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THE EFFECT OF PARENT'S ATTITUDES ON THE LEADERSHIP BEHAVIORS OF STUDENTS AT THE FACULTY OF SPORT SCIENCES

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Abstract

The aim of this study is to explore the effect of parental attitudes of students at the Faculty of Sports Sciences on their leadership behaviors.

For data collection, two instruments were used in the current study to explore the leadership behaviors of students and their parental attitudes. These were: 'The Leadership Behavior Scale' which was developed by Hemphill and Coons [8] and adapted into Turkish by Önal [10] and 'The Parental Attitude Scale' which was developed by Kuzgun and Eldeklioğlu [9]. These questionnaires were administered to a total of 590 students consisting of 376 male and 214 female students. For data analysis, the SPSS statistical packet program was used for frequency analysis, and independent t-tests, one-way ANOVA and Tukey test were run to find out the source of the difference among different groups of participants. In addition, correlation analysis was performed to reveal the relationship between the students' leadership behaviors and parental attitudes.

The findings of the study showed that there was a statistically significant positive correlation between parental attitudes and leadership behaviors of the participants.

Based on this finding, it was revealed that the more the parental attitudes of the participants increased, the more the students' leadership behaviors increased.

Key words: *Parental Attitude, Leadership Behavior, Sports, Physical Education.*

Introduction

Attitude is a kind of behavior which is formed in response to a particular situation faced by an individual and which has its origins in psychology and is related to the personality of the individual [11]. The importance of family education in the development of the individual and its impact on attitude are recognised by all scientists and explained from different perspectives. Cüceloglu [5] explains the behavioral characteristics of individuals and states that the family and the environment in which they grow need to be taken into consideration, because there is a direct relationship between the behavior of the individual and the attitude of his/her family. Parental attitudes are based on parental control and the socialization of the child. The basic point here is what kind of socialization and control the parents provide their children. Parents' first and main role is to teach, influence and control [3]. In this respect, three different parental attitudes including the democratic, protective and authoritarian were investigated within the scope of this research.

Democratic parents possess the kind of attitude which means that they love their children, they really care about them and they have a good relationship with them, which is based on love and respect. They try to solve problems by consulting with their children. Moreover, there is a sincere and friendly atmosphere rather than tension in the family [16].

An overprotective atitutude is based on excessive control, and the parents who have this attitude show great interest in and affection towards their child. All of the child's desires are fulfilled. Children who grow up in such extremely protective families can be dependent and they have a lack of self-confidence and emotional problems [15].

Parents with oppressive-authoritarian parental attitudes do not consider their child's

developmental stages, personality traits and desires and they expect the child to behave in the way they want them to, while punishing the child who does not comply with their own desires [11]. These penalties may include shouting, censure, scolding or even physical violence.

Many studies have been conducted and a number of theories developed about leadership in relevant literature. There are many taxonomies regarding the concept of 'leadership' in literature. Based on the most common classifications, 'Feature Theories' advocates that leadership skills depend on inherent characteristics and 'Behavioral theories' approaches this issue by evaluating leadership through effective leader behavior. 'Contingency Theories' consider the effective leaderships with a focus on the conditions which the individuals experience. 'Current Approaches' assess the leader through vision ownership, creativity and the skill of vision for the future. Previously, the definition of leadership was related to politics, the military and religion. With advancements in the industrial revolution, the studies in the field of leadership increased as the needs of these organizations differed as well as the increase in the importance of the organization [1].

In our research, there are two dimensions of leadership. The first are leaders who prefer the dimension of construction. They are more focused on business and professionalism; they expect their subordinates to reach certain standards of success and give importance to the completion of work at the right time. The second are leaders who prefer the dimension of tolerance; they are more people-oriented, behave in a friendly way to subordinates, are open to communication, and support their subordinates [14].

Due to the age of science and technology, we are facing a dynamic and ever-changing and developing environment. We are experiencing a period of rapid depletion in social relations and human relations. Considering that there is socialism on the basis of the concept of sports, it has become important to investigate how effective the family education is on leadership behaviors and how much bilateral communication dominates.

The aim of this study is to explore the effect of parental attitudes of the students at the Faculty of Sports Sciences on their leadership behaviors.

Material and methods

For data collection, two instruments were used in the current study to explore the students' leadership behaviors and their parental attitudes. These were: 'The Leadership Behavior Scale' which was developed by Hemphill and Coons [8] and adapted into Turkish by Önal [10] and 'The Parental Attitude Scale' which was developed by Kuzgun and Eldeklioğlu [9]. These questionnaires were administered to a total of 590 students consisting of 376 male and 214 female students.

For data analysis, the SPSS statistical packet program was used for frequency analysis, and independent t-tests, one-way ANOVA and the Tukey test were run to find out the source of the difference among different groups of participants. In addition, correlation analysis was performed to reveal the relationship between the students' leadership behaviors and parental attitudes.

SPSS 16 statistical packet programme was used to evaluate the acquired data and meaningfulness level is accepted as ($p<0,05$).

Results

An insight into the gender of the participants in Table 1 showed that 63.8 % of the participants are men whereas 36.2 % of them are women. In terms of age, it was revealed that 29.7 % of the participants are between the ages 21 and below while 48.4 % of them are between 21-25 ages and 21.9 % of them are at the age of 26 and above.

As for the distribution of participants in terms of departments as indicated in Table 1, it was revealed that 25.9 % of the participants are at the Department of Coaching, 23.1 of them are at the Department of Physical Education Training, 26.4 % of them are at the Department of Sports Management and 24.6 % of them are at the Department of Recreation. Considering their grades, 27.8 % of the participants are at 1st Grade, 24.6 % of them are at 2nd Grade, 25.1 % of them are at 3rd Grade and 22.5 % of them are at 4th Grade.

Table 1. Participants' Information in terms of Demographic Features

Gender	**N**	**%**
Men	376	63.8
Women	214	36.2
Age	**N**	**%**
Age 20 and below	175	29.7
Between 21-25 ages	286	48.4
Age 26 and above	129	21.9
Department	**N**	**%**
Coaching	153	25.9
Physical Education Training	136	23.1
Sports Management	156	26.4
Recreation	145	24.6
Grade	**N**	**%**
1st Grade	164	27.8
2nd Grade	145	24.6
3rd Grade	148	25.1
4th Grade	133	22.5
Total	**590**	**100**

Table 2. The Comparison of the Participants' Parental Attitudes based on Gender

Sub-Dimension	**Gender**	**N**	**Mean**	**Std. Dev.**	**t**	**P(sig.)**
Democratic parental attitude	Men	376	3.47	,321	2,741	,006*
	Women	214	3.30	,269		
Protective parental attitude	Men	376	2.86	,274	2.165	,032*
	Women	214	3.02	,369		
Authoritarian parental attitude	Men	376	2.68	,521	2.804	,005*
	Women	214	2.97	,601		

*: p<0,05

As indicated in Table 2, it was found out that there were statistically significant differences between men and women based on their gender regarding their parental attitudes (p<,05). According to the findings obtained from data analysis, considering democratic parental sub-dimension, men (=3,47±,321) had higher means compared to women (=3,30±,269). As for the protective parental attitude sub-dimension, women (=3,02±,369) had higher means than men (=2,86±,274). Regarding the authoritarian parental attitude sub-dimension, women participants (=2,97±,601) had higher means compared to men (=2,68±,521).

Table 3. The Comparison of the Participants' Leadership Behaviors based on their Gender

Sub-Dimension	Gender	N	Mean	Std. Dev.	t	P(sig.)
Initiation of Structure	Men	376	56,40	,724	,973	,015*
	Women	214	54,98	458		
Consideration	Men	376	55,54	,654	2,387	,004*
	Women	214	57,72	,628		

*: p<0,05

As it is obvious in Table 3 above, it was revealed that there were statistically significant differences between men and women in terms of initiation of structure (p=,015) and consideration (p=,004) sub-dimensions. Specifically, considering the initiation of structure sub-dimension, male students (=56,40±,724) had higher means compared to female students (=54,98±,458) and regarding the consideration sub-dimension, female students (=57,72±,628) had higher means compared to male students (=55,54±,654).

Table.4 The Comparison of the Participants' Parental Attitudes based on Age

Scale	Age	N	Mean	Std. Dev.	F	P(sig.)
Democratic Parental attitude	20 and below	175	3,04	,485	,175	,368
	between 21-25	286	3,02	,551		
	between 26-30	129	3,05	,689		
Protective Parental Atitude	20 and below	175	3.08	,248	,279	,247
	between 21-25	286	3.07	,458		
	between 26-30	129	3.04	,472		
Authoritarian Parental Attitude	20 and below	175	3.11	,354	,235	,196
	between 21-25	286	3.07	,227		
	between 26-30	129	3.08	,452		

*: p<0,05

As indicated in Table 4 above, the findings obtained from the data analysis demonstrated that there were not any statistically significant differences among participants from different age groups in terms of their parental attitudes (p>0,05).

As is obvious in Table 5, there was no statistically significant difference between participants from different age groups in terms of their means at the Initiation of Structure (p=,559) Consideration (p=,368) and sub-dimensions (p>0,05).

Table.5 The Comparison of the Participants' Leadership Behaviors based on Age

Scale	Age	N	Mean	Std. Dev.	F	P(sig.)
Initiation of Structure	20 and below	175	55,05	,830	,284	,559
	between 21-25	286	54,91	,890		
	between 26-30	129	55,02	,835		
Consideration	20 and below	175	54,18	,975	,354	,368
	between 21-25	286	54,22	1,021		
	between 26-30	129	54,14	1,035		

*p<0,05

Table.6 The Comparison of Participants' Parental Attitudes in terms of Departments

Scale	Department	N	Mean	Std. Dev.	F	P(sig.)
Democratic Parental attitude	Physical Education Training	136	3,04	,485	,175	,368
	Sports Management Coaching	156	3,02	,551		
	Recreation	153	3,05	,689		
		145	3.06	,436		
Protective Parental attitude	Physical Education Training	136	3.08	,248	,279	,247
	Sports Management Coaching	156	3.07	,458		
	Recreation	153	3.04	,472		
		145	3.01	,547		
Authoritarian Parental attitude	Physical Education Training	136	3.11	,354	,235	,196
	Sports Management Coaching	156	3.07	,227		
	Recreation	153	3.08	,452		
		145	3.05	,357		

*p<0,05

As indicated in Table 6, there were no statistically significant differences among participants in terms of their parental attitudes based on their departments (p>0,05).

As seen in Table 7, there were statistically significant differences across participants from different departments in terms of Initiation of Structure (p=,000) and Consideration (p=,000) sub-dimensions (p<0,05).

In this respect, considering initiation of structure sub-dimension, Sports Management department students (=55,73±,738) were found to show more task-oriented leadership behaviors compared to the students at the Physical Education Training (=54,23±,703), Coaching (=54,12±,949) and Recreation (=54,13±891) Departments. As for the Consideration sub-dimension, the students at the Coaching Department (=55,82±1,019) were found to have more people-oriented leadership behaviors compared to the students at the Departments of Physical Education Training (=54,05±,752), Sports Management (=54,16±,971) and Recreation (=54,05±,881).

Table 7. Comparison of the Participants' Leadership Behaviors based on their Departments

Sub-dimensions	Department	N	Means	Std. Dev.	F	P(sig.)	Difference
Initiation of structure	1- Physical Edu. Tr.	136	54,23	,703	4,245	,000*	2-1 2-3 2-4
	2- Sports Man.	156	55,73	,738			
	3- Coaching	153	54,12	,949			
	4- Recreation	145	54.13	,891			
Consideration	1- Physical Edu. Tr.	136	54,05	,752	4,351	,000*	3-1 3-2 3-4
	2- Sports Man.	156	54,16	,971			
	3- Coaching	153	55,82	1,019			
	4-Recreation	145	54.05	,881			

*p<0,05

Table 8. Comparison of Participants' Parental Attitudes Based on Grade

Scale	Grade	N	Means	Std. Dev.	F	P(sig.)
Democratic Parental Attitude	1st Grade	164	2,98	,645	,248	,148
	2nd Grade	145	3,02	,625		
	3rd Grade	168	3,04	,617		
	4th Grade	133	3,03	,687		
Protective Parental Attitude	1st Grade	164	3.06	,578	,341	,268
	2nd Grade	145	3.07	,568		
	3rd Grade	168	3.11	,534		
	4th Grade	133	3.10	,579		
Authoritarian Parental Attitude	1st Grade	164	3.14	,487	,314	,324
	2nd Grade	145	3.16	,436		
	3rd Grade	168	3.09	,439		
	4th Grade	133	3.08	,462		

*p<0,05

As demonstrated in Table 8 above, the findings of the study based on data analysis yielded no statistically significant difference between the participants from four different grades considering their parental attitudes (p>0,05).

Table 9. The Comparison of the Participants' Leadership Behaviors Based on Grade

Sub-dimensions	Grade	N	Means	Std. Dev.	F	P(sig.)	Difference
Consideration	1st Grade	164	55,05	,585	1,395	,000*	4-1
	2nd Grade	145	55,11	,563			4-2
	3rd Grade	168	56,54	,635			3-2
	4th Grade	133	56,65	,615			3-1
Initiation of structure	1st Grade	164	56,35	,254	1,268	,328	---
	2nd Grade	145	56,38	,107			
	3rd Grade	168	56,44	,276			
	4th Grade	133	57,41	,341			

*p<0,05

The findings of the study showed that although there was not a statistically significant difference in terms of initiation of the structure (p=,482) sub-dimension, there was a statistically significant difference between different grades in terms of consideration (p=,000) sub-scale (p<0,05).

Based on this finding, regarding consideration sub-dimension, the 4th grade (=56,65±,615) and the 3rd grade students (=56,54±,635) were found to show more people-oriented leadership behaviors compared to the 1st grade (=55,05±,585) and the 2nd grade students (=55,11±,563).

Table.10 Analysis of Correlation between Participants' Parental Attitudes and Leadership Behaviors

Sub-dimensions		Leadership Behaviors
Democratic Parental Attitude	Pearson Correlation	.796**
	P	.000
	N	590
Protective Parental Attitude	Pearson Correlation	.772**
	P	.000
	N	590
Authoritarian Parental Attitude	Pearson Correlation	.734**
	P	.000
	N	590

*p<0,05

The analysis of the data showed that there was a strong positive correlation between participants' democratic, protective and authoritarian parental attitudes and their

leadership behaviors (r=.796, r=.772, r=.734, p<0.01).

Based on this finding, it is possible that the higher means the participants have in terms of their parental attitudes, the higher means they have in terms of their leadership behaviors.

Discussion and conclusions

Parents' attitudes and the leadership behaviors of students studying at the Atatürk University Faculty of Sport Sciences were investigated and the following conclusions were reached.

As a result of comparing the parental attitudes of the participants according to their gender; women students have a more protective and authoritarian attitude from their families, male students reported that their families have a more democratic attitude. This situation can be interpreted due to the fact that Turkish parents have an authoritarian attitude because they think that girls are more in need of protection than boys. Dokuyan [6] investigated the parental attitudes of 12th-grade students and all three sub-dimensions attained the same findings. These findings support our research. Yeniacun [17] investigated the attitude of parents in young adults and reached the conclusion that there is no difference according to gender. This situation contradicts our findings.

Significant differences have been reached in comparing the leadership behaviors of participants according to their gender. Accordingly, women have more averages than men at the sub-dimension of consideration. This is due to women having a more emotional structure and greater belief in sharing which may lead to the adoption of a personal leadership approach. Also, in the sub-dimension of the inititation of structure men have more averages than women. This may be due to the fact that men take a more managerial structural focus, leaving their emotions aside and acting professionally. Atar and Özbeğ [2] investigated the leadership behavior of Physical education and sports school students and have identified significant differences in favor of women. Durukan [7] investigated the leadership behaviors of physical education and sports college students in the 1st and 4th grades and has reached similar results. These findings support our research. Solmaz ve Aydın [12] investigated the leadership behaviors of physical education and sports college students and found no significant difference according to gender. Can [4] in his study reached similar results. These findings contradict our findings. Significant differences have been reached in comparison of leadership behaviors according to the department of the participants. According to this, it is seen that sports management department students have a higher average than other department students. This situation may be due to the curriculum of the management department which teaches the establishing of a professional relationship rather than an emotional bond among employees as they take courses related to management. It is seen that the students of the coaching department have more averages at the sub-dimension of consideration. One of the most important factors affecting sporting performance when it comes to professional competence is motivation. Each athlete has a distinctive personality, due to which, the trainer should establish a mutual relation with them separately. Significant differences have been reached in the sub-dimension of consideration in comparing the leadership behaviors of the participants. According to these results, it is seen that 4th grade students have more averages. This situation may be because of the increasing experience of life together with the difficulties experienced and the ability to empathise becoming more advanced in individuals. A strong positive relationship was found between the attitudes of the participants' parents and their leadership behaviors. This situation should show whether the authoritarian, protective or democratic attitude is exhibited; It can be interpreted in the way that young people who are cared for by their family, and who remain in communication with them can also develop leadership caracteristics.

As a result; young people give direction to the sport of a country through the education they receive. In order to achieve their personal goals and organizational goals it is important to be individuals that have leadership spirit. Considering the fact that parental attitudes

affect the leadership behavior of individuals; awareness should be raised among families of how effective education and communication are on individuals. This consciousness can be enhanced with conditions such as personal development, empathy, communication skills courses, seminars, symposiums, conferences.

In this way, young people who are educated in the faculty of sports sciences and their families will be able to establish better communication and are more confident in terms of personalities and individuals with more advanced leadership characteristics; they will begin to contribute more to Turkish sport.

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SOCIAL FACTORS INFLUENCING SPORT PARTICIPATION AMONG SECONDARY SCHOOL STUDENTS IN OYO WEST LOCAL GOVERNMENT AREA OF OYO STATE, NIGERIA

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Abstract
The study was conducted to investigate the social factors influencing sport participation among secondary school students in Oyo West Local Government Area, Oyo State. A descriptive survey research design was adopted for the research; the population of the study was all 10,385 secondary school students in Oyo West Local Government, Oyo State. Multistage random sampling technique which included purposive, proportionate and random sample techniques were used to select 642 of the students. The instrument for data collection was a researchers-designed questionnaire, validated by experts and the reliability coefficient was r = .76. Data were analysed using descriptive statistics of frequency and percentage for the demographic characteristics and inferential statistics of chi-square was used to test the hypotheses at 0.05 level of significance. Results of the study indicated that the following factors: parental influence n = 642, $\chi 2$ (9) = 505.321 > 16.92, sport facilities n = 642, $\chi 2$ (9) = 455.184 > 16.92, gender n = 642, $\chi 2$ (9) = 331.588 > 16.92, and economic status n = 642, $\chi 2$ (9) = 447.408 > 16.92 significantly influenced sport participation among secondary school students in Oyo State. It was concluded that sports participation among secondary school students is greatly influence by these social factors. Therefore, it is recommended that parents should encourage their children to participate in sports, and the government should support the school authorities in provision of adequate sport facilities for schools. Equal opportunities should be provided for both male and female students to fully participate in sports.
Key words: *Fitness, Health, Social Factors, Sport, Wellbeing*

Introduction

Human beings have enjoyed participating in sports since ancient times, as exemplified by the Greek Olympic Games. Information obtained from ethnographic and archaeological records of early European explorers confirms that sports are as old as man [16]. Sports can be defined as all forms of physical activity that enhance physical fitness, mental wellbeing and social interaction, such as play, recreation, organized or competitive sport and indigenous sports and games [1]. The importance of sport as one of the most reliable means to overcome the constraints of physical, emotional, social and psychological stress cannot be over emphasized in modern life. Research has shown that people who participate in sport regularly are more physically fit than others who participate less. Those who do not participate in sport and are sedentary for a major part of their days have a higher risk of experiencing physical and health challenges including higher levels of stress, less confidence during their life time; which might impede their ability to cope with the demands of life [11,22]. Sport participation is an essential component of the planning process in various aspects of life including educational activities, culture and occupation. As such, it is has become one of the most important programmes in schools today that should be used to promote all round development of secondary school

students in Oyo West Local Government Area and other parts of Nigeria.

Participation in sporting activities helps to increase cognition, muscular strength, bone density, motor and aerobics capacities, control child obesity, reduce high blood pressure and fatigue. Olanipekun and Akindutire [20] indicated that many people who suffer from degenerative circulatory disorders tend to eat diets high in fat and cholesterol, become overweight, live under emotional stress and fail to participate in regular exercises or sports. Participating in sport helps the participants stay in shape, improve endurance, boost self-esteem and maintain a healthy body weight. Socially, sports bring secondary school students together from different schools, backgrounds and communities and gives their parents the opportunity to appreciate one another. Through sport interactions, children boost friendships, teamwork and build relationships with their peers and even adults; a practice which can considerably enhance unity and the development of the Oyo West Local Government Area. In addition, by providing wisdom and encouragement through sports, coaches and teachers in secondary school can be very good role models and the relationship developed with them would be very important to the success of the students as it pushes them to achieve peak performance levels physically and even academically [5]. These benefits reinforce the need for all schools to encourage sport participation among students and staff as an important strategy to promote being physically active, which is crucial for improving and maintaining health and wellbeing in Nigeria [2].

Participation in sport encourages individuals to become active by engaging in exercise and other forms of physical activity. People who develop the behaviour of being physically active as children have a greater tendency of carrying it into adulthood, living healthilyy, and keeping fit with all-round optimal life performance than those who did not. This was emphasised by Roy [21] who reported that exercise stimulates the growth of cerebral blood vessels, enhances communication across synapses, boosts mood and act as a natural antidepressant, augments memory and increases brain density. Apart from enhancing learning and academic performance in school children, exercising regularly also promotes a graceful aging process with improved maintenance of cognitive function [21]. Therefore, participation in sport is important to improving the academic performance of students because it eases the stress of academic work, boosts focus and refreshes the brain for greater cognitive effectiveness.

Certain social factors emanating from the individual; their culture, society and family, influences sport participation among adults and children. It has been found that culture and tradition, age, gender, economic status and parents are significant social factors which influence participation in sports [5, 19]. Being the first point of socialization, the family largely influences the entire experience of the child determining his/her early perception about life. Parents play a principal role in their children's sport and physical activity participation due to the influence of modelling, financial and psychological supports. However, parents who are not interested in sport affect their children negatively [6].

Another important factor constituting a barrier to sport participation among secondary school students is the lack of high standard or well-maintained and accessible playgrounds. Most schools do not have their own sport facilities and equipment; even if any are available, they are often inadequate, sub-standard or poorly maintained [7]. Economic status, which includes both resource-based and prestige-based measures are linked to social class positions among both children and adults. The economic status of a child directly reflects the economic status of his/her parent and has significant effects on sport participation due to the inability to afford the costs of membership in a sports club, sport apparel, transport to sport venues and sport equipment. Socioeconomic status determines the affordability of parents, thus affecting their child's sport participation and performance [23]. This means most children with great sport potentials may not be able to pursue their vision in sport due to challenges and setback of low economic status experienced early in life. Most parents prefer to

devote their little resources to their children's education since the dominant belief of society is that sport could be a distraction form serious academic work.

Starting from childhood, several gender-related reasons influence sports participation as it has been indicated that females usually participate in sport less frequently than males [17]. Unlike males, the female child often has more domestic responsibilities that keep them busy at home. In addition, the fear of assaults, being raped, and cultural and religious perceptions all serve as barriers to female participation in sport. The low rate of women participating in sports is not due to lack of interest but societal restrictions through direct and indirect forms of discrimination and stereo-typing concerning activities that involve strenuous physical exertions [4, 18]. Furthermore, psychological barriers to a student's participation in sport exist. These include role conflict, low self-esteem and body image or absence of role models and fear of injury. Some students see themselves as not having the skills; as such they do not have the courage to participate in sport. It is commonly known that some of the skills required to overcome these psychological barriers can be developed and mastered during adolescent years where schooling has a fundamental effect on children. Teachers and peers have been very crucial to providing support towards developing individuals' talents [13]. Nonetheless, differences in the effect of these barriers may continue to dwarf the number of students who participate in sport. Therefore, it is important to identify the specific implication to theses social factors in order to increase sport participation among secondary school students.

Statement of the Problem

Sports have become a vital tool for individual and community development. Children who participate in sport are fitter, healthier, perform better academically and are more active as adults. This helps in maintaining better social interaction, occupational efficiency and less risk of chronic diseases and mortality rate. Despite these benefits, the researchers observed that several secondary school students in Nigeria, especially in Oyo West Local Government Area of Oyo State do not participate in sport. This may be due to social factors influencing human behaviours. These factors include parental influence, gender, economic status, sport facilities and equipment which have varying influences on sport participation and have not been examined specifically among secondary school students in Oyo West Local Government Area of Oyo State, Nigeria. Hence, the need for this study.

Objective of the Study

The objective of this study was to examine how social factors such as parents, sports facilities, sports equipment, self-esteem, gender and economic status influence sports participation among Secondary School Students in Oyo West Local Government Area of Oyo State.

Methodology

Descriptive survey research design was used for the study. The population was 10,385 students of all the 40 secondary schools in Oyo West Local Government Area of Oyo State. The sample was 642 of the students with age ranging from 11 to 21 years and consisting of 363 (56.5%) female and 275 (43.5%) male. They were selected using a multistage sampling technique that initially stratified their schools into 29 public secondary schools and 11 private secondary schools. Proportionate random sampling technique was conducted next in order to select 40% of the schools in each stratum. Thus, 17 schools (12 public schools and 5 private schools) were selected and proportionate random sampling technique was used in the final selection to sample 12% of students from each of the selected schools according to the sample used.

A questionnaire titled "Factors Influencing Sport Participation among Secondary School Students Questionnaire (FISPSSSQ)", which was developed by the researchers and validated by three experts in the Department of Human Kinetics Education, at the University of Ilorin was used for data collection. Test retest method was used to ascertain its reliability which indicated r = 0.76. The instrument was divided into sections A (that dealt with demographic data of the respondents) and B (that consisted of question

items that elicited responses on the hypotheses). A four-point Likert rating scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) was used. The instrument was administered directly to the students in their schools within a week (five working days) after obtaining the permission of their various schools' authorities.

All the participants were properly informed and they presented with a written informed consent form that was signed by their parents before they participated in the study. The Statistical Package for Social Sciences (SPSS) version 20.0 software was used for data analysis. To generate variables for analysing the hypotheses, SA and SD responses were merged to form Positive Response (PR) while D and SD responses were merged to form Negative Response (NR). Descriptive statistics of frequency and percentage were used to analyse PR and NR and the aggregate was expressed as percentage, mean PR and NR. Inferential statistics of chi-square was used for hypotheses testing with a p-value of 0.05 for ascertaining statistical significance.

Results

Hypothesis One: Parental factor has no significant influence on sport participation among secondary school students in Oyo West Local Government Area of Oyo State, Nigeria.

Table 1. Chi-square Analysis on Influence of Parental Factor on Sport Participation

S/N	Parent and Sport Participation	n	Positive Response	Negative Response	χ^2	df	Sig
1.	Financial support from my parent affects my participating in sport.	642	276 (43%)	366 (57%)	505.32	9	.000
2.	My cultural belief is an obstacle to sport participation.		240 (37.4%)	402 (62.6%)			
3.	My parents' occupational status influences my participation in sport.		318 (49.6%)	324 (50.5%)			
4.	Educational level of my parent encourages me to participate in sport.		503 (78.4%)	139 (21.6%)			
	Mean		334.3 (51.9%)	307.8 (47.9%)			

$p \leq 0.05$

Table 1 show chi-square analysis of the influence of parental factor on sport participation among the respondents n = 642. Mean response revealed that positive response (PR) was above average $\bar{x}$ = 334.3 (51.9%) and Negative response (NR) was $\bar{x}$ = 307.8 (47.9%). This indicated high parental influence on sport participation among the students. Furthermore, the result revealed parental factor had significant influence on sport participation of the students $\chi 2(9) = 505.32$, $p < .000$. This led to rejection of the null hypothesis that "parental factor has no significant influence on sport participation among secondary school students in Oyo West Local Government of Oyo State, Nigeria".

Hypothesis Two: Sport facilities have no significant influence on sport participation among secondary school students in Oyo West Local Government of Oyo State, Nigeria.

Table 2. Chi-Square Analysis on Influence of Sport Facilities on Sport Participation

S/N	Sport Facility and Sport Participation	n	Positive Response	Negative Response	χ^2	df	Sig
1.	Inadequate sport facilities in my school influence my level of participation in sport.	642	462 (72%)	180 (28.1%)	455.18	9	.032
2.	Availability of some standard sport facilities in my school encourage my participation in sport.		475 (73.9%)	167 (26%)			
3.	Lack of a qualified coach in my school to train us properly on use of sport facilities reduces the level of sport participation of students.		386 (60.1%)	256 (39.9%)			
4.	Due to poor maintenance, sport facilities in my school are not durable and thus hinder regular participation in sport.		337 (52.5%)	305 (47.6%)			
	Mean		415 (64.6%)	227 (35.4%)			

$p \leq 0.05$

Table 2 shows chi-square analysis for the influence of sport facilities on sport participation among the respondents n = 642. The mean response revealed PR $\bar{x}$ = 415 (64.6%) was higher than NR $\bar{x}$ = 227 (35.4%) indicating that sport facilities has a high influence on sport participation of the respondents. The chi-square result showed that sport facilities significantly influenced their participation in sport $\chi 2(9) = 455.18$, $p < 0.032$. Therefore, we rejected the null hypothesis that "sport facilities have no significant influence on sport participation among secondary school students in Oyo West Local Government of Oyo State, Nigeria.

Hypothesis Three: Sport equipment has no significant influence on sport participation among secondary school students in Oyo West Local Government of Oyo State, Nigeria.

Table 3. Chi-Square Analysis of Influence of Sport Equipment on Sport Participation

S/N	Equipment and Sport Participation	n	Positive Response	Negative Response	χ^2	df	Sig
1.	Inadequate sport equipment is a major factor discouraging my participation in sport.	642	462 (72%)	180 (28.1%)	460.97	9	.000
2.	A lot more students will participate in sport if the necessary sport equipment is made available in my school.		475 (73.9%)	167 (26%)			
3.	The number of students participating in sport is low due to frequent injury from use of substandard sport equipment.		386 (60.1%)	256 (39.9%)			
4.	Lack of proper maintenance and replacement of worn out sport equipment hinders my participation in sport.		337 (52.5%)	305 (47.6%)			
	Mean		412.3 (64.2%)	226.8 (35.3%)			

$p \leq 0.05$

Table 3 shows chi-square analysis for the influence of sport equipment on sport participation among the respondents n = 642. The mean PR x^{-}= 412.3 (64.2%) was higher than NR x^{-}= 226.8 (35.3%). This shows that sport equipment has a high influence on their sport participation. Further analysis revealed that sport equipment was a social factor that significantly influenced the sport participation of the respondents $\chi 2(9) = 460.968$, $p < .000$. This led to rejection of the null hypothesis that "sport equipment has no significant influence on sport participation among secondary school students in Oyo West Local Government of Oyo State, Nigeria".

Hypothesis Four: Self-esteem has no significant influence on sport participation among secondary school students in Oyo West Local Government Area of Oyo State, Nigeria.

Table 4. Chi-Square Analysis of Influence of Self-Esteem on Sport Participation

S/N	Self Esteem and Sport Participation	n	Positive Response	Negative Response	χ^2	df	Sig
1.	Lack of confidence to face challenges during sport affects my participation in sport	642	298 (46.5%)	344 (53.5%)	331.59	9	.002
2.	Lack of support from others hinders my participation in sport		347 (54.1%)	295 (45.9%)			
3.	I do not like to participate in sport because students who participate in sports are often unruly		193 (30.1%)	448 (69.7%)			
4.	Constant criticism from peers has led to my withdrawal from sport participation		311 (48.5%)	331 (51.5%)			
	Mean		287.3 (44.8%)	354.5 (55.2%)			

$p \leq 0.05$

Table 4 show chi-square analysis of the influence of self-esteem on sport participation among the respondents n = 642. The result revealed NR x^{-}= 354.5 (55.2%) was higher than PR x^{-}= 287.3 (44.8%). In addition, chi-square result indicated self-esteem has a significant influence on sport participation of the respondents $\chi 2(9) = 331.588$ $p < 0.002$. Based on this, the null hypothesis that "self-esteem has no significant influence on sport participation among secondary school students in Oyo West Local Government Area of Oyo State, Nigeria was rejected.

Hypothesis Five: Gender has no significant influence on sport participation among secondary school students in Oyo West Local Government of Oyo State, Nigeria. Table 5 show chi-square analysis of the influence of student's gender on their participation in sport n = 642. The mean response indicates NR x^{-}= 347 (54%) was higher than PR x^{-}= 295 (40%). The chi-square result revealed a significant influence of gender on sport participation among the respondents $\chi 2$ (9) = 331.588, $p < .002$. This led to the rejection of the hypothesis that "gender has no significant influence on sport participation among secondary school students in Oyo West Local Government Area of Oyo State, Nigeria.

Hypothesis Six: Economic status has no significant influence on sport participation among secondary school students in Oyo West Local Government of Oyo State, Nigeria. Table 6 show chi-square analysis of influence of economic status on sport participation among the respondents n = 642. Their mean response showed PR x^{-}= 345.8 (53.9%) was higher than NR x^{-}= 296.3 (46.1%), which indicates economic status has a higher influence on sport participation of the respondents. Chi-square

result revealed that economic status significantly influenced sport participation among the respondents $\chi 2(9) = 447.41$, $p < .000$. This led to the rejection of the null hypothesis that "economic status has no significant influence on sport participation among secondary school students in Oyo West Local Government Area of Oyo State, Nigeria."

Table 5. Chi-Square Analysis of the Influence of Gender on Sport Participation

S/N	Gender and Sport Participation	n	Positive Response	Negative Response	χ^2	df	Sig
1.	Female students should not participate in sport at all.	642	248 (38.6)	394 (61.4%)	331.59	9	.009
2.	Female students that participate in sport might not be able to bear children in future.		211 (32.9%)	431 (67.1%)			
3.	Female students are not given the same image as the male students in sport participation.		383 (59.6%)	259 (40.3%)			
4.	Religious perception hinders the female students from participating in sport.		338 (52.7%)	304 (47.3%)			
	Mean		295 (46.0%)	347 (54.0%)			

$p \leq 0.05$

Table 6. Chi-Square Analysis of Influence of Economic Status on Sport Participation

S/N	Economic Status and Sport Participation	n	Positive Response	Negative Response	χ^2	df	Sig
1.	High cost of equipment discourages participation in sport.	642	399 (62.1%)	243 (37.9%)	447.41	9	.000
2.	Financial status of one's parent could serve as hinderance to sport participation.		305 (47.5%)	337 (52.4%)			
3.	Low salary earning parents mostly find it difficult to give financial support towards their children's sport participation.		426 (66.4%)	216 (33.6%)			
4.	Living in a poorly designed neighbourhood reduces the level of students' participation in sport.		253 (39.4%)	389 (60.6%)			
	Mean		345.8 (53.9%)	296.3 (46.1%)			

$p \leq 0.05$

Discussion

The benefit of sport on the wellbeing of children in modern world cannot be overemphasized. However, the findings of this study suggest that certain social factors must be properly addressed so that more secondary school students in Nigeria can benefit from sport participation. In hypothesis one, it was found that parental factors had a significant influence on low sport participation among secondary school students in Oyo West Local Government Area of Oyo State, Nigeria. This implies that the majority of the parents of these students still hold the age long practice of discouraging children from participating in sport. Some of the concerns raised by such parents is that participation in sport causes circumscribed academic concentration, which could lead to poor academic performance among other issues. This finding is in

line with Bailey et al. [6] that the family is the point of first socialization, growth and development of the child so that parents' opinion and practices about sport influences their children's interest in sport. However, more studies have continued to support the need for students to engage in regular physical activity that can be achieved by participating in sport. Notable among them is Roy [21] who emphasised that physical activity and sport stimulates the growth of cerebral blood vessels, enhances communication across synapses, boost mood and acts as a natural antidepressant, augments memory and increases brain density, which is necessary for enhancing learning and academic performance and promoting graceful aging. This suggests that parents who want to improve their children's academic performance must encourage their children to participate in sport. They might only need to assist them in planning their schedule so that they can integrate sport and other academic tasks effectively.

Hypothesis two revealed that sport facilities significantly influenced the level of sport participation of the students. Sport facilities are crucial to development of athletic potential because they act as significant stimuli that attract or influence most young people's emotions in relation to sports. Thus, when sport facilities are not available for students to use, they might not develop much interest in sports [10]. Buttressing this submission our findings revealed that 73.9% of the respondents were encouraged to participate in sport due to availability of some standard sport facilities in their school (table 2). This often occurs especially when new sport facilities are built in schools. Unfortunately, the building of sport facilities in Nigerian secondary schools have been mostly substandard and irregular [7]; as such, they do not contribute much to reduction of the low level of sport participation among secondary school students. The findings further indicated inadequacy and poor maintenance of available sport facilities and lack of qualified coaches to utilize the sport facilities in the training of students as a hinderance to their participation in sports. This finding supports Dauda-Olajide et al. [10] who reported that the state of sport facilities in Nigeria is a major factor influencing participation, interest and performance of athletes.

The findings in hypothesis three revealed that sport equipment significantly influenced sport participation among the respondents. This implied poor provision of sport equipment was one of the factors responsible for low levels of sport participation among secondary school students in Oyo West. Their responses revealed sport facilities in their school were largely inadequate, poorly maintained, substandard and increased the risk of injury, which led to a reduction in the number of students who participated in sports. The finding corroborates the observations of Black, Johnston, Propper and Shields [8] that most schools cut down on their sports budgets in order to meet the rising costs of management. Whereas the availability of necessary sports facilities has been regarded as a motivating factor in physical activity and sport which are personal health enhancing behavioural indicators among secondary school students leading to active living in adulthood and long-term health benefits. Therefore, attention must be given to creating a sustainable environment through provision of sport equipment and facilities in order to build a healthy society where children and adults can perform their social responsibilities appropriately.

In hypothesis four we found that self-esteem had a significant influence on sport participation of the respondents. The desire to engage in competitive events like sports is largely a reflection of perceptions of one's ability or competence [9]. Most people who come out to engage in sport have positive self-esteem and this has been reported to be one of the most powerful intrinsic motivating factors in sport participation [12]. The type of support from the environment including significant others affects individuals' self-esteem. Those with greater environmental support especially towards sport are more likely to engage and perform excellently in sports than others with little or no support. Our finding revealed that a large percentage (48.5%; $\bar{x}$287.3) of the respondents had poor environmental support for sport participation and this might have translated into their low level of involvement in it. This finding is corroborated by Gould et al. [13] who found that psychological barriers to students' participation in sport include role conflict, low self-esteem, or absence of role models and fear of injury.

The findings in hypothesis five showed the students' gender was one of the factors that influenced their participation in sport. This finding is similar to Ogidan [18] who observed that fewer women participate in sports than men not because women are not interested in sports but due to the long history of direct and indirect forms of discrimination and stereo-typing of women in society. Also supporting this assertion, Adesoye [3] noted that females' participation in sporting activities has for a long time been relatively low compared to men due to differential treatments based on socialized gender roles and expectations which directly influence their participation in sport. The implication of this is that potentially talented female students are discouraged from developing their sporting abilities; and the increase in the number of physically inactive students in secondary school would lead to more sedentary lifestyle among women in society with a tendency to higher risks of hypokinetic diseases and high mortality rates.

Hypothesis six revealed that economic status influenced sport participation among the

respondents. Secondary school students and amateur athletes often face the problem of poor funding, especially in Nigeria where sponsorship of athletes at this level is a major problem. According to Bailey et al. [6] the economic status of a child is the economic status of his/her parent. Most of the respondents' parents belong to the low economic status group who have to prioritize their expenditure in order to cope with the rising costs of living. Although this study did not consider how different levels of economic status influenced sport participation, it was discovered that living in poorly designed neighbourhoods reduced the level of sports participation of the respondents. This could be due to poor organisation and lack of sport facilities within the proximities of their households. Thus, even if the students were interested in sport, these economic factors could hinder their participation. This supports the findings of Kamphuis et al. [15] and Higgs, Langford and Norman (2015) that unfavourable neighbourhood, household and individual factors accounts for not participating in sport mostly among people with lower socio-economic status.

Conclusions

Due to the low level of sport participation of secondary school students, we examined social factors influencing sport participation among secondary school students in Oyo West Local Government Area of Oyo State, Nigeria. Based on the findings of the study, we concluded that the students' level of sports participation was significantly influenced by low parental support, insufficient sports facilities and equipment, gender imbalances in sport, economic status and low self-esteem of the students.

Recommendations

There is need to sensitize parents and secondary school students themselves on the benefits of sport participation with emphasis on creating equal opportunities for male and female students' participation. Special recognition and awards should be given to students who perform exceptionally in sport so that it can serve as motivation towards sport participation among other students.

The school authority, government and private individuals/organisation should synergize in the provision of equipment, facilities and funds to facilitate more students' participation in sport. The school authorities and other stake holders in education should ensure that qualified teachers and coaches are employed to teach and coordinate sport affairs in secondary schools. Periodic training programmes should be organised for the teachers and coaches to update them on the current development in sports.

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ENERGY DRINKS AS A POTENTIAL HEALTH RISK FOR CHILDREN AND ADOLESCENTS

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Abstract

The aim of this article is to present the phenomenon of the increase in the consumption of energy drinks particularly among children and adolescents and to show their negative health effects.

In the education process, the young generation is to acquire the necessary knowledge about health, its conditions and threats, as well as develop the ability to use this knowledge in everyday life to know, want and be able to enhance their own health and that of other persons and to improve the quality of life. Therefore, in education, physical education teachers who are prepared for this function play a special role in the health education of students. Their task is education in the field of healthy lifestyle, transferring knowledge about the adverse consequences of one's behaviour and related health threats, including sensitizing children and adolescents to the negative effects of drinking energy drinks, as well as building health awareness of students and shaping a sense of responsibility for one's own health.

Key words: *health behaviours, energy drinks, health promotion, health risk*

Introduction

Energy drinks, as a popular source of caffeine, constitute a group of food products characterized by a very dynamic and systematic increase in sales. They enjoy growing popularity not only among adults, but above all among children and young people. They appeared in Poland in the 1990s and have since then become common drinks consumed particularly in the group of teenagers. Currently, due to their increasing popularity, their abuse is a significant public health problem.

Energy drinks can be divided into two groups: isotonic and energetic. Isotonic beverages are used for regeneration during or after intense physical exercise. They balance the level of water and electrolytes lost by the body as well as supplementing them with vitamins and minerals and to a small extent with carbohydrates. On the other hand, energy drinks have a different effect and are often confused with isotonic beverages. They are intended for stimulating the body, for increased effort, and their main ingredient is caffeine. They cause mood improvement, increase in vitality, give a feeling of greater physical and mental efficiency, but also may have negative effects [12]. This work focuses on the second group of these beverages.

The aim of the article is to present the phenomenon of the increase in the consumption of energy drinks particularly among children and adolescents and to show their negative health effects.

The main ingredients of energy drinks

Energy drinks mainly contain caffeine, which is intended to stimulate the body. The other ingredients, such as guarana, taurine, inositol, carbohydrates, B vitamins, glucuronolactone or ginseng, are supposed to enhance caffeine or eliminate the negative effects caused by the forced stimulation of the body [4]. Energy drinks are also sweetened with various types of glucose-fructose sugar or

sucrose, considered to be a fast source of energy (the amount of sugar is between 1g and 43g in 237ml, which corresponds to 10 teaspoons) [23]. According to specialists, popularizing energy drinks containing caffeine is harmful because it causes an increase in sugar consumption among young people, who are the largest group of consumers. According to statistics, as many as 25% of teenagers drink up to three cans of this type of drink every day. Keep in mind that energy drinks contain a high sugar content, and up to every third child in Europe suffers from overweight or obesity. A 250 ml energy drink can contain up to 27 grams of sugar and 80 mg of caffeine.

According to the recommendations of the World Health Organization (WHO), adults and children should receive no more than 10 percent of their daily energy from sugars, so no more than 50 grams a day. Experts emphasize that caffeine should not be promoted in food for children and adolescents. Regular drinking of energy drinks may cause headaches and problems with falling asleep [11].

Caffeine is the most common stimulant used in energy drinks. It belongs to the alkaloid group. It occurs in the leaves of tea and Ilex paraguariensis (Yerba mate), coffee and cocoa seeds and in over 60 species of other plants. In plants, it plays the role of a natural pesticide and acts paralyzingly and insecticidally on many pests. Energy drinks contain from 32-48 mg of caffeine in 100 ml. Thus, a 250-ml can may contain between 80-120 mg of caffeine. For comparison, a cup of coffee contains on average 50 mg of caffeine, a cup of soluble coffee from 70-100 mg [4], a glass of tea from 10-50 mg, and a can of cola 40 mg [18]. Caffeine intoxication may be caused by the intake of 500 mg of this substance, which translates into drinking 5 cans of energy drink. The lethal dose of caffeine for an adult is 200-400 mg / kg.

After taking 10-12 grams of pure caffeine or drinking 30 litres of energy drinks, death may occur. In energy drinks apart from caffeine, guarana is also often present, which is a rich source of caffeine, so that one can of energy drink can contain up to 300 mg of this substance [4]. The strongest energy drink sold in Poland is CocaineStimulation, which contains twice as much caffeine as other beverages of this type. The dose of caffeine in this product is 64 mg per 100 ml [17].

The main factors determining why people drink coffee are its taste and stimulating effects. Caffeine has no nutritional properties, but it can produce addiction effects, felt after 6-18 hours from the last dose. We can distinguish both positive and negative effects of caffeine. Positives include: stimulation of the central nervous system, delayed mental and physical fatigue, acceleration of mental reactions, increased aerobic capacity, improved reaction time, affecting complex cognitive processes, it may alleviate some effects of sleep deprivation, and improves the coordination of thoughts and memory [13]. In the case of excessive consumption of caffeine, undesirable effects may occur that are individual for a given individual and are conditioned by age, sex, weight, metabolism, as well as the daily dose of caffeine consumption, the blood pressure and the addiction to drinking coffee. The main consequences are: stimulation of the heart rhythm, respiration and central nervous system, heart disease, hypertension, lowering bone density and osteoporosis, increased gastric acidity, epigastric pain, nausea, heartburn, gastroesophageal reflux disease. Excessive consumption of caffeine may cause difficulties with getting pregnant and pregnancy risks, and adversely affect people with glaucoma or ocular hypertension [13]. A person who has taken too much caffeine may experience anxiety, nervousness, insomnia, tremor, tachycardia, and psychomotor agitation [19]. In the case of discontinuation of energy drinks, condition of disorder, anxiety and depression, memory and concentration disorders [13,17], as well as fatigue and weakness, dehydration, tachycardia, stiffness and muscle aches, vomiting, nausea and abdominal pain, inability to focus, insomnia and headaches. There may also be convulsions, heart palpitations, psychotic symptoms, such as hallucinations, and even death in some cases [3].

Especially dangerous is the effect of caffeine on children. Apart from the increase in blood pressure, it may cause disorders of brain development, change in mood, irritability, anxiety and may affect the quality and length of

sleep. Excessive consumption of energy drinks can also lead to disorders of brain development, increased risk of addiction to alcohol and other psychoactive substances and mental disorders [17].

Guarana is an extract from a plant known for its highest caffeine content. Its grains contain even three times more caffeine than coffee (1 g of guarana contains about 40 mg of caffeine) [4]. It has a stimulating, strengthening and anti-fatigue effect. Energy drinks contain no information about the caffeine content in guarana added to the drink. As an addition to this kind of beverages, guarana can be dangerous because it increases the total caffeine content. Guarana overdose is manifested by: strong psychomotor agitation, cardiac acceleration, diarrhoea, vomiting, and even cardiac arrhythmias [13].

Taurine is used as an additive in energy drinks, sports nutrition and baby porridge. It affects the production of hormones responsible for burning and excretion of fats. It participates in metabolism, regulates the work of the heart, and stimulates muscle work. During exercise, it reduces the excretion of serotonin, which means that fatigue is not felt and the body can work longer, which can be dangerous for the circulatory system. Taurine plays an important physiological role, which includes modulation of the calcium ion (Ca2 +) concentration, has antioxidant properties, is a neurotransmitter and neuromodulator, is responsible for osmoregulation, participates in the formation of bile acids, stabilizes cell membranes and regulates phosphorylation of proteins [28].

Glucuronolactone, glucuronic acid, as a natural compound from the group of carbohydrates, is formed in the liver from glucose. In food rarely found, the best source of this compound is wine. In energy drinks it usually occurs at the amount of 25-240 mg / 100 ml. This compound helps to fight stress, fatigue, it reduces drowsiness, stimulates alertness, concentration, and shortens the reaction time. It has the properties of physical regeneration, it accelerates the excretion of harmful, endogenous and exogenous metabolic products, increasing energy levels and endurance as well as preventing the accumulation of fat due to over-stimulation of insulin [8].

Inositol is generally classified as B group vitamins. However, technically it is not a vitamin because this compound is produced in the body. Its presence has been shown in the brain, in the liver and kidneys. It also circulates in the blood, from where it is taken up by cells. Inositol is a phospholipid component. It contributes to the metabolism of fats and cholesterol, has a calming effect, improves mental fitness and well-being. It occurs in plant and animal products: milk, meat, fruit (melons, citrus), vegetables (especially legumes), in cereals and nuts. In energy drinks, it is usually present in an amount of up to 20 mg / 100 ml. The daily requirement is estimated at 500-1000 mg. In combination with vitamins PP and B6, it positively affects cardiac function, cerebral and peripheral circulation [8].

Carbohydrates (saccharides, sugars) are organic compounds, mainly of vegetable origin. Chemically, carbohydrates are divided into simple (monosaccharides: ribose, monosaccharides, simple sugars) and complex (disaccharides, oligosaccharides, polysaccharides). Monosaccharides include ribose, arabinose, glucose, fructose, galactose, mannose, and disaccharides: sucrose, lactose, maltose, trehalose. From the nutritional point of view, carbohydrates are divided into digestible (monosaccharides, disaccharides, polysaccharides) and non-absorbable.

Carbohydrates are the main energy substrate and source of energy in the process of cell oxidation (burning 1 g of carbohydrates provides 4.1 kcal). The energy obtained allows stabilization of body temperature, the work of the internal organs and physical activity. Glucose is essential for the brain, spinal cord, erythrocytes, muscles, intestines and heart. Carbohydrates also regulate the mechanisms of feeling hunger and satiety, participate in the burning of fats from foods, control the function of the colon, affecting the level of glucose and insulin in the blood, as well as the intestinal epithelium. They are found in cereal products, fruits, vegetables, legume seeds, potatoes, milk and milk products, refined sugar, honey, confectionery products and sweetened beverages, including energy drinks [10].

The consumption of excessive amounts of sugars affects the occurrence of overweight and obesity, insulin resistance, diabetes, metabolic syndrome, cancer, non-alcoholic hepatic steatosis and caries. The reason for this is the increase in the consumption of sucrose and simple sugars derived from sweets and confectionery, sweetened beverages and highly processed foods. For Polish people over 1 year of age, the recommended daily intake of carbohydrates is 130 g per day. Carbohydrates in the daily diet should constitute 45-65% of total energy from food, and 10% of energy should not exceed those from simple sugars [10]. Consumption of one glass of an energy drink provides the organism of an adult with 29% of the daily requirement for carbohydrates and constitutes 76.5% of the recommended daily amount of simple sugars, based on the dietary formula of 2000 calories [7].

Vitamins from group B are responsible for the metabolism of fats, proteins and carbohydrates, support brain function, eliminate fatigue, stimulate and counteract nervous disorders [13,27]. They are added to energizing beverages for example to colour the substance (vitamin B2 - E101) or to demonstrate the health-promoting effect of the drink on the body. They are often added in amounts exceeding the recommended daily allowance (RDA). The wrong information is also often put on the label, which understates the amount of ingredients or does not present the full content of the substances contained in the drink [13].

With excessive intake of vitamin B1, you may experience dizziness, hypersensitivity, muscle twitching, arrhythmia and may also experience allergic reactions. However, an excess of vitamin B2 may cause nausea and vomiting, B5 - a significant upset of the digestive system, diarrhoea, allergy symptoms, B6 - decreased muscle coordination, muscle weakness, unsteady gait, degeneration of the nervous tissue, tingling sensation. This vitamin has an adverse effect on the presence of amino acids in blood, and can result in B12- allergic symptoms, nosebleeds, and in exceptional situations, anaphylactic shock. If a large amount of vitamin PP (niacin, nicotinic acid) is ingested, liver damage, arrhythmia, burning and itching of the skin, elevated blood glucose levels, headaches and pains, vomiting, or orthostatic hypotension may occur [12].

In order to highlight and promote the product, manufacturers of energy drinks attract customers' attention by adding biologically active substances, as well as herbal extracts, to increase their effectiveness and attractiveness. The addition of L-carnitine is to help burn fat and maintain good condition; it also eliminates free radicals, supports vitality, slows down the aging process and accelerates the regeneration of the body after increased physical activity. Japanese ginkgo slows down the aging process, prevents atherosclerosis and the deterioration of intellectual and mental abilities in older people. Excessive amount may cause stomach upsets, headaches and dizziness. Ginseng is designed to improve the ability to remember, endurance of the body and resistance to stress. In people who abuse ginseng, so-called ginseng syndrome may appear (drowsiness, weakness, skin changes, headaches, diarrhoea), as well as cardiac arrhythmia, insomnia, allergic symptoms [12]. The above-mentioned substances used rationally, particularly in the form of fruit and vegetables or in the form of dietary supplements or medicines under the supervision of a physician do not pose a health risk. On the other hand, consumed in excess, for example in the form of energy drinks, they may have serious health consequences. Therefore, the use of these beverages should be controlled and information about possible undesirable effects should be presented on the packaging.

The dynamics of the sales phenomenon

The energy drinks industry is growing dynamically on a global scale, and their sales in the years 2008-2012 increased by as much as 60%, in 2012 it was estimated at 12.5 trillion dollars [3]. In 2015 the value of sales of these beverages globally amounted to over 38,208 million euros, and in the European Union 7,129 million euros.

By contrast, in Poland, the value of sales is 308 million euros, which is 4.3% of the EU market value. In the countries of the European Union, the largest consumer of this drink is Great Britain, which generates consumption of 25% of the value of the EU market. A report prepared by the international network of

KPMG auditing and consulting companies in 2016 "The market of non-alcoholic beverages in Poland" also shows the increase in the sales value of these beverages. In 2015, the value of the energy drinks market in Poland amounted to nearly PLN 1.3 billion, and it is forecast that by 2020 this value will have increased to PLN 1.8 billion [2].

The data provided by Nielsen company is confirmation of the announced forecasts in Poland. It is based on the analysis of the 12-month sales trend according to which the sales value of the energy / sport drink category amounted to nearly PLN 1.52 billion (MAT: May 2018) and thus advanced by two positions on the list of the largest categories of FMCG (Fast Moving Consumer Goods) in relation to the previous year [21].

The largest distribution channels for energy drinks are discount stores (65%), supermarkets (55%), hypermarkets (51%), grocery stores (44%) and gas stations (28%), liquor and wine-confectionary stores (7%), and online shops (2%); that is off-trade sales. On the other hand, clubs, discos (4%), mass events or time points (4%), pubs, bars, cafes (3%), restaurants (2%), hotels (1%) (on-trade) have a lower percentage of sales. [2].

The research carried out in selected European Union countries shows that the average European male drinks on average 2.9 liters of energy drink a year, spending 11 euros. The average Pole spends 8 euros each year, purchasing over 3 liters of energy drink. The biggest consumers are the British, who buy over 8 liters of this drink, paying over 30 euros. The lowest sales of energy drinks occur in Romania, Ukraine and Italy, with Italians spending more money on them [2].

The results of the European Food Safety Authority (EFSA) survey conducted in 2011 in 16 European Union countries show that energy drinks are consumed by 68% of adolescents aged 10-18 years, 30% adults and 18% of children under 10 years of age. However, consumption of this type of drinks among young people in individual countries is differentiated, as in Greece, 48% of adolescents declared that they consume this drink, while in the Czech Republic this was as much as 80%. According to the respondents, consumption among children in Greece was 6%, and among children from the Czech Republic as much as 40% [3].

Marketing, which is mainly aimed at young and active people, has a significant impact on the demand for consuming these drinks. New products appear on the market all the time, and manufacturers use appropriate marketing techniques to increase the number of customers. In 2012, companies spent 282 million dollars on advertising [19].In trying to reach the consumer, they advertise the product by only showing the benefits of consuming energy drinks such as: increase in mental and physical performance related to, among other areas, the practising of competitive sports such as: cycling, snowboarding, skiing and climbing, as well as greater endurance, weight loss, good fun and even as a legal alternative to drugs. Attractive packaging is created, and the price of the product is lowered to reach people with limited financial resources, especially young people. The information about the content of caffeine and its side effects is often omitted, while new attractive names to encourage young people to buy energy drinks are invented and created. Sports competitions are also sponsored as well as the use and offering of free samples, and advertising on social media.

Various efforts are also used to encourage the consumption of large amounts of these drinks, increasing their capacity to 1 litre or through the creation of products which cannot be resealed after being closed; therefore, the consumer is forced to drink the whole beverage in a short time. Producers take into account the needs of today's consumers who have an excessive number of duties and live quickly, offering them not only energy in the form of drinks, but also ice cream, chewing gums, or yoghurts with a high content of stimulants, which help to reduce fatigue and enable participation in further activities [19].

Most young people use energy drinks because of the prevailing fashions or in the hope that they will help them achieve better results in studies, sport and other aspects of life. However, their effect is short-lived, they will not improve our condition or make us feel rested. The feeling of tiredness and fatigue

returns quickly. They certainly do not replace sleep and rational rest [27].

A frequent selection criterion when purchasing an energy drink is its specific taste, which is difficult for the consumer to distinguish from other brands of this type of products. Although 47% of consumers are loyal to the preferred brand, manufacturers often use various methods that include the addition of an extra ingredient, e.g. a fruit aroma to change taste. Marketing treatments also involve enriching the composition by adding vitamins, microelements or other guarana ingredients, ginseng that can distinguish a given product and convince the consumer about the suitability of this drink in stimulating and regenerating the body. An effective method used by producers to distinguish a product and strengthen a given brand is to use a supporting brand strategy through celebrity endorsement and recommendations. It is used both by market leaders and smaller producers trying to find consumers. The most common supporting brands are the names of well-known athletes; that is personal brands. In trying to identify with their idol, customers buy and consume the advertised product, in order to improve their image and attractiveness in their environment. So far, producers have used the names of people from the world of sport such as: Dariusz Michalczewski, Mike Tyson, Bruce Lee, Robert Lewandowski, Jakub Błaszczykowski, Mamed Khalidov, Mariusz Pudzianowski, Przemysław Saleta, Adam Małysz, and even recently the disco-polo singer Zenon Martyniuk. The largest energy drinks company in the world with 70% share in the global market is Red Bull. It has built its position thanks to promotional activities consisting in sponsoring sports events and athletes or acting as the organizer of events. Red Bull was a sponsor of a Formula 1 team, the Dakar Rally team. During the event "Red Bull Stratos", it used the name of parachutist Felix Baumgartner, who in 2012 jumped from the stratosphere while beating four world records. The action was broadcast in the media, making the parachutist famous and at the same time strengthening the position of the Red Bull brand, which has become a trendsetter, crossing barriers and creating new challenges. Similarly, another brand of energy drinks, Monster, used sponsorship of moped sports disciplines through the well-known motorcycle road racer Valentino Rossi. The Monster brand sponsored the Motocross World Championship and Motorcycle World Championships, strengthening its market position. The use of marketing and promotional methods has turned out to be very effective because energy drinks are products that evoke strong emotions, are associated with the manifestation of lifestyle choices and belonging to a social group [15].

Social consequences

The dynamic growth of energy drinks consumption is a threat to public health, especially for young people. According to nutrition specialists, consuming this type of drink is harmful, especially for children and adolescents because the young body has fewer opportunities than an adult to safely assimilate and remove ingredients contained in energy drinks.

The consumption of energy drinks among youth is associated not only with potential health risks, but also with risky behaviours; among others, seeking strong impressions, smoking and the use of other harmful substances, getting drunk, depression or injuries that require treatment [3,9]. Consumption of energy drinks raises serious safety concerns. In 2007-2011, the number of visits to emergency departments related to the use of energy drinks doubled, and in 2011, 1 in 10 people who consumed them required hospitalization [20].

Undesirable effects of energy drinks occur in 80% of teenagers and 77% of students. 31.2% of respondents complained about insomnia and trouble falling asleep, 30.1% on heart rate and feeling of palpitations, 27.1% were irritated, agitated and anxious, and 18.2% had dizziness [16].

Unlike hot coffee or tea, energy drinks can be drunk at a gulp. Caffeine is therefore absorbed faster, which can result in overdose. In many countries, deaths have also been reported from heart failure or hospitalization due to convulsions that were associated with excessive consumption of energy drinks. WHO experts claim that: "Because the sale of energy drinks is rarely limited by age criteria - unlike

alcohol and cigarettes, and there is evidence that these beverages have a negative impact on children, their future consumption may pose a serious public health problem". This risk can be minimized by introducing appropriate legal regulations: setting an acceptable limit of caffeine in one portion of beverages available on the market, limiting the possibility of selling energy drinks to children and adolescents, and obliging producers of these beverages to responsibly advertise their products [3].

Energy drinks can be drunk by healthy adults in reasonable amounts, for example in situations where they are unable to rest before the physical or mental effort that awaits them. However, a much better solution than drinking energy drinks is to drink medium strong coffee. Certainly, drinks should be avoided by people with high blood pressure, children, pregnant and breastfeeding women, people with diabetes, neurological disorders and liver problems. Energy drinks do not have a great nutritional value because they provide only 2-3% of the daily intake of calories, so their function is limited to stimulating psychophysical activity rather than providing energy.

The main consumers of energy drinks are pupils and students, long-distance drivers, sales representatives, representatives of business professions, people working on night shifts and representatives of the uniformed professions. They are common in pubs and discos as an addition to drinks [13]. Children and adolescents reach for energy drinks in every possible situation: before classes, before physical activity, the disco, parties, tests, long hours of using the Internet or computer games, on excursions, performing sport activities, and even at home while doing everyday duties [19]. An energy drink becomes a drug for them after exhausting activities or a sleepless night because they think that it is an easy way to regenerate their body.

In America, energy drinks are the most popular drink among teenagers and young adults right after multivitamins. The greatest number of energy drinks is consumed by people aged 18-34, while nearly one third of adolescents aged 12-17 drink them regularly [20].

Studies conducted in Italy among pupils aged 11-13 show that the consumption of energy drinks increases with age. 6.2% of sixth grade students drink energy drinks at least once a week, while among eighth graders this percentage increases to 16.5%. Consumption of energy drinks less often than once a week was declared by 18.6% pupils aged 11, and the percentage among students aged 13 increased to 50.4%. These studies show that successful marketing strategies for the producers of energy drinks increasingly reach younger customers, in particular children of school age. Also in the older age group, energy drinks are very popular because as many as 31% of people aged 12-17 drink these beverages regularly, aged 17-29 the studies showed that 30.6% used energy drinks occasionally, 14.2% monthly, 14.9% weekly and 2.6% daily [5].

Research carried out among Polish students shows that 70% of students (almost 65% of social science students and 75% of students from technical faculties) consume energy drinks [14]. Other studies carried out in 2015, among students aged 18-28 from Wrocław universities, show that over 80% of respondents declare that they have consumed these beverages, while more than half of them admit that they consume them occasionally. The more often the respondents consumed energy drinks, the more side effects they felt, including heart palpitations, sleep disturbances, hand tremors and abdominal pain. With the increase in the frequency of consumption, the need for their regular consumption also increased, which is related to the occurrence of caffeine, which has an addictive effect.

In the case of energy drinks consumption the reasons why young people reach for them are very significant. Students deciding to consume this drink are mainly driven by the desire to increase energy (68.3%) and reduce drowsiness (55.5%). Also, the specific taste of the drink is very important for them, as 42.6% of the surveyed students declared. On the other hand, trend, fashion or marketing have the least importance for them [22].

From the research carried out among junior high school students (11-16 years old) and high school students (16-17 years) the most

common reason for using energy drinks was their taste (45%), which may indicate that these beverages are treated as refreshing drinks, which have beneficial effects on the body. Among the studied group, energy drinks also help improve sports performance and learning or improve well-being. On the other hand, advertising is very important, which for 50% of the youth is by far the most common source of knowledge [4].

Mixing energy drinks with alcohol is especially dangerous. Alcohol mixed with an energy drink is absorbed faster which accelerates intoxication but also poisoning. Among some people it may also increase the level of aggression. Unfortunately, drinks consisting of these ingredients are very common in clubs and discos. A European Food Safety Authority (EFSA) study found that over 70% of young adults aged 18-29 mix energy drinks with alcohol. The consumption of this kind of drink is riskier than drinking alcohol itself, because it can cause faster alcohol intoxication and lead to poisoning. People feel less drunk although they drink more alcohol mixed with an energy drink than pure alcohol. The combination of caffeine and alcohol accelerates diuresis and leads to faster dehydration of the body, and can also cause dangerous fluctuations in blood pressure, dehydration, insomnia, insulin resistance, stimulation of the heart, headaches and neurological disorders.

In some EU countries, regulations regarding the sale of energy drinks have been introduced. In France, in 2013, a tax was levied on drinks containing a large amount of caffeine, and in order to put a particular energy drink on sale, accurate information about its harmfulness must be included on the label. In Hungary energy drinks are subject to a public health tax, and in Sweden some of these beverages are only available in pharmacies and selling them to children is prohibited [3]. Denmark and Norway forbid the distribution of energy drinks. The ban on the sale of energy drinks to children in the UK was also introduced by the British supermarket chains Waitrose and Sainsbury's Aldi, Asda and Tesco. Since March 2018 the Waitrose network, has decided that it will not sell energy drinks with high caffeine content to people under 16 years of age. In Lithuania, since 2015, the sale of this type of beverages to persons under the age of 18 is forbidden, as well as the promotion of energy drinks. Latvia also plans to introduce similar regulations [6].

In Poland, energy drinks are legal. In accordance with applicable legal regulations, the packaging of a drink with a high content of caffeine or foodstuffs with the addition of caffeine must be labelled with information (in the same field of vision as the name of the food) concernign its high caffeine content. It is not recommended for children, pregnant women and breast-feeding women. Despite the warnings on a can of energy drink - that it is a product for adults, not advised for children, has a high caffeine content - the growing popularity of these beverages among children and adolescents is becoming alarming [9]. The law limits only access to foodstuffs containing significant quantities of ingredients not recommended for the development of children and adolescents, including energy drinks in kindergartens and schools. Currently, the Ministry of Health does not carry out legislative activities restricting the sale of energy drinks to persons under the age of 18 outside the area of education system units.

The Ministry of Health fights energy drinks through educational activities that aim to raise the knowledge of Polish consumers as well as children and young people. The projects are also undertaken as part of the National Health Programme for the years 2016-2020 [24], pursuing the operational objective 1, under the title "Improving the methods of nutrition, nutritional status and physical activity of society". The most important activities undertaken by the Ministry of Health in recent years are: the establishment of the National Centre for Nutritional Education (NCEŻ), a platform that provides access to reliable information on food, nutrition and physical activity, the creation of an online dietary clinic providing every adult with a consultation, creating an application called "Zdrowice" promoting a healthy lifestyle among children and young people, i.e. a free game for smartphones with the Android system addressed towards children and youth, the

organization of nutrition workshops for persons responsible for implementing nutrition in the education system units and the organization of nutrition workshops for children and parents [26].

Summary

Counteracting the ever-increasing phenomenon of consuming energy drinks that have a negative impact on children and adolescents is difficult. In the future, their consumption may be a serious public health problem. It can be minimized by setting an acceptable limit of caffeine in one portion of beverages available on the market, limiting the possibility of selling energy drinks to children and young people, as is the case with cigarettes or alcohol, as well as obliging producers of these beverages to responsible advertising or even banning their products. Lack of proper legal regulations, easy access to energy drinks, everywhere and at any time, social consent in the use of these types of products, low social awareness about the consequences of consuming energy drinks and mixing them with alcohol, but above all marketing showing only the benefits of using these beverages, addressed mainly to an increasingly younger group of recipients, make it difficult to carry out activities that prevent a rapid increase in consumption.

Currently, the only effective action to reduce the consumption of this type of product is the multi-sectoral education of the public about the risks associated with the consumption of energy drinks. In the conducted research, many experts believe that there is an urgent need to increase knowledge, especially in the school environment among children, and adolescents, as well as teachers, parents or health professionals about the health risks of consuming energy drinks, among others, by introducing programmes to prevent the consumption of energy drinks and to inform them about possible health risks.

The best way to prevent diseases and various health problems is health promotion and health education. According to the new 2017 primary school core curriculum, health education is provided by physical education teachers within a specific thematic block called "health education". Physical education should include content about health and its diagnosis in the context of counteracting diseases associated with contemporary lifestyles, as well as raising the importance of an active and healthy lifestyle in order to maintain fitness and health for as long as possible [25].

Therefore, in education, physical education teachers who are prepared for this function play a special role in the health education of students. Their task is education in the field of healthy lifestyles, transferring knowledge about the adverse consequences of one's behaviour and related health threats, including sensitizing children and adolescents to the negative effects of drinking energy drinks, as well as building health awareness among students and shaping a sense of responsibility for one's own health. In the education process, the young generation is to acquire necessary knowledge about health, its conditions and threats, as well as develop the ability to use this knowledge in everyday life to know, want and be able to enhance their own health and that of other persons and to improve the quality of life. Therefore, health education should be conducted from the earliest years of life to shape pro-health behaviours and habits.

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THE SPORTS OR RECREATIONAL INFRASTRUCTURE OF SCHOOLS FOR PUPILS WITH DISABILITY

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Abstract
By preparing the space within an educational institution for a quantitatively significant group of pupils with special needs, we prevent exclusion by enabling environmental integration. That policy of public space management is consistent with the World Health Organization's (UN WHO) "World Action Program for People with Disabilities", the European Union's document "Accessibility: principles and lines directives", as well as with Polish law. The aim of this study was to analyse the adaptation of school sports and recreational infrastructure to the needs of students with different types of disabilities. The study was carried out as a part of the research project DS-300 at the University of Physical Education in Warsaw. According to the premises of the pilot study, the analysis of the available source materials, participant- and open nonparticipant observation together with photographic documentation were applied. Structured interviews with the employees of primary schools with integrated classes in the selected districts of Warsaw (Bielany and Żoliborz) were conducted. A questions layout was used as a research tool for closed-ended structured interview. Adapting school facilities to the needs of students with disabilities (with mobility dysfunctions, visually impaired or with other special needs) is an extremely complex issue due to the variety of disorders. Therefore, the principle that should be applied to the design of education facilities (all levels) needs to be universal design, taking into account their functional availability, including sports and recreational infrastructure for all groups of students, with the message: "designing for the disabled - we design for everyone". It should be emphasized that there is no single, universal and ideal model of integration, or school sports team "without barriers", therefore the problem of functional and curricula concept is still open, and professional search and discussions should be constantly conducted - both practical and theoretical.

Key words: *schools with integrated classes, sports and recreation infrastructure, pupils with disabilities, social inclusion*

Introduction

Removing the obstacles in educational facilities, including sport and recreational infrastructure, is not only a requirement of formal law and a noble ethical obligation, but most of all, a rational social policy. The importance of participation in physical education classes, extra-curricular sport, recreation in playgrounds as a method of counteracting exclusion and promoting a more complete social inclusion - is well documented in specialist literature [1,2,9,11,14,16,17]. By preparing the space of educational institutions for students with physical or mental disabilities, we enable the environmental integration to accelerate the costly rehabilitation process for nearly 200 thousand people with different disabilities (Table 1).

In Poland, in the 2015/2016 school year, over 184,000 pupils were faced with a decision about the need to participate in special educational programs, including 19,344 students with physical disability [www.men.cie.gov.pl]. At the basic level of education, in the 2016/17 school year, pupils with a special educational need in most cases attended public primary schools (66.9%). Out of 49 thousand pupils, 2% studied in special class units, 33.6% in integration units and 64.4% in open access class units [6]. This educational policy is consistent with the UN World Health Organization "The World Programme of Action Concerning Disabled Persons" and the

European Union's document "Accessibilite: principles and lines directrices" (Conseil de l'Europe, Strasbourg 1992), which set three goals: a) prevention, b) rehabilitation, and c) equal opportunities. The programs of therapy through sport and recreation, implemented for several decades in Poland and other EU countries, bring excellent results, help people with disabilities to achieve a higher quality of life and help in social integration [1,2,10,11,14,15,17]. However, it is difficult to talk about the social inclusion of students with disabilities during school activities, including physical education classes and recreation, if the school facilities and surroundings are not accessible and safe for wheelchair or blind students. The technical barriers, including spatial ones, may relate to the necessity to overcome stairs, uneven surfaces, narrow doors and corridors – which means functional availability of areas, facilities and equipment. Therefore, the principle that should hold good to the preparation of education facilities (at all levels) should be universal design, considering their functional availability, in accordance with the message: "designing for the disabled - we design for everyone" [12]. The designers of these areas are obliged to follow such an approach in planning by - besides the indicators of a humanistic, medical, and technical nature - the legal requirements applicable in Poland [28,29]. This includes the regulation of the Minister of National Education of 9 August 2017 on the conditions of education, upbringing and care for disabled and socially challenged children and youth, or those threatened by social challenges. It also includes the Regulation of the Minister of National Education of 17 March 2017 on the organization of public schools and public kindergartens [28,30,31]. It should be emphasized that in Poland the preparation of sports and recreational areas in terms of the needs of students with disabilities has significantly improved as newly built or modernized educational facilities must meet legal standards. The entrances to the buildings are doubled by a ramp, internal stairs - by a passenger lift, corridors and doors have a width that allows for manoeuvring the trolley; surrounded by school buildings there are wide walking routes, which are safe and devoid of terrain differences, and within the building changing rooms and toilets are suitable for disabled students. Adapting educational facilities to the needs of disabled students (who have motor dysfunctions, are visually impaired or have other disorders) is an extremely complex issue due to the variety of their needs. Different facilities must be provided for wheelchair users, as opposed to for a visually impaired person. Practical guidebooks for designers are helpful, such as those are published by the United Nations, or the Secretariat for the Convention on the Rights of Persons with Disabilities "Accessibility for the Disabled – A Design Manual for the Barrier Free Environment" or works targeted at functionally accessible public facilities, including sports and recreation areas at school facilities [8,12].

Aim, methods and research material

The aim of the study was to assess the availability of sports and recreation infrastructure for students with disabilities in primary schools with integrated classes in selected districts of Warsaw city.

The availability assessment was completed according to the following criteria:

- characteristics of needs,
- availability of the school building and grounds,
- availability of sports and recreation facilities.

On the basis of the assumptions of the pilot study, interviews with primary school employees with integrated classes in Warsaw Bielany and Żoliborz districts were conducted, together with the analysis of the available source materials, participant observation and non-participating public participation along with photographic and structured documentation.

A disposition was used as a research tool for the structured interview.

During the pilot study, information on the available sports and recreational equipment and infrastructure in primary schools with integrated classes in two districts - Żoliborz and Bielany - was obtained. From May to June 2018 structured interviews with the headmasters of the studied schools were conducted. The lack of access to the sports and recreation infrastructure inside the school appeared to

constitute a major limitation. It blocked the potential to complete photographic documentation of all examined facilities. The permission to take pictures concerned only the external infrastructure of the school (playgrounds, sport fields, school surroundings).

Results

School sports and recreational infrastructure should be available not only during school hours but after classes, in the afternoons, also for the local community, and especially for elderly people. Therefore, when striving to create an inclusive environment "without barriers", as in the case of other sports and recreation facilities - in the communication space, locker rooms, toilets and showers and building surroundings - the needs of the disabled should be taken into account, in particular the wheelchair user [8,21]. The accessibility of sports and recreation areas will be determined primarily by the appropriate parameters of horizontal and vertical communication, cloakroom and sanitary facilities (toilet, showers), as well as equipping showers in waterproof "white wheelchairs". According to the literature [8], changing the dimensions of the sports field or hall is not recommended (except for the level alignment and proper passage width). However, changes are suggested in the layout, for example: the height adjustable option of the basket board or installing handrails for exercises helpful for people with motion dysfunction. It should be emphasized that the sports equipment repository should be larger, possible to use as a sport-wheelchairs park, (also as a convenient place to change the standard wheelchair for a sport one). If there is a swimming pool at the school, the needs of people with disabilities must be met. Except for adjusting locker rooms and sanitary spaces, there should be a place enabling an unobtrusive and safe transfer to a waterproof wheelchair, and an appropriately contoured, gentle descent into the water with handrails and a ramp, as well as a lift available for the direct transfer of a disabled person from the wheelchair to the water.

The above remarks are also applicable within the arrangement of school playgrounds for toddlers, in order to be accessible to children with disabilities. With respect to both, special devices (construction of swings, rockers, slides, trampolines - with a secure fixing for wheelchairs) should be considered, together with their layout, as well as adequate access paths. Pedestrian paths should be even, smooth, but not slippery, respectively wide, without ground level differences of more than 2 cm:

Searching for the model of school sports and recreation infrastructure "for all"

The social significance of solutions for universal areas of sport and recreation, their important inclusive function in educational institutions are difficult to overestimate. It is important to emphasize the strong opposition of specialists to the creation of "school ghettos" for students with physical or intellectual disabilities in state schools, constituting 6% of all pupils in educational institutions [18]. The situation is similar in Germany, France, the Netherlands, Switzerland, the Scandinavian countries, and outside Europe - in Canada, Japan and the USA.

Contemporary pedagogical knowledge emphasizes the great importance of social rehabilitation, consisting in the widest possible inclusion of non-able bodied people in various social activities within the same space. Many specialists involved in this issue, on the basis of long-term research and observation, state that children with health problems must be provided with the right conditions for sport and recreation, and their needs do not differ significantly from the preferences of their peers [1,2,26,27].

Above all, it is essential to provide special standard devices, a games field or a playground for the youngest children - in no way labelled, separated or highlighted as different from the one dedicated to other students. Both children with disabilities and their non-disabled peers often respond in a natural and spontaneous way in school open areas for sport and recreation. They will play creatively, using ordinary and dedicated devices - regardless of their fitness - if they appear attractive. These behaviours of the author's children were observed during field

studies at playgrounds in Poland (ds. 300 AWF Warsaw), but similar types of behaviour are described in the work of other researchers [1,9,16]. Therefore, it is important from the social point of view, instead of building special objects to equip ordinary gymnasiums, playgrounds or school playgrounds with devices designed for children with disabilities (for example, those moving on a wheelchair). These can be, for example, flat devices - trampolines resting at ground level, which can be safely entered with a pushchair, but also jumped on independentlyif the children feel like it; swings to which a stroller can be safely attached, gyms with movable basketball boards (with the possibility of lowering them for wheelchair users) or swimming pools equipped with cranes or movable ramps to enter the water. Other basic devices that should be included in the integration sport and recreation areas include elevated sandboxes, shower trays and flower beds (available for a child in a wheelchair); traditional slides and rockers with a more solid construction, equipped with additional handles and appropriate security. In many non-Polish schools, the equipment of the halls and sports fields is enriched with attractive and universal accessories, i.e. colourful balls (bright colours with sound), mats (colourful, with music, pleasant sounds), swings, reinforced and profiled safety ladders, slow motion balls, soccer sensory balls, big balls for therapeutic exercises, massage balls, foam, coloured geometric figures, etc.

Unfortunately, the accessibility of devices for the integration of school sports grounds and toys for universal playgrounds is still limited. This has a negative impact on the attractiveness not only of the school recreation program, but also city parks and green areas in housing estates. At the same time, it should be emphasized that the situation is constantly improving, especially for large cities [Table 2].

Certainly, even more interesting project results for the integration model of sports and recreation areas in educational institutions could be achieved with the involvement of a number of specialists (graduates of the Academy of Art, Academy of Physical Education, Medical Academy, Pedagogical faculties, Polytechnic), in consultation with specialized associations (people with hearing impairments, or the visually impaired).

Summary and discussion

In Poland, despite the visible improvement, some children and young people still do not have access to a safe and universal sports infrastructure, especially in smaller centres. This is indicated by the available data of the Central Statistical Office, data of the Educational Information System, and published reports of the Supreme Audit Office. Deficiencies occur despite the efforts of successive governing teams responsible for the conditions for the implementation of physical education classes and the promotion of youth in educational establishments of an integrational character. This state of affairs is also confirmed by other documents, for example, the report "Social Diagnosis of Demand for Sports and Recreation Infrastructure" commissioned by the Ministry of Sport and Tourism. This results from the fact that there is still a lack of integrative sports facilities; the availability of, primarily, properly prepared indoor swimming pools and sports halls is hindered.

Therefore, there is an urgent need to prepare hundreds of Polish educational facilities and their surroundings (including sports fields and recreation areas) in such a way that all students can use them on equal terms. The lack of such facilities has a negative impact on the process of social inclusion, and consequently, affects the entire later life of a student with disability. It turns out that decades of neglect in this area now require constant, uninterrupted activities and major expenditures. In February 2017, the Ministry of Sport and Tourism (Department of Sports Infrastructure) announced the "School infrastructure development program for 2017". The goal of the "Program" is to improve the condition of school sports infrastructure, including integration-oriented educational institutions. What is more, the project assumes not only the use of infrastructure for the purpose of physical education classes, enabling the organization of sports activities, but also to serve local communities for active leisure time (www.mnsport.gov.pl). Significant funds are to be earmarked for the construction of indoor

swimming pools, sports fields (without barriers) and repairs to existing but neglected facilities.

The assumption of the planned investments is not only versatility, but also general accessibility, openness for the residents of the area in the after-school period: afternoons, during weekends and during holiday periods. An extremely important postulate for the dissemination of the idea of "sport for all" included in the above-mentioned 'Program' of the Ministry of Sport and Tourism is the possibility of free use of school areas and facilities. It is also worth following government activities implemented within the scope of the "The Accessibility + Program".

We should hope that thanks to similar programs, educational facilities will be diversified and adapted to the current needs and elements of sport and recreational integration infrastructure, enabling various forms of activity by various groups of students (schoolchildren and extracurricular - also residents of nearby settlements). Thanks to such projects recreational areas and sports and recreation facilities - through the appropriate enhancement of development and diversity - have a chance to play an important integrating role for the whole local community. It can be hoped that this will concern universal sports facilities, and open spaces "without barriers", including school playgrounds for young children - currently not always available to external users.

Another important aspect of sustainable and economically efficient investment in the sports and recreational "no barriers" school is the problem of increasing the use of expensive infrastructure, and thus striving for its year-round (multigrade) use. An appropriate project can ensure that the integrative sports and recreational infrastructure is available throughout the year in changing climatic conditions; exercises can take place in comfortable conditions thanks to good lighting, screens and careful selection of plants can give protection against wind, noise and dust. A partial roof may protect against excessive insulation or rain and snow. It is worth placing more emphasis on natural materials from which individual elements of the infrastructure can be made. These give children a greater sense of comfort and safety.

Finally, it should be emphasized that, although the removal of technical barriers (both in the school building itself and in its surroundings) is extremely important for improving the accessibility of sports and recreation infrastructure, it is the empathy and support shown by teachers, employees of educational institutions, peers and parents that have a decisive influence on achieving the full social inclusion of a student with disability.

Table 1. Statistical data of pupils with special educational needs in Poland (September 2016).

	Special educational needs of pupils	**Numer of pupils**
1	With conjugate disability	30 854
2	Blind	350
3	Visually impaired	8 182
4	Hearing impaired	2 216
5	Hard of hearing	10 030
6	Light intellectual disability	47 122
7	Moderate or severe intellectual disability	23 681
8	Socially challenged	3 578
9	In danger of being socially challenged	9 947
10	In danger of becoming addicted	31
11	With behavioral disorders	177
11	Chronically ill	81
12	With mental disorders	31
13	Students with physical disabilities (including aphasia)	19 934
14	Students with autism (including Asperger's Syndrome)	27 794
15	Total	184 008

Table 2. Analysis of the equipment of playgrounds and the sport and recreation areas in schools with integration departments

No	Playgrounds and sport and recreation areas in schools with integration departments	Adaptation of the school building and the number and type of facilities for children with disabilities to enable participation in sports activities	The minimum recommended number of facilities for children with mobility disabilities (in age groups)[1]
1	Primary School A classes 1 - 8 (pupils aged 6-15)	The school's ground floor is adapted and accessible to wheelchair users (toilets, handrails, ramp at the entrance, wide doors, parking spaces, leveled surface), a room for sensory integration. Playground, gym and multifunctional outdoor field with standard equipment	For children aged 5 - 7: (2) For children aged 8-10: (3) For children aged 11 – 13: (4) For youths aged 14 - 16: (5)
2	Primary School B classes 1 - 8 (pupils aged 6-15)	The school building is well adapted: lifts, ramps, handrails, adapted toilets, wide doors. Specialized rooms - room for sensory integration Playground, gym, - standard equipment. Multifunctional field for team games (basketball, volleyball, badminton, handball); football field with artificial surface. Additionally: a sensory path, a green science garden.	For children aged 5 - 7: (2) For children aged 8-10: (3) For children aged 11 – 13: (4) For youths aged 14 - 16: (5)
3	Primary School C classes 1 - 8 (pupils aged 6-15)	The school building in the process of adjustment: no elevator, platform, a lot of stairs, long corridors. Comfortable surface around the school (cube). A new fenced playground, with artificial, leveled surface, space for younger and older children, colorful exercise equipment, a square accessible for wheelchair users; gym - standard equipment. Multifunctional field for team games (basketball, volleyball, badminton, handball); football field with artificial surface, athletic track, long jump, table tennis tables - available for pupils with disabilities	For children aged 5 - 7: (2) For children aged 8-10: (3) For children aged 11 – 13: (4) For youths aged 14 - 16: (5)
4	Primary School D classes 1 - 8 (pupils aged 6-15)	The school building is adapted: lift, handrails in the corridors, toilets, wide doors. Parking places for the disabled. The SI therapy room and rehabilitation room. Playground, gym and outdoor field with standard equipment.	For children aged 5 - 7: (2) For children aged 8-10: (3) For children aged 11 – 13: (4) For youths aged 14 - 16: (5)

Source: The study by authors based on the results of field research in Warsaw, in the Bielany and Żoliborz districts (April - June 2018). This segment of the research project DS.- 300 AWF Warsaw was implemented according to the methodology described by Canadian scientists from Laurentian University: Yantzi N.M., Young N.L., Mckeerer.P. (Yantzi et al. 2010)[2]

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[1] Based on recommendations US Access Board Guide on Play Areas and Sports Grounds 2005

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PEDAGOGICAL COUPLES IN THE PRACTICUM OF A BACHELOR DEGREE IN PRIMARY EDUCATION: EDUCATIONAL INNOVATION IN THE UNIVERSITY OF BALEARIC ISLANDS

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Abstract

Background/Objective: The education system in Spanish universities evolves continuously, especially since 2010, when the Bologna Plan was incorporated. Some changes were needed in order to improve the quality of the practicum, which is a crucial subject on the academic program for the primary education bachelor. This investigation shows a pilot experience, and the aim of this study is to design a new approach of the practicum in the Primary Education Bacherlor's Degree in the University of the Balearic Islands (UIB).

Methods: 8 university teachers from the department of physical education (PE), 22 school PE teachers from 17 different schools and 44 students participated in this project. The practicum had a duration of 8 weeks, and the whole project a duration of 1 year. The innovation aspects are the pedagogical couple methodology, the participation of the students in the evaluation process and the type of homework students did.

During the whole period there were internal and external evaluations to detect which measures worked and which did not.

Results: The use of pedagogical couples, with a combined auto-evaluation, co-evaluation and hetero-evaluation, and the type of documents students had to produce as homework are the three pillars of the project, which has had good results in satisfaction and learning according to university teachers, school teachers and students.

Conclusions: The results from this pilot project were positive, with a high level of satisfaction from the students, school teachers and university teachers. Students improved their knowledge working with the pedagogical couple system, and the homeworks students did were more motivating than in the past.

Key words: *Practicum, pedagogical couples, competences, Autonomy, Bologna Plan.*

Introduction

This paper presents a pilot project concerning a new concept of practicum, which was based on pedagogical couples as an innovative pedagogic strategy.

With the incorporation of the Bologna Plan, aspects such as meaningful learning, the importance of relating the academic sphere to the workplace [11] and learning by competences have acquired great importance [2,6,7,9]. Taking that into account, the ultimate goal of the practicum in a bachelor's degree is to form excellent professionals for the future [4].

Careers are increasingly complex, so the training of university students must be multidisciplinary [11], which makes the practicum much more important. Also, this system of learning benefits teachers because they remain in touch with students with updated knowledge, initiative, and creativity.

The practicum could be understood as a pre-work experience, where students could put into practice the knowledge they have acquired earlier and, at the same time, learn from other professionals and while gaining experience [7]. Students must observe, make decisions, reflect and plan various educational situations.

The pedagogical couples is a strategy that has been carried out to improve the quality of the practicum. This system helps to analyse different education strategies, improve team work skills and the ability to analyse complex situations [3, 9].

Additionally, only well-established programs are able to focus on curricular aspects. Focusing on organizational aspects alone is a frequent mistake, which affects the quality of the practicum, and a failure to focus on learning content, adequate evaluation systems and tutoring systems [11]. As a result, and in order to have a high quality of education in our university, we have carried out this pilot project to improve curricular aspects of the practicum.

Aim

The aim of the project is to improve the quality of the practicum, focusing on learning by competences, through the pedagogical couples system.

Materials and methods

The present pilot project took place at the Education School of the University of the Balearic Islands (UIB), specifically in the physical education Department, with 8 university teachers, 22 school teachers in 17 different primary schools in Mallorca and 44 students.

During this practicum, bachelor degree students of primary education taught physical education (PE), to children aged 6-12 years. Students from this practicum had done two practicums before, of 450 hours each, the first one with children aged 6-9 and the second one with children aged 9-12.

The objective is to design, implant and analyse a new practicum system, which increases the quality of the subject and improves our students' training, using the methodology of pedagogical couples.

The final objective is to apply this new system to all practicums of the bachelor´s degree in primary education at the University of the Balearic Islands (UIB).

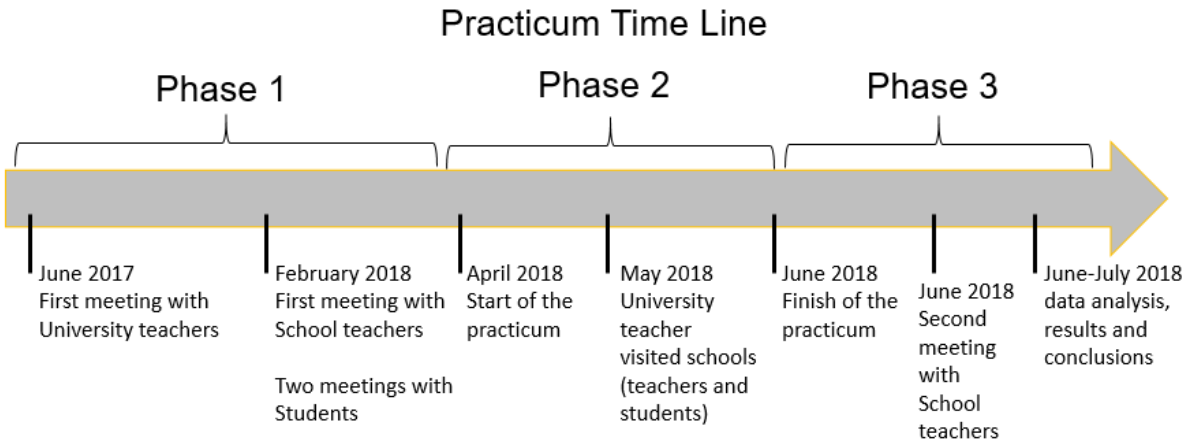

Figure 1. Practicum Time Line

For the organization and coordination of this project, the organization team met with all parties before and after the practicum. At the outset, in phase 1, three meetings took place. The first one was with all university and school teachers. In this meeting, university teachers explained the aims, and designed the strategy of the practicum with school teachers. The second one took place with all university teachers and students, and the third one was between each university teacher and his/her students.

During the practicum, university teachers were in touch with school teachers and students via phone calls and emails, and visited the schools one or more times. If there were doubts or problems, university teachers had meetings with students, school teachers or both.

The school teachers evaluated the practice part of the practicum, giving 50% of the grade, and the university teachers evaluated the theory part, giving the other 50% of the grade. To favour the evaluation process, teachers from schools and university stayed in touch during the whole practicum. During phase 2, the university teacher visited the school to see the students give a full lesson, and take part in the feedback dynamic with the observer student and the school teacher.

Pedagogical couples, the most innovative aspect of this practicum, is a methodology characterised by putting the students in pairs during the whole practicum. Every school teacher worked with two students at the same time. The PE teacher classes were distributed to students, having the same number of classes each, and having classes in the two educational cycles (6-9 years, and 9-12 years) according to Spanish educational law (LOMCE, 2013 for more information visit https://www.mecd.gob.es/educacion/mc/lomce/lomce/presentacion.html). During the lessons, one of the pedagogical partners delivered the class as a teacher, and the other observed and completed an observational document to give feedback at the end of the lesson. The school teacher guided the observation and took notes to give feedback at the end of the class as well. To guarantee an adequate evaluation system the university teachers had designed an observational document to guide the observation and evaluation of the pedagogical couple during the practicum. The aim of this document was to give useful feedback to help learning and improve teaching skills.

For the evaluation of the practice part of the practicum, there was an innovation aspect of auto-evaluation, co-evaluation and hetero-evaluation combination, with the aim of using the evaluation as part of the learning content based on competences [1, 10]. This was performed with the consideration that students will be future teachers, and that the scope of the evaluation, as well as the autonomous learning, are very important aspects in their university education [8]. Every student had to carry out self-assessment and co-evaluate his/her pedagogical couple. Students made these evaluations every day during the sessions, and also they did this at the end of the practicum, offering an overall evaluation of the practicum. After these evaluations, the school teacher would assess the participants, taking into account the students' evaluations.

In relation to the homework, the documents that students created consisted of three parts. In the first of these, students were required to explain their work plan for the 8 weeks of their practicum, specifying objectives, methodologies, contents, courses and competences. In the second part, they had to explain the three best classes and the three worst classes they had done and make a thoughtful comment. The third part consisted in making a poster about an important aspect of PE in the school they had done the practicum, present it in a poster session, and make a thoughtful comment on what in their opinion were the two best posters. This last part was designed as a motivational project to introduce the students to the range and focus of the research. Preparing these documents took time and effort and improved the students' skills [5].

As a pilot project, the evaluation aspect was very important. For that reason, an internal and an external evaluation were made. For the internal evaluation, the questionnaire used had a scale between 1 and 5, and an open-ended question, in order to evaluate all roles: university teacher-student and vice versa, school teacher-student and vice versa, school teacher-university teacher and vice versa, all at the beginning, during and at the end of the process. An external commission did an overall, continued evaluation of the practicum project. On one side, the University evaluated the design phase, and on the other side, professors from other departments evaluated the project during the process and at the end.

As data collection document for the project, we used the documents students made as homework, the meetings between university teachers and school teachers to give feedback to each other, tutoring sessions between university teachers and students, a visit from the university teacher to the school, and the satisfaction questionnaires.

In the present study we used excel to determine the mean and standard deviation, and the graphic design.

Results

The geographical distribution of the schools was carried out taking into account the quality of the PE department/teacher in each school, with schools distributed in 9 municipalities of Mallorca, Spain. For the research group it was very important to choose the schools for their quality, not for their location or other aspects unrelated to education.

The students and teachers were asked to evaluate the first meeting, with 35 students out of 44 and 11 teachers out of 22 responding to the questionnaire. As Figure 2 shows, the results were positive: 8 students and 4 teachers classified the meeting as good, and 27 students and 7 teachers classified the meeting as very good.

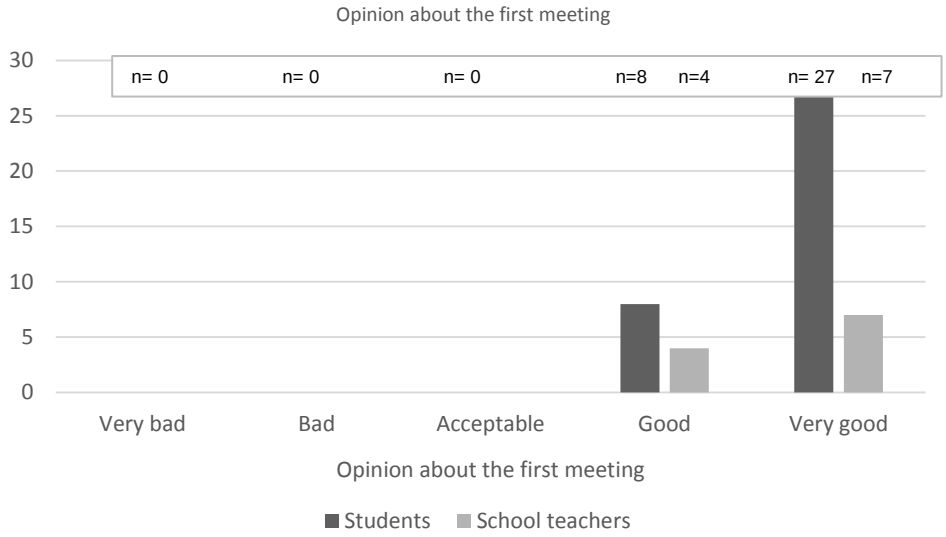

Figure 2. Students and school teachers satisfaction questionnaire of the first meeting.

At the end of the practicum, a satisfaction questionnaire was carried out for the university teachers, school teachers and students evaluating the practicum system. Students (n=44) evaluated the practicum with a mark (mean) of 8.53/10 and a standard deviation (SD) of 1.7. School teachers (n=16) evaluated the practicum with 8.54/10 and SD 1.34. University teachers (n=6) evaluated the practicum with 9.83/10 and a SD of 0.41.

Figure 3 shows the mark that each group gave to each part of the practicum, differentiating between evaluation system, university organization, school organization and overall assessment.

Results from the internal evaluation were positive; however, it is necessary to highlight that the 3 agents: students, school teachers and university teachers emphasized the brevity of the practicum (250 hours) as a negative aspect.

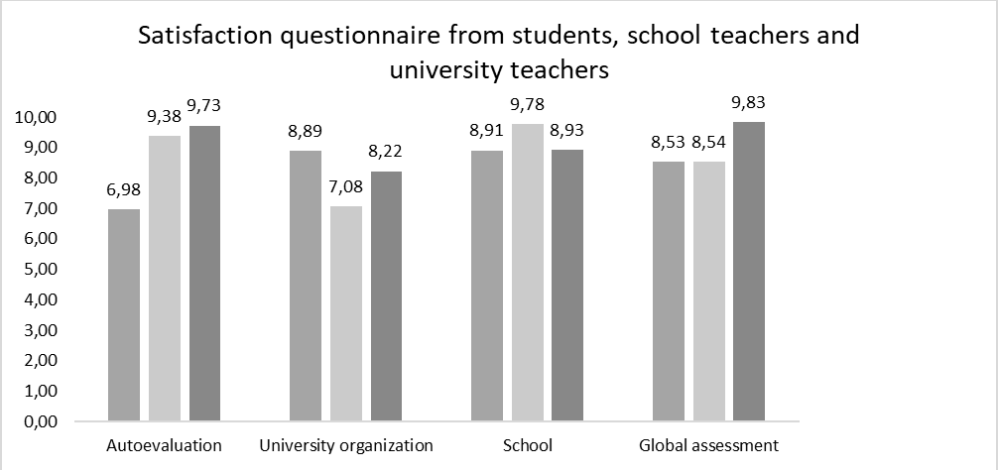

Figure 3. Satisfaction questionnaire from students, school teachers and university teachers at the end of the practicum

Discussion

The methodology of the pedagogical couples was new in the practicum of the UIB, and the results are positive in terms of both opinion and learning. Other studies had reported positive results on pedagogical couples in practicums, with a positive opinion from the students and a greater level of learning [3]. During the academic year 2018-19 the practicum of PE will incorporate pedagogical couples again, with the intention of implanting it progressively to all the practicums of the bachelor's degree in primary education.

The homework of the previous two practicums had required students to evaluate the theoretical aspect of the work practice. Students had reported this to be a boring and uneducational task. For this reason, in the present pilot project we decided to incorporate the new format, with 3 homework tasks as commented before. Students reported that this system was more exciting, and they realised that the level of learning was better. Furthermore, in our opinion, these tasks are more related to their professional future and contributes more to the acquisition of the competences that the Bologna plan promotes.

In spite of students evaluating the self-assessment with the worst mark compared to the other aspects of the practicum, school teachers and university teachers agreed with the use of the auto-evaluation and co-evaluation as an important aspect that contributes to the learning of the students, making them more competent for their future work.

Putting to one side the aspects commented before, an important issue on which students, school teachers and university teachers agree is the duration of the practicum. In this bachelor's degree, the duration of the specialty practicum is just 250 hours, in comparison with the two general practicums of 450 hours. We know that it was difficult to find a solution to this, but the practicum period should be longer for a better preparation of the students.

A marked strength of this study was the innovation of the methodology and the design of the practicum. Also, it is important to note that we will continue to analyze this project for years, to guarantee the quality of the practicum. As far as the limitations are concerned, the size of the sample is limited, and the objectively measured data is also limited.

Conclusion

The present pilot project has served as a precedent to improve the quality of the practicum, but more actions are necessary to guarantee the maximum learning of the students.

The pedagogical couples, the type of homework and the evaluation were changes that helped to improve the learning of the students. Furthermore, the duration of the practicum should be longer to guaranty our students get enough expertise.

This pilot study was considered necessary by University teachers and school teachers, and both parties agreed that the protocol designed to improve the quality of the practicum and to encourage learning from our students is appropriate. Also, students were satisfied with the practicum programme.

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EDUCATIONAL MATURITY AND MOTOR AND SOMATIC DEVELOPMENT OF KINDERGARTEN AND EARLY SCHOOL AGE CHILDREN

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Abstract

The proper physical development of a child is the last criterion for achieving educational maturity. It is often underestimated; however, it is very significant in school activities, since a healthy, physically fit, and properly nourished child will be less exhausted by sitting at a desk, walking to school, or performing various tasks which may often seem challenging. The purpose of the paper is to evaluate the school maturity of kindergarten age and early school age children and their somatic and motor development in the context of their commencing school education. While verifying these general rules, studies on a group of 628 girls and boys aged 6 and 7 years were conducted in the city of Opole. The test prepared for this survey consisted of 7 fitness tests and body height, weight, and fat measurements. The results obtained have been subjected to statistical analysis. An analysis of the morphological measurement results and fitness tests demonstrate that both the six-year-old girls and boys did not attain the same level of physical school maturity as their 7 years old schoolmates. This level of maturity would enable them to withstand the educational requirements of the primary school curriculum.

Key words: *educational maturity, physical maturity, ontogenetic development, school education, motor development*

Introduction

At what age should a Polish child start their primary school education? Many educators, psychologists, scientists from various areas of social life, parents, and representatives of the Polish education system have tried to answer this question for years. Does the age of 7 or 6 imply, in their opinion, that a child is mature enough and school-ready? Based on the respective decisions and regulations of state authorities, at the present moment, according to the Act of the Education System of June 23, 2016, as of the start of the 20016/2017 school year, compulsory education covers children aged 7 and older. A 6-year old child will have the right to commence their education in the first year at a primary school as long as they have received pre-school education in the school year preceding the school year in which they are to start their school education. If the child did not attend a kindergarten, the parents can also register them for the first class. In such a case, however, an evaluation from a psychological and pedagogical counseling facility on the possibility of commencing learning at primary school will be necessary. When moving from pre-school age to early school age, the child is exposed to changes regarding teaching methods. While pre-school activities were largely play-oriented, primary school activities are based around learning. To meet these requirements, a child should achieve school maturity. The notion of being school-ready has been defined by many researchers in professional literature. M. Kwiatkowska defines this notion as a child being ready to undertake new tasks imposed by the school, and to adapt to an unknown environment and to a generally different life situation [6,7]. S. Szuman [13] describes school maturity as the child achieving a sufficient level of physical, social, and mental development, as to be sensitive and prone to systematic teaching and upbringing within the primary school. M. Pilkiewicz [9] describes school maturity as the readiness of a child to undertake a new social

role, along with all the duties it involves. School maturity includes three fields of a child's development: mental maturity, emotional and social maturity, and physical maturity. According to this author, school maturity includes three fields: mental maturity – it is believed that a mentally mature child is a child who is mature enough to study. They gladly learn to write, read, and count. The child's mental readiness to study is also determined by their development level in speaking, thinking, expressing their wishes, their own conclusions, opinions, and imagination suitable for the final pre-school age stage. The child's curiosity about the world and their activity influences, to a large extent, their mental development. This is reflected in the asking of numerous and frequent questions, which they cannot answer. To each question, he or she asks, the child should receive an answer which will help them satisfy their curiosity and expand their knowledge regarding life and the surrounding world. The child's mental maturity is demonstrated by their ability to listen and understand what others say, and to easily express themselves.

Trouble-free communication with their surroundings should be facilitated by a large stock of words. The speech should be correct in grammatical and logopedic terms. Correct pronunciation is the basis for reading and writing. The mental maturity requirements for a child who begins their school education are also described by A. Klim-Klimaszewska [4]. The author emphasizes that a student should have such an amount of information and comprehend it to such an extent that they are able to benefit from the teacher's explanations and remarks. In addition, with the use of logical thinking, the child should connect the information provided together, and on the basis of it, make their own conclusions. According to the afore mentioned author, a person who is mature enough to study at school, quite quickly memorizes the information delivered and is able to recreate it in anticipated situations. The author pays attention not only to speech development in grammatical terms, but also to the fact that the child should distinguish the prosodic features of speech. She states that a person ready to study at a school must be aware of accent and intonation, differentiate rhymes, and recognize the rhythm of speech. For A. Klim-Klimaszewska, what is important is not only the ability to differentiate letters graphically, but also the dependencies between the elements that constitute them. A child should recognize that letters "b" and "d" consist of the same elements – a dash and a circle, but also recognize the dependency that in letter "b", the dash is in front of the circle, and in letter "d", the dash is behind the circle. A. Klim-Klimaszewska also emphasizes that a school-ready child, especially when it comes to the ability to read and write, is a child who has correctly developed phonematic hearing [5].

A pre-school age child undergoes changes in its emotional and social development. Mood fluctuations occur in their emotional life. They react to positive and negative incentives by yelling, crying, or laughing. Interruptions bring changes in the nervous stability, which is reflected in the child's caprices or crying. Such a situation can often lead to conflicts with the surrounding world. This phenomenon changes at early school age. A child's emotional and social maturity is also demonstrated by their independence, resourcefulness in various situations, dutifulness, persistence in pursuing goals, but also acceptance of failure. A mature child has no problem in establishing contacts with other persons, or complying with the rules prevailing in the class. He or she is able to function in a group, and is disciplined. The emotional maturity level of a given person results from the emotional development level they have achieved, which is defined as the process of shaping specified emotional dispositions. The general collection of these dispositions is defined in turn as emotionality [6].

Physical maturity is most generally associated with the child's health and general fitness [6]. It consists of motor fitness, fatigue and infection resistance, correct eyesight and hearing and manual fitness. The basic biological need at kindergarten age is increased activity in the open air, namely activeness. Through activeness, a child improves fitness, and encounters the new or the unknown. Performing the same activities for a long time

may lead to fatigue, which may be dangerous for the child. The parents should control their child's physical effort and leisure. They should also provide correct nutrition to the child, namely proper vitamins and mineral components. Health is significantly influenced by hygienic lifestyle – activity in the open air at any time of the year, clothes adapted to the weather. Manual fitness is associated with the development of the muscles of the hands, fingers, and wrists, which serve an important role in the child's life. In order to develop it, the child must be provided with various appliances and materials to work with. A child may demonstrate problems with drawing, writing, or reading when care for senses such as hearing or eyesight is insufficient [6].

Bearing in mind the individual development of a child and the dynamic progress of civilization, we debate more often than before when to send a child to school. A growing number of parents of "six-year-olds" try to answer this question. Among the solutions are opinions from psychological and pedagogical counseling facilities. The opinions they issue only offer information about the school readiness level in intellectual and emotional terms. But the guidelines for physical maturity are insufficient. Why is the physical maturity level of a child who crosses the threshold of a school so important? A school child must have enough physical strength and resistance to fatigue. Sitting at a desk for many hours, carrying a heavy backpack and performing various mental tasks is difficult, even for a healthy, strong and fit child. A weak, sickly child who is held back in their motor development cannot participate in classes on equal terms with other children, gets tired and exhausted quickly, often skips classes, and finally struggles to master the required material. A demonstration of the undoubtedly great physical effort children undertake in the 1st class at a primary school are the results of a study concerning the weight of backpacks in primary schools in Opole and Opolskie Voivodeship, carried out by employees from the State Sanitary Inspectorate in Opole [16].

Aim of the study

The purpose of the study was to evaluate the school readiness level in terms of the motor and somatic development of kindergarten and early school aged children in the context of starting their education at a primary school.

In order to implement the purpose of the study, the following research questions were asked:

- Which of the physical school maturity measures show the biggest change tendency?
- Do morphological features diversify 6 and 7 year-olds in terms of the school readiness level?
- Do the differences in the physical fitness measures depend on the age of the children being studied?
- Do the differences in the fitness measures depend on the gender of the children being studied?
- Can the results of the studies be a determinant of the physical school maturity of children aged 6 and 7?

Study Materials and Methods

The study group consisted of girls and boys aged 6 and 7, 628 persons in total, including:

- in the six-year-old group, 255 persons:
  - 128 girls,
  - 127 boys,
- in the seven-year old group, 373 persons;
  - 183 girls,
  - 190 boys.

The studies were conducted in 10 kindergartens and 8 primary schools within the area of Opole. Kindergartens covered by the studies are free-standing buildings with playgrounds separated by greenery from traffic-loaded streets. Children staying here have very good conditions for playing in the open air, which is important for correct development and health.

The gardens are equipped with modern, safe, and colorful playgrounds. Apart from implementing the minimum teaching program at the kindergartens, a number of additional activities take place, among others: foreign language lessons, eurythmics, sport classes, and also drama classes. The schools covered by the studies are also free-standing

buildings. All the conditions for classes are provided within them (lessons in classes, and sport). The schools have large, spacious sports halls, and external playing fields with green areas. The city of Opole is the capital of the Opolskie Voivodeship. The city's area is 96km² and the number of residents is about 126 000.

As the research tool, basic anthropometric measures were used to evaluate the morphological development. With the use of an anthropometer, an electronic scale, and a caliper, the following were measured:

- Body height with an accuracy down to 0.1cm,
- Body weight with an accuracy down to 0.1kg,
- The thickness of skin-fat folds with an accuracy down to 0.1cm:
- the fold under the knee – held vertically under the incisura poplitea on the back of the calf. A child being studied sat on a small bench, with the feet placed on the floor, and the knees bent at 90º,
- the fold on the biceps muscle – the fold held lengthwise, at the height of the fold measurement on the triceps muscle. The child being studied stood at attention, with the arms along the trunk,
- the fold on the arm held lengthwise, above the triceps muscle, half the way between the acromion and the olecranon. The child being studied stood at attention, with the arms along the trunk,
- the fold on the belly held crosswise slightly below (about 1 cm) the belly button, and about 5 cm sidewise. The child being studied stood at attention, with the arms along the trunk,
- the fold under the shoulder blade held askew sidewise at the lower angle of the blade. The child being studied stood at attention with the arms along the trunk.

To evaluate the motor development, the specially prepared Physical School Maturity Test was used, which includes the following fitness tests:

1. Balance test – general balance of the whole body (standing on the toes)
2. Jump test – the explosive strength in the lower limbs (jumps in pairs left and right leg),
3. Functional strength test – arms muscle endurance (handing on a bar),
4. Upper limbs dynamic strength test (throwing a 1kg medicine ball forward in straddle sitting position),
5. Back muscle strength test (throwing a 1kg medicine ball backwards in straddle sitting position),
6. Trunk strength test – abdominal muscle endurance (bends on a physio wedge in 15s),
7. Running speed, agility test (figure 8 run).

During all stages of the studies, the same measuring equipment was used, the accuracy of which was periodically checked. For somatic measurements, children being studied wore sport outfits (barefoot). In the preparation of the material, the following statistical analysis methods were used: arithmetic mean, standard deviations, Student's t-test.

Table 1. Statistical characteristics examinated boys and girls

		PUBLIC PRIMARY SCHOOL OPOLE	NON-PUBLIC PRIMARY SCHOOL OPOLE	OPOLSKIE VOIVODESHIP (IN TOTAL),
Number of schools studied		1	1	**25**
Number of classes studied		1	2	**38**
Number of students studied		28	32	**492**
BOYS	Student average body weight	28.60	27.31	**27.63**
	Average weight of backpack with content	5.00	2.99	**3.07**
	Average weight of books	1.78	0.38	**0.80**
	Average weight of exercise books and notebooks	0.29	0.57	**0.64**
	Average weight of books, exercise books and notebooks	2.08	0.94	**1.32**
	Average weight of empty backpack	1.05	0.44	**0.93**
GIRLS	Student average body weight	26.77	27.14	**27.07**
	Average weight of backpack with content	4.77	2.85	**3.13**
	Average weight of books	1.85	0.36	**0.81**
	Average weight of exercise books and notebooks	0.33	0.69	**0.66**
	Average weight of books, exercise books and notebooks	2.19	1.04	**1.35**
	Average weight of empty backpack	**1.08**	**0.48**	**0.88**

Results

When analyzing the results obtained from the measurement of the basic somatic features, i.e. the body height and weight of the group being studied, the difference between the average results of girls aged 6 and 7 years can be observed. The girls attending the first class at primary school are, on average, 4.84cm taller than the one year younger girls who attend kindergarten. Statistical characteristics were prepared with the use of Student's t-test (t =-7.537), where the significance index p = 0.000 demonstrates the dependency between the groups being studied (Tab. 1).

When evaluating the results obtained in the measurements of the body weight of the group being studied, differences between the average results of 6 and 7 year old girls are noticeable.

The average results obtained by six-year-old girls are, on average, 3.06 kg lighter as compared to the seven-year old girls. Statistical characteristics were prepared with the use of Student's t-test (t =-5.369) where the significance index p = 0.000 demonstrates the difference between the groups being studied. In analyzing the fat level studied, more developed fat tissue was observed in all the measurements in the seven-year old girls, and there was no statistical difference observed in the skin-fat fold under the shoulder blade alone (Tab. 1).

Table 2. Statistical characteristics of measurements (body height, weight, and fat measurements in 6 and 7 years old girls. Significant indices at a level of p< 0.05 are printed in bold font

Subsequent measurements	Test	Group of girls	$\overline{X}$	Max result	Min result	s	Student's t-test	
							t	p
1.	Body height [cm]	six-year-olds	121.351	139.7	107.8	5.241	-7.537	**0.000**
		seven-year olds	126.199	140	110.2	5.798		
2.	Body weight [cm]	six-year-olds	23.534	40.4	16.3	4.365	-5.369	**0.000**
		seven-year olds	26.599	51.6	18	5.320		
3.	Skin-fat fold under the knee [mm]	six-year-olds	14.574	34	9	3.947	-4.904	**0.000**
		seven-year olds	16.903	38	9	4.232		
4.	Skin-fat fold of the triceps muscle [mm]	six-year-olds	13.932	31	5	4.067	-2.833	**0.004**
		seven-year olds	15.195	34	8.5	4.240		
5.	Skin-fat fold of the biceps muscle [mm]	six-year-olds	8.824	20	3	3.974	-2.439	**0.015**
		seven-year olds	10.005	22	2.5	4.348		
6.	Skin-fat fold under the shoulder blade [mm]	six-year-olds	9.285	27	3	9.413	-1.070	0.285
		seven-year olds	10.203	35	3	5.639		
7.	Skin-fat fold on the belly [mm]	six-year-olds	8.785	31	5	5.232	-2.000	**0.045**
		seven-year olds	10.054	34	8.5	5.668		

Table no. 2 shows an analysis of the measurement results for the body height of the boys studied, in which a clear difference between the average results of the boys aged 6 and 7 is noticeable. The average results obtained in this measurement favor the seven-year old boys, who achieved 7.316 cm more. The statistical characteristics performed with the use of Student's t-test (t =-11.683) demonstrate that the seven-year old boys obtained on average a higher (12.698cm) statistically significant difference (p=0.000) in the body height.

The results of body weight measurements in the same group suggest quite a large difference between the subjects. The average results obtained in this measurement favor the seven-year old boys, who achieved results better on average by 3.98 kg (Fig 2) than the six-year-old boys. As in the body height measurement, a statistical dependence was also observed here (Tab. 2).

Based on an analysis of the data related to the fat level in the six-and seven-year olds, included in Table no. 2, it can be concluded that in all the measures, the higher fat level was observed in all the cases; however the statistical dependence is confirmed by the measurements under the knee and on the triceps muscle.

Table 3. Statistical characteristics of measurements (body height, weight, and fat measurements in 6 and 7 years old boys. Significant indices at the level of $p< 0.05$ are printed in bold font

Subsequent measurements	Test	Group of boys	$\overline{X}$	Max result	Min result	s	Student's t-test	
							t	p
1.	Body height [cm]	six-year-olds	120.382	135.8	104.6	5.658	-11.68	**0.000**
		seven-year olds	127.698	145.5	113	5.350		
2.	Body weight [cm]]	six-year-olds	23.278	39.9	15.7	4.134	-7.04	**0.000**
		seven-year olds	27.259	48.9	16	5.417		
3.	Skin-fat fold under the knee [mm]	six-year-olds	13.835	34	8	4.092	-5.26	**0.000**
		seven-year olds	16.321	34	6	4.148		
4.	Skin-fat fold of the triceps muscle [mm]	six-year-olds	12.523	30	6	3.755	-2.402	**0.016**
		seven-year olds	13.667	33	6.5	4.420		
5.	Skin-fat fold of the biceps muscle [mm]	six-year-olds	8.630	23	2	8.979	-0.239	0.810
		seven-year olds	8.810	26	2	4.259		
6.	Skin-fat fold under the shoulder blade [mm]	six-year-olds	7.484	31	3	4.374	-1.728	0.084
		seven-year olds	8.421	36	3	4.969		
7.	Skin-fat fold on the belly [mm]	six-year-olds	7.246	26	2	4.602	-1.448	0.148
		seven-year olds	8.102	39	2.5	5.522		

The statistical characteristics of the measurements in particular fitness tests for the girls aged 6 and 7, confirmed by the results from Table 3, indicate that seven-year old girls in all the tests obtained on average better results than the one-year younger girls.

The statistical analysis was performed with the use of Student's t-test demonstrating a significant dependence in five measures. In the arms muscle endurance test, such a dependency was not observed.

Table 4. Statistical characteristics of measurements in particular fitness tests for 6 and 7 year old girls. Significant indices at the level of $p < 0.05$ are printed in bold font

Subsequent measurements	Test	Group of girls	$\overline{X}$	Max result	Min result	S	Student's t-test	
							t	p
1.	Whole body general balance [s]	six-year-olds	185.023	89.9	1.4	158.593	-3.30	**0.001**
		seven-year olds	257.595	96.8	1.2	209.994		
2.	Lower limbs explosive strength [cm]	six-year-olds	134.13	192	45	29.12	-7.06	**0.000**
		seven-year olds	158.34	231	83	30.14		
3.	Arms muscle endurance [s]	six-year-olds	267.34	90.8	5.3	168.246	-1.99	0.464
		seven-year olds	306.497	82.6	4.8	171.162		
4.	Upper limbs dynamic strength [cm]	six-year-olds	196.48	280	100	38.17	-5.67	**0.000**
		seven-year olds	222.21	360	110	40.25		
5.	Trunk strength [number of repeats in 15s.]	six-year-olds	13.65	20	8	2.15	-3.32	**0.000**
		seven-year olds	14.46	20	10	2.11		
6.	Running speed, agility test [s]	six-year-olds	162.73	22.4	12.7	17.28	6.8	**0.000**
		seven-year olds	149.22	20.8	12.1	17.2		

A tendency similar to the one in the results for the girls is noticeable in the group of boys which is confirmed by the results from Table 4. While the results for the arms muscle endurance test were on average better for the seven-year old boys, they did not demonstrate a statistical dependence. On the other hand, the results for five other tests, through their significance index, which was lower than 0.05, indicate that there is a statistical dependence. To sum up, it can be clearly concluded from the results obtained and their analysis that the physical fitness level of 7 years old children is clearly higher than that of their one-year younger school mates. On this basis, an evaluation of the physical maturity level of 6- and 7- year old children can be undertaken. The level of the somatic and motor features of 6-7-years old children in the area of Opole unambiguously indicates in terms of the physical school maturity that older children have higher chances in early school education.

Table 5. Statistical characteristics of measurements in particular fitness tests in 6 and 7 year old boys. Significant indices at the level of $p< 0.05$ are printed in bold font

Subsequent measurements	Test	Group of boys	$\overline{x}$	Max result.	Min result.	S	Student's t-test	
							t	p
1.	Whole body general balance [s]	six-year-olds	180.086	95.3	1.3	166.929	-3.04	**0.002**
		seven-year olds	246.410	93.3	1.6	204.093		
2.	Lower limbs explosive strength [cm]	six-year-olds	149.669	271	42	33.577	-6.53	**0.000**
		seven-year olds	176.786	270	23	37.894		
3.	Arms muscle endurance [s]	six-year-olds	267.921	85.2	4.8	160.526	-1.69	0.091
		seven-year olds	299.536	82.7	4.8	164.625		
4.	Upper limbs dynamic strength [cm]	six-year-olds	201.929	300	110	40.503	-10.09	**0.000**
		seven-year olds	251.842	370	130	44.836		
5.	Trunk strength [number of repeats in 15s.]	six-year-olds	14.307	20	8	2.029	-3.73	**0.000**
		seven-year olds	15.210	22	7	2.167		
6.	Running speed, agility test [s]	six-year-olds	160.322	22.5	12.8	17.198	7.97	**0.000**
		seven-year olds	145.031	21.7	11.6	16.397		

Discussion

The physical maturity of a child, as one of the school readiness elements determined by physical skills, motor capabilities, and thus by physical fitness, has been researched by many authors for years [W. Wilgocka-Okoń, S. Szuman and others]. School maturity is understood as the full development of the body. According to W. Wilgocka-Okoń [14], maturation is not the only factor responsible for the development. It includes biological, environmental factors, and learning. On the other hand, when speaking of school readiness, she means a certain development level of a child at which the child can cope with their school duties. In the opinion of W. Okoń [8], educational maturity is the child's achievement of a mental, emotional, social, and physical development level, which will make it possible for them to participate in school life and to master the first class program. W. Okoń's understanding of school readiness is similar to that of S. Szuman [12], who writes that when a child obtains the mental, physical, social, and emotional development level, it is possible for the child to systematically learn and adapt to education in the first class at primary school. These authors have jointly expressed the view that the motility development is an important factor for the child in establishing social contacts. They also try to prove that good physical fitness demonstrated in games and in playing during breaks and classes makes it easier for children to join the group and to be accepted by their peers. Physical fitness level was also assigned a significant role in shaping autonomy, self-confidence, and independence in action. Such predispositions, among others, should be shown by a child who ends their pre-school education and, following its completion, when starting their primary school education, they should have the following skills in the scope of their health and physical fitness education:

- care for their own health, have basic understanding of healthy nutrition,
- recognize the connection between illness and treatment, submit to treatment (e.g. they know that it is necessary to take medicines and injections),
- be physically fit, or fit for their capabilities, if they are less able physically,
- participate in physical classes, plays and games, in a park, on the playground, or in the sport hall.

Szewińska describes school maturity as a development level that is necessary for the child to adapt to the conditions prevailing in education in the first class [11].

M. Przetacznikowa evaluates a child as school-ready, if:

- they have reached a sufficient physical and motor level,
- they have sufficient knowledge,
- they can communicate by speech,
- they engage in performing tasks and implement them to the end,
- they can cooperate with others,
- they control their emotions [10].

Why is the physical maturity level of a child who crosses the threshold of the school so important? A school child must have enough physical strength and be resistant to fatigue. Sitting at a desk for many hours, carrying a heavy backpack, and performing various mental tasks is difficult, even for a healthy, strong, and fit child. A weak sickly child who is challenged in their motor development cannot participate in the classes on equal terms with other children, they get tired and exhausted, often skips classes, and finally they struggle to master the required material [15]. The middle childhood period, also known as the pre-school age, in the opinion of M. Kielar-Turska [3] lasts from the 4th to 6th years of life, while according to A. Klim-Klimaszewska and M. Żebrowska, it lasts from the 3rd to 7th years of life [4,16]. The name pre-school age originates from the fact that this period precedes the child's school duties. Some children attend a kindergarten during these years, which in our system is the first level of education. However, the chronological limits of this period are relative and fluid, just like those of the other periods. At each stage, features of the earlier one can exist, disappear, and new ones develop, specific to the given age, or such that are typical only later in life. It is worth pointing out that children develop at a different pace, in different conditions, and this means they are different than their peers, both physically and mentally. There are three-year olds who are not ready to participate in a pre-school group, and children who can be enrolled at school before reaching the age of 7. In all children, changes in their psychological and physical development occur, typical exclusively of the pre-school age. Apart from the common development features for this period, changes can be distinguished which show the dynamics of the child's cognitive processes, and the transformation in the emotional and social sphere of their mental development. M. Żebrowska distinguishes the following phases in the pre-school period [16]:

1. Early phase, 3- 4 year olds,
2. Middle phase, 4 - 5.5 year olds,
3. Late phase, 5.5- 7 year olds.

In the opinion of Paprotna [9], the pre-school age is a period of intensive development, and of children opening themselves to the surrounding reality; at the same time it should be a time of happiness and positive experiences associated with discovering the world. The experience that remains in people from this period in life is often the basis on which they build their personality, their attitude towards themselves, others, and the world. The physical and motor development of kindergarten age children is characterized by a progress that is ordered and logical, as Cudak notes [1].

An alternative related to this problem can be the set of physical maturity tests being discussed for 6-year-old children. The tool created for the purposes of the studies is a set of 6 fitness tests for evaluating: the whole body's general balance, running speed (agility), the lower limb explosive strength, the arms muscle endurance test, the upper limbs dynamic strength, and the trunk strength. In addition, each child covered by the study was subjected to measurements of the basic somatic features, namely the body weight and height, and measurements of skin-fat folds. The tests are simple exercises that do not require any special

physical abilities, which can be performed by children both in preschool, school, or domestic conditions, supervised by a teacher or a parent [16]. To confirm this thesis, similar studies are still in progress, using the same research tool in other regions of Poland. Bearing in mind the presented deliberations of many authors, it seems justified to continue studies on the physical development of children in early school education.

Conclusion

- The arms muscle endurance of 6-7 year old children, namely the functional strength of their arms, was the only test performed that did not demonstrate statistically significant changes, although the average results obtained by the girls and the boys favour seven-year olds.
- The morphological characteristics diversify between the tested groups in terms of their school readiness level; the development age of the seven-year olds directly affects the higher development level of their body height, weight, and fat in relation to their one-year younger school mates.
- The age of the children being studied directly influences the development of the seven-year olds' physical fitness. In all the tests conducted, the children attending kindergartens, namely the six-year-olds, obtained worse results.
- The gender of the children being tested in the development period being discussed has no impact on the results of the studies. The change tendencies are noticeable only within the same gender, favouring the older children.
- The higher physical fitness level and a significant increase in the somatic features demonstrate that physical fitness of 7-year old children can be a determinant of physical school maturity.

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