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## **Impact of parents' nutritional knowledge on the nutrition and frequency of consumption of selected products in children and adolescents practicing football in a football club in Bydgoszcz, Poland**

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## **Abstract**

Rational diet improves the ability for intensive effort and training. Nutrition in children and adolescents depends on the nutritional knowledge of their parents.

The aim of the study was to assess the parents' nutritional knowledge and its impact on the nutrition of their children practicing football.

Study group consisted of 100 football players aged 11–16. The parents' nutritional knowledge and the nutrition of the athletes were assessed using the modified KomPAN questionnaire. The correlation between the parents' knowledge and the frequency of consumption of selected products was determined using a  $\chi^2$  test in the Statistica 12.5 software.

A correlation between the parents' nutritional knowledge and the frequency of consumption of selected products by their children was observed. Parents with insufficient knowledge less frequently served dark bread and thick groats than those with good and sufficient knowledge. Parents with good and sufficient knowledge less frequently served instant soups, canned meat, energy and isotonic drinks. No impact of the parents' knowledge was observed with reference to white cheese, vegetable oils and sweets. Nutritional education of the parents of young athletes is necessary regardless of their nutritional knowledge. Improving eating habits can positively affect children's development and achievements in sports.

**Keywords:** Nutrition; Knowledge; Sport; Young Athletes; Eating habits.

## **Introduction**

As reported by the Central Statistical Office of Poland in the year 2012, sports clubs in Poland have 640,810 young members up to the age of 18 years. This is over 25,000 more young athletes than in 2010. In 2012, 85 in 1000 children and adolescents were athletes—5 more than two years before. The statistics for the Kuyavian-Pomeranian Voivodeship are even more favourable in comparison with other regions: the above factor is 90, sixth-best among all voivodeships (CSO 2013). Children and adolescents practicing football in sports clubs require special attention as their ongoing development processes and intense physical activity generate higher nutritional needs. Therefore, due to the increasing interest in sports, and particularly the large number of children and adolescents attending sports clubs, emphasis should be put on rational nutrition of young athletes. Young athletes whose diet is unbalanced, does not provide all the necessary macro- and microelements and has insufficient

supply of fluids, can experience deterioration in such sport-related parameters as strength, speed and endurance, poor concentration and increased risk of injury (Bonci, 2010). Usually, the assessment of nutrition of young athletes reveals many errors regarding mainly calorie supply and completeness of nutrients (Montfort – Steiger & Williams 2007). The persistently low calorie supply may lead to malnutrition, increased susceptibility to diseases, lower than expected growth and delayed puberty (Murat, Żurek & Michalski 2012). Usually, young athletes consume insufficient amounts of calcium, iron, B vitamins and antioxidant vitamins, polyunsaturated fatty acids, vegetable fibers and even water, and an excess of simple sugars, animal fats, protein, sweet carbonated drinks, fast food or even energy drinks (Purcell, 2013). This situation not only affects the achievements and progress in sports, but most of all the health and development of children in their growth period, which has health-related consequences in adult age (Malczewska, 2013), (Jarosz et al.,2008) . Frequently, a better and comprehensive care is provided to young football players when they start to succeed, but this usually happens after several years of training (Benardot, 2000). This care involves the assessment of eating habits and nutritional status of the young talented athletes, as well as correction of errors in this respect that might have been committed for years before the assessment. Adult athletes often use expert advice, including that of dietitians, and outstanding athletes employ whole teams of advisers with dietitians playing the key role (Leonkiewicz, Gacek & Frączek, 2015). Paradoxically, young athletes, for whom nutrition is the most important element of both their physical development and progress in sports, rely on the knowledge of their parents / legal guardians and, in best-case scenarios, their trainers possessing the knowledge of nutrition in children and adolescents practicing sports (Gacek 2007)). Unfortunately, according to studies in this area, parents / legal guardians, trainers, physical education teachers and young athletes themselves have poor knowledge of rational nutrition (Szczepańska, Malczewska – Lenczowska & Gajewski 2007). In the current system of sports training in children and adolescents and in light of the absence of nutrition standards for this population practicing sports, research projects that will provide further fact-based knowledge in this respect are of great importance (Chalcarz & Radzimirska – Graczyk, 2004). Guidelines and possibly standards of nutrition based on this research will help to develop

rational nutrition plans dedicated to various sports disciplines for children and adolescents, including the population of several hundred thousand young footballers (Stankiewicz & Bogdanska, 2013). A strategic role in the process of children's education in nutrition will still be played by their parents / legal guardians, especially since children acquire their first eating habits in their home environment (Wyka, Grochowska – Niedworak, Malczyk, Misiarz.& Hołyńska, 2012). Parents / legal guardians can directly affect the eating habits of young athletes by providing or denying them selected food products and teaching them about nutrition (Alaynyte, Perry & Aubrey, 2015), (Frączek,2004). Studies published to date indicate that higher efficiency in teaching healthy eating habits can be observed in families in which children can identify with parents and follow their behaviour (Cupisti, D'Alessandro, Castrogiovanni, Barale & Morelli, 2002). Due to the multiple errors in nutrition committed by young athletes, it is also necessary to educate their parents to enable the transfer of relevant knowledge and best practices that would help their children develop healthy eating habits (Jeżewska – Zychowicz, 1996), (Kozioł – Kozakowska, Piórecka & Schelgel – Zawadzka, 2008). Proper eating habits not only can bring benefits in the form of improved results in sports, but can also be part of healthy lifestyle of the young people and prevention of diet-related diseases in adult life (Zalewska &Maciorkowska, 2013).

## **Material and methods**

The study group consisted of 90 parents and/or legal guardians of young football players aged 11 to 16 years practicing football in a football club in Bydgoszcz, Poland. The parents and/or legal guardians answered questions about the nutrition of their children included in the KomPAN questionnaire. The parents' nutritional knowledge was assessed based on 25 additional questions included in the questionnaire (part C. Views on food and nutrition) and the answers were analyzed in the Statistica 12.5 software using a  $\chi^2$  test. The results were analyzed based on the publication "Procedury opracowania danych żywieniowych z kwestionariusza KomPAN" (Processing data from the KomPAN questionnaire) (Jeżewska – Zychowicz et al., 2014). For each correct answer, 1 point was granted, while for an incorrect

or “hard to say” answer, no points were granted. The final score was the sum of all points. During data processing, only the correct answers were taken into account and interpreted. The following scale was used to group the parents by the level of their nutritional knowledge: insufficient: 0–8 points, sufficient: 9–16 points, and good: 17–25 points. The parents of young athletes also had the opportunity to subjectively assess their nutritional knowledge.

## **Results and Discussion**

The analysis demonstrated that one in five parents with insufficient nutritional knowledge provided their children with only 3 meals per day. The highest percentage of the parents with good nutritional knowledge provided their children with 4 or 5 meals. None of the parents with good knowledge provided 3 meals per day. It is a very important aspect of the nutrition of athletes due to the need for a continuous supply of energy during the day, while maintaining adequate breaks between meals (Alaunyte et al.,2015). The obtained data indicate that most often, fixed meal times are practiced by athletes whose parents have sufficient nutritional knowledge. Irregular meals are most often served by the parents with insufficient knowledge (one in five of them). This is twice more often than in the case of the parents / legal guardians with good nutritional knowledge. None of the meals should be skipped and their times should be fixed to ensure a constant glucose concentration in the blood of young footballers (Leonkiewicz et al.,2015), (Boniecka, Michota – Katulska, Ukleja et al.,2009). Skipping meals or not consuming them at fixed times may lead to various conditions with a negative effect on the results in sports, e.g., fast fatigue or problems losing excessive adipose tissue (Bonci, 2010).

Assessment of the frequency of eating between meals revealed that 70% of the parents with insufficient nutritional knowledge provided their children with snacks several times per week (70%). This is 50% more compared to the parents with sufficient and good knowledge. One in five athletes with parents having sufficient and good nutritional knowledge had a snack several times per day. Eating snacks frequently by young athletes can be caused by a lack of meals before and after training. The analysis by Leonkiewicz et al., (2015) indicated a

number of abnormalities associated with nutrition before and after training among young athletes, regardless of their age and sports discipline (Leonkiewicz et al.), (Gacek, 2007), (Zabrocki & Kaczyński, 2012)

Analysis of the study results demonstrated that those athletes whose parents had insufficient nutritional knowledge never abstained from using additional sugar. In the same group, 60% of the athletes added 2 teaspoons of sugar to beverages, while in the other groups the habit was reported by approx. 40% of the athletes. In turn, additional salt was not used by 60–75% of the athletes from each group. The use of salt was avoided mostly by those athletes whose parents had sufficient nutritional knowledge. The study by Wyka et al., (2012) revealed that most parents have a problem indicating the correct amount of salt that a child should consume. Table I presents the impact of the parents' nutritional knowledge on the frequency of consumption of selected food products by children. The data from Table I indicate that white bread (e.g. wheat bread, toast bread, croissants) were most often (several times per day) served by the parents with good nutritional knowledge, and it was nearly twice as often as among the parents with insufficient nutritional knowledge. Dark bread and thick groats were not served at all by 37.5% and 40% of the parents / legal guardians with insufficient knowledge, 17.9% and 20% of those with sufficient knowledge, and 16.7% and 10.5% of those with good knowledge, respectively.

The study by Alaunyte et al. showed that white bread is consumed more often by athletes with poor nutritional knowledge. A similar situation was reported for rugby players. Rugby players with poor nutritional knowledge ate dark bread more rarely (Alaunyte et al., 2015). In the study by Chalcarz & Radzimirska Graczyk (2004) a lack of knowledge of the principles of healthy nutrition, including the consumption of cereal products, was revealed among adolescents practicing fencing. Cereal products, particularly those of thick milling, are a very important group of products because of the content of B vitamins and minerals, including zinc, magnesium, phosphorus and potassium (Jarosz, 2008). Only 20% of the parents with good and insufficient nutritional knowledge once a day provided their children with milk and dairy products, which are the source of protein and calcium with the highest bioavailability. The parents or legal guardians with sufficient knowledge served these products twice more

often. A reverse situations was noted in adult athletes, in whom good nutritional knowledge results in a more frequent consumption of milk (Alaunyte et al., 2015). Fermented dairy beverages were served several times per week by 60% of the parents with good and insufficient knowledge, while the parents with sufficient knowledge served these products two times less frequently. Among the students of a Sport Champions School, recommendations concerning the consumption of milk and dairy products were not followed in a satisfactory manner as well (Gacek, 2007). Fried food (meat, cereals etc.) were served several times per week by 70% of the parents with insufficient nutritional knowledge. A little less, nearly 60% of the parents from the other groups served fried products with the same frequency. Analysis of the impact of nutritional knowledge on the consumption of butter at least once a day showed that almost 60% of the parents with sufficient and good nutritional knowledge and 40% of the parents with insufficient nutritional knowledge served this product to their children with this frequency. Sometimes parents use or suggest using a low-fat diet in an attempt to reduce the amount of adipose tissue. However, doing so might cause deficiencies of essential fatty acids and fat-soluble vitamins (Bonci, 2010). One in five parents with insufficient knowledge never served white meat ( $p=0,0037$ ).

Table I. Impact of parents' nutritional knowledge on the frequency of consumption of selected products

Products / frequency of consumption	Nutritional knowledge	Never	Once a week	Several times per week	Once a day	Several times per day	Products / frequency of consumption	Nutritional knowledge	Never	Once a week	Several times per week	Once a day	Several times per day
<b>White bread</b>	Insufficient	0.0%	20.0%	20.0%	30.0%	30.0%	<b>Eggs</b>	Insufficient	0.0%	70.0%	20.0%	10.0%	0.0%
	Sufficient	1.7%	1.7%	21.7%	21.7%	53.3%		Sufficient	0.0%	62.7%	37.3%	0.0%	0.0%
	Good	0.0%	0.0%	26.3%	15.8%	57.9%		Good	0.0%	57.9%	42.1%	0.0%	0.0%
<b>Dark bread</b>	Insufficient	37.5%	50.0%	12.5%	0.0%	0.0%	<b>Potatoes</b>	Insufficient	0.0%	10.0%	60.0%	30.0%	0.0%
	Sufficient	17.9%	55.4%	16.1%	5.4%	5.4%		Sufficient	0.0%	13.3%	71.7%	15.0%	0.0%
	Good	16.7%	33.3%	38.9%	11.1%	0.0%		Good	0.0%	0.0%	100.0%	0.0%	0.0%
<b>Buckwheat groats</b>	Insufficient	40.0%	40.0%	20.0%	0.0%	0.0%	<b>Legume seeds</b>	Insufficient	40.0%	40.0%	20.0%	0.0%	0.0%
	Sufficient	20.0%	53.3%	16.7%	10.0%	0.0%		Sufficient	18.6%	79.7%	1.7%	0.0%	0.0%
	Good	10.5%	63.2%	21.1%	5.3%	0.0%		Good	26.3%	68.4%	5.3%	0.0%	0.0%
<b>Rice</b>	Insufficient	0.0%	60.0%	40.0%	0.0%	0.0%	<b>Fruits</b>	Insufficient	0.0%	50.0%	50.0%	20.0%	30.0%
	Sufficient	1.7%	57.6%	39.0%	1.7%	0.0%		Sufficient	0.0%	8.6%	34.5%	31.0%	25.9%
	Good	0.0%	47.4%	52.6%	0.0%	0.0%		Good	0.0%	5.3%	26.3%	31.6%	36.8%
<b>Milk</b>	Insufficient	0.0%	20.0%	30.0%	20.0%	30.0%	<b>Vegetables</b>	Insufficient	0.0%	10.0%	30.0%	50.0%	10.0%
	Sufficient	5.0%	13.3%	25.0%	43.3%	13.3%		Sufficient	1.7%	15.6%	30.5%	28.8%	20.3%
	Good	0.0%	15.8%	42.1%	21.1%	21.1%		Good	0.0%	10.5%	31.6%	36.8%	21.1%
<b>Fermented dairy products</b>	Insufficient	0.0%	10.0%	60.0%	30.0%	0.0%	<b>Sweets</b>	Insufficient	0.0%	20.0%	60.0%	20.0%	0.0%
	Sufficient	6.7%	25.0%	31.7%	28.3%	8.3%		Sufficient	1.7%	16.7%	48.3%	23.3%	10.0%
	Good	0.0%	5.3%	63.2%	21.1%	10.5%		Good	0.0%	16.7%	55.6%	16.7%	11.1%
<b>White cheese</b>	Insufficient	0.0%	30.0%	50.0%	20.0%	0.0%	<b>Fast food</b>	Insufficient	0.0%	90.0%	0.0%	0.0%	10.0%
	Sufficient	5.2%	34.5%	44.8%	12.1%	3.4%		Sufficient	6.7%	86.7%	6.7%	0.0%	0.0%
	Good	0.0%	26.3%	52.6%	21.1%	0.0%		Good	0.0%	94.7%	5.3%	0.0%	0.0%
<b>Hard cheeses</b>	Insufficient	0.0%	33.3%	55.6%	11.1%	0.0%	<b>Instant soups</b>	Insufficient	30.0%	50.0%	20.0%	0.0%	0.0%
	Sufficient	1.7%	20.0%	46.7%	21.7%	10.0%		Sufficient	68.3%	28.3%	3.3%	0.0%	0.0%
	Good	5.3%	10.5%	57.9%	10.5%	15.8%		Good	66.7%	27.8%	5.6%	0.0%	0.0%
<b>Fried food</b>	Insufficient	0.0%	20.0%	70.0%	10.0%	0.0%	<b>Canned meat</b>	Insufficient	40.0%	60.0%	0.0%	0.0%	0.0%
	Sufficient	3.4%	37.3%	59.3%	0.0%	0.0%		Sufficient	58.3%	40.0%	1.7%	0.0%	0.0%
	Good	0.0%	36.8%	57.9%	5.3%	0.0%		Good	73.7%	21.1%	5.3%	0.0%	0.0%
<b>Butter</b>	Insufficient	10.0%	40.0%	10.0%	0.0%	40.0%	<b>Canned vegetables</b>	Insufficient	30.0%	50.0%	20.0%	0.0%	0.0%
	Sufficient	6.9%	12.1%	22.4%	19.0%	39.7%		Sufficient	31.0%	55.2%	12.1%	1.7%	0.0%
	Good	0.0%	5.3%	36.8%	10.5%	47.4%		Good	11.1%	66.7%	22.2%	0.0%	0.0%
<b>Lard</b>	Insufficient	90.0%	10.0%	0.0%	0.0%	0.0%	<b>Fruit juices</b>	Insufficient	0.0%	40.0%	40.0%	0.0%	20.0%
	Sufficient	74.1%	17.2%	5.2%	3.4%	0.0%		Sufficient	3.4%	32.2%	42.4%	10.2%	11.9%
	Good	94.7%	5.3%	0.0%	0.0%	0.0%		Good	0.0%	26.3%	47.4%	15.8%	10.5%
<b>Vegetable oils</b>	Insufficient	30.0%	20.0%	40.0%	10.0%	0.0%	<b>Fruit/vegetable juices</b>	Insufficient	30.0%	30.0%	30.0%	10.0%	0.0%
	Sufficient	22.0%	22.0%	35.6%	8.5%	11.9%		Sufficient	35.0%	45.0%	13.3%	3.3%	3.3%
	Good	31.6%	10.5%	42.1%	10.5%	5.3%		Good	27.8%	33.3%	33.3%	0.0%	5.6%
<b>Cold meats</b>	Insufficient	0.0%	70.0%	30.0%	0.0%	0.0%	<b>Sweetened beverages</b>	Insufficient	22.2%	44.4%	33.3%	0.0%	0.0%
	Sufficient	1.7%	53.3%	23.3%	3.3%	18.3%		Sufficient	16.7%	61.7%	15.0%	6.7%	0.0%
	Good	5.3%	47.4%	26.3%	10.5%	10.5%		Good	15.8%	73.7%	5.3%	0.0%	5.3%
<b>White meat *</b>	Insufficient	20.0%	40.0%	40.0%	0.0%	0.0%	<b>Water</b>	Sufficient	20.0%	0.0%	20.0%	40.0%	20.0%
	Sufficient	0.0%	21.7%	71.7%	6.7%	0.0%		Good	5.0%	3.3%	8.3%	15.0%	20.0%
	Good	0.0%	31.6%	63.2%	5.3%	0.0%		Insufficient	5.3%	5.3%	5.3%	0.0%	84.2%
<b>Red meat</b>	Insufficient	10.0%	40.0%	50.0%	0.0%	0.0%	<b>Energy drinks</b>	Insufficient	50.0%	30.0%	0.0%	0.0%	20.0%
	Sufficient	10.3%	34.5%	51.7%	3.4%	0.0%		Sufficient	84.7%	11.9%	0.0%	0.0%	3.4%
	Good	0.0%	36.8%	57.9%	5.3%	0.0%		Good	89.5%	10.5%	0.0%	0.0%	0.0%
<b>Fish</b>	Insufficient	0.0%	0.0%	80.0%	20.0%	0.0%	<b>Isotonic drinks *</b>	Insufficient	10.0%	70.0%	0.0%	10.0%	10.0%
	Sufficient	5.2%	1.7%	87.9%	5.2%	0.0%		Sufficient	41.7%	45.0%	13.3%	0.0%	0.0%
	Good	15.8%	0.0%	84.2%	0.0%	0.0%		Good	36.8%	52.6%	10.5%	0.0%	0.0%

\* indicates the significance of the  $\chi^2$  test  $p \leq 0,05$



However, 71% and 63% of the parents with sufficient and good nutritional knowledge, respectively, provided their children with such products several times per week, compared to only 40% of the parents with insufficient nutritional knowledge. Red meat was served to the young athletes several times per week by over 50% of parents, regardless of their level of nutritional knowledge. In the study by Alaunyte et al., (2015) no differences were demonstrated between nutritional knowledge and the consumption of red meat and poultry. Fish were provided to the young athletes several times per week by 88% of the parents with sufficient knowledge and 80% of the parents with insufficient knowledge. Also rugby players with good nutritional knowledge eat oily fish more often (Alaunyte et al., 2015). Eggs were included in the diet of the athletes by 20% of the parents / legal guardians with insufficient knowledge, which is twice as much compared to the parents with good and sufficient knowledge. Among adult players, no differences in the consumption of eggs, a highly nutritive product, were demonstrated (Alaunyte et al., 2015). Products rich in protein, such as meat, fish and eggs, should be included in the diet of young athletes every day. An adequate supply of protein ensures the appropriate growth and development of a young organism (Bonci, 2010). Potatoes were served several times per week mostly by the all parents with good nutritional knowledge, while to a lesser extent by the parents with insufficient (60%) and sufficient (72%) nutritional knowledge. Similar results were obtained in the study by Alaunyte et al. (2015). A complete lack of legume seeds in the diet of children and adolescents is a widespread phenomenon. These valuable products were never served to children by 40% of the parents with insufficient nutritional knowledge, 19% of those with sufficient knowledge and 26% of those with good knowledge. In a group of adult athletes with poor nutritional knowledge, these products were not eaten at all by as many as 60% respondents. Inclusion of legume seeds in the diet of athletes is particularly important due to the content of various fiber fractions and reduced glycemic index of the products (Frączek, 2004). Vegetables were most often served once a day by 50% of the parents with insufficient nutritional knowledge, 37% of those with good nutritional knowledge and 29% of those with sufficient nutritional knowledge. Fruits were provided at least once a day by 68% of the parents with good knowledge, 57% of those with sufficient knowledge and 50% of

those with insufficient knowledge of nutrition. In a study conducted in rugby players, athletes with good nutritional knowledge consumed more fruits and vegetables than those with poor knowledge (Alaunyte et al., 2015). This group of products is extremely important in the nutrition of young athletes as it constitutes an excellent source of minerals, vitamins, including antioxidant ones, fiber and bioavailable carbohydrates (Frączek, 2004). Data presented in Tab. 1 indicate that 60% of the parents with insufficient nutritional knowledge included sweets in the diet of the young footballers several times per week, while those with sufficient and good knowledge did so to a slightly lesser extent: 48% and 56%, respectively. Regardless of the parents' competence in nutrition, fast food was consumed once a week by almost 90% of the athletes. In the study by Alaunyte et al. no differences were observed between groups of athletes regarding the consumption of products rich in simple sugars and/or fat (Alaunyte et al., 2015). The food pyramid for athletes published by the Swiss Society for Nutrition indicates that the consumption of salty snacks, sweets and sweetened drinks should be reduced (Burke, 2008). Regardless of the knowledge of nutrition, the young athletes avoided including products such as instant soups and canned meat in their diet. Similarly, no influence of the parents' nutritional knowledge was observed in the case of juices, served by 47%, 42% and 40% of the parents with good, sufficient and insufficient knowledge, respectively. Fruit/vegetable juices were not served at all or, most often, only once a week regardless of the parents' knowledge of nutrition. Only approx. 30% of the young footballers drank fruit/vegetable juices served by the parents with good and insufficient nutritional knowledge several times per week. Similar results were observed in the already cited study of rugby players (Alaunyte et al., 2015). Sweetened beverages were consumed by the young footballers quite often. They were served most often once a week by 74% of the parents with good knowledge, 62% of those with sufficient knowledge and 44% of those with insufficient knowledge. However, drinking sweetened beverages by the young footballers more often than several times per week was less frequent and applied only to 1/3 of those whose parents had insufficient nutritional knowledge. Consumption of mineral water by the young athletes several times per day was declared by 84% of the parents with good knowledge, 68% of those with sufficient knowledge and only 20% of those with insufficient

knowledge. Among adult players with a good level of nutritional knowledge, 90% declared drinking water “often” (Alaunyte et al., 2015). Somewhat surprising is the fact revealed in our study that the parents with sufficient and good knowledge provided their children with isotonic drinks almost 4 times less frequently than the parents with insufficient knowledge of nutrition ( $p=0,0082$ ). Energy drinks were avoided by nearly 90% of the parents with good knowledge, 85% of those with sufficient knowledge and only 50% of those with insufficient knowledge of nutrition. However, worrying is the fact that among the young athletes whose parents had insufficient nutritional knowledge, 20% drank energy drinks several times per day and 30% drank energy drinks once a week. The supply of the appropriate fluids is extremely important in the diet of a young athlete. Matching the type of fluids with training duration and intensity will reduce the risk of overheating and dehydration. For athletes whose physical effort does not exceed 60 minutes, rehydration with water is recommended (Rowland, 2011), (Wilk & Bar – Or, 1996). The correlation of the nutritional knowledge of each group: parents / legal guardians, trainers and physical education teachers, with the nutrition of children was not substantiated with scientific evidence. However, we should probably agree with the main argument presented by researchers, that “nutritional knowledge” is a necessary but not the only or sufficient factor to change nutrition habits (Spendlove, Heaney & Gifford, 2011), (Gordyńska – Glodman & Ratajczak, 2010). From the studies regarding the factors that impact the nutrition habits of certain groups, including children practicing sports, published to date, it appears that the amount of nutritional knowledge affects the choice of food products (Worsley, 2002), (Kersting, Sichert-Hellert, Vereecken, Diehl, Béghin & De Henauw et al., 2008). Data from the scientific publications concerning this issue indicate, e.g., that the knowledge of children's nutrition that parents / legal guardians should possess should contain at least a minimum of accessible information about the needs of a child at every stage of development. In the case of children practicing sports, parents / legal guardians should at least be aware of the increased energy and nutrient demand in young athletes resulting from the increased physical activity and difference in certain physiological processes compared to those in adults (Chalcarz & Radzimirska Graczyk, 2004). It is extremely important that parents or legal guardians, as well as trainers be aware of the consequences of improper

nutrition in children practicing sports. Publications of both Polish and foreign studies indicate that the level of nutritional knowledge in the various groups: children and adolescents, parents, teachers, trainers and other school employees, is insufficient (Leonkiewicz et al., 2015). A “good” knowledge of human nutrition, including that in the developmental age, was declared by almost 60% of respondents. However, further verification of the knowledge of nutritional problems in the developmental age showed that only one third of the surveyed group indeed had a good level of knowledge (Ameryk, Augustyniak & Szymelfejnik, 2016). In one of the studies from 2002, 80% of respondents assessed their nutritional knowledge as “good”, but in practice the parents’ knowledge did not translate into proper eating habits (Gacek, 2007).

To conclude, parents with insufficient knowledge less frequently provide their children with dark bread, thick groats, legume seeds, white meat and mineral water, and more frequently with fried products, sweetened beverages, milk and fermented milk beverages. Serving or allowing children to have energy drinks is a reprehensible practice. Parents and/or legal guardians with sufficient and good knowledge more often serve butter, hard cheeses, vegetables and fruit/vegetable juices, and less instant soups, canned meat and isotonic drinks. The children of those parents, with few exceptions, do not consume energy drinks. No correlation between the level of nutritional knowledge and consumption of products such as: white cheese, vegetable oils, cold meats, red meat, fish, eggs, sweets, fast food, canned vegetables and fruit juices, was demonstrated.

Due to the lack of a standardized tool for the assessment of nutritional knowledge, this paper is a preliminary publication aimed to present some evidence regarding the effects of nutritional knowledge on the selection of food products for boys practicing football. Our study revealed a trend indicating the impact of the parents’ nutritional knowledge on the frequency of serving selected food products, which can be the starting point for further studies aimed to create a standardized research tool that would allow determination of deficiencies in nutritional knowledge and development of the most efficient education programs.

## **Conclusions**

1) It is advisable to generally increase the parents' nutritional knowledge for the improvement in the number and times of serving meals. This would enable young athletes to obtain proper body development and achievements in sports.

2) Improvement in nutritional knowledge will result in changes in the frequency of consumption of selected food products. This will contribute to an increased frequency of serving healthy products, e.g., wholemeal bread, thick groats and water, and reduced frequency of consumption of unhealthy products, such as fried food, sweetened carbonated beverages, sweets and fast food.

3) The reported improper aspects of the nutritional knowledge of parents / legal guardians and their impact on selecting food products indicate the need for a systematic nutritional education based on scientific evidence, provided to the young players themselves, as well as their parents or legal guardians, trainers, teachers, school directors, school caterers, school shop owners and boarding managers, particularly in sport schools.

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