Assessment of Physical Activity of Children and Youth in Podkarpackie Voivodeship

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Sabina Krupa  sabinakrupa@o2.pl  
Rzeszow University  
*Corresponding Author*  
ORCiD: 0000-0002-3002-3153

Dorota Ozga  
Rzeszow University

Patryk Stokłosa  
Science Club Rzeszow University

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Abstract

One of the more important goals of a modern public health strategy is to increase physical activity. Children should be implemented to spend their free time actively. Physical activity reduces depression, reduces anxiety and fear, and increases human immunity in the event of stressful situations. In order to write the thesis, a research tool was used, which is the author's questionnaire. A total of 100 questionnaires were distributed, of which 96 were submitted, while 4 questionnaires were left blank by students. Gender does not affect physical activity and participation in physical education classes among children and youth from the Podkarpackie Voivodeship. Younger subjects practice physical education more regularly. The conducted research showed that women more often use exemptions from physical education classes than men. Both physical education teacher and parents do not affect the physical activity of children and youth from the Podkarpackie Voivodeship. Most respondents prefer to practice individually or with a friend. Almost half of the respondents believe that physical education classes are at an average level.

Background

The family plays a very important role in the lives of children and young people. It influences the development of interests and habits, participates in upbringing, is responsible for preparing the child to lead a healthy lifestyle. A healthy lifestyle is understood as introducing a child to take up physical activity in and out of school, proper nutrition, regular meals, and ensuring that the child never goes to school without breakfast. This lifestyle will contribute to the acquisition of proper habits,
and reduce the risk of disorders in the functioning of the child's body\textsuperscript{1,2}. Physical activity has a huge impact on human health. It maintains or improves the functioning of the body, helps fight stress and prevents diseases\textsuperscript{3,4}. Regular physical activity plays an important role in raising and maintaining physical fitness at the appropriate level\textsuperscript{5}. The data presented in the National Health Program show that only about 30\% of children and adolescents, and 10\% of adults use forms of movement in which the intensity and type of exercise loads meet the basic physiological needs for the body. As much as 57\% of students show low activity\textsuperscript{6}. Joint physical activity of the parent and child is a very good opportunity to spend free time together. If adults undertake physical activity through systematic exercise or playing sports, then also children will be more motivated to leave the house and exercise together\textsuperscript{1}.

One of the more important goals of a modern public health strategy is to increase physical activity. Children should be implemented to spend their free time actively\textsuperscript{6,7}. Nowadays, sick leave from physical education classes are becoming more and more common. Children forcing parents to take time off deprive themselves of the opportunity to discover what sport, fun and competition are. Sport in childhood has many advantages, first of all, it teaches children to work in a team and learn about their strengths and weaknesses\textsuperscript{8}. Children who spend their free time actively, have a better ability to communicate with their peers, strive to meet their goals and needs and are highly sensitive to the other person. The way of spending free time by a child influences the development of his character and attitude to the surrounding environment in which he lives. Active leisure time eliminates negative qualities, including awkwardness, passivity, laziness, while it
shapes cordiality, helpfulness and friendship. Physical activity reduces depression, reduces anxiety and fear, and increases human immunity in the event of stressful situations\textsuperscript{9,3}. The contemporary improvement of civilization, the popularization of computers and communication means have led society to lead a sedentary lifestyle\textsuperscript{10,11}. For this reason, physical activity in children and adolescents has a compensatory function, which consists in replacing a sedentary lifestyle with outdoor exercises and physical education lessons\textsuperscript{9,13}. Playing sports at a young age improves accuracy in action, coping with fatigue, shapes the sense of duty, and coping with difficulties\textsuperscript{12,13}. Easier people experience successes and failures in their lives\textsuperscript{12}. Children who exercise regularly mature faster and have a more resistant body. People who practice little sports experience neurosis as well as behavioral disorders\textsuperscript{14}. Sport teaches the rules that should be followed in a given group and cooperation with its friends. It increases self-esteem and greater self-confidence. As a result, young people have self-respect and a better picture of themselves\textsuperscript{12}.

Sport combines competition and cooperation components and plays an educational role that prepares young people for adulthood\textsuperscript{15}. Physical activity develops most at the age of 6-9 years. In this period, symmetry and shapiness of entire body movements are formed in children\textsuperscript{2}. Children show great willingness to move and to spontaneous exercises with their peers. During this time, self-control arises, which is referred to as the golden period of motorism\textsuperscript{16}. In the period of 10-13 years, speed, endurance and precision of performed movements become noticeable\textsuperscript{2}. The correct level of physical activity for children and adolescents is a balanced intensity effort that is performed every day, at least 60 minutes\textsuperscript{15}. The
minimum physical activity of a child once a week is 6 hours. Exercises performed at least twice a week should be based on increasing flexibility and muscle strength. These can be exercises outside the school, in the open air, such as cycling, rollerblading or running, as well as physical exertion undertaken at home, games and plays at school, during breaks, physical education lessons or additional sports activities conducted at school.

Extra-curricular and extracurricular activities are organized so that children and young people can spend time actively outside of school. They play a didactic, educational and protective role. These can be SKS classes, sports and recreation events or a school trip. They supplement physical education classes on non-school days. The important thing in these classes is that they are optional, only people who express their willingness participate in them. They can choose the form of physical activity in which they want to participate.

Material and Methods

In order to write the thesis, a research tool was used, which is the author's questionnaire. It consisted of 40 questions, of which the first 5 questions related to the record: gender, age, place of residence, type of school and class attended by the respondent. The next 4 questions concerned the nutritional status of respondents: height, weight, nutrition assessment, and the frequency of eating fast food by respondents. The next 2 questions concerned the subject from which the respondents obtain the best results and their average at the end of the year. The rest of the questions concerned physical activity at school and outside, as well as the type of leisure time spent by respondents.
Organization and the process of data collection

The study group consisted of pupils in Primary School, grades 6 and 7, aged 12-14, and pupils of the General Secondary School of the 3rd grade, aged 18-19. The research was carried out from January 28 to February 28, 2019. Participation in the study was anonymous. In the Secondary School John Paul II Sisters Gift, II High School. Colonel. Leopold Lisa Kuli, III High School Cyprian Kamil Norwid, VI High School Ambroży Towarnicki and the 7th High School in Rzeszów. The directors of these schools did not agree to conduct a survey. The conducting of surveys was approved by the Directorate of the Primary School Ignacy Solarz, and the Directorate of the First High School Fr. Stanisław Konarski in Rzeszów. After obtaining consent, an original questionnaire of 40 questions was prepared, which was accepted by the Promoter. In Primary School, questionnaires in grades 6 and 7 were distributed, while in high school in grades 3. A total of 100 questionnaires were distributed, of which 96 were submitted, while 4 questionnaires were left blank by students.

Inclusion criteria:

Informed consent of the student to participate in the study
Parent's informed consent to participate in the study
Students in classes 5,6,7,8 of Elementary school
Grade 3 Junior High School students
Approval of the facility for testing

Exclusion criteria:

Lack of informed consent of the student to participate in the study
Lack of parental consent for participation in research
Students outside classes 5,6,7,8 of Elementary school
Students outside class 3 of the Junior High School
Lack of consent of the facility to conduct tests

Statistical analysis
Statistical analyzes of nominal variables were carried out using the Chi-square test, as well as relevant statistics, the main purpose of which is to determine the strength of the relationship between the variables: Phi (Tables 2 by 2) and V Kramer (Tables larger than 2 by 2). When the variables were built on ordinal scales, Kendall's tau-b correlation coefficients (for two ordinal variables with the same number of responses) and Kendall's tau-c (for two ordinal variables with different numbers of responses) were used. Measures determining the strength of the relationship are normalized and take values from 0 to 1. A higher value of the coefficient indicates a stronger relationship. The obtained correlation results (Kendall tau-b and Kendall tau-c) as well as the Phi symmetrical measure can take negative values, which in this case are interpreted as the inverse relationship / correlation. When the crosstab consisted of questions built on a nominal and ordinal scale, then the statistics were read at a weaker level of measurement. There are some assumptions to be aware of when performing the Chi-square test. It is assumed that it allows sufficiently precise assessment of the test probability when there are less than 20% of cells with an expected number less than 5 and when no cell has an expected number less than 1. The analysis was carried out using SPSS 17.0, and all relationships are statistically significant when p≤0.05.

Results
In the study, the vast majority were women 64.6%, while men were 35.4% much less than women. Among the respondents, the age range ranged from 12-14 years, and 18-19 years. Almost as many people aged 12-14 as respondents aged 18-19 participated in the study. Children aged 12-14 years accounted for 51.0%, while youths aged 18-19 accounted for 49.0%. The question was asked, "Do you like to do
physical education classes?", The vast majority of the respondents 84.4% answered "yes", while 15.6% of students marked the answer "no". To the question "How often do you practice in physical education classes?" The greater half of the respondents 65.6% ticked "always", 24.0% of students answered that "sometimes", 6.3% of respondents answered "I am fired from PE ", While 4.2% of respondents gave the answer" rarely ". To the question. For what reasons do you usually not do physical education classes? "21.9% ticked" I have no outfit ", 14.6%" I am indisposed ", 13.5%" after infections, infectious diseases ", 11.5% "I don't feel like it", 6.3% "headache". The same 3.1% of respondents answered "I have a long-term sick leave" and "injuries - fractures, sprains, dislocations", 2.1% "anxiety at school". 8.3% of respondents marked the answer "other", in which they mentioned cough, cold, headache, allergies, unpleasant smell in the gym, fresh tattoos, study before the test, as reasons not to exercise in physical education classes. 15.6% of respondents answered "I always exercise".

To the question, "What do you think has the biggest impact on the low attractiveness of physical education classes?" 43.8% of respondents answered "low commitment of colleagues", 13.5% answered that "low commitment of physical education teacher", 12 ,5% "insufficient number of people exercising during physical education classes", 8.3% "lack of proper equipment, e.g. mats, weights", 7.3% "small gym", and 4.2% "small selection of equipment at the gym ". 10.4% of respondents gave "other" answers, in which they mentioned inappropriate behavior of the PE teacher and classmates, unpleasant smell in the room, late hours of PE, a small variety of activities such as swimming pool, skis, ice rink, roller skates. To the question, "How often do you participate in additional sports activities at school?"

The greater half of the respondents 55.2% ticked the answer "I do not attend
additional sports activities", 28.1% of respondents answered "sometimes if I have
time and desire", 9 , 4% of the students answered "I am present in every class,
5.2" I rarely take part in such classes ", while 2.1% of respondents marked" there
are no additional sport activities organized in my school "(Figure 1).

Figure 1. Frequency of participating in additional sports at school
To the question, "What do you like to do in your free time?" 40.6% of students
answered "meeting with friends", 38.5 "listening to music", 17.7 "using the
computer", 14.6 "Read books", 10.4 "go shopping", 7.3 "go to sports
activities", 4.2 "watch TV", 1 "run", while 21.9% of respondents answered 
other ", in which they provided drawing, painting, training, sleeping, helping others,
playing the guitar, computer games, handball, soccer, basketball, cycling,
rollerblading, swimming, acrobatics, gymnastics, horse riding, long walks, watching
series and dancing (Figure 2).

Figure 2. What do you like to do in your free time?"
When asked, "What do you think is the biggest advantage of physical activity? The
vast majority of 54.2% of respondents said that "reduces body fat and prevents
obesity" and "improves mood and relieves stress". 34.4% of respondents answered
"strengthens muscles and bones", 11.5 "improves concentration", 10.4
"increases resistance to infection". For 6.3% of respondents, the biggest advantage
of physical activity is that it 'improves sleep quality'. 2.1% of respondents marked
the answer "other", in which they noted weight loss and muscles as well as
entertainment.
Discussion

In recent years, a decrease in physical activity has been observed among children and adolescents. Young people prefer to spend most of their time in front of the computer, which is bad for their health. With age, the sedentary lifestyle becomes more and more popular, which promotes the development of overweight and obesity among children and adolescents\(^{17}\). BMI was calculated for them on the basis of values given by children and young people. Own research shows that 76.0\% of students have normal weight, 20.8\% underweight, and 3.1\% overweight / obesity. Based on the research conducted by Marcysiak et al., Half were slim and those with body mass deficiency, 32\% were obese, and 18\% were at risk of obesity or overweight\(^{18}\). Studies conducted on children leaving primary school by Zimna-Walendzik et al. Showed that 11\% of people were overweight, 16\% obesity, and 8\% of children underweight\(^{19}\).

The family shapes the eating habits of young people very much. Our own research shows that 71.9\% of the surveyed people eat healthy, 20.8\% unhealthy, 5.2\% very healthy, and 2.1\% very unhealthy. Both gender, age and place of residence do not significantly affect the nutrition of children and young people. The research conducted by Marcysiak et al. Shows that students living in the countryside were eating better. 80\% of respondents indicated that they eat healthy food. 21\% of boys rated their nutrition as very healthy, 55\% healthy, 18\% unhealthy, and 6\% very unhealthy. 14\% of the girls indicated that they eat very healthy, 69\% healthy, 16\% unhealthy, and 1\% very unhealthy\(^{15}\).

When assessing the frequency of eating fast food, own research shows that more than half of respondents (51.0\%) eat fast food occasionally, 28.1\% several times a
month, 8.3% 1-2 times a week, 4.2% daily, 7.3% of people do not eat junk food at all. 1% of respondents gave a different answer among those provided. Almost 40% of respondents from the research conducted on children attending music school by Forjasz et al. Answered that they eat fast food twice a week\textsuperscript{20}. Such eating habits significantly affect the development of overweight and obesity among young people and have a very large impact on their further health. It is very important to develop appropriate eating habits from an early age. By leading an appropriate lifestyle in children and adolescents, the risk of eating disorders is reduced. Young people accept their own body, they have no complexes\textsuperscript{17}.

Physical activity should be promoted from an early age so that young people develop the habit of spending free time in an active way instead of sitting in front of a computer screen or TV screen. Children and young people should know the role of movement in their health and life\textsuperscript{15}. Own research shows that the desire to exercise in physical education classes is related to the age and place of residence of the respondents. To the question asked, do you like to do physical education classes, 100% of primary school children answered "yes". From high school, 69.4% of students marked 'yes' and 30.6% 'no'. More students in cities are reluctant to practice physical education (31%) than from rural areas (9%). The most common reasons for not exercising among the respondents are usually lack of attire (21.9%), unavailability (14.6%), condition after infections, infectious diseases (13.5%) or the answer I do not want, which was indicated by 11.5% of respondents. Other reasons include headache, anxiety at school, fracture injuries, sprains, dislocations and long-term sick leave. Research carried out by Zimna-Walendzik et al. Showed that children leaving primary school like physical education classes and regularly
participate in them (80%), most often they leave lessons due to illness\textsuperscript{19}. According to the research of Wojtyła et al, who studied junior high school students, 96% of students practice physical education classes, as a reason for not exercising they give long-term sick leave due to usually bone diseases, diseases of the circulatory system or allergies\textsuperscript{17}. Similarly, Wojtyła-Buciora et al., Examining high school students, showed that 89% of students took part in physical education classes, of which 78% declared that they liked physical education classes. Among 11% of young people not taking part in physical education classes, 93% of students give long-term sick leave as a reason for not exercising because of: musculoskeletal disorders (46%), cardiovascular diseases (16%) and respiratory diseases (6%)\textsuperscript{13}.

When assessing the frequency of exercise during physical education classes, own research shows that the majority of respondents (65.6%) always answered the answer, 24.0% sometimes, rarely 4.2%. 6.3% of students declared that they were exempted from physical education classes. Age and place of residence had an impact on the frequency of exercise among children and adolescents. More primary school students (83%) declared that they always practice physical education classes than high school students (49%). Students living in the village are more likely to practice physical education classes than students living in the city. Out of 67 students living in the village, 48 respondents (71.6%) answered that they always exercise, and out of 29 people living in the city, 15 of them (51.7%) gave such an answer. Iliaszeva et al examining younger schoolchildren showed that 95.6% of respondents very often and often participate in physical education classes at school, and only 1.2% of respondents do not practice these classes\textsuperscript{21}. Research conducted by Antos et al. Shows that the regularity of participating in physical
education classes at upper secondary school youth varied. 64% of respondents declared that they regularly participate in these classes, and 36% do not systematically participate in physical education classes\textsuperscript{22}. It follows that physical activity decreases with age. This can be caused by long-term dismissals written by doctors or short-term dismissals written by parents\textsuperscript{13}. Dissemination of physical activity and a healthy lifestyle among children and youth necessary to improve the health of the future adult population\textsuperscript{20}.

Conclusions

1. Physical activity of children and youth in the Podkarpackie Voivodeship is good.

2. In most cases, the respondents eat healthy food. The frequency of eating fast food among the surveyed children and adolescents is not related to the sex, age, place of residence and BMI of the respondents.

3. The average of students from the last year does not affect the willingness to participate in physical education classes, and it does not contribute to obtaining better results from physical education classes among children and youth in the Podkarpackie Voivodeship.

4. Both age and place of residence had an impact on taking up physical activity by children and young people in the Podkarpackie Voivodeship. Younger respondents are more likely to exercise in physical education classes than high school students. With age, physical activity decreases among respondents. Respondents living in the village more often do physical education classes than students living in the city. Children who are eager to exercise in physical
education classes more often would like to spend more time on physical activity.

5. Gender does not affect physical activity and participation in physical education classes among children and youth from the Podkarpackie Voivodeship.

6. Younger respondents practice physical education classes more regularly. The conducted research showed that women more often use exemptions from physical education classes than men.

7. Both the physical education teacher and parents do not affect the physical activity of children and young people from the Podkarpackie Voivodeship. Most respondents prefer to practice individually or with a friend. Almost half of the respondents believe that physical education classes are at an average level.

List of Abbreviations

SKS - School Sports Club

BMI - Body Mass Index

Declarations

Ethics approval and consent to participate: All participants were informed about the study and confidentiality protocols. Informed consent was obtained from all the participants; the study was approved by the ethics committee of Rzeszow University.

Consent for publication: Authors agree for publication

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**Implications for practice**

Research carried out in Poland indicates that the knowledge of young people about the need to maintain physical activity is at a good level. It is necessary to monitor physical activity in adolescents to improve the condition of this group. It is necessary to constantly promote information on possible methods of using free time both at school and in other places accessible to young people.

**References**

1. Kubusiak- Słonina A, Grzegorczyk J, Mazur A. Ocena sprawności i aktywności fizycznej dzieci szkolnych z nadmierną i prawidłową masą ciała. VIA MEDICA. Endokrynologia, Otyłość i Zaburzenia Przemiany Materii. 2012, Tom 8, Nr 1, s.16-23.

2. Urniaż J. Ogólna Metodyka Nauczania Ruchu. Olszańska Szkoła Wyższa im. Józefa Rusieckiego. Olsztyn 2003.

3. Dencikowska A, Dencikowska B. Uwarunkowania społeczne biernego wypoczynku w czasie wolnym [W:] Żarów R. (red.) Człowiek w zdrowiu i chorobie promocja zdrowia, leczenie i rehabilitacja. Państwowa Wyższa Szkoła Zawodowa w Tarnowie. Tom II, Tarnów 2010, s.128-137.

4. Wojtyła- Buciora P, Marcinkowski JT. Aktywność fizyczna w opinii młodzieży licealnej i ich rodziców. Problemy Higieny i Epidemiologii. 2010, 91(4), s.644-649
5. Grzegorczyk J, Mazur E, Domka E. Ocena aktywności fizycznej gimnazjalistów dwóch wybranych szkół na Podkarpaciu. Przegląd Medyczny Uniwersytetu Rzeszowskiego. Rzeszów 2008, 3, s.226-234.

6. Maj M, Kozera M, Żarów R. Aktywność i sprawność fizyczna młodzieży gimnazjalnej i licealnej [W:] Żarowa R. (red.) Człowiek w zdrowiu i chorobie promocja zdrowia leczenie i rehabilitacja. Państwowa Wyższa Szkoła Zawodowa w Tarnowie. Tarnów 2012, s.251-264.

7. Nowotny J, Nowotny-Czupryna O, Czupryna K, Plinta R. Wpływ aktywności fizycznej na organizm [W:] Nowotny J. (red.) Edukacja i reedukacja ruchowa. Podręcznik dla studentów fizjoterapii i fizjoterapeutów. Wydawnictwo Kasper, Kraków 2003, s.46-51.

8. Rodziewicz-Gruhn J. Uczestnictwo w pozaszkolnej aktywności ruchowej młodzieży z Częstochowy. Prace Naukowe Akademii im. Jana Długosza w Częstochowie. Kultura Fizyczna. 2012, z. XI, s.159-168

9. Groffik D. Metodyka stosowania ćwiczeń fizycznych w profilaktyce i terapii. Akademia Wychowania Fizycznego im. Jerzego Kukuczki w Katowicach. Katowice 2009.

10. Woynarowska B. Aktywność fizyczna dzieci i młodzieży. Medycyna Sportowa. Medical Tribune. Warszawa 2011, s.16-20.

11. Antos E, Staniak E. Ocena aktywności fizycznej młodzieży ponadgimnazjalnej. Instytut Pielęgniarstwa. Collegium Masoviense Wyższa Szkoła Nauk o Zdrowiu w Żyrardowie. Polski Przegląd Nauk o Zdrowiu. 2015, 1(42), s.22-27

12. Bodys-Cupak I, Grochowska A, Prochowska M. Aktywność fizyczna gimnazjalistów a wybrane wyznaczniki ich stanu zdrowia. Problemy Higieny i Epidemiologii. 2012, 93(4), s.752-758.
13. Woynarowska B. Aktywność fizyczna dzieci i młodzieży. Medycyna Sportowa. Medical Tribune. Warszawa 2011, s.16-20

14. Wojtyła A, Biliński P, Bojar I, Wojtyła K. Aktywność fizyczna młodzieży gimnazjalnej w Polsce. Problemy Higieny i Epidemiologii. 2011, 92(2), s.335-342.

15. Giłka M, Napierała M, Cieślicka M, Muszkieta R, Zukow W. Aktywność fizyczna młodzieży z gimnazjum nr 52 w Bydgoszczy. Wyższa Szkoła Gospodarki w Bydgoszczy Uniwersytet Kazimierza Wielkiego w Bydgoszczy. s.11-20

16. Iliašzeva V, Mazur P. Aktywność fizyczna uczniów w młodszym wieku szkolnym. Białoruś, Brześć, Państwowy Uniwersytet imienia A.S. Puszkina. Polska, Chełm, Państwowa Wyższa Szkoła Zawodowa. Gry i rozrywka w kulturze czasu wolnego dzieci i młodzieży: zmiany w paradygmacie społecznym. UO „Brest State University nazwany AS Puszkina” Wydział Edukacji Fizycznej dyscyplin sportowych. Brest "Alternative" 2016, s.185-190.

17. Woynarowska B, Mazur J, Oblacińska A. Uczestnictwo uczniów w lekcjach wychowania fizycznego w szkołach w Polsce. Hygeia Public Health. 2015, 50(1), s.183-190.

18. Marcysiak M, Zagroba M, Ostrowska B, Wiśniewska E, Marcysiak M, Skotnicka-Klonowicz G. Aktywność fizyczna a zachowania żywieniowe dzieci i młodzieży powiatu ciechanowskiego. Problemy Pielęgniarstwa, 2010, 18(2), s.176-183.

19. Zimna-Walendzik E, Kolmaga A, Tafalska E. Styl życia- aktywność fizyczna, preferencje żywieniowe dzieci kończących szkołę podstawową. ŻYWNOŚĆ. Nauka. Technologia. Jakość, 2009, 4(65), s.195-203

20. Marcysiak M, Ciosek A, Żywica M, Prządak E, Banasiewicz D, Marcysiak M, Zagroba M, Ostrowska B, Skotnicka-Klonowicz G. Zachowania żywieniowe i
aktywność fizyczna uczniów klas sportowych i ogólnych w Ustrzykach Dolnych.
Problemy Pielęgniarstwa, 2009, 17(3), s. 216-222

21. Illiaszeva V, Mazur P. Aktywność fizyczna uczniów w młodszym wieku szkolnym.
Białoruś, Brześć, Państwowy Uniwersytet imienia A.S. Puszkina. Polska, Chełm,
Państwowa Wyższa Szkoła Zawodowa. Gry i rozrywka w kulturze czasu wolnego
dzieci i młodzieży: zmiany w paradygmacie społecznym. UO „Brest State
University nazwany AS Puszkina” Wydział Edukacji Fizycznej dyscyplin
sportowych. Brest "Alternative" 2016, s.185-190

22. Antos E, Staniak E. Ocena aktywności fizycznej młodzieży ponadgimnazjalnej.
Collegium Masoviense Wyższa Szkoła Nauk o Zdrowiu w Żyrardowie. Polski
Przegląd Nauk o Zdrowiu. 2015, 1(42), s.22-27

Figures
Figure 1

Frequency of participating in additional sports at school
Figure 2

"What do you like to do in your free time?"