Original Article

Selected socio-economic factors influencing swimming competency of secondary school students

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Abstract

Introduction. Swimming is one of the most popular sport especially in the summer time. However, many people are still underestimating the risk related to the water environment and in addition, studies dealing with the longitudinal monitoring of the swimming performance of candidates of the study of physical education point out a declining degree of swimming competency with lower levels each year. Swimming competency is affected by a number of different factors: age, conditions and facilities, anatomical, physiological and functional preconditions. In this work, we decided to examine selected socio-economic factors and we focused mainly on the education of the parents, occupation of the parents, the economic strength of the family, but also swimming skills of the parents. **Objective.** The aim of this study was to investigate the effects of sociological and economic factors on the swimming competency of secondary school students. **Materials and Methods.** The sample consisted of 175 secondary school students (94 male and 81 female). From the original number of 188 students, we excluded 13 students, since they did not meet the conditions necessary to be included in our research. The main method of data collection was a questionnaire which was divided into three parts. **Results** After evaluation of the data, we can conclude that the parents' education level and swimming skills significantly influenced the swimming competency of their children. Economic status had a significant impact on swimming competency only in the case of boys. In addition, parental employment did not affect the students' swimming competency. **Conclusion.** This type of information could be relevant to the field of sport humanistic so we can further investigate changing nature of the participation in physical activities.

Key Words: aquatic environment, economic class, education, parental influence

Introduction

Some of the most popular sports, especially in the summer time, are undoubtedly swimming and water activities. However, a large part of the population is still underestimating the risks related to the water environment that can ultimately lead to serious health threats and, in the worst cases, death. One of the ways of preventing such situations is mastering the ability to swim. Particular attention should be paid to the education of children and young people in this regard. The situation in Slovakia is deteriorating every year. This is proven by studies dealing with the longitudinal monitoring of the swimming performance of candidates of the study of physical education, in which several authors report a declining degree of swimming competency with lower levels each year (Bence, Kalečík, Chebeň, 2010; Kalečík, Benčúriková, 2010; Kalečík, 2010). Swimming competency is affected by a number of different factors: age, conditions and facilities, as well as anatomical, physiological and functional preconditions. Sport is currently a strongly social phenomenon, so we cannot forget the sociological, economic and psychological factors that influence swimming competency. In this paper, we decided to examine selected socio-economic factors which can affect swimming competency. In Slovakia, there is still a lack of research papers examining how socioeconomic status affects the physical activity of Slovak youth, while in the foreign literature this area is of interest to many researchers (Strawinski, 2010; Pugliese, Tinsley, 2007; Gustafson, Rhodes, 2006). The relationship one has towards swimming and the water environment is a significant factor influencing one's swimming competency. Students tend to come to school with a pre-existing relationship with the water environment. If this relationship was promoted by their parents and the support was gradually increased over the years, a student will have a good chance of adopting swimming strokes without engaging in long-lasting fundamentals drills (Bence, 2005). Bebetos, Zetou, Antoniou (2014) point out that parents can influence their children's participation in physical activity through different mechanisms. These may include direct modelling of physical activity, providing resources to perform physical activity, establishing or eliminating barriers to physical activity, and positively reinforcing children for participation in physical activity. Pharr, Irwin, Irwin (2014) investigated the parental factors influencing the aquatic skills of children and adolescents. They found acyclical, familial pattern which included encouragement, fear of drowning, and swimming

frequency. Children were found to swim significantly more often if their parents encouraged them to swim, the members of their family knew how to swim and swam with them, and their parents were not afraid of the children drowning or of drowning themselves. Engagement and support of the family and parents also significantly influenced the aquatic skills of children in the study by Irwin et al. (2010). Biernat (2012) assessed the correlation between socio-demographic factors and swimming activity among the working population of Warsaw. Gender, age, BMI, education, occupation and income were found to be significantly related to the swimming activity. A study by Strawinski (2010) also presented a positive relationship between education and physical activity, and determined that income plays an important role in the participation of Poles in physical activity. Moreover, Heilbrun and Gray (1993) suggested that the level of education influences a person's participation in sport and leisure activities more than their income. The swimming competencies of the participants in Podstawski et al. (2014) were found to be at a poor level, possibly due to the low income of these residents. From the investigated set of factors, only the place of residence and the monthly budget significantly influenced the measurements of swimming skills (the ability to swim, distance of swimming and the ability to swim different strokes). An increasing level of urbanisation and a higher monthly budget positively influenced women's performances in swimming, as there were only a few women who were unable to swim even the length of a single metre. The latter factor also positively affected the number of swimming strokes that the study participants could perform. The aquatic skills of students also seem to be strongly influenced by their opportunities to learn, such as their access to swimming pools and other bodies of water during childhood. As a beginner, the more time an individual spends executing certain activities (e.g. swimming), the better is the result that may be obtained and one feels more confident in the water environment (Newell, Rosenbloom, 1981). Since the amount of time spent in the water environment is an important factor for improving one's aquatic skills, a lack of opportunities to engage in at least basic swimming movements promotes fear of the water and results in a worsening of swimming competencies. Socio-economic status has been proven to be the primary factor influencing one's swimming ability, as children growing up in the middle and upper economic classes have better access to different bodies of water. Swimming, as a form of physical activity, correlates with specific socio-economic factors that are characteristic for this environment. Research concerning socio-economic status has shown that regular access to water bodies is most likely to be the main factor in achieving a certain level of swimming ability among middle- and upper-class families (Ponessa, 1992). The purpose of this study was to investigate the effects of certain sociological and economic factors on the swimming competency of secondary school students.

Materials and Methods

Sample

The sample consisted of 175 secondary school students (94 male and 81 female) in the Kosice region (Slovakia) who were randomly asked to participate in the study. The average age of the participants was 17.3 for the boys and 17.4 for the girls. From the original number of 188 students, we excluded 13 students, since they did not meet the conditions necessary to be included in our research (the questionnaire was not completed according to the instructions).

Data collection

The main method of data collection was a questionnaire, which was distributed to secondary school students in Košice in order to obtain data on their socio-economic status, aquatic skills of the respondents and their parents. The questionnaire allowed us to investigate the relationships between the individual variables. It consisted of 20 closed-ended questions, but included an option for the respondents to elaborate on a certain response, and it was divided into three parts.

1. The first part focused on sociological variables: namely, the number of people in the household, level of parental education and type of parental employment. We used the European Social Survey (2012) as a template to design these questions.
2. The second part of the questionnaire examined the economic status of the respondents. Due to ethical issues and problems the students had in reporting their economic status, we decided to use the Family Affluence Scale (FAS). The FAS is a four-item measurement of family wealth that involved asking the students about things they were likely to know about in their family (cars, number of bedrooms, vacations, computers). A total FAS score was calculated for each student based on their responses where FAS low (score=0,1,2) indicated a low level of affluence, FAS medium (score=3,4,5) indicated a middle level of affluence, and FAS high (score=6,7,8,9) indicated a high level of affluence.
3. The third part of the questionnaire investigated the aquatic skills and history of the respondents and their parents. An original 12-item questionnaire which was previously utilised in the VEGA no. 1/4482/07 project was redesigned for the purposes of our study. We included questions about the perceived importance of aquatic skills and the parents' level of swimming competency. Contrary to this, we excluded several questions which were not related to the topic of our study.

Data analysis

We used MedCalc for Windows, version 15.8 (MedCalc Software, Ostend, Belgium) for a quantitative analysis. The following types of graphs were used for the graphical presentation of the results: bar graph and

frequency graph with absolute values. We used the Chi-square test to determine the relationships between the individual paired variables (items in the questionnaire). In the probability calculations, the statistical significance was $p = 0.05$ at the 95% significance level, and $p = 0.01$ at the 99% significance level. In terms of logical methods, we used induction, deduction and causal analysis.

Results

Out of the group of 94 boys and 81 girls, 12 boys and 12 girls could not swim. Most of the students considered swimming competency to be important and they were most often taught to swim by their fathers. We recorded 7 students who, despite completing a swimming course at elementary school, could not swim.

Fig.1: Parental education and swimming competency of the students (x axis: 1-elementary school, 2-secondary school, 3-higher education, 4-PhD)

Fig 1. shows that the boys whose fathers achieved only a basic level of education could not swim. In the case of girls, this result was 25%. All four graphs show that the level of swimming competency increased with the increasing education of the parents. In three cases, these results were statistically significant ($p < 0.05$), and it was only in the case of the girls that the relationship between the fathers' level of education and the swimming competency of the respondents was statistically insignificant.

Fig.2: Parental swimming competencies and swimming competencies of the students (x axis: 1- non-swimmer, 2 - swimmer-beginner, 3- unsure swimmer, 4- swimmer)

Further results showed that the level of parental swimming skills had a significant relationship with the swimming competency of their children. With the exception of the maternal swimming abilities in girls ($p < 0.05$) all the other results were significant at the 1% level of statistical significance (Fig. 2).

Fig.3: Parental swimming competency and perceived importance of swimming reported by the students (y axis: 1- non-swimmer, 2 - swimmer-beginner, 3- unsure swimmer, 4- swimmer)

Figure 3 shows the relationship between the importance students assigned to aquatic skills and the swimming competency of their parents. With the increasing level of the fathers' swimming competency, the students tended to consider the acquisition of appropriate aquatic skills as more important. The fathers of those students who did not consider swimming competency to be important were mostly beginner swimmers. The same trend was also observed in the case of the mothers.

Fig.4: Economic class of the family and swimming competency of the students

In the next part, we investigated whether the economic status of a family was related to swimming competency. In the boys, we recorded up to 44% of students who could not swim in the category of the lowest economic status; while in girls the result was 36% of non-swimmers in the lowest economic status (Fig. 4). In the case of boys, we recorded a significant statistical relationship at the 5% level of statistical significance; but in the case of the girls, we did not record a statistically significant relationship. We can therefore state that the

economic status of a family has a statistically significant relationship with swimming competency only in the case of boys.

Fig.5: Economic class of the family and perceived importance of swimming reported by the students

Figure 5 presents the students' answers to the question regarding the importance of swimming competency according to their economic status. The answers of the students from all three economic classes were on average close to the answer "yes"; however, we can see a certain trend line. Swimming competency, for the students with the high economic status, was important; and conversely, with a declining economic status, the perceived importance of swimming competency decreased. In analysing the results connected with the frequency of swimming, we found a statistically significant difference between the frequency of swimming and socio-economic status ($p < 0.05$). We also did not observe any statistically significant relationship ($p > 0.05$) between the economic status of the family and the way that the students had learned to swim. The next socio-economic factor we examined was the parental employment status as a factor influencing the aquatic skills of their children. Here, we found a statistically significant difference only in the variable for the father's employment status ($p < 0.01$). There was no significant difference in any other instances. This result also revealed that the fathers of 80% of the boys who could not swim were unemployed.

Discussion

In terms of the education variable, we can confirm that the education of the parents had an impact on the swimming competency of the high school students in our research group, with the exception of the father's education in the group of girls. This deviation from the trend is very difficult to explain, but similar results were recorded by Podstawski et al. (2014), who examined selected socioeconomic factors in a group of 19-20-year old women. He also found that the father's education did not affect the swimming skills of the women in his sample. Other studies (Laosee et al. 2011; Ahmed, Rahman, Ginneken, 1999) have pointed out that the level of parental education does not affect the swimming competency of their children. However, most of our results in this category are consistent with the results of other authors who did not apply their research specifically to swimming, such as Hashemi et al. (2013). According to their results, parents with a higher level of education are more aware of the importance of sports and pay greater attention to their children's physical activity. In addition, a study of Cho and Lee (2017) suggests that more educated adults are more likely to explore health information and opportunities, so they can directly improve health. In terms of the employment variable, we can state that in our research group, the parents' employment did not affect the students' swimming competency, with the exception of the father's employment in the group of boys. Our result differs from that of Stockie (2003), who suggests that the parental occupation influences a child's physical activity in different ways. Even though we did not focus on the income, a job still determines the parent's exact working time, which can influence the time that a parent spends with their children especially at a younger age (e.g. transport to training and extracurricular activities). In addition, without a well-paid job, a parent is not able to cover the possible expenditures, and therefore their child may not be interested in any specific physical activity. Depending on the job, the working place and the working times of parents, children may be engaged in different types of physical activity and sport (school sport, professional sport, and recreational sport). In the economic status variable, we found that, in our research group, economic status had a significant impact on swimming competency only in the case of boys. Studies by Poness (1992) have shown that socio-economic status is a key factor influencing swimming competency. In general, children growing up in the middle and upper economic classes have more opportunities to learn to swim, because they have more access to swimming pools and lakes, as well as to instructors and coaches. Strange (2003) examined the relationship between psycho-sociological factors and the swimming skills of primary school students in Australia. His results showed that the students from areas with a lower socio-economic status (SES) reported lower levels of swimming ability. In fact, almost every study in this area (Humbert et al. 2006; Patnode et al., 2010; Hashemi et al., 2013) has stated that socioeconomic status has a major impact on a child's physical activity. In addition, the answers to the question about the importance of swimming competency according to economic status suggest that students from all three economic classes predominantly consider swimming competency to be important, but we see a certain trend line here. Swimming competency is important for the students from a high economic class, and on the contrary, with decreasing economic status, the

perceived importance of swimming competency also decreases. Although Moran (2006) in his study conducted on the secondary school students in New Zealand did not find a positive correlation between economic status and the perception of swimming competency, his results from schools attended mainly by students from a low economic class suggest that these students perceive swimming competency and safety in the aquatic environment to be less important than students with from a higher economic class.

Furthermore, we can state that the swimming abilities of the parents had a significant impact on the swimming competency of their children, in relation to both boys and girls. It is therefore highly likely that if the parents could not swim, their children will have little chance to become swimmers. The results of Laosee et al. (2011) also showed that parents who could swim had a positive attitude towards swimming, and were more likely to support and assist in teaching their child to swim. The results of Pharr, Irwin, Irwin (2014) suggest that strategies to reduce fear of drowning may prove to be an effective family-based intervention to increase swimming and physical activity in children and their parents as well as indirectly reduce the risk of drowning as a consequence. However, Parents also can negatively affects their children's physical activity levels by discouraging or preventing them from participating in physical activities (Boufous, Finch, & Bauman, 2004; Telford et al., 2012). Boufous, Finch and Bauman (2004) found that more than 25% of parents discouraged their children from participating in sports or physical activity due to concerns about their children. Telford et al. (2012) found a negative association between parents' perceived of risk of injury of their children and the amount of time their children were physically active.

Conclusion

If we want to address the unsatisfactory level of swimming competency among children and adolescents, it is important to investigate the origins of this phenomenon. Despite being one of the most common arguments, the lack of swimming pools in Slovakia represents a major problem with regards the acquisition of an adequate swimming competency, while socio-economic factors should not be overlooked. Hopefully, this paper will help to address one aspect of the complex problem of swimming competency in children and adolescents. Each sport, swimming included, has its own characteristics which attract specific groups of people. A decision to participate in a sport or a physical activity usually stems from several factors. If participation in physical activity is to become a priority, it is therefore important to identify the different constraints and factors influencing the participation of specific groups of population (minorities, different socioeconomic groups) in sport. This type of information could be relevant to the field of humanistic sport psychology, so that we can further investigate the changing nature of the participation in physical activity. Since our sample was random, we cannot generalise these results to the entire population of adolescents; therefore, it would be useful to conduct further surveys in a sample of Slovak high school students, in order to determine whether our results are confirmed.

Conflict of Interests: The authors have no conflict of interest to declare.

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