points;
- neither agree nor disagree – 2 points;
- disagree – 1 point;
- strongly disagree – 0 points.

The questionnaire also included 20 questions with the reversed scoring. In order to calculate the index value of a specific component one needed to divide the sum of the points scored by the number of questions. The sum of all the points obtained in individual components served to calculate the global index (GI) of attitudes towards physical culture according to the formula:

$$\text{Global index (GI)} = \frac{CC + EC + BC}{67}$$

The calculated global index defined the level of attitudes. Three intervals (levels) were established:

- GI low – from 0 to 1.3;
- GI medium – from 1.3 to 2.6;
- GI high – from 2.7 to 4.0.

Organisation of research and characteristics of the tested population

The research covered the senior year students from Tarnów who attended grammar schools, secondary technical schools and first degree vocational schools.

At the first stage of research, which took place in September and November 2016, Department of Education in Tarnów Municipal Office was requested for an updated list of schools in Tarnów. On obtaining a complete list of schools, 26 secondary schools were focused on. At this stage Vocational and Further Education Centre as well as Musical School Complex were rejected because of a small number of students. The remaining 24 schools were qualified for a draw and with the use of random number tables 9 (38%) schools were selected, 4 (30.8%) of them were grammar schools (GS), 3 (37.5%) secondary technical schools (T) and 2 (40%) first degree vocational schools (VS).

The heads of the selected schools were asked in written to give permission for participating in the research. After the presentation of the project all the school heads agreed to participate, however, with the objection concerning revealing complete personal data by students. Then, class teachers and physical education teachers were contacted directly in order to be presented the assumptions of the research and to collect lists of students and timetables from them.

The second stage of research took place from December 2016 to the end of March 2017. The dates were carefully chosen to minimize the disturbances in teaching at grammar schools and secondary technical schools considering the maturity and vocational examinations.

The said stage covered surveys, which were administered in the way that ensured similar conditions to all students while answering questions. The surveys took place in classrooms during form tutor periods. The students absent during the survey were tested on another day following the same principles.

The survey covered 751 students, 413 (55.0%) males and 338 (45.0%) females. The detailed data are presented in Table 1.

Table 1. Gender of the surveyed students and type of school they attended

| Type of school | Responders' gender | | | | | |
|-----------------------------|--------------------|------|-----|------|-------|-----|
| | M | | F | | Total | |
| | N | % | N | % | N | % |
| Grammar schools | 168 | 37.7 | 278 | 62.3 | 446 | 100 |
| Secondary technical schools | 207 | 84.8 | 37 | 15.2 | 244 | 100 |
| Vocational schools | 38 | 62.3 | 23 | 37.7 | 61 | 100 |
| Total | 413 | 55.0 | 338 | 45.0 | 751 | 100 |

Methods of research results statistical analysis

The collected research material was statistically analysed with regard to the research questions posed earlier. The following techniques were used:

1. In order to characterize the tested groups percentage distributions were used (in case of ordinal variables) or descriptive statistics such as: minimum, maximum, average, median, mode, standard deviation, variation coefficient.
2. The significance of differences between two groups for quantitative variables was tested with the use of Student t-test. When the data were not described with normal distribution a non-parametric equivalent of Student *t*-test was used, namely Mann-Whitney U test.
3. In order to check the significance of differences for quantitative variables variance analysis (ANOVA) was used. If a statistically significant result was obtained, post hoc tests were administered in order to establish which group pairs are significantly differential. For groups with non-uniform variances Tamhane's test was used in the research. When the assumptions of ANOVA

test were not met, its non-parametric equivalent – Kruskal-Wallis test was used.

- The statistical significance level was established as $\alpha = 0.05$, distinguishing as well statistically significant results for the levels $\alpha = 0.01$ and $\alpha = 0.001$. The p values indicating a statistically significant result were displayed in bold.

Results

As the research showed each index of students' attitudes towards physical culture was at the medium level,

and the values ranged from 2.06 to 2.55 points. The average value of the global index of attitude amounted to 2.28 points. The highest result regarded the cognitive component (2.55), and the lowest average value was recorded in the case of the behavioural component (2.06). The greatest diversity of data was noticed in the behavioural component (Table 2).

The gender-based result analysis revealed statistically significant differences in each component of the attitude (Table 3). For the cognitive component: $p < 0.01$, and for the emotional and behavioural components as well as the global index: $p < 0.001$. Males obtained higher average values of the tested indices of attitudes than females.

Table 2. Class intervals and statistical values of individual components and the global index of attitudes towards physical culture

| Class intervals | N | CC | | EC | | BC | | GI | |
|--------------------|----------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|
| | | N | % | N | % | N | % | N | % |
| 1 | 0.25–0.5 | 0 | 0.0 | 0 | 0.0 | 5 | 0.7 | 1 | 0.1 |
| 2 | 0.5–0.75 | 0 | 0.0 | 4 | 0.5 | 1 | 0.1 | 1 | 0.1 |
| 3 | 0.75–1 | 1 | 0.1 | 6 | 0.8 | 14 | 1.9 | 2 | 0.3 |
| 4 | 1–1.25 | 2 | 0.3 | 13 | 1.7 | 32 | 4.3 | 9 | 1.2 |
| 5 | 1.25–1.5 | 10 | 1.4 | 28 | 3.7 | 63 | 8.4 | 19 | 2.5 |
| 6 | 1.5–1.75 | 11 | 1.6 | 64 | 8.5 | 103 | 13.8 | 43 | 5.7 |
| 7 | 1.75–2 | 45 | 5.9 | 129 | 17.2 | 122 | 16.3 | 92 | 12.4 |
| 8 | 2–2.25 | 87 | 11.6 | 138 | 18.4 | 155 | 20.6 | 173 | 23.0 |
| 9 | 2.25–2.5 | 180 | 23.9 | 145 | 19.3 | 123 | 16.4 | 187 | 24.9 |
| 10 | 2.5–2.75 | 195 | 25.9 | 123 | 16.4 | 76 | 10.1 | 140 | 18.6 |
| 11 | 2.75–3 | 138 | 18.4 | 69 | 9.2 | 31 | 4.1 | 56 | 7.5 |
| 12 | 3–3.25 | 56 | 7.5 | 25 | 3.3 | 16 | 2.1 | 19 | 2.5 |
| 13 | 3.25–3.5 | 22 | 2.9 | 5 | 0.7 | 8 | 1.0 | 8 | 1.1 |
| 14 | 3.5–3.75 | 3 | 0.4 | 2 | 0.3 | 1 | 0.1 | 1 | 0.1 |
| 15 | 3.75–4.0 | 1 | 0.1 | 0 | 0.0 | 1 | 0.1 | 0 | 0.0 |
| Total | | 751 | 100 | 751 | 100 | 751 | 100 | 751 | 100 |
| Maximum value | | 4.00 | | 3.57 | | 3.80 | | 3.62 | |
| Minimum value | | 0.77 | | 0.52 | | 0.10 | | 0.50 | |
| Average | | 2.55 | | 2.23 | | 2.06 | | 2.28 | |
| Standard deviation | | 0.40 | | 0.48 | | 0.53 | | 0.43 | |
| Median | | 2.58 | | 2.24 | | 2.10 | | 2.30 | |
| Mode | | 2.73 | | 2.33 | | 2.15 | | Multiple | |

Table 3. Gender-based record of average values of responders' attitudes towards physical culture

| Index of attitude towards physical culture | \bar{x} | | SD | | <i>t</i> | <i>p</i> |
|--|--------------------|------|------|------|----------|----------|
| | Responders' gender | | | | | |
| | M | F | M | F | | |
| Cognitive component | 2.59 | 2.50 | 0.41 | 0.39 | 2.78 | 0.006 |
| Emotional component | 2.33 | 2.10 | 0.45 | 0.48 | 6.73 | <0.001 |
| Behavioural component | 2.16 | 1.94 | 0.53 | 0.51 | 5.95 | <0.001 |
| Global index | 2.36 | 2.18 | 0.42 | 0.41 | 5.89 | <0.001 |

Note: *t* – Student *t*-test.

As far as the type of school is concerned, statistically significant differentiation of results appeared only in the emotional component between the tested grammar school students (2.19 ±0.49) and secondary technical school students (2.30 ±0.49). It should be emphasised that secondary technical school students obtained the highest results in individual components and the global index (Table 4).

Detailed analysis of the level of students' attitude towards physical culture (Table 5) revealed that the highest percentage of the responders was placed in the medium level interval, both in the case of the cognitive (52.9%), emotional (74.4%) and behavioural (74.4%) component and the global index (76.6%).

Table 4. Type of school based record of average values of responders' attitudes towards physical culture

| Index of attitudes towards physical culture | \bar{x} | | | SD | | | <i>F</i> | <i>p</i> | T2 |
|---|----------------|------|------|------|------|------|----------|----------|------|
| | Type of school | | | | | | | | |
| | GS | T | VS | GS | T | VS | | | |
| Cognitive component | 2.55 | 2.57 | 2.47 | 0.40 | 0.44 | 0.31 | 2.18 | 0.116 | |
| Emotional component | 2.19 | 2.30 | 2.19 | 0.49 | 0.49 | 0.32 | 3.90 | 0.022 | GS-T |
| Behavioural component | 2.03 | 2.12 | 2.06 | 0.53 | 0.55 | 0.48 | 1.80 | 0.169 | |
| Global index | 2.26 | 2.33 | 2.24 | 0.42 | 0.45 | 0.32 | 2.36 | 0.097 | |

Table 5. Gender-based level of attitudes towards physical culture and statistical values of individual components and the global index

| Responders' gender | Level of attitudes | Statistical values of individual components and the global index | | | | | | | |
|--------------------|--------------------|--|------|-----|------|-----|------|-----|------|
| | | CC | | EC | | BC | | GI | |
| | | N | % | N | % | N | % | N | % |
| F | Low | 3 | 0.9 | 19 | 5.6 | 35 | 10.4 | 10 | 2.9 |
| | Medium | 195 | 57.7 | 275 | 81.4 | 272 | 80.5 | 287 | 84.9 |
| | High | 140 | 41.4 | 44 | 13.0 | 31 | 9.1 | 41 | 12.2 |
| M | Low | 2 | 0.5 | 7 | 1.7 | 29 | 7.0 | 7 | 1.7 |
| | Medium | 202 | 48.9 | 284 | 68.8 | 309 | 74.8 | 288 | 69.7 |
| | High | 209 | 50.6 | 122 | 29.5 | 75 | 18.2 | 118 | 28.6 |
| Total | Low | 5 | 0.7 | 26 | 3.5 | 64 | 8.5 | 17 | 2.3 |
| | Medium | 397 | 52.9 | 559 | 74.4 | 581 | 77.4 | 575 | 76.6 |
| | High | 349 | 46.4 | 166 | 22.1 | 106 | 14.1 | 159 | 21.1 |

Note: Chi-squares of each category analysed separately:

CC: $\chi^2(2) = 6.54; p = 0.038$

EC: $\chi^2(2) = 35.19; p < 0.001$

BC: $\chi^2(2) = 13.83; p = 0.001$

GI: $\chi^2(2) = 30.64; p < 0.001$.

Statistically significant differences at the level $p < 0.001$ and $p < 0.05$ were observed between individual indices and gender. Males obtained higher values than females in the high level of attitude interval. On the other hand, females obtained higher values in the medium and low interval.

On the basis of the results presented in Table 6 it was found that in some components there were statistically significant differences between the type of school and the level of attitudes. They regarded the

cognitive component ($p < 0.05$), emotional component ($p < 0.001$) as well as the global index ($p < 0.05$). In each type of school the higher percentage values were visible in the interval of the medium level of attitudes towards physical culture. Secondary technical school students more frequently presented a high level of attitudes. Among vocational school students not a single case was recorded in the interval of low level of attitudes, with the exception of the behavioural component.

Table 6. School type based level of attitudes towards physical culture and statistical values of individual components and the global index

| Type of school | Level of attitudes | Statistical values of individual components and the global index | | | | | | | |
|----------------|--------------------|--|------|-----|------|-----|------|-----|------|
| | | CC | | EC | | BC | | GI | |
| | | N | % | N | % | N | % | N | % |
| GS | Low | 3 | 0.7 | 21 | 4.7 | 42 | 9.4 | 11 | 2.5 |
| | Medium | 235 | 52.7 | 335 | 75.1 | 346 | 77.6 | 348 | 78.0 |
| | High | 208 | 46.6 | 90 | 20.2 | 58 | 13.0 | 87 | 19.5 |
| T | Low | 2 | 0.8 | 5 | 2.1 | 19 | 7.8 | 6 | 2.5 |
| | Medium | 118 | 48.4 | 167 | 68.4 | 185 | 75.8 | 172 | 70.5 |
| | High | 124 | 50.8 | 72 | 29.5 | 40 | 16.4 | 66 | 27.0 |
| VS | Low | 0 | 0.0 | 0 | 0.0 | 3 | 4.9 | 0 | 0.0 |
| | Medium | 44 | 72.1 | 57 | 93.4 | 50 | 81.9 | 55 | 90.2 |
| | High | 17 | 27.9 | 4 | 6.6 | 8 | 13.2 | 6 | 9.8 |

Note: Chi-squares of each category analysed separately:

CC: $\chi^2(4) = 11.25$; $p = 0.024$

EC: $\chi^2(4) = 23.15$; $p < 0.001$

BC: $\chi^2(4) = 3.08$; $p = 0.545$

GI: $\chi^2(4) = 12.54$; $p = 0.014$.

The students also answered questions concerning physical education lessons (Table 7). As the research shows males in comparison to females would be more willing to attend physical education lessons even if they were not obligatory, and what is more they are less bored during PE lessons and more often feel pleasure while participating in them. When they are healthy they always participate in PE lessons. The gender-based differentiation of the analysed results proved to be statistically significant at the ($p < 0.001$) level.

As far as the type of school is concerned secondary technical school students best perceived physical education lessons (Table 8) obtaining the highest average value of attitudes in three questions (9, 11, 65). Statistically significant differences at the $p < 0.05$ level appeared between secondary technical school and grammar school students in answers to question 11: Do you feel pleasure when you participate in a PE lesson? The best score was obtained by secondary technical school students (2.50 ± 1.08) and the worst by those who attended grammar schools (2.19 ± 1.15).

Table 7. Gender-based detailed analysis of answers to questions regarding physical education lessons

| Question category | \bar{x} | | SD | | Medians | | U | p |
|-------------------|--------------------|------|------|------|---------|------|----------|--------|
| | Responders' gender | | | | | | | |
| | F | M | F | M | F | M | | |
| Question 9 | 2.25 | 2.65 | 1.12 | 1.17 | 2.00 | 3.00 | 54845.00 | <0.001 |
| Question 10 | 2.09 | 2.47 | 1.20 | 1.25 | 2.00 | 3.00 | 57077.50 | <0.001 |
| Question 11 | 2.03 | 2.53 | 1.09 | 1.10 | 2.00 | 3.00 | 51864.50 | <0.001 |
| Question 65 | 2.22 | 2.64 | 1.29 | 1.19 | 3.00 | 3.00 | 57214.00 | <0.001 |

Note: U – Mann-Whitney U test.

Legend:

Question 9: Would you participate in PE lessons if they were not obligatory?

Question 10: Are you bored with PE lessons?

Question 11: Do you feel pleasure while participating in PE lessons?

Question 65: When you are healthy do you always attend PE lessons?

Table 8. School type based detailed analysis of answers to questions regarding physical education lessons

| Question category | Type of school | \bar{x} | SD | Medians | H | p | T2 |
|-------------------|----------------|-----------|------|---------|-------|-------|------|
| Question 9 | GS | 2.39 | 1.17 | 3.00 | 5.54 | 0.063 | - |
| | T | 2.59 | 1.16 | 3.00 | | | |
| | VS | 2.52 | 1.06 | 3.00 | | | |
| Question 10 | GS | 2.22 | 1.24 | 3.00 | 4.83 | 0.089 | - |
| | T | 2.41 | 1.25 | 3.00 | | | |
| | VS | 2.41 | 1.22 | 3.00 | | | |
| Question 11 | GS | 2.19 | 1.15 | 2.00 | 11.83 | 0.003 | GS-T |
| | T | 2.50 | 1.08 | 3.00 | | | |
| | VS | 2.36 | 1.05 | 3.00 | | | |
| Question 65 | GS | 2.43 | 1.30 | 3.00 | 1.86 | 0.395 | - |
| | T | 2.52 | 1.19 | 3.00 | | | |
| | VS | 2.31 | 1.18 | 3.00 | | | |

Note: H – Kruskal-Wallis test.

Legend:

Question 9: Would you participate in PE lessons if they were not obligatory?

Question 10: Are you bored with PE lessons?

Question 11: Do you feel pleasure while participating in PE lessons?

Question 65: When you are healthy do you always attend PE lessons?

Students' answers to questions regarding motor exercises were more varied (Table 9). Males more frequently than females took pleasure in physical exercises despite being tired ($M - 2.97 \pm 1.06$; $F - 2.61 \pm 1.15$) and they were less bored exercising ($M - 2.65 \pm 0.97$; $F - 2.53 \pm 0.97$). Most males felt an inner need to play ball games ($M - 2.51 \pm 1.29$, $F - 1.78 \pm 1.28$) and found it necessary to increase the number of PE lessons ($M - 2.00 \pm 1.27$; $F - 1.43 \pm 1.19$), and they would be satisfied

with this fact ($M - 2.36 \pm 1.27$; $F - 1.59 \pm 1.28$). Generally, physical exercises provided more pleasure to males than to females ($M - 2.99 \pm 1.00$; $F - 2.73 \pm 1.12$). On the other hand, most female students believe that in team games the result is more important than pleasure ($F - 2.54 \pm 1.05$; $M - 2.15 \pm 1.18$). Statistically significant differences were recorded in answers to questions: 5, 41, 46, 63, and 64 ($p < 0.001$) as well as 67 ($p < 0.01$).

Table 9. Gender-based detailed analysis of answers to questions regarding motor activities

| Question category | \bar{x} | | SD | | Medians | | U | p |
|-------------------|--------------------|------|------|------|---------|------|----------|--------|
| | Responders' gender | | | | F | M | | |
| | F | M | F | M | | | | |
| Question 5 | 2.61 | 2.97 | 1.15 | 1.06 | 3.00 | 3.00 | 56414.50 | <0.001 |
| Question 14 | 2.53 | 2.65 | 0.97 | 0.97 | 3.00 | 3.00 | 65341.00 | 0.093 |
| Question 41 | 1.78 | 2.51 | 1.28 | 1.29 | 2.00 | 3.00 | 48064.50 | <0.001 |
| Question 46 | 2.54 | 2.15 | 1.05 | 1.18 | 3.00 | 2.00 | 56911.50 | <0.001 |
| Question 63 | 1.43 | 2.00 | 1.19 | 1.27 | 1.00 | 2.00 | 52214.50 | <0.001 |
| Question 64 | 1.59 | 2.36 | 1.28 | 1.27 | 1.00 | 3.00 | 46707.00 | <0.001 |
| Question 67 | 2.73 | 2.99 | 1.12 | 1.00 | 3.00 | 3.00 | 61075.50 | 0.002 |

Note: U – Mann-Whitney U test.

Legend:

Question 5: Do you feel pleasure during physical exercises despite being tired?

Question 14: Are you usually bored with motor exercises?

Question 41: When you see a ball do you feel an inner need to play it?

Question 46: When you take part in a game what is more important for you the result or the pleasure of participating in it?

Question 63: Do you think that increasing the number of PE lessons at school is necessary?

Question 64: Would you be happy if the number of PE lessons at school was increased?

Question 67: Do you take pleasure in physical exercises?

The type of school based analysis of the responders' answers regarding motor exercises (Table 10) showed that secondary technical school students took more pleasure in physical exercises despite being tired (2.92 ± 1.05), were less bored doing them (2.65 ± 0.95), seeing a ball felt a need for playing (2.40 ± 1.28), which they did not perceive in terms of the result but pleasure (2.34 ± 1.15). Most secondary technical school students would also be content if the number of PE lessons was increased, however, most vocational school students stood for the necessity to increase the number of physical education lessons as well (1.98 ± 1.13). In case of

question 67: Do physical exercises give you pleasure? the highest values were recorded among grammar school students (2.92 ± 1.05). Statistically significant differences were visible in the answers to four questions: 41 and 63 ($p < 0.01$) between GS-T, 64 ($p < 0.05$) between GS-T and 67 ($p < 0.05$) between GS-VS.

The component which obtained the highest average value among the tested students was the cognitive component (2.55 ± 0.40). The lowest value was recorded in the behavioural component (2.06 ± 0.53). The global index of student attitudes towards physical culture amounted to 2.28 ± 0.43 , which means the medium level (Table 11).

Table 10. School type based detailed analysis of answers to questions regarding motor activities

| Question category | Type of school | \bar{x} | SD | Medians | <i>H</i> | <i>p</i> | T2 |
|-------------------|----------------|-----------|------|---------|----------|----------|-------|
| Question 5 | GS | 2.75 | 1,16 | 3.00 | 3.14 | 0.208 | - |
| | T | 2.91 | 1,07 | 3.00 | | | |
| | VS | 2.84 | 0,99 | 3.00 | | | |
| Question 14 | GS | 2.57 | 0,98 | 3.00 | 0.92 | 0.631 | - |
| | T | 2.65 | 0,95 | 3.00 | | | |
| | VS | 2.59 | 0,96 | 3.00 | | | |
| Question 41 | GS | 2.06 | 1,37 | 2.00 | 9.46 | 0.009 | GS-T |
| | T | 2.40 | 1,28 | 3.00 | | | |
| | VS | 2.20 | 1,18 | 2.00 | | | |
| Question 46 | GS | 2.32 | 1,15 | 3.00 | 0.25 | 0.882 | - |
| | T | 2.34 | 1,15 | 3.00 | | | |
| | VS | 2.31 | 1,06 | 2.00 | | | |
| Question 63 | GS | 1.62 | 1,27 | 1.00 | 10.84 | 0.004 | GS-T |
| | T | 1.91 | 1,28 | 2.00 | | | |
| | VS | 1.98 | 1,13 | 2.00 | | | |
| Question 64 | GS | 1.90 | 1,35 | 2.00 | 7.69 | 0.021 | GS-T |
| | T | 2.18 | 1,29 | 2.00 | | | |
| | VS | 2.15 | 1,22 | 2.00 | | | |
| Question 67 | GS | 2.92 | 1,05 | 3.00 | 8.88 | 0.012 | GS-VS |
| | T | 2.87 | 1,09 | 3.00 | | | |
| | VS | 2.56 | 1,03 | 3.00 | | | |

Note: *H* – Kruskal-Wallis test

Legend:

Question 5: Do you feel pleasure during physical exercises despite being tired?

Question 14: Are you usually bored with motor exercises?

Question 41: When you see a ball do you feel an inner need to play it?

Question 46: When you take part in a game what is more important for you the result or the pleasure of participating in it?

Question 63: Do you think that increasing the number of PE lessons at school is necessary?

Question 64: Would you be happy if the number of PE lessons at school was increased?

Question 67: Do you take pleasure in physical exercises?

Table 11. Record of the average values and standard deviations on the basis of individual indices of attitudes towards physical culture

| Indices of attitudes towards physical culture | \bar{x} | SD |
|---|-----------|------|
| Cognitive component | 2.55 | 0.40 |
| Emotional component | 2.23 | 0.48 |
| Behavioural component | 2.06 | 0.53 |
| Global index | 2.28 | 0.43 |

Gender-based analysis of the results of individual indices of attitudes towards physical culture (Table 12) revealed statistically significant differences at the $p < 0.001$ and $p < 0.01$ level in each case. Higher average values were recorded among males than females.

On the basis of the data placed in table 13 it was found that secondary technical school students presented a higher level of attitudes towards physical culture in each index in comparison to the responders from the other types of school. Statistically significant differentiation regarded only the index of the emotional component ($p < 0.05$) between grammar school students (2.19 ± 0.49) and secondary technical school students (2.30 ± 0.49).

Table 12. Record of gender differences on the basis of individual indices of attitudes towards physical culture

| Indices of attitudes towards physical culture | \bar{x} | | SD | | <i>t</i> | <i>p</i> |
|---|--------------------|------|------|------|----------|------------------|
| | Responders' gender | | | | | |
| | F | M | F | M | | |
| Cognitive component | 2.50 | 2.59 | 0.39 | 0.41 | -2.78 | 0.006 |
| Emotional component | 2.10 | 2.33 | 0.48 | 0.45 | -6.73 | <0.001 |
| Behavioural component | 1.94 | 2.16 | 0.51 | 0.53 | -5.95 | <0.001 |
| Global index | 2.18 | 2.36 | 0.41 | 0.42 | -5.89 | <0.001 |

Table 13. Record of differences between different types of school on the basis of individual indices of attitudes towards physical culture

| Indices of attitudes towards physical culture | \bar{x} | | SD | | | | <i>F</i> | <i>p</i> | T2 |
|---|----------------|------|------|------|------|------|----------|--------------|------|
| | Type of school | | | | | | | | |
| | GS | T | VS | T | GS | VS | | | |
| Cognitive component | 2.55 | 2.57 | 2.47 | 0.40 | 0.44 | 0.31 | 1.53 | 0.218 | - |
| Emotional component | 2.19 | 2.30 | 2.19 | 0.49 | 0.49 | 0.32 | 3.84 | 0.022 | GS-T |
| Behavioural component | 2.03 | 2.12 | 2.06 | 0.53 | 0.55 | 0.48 | 1.88 | 0.153 | - |
| Global index | 2.26 | 2.33 | 2.24 | 0.42 | 0.45 | 0.32 | 2.39 | 0.092 | - |

Note: T2 – post-hoc Tamhane's T2 test.

Summary and conclusions

The society which is not indifferent to public health should pay more attention to school physical education. It results from the fact that apart from achieving operational and instrumental aims, physical education lessons are a proper place for forming lifelong attitudes towards one's body and its needs.²⁵ The shaping of attitudes towards a widely understood health is particularly important from the perspective of school practice as it concerns young people who start forming their system of values, beliefs and habits. A significant role in this process is played by a teacher and a favourable atmosphere of physical education lessons.

This work tries to answer the questions concerning the level of attitudes towards physical culture, physical education lessons and exercises included, presented by senior year secondary schools students. In search for the answers to the said questions S. Strzyżewski's questionnaire for testing attitudes of children and youngsters towards physical culture was used.

The results in these areas can be recognized as satisfying. As far as the attitudes towards physical culture

are concerned, the tested males obtained higher values both in individual components and the global index. Concerning the type of school, secondary technical school students presented the highest average values in each component of the attitudes towards physical culture. For the cognitive and global index the lowest values were recorded among first degree vocational school students, whereas the lowest behavioural index was recorded among grammar school students.

A similar distribution of the analysed components and the final assessment of the attitude towards physical culture was reported in the research done by K. Górna,²⁶ E. Madejski et al.,²⁷ and A. Gądek.²⁸

As far as the attitudes towards physical education lessons are concerned the general results of students' opinions can be regarded as optimistic. For females the emotional value was more significant. Males, however, attached more importance to the level of intensity during class, which could influence their stimulation (activity dimension). While analysing the results it was noticed that for grammar school students physical education lessons had a less positive value than for their peers from secondary technical schools. However, in

both groups positive attitudes dominated. The value of positive emotions experienced during physical education lessons and their importance were also emphasised by other authors.^{29,30}

As mentioned before the satisfaction from the participation in PE lessons is an important factor in forming positive attitudes towards physical education. While analysing the obtained results in terms of valuation it was noticed that a low level of emotional value was most characteristic of male students from grammar schools. The reason for this phenomenon may lie in inadequate organisation of lessons and maladjustment of the programme content to student interests. It is worth noting that adequate organisational changes in the course of the lesson have a positive impact on student attitudes and the effectiveness of classes.³¹ The quality of physical education lessons contributes to undertaking physical activity later in adult life.^{32,33,34}

Considering the results of the research and taking into account the research questions posed earlier, the following conclusions were formulated:

1. The obtained data show that the attitudes towards physical culture among the surveyed youngsters are shaped at a satisfying, although medium, level. The surveyed males obtained higher values both in individual components of the attitude and the global index.
2. Secondary technical school students dominated over the other types of school.
3. Practical implication: during physical education lesson it is not only important to achieve short-term goals but long-term goals should be a priority as well. What is particularly important is forming adequate attitudes towards widely understood physical culture among female students and first degree vocational school students, since the results were the lowest in the said groups.

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