Original Article

THE RELATIVE AGE EFFECT ON SOCCER GOALKEEPER TRAINING IN BRAZIL: SCENARIOS OF THE MALE AND FEMALE ELITES

O EFEITO DA IDADE RELATIVA SOBRE A FORMAÇÃO DE GOLEIROS DE FUTEBOL NO BRASIL: CENÁRIOS DAS ELITES MASCULINA E FEMININA

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RESUMO

No Brasil, os campeonatos de futebol para crianças e adolescentes são geralmente organizados e divididos por categorias relacionadas a faixas etárias (normalmente a cada dois anos), com o objetivo de promover maior equilíbrio e justiça na competição. Embora produzam certo cenário de proximidade de capacidades de desempenho entre os participantes, por outro lado, tal divisão comporta e sustenta algumas condições de desigualdade de ofertas de oportunidades de aprendizagem. Isso somado a questões de ordem sociocultural e pedagógica, estrutura um fenômeno denominado Efeito da Idade Relativa (EIR). O objetivo deste estudo foi analisar a ocorrência do EIR em goleiros e goleiras dos Campeonatos Brasileiros de futebol masculino e feminino da Série A no ano de 2018. As informações sobre as datas de nascimento dos(a) atletas foram coletadas através do site oficial da Confederação Brasileira de Futebol. O grupo masculino foi composto por 68 goleiros dentro de uma população de 73 indivíduos, enquanto o grupo feminino foi composto por 39 de um total de 43 goleiras. Para a análise estatística foi utilizado o teste qui-quadrado. Os resultados revelam que o EIR não acontece nesta população, em nenhum dos gêneros. Isso pode ocorrer por existir menor concorrência por vagas de goleiros e goleiras em equipes de futebol. Conclui-se que, para o gênero masculino e feminino, a data de nascimento não parece influenciar a oferta de oportunidades para goleiros atingirem a elite do futebol brasileiro.
Palavras-chave: Efeito da Idade Relativa. Formação Esportiva. Futebol. Goleiros. Esporte.

ABSTRACT

In Brazil, soccer championships for children and adolescents are generally organized and divided into categories by age group (usually every two years), with the aim of bringing about greater balance and fairness in the competition. Although they create a certain scenario in which performance capabilities are similar among participants, such division, on the other hand, enables and sustains some conditions that provide unequal learning opportunities. Coupled with socio-cultural and pedagogical issues, it structures a phenomenon called Relative Age Effect (RAE). The objective of this study was to analyze the occurrence of RAE among male and female goalkeepers that competed in the A series of the 2018 Brazilian men's and women's soccer championships. Information about the athletes' birth dates was collected from the official website of the Brazilian Football Confederation. The male group was composed of 68 goalkeepers within a population of 73 individuals, while the female group was composed of 39 of totals of 43 goalkeepers. For statistical analyses, the chi-square test was used. Results reveal that the RAE does not happen in this population, regardless of gender. This may be due to the goalkeeper position in soccer teams being less contested. It is concluded that, for both males and females, date of birth does not seem to influence the offer of opportunities for goalkeepers to reach the elite of Brazilian soccer.
Keywords: Relative Age Effect. Sports Training. Soccer. Goalkeepers Sports

Introduction

In Brazil, soccer championships for children and adolescents are generally organized and divided into categories by age group (usually every two years), with the aim of bringing about greater balance and fairness in the competition[1]. These youth tournaments are mostly organized by federations, leagues and sports associations at the national, state, regional and municipal levels. Although it is possible to find competitions aimed at children between six and seven years old (under-7), official tournaments are usually held from the under-11 to the adult category[2].

Despite the fact that, in some Brazilian states, there are age categories that allow the participation of both boys and girls, it is common for the former to play soccer in all

categories, while girls participate more after the under-11 (or even at older ages), when division by gender begins[1].

In this scenario, it is very common for tournaments to be organized in order to start and end within the same current year (from January to December). Thus, in the same age category there are athletes who were born between the 1st of January of a given year and the 31st of December of the following year[1]. These differences within the same age category, although they create a certain scenario in which performance capabilities are similar among participants, also hold and sustain, on the other hand, some conditions of inequality, which, coupled with socio-cultural and pedagogical issues, structures a phenomenon called Relative Age Effect (RAE)[3,4].

One of the first studies that investigated this phenomenon in sports[5] evidenced that the athletes in the National Hockey League (NHL), the main North American ice hockey league, were born mostly in the first semester, mainly in the first quarter of the year. In addition to these data, the authors reported that these athletes presented physical and cognitive advantages over those born in the last half of the year[5]. For these reasons, they received better opportunities for more positive experiences, as to both quantity and quality, which resulted in better chances for them to learn and develop athletic skills compared to their relatively younger peers[5].

It is possible to observe that the RAE brings consequences in the short and long term and can lead to two important factors. As for the first, the literature points out that, within a group of athletes in the same age category, in different sports (soccer, basketball, hockey), those born in the first half of the year are usually more likely to reach high performance. This would be a consequence of advantages received throughout their learning process, based on differences in the participants' physical and cognitive maturation stages, generally favoring the older ones, born in the first semester[3,4,6,7]. For obtaining such advantages prematurely compared to their younger peers, these privileged youths receive from coaches better opportunities to participate in training sessions and competitions, causing them to learn and develop in better conditions[3,4,6,7]. For said reasons, those athletes born earlier have advantages over the younger ones, who are usually in an earlier stage of maturation, especially in junior categories, and this effect tends to disappear in the sports elite within these respective modalities[3,4,6,7].

The second factor, of a pedagogical order, is due to a premature search for optimal competitive results by coaches, parents and managers[8]. This perspective leads them to offer better practice opportunities to those young athletes who present better physical, motor and cognitive conditions to contribute to victories, thus limiting learning opportunities for the younger ones, disfavoring the latter's positive engagement with sports, which can even end up with them quitting their activities[6,9,10].

In soccer, a pioneering work on RAE investigated male athletes aged between 17 and 20 years old who played in the 1990 Football World Cup in the main category. Its findings were similar to those of the study with hockey athletes, indicating the existence of RAE in both aforementioned categories[4].

From the 2000s, there was an increase in studies involving the RAE in soccer[11]. Several authors reported this phenomenon in the adult male category in different countries, such as Germany, Belgium, Brazil, Denmark, Spain, France, the Netherlands, England, Italy and Sweden[12-15].

In Brazil, the RAE influences the selection of younger male soccer players, since the ones chosen to compose the Brazilian national teams up to the Under-18 category are mostly athletes born in the first quarter[16]. However, in the analyses performed on older age categories, the RAE decreased[16]. In the adult Brazilian national team, it is not possible to observe the influence of the RAE[16].

In view of the above, the literature points out that the RAE is more frequently found in younger age categories in men's football[11]. In older categories and at the elite level, the phenomenon occurs less frequently. The RAE also proved to be influenced by the tactical roles played by the athletes on the field, with defenders, midfielders and forwards appearing to be the most influenced by the phenomenon, while goalkeepers were the least influenced[11]. Still about tactical roles, a study involving major European professional football leagues described that the RAE is present especially in male players who act as defenders, forwards and midfielders, with goalkeepers again being the athletes least influenced by this phenomenon[17].

In a study involving the top ten professional male football leagues in Europe, the players were divided by tactical roles, and it is possible to observe that the RAE was present in nine of the ten competitions, with the exception of the Belgian League[18]. In those nine leagues, goalkeepers were affected by the phenomenon as well, but to a lesser extent compared to players in other tactical positions[18].

In women's soccer, the RAE seems to be less frequent compared to men's. Nonetheless, this phenomenon was observed in some countries with a prominent position in this sport, mainly in Europe (France, England and Spain), but it did not occur in less relevant countries (Eastern Europe), possibly because the competition between female athletes to join competitive teams is lower[10]. In addition, the RAE appeared to be influenced by the athletes' tactical role. The distribution of the defenders' birth dates was more frequent in the first semester, compared to those of the other positions[11].

In another study[19], composed of 1,886 male and female players from different teams that competed in the 2010 South Africa World Cup (724 players), in the 2011 Colombia Under-20 World Cup (497 players), in the 2011 Germany Women's Football World Cup (329 players) and in the 2012 Japan U-20 Women's Football World Cup (336 players), the authors revealed that the RAE occurred only in the Brazilian U-20 men's team. This same effect was not observed in the female under-20, adult female and adult male categories of the Brazilian national team.

In Spain, a research involving the five women's soccer divisions in the country found the RAE in all of them, and the tactical roles most affected by the phenomenon were goalkeepers and defenders[20]. Other studies showed similar results[21,22].

Faced with this scenario, the objective of this investigation was to analyze RAE occurrence among male and female goalkeepers who competed in the A series of the 2018 Brazilian Men's and Women's Championships.

This research is relevant for a) the lack of studies on RAE among male and female soccer goalkeepers[20]; b) the possibility of updating this scenario in relation to men[11]; c) the possibility of investigating this phenomenon on women[11]; d) the relationship between RAE and pedagogical procedures involving soccer, and its influence on the provision of sports participation opportunities to children and youths by coaches and sports managers[11,20,22,23].

Thus, this work is organized into five sections, in addition to the introduction. First, we will address the social and pedagogical context that involves the role of male and female soccer goalkeepers in Brazil; then, we will present the data collection and analysis method, the results, the discussion and the final considerations.

Soccer goalkeepers: the complexity of the sports identification, selection and development process

In the 20th century, the goalkeeper position was greatly devalued by several clubs in Brazil and other countries. Traditionally and culturally, it used to be linked to the least skilled players, mainly until the 1990s. In this context, few athletes aspired and sought to

play this role[24]. In addition, goalkeepers find themselves in constant tension, as they are the last players on the defensive line, with less interest from children and youths[24, 25].

The skills necessary to become a soccer goalkeeper became more complex as of 1992, when, with the inclusion of a new rule, the athletes in this position were no longer allowed to use their hands to receive a pass from a player of their own team. From the 2000s, goalkeepers began to stand closer to the line of defenders, and due to the greater dynamism of the game, the better physical preparation of the athletes, and the lighter balls, the athletes in this position had to develop other skills, unlike the goalkeepers from the 20th century[24-27].

Currently, goalkeepers need to develop different skills and abilities to play at the elite level, including tactical-technical, physical, motor and psychological ones[24-27]. Gallo et al.[28] analyzed 12 matches played by a club from the state of São Paulo during the first round of the adult São Paulo Championship to investigate the defensive and offensive actions of goalkeepers. It was possible to observe that, during those matches, there were 93 jumping/falling/defending actions, 95 goal kicks (crosses, one-on-one situations, and anticipations) and 267 times that the ball was put into play (short and long passes, and throws), totaling 455 motor actions performed during this period. Per game, the average number of these actions was 7.8 jumps/falls/defenses, 7.9 goal kicks, and 22.3 times that the ball was put into play, totaling 37.9 general actions performed. These data emphasize the complexity of developing the skills necessary to play this tactical role with excellence.

To develop the skills necessary for the different types of intervention required in the game, goalkeepers, just as any athlete, take part in a process of sports participation and training. For it to be a successful experience, it is important that it is built over a long period and that each stage of participation is respected[25]. Moreover, it is worth noting that most of the time goalkeepers participate in specific training sessions, which means a more individualized preparation process compared to other tactical roles[24,25].

In this regard, a positive and adequate organization of sports participation and training of young goalkeepers depends on the way in which different agents influence this process. It is known that the immediacy of results in childhood does not predict future sporting excellence and, for this reason, coaches who provide opportunities only to those athletes who present a better level of performance earlier can limit the participation of several other children and/or adolescents who, despite not yet showing an outstanding performance, could develop it in the long run. It is known that lack of opportunities for practice, especially at the beginning of sports participation, can demotivate the participant/athlete and cause them to quit sports as a consequence[6].

Another aspect that influences this process is pointed out by Voser et al.[25] as the height of soccer goalkeepers, associated with the development of the aforementioned skills. For the authors, a male athlete in this position must be between 1.85m and 1.95m tall. Similarly, Gallo et al.[28], in a study that analyzed all 96 goalkeepers who were present at the 2006 World Cup, also found an average height of 1.86m.

Berto and Magalhães[29] carried out a study with the aim of investigating the height of goalkeepers belonging to the junior categories of three clubs of the Minas Gerais Football Federation, from the under-14 to the under-20 category, totaling 36 participants. It was possible to observe that the three clubs preferred to select tall goalkeepers, with the average height of the selected ones increasing as the age categories advanced, which was 1.81m in the under-14, 1.84m in the under-15, and 1.88m both in the the under-17 and under-20 categories, corroborating the aforementioned studies. In this way, it is clear that some selection and exclusion criteria are commonly imposed on goalkeepers arbitrarily during sports training and primarily based on aspects influenced by biological and maturation conditions.

Still in this regard, Gil et al.[30] conducted a longitudinal study in which they analyzed, within a Spanish soccer club, the process of selecting and identifying players in different tactical roles who started this process between the ages of nine and ten years old. A pre-selection created a group of 64 players, while the final selection, three years after the pre-selection, had 21 athletes. Training sessions and matches were watched, and different physical tests and anthropometric characteristics were assessed over this period. The authors observed that the pre-selected goalkeepers and forwards had different characteristics from those of the other tactical roles, with both being older than the others. After the final selection, the remaining goalkeepers were those who were taller (average height of 1.86 m), had longer lower limbs, had a greater arm span, were heavier and had a higher fat percentage compared to the other positions. With regard to the physical tests, the goalkeepers did not perform as well as the other players did in most tests, except for vertical jump. The remaining goalkeepers also showed greater arm strength compared to those who were excluded from the process, in addition to being in a more advanced maturation stage.

However, Thiengo et al.[31] found that the goalkeeper development and selection process does not take into account anthropometric characteristics only. In a study that aimed to analyze the historical process of goalkeeper selection and identification by 13 goalkeeping coaches who worked in Brazilian football clubs between 1970 and 2005, using semi-structured interviews, the authors found that this selection occurred predominantly during specific training sessions, in which technical gestures and important characteristics, such as positioning during matches, were analyzed. It was also possible to observe that height and psychological aspects, such as leadership skills, were also emphasized during this identification, which elucidates the complexity of this process, from identification to development towards the sports elite.

As an outcome of this Brazilian context, despite the resulting increase in the prestige of goalkeepers in the national and international scenario, especially due to a greater professionalization, competition for places in junior categories is still lower compared to other tactical roles, such as forwards and midfielders[24,25].

Methods

Participants

All participants in this study are male and female goalkeepers who competed in the A series of their respective Brazilian football championships in 2018. Sample calculations were performed for both groups[32], with a 95% confidence level, which indicated a minimum necessary sample of 62 individuals for males, and 39 for females. Information about the athletes' birth dates was collected from the official website of the Brazilian Football Confederation[1].

The male group was composed of 68 goalkeepers within a population of 73 individuals, while the female group was composed of 39 of a total of 43 goalkeepers. Five male and four female individuals were removed from the sample because they were not born in Brazil, which could lead to a biased analysis, due to possible discrepancies concerning the contexts and ways of organizing youth competitions in other countries compared to Brazil. The average age found was 27.85 ± 5.65 for the male group, and 25.9 ± 3.90 for the female group.

Statistical Procedures

For statistical data analyses, the chi-square test was used to investigate differences between birth date distributions, just as other studies in the literature did[7,32-35]. Data analysis used two divisions: a) four quarters (Q1: January-March; Q2: April-June; Q3: July-

September; Q4: October-December), with an expected frequency of 25% being assumed for each quarter[32]. b) semesters (S1: January-June; S2: July-December), assuming a percentage of 50% in each semester. These analyses were performed for both genders[7].

Although some studies on RAE consider the distribution of the general population's birth as the expected frequency for this calculation[34,35], this piece of data was only available in Brazil after 2003[36], after the childhood period of the players in this study, so this parameter could not be used.

The statistical procedures had p<0.05 as parameter for significance levels. For the analyses that required multiple comparisons, the Bonferroni correction was used, which indicated p<0.0083 as parameter.

The chi-square test was performed using SPSS (Statistic Package for Social Science) for Windows®, version 20.0.

This study was approved by the research ethics committee of the authors' home university (CAAE 48217915.8.0000.5659).

Results

Men's Soccer

Table 1 shows absolute numbers and percentages for goalkeepers born in each quarter and semester.

Table 1. Absolute values for the goalkeepers' birth dates

Period	Athletes	%
Q1	21	30.4%
Q2	16	23.2%
Q3	15	21.7%
Q4	17	24.6%
S1	37	53.6%
S2	32	46.4%

Source: The authors

In absolute numbers, 21 athletes were born in the first quarter (30.4%), while 16 were born in the second, 15 in the third and 17 in the fourth (23.2%, 21.7%, 24.6%, respectively). With regard to the comparison by semester, 37 were born in the first (53.6%) and 32 in the second (46.4%) semester.

In order to analyze whether there is a statistical difference in the absolute numbers, Table 2 shows the values from the chi-square test, as well as their significance in the different comparisons between quarters and semesters.

Table 2. Chi-square values and significance levels for comparisons related to the goalkeepers' birth dates

Comparison	X^2	p
Q1 x Q2	0.676	0.411
Q1 x Q3	1.000	0.317
Q1 x Q4	0.421	0.516
Q2 x Q3	0.032	0.857
Q2 x Q4	0.03	0.862
Q3 x Q4	.0125	0.724
S1 x S2	0.362	0.547

Note: Levels of significance considered p<0.0083 for quarterly analyses, and p<0.05 for semester analyses
Source: The authors

In the analysis between quarters, which consisted of multiple comparisons (Q1 x Q2, Q1 x Q3, Q1 x Q4, Q2 x Q3, Q2 x Q4, Q3 x Q4), in which the Bonferroni correction was necessary (p<0.0083), none of them showed statistical difference between the periods analyzed. In the analysis between semesters, in which the level of significance was considered p<0.05, the same result was also observed. Therefore, it can be stated that RAE was not found in male Brazilian elite soccer goalkeepers.

Women's Soccer

Table 3 shows absolute values and birth date distribution percentages in the quarters and semesters.

Table 3. Absolute values for the female goalkeepers' birth dates

Period	Athletes	%
Q1	17	43.6%
Q2	8	20.5%
Q3	8	20.5%
Q4	6	15.4%
S1	25	64.1%
S2	14	35.9%

Source: The authors

In absolute numbers, there were 17 athletes who were born in the first quarter (43.6%), eight in the second, eight in the third, and six in the fourth quarter (20.5%, 20.5%, 15.4%, respectively). It is worth noting that the number of female goalkeepers born in the first quarter is much higher than in the other quarters. As for the comparison by semester, 25 were born in the first (64.1%) and 14 in the second (35.9%).

In order to analyze whether there is a statistical difference in the absolute numbers, Table 4 shows the values from the chi-square test, as well as their significance in the different comparisons between quarters and semesters.

Table 4. Chi-square values and significance levels for comparisons related to the goalkeepers' birth dates

Comparison	X^2	*p*
Q1 x Q2	3.24	0.072
Q1 x Q3	3.24	0.072
Q1 x Q4	5.261	0.022
Q2 x Q3	0.000	1.000
Q2 x Q4	0.286	0.593
Q3 x Q4	0.286	0.593
S1 x S2	3.103	0.078

Note: Levels of significance considered p<0.0083 for quarterly analysis, and p<0.05 for semester analysis
Source: The authors

However, despite the difference in absolute numbers in the analysis between quarters, which consisted of multiple comparisons (Q1 x Q2, Q1 x Q3, Q1 x Q4, Q2 x Q3, Q2 x Q4, Q3 x Q4) and required the Bonferroni correction (p<0.0083), no statistical difference was found between any of the periods analyzed. In the analysis between semesters, in which the level of significance was considered p<0.05, the same result was also observed. Therefore, it can be stated that RAE was not found among female goalkeepers of the Brazilian elite soccer.

Discussion

This section is divided into three subsections, with the first being related to general discussions around the results of the study with goalkeepers and RAE. The second refers specifically to results for male goalkeepers, and the third, for female goalkeepers.

Social and pedagogical aspects on the training of young goalkeepers.

The purpose of this article was to analyze the occurrence of RAE among male and female goalkeepers competing in the A series of the 2018 Brazilian men's and women's championships. The results reveal that this phenomenon does not happen in these populations.

Although the anthropometric and physical characteristics proved to be important in previous studies[28-31], this phenomenon was not observed in the sports elite. It is known that soccer goalkeepers have a specific training in their clubs, with professionals specialized in teaching and developing this skill[24-27]. In addition, it was possible to observe that several skills make up the training process for the formation of a soccer goalkeeper[24-27]. The association between these two components may, as a final result, have considered not only aspects related to the current stage of maturation and other factors of an immediate nature, but also the skills that have been developed in the long term.

In view of the above, there is a positive aspect for the absence of RAE in this population, evidencing the importance of a different pedagogical approach of goalkeeper training, which, in the long run, may have overcome the factors that could favor the appearance of the RAE. In this way, it is worth highlighting the importance of professionals specifically involved with the athletes in this position adopting appropriate pedagogical approaches that reduce the effects of the RAE, in addition to not considering only immediate maturation and physical aspects for the identification of talents at the beginning of the process.

According to Voser et al.[26], a goalkeeper peaks in the sports elite after 20 years of age. Associating this factor with those mentioned above, one must not consider only immediate aspects when it comes to physical and maturation characteristics during the athlete identification and selection process. Furthermore, privileging those who show a better performance earlier over those considered late may be a mistake, as these characteristics do not encompass all the complexity of this process.

In this regard, there are also other factors that contribute to the occurrence of the RAE and that evidence the participation and influence of social agents from the sports field, such as parents and coaches[10]. The first factor, called 'Matthew Effect', refers to parents favoring and investing more in children who show good early performance. Thus, for receiving greater investments and incentives, they learn and develop more than the other kids who, at first, did not perform well and did not receive the same opportunities for practice[10].

The second, the Pygmalion Effect, happens when coaches create higher expectations and, consequently, invest more in and offer opportunities to those children who mature earlier, compared to their late peers. Therefore, there is an advantage for that individual, manifested both in special forms of attention and opportunities, and in a greater participation in activities[10].

The Galatea Effect occurs when the child, soon in their early years of sports training, believes to be more skilled compared to their peers. When encouraged by parents and coaches to believe in this condition of superiority, they have a greater expectation of themselves, as well as greater confidence and a desire to learn and develop their sports skills[10].

Therefore, sports agents (parents, peers and coaches) have extremely important roles, from the identification process to the final stages of sports development and, analyzing the results of this study, it is important that they support and provide equal opportunities for practice to children and adolescents, as good performance in younger categories does not predict the rise to the elite sports level[8-10].

Men's Soccer

The literature on RAE suggests that male athletes born in the first half of the year are more likely to ascend to elite sports due to a concern about immediate results on the part of coaches, with relatively older ones being selected to the detriment of those born later[9,37,38].

In view of the above, another study addressing this phenomenon in men's football[16] observed that the RAE occurs in the Brazilian national team up to the under-18 category because the body composition and cognitive capacity of youths born in the first semester are more advanced compared to those of the relatively younger ones. For these reasons, the individuals who reach maturation stages earlier end up possessing the characteristics desired momentarily to be selected by their coaches. However, these data were not found in adulthood[16].

A recent systematic review[11] reported that the RAE in men's soccer tends to decrease in the older categories compared to the younger ones. Additionally, the occurrence of this phenomenon also decreases in the elite of this sport[11], corroborating the results of this study.

The RAE is still more present in forwards than in goalkeepers[11]. This may be due to the fact that, in today's soccer, players who make up the attack compete harder in the selection process because the prestige of the position is greater, and so are the financial gains[11]. Besides, the RAE occurs more frequently among midfielders, defenders and forwards, while goalkeepers are less influenced by the phenomenon. Based on these aspects, the data from the present study corroborate the literature and evidence this scenario concerning the least prestigious tactical role in soccer[11,39-41].

In the talent selection process, coaches usually choose athletes who meet their immediate needs, without taking into account the development process of the young sportsman/sportswoman, and, for this reason, there is a greater representation of players born in the first semester in junior categories, excluding goalkeepers[42].

Faced with this scenario, as a cause for the RAE observed in the junior categories of men's soccer, referring to the different tactical roles of goalkeepers, the sense that coaches, parents and managers make of educational processes linked to sports is of the greatest importance in relation to mere differences in maturation between young players[43]. The importance and priority prematurely given to results in competitions is a point of major relevance for this process[8]. This perspective has a direct influence on the favoring of those players considered more apt (usually the relatively older ones), to the detriment of those deemed to be less apt (usually the relatively younger ones), depriving the latter of the opportunity to learn and develop sports skills[10]. This scenario is favorable to the RAE, as it creates unequal conditions for sports development among young people with relative age differences.

Thus, it is not the maturation level itself of children and adolescents that creates the RAE, but rather the way in which coaches evaluate and select young athletes to participate in training and competition processes. Usually, the search for optimal results at an early stage causes these agents to ignore the inequalities in performance levels caused by relative age, sometimes manifested in different maturation conditions among young players[43]. When, in the case of goalkeepers, competition is low in childhood, this sense of immediacy and premature search for results adopted by coaches does not find support, nor does it result in an unequal distribution of opportunities, since few are those willing to compete for the role of

goalkeepers in junior teams, being therefore more easily selected to receive better learning opportunities.

Women's Soccer

The literature on RAE in women's soccer has fewer studies compared to men. The contrast in the number of publications and in the results found on RAE between these genders is due to sports played by men being more popular[11].

In view of the above, even though in the current study the RAE phenomenon was not present in neither of the genders, it is possible to state that soccer is culturally and historically considered as a men's sport, on the basis of discrimination and prejudice, hindering female participation in all age categories[44-46].

The fact that female goalkeepers are also not influenced by this phenomenon encourages discussion on the theme. In Spain, the RAE was investigated in 4,035 female soccer players in the adult category from three different divisions, with the players being separated by tactical role[20]. As for the female goalkeepers, the RAE was not found in athletes playing at national level and in the first division. Now, in the second and third divisions, the phenomenon occurred20.

A study that investigated female players in the National Indoor Football League of the 2013/20148 season, a sport that shares several cultural ties with soccer, reported no RAE among goalkeepers and players in other positions, which also corroborates the results of the present study.

For not competing in major tournaments in younger soccer categories, women are less exposed to talent selection processes that would take into account immediate early results in childhood and adolescence, and this may have influenced the absence of RAE in women in this study.

Pedagogical and socio-cultural evidence is given by the fact that, in Brazil, there are more than 28,000 professional male players registered in the Brazilian Championship, in their different divisions, against only 937 athletes in women's football1. This unbalanced situation of female participation in soccer means that the RAE is not a predominant factor in talent identification and selection processes, which is also due to less competition between athletes.

This lower participation seems to contribute to reducing competition in the talent selection and development process, and this may be one reason why the RAE phenomenon was not found in the results of this study and explain the absence of RAE in several sports played by women[8,19].

Conclusions

This study aimed to investigate the existence of the RAE phenomenon in male and female goalkeepers competing in the A series of the 2018 Brazilian Championship. Said phenomenon was not detected in any of the groups (men and women), in both analyses by quarter and semester.

Due to the similarity between the RAE results, it is possible to consider them as similar phenomena, and the findings of this study corroborate this idea. However, a caveat about the different conditions of practice in view of the valuation of men's soccer over women's soccer is fundamental, since, even today, there is still discrimination and prejudice against the participation of women in this sport, and this reduces the provision of opportunities for practice.

Because the RAE did not occur, it is concluded that, for both males and females, date of birth does not seem to influence the offer of opportunities for athletes in this position to reach the elite level of Brazilian soccer.

Psychosocial, maturational and pedagogical aspects can influence the presence of the RAE and seem to be interrelated. The literature points out that, in men's soccer, the coaches involved in talent selection and identification processes tend to care about the search for optimal competitive results early, not considering the importance of providing the same opportunities for all children and adolescents to experience a long-term sports development process.

In the study population, however, this fact is not evident, since there is no difference in birth date distribution between quarters and semesters. This result may be closely related to the devaluation of the role of goalkeeper in the soccer culture, which could decrease the demand for children and young people for this form of performance, leading to less competition for participation in training and matches.

In women's football, in addition to the results showing a picture very similar to that of men, there is a necessary reflection on how opportunities for practice are offered to this type of population in Brazil. The small number of athletes compared to men's football can be considered as an even more relevant factor that can contribute to perpetuating this sport as a men's space. The small number of championships for younger female categories, as well as the low participation rate of women, may also be responsible for preventing RAE occurrence, but they are not characterized as desirable social phenomena.

Therefore, fewer practice opportunities for females can also be considered as a barrier to the growth of the number of participants and to the professionalization of soccer in the country. We believe that the ideal scenario would be to promote more possibilities for practice, especially in adolescence, but based on pedagogical principles that privilege long-term participation and development, in a pleasant way, disconnected from the early search for competitive results, both for boys and girls.

In light of the foregoing, further research in this field is needed to make it clear how athlete initiation and development processes in soccer occur in Brazil, in addition to finding out whether RAE occurs among male and female goalkeepers in the other divisions of the Brazilian Championship.

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