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THE RELATIVE AGE EFFECT ON THE SELECTION IN THE SLOVAKIA NATIONAL FOOTBALL TEAMS

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Summary: The focus of this research was to determine the relative age effect (RAE) on selection in the Slovakia national football teams. A factor that may have a significant impact on the quality of players chosen for the national teams or may result in a poor selection of players for the elite teams. Anthropometric and cognitive acceleration of players born in the first months of the calendar year concerning the overall context of the competition for placement in the national teams may be considered as a significant advantage. The aim of this research was to examine, determine and verify the presence of relative age effect in the selection of football players for the Slovakia national teams starting with the under 16 age category (U-16) through to the A - senior national football team. We presumed that the elite teams under this review and study consisted predominantly of players born in the first quarter of the calendar year, while also presuming that relative age effect receded with the increasing age category. Our survey sample U16 consisted of 79 players, U17 consisted of 47 players, U18 consisted of 58 players, U19 consisted of 71 players, U21 consisted of 52 players and A - senior national team consisted of 302 Slovakia national football players. The information obtained from the Slovak Football Association has been processed by the application of statistical methods and statistical significance test (T-test). Our research confirmed the presence of relative age effect in the U-16, U-17 and U-18 teams under our investigation ($p \leq 0.01$). In the U19 and U21 age categories, statistical significance has not been confirmed. As for the senior national team, statistically significant difference has been found in relation to players born in the last quarter of the year as opposed to players born in the first three months of the year ($p \leq 0.01$). Our results have shown that with the increasing age, the relative age effect fades and vanishes in full in the category of senior elite players. In the U-19 and U-21 age categories, statistical significance has not been confirmed. Based on this research results it may be recommended to use the advantage of relative age effect for the selection of players of the particular age category in the particular competition (such as e.g. the European Championship qualification, the European Championship final tournament qualification, or the World Cup qualification in the U-16, U-17, U-18 age categories).

Key words: football, relative age effect, Slovakia national teams

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Introduction

The Slovakia youth football national teams can make evenly matched games in football when playing against the most advanced European teams, and actually winning a number of the matches. With increasing age, however, the players can no more compete with the countries they had previously beaten or with which they achieved good scores. One of the factors causing stagnation or regress in football game performance may also be the relative age effect in selecting the players for national teams. Football play may be affected by numerous factors of the complex consisting of the team game performance or game performance of individual players (Peráček 2004; Peráček et al. 2014). After fragmenting the individual factors of sports performance in football, we decided to study and analyse the relative age effect in the selection of players for the Slovakia national teams.

The RAE related issues were dealt with in research works of various authors in different countries (Helsen, Starkes and Van Winckel 1998; Musch and Hay 1999; Vaeyens, Philippaerts and Malina 2005; Vincent and Glamser 2006; Gonzales Aramendi 2007; 0. Delorme, Boiché and Raspaud 2009; Augste and Lames 2011; Fleming, J. and S. Fleming, 2012; Costa et al. 2012; Gregora and Mikulič 2015). In addition, various observations were conducted in different sports, whether individual ones, such as tennis (Giacomini 1999; Agricola et al. 2012), swimming (Baxter-Jones et al. 1995) or in collective sports, such as volleyball (Grongin et al. 1984), American football (Daniel and Janssen 1987), cricket (Edwards 1994), basketball (Saaverda et al. 2014), ice hockey (Hurley et al. 2001; Wattie et al. 2007), and baseball (Grondin and Koren 2000; Thompson et al. 1991).

The Canadian psychologist Barnsley (1985) was the first to discover and describe this phenomenon, calling it relative age effect. Later, Barnsley et al., (1992) assembled statistical data on all players in the junior ice hockey league in Ontario. The majority of the players were born in January, followed by those born in February and then those born in March of the relevant calendar year. The number of players born in January was almost 5.5 times greater than those born in November.

Relative age effect may be manifested as preference given to players of higher relative age, i.e. players born in the first quarter of the year (January - March). This phenomenon arises substantially from the assumption that players born in the first quarter of the year may have a major biological advantage over those born in the later months of the calendar year. Such biological acceleration in fitness, cognitive and morphological conditions/abilities is more pronouncedly demonstrated in the lower age categories. Here, the key problem

regarding the relative age effect occurs mainly with the detection and identification of talented football players selected for national teams. The football experts should realize and be aware of the relative age effect consequences, especially when making important selection of players for the national teams, as indicated and reminded by Campo et al. (2010).

Relative age effect may have negative implications for the higher age categories of players, when somatotype and some anthropometric indicators have ceased to play such important role in the player's game performance that previously facilitated the player's dominance or superiority in the football field. Several authors (Mujika et al. 2009; Campo et al. 2010) show that in forming the senior national squads, RAE does not play such an important role and has not such impact on the game performance as in the lower age categories. Therefore, the age-group position effect is not recommended to be taken into account in the selection of players. Principally for the reason that all of the game parameters become more balanced in the adult age, because of which the relative age effect loses its significance.

Helsen et al. (2000) maintain that a number of football coaches and experts involved in the process of national team selections interchange biological acceleration in the selection year and football talent. Helsen, Winckel and Strakes (2005) analysed the RAE in ten European countries and their national teams under the age of 15, 16, 17 and 18 years. Their results showed that the players born in the first quarter (in the first three months) of the selection were overrepresented in the elite teams under their investigation. Gregora and Mikulič (2015) made a conclusion in their research according to which, in the lower age categories, teams participating in the final under-17 European Championship tournaments and the European under -19 Championship, the RAE impact was greater; this also shows that the largest mistake risks or the wrong player selections exist with the lower age categories. Hamnvik et al. (2014) compared football national teams of Norway, Sweden and Portugal (U-17, U-19 and the A - senior national team), assuming that Portugal, an advanced football country typically preferring players with technical excellence skills without special accent on somatotype, had a less number of players born in the first three months of the selection year than the Scandinavian countries. The results showed the RAE presence in all samples except for the senior national teams in individual countries. That means, in the Portugal selections, too, statistically significant differences were established in representation of the players born in the first three months of the selection year.

The RAE purposely exploited in the selection of players for national teams may subsequently be regarded as discrimination against players born in the later months of the

selection year. Primary problems arise in the early selection periods when one of the criterions in the choice of players is also their relative age. Secondary problems are starting to occur with the player who was picked to the national selection. He takes advantage playing for a long period of time, he gets high standard conditions available (elite coaches, outstanding setting, excellent means, enhanced competition, great care, chances to play against the best teams, plenty of experience). These are advantages for the player when we compare him to a talented player born in the later month of the selection year (Merton 1968). In such above standard conditions, the player may grow to become a first-rate player but not of the same superior quality as the talented player might have grown to. Consequently, it may be wrongly inferred, in this context, that the selection of players to national teams was right and proper. Tertiary problems arise after the players proceed to or qualify for the senior teams. At the time of the player's advancing to play senior football games, the relative age effect eventually recedes, with the sports talent getting into the foreground. Should the relative age effect possibly be eliminated in the selection of players to national teams, better game performance may potentially be achieved. We have found research studies the authors of which believe the system of placement of players in the particular age categories should be altered and a new system should be implemented in accordance with biological age (Baxter-Jones 1995), or chronological age (Hurley 2009).

The Aim

The aim of this research work is to find whether the relative age effect is present in the Slovakia national football teams.

a) It is assumed that the Slovakia national teams of under 16 years, under 17 years, under 18 years, under 19 years and under 21 years of age are significantly composed of players born in the first three months of a year when compared with those born in the last four months of the year.
b) It is assumed that the impact of the relative age effect on the selection in the A – Slovakia senior national team is not present.
c) It is assumed that the impact of relative age effect on the selection in the Slovakia national football teams decreases with the increasing age category.

Methods

We ascertained the birth-dates of individual players in the following age categories: U16 (consisted of 79 players), U17 (47), U18 (58), U19 (71), U21 (52) and A – senior national team consisted of 302 Slovakia national football players (Tab. 1).

Table 1

Number of Players in Slovakia National Football Teams

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Sum.
SVK U16	17	11	12	5	6	5	3	6	4	5	3	2	**79**
SVK U17	8	7	10	8	4	0	3	1	4	1	0	1	**47**
SVK U18	7	10	5	10	7	4	5	4	4	1	0	1	**58**
SVK U19	10	9	8	6	3	5	7	4	10	2	2	5	**71**
SVK U21	5	5	4	6	4	1	5	1	5	5	4	7	**52**
SVK A	23	19	34	21	23	25	29	21	31	22	31	23	**302**
Summary	**70**	**61**	**73**	**56**	**47**	**40**	**52**	**37**	**58**	**36**	**40**	**39**	**609**

For obtaining the necessary information, we used official documents kept by the Slovak Football Association. The data so obtained were entered into the collection sheets prepared for the purpose of the survey. In addition to the principles of basic logical procedures of analysis, synthesis, inductive and deductive approaches used in the data processing and evaluation, also fundamental statistical methods were applied. Our intention was to find whether statistically significant differences could be established in the results found within the same sample or in individual national teams. For this purpose, Kampmiller (2010) recommends to apply the T-test (for independent samples) of statistical significance.

Results and Discussion

The analyses of the relative age effect in the Slovakia youth national football teams under this survey (Fig. 1) have shown that the influence of RAE was present in all youth national teams ($p \leq 0.01$), except for the U-19 selection. This team was surveyed within a long-term qualifying cycle, which means that it includes a broader spectrum of players. From our point of view, when Slovakia is going to take part in the U-19 European Championship final tournament or the U-19 World Cup tournament, the coaches might have been influenced intentionally or unintentionally by the factor of relative age. This view may be corroborated also by the research of Gregora, Mikulič (2015), in which the influence of relative age effect was found in all national teams in all European Championship final tournaments in the U-17 and U-19 age categories. The coaches selecting players for the particular tournament (the U-17 and the U-19 European Championships), in the particular time were apparently affected by the relative age effect and the factor-related advantages. The most considerable influence of relative age effect was found in the U-16 category ($p \leq 0.01$, $t = 5.004$). The largest is the number of players born mostly in January, February and March.

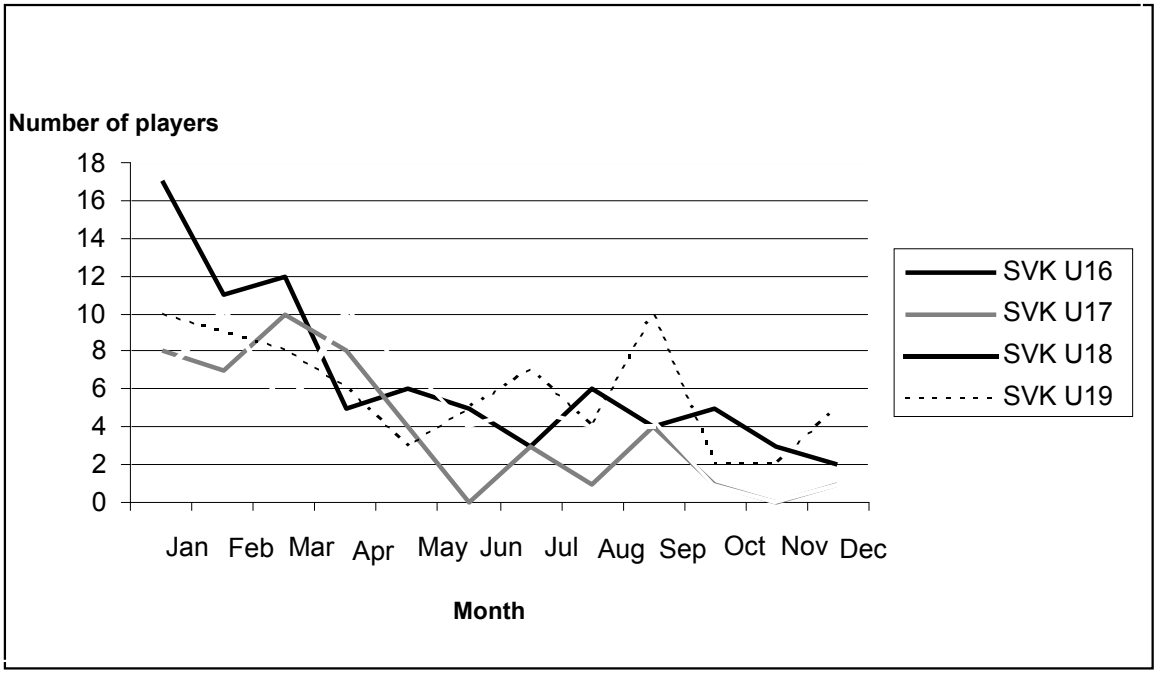

Figure 1
Month Position Distribution of Players in the Youth Football Teams

In reviewing the U-21 Slovakia national selections and the senior team (Fig. 2), the relative age effect or the dominant representation of players born in the first three months of the years has not been confirmed. With the proportionality of the national players under review becoming well balanced, the relative age effect gradually recedes and disappears completely. Our results have been confirmed by the number of players born in the last four months of the relevant year, being greater than the number of players born in the first three months (January, February and March). In the category of players under 21 years, this difference has not yet been statistically significant, but in the senior national team this difference was significant ($p \leq 0.01$, $t = 3.241$). This fact corroborates our statement concerning professional senior football teams in which somatotype and selected anthropometric indicators play no dominant role in the game performance that previously facilitated the player's prevalence over his competitors or opponents in the lower age categories. Here, sports talent and other key factors get into the foreground determining whether the particular player will win recognition in professional football. Various international authors came to the same conclusion (Mujika et al. 2009; Campo et al. 2010), who maintain that relative age effect should not be taken into regard. Principally because all of the players' parameters become more balanced in the adult age, or because the relative age effect loses its impact.

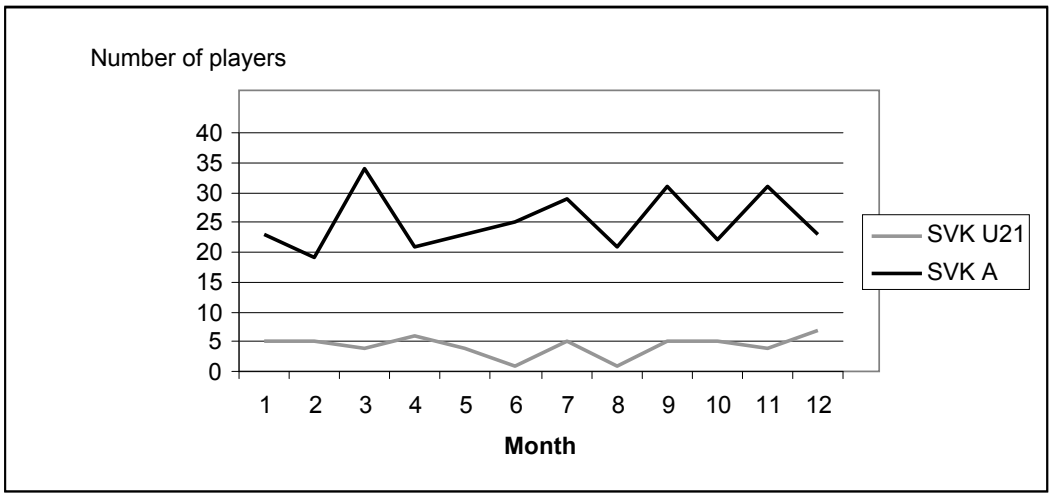

Figure 2
Month Position Distribution of Players in the U21 and Senior Football Teams

Therefore, when identifying and selecting players to youth football academies, league squads and national teams, ample prudence and carefulness is necessary. Without paying adequate attention, calendar age bias against less developed players (but possessing great talent) may imply they will get lesser training opportunities and fewer chances in match games. The percentage representation (Fig. 3) of players born in the first three month of the qualifying year shows a declining tendency. The higher the age category, the distribution of birthday months of the national players becomes more balanced.

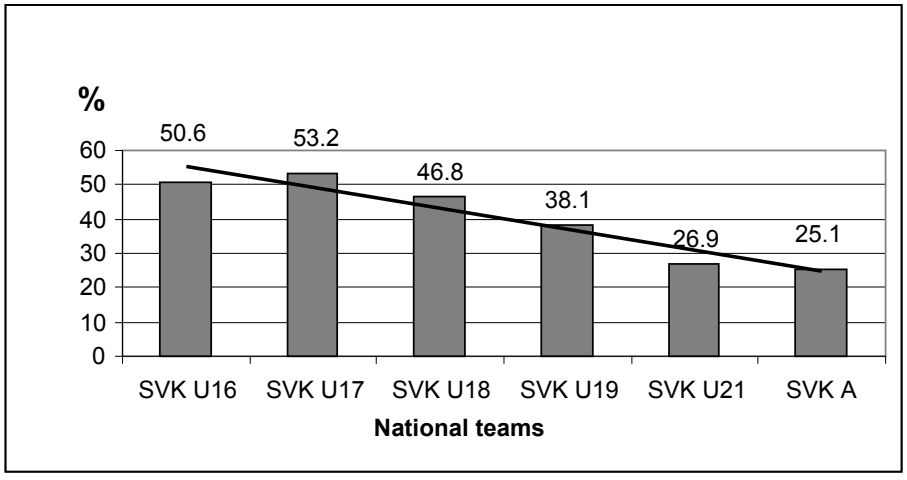

Figure 3
Percentage Representation of Players Born in January, February and March

The first assumption (presented in (a) under the Aim heading) has not been confirmed, because with the Slovakia national teams of players under 19 years and under 21 years of age,

no statistically significant difference has been found. We also assumed RAE absenting in the A - senior national team, as well as the gradual RAE decrease with the increasing of age category. Under the present study, these assumptions have been confirmed.

Ultimately concluding this means that the football coaches or experts selecting players to youth national teams are influenced by the relative age effect. The chance to gain cognitive advantage over the opponent plays a significant role for decision-making in the selection or nomination of players to the actual match. It should be reminded that relative age effect (RAE), not being an indicator for talent detection and identification (probably the player's actual physical maturity is not on par with the player's talent), merely serves the purposes of apparent advantage in the selection of players for a specific tournament (competition, race) at a specific time and within a specific age category. The "maximum maturity" in sports occurs only around the age of 21. From this, an implication crucial for the sports practice arises, namely that in identifying talented players, and in assessing the future performance potential, the relative age effect should be ruled out.

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