

Talent Selection and Management in View of Relative Age: the Case of Swimming

Authors' contribution:

- A) conception and design of the study
- B) acquisition of data
- C) analysis and interpretation of data
- D) manuscript preparation
- E) obtaining funding

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ABSTRACT

Based on our empirical research, through the analysis of the birthdates of young competitive swimmers, the present paper aims to examine the system of talent selection and management in Hungarian competitive swimming complemented with a new element. The research population consisted of the registered junior competitive swimmers participating in the new talent management program of the Hungarian Swimming Association (N=235; average age: 11.44) due to the decision of the Coaches' Committee. Our research was based on the analysis of documents and databases. Besides the descriptive statistics, Chi-square tests and the Kruskal-Wallis test were applied. The results show that swimmers born in the first three months of the year are still more likely to be recruited in the program than their relatively younger counterparts. Furthermore, as a potential effect of the new program, the dominance of the first quarter of the year is also characteristic among those eligible for the next level of talent management. The new selection system of Hungarian swimmers is still highly sensitive to the relative age. Thus, it is recommended to further investigate the functioning of the new talent management program in terms of selection and success.

KEYWORDS

swimming, talent management, relative age effect, Hungary, competitive youth sport

Introduction

In 2017, the 17th FINA World Championship was held in Budapest, Hungary. Parallel with this event, the country also hosted the 14th Summer European Youth Olympic Festival in the city of Győr. At this competition, Hungarian athletes ranked third on the medal table; Hungarian junior swimmers contributed to this performance with sixteen medals. At this event, the most talented swimmers participated and were also given the chance to take part in the world championship in Budapest in the senior competition. They finished in medal-winning positions or received points at the world championship and became the best of their age group in Győr. This means that the adult swimmers of the current Hungarian senior team are accompanied by a number of young athletes who can achieve great results in the near future.

Justification for choosing the topic

Although sport as a social subsystem has undergone radical changes over the past decades, we can agree with Heinemann's statement (1974) that children can start an active sports life between the ages of 7 and 12-13, since this is a developmental stage when they can be characterized by dominantly accepting behavior towards various norms and rules. This is also why the examination of junior athletes is a significant topic in sport-related research. In the international literature, many authors have offered an agenda for researching youth-level athletes (Heinemann, 1974; Ntoumanis, & Biddle 1999; MacPail, & Kirk 2006). In Hungary, Géczi et al. (2009) urged the examination of junior athletes in terms of selection and talent management in various sports. In our previous study, we examined the body size of junior-age swimmers participating in the Future Champions program (Nagy et al., 2015b). In this work, we suggested the further examination of this program. The potential effects of this newly implemented and unique program of the Hungarian Swimming Association (HSA) make it reasonable to undertake scientific research in junior-age swimming. The novelty of the topic can be marked in the examination of the selection principles of a new talent management program. This new initiative of the HSA may have an impact on the selection process that existed before the program was launched. The advantages gained by participation in the program appear as a new element in the talent management of swimmers and can therefore affect the way these talents are nurtured.

In Hungarian sport scientific literature, the topic of selection and talent management has mainly been approached from motoric and psychological aspects. In our research, we attempted to bring a new approach to the forefront; through the analysis of the birthdates of swimmers, we focused on relative age.

Review of related literature

Seeking the characteristics of talent is a popular theme in sport-related literature. A number of authors have made attempts to extend the knowledge related to this topic. Bognár et al. (2009) presented a multidimensional interpretation of sporting talent. Stress is also put on the outstanding importance of the health status and the psychological, physiological, anthropometrical, motoric, and social characteristics of talents (Harsányi, 2009). In their study on the selection of talented football players, Csáki et al. (2013) emphasized that selection is a long-term and complex process during which both objective and subjective methods of measurement are needed. Thomas and Thomas (1999) also underlined the importance of objective measurement, as it can be used to predict adult-age performance with great likelihood. A method of objective measurement that's easy to follow is performance in competitions. According to Peltola (1992), competition is the best opportunity for finding and defining talent. This idea is shared by Harsányi (2009), who, through the examination of track-and-field athletes, reached the conclusion that performance in competition can be an indicator for recruitment in competitive sport.

One of the guiding selection principles of the new talent management program under scrutiny in our work is children's performance at competitions. Therefore, the selection of young swimmers into the new talent management program can be regarded as a method of objective measurement. In the selection of Hungarian swimmers, apart from the objective method of analyzing competitive results, the professional opinion of authorized coaches is also taken into account. These are the coaches working in the Coaches' Committee of HSA who select the participants of the new talent management program based on competitive results and applications by coaches. Therefore, both objective and subjective factors are integrated in the selection of swimmers. As the age of talent selection is moving to earlier life stages in most sports, coaches and teachers try to find talented children at the earliest age possible so that they can commit these talents to the given sport. Therefore, they try to identify talent based on characteristics (strength, quickness, and physical parameters) that depend on chronological and biological age and not on talent (Baker et al., 2010). This is why the significance of relative age may also have an impact on recruitment and inclusion in talent management programs. In the talent base of Hungarian swimming, this can be marked in that the parameters that are in favor of the relatively older athletes in competition (Nagy et al., 2015b) also influence the

performance based on which swimmers are included in the new talent management program. Several authors have called attention to the effect of relative age in connection with talent selection. In popular sports that are chosen by the masses, such as swimming in Hungary, the role of relative age can be critical in relation to selection and assessment. The reason for this is the high number of swimmers, making selection a realistic and necessary process. As the numbers are high, making it possible to filter some swimmers out, competition can be fierce. In such an environment, the relatively older athletes are more likely to be identified as talents and will be selected in programs (Musch, & Grondin, 2001; Delorme, & Raspaud, 2009). O'Sullivan (2015) remarks that this kind of selection mechanism decreases the chance of including potentially talented competitors by five percent, and therefore it also decreases their chance for later success, only because they were born in the wrong month. This group is also complemented by potentially talented children who are at a disadvantage due to their slower development.

The implementation of a new talent management program for junior swimmers

Egressy (2008) describes a person who is talented at swimming as one that possesses a complex set of abilities characteristic to this sport. In swimming, the medium of performing motor tasks significantly differs from non-water sports. In this sport, coaches and talent scouts look for children who, apart from the general traits of sporting talent, can also reach their potential in water. In dealing with talent recruitment and management in swimming, Révész et al. (2007) presented the features of selection among Hungarian junior swimmers. Among other things, they mentioned the ability to move in a different medium, dominant stamina, the ability to cope with monotony, and the ability to perform in competition.

According to Meylan et al. (2010), various examinations alone are not sufficient to define talent. In line with this, there is not a prescribed set of exercises in Hungarian swimming that could be used to predict success. The first step of selecting competitive swimmers takes place after learning the movements, at the end of basic swimming lessons. After this, the youngsters need to pass a second filter: the checking of competitive technique. These two stages can be regarded as steps of negative selection. Children who are not able to further develop their technical skills are advised to engage in other sports. At the third stage, participants of the competitive level are selected based on their ability to compete and their psychological, mental, and conditional characteristics (Révész et al., 2007). They start to participate in competitions at 10-12 years old as an objective system of selection. The selection scheme described by Révész et al. (2007) has recently been complemented by the new talent management program of HSA, called Future Champions.

One of the reasons for the continuous success of Hungarian competitive swimming is that its foundations are laid in outstanding talent management. The talent management system in Hungary has been transformed several times in order to meet the demands of the present-day sport of swimming. In the process of the talent management of competitive swimming, one of the most recent, and so far the largest, initiatives is the new program discussed here. The program supports talented swimmers from all over the country. It especially focuses on the 11-12 age group and members of the junior national team. Competitors participating in the program are recruited based on the professional decision of the regional leaders and the Coaches' Committee of the Hungarian Swimming Association from eight regions of the country. Selection takes place mainly based on their results in competitions and the recommendations of experts. Children involved in the program are given special attention. Their preparation is enriched by the provision of equipment and opportunities for training camps in comparison with the rest of the swimmers. This is completely unique in the history of talent management in Hungarian swimming.

This recently implemented talent management program in swimming differs from previously existing programs, and its functioning may now influence the prevailing system of talent selection. From the competitors who are already part of the structure, those assessed to be talented are selected at the age of 11-12, which was not formerly a characteristic in the system of junior competitive swimming in Hungary. Furthermore, the selected group of swimmers are offered extra opportunities compared to the rest of the swimmers, which is again unprecedented in the previous structure of talent management. Moreover, this is

happening on the national level, involving the entire swimming population. In addition, the new opportunities created by the program extend the area of talent management among swimmers.

Objectives

The objective of the study is to present the results of our independent research, the major aim of which was to explore the characteristics of the newly implemented talent management program and its effects on the selection and development of talented junior swimmers. Another primary aim of our investigation was to discover the ways in which the new program has brought about changes in comparison with the one that previously prevailed. Furthermore, we intend to assist the daily work of professionals in the field and to enhance their understanding of the guiding principles of talent selection and management.

Hypotheses

Our research was based on the following hypotheses.

We assumed that:

- as a result of the implementation of a new selection and management program, there are no significant differences between the swimmers with regards to the date of their birth;
- there are no gender differences in the selection with regards to date of birth;
- no significant differences can be observed between successful and less successful swimmers in terms of their date of birth;
- there are no regional differences regarding the number of successful swimmers.

Material and methods

The total population of competitive swimmers registered by the Hungarian Swimming Association that was selected into the new talent management program by the Coaches' Committee was considered as the research population (N=235, of 118 boys and 117 girls). Their average age was 11.44 ± 0.57). The basic method for collecting the data was the analysis of documents, the source of which was the database of the Hungarian Swimming Association and some data available on its website. In order to analyze the periods of birth, we divided the competitors into four categories in accordance with the approach used in a number of studies (Albuquerque et al. 2015; Nagy et al. 2015a; Breznik & Law 2016; Müller et al. 2016). In the group associated with the first quarter of the year, those born between January and March (n=89) were included, and in the second group, those born between April and June (n=59) were included. The third group was made up of swimmers born between July and September (n=59), while the fourth one was comprised of swimmers born between October and December (n=28).

In the analysis, we differentiated between successful and less successful athletes. The swimmers that we considered to be successful managed to stay in the program after the narrowed squad selection one year later. This way, they could benefit from the long-term advantages offered by the new program and could take part in the top-level talent development of swimmers. The group of less successful swimmers consisted of those who were dropped when the squad was narrowed after one year. Therefore, they were deprived of the extra opportunities and support offered to swimmers remaining in the talent management program. The number of successful swimmers was 93 (50 boys and 43 girls). There were 142 less successful swimmers (68 boys and 74 girls).

The examined swimmers were further classified according to the eight regions defined by the HSA: the Central Hungarian Budapest region (n=60 swimmers), the Central Hungarian Pest region (n=28), the Northern Hungarian region (n=24), the Western Transdanubia region (n=30), the Central Transdanubia region (n=18), the Northern Great Plain region (n=19), the Southern Great Plain region (n=32), and the Southern Transdanubia region (n=24).

In order to process the data, descriptive statistics were used to examine the relationships between birthdate, gender, and success by means of non-parametric data. Chi-square tests were applied to analyze differences between the periods of birth. Finally, the non-parametric version of the one-way analysis of variance was employed to analyze the differences between the successful and less successful swimmers in terms of gender.

When defining the value of significance, we set the margin of error at 0.05, as it is applied in social scientific research. The data were analyzed with the SPSS 21.0 program.

Results

By analyzing the dates of birth of the swimmers selected following the implementation of the new management program, it was revealed that one-third of them were born in the first quarter of the year (37.9%), one-fifth of them were born in the second quarter, and another fifth were born in the third. The rest, roughly one-tenth, were born in the last three months of the year (Fig. 1).

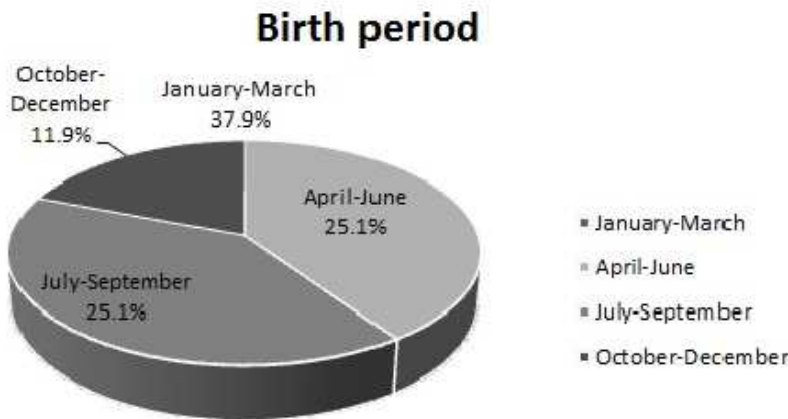


Figure 1. The birth period of swimmers in the Future Champions program (N=235)
 Source: Author’s own study.

The findings of the applied Chi-square tests showed significant differences between the athletes born in different quarters of the year (Chi-square=31.672; d=3; p<0.001). Significant differences were found between the young male swimmers (Chi-square=18.339; d=3; p<0.001) and between the young female swimmers (Chi-square=17.256; d=3; p<0.001) regarding their birthdates. In both cases, the birth period with the most swimmers selected into the program included those who were born between January and March (boys: 36%; girls: 40%), while the birth period with the least number of swimmers selected into the program included those who were born between October and December (boys: 9%; girls: 14%). Differences between the two genders were measured with the Kruskal-Wallis test. According to the results of the test, there are no significant differences between male and female participants of the program in relation to their birthdates (p=0.599) (Fig. 2).

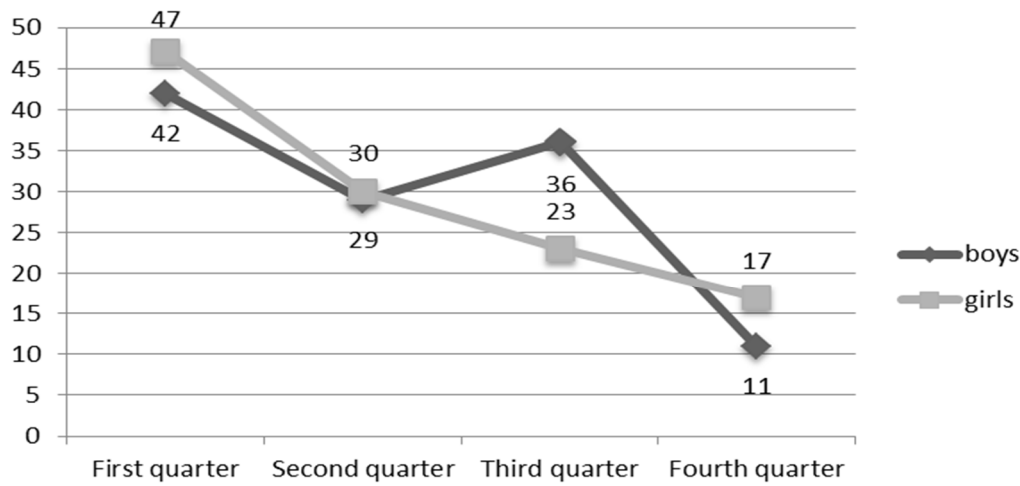


Figure 2. Gender differences according to birthdate (N=235)
 Source: Author’s own study.

Regarding the distribution of the successful and less successful swimmers, the highest proportion of them were born in the first quarter of the year and the lowest in the last quarter. In Figure 3, it can be observed that 39.8% of the successful swimmers were born in the first quarter, whereas only 10.8% were born in the last quarter. Within the group of successful swimmers, the number of competitors continuously decreased from the first quarter to the last, while in the group of the less successful swimmers, the number of those born in the third quarter of the year was higher than the same figure for the second quarter. In the group of less successful swimmers, 36.6% were born in the first quarter of the year.

Differences between the groups of successful and less successful swimmers were measured with the Kruskal-Wallis test. According to the results of the test, the two groups show no significant differences in terms of date of birth ($p=0.599$) (Fig. 3).

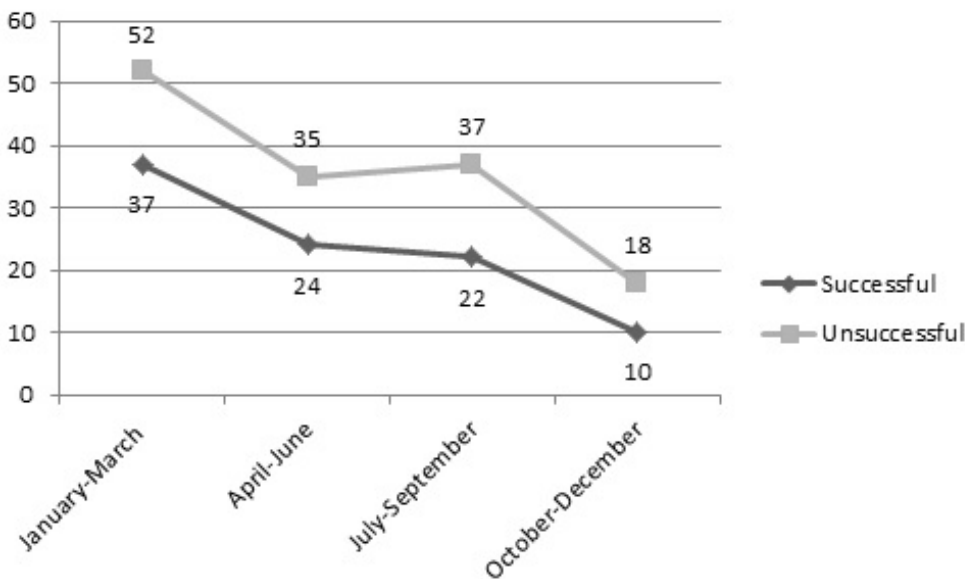


Figure 3. The number of successful and unsuccessful swimmers according to the quarter they were born (N=235)
 Source: Author’s own study

The system of selection and talent management in Hungarian competitive swimming was complemented with a new element. One of the first steps of talent selection is ranking based on sports results. During the process, the participating children and their numbers are defined in eight regions of the country. There are some regions where, owing to the limits in number, some of the more talented swimmers do not get the opportunity to participate in the program. Parallel to this, there are also regions from which swimmers with less outstanding results were included. This renders it possible that talented swimmers do not get the opportunity to participate because they live in the wrong place. Because of this phenomenon, we attempted to measure the performance according to regions by analyzing the number of successful competitors. The results show that out of all the successful swimmers ($n=93$), the most came from the Central Hungarian Budapest region ($n=28$, 30.1%). This percentage is almost three times higher than in any other region. In their ranking, the Central Hungary Pest, Northern Great Plain, and Southern Transdanubia regions occupy the next three places, equally with 11.8%, while all other regions were represented by less than 10% in the narrowed squad of young swimmers (Fig. 4).

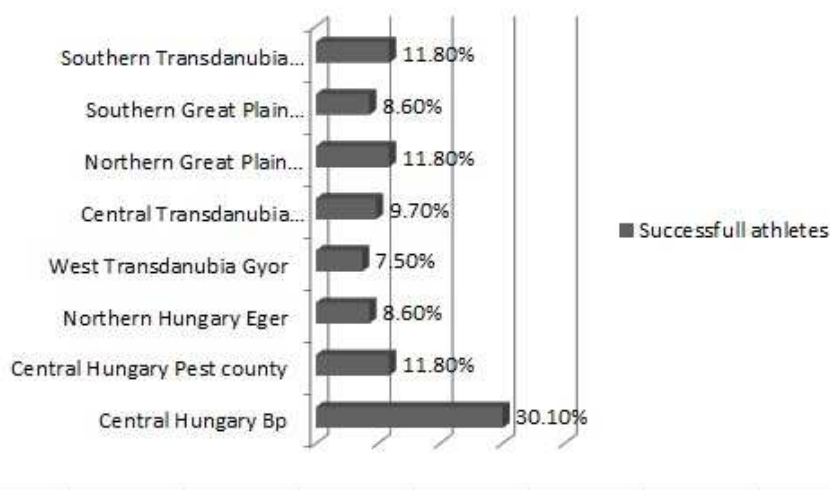


Figure 4. The number of successful athletes in the individual regions ($n=93$)

Source: Author's own study.

Discussion and conclusion

When examining the birthdates of youngsters in the database of the Hungarian national talent management program called Heracles, Nagy and Sterbenz (2016) demonstrated that the phenomenon of the relative age effect is present in several sports. Through the investigation of the participants' birthdates in the largest talent management program of swimming, we were also able to observe that most of the selected athletes were born in the first three months of the year. The number of participants born in the last quarter of the year was significantly lower. Because of these findings, our first hypotheses, according to which there are no significant differences between the swimmers with regards to the date of their birth, had to be rejected.

Since our present research focused on talented swimmers aged 11-12 years old, the findings reinforce the remark made by Thompson et al. (2004) that at the age of 11-12, the selection of swimmers is affected by relative age. The results of our research concur with the ones discovered by O'Sullivan (2015) in the examination of ice hockey players aged 11-13 years old. On the other hand, they contradict the remarks of Costa et al. (2013), who found that relative age has no effect on the performance of young swimmers. Notwithstanding this, in line with other authors' work (Musch, & Grondin, 2001; Cogley et al., 2009), we rightly think that in the selection mechanism of the new talent management program, the birthdates of the competitors play an emphatic role.

Nevertheless, this does not mean that with the implementation of the new talent management program only those born in the first half of the year can achieve outstanding success in the youth and senior competitions. What is more, O'Sullivan's work (2015) also revealed that children who are relatively younger and are still able to make it into talent management programs are likely to become top athletes in the future. With reference to Baker and Logan's idea (2007), according to which relatively younger athletes can harden among their relatively older counterparts due to higher demands and stronger opponents, we also presume that the relatively younger swimmers selected in the program are provided an opportunity for a quickstep development.

The gender-based analysis of the selected swimmers has shown that the highest percentage of talented swimmers were born in the first quarter of the year, including both girls and boys. This reinforces and also complements the results we previously obtained when examining the entire junior and senior national teams (Nagy et al., 2015a). In analyzing the 11-12 age group specifically, we experienced that after the first quarter of the year, the third quarter was represented by the second-highest percentage with boys, while among girls there was a gradual decrease from the first to the last quarter of the year. This may imply that the relative age effect is more tangible among female members of the junior national team. However, we could not find gender differences between the boys and girls regarding their relative age; the relative age effect is equally characteristic among girls and boys aged 11-12 years old.

When examining this stage of talent management, no significant differences could be marked between successful and less successful competitors in terms of their birthdates. In both groups, the highest number of swimmers were born in the first quarter of the year. Among successful swimmers, nearly half were born in the first quarter, while the last three months were represented by one-tenth, with a gradual decline from the first to the last quarter. Although the exact proportions differed, a similar tendency could be noted with the less successful swimmers. Our third hypothesis, according to which no differences can be observed between successful and less successful swimmers in terms of their dates of birth, can be accepted.

It is highly possible that differences among swimmers stemming from relative age can indeed be marked in the talent management program and may affect the success of swimmers. In light of the results, we can remark that after narrowing the squads, relatively older children are more likely to remain in the program. Certainly, staying in the program is defined by many factors; nevertheless, based on the results we were able to observe that there was a tendency for the previously existing selection mechanism to be affected by the implementation of the new talent selection and management program.

The data of swimmers aged 11-12 years old included in the program suggest that the effect of relative age may be stronger than before. The data of less successful swimmers show that the third quarter of the year was represented by the second highest percentage. It suggests that the relatively older swimmers may take the place of younger ones when the squad is narrowed down. These children, deprived of the support available for those staying in the program, may then have an even lower chance than their relatively older rivals. Swimmers who are relatively younger and were still recruited into the program have already proven that they deserve special attention. Yet with the narrowing of the squad, they lose opportunities for further development since they cannot get the extra support. In this way, the system of talent selection and management might take an opportunity away from some promising children whose talent has already been recognized by experts and who would not have been dropped from the squad in the previous system of selection.

Talent management in sport has become an emphatic area of sport policy in recent decades. So far, the relationship between child-aged swimming and senior-level elite sport performances has not been supported by evidence (Nádori, 2009). Even so, there are several examples we can recall among the Olympic champions of the past decades. For instance, Krisztina Egerszegi won her first gold medal at the age of 14. László Cseh already indicated his greatness in the sport during junior age, winning several championships. We could also mention Dániel Gyurta, who held the national record of his cohort for years. The list could continue with Éva Risztov and Ágnes Kovács. The results of Hungarian Olympic and world champions

underline that those showing signs of talent must be given special attention. The results presented in our study show that this phenomenon may appear in the long run in Hungarian competitive swimming. This lends importance to our results, according to which the majority of the selected children are relatively older than their peers, and the same applies for those eligible for the top-level talent management program. The implementation of the program as a new element in talent management seems to exert an influence on junior competitive swimming.

Based on the performance of swimmers from the individual regions defined in the program, the Central Hungarian Budapest region was represented by the highest percentage of successful groups of swimmers who were included in the narrowed squad. Comparing this percentage with the rate of successful swimmers in the other regions, we found significant differences. Consequently, we could not verify the fourth hypothesis. Therefore, we recommend that when the special numbers to be recruited from the regions are defined, regional leaders and supervisors should take into consideration the dominance of the Central Hungarian Budapest region in talent supply and increase the number of children eligible for support there compared to the other regions. In our research, it was proven that swimmers born in the first quarter of the year are more likely to be selected into the new talent management program than their relatively younger peers. Furthermore, most of the competitors who qualified for extra support were also born in the first three months of the year. Since the factors ensuring the realization of talent have a similarly strong impact on the development of young athletes as the principles of talent selection itself (Fügedi et al. 2009), we recommend that differences rooted in the relative age effect be recognized in the process of the talent selection and development of swimmers.

Finally, based on the thoughts of O'Sullivan (2015), we call the attention of professionals working in swimming to the results presented in his study. According to O'Sullivan, the efficiency of any system of selection, even one that is not necessarily well constructed, can be verified by experts because of the steps they take. The reason for this phenomenon is that due to their higher-level training, the selected athletes will indeed be better. The effects of a mistaken selection mechanism that does not take account of the relative age effect are strengthened by the environment and the physical and psychological effects accompanying the selection process. Consequently, in this new structure of talent selection and development, the number of real talents remaining in the system may decrease.

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