

Assessing physical activity and sedentary lifestyle behaviours for children and adolescents living in a district of Poland. What are the key determinants for improving health?

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Abstract

Introduction. Adequate levels of physical activity throughout an individual's life ensure an optimal state of health. Only 30% of adolescents and 10% of adults perform sufficient physical activity to facilitate proper physical, psychological/mental and emotional development.

Objective. Determining physical activity behaviour in children and adolescents through surveying the opinions of school pupils and parents, in order to lend support for optimised educational programmes designed to promote healthy lifestyle behaviour, as well as establishing consistent answers.

Materials and Methods. A randomised survey was conducted on two groups of n=1100 pupil subjects, each attending elementary or secondary school, with the former in Classes 5 and 6, whereas the latter were aged between 16–19 years old; in both instances parents were also included in the survey. All subjects came from the Kalisz District in western-central Poland, and were divided into those living in the city of Kalisz and those in the surrounding rural areas.

Results. It was found that 87%, 96% and 89% of elementary, middle and secondary school pupils, respectively, participated in Physical Education (PE) lessons. The numbers of pupils who daily, or almost daily, spent time on a computer, were 52%, 60% and 70%, respectively, for elementary, middle and secondary schools, and likewise 70%, 62% and 48% for watching TV.

Conclusions; It is vital that education programmes with a focus on a healthy lifestyle are introduced and targeted at teenagers in order to promote physical activity during the crucial time of the body's development. The period of maturing into adulthood is particularly crucial for acquiring the right knowledge, convictions, skills and attitudes that help shape a pro-healthy lifestyle in later years.

Key words

physical activity, sedentary behaviour, youth, school

INTRODUCTION

Among the major health problems facing modern society, such as malnutrition, overweight and obesity, is the lack of fitness resulting from insufficient physical activity. Preventing this from happening constitutes a vital factor in decreasing the incidence of non-communicable disease, both in Poland and worldwide. Appropriate physical activity during the formative years also ensures that overweight and obesity are less likely to develop, as well as the other so called 'Diseases of Civilisation'. Indeed, throughout an entire lifetime, an optimal state of health together with physical and mental fitness can be achieved through undertaking physical activity. This is accomplished by increasing the energy expenditure over and above that required for a basic

metabolic rate, leading to a decrease in body mass whilst still maintaining it at appropriate levels. A plethora of studies from other countries demonstrate that one of the fundamental problems in public health is a lack of physical activity which affects all the whole of society, including adults, children and adolescents. It is recognised that factors limiting physical activity are not only due to the progress of urbanisation and automation, but are also caused by the various attractions of the media and TV. Being confronted with this situation has led health experts from many countries to formulate recommendations on the levels of physical activity needed to benefit an individual's state of health, and decrease the risks of the 'Diseases of Civilisation' arising from a lack of physical activity. Medical public health organisations from the USA, such as AHA (American Heart Association) [1], AAP (American Academy of Paediatrics), and the ACSM (American College of Sports Medicine) [2], all state that the optimum number of physical exercise amongst youth should be 5 days per week, each lasting 60 minutes, ranging

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from moderate to intense/vigorous – MVPA (Moderate to Vigorous Physical Activity).

Engaging in regular/systematic physical activity has many beneficial effects, such as decreasing the risk of cardio-vascular disease, which can occur in children and adolescents, through reducing cholesterol levels and having stable lipid management. In contrast, an ever-increasing sedentary lifestyle which is becoming more apparent across many social groups, doubles the risk of coronary artery disease, stroke, hypertension, obesity and Type 2 diabetes [3]; for the latter, a 30% risk reduction can be obtained by undertaking regular physical exercise [4].

Numerous studies also confirm that moderate physical exercise, of 30–60 minutes daily, is positively correlated with a reduced cancer risk by up to 46% [5], the underlying reasons being that physical exercise reduces the amount of adipose tissue, increases the metabolism of fats obtained from a high-caloric diet, improves immunological function, decreases free radical formation, and alters sex hormone levels which impact directly on tumour growth [6]. That a sedentary lifestyle increases the risk of cancer is also confirmed by studies comparing female students who participate in sports with those that prefer not to; where physical activity in adolescent girls significantly decreases the risk of breast, cervical and ovarian cancer [7].

Locomotory movement (mobility), especially in children and adolescents, has positive effects on bone mineralisation where levels are higher in those who are physically active and are directly proportional to the amounts of physical activity/exercise that is undertaken [8]. Regular exercise increases muscle mass, thereby strengthening bones and in consequence affecting those muscles responsible for maintaining body balance and coordinating movement. Regular physical activity also benefits bone mineral density during all stages of life; in the young it assists in maximising the peak bone mass, while in adulthood it halts bone mass loss that leads to osteoporosis and bone fracture [9].

Regular exercise increases the transmission rate of nervous reaction to stimuli and serves to stimulate the central nervous system (CNS). In this way it aids the development of motor function and improves coordination of movement [10]. Nevertheless, only one third of adolescents are estimated to perform sufficient physical exercise to assure appropriate physical, mental and emotional development – this applies globally, to both developed and developing countries [11]. Performing sufficient exercise also helps increase resistance to stress and fatigue [12]. It is therefore recognised that levels of physical activity are associated with disease development, where shortcomings in the former during adolescence lead to wide-ranging health problems in later life [13].

Objectives

1. To determine physical activity behaviour in Polish children and adolescents through surveying the opinions of pupils and parents in order that optimised educational programmes, designed to promote healthy lifestyle behaviour, can be implemented.
2. To assess whether the place of residence, (urban vs. rural), bears any relation to healthy lifestyle behaviour.
3. To establish similarities between responses from pupils and parents regarding physical activity.

MATERIALS AND METHOD

A randomised survey was performed in a group of elementary and secondary school pupils (otherwise termed High School or Upper Secondary School) from the Kalisz district of western-central Poland. This consisted of Classes 5 and 6 in the former and those aged 16–19 years old in the latter; parents were also included. Subjects were divided into those living in the city of Kalisz City or in the surrounding rural areas, with $n=1100$ subjects in each group. The study tool was a questionnaire designed by the Chief Sanitary Inspectorate targeted at the afore-mentioned subject groups, which also allowing the reliability of replies to be checked through comparing the respective answers provided (on the various aspects of lifestyle behaviour), between parents and their offspring. Permission for conducting the study was obtained from the appropriate authorities as follows; Department of Education at the Kalisz City Authority, the Head of the Kalisz District Authority as well as the Superintendent's Office of Education and Upbringing in Poznań. The study was also performed in close cooperation with staff from the local government community authorities in whose regions the subjects were residing.

Randomised sampling was stratified into two levels; ie. for schools and pupils. The technique of cluster sampling was used in that the class attended, district and municipality were taken into account, where all pupils from a given class were surveyed anonymously. Pupils were chosen from randomised selections, (using the SPSS and Statistica programmes), of elementary and secondary schools or education centres made from the Polish Ministry of Education Database (30 September 2008).

The survey was voluntary and anonymous, performed during pupils' school periods. Questionnaires intended for parents were taken home by the pupils in sealed envelopes, and then returned completed to the appropriate form teachers on designated days. The following numbers of questionnaires were returned:

- for pupils – Classes 5 and 6 from elementary schools returned $n=846$, while secondary schools $n=1018$, representing return rates of 77% and 92%, respectively;
- for parents – 708 were replies from elementary school children, and 670 from secondary schools, respectively, making up return rates of 64% and 61%.

Further analyses were conducted only on questionnaires which had been completed correctly, as follows;

- for pupils – 819 were from elementary schools and 999 from secondary schools, constituting, respectively, 74% and 91% of those surveyed;
- for parents – 688 were replies from elementary school children and 667 from secondary schools, constituting, respectively, 62% and 61% of those surveyed.

Answers thus obtained were entered into a central database using an integrated system programmed for accumulating questionnaire data, which were then subjected to statistical questions performed via the STATISTICA software package. The Pearson's χ^2 test was used to determine whether variables were significantly dependent, and testing for independence between $m \geq 2$ qualitative variables expressed in nominal scales. Calculated χ^2 values were compared to critical values for rejecting the Null Hypothesis (ie. the chances

of there not being a dependency) at the following levels of probability: $p=0.05$, $p=0.02$, $p=0.01$ and $p=0.001$.

The study results from elementary and secondary schools were also compared to corresponding data obtained from middle school children throughout the whole of Poland in the 2008–2009 school year. The intention was to estimate the numbers of pupils who participate in PE lessons or physical exercise outside school time, according to age group. The survey was conducted on 12,005 middle school pupils. The questionnaire had been designed by the Polish Chief Sanitary Inspectorate, based on the GlobalSchool-base Student Health Survey (GSHS). From this, 9,360 pupils and 6,951 parents correctly filled in the questionnaires. The survey itself was performed by staff of the State Sanitary Inspectorate in specific districts, and the same randomised sampling procedures were used for the presented study.

RESULTS

PE classes were attended by 87%, 96% and 89% of pupils from elementary, middle and secondary schools, respectively. Replies received from pupils were then compared with those given by the parents of elementary and secondary school pupils. It was found that parents of just elementary school children more frequently answered that their offspring participated in physical exercise during these classes than according to the children themselves (Fig. 1). It therefore appears that parents may either be ignorant or do not wish to admit knowing the actual participation of their children in PE lessons.

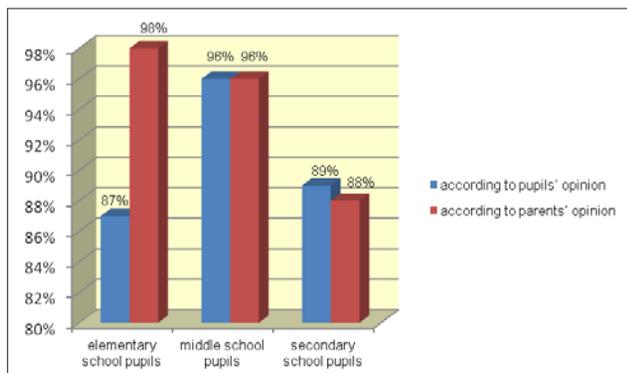


Figure 1. Pupil participation in PE lessons as declared by pupils and parents, expressed as percentages

The reasons given by pupils for being absent from PE lessons were due to having long-term sick leave in 93% and 55% cases for those from secondary and middle schools, respectively. The most common illnesses were musculoskeletal or cardiovascular disorder. However, according to parents, 36% and 40% of middle and secondary school pupils gave musculoskeletal disorders as the reason for sick leave, whereas only 4% and 5%, respectively, provided cardiovascular disorders as reasons. Thus, especially in the latter case, the answers given by children and parents clearly disagree. In contrast, the results from elementary schools show that replies mostly agree between parents and children; the single exception being that in those children who claimed being absent due a yearly long-term sick leave (1%), only half of this number had been confirmed by parents.

Of the elementary school pupils, only 36% replied that they participated in physical exercise daily, and 36% declared doing so 4–6 times weekly (Fig. 2). However, daily physical activity lasting two hours was performed by 51% of all children (Fig. 3), and 39% allocated 1–5 hours weekly, 33% 6–10 hours, 19% 11–20 hours and 10% over 20 hours.

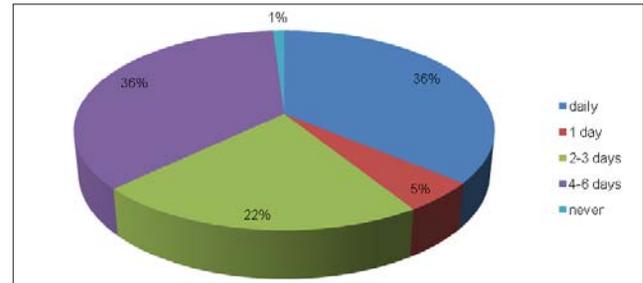


Figure 2. Number of days/weeks that pupils spend on defined sport activities

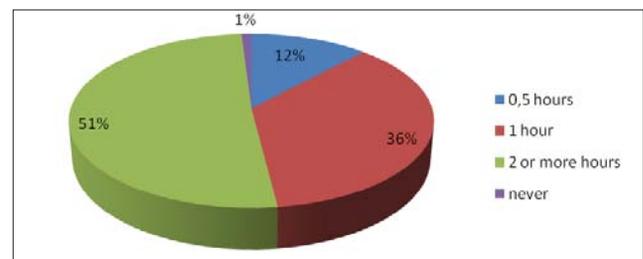


Figure 3. Daily hours that pupils allocate for physical activity

It was found that somewhat more elementary school pupils living in rural areas (90%) declared that physical exercise was their only means of performing physical activity, compared to those living in the city itself (85%); there was no difference in middle school children. However, substantially more secondary school pupils living in the city of Kalisz (85%) participated in PE lessons during a school year than those living in the rural areas (64%) (Fig. 4).

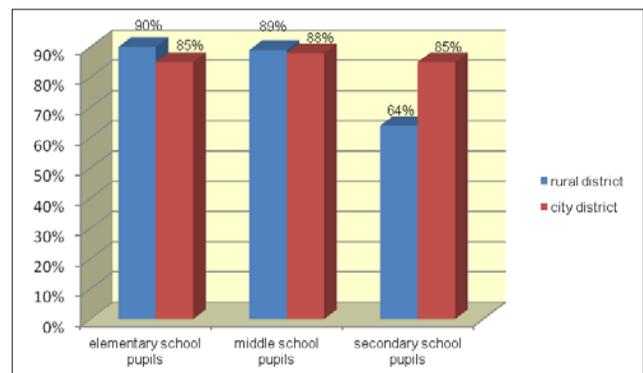


Figure 4. Proportion of daily physical effort spent on PE lessons in pupils living either in urban or rural areas, according to elementary, middle or secondary school

A decided majority of pupils claimed that they liked PE lessons, but only about <50% replied that they would actually like them to be increased (Fig. 5). These results are considered disturbing, as they demonstrate that an unhealthy and sedentary lifestyle is increasingly being preferred among young people. Furthermore, only 52% and 42% of parents whose children attend middle and secondary schools, respectively, showed any inclination for increasing time

devoted to PE lessons. The answers of parents and children from elementary schools agree, but only 18% of parents declared having a family custom/habit of participating together in recreational sports.

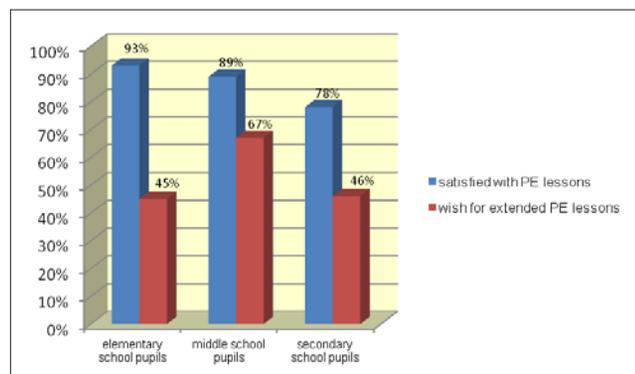


Figure 5. Number of pupils satisfied with/liking PE lessons, or wish them to be extended, expressed as percentages

Elementary school pupils (86%) also declared taking regular physical exercises in addition to PE lessons, which most commonly included; cycling (59%), playing football (37%), running (28%), swimming (19%), dancing lessons (16%) and volleyball (13%). The daily physical activity undertaken by middle or secondary school pupils are usually PE lessons and travelling to school. Active participation in sport was undertaken by 38% middle school pupils, compared to 22% from secondary school, reflecting that a sedentary lifestyle becomes more pronounced with age. The most popular sports among middle and secondary school pupils were, respectively, football (39% and 34%), volleyball (32% and 26%) and swimming (17% and 17%).

Tables 1 and 2 show the opinions of parents on the proportion of free/leisure time spent by their elementary, middle and secondary school offspring doing various activities, where using computers or watching TV predominate over sports in the last two age groups. Thus, once again, a sedentary lifestyle is preferred in the older age groups, as particularly highlighted by the data in Table 2, demonstrating that elementary school pupils more frequently spend their spare time participating in sports than those from middle or secondary schools.

Table 1. Leisure time spent by pupils according to parental opinion, between using computers or watching TV, divided into elementary, middle or secondary school gradations; expressed as percentage incidence

	Elementary-school pupils		Middle-school pupils		Secondary-school pupils	
	Computer	TV	computer	TV	Computer	TV
daily or almost daily	52%	70%	60%	62%	70%	48%
3–4 times weekly	29%	24%	22%	22%	18%	31%
1–2 times weekly	13%	5%	8%	6%	9%	15%
less than once weekly	3%	1%	2%	1%	2%	4%
less than once monthly	3%	0%	1%	1%	1%	2%

Table 2. Leisure time spent on physical activity by pupils according to parental opinion, divided into elementary, middle or secondary school gradations; expressed as percentage incidence

	Elementary school pupils		Middle school pupils		Secondary school pupils	
	at sports clubs	amateur sport	at sports clubs	amateur sport	at sports clubs	amateur sport
daily or almost daily	14%	35%	9%	16%	5%	9%
3–4 times weekly	12%	32%	10%	18%	6%	16%
1–2 times weekly	28%	17%	18%	19%	15%	26%
less than once weekly	11%	10%	9%	13%	11%	20%
less than once monthly	35%	10%	32%	10%	63%	29%

One of the key questions asked of middle and secondary school pupils was how much satisfaction did they derive from performing daily physical activity. The former showed that 34% were very satisfied, compared to 16% of the latter. Despite that over half of secondary school pupils were satisfied or more than satisfied with their levels of physical activity, this was in reality quite poor as, for example, 27% of physical activity was devoted to getting to school. In addition, almost the same numbers of middle and secondary school pupils expressed being very dissatisfied with their low levels of physical activity.

Pupils attending middle or secondary school (when treated together as a group) who live in the rural areas were more often satisfied (48%) or very satisfied (28%) with their levels of daily physical activity, compared to those from the city of Kalisz. However, it should be noted that the place of residence had no influence on satisfaction levels in middle school pupils *per se* in the levels of physical activity actually undertaken; more middle school pupils living in the countryside (38%) were very satisfied compared to those living in the Kalisz city district (31%) (Fig. 6). The main reasons given for being dissatisfied with how much physical activity is performed were either lack of time or lack of sports facilities.

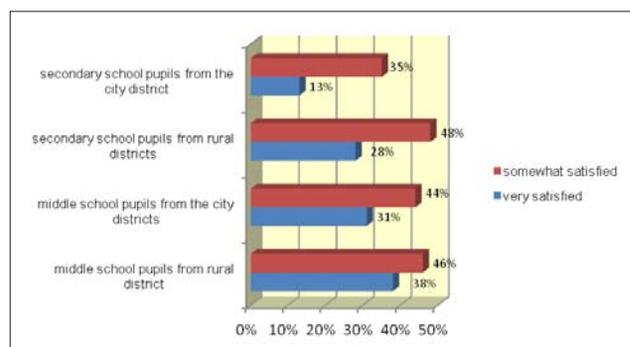


Figure 6. Satisfaction rates of middle and secondary school pupils with their physical activity, according to place of residence

DISCUSSION

Throughout the last 20 years there has been a rise in a sedentary lifestyle in most developed countries, associated with insufficient or even a lack of undertaking any physical activity [14]. Undoubtedly, this has arisen through the modern developments seen in technology, changes in lifestyle,

coupled with ignorance about how physical activity affects the normal course of healthy body development. It is well recognised that a physically active lifestyle during childhood and adolescence increases the likelihood of maintaining such behaviour in later years. In contrast, the unwillingness of youth to undertake physical exercise leads to adopting a sedentary lifestyle in adulthood and advanced years. Within this context, barely 30% of adolescents undertake sufficient physical exercise to ensure appropriate physical, mental and emotional development [15]. This constitutes a health risk leading to abnormal development of the young, with negative consequences arising, for example, developing obesity in later life [16]. It has been shown that only 10% of adults actually undertake sufficient physical activity adequate for their physiological needs [15]. The last decades have actually seen that levels of physical fitness have worsened in both youth and adults, as demonstrated by the Countrywide Integrated Noncommunicable Disease Intervention programme (CINDI WHO) conducted in various European countries. These are disturbing observations which go against recommendations made by many health experts. Based on scientific studies, the World Health Organization (WHO) prescribes daily physical activity lasting 60 minutes and of moderate to high intensity for children and adolescents aged 5–17 years [17]. This level and type of activity is also recommended in authorised documentation at the Copenhagen WHO Regional Office [18]. Similar advice has been issued by the USA Center for Disease Control and Prevention (CDCP) in Atlanta, Georgia [19]. Such physical exercises should be diversified and made available to suit the developing young individual, particularly in the earliest years [11]. If children/youths regularly perform some form of physical activity, eg. through travelling substantial distances to school by walking or bicycle riding, then other daily physical activity can be of moderate or high intensity, and lasting for only 30 minutes. It should be remembered that appropriate physical movement/mobility can be achieved through aerobics or exercises that stretch the muscles. The former increase breathing and heart rate which supplies more oxygenated blood to muscle tissue during exercise, whereas muscle stretching is best adopted as a warm up before performing exercises, and afterwards for stepping down from physical exertion.

The current study is consistent with these afore-mentioned observations in that although 87% and 89% of elementary and secondary school pupils declared participation in PE lessons, less than half wanted to increase the number of lessons. According to parents, 98% and 88% of their offspring attending elementary and high school take part in physical exercises. These somewhat similar findings are therefore convergent. Most pupils from middle schools, however, prefer PE lessons (96%), which is confirmed by their parents. These pupils also more often declared wanting to increase the number of PE lessons (67%), compared to the other age groups; however, this is still a relatively small number. Overall, most respondents stated that they like having PE lessons; however, the least satisfied are secondary school pupils (78%), which is consistent with a study by Wołoska and Jankowska [20] who report 72% amongst 16 year-olds living in Gdańsk. The most common physical efforts expended during the day were found to be from doing PE lessons and walking to school, which clearly shows that physical activity is mostly through compulsory school lessons which are insufficient for their body's locomotory-mobility requirements.

The place of residence had no effect on elementary and middle school pupil participation in PE lessons; urban dwellers, respectively, showed similar rates of 90% and 89%, similar to those from rural areas – 85% and 88%. More secondary school pupils living in the urban district (85%) indicated that taking PE lessons constituted their physical daily activity, than those from the rural areas (64%); however, conversely, the latter were more satisfied with their levels of physical activity (28% vs. 13%).

It is considered nowadays, that 180 minutes of weekly PE lessons (ie. 4 weekly periods), are insufficient to meet the locomotory-mobility needs of pupils, and moreover do not prevent the emergence of risk factors for chronic disease, especially obesity. It is therefore necessary that an active lifestyle habit is acquired for the young which is not just limited to PE lessons at school. After-school physical activities were claimed to be performed by 38% and 22% of middle and secondary school pupils. Replies given by parents, however, show that 9% and 5%, respectively, of pupils perform regular training, as opposed to 16% and 9% engaging in recreational sports, according to the respective pupil school groups. These relationships have been confirmed by the Chabros et al. study that showed 35% of girls and 39% boys attending elementary and middle schools in Warsaw participated in after-school sports [21]. Findings from the Institute of Food and Nutrition (IFN) in Warsaw demonstrate only 5% of boys and 7% girls aged 11–15 years take part in after-school sports club activities [22]. A study by Charzewska et al [23] shows 30% of secondary school pupils declared participating in diversified physical activities, but only a small proportion did so 3–4 times weekly (2–6%), which is marginally higher than those participating 1–2 times weekly (10–12%). Data obtained from the Central Statistical Office (CSO) indicate that only 30% of elementary school pupils take part in recreational physical activities at least once weekly for one or more hours [24]. The presented study confirms these observations, where 39% of pupils assign 1–5 hours weekly for sports. In both these afore-mentioned cases, the amount of physical activity undertaken does not meet the recommendations for teenagers. It should also be pointed out that physical activities outside school hours can increase or top-up the few school hours dedicated to sport, which can thus fulfil both locomotory-mobility and recreational requirements.

Pupils from middle and secondary schools (22% and 46%) showed dissatisfaction concerning physical activity. Those who did not take part in any after-school sports cited a lack of time and sports facilities as reasons. They also claimed a lack of self-motivation arising from either laziness, or that their upbringing did not include having a family sports tradition.

Another worrying observation is that out of 4% and 11% of middle and secondary school pupils who did not participate in PE lessons, of these, 55% and 93% of pupils, respectively, gave the excuse of being on long-term medical sick leave as the reason for their absence. The most common medical reasons in the Kalisz schools were disorders of the musculoskeletal, cardiovascular, or respiratory systems. Additionally, these subjects admitted that they were unenthusiastic about doing physical exercises, (7% and 5% of middle and secondary school pupils). Frequent abstention from PE lessons has also been noted from studies conducted by the Epidemiological and Standards Unit of the IFN [25]. Here, they found that 3% of boys and 4% of girls aged 11–15 from Warsaw were

constantly on long-term sick leave from PE lessons. Similar observations have been made by some Educational and Health Centres, where data from Kraków show that 10% of middle school pupils regularly used long-term sick leave, and likewise for the cities of Gdansk and Lodz [25]. Reports from the Małopolska province during 2005–2006 demonstrated that 36% of girls and 19% of boys from secondary schools, also used long-term sick leave to abstain from PE lessons. Studies by Piotrowskiej et al. [26] show that long-term sick leave was used by 18% of secondary schoolgirls aged 16–18. According to Krawczyński [27], the numbers of long-term sick leave cases used in Poland for abstaining from PE are nearly five times higher than that currently reported in school pupils. In order to remedy this situation (by reducing sick leave), it is necessary to increase parental awareness of how important body locomotion/mobility is for ensuring that their children have an optimal state of health and fitness. Teachers should pay close attention to the issue of excusing PE lessons due to sick leave so that such numbers can be decreased.

Youngsters growing older, become less physically active due to being engaged in an increasing number of other pursuits that are mainly sedentary, both in school and during leisure time. In particular, insufficient physical activity in teenagers during leisure time is unsatisfactory. The reasons are not only increasing urbanisation or automation, but that the media and TV have become especially attractive. According to CSO data, the amount of time spent on computers or watching TV, on average, has increased from two hours daily during 1996–2004 to 2.5 hours [24]. In 2001, the American Paediatric Academy recommended that youngsters spend a maximum time of two hours daily in front of computer or TV screens [28]. Other data from the USA show that half of the teenage population perform moderate physical activity less than three times weekly, but that five hours daily are spent on computers or watching TV [29]. The presented study demonstrates that, respectively, 52%, 60% and 70% of elementary, middle and secondary school pupils daily, or almost daily, spend time on computers, whereas the corresponding numbers for watching TV are 70%, 62% and 48%. A study by Swiderska-Kapacz proved that 51% of middle schoolchildren from Gorzów dedicate their leisure time to watch TV, while 49% do so using a computer [30]. Research by Oblacinski and Wojnarowski [31] demonstrate that during schooldays, 76% of youngsters aged 16–19 use a computer. In keeping with the presented study, results from Witana and Szpak [32] and Gajewska [33] confirm the length of time that, respectively, 43% and 30% of secondary school pupils spend watching TV.

Importantly, attitudes to health are shaped at school whose role is to direct pupils towards taking appropriate physical activity in such a way that it is continued and developed right from the start at elementary school to high school, and thence onwards throughout adulthood. The role of the PE teacher, as well as other teachers, are crucial in promoting physical activity where, by example, they can encourage sports activities by organising competitions, contests or tournaments.

It must be stressed that an active lifestyle not only serves the purposes of recreation or physical exercising, but it is a lifestyle that depends on making physical activity a routine part of a normal day. It is also important that locomotory-mobility activity helps youngsters to develop socio-educational abilities where they learn the consequences of the choices made and achievement of aims, together with

increasing their interest in competing, acquiring willpower and team spirit skills. For these reasons, teachers should use their knowledge to develop motor skills, (mobility) in pupils, together with promoting a healthy lifestyle through also encouraging those youngsters who are less physically able.

An important element is to organise activities that involve parents, youth organisations or local government which equally form a significant part of national health policy supporting civil society. A good example of using this approach is the National Programme for the Prevention of Overweight and Obesity and Chronic Non-communicable Diseases through Improved Nutrition and Physical Activity, implemented through the Polish Ministry of Health (2007–2011) [25]. An interesting solution for encouraging youngsters to increase physical activity is by using a 'Physical Activity Pyramid' that takes into account a wide diversity of physical exercises; having been previously adopted by other countries like the USA, Canada and Spain.

Despite the strong influence of peer pressure on adolescent behaviour, many studies nevertheless indicate a significant role that parents still play in acquiring habits/customs leading to either an active or sedentary lifestyle in their offspring [34]. Performing sports or physical activity together with parents, often brings forth positive results in youngsters, where these healthy habits are carried on to later life [35].

Physical recreation within the family should be performed together during leisure time or according to the individual interests of parents and children. In this respect, parents should serve as role models through engaging in an active lifestyle, creating the right conditions for their developing children to participate in sports – even if this means simply taking them to places that perform recreational sports. Another important aspect is a good relationship between parents and siblings, with parents being actively involved in physical activities with their children. Planning such activities, however, should always take into account the individual child's level of physical ability/capability. It is paramount that joint activities are enjoyable and allow everyone to participate. A study by Shmitz [36] has shown that family togetherness, parental authority and taking part in children's physical activities have a direct bearing on an active lifestyle in teenagers, whereas all forms of compulsion result in negative consequences; the latter being perceived by youngsters as placing limits on their autonomy. Studies in the UK also indicate a positive correlation between the role of the family, its togetherness, and the levels of physical activity undertaken. A lack of these relationships increases the risk of low physical activity through teenagers acquiring sedentary lifestyle habits [37]. The presented study demonstrates that only 18% of pupils' parents declared that there was a family custom of jointly participating in recreational sports. Nevertheless, as previously emphasised, parents support the increase in PE lessons at school. The idea that a family cultivates an active lifestyle, however, seems misplaced and inconsistent with the observed facts.

CONCLUSIONS

1. Youngsters enjoy PE lessons; however, a large majority do not wish lessons to be increased.
2. Pupils living in the urban district more frequently indicated that PE lessons constituted their main daily physical effort,

compared to their peers from the countryside. The latter group were more satisfied with their physical activity than those from the city.

3. Overall, the parents surveyed confirmed that their children were unwilling to take part in diversified physical activities after-school, despite themselves not having a rational plan for using family leisure time in an appropriate way.
4. A sedentary lifestyle is increasing in older adolescents.
5. It is vital that appropriate health programmes are introduced that provide education for adopting a healthy lifestyle concerning physical activity in teenagers during their development.
6. Such afore-mentioned measures need to be managed by schools, with parents being actively involved.
7. The knowledge, beliefs/convictions and skills acquired about health during the formative years will decide on the lifestyle adopted in later adult years.

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