139 - RELATIVE AGE EFFECT IN PROFESSIONAL SOCCER ATHLETES DURING 2005' CONFEDERATIONS CUP GERMANY.

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Introduction

Williams and Reilly (2000) present that the specific soccer talents selection is based on maturation, growth, training and genetics. As in other team sports, the soccer talent selection must occur in a more complex way due to the difficulties in predicting the final performance when a sport is dependent on many extrinsic and intrinsic factors (Reilly et al, 2000). Thus, the standards and procedures applied to the soccer talent selection are diverse and their success is only relative. Hoff (2005) affirms that soccer performance, no matter category, must be exclusively based on technical, tactical and physical elements. Age differences among individuals of the same age group or "school-year" is called *relative age* and its consequence is called *Relative Age Effect - RAE* (Musch and Grondin, 2001).

In competitive sports it's observed that most of times individuals who were born in the beginning of the year are numerically predominant over individuals who were born in the end of the competitive year. This fact is more evident in youth categories, considering that as higher the category is, less the age differences between groups are, so, the RAE becomes smaller. Differences in relative age close to 12 months may result in significant anthropometrical variations within the same group (Helsen et al, 2005). When boys and girls are grouped based on the age range, cognitive, emotional and physical differences are observed between younger and older individuals (Musch and Grondin, 2001; Malina, 1994).

Some evidences on the use of elements related to *RAE* have been observed in soccer, although the level of success is low (Vaeyens et al, 2005). Comparing different countries and cultures seems to be very complicated by the fact that the periodicity for birth dates related to competitive seasons and school years is different when considering countries located in the south hemisphere to countries located in the north hemisphere (Musch and Hay, 1999).

This situation was observed by Bäumler (1996, apud Musch and Grondin, 2001) with professional athletes from German Soccer League. Studies performed in the beginning of 90's showed a more intense *RAE* in U-17 and U-20 World Cups than in Professional World Cup (Barnsley et al, 1992). In a recent study, Helsen et al (2005) observed the *RAE* in 10 European soccer national teams, U-15, U-16, U-17 and U-18 categories and concluded that in 7 of them there was a tendency of selecting players who were born in the first trimester of the year.

The aim of this study was to verify the frequency of *RAE* in professional soccer players who participated in Confederations Cup Germany, promoted by FIFA in July, 2005.

Methodology

Birth dates of all 184 soccer players (26.85 ± 3.49 years old) from 8 selections participating in 2005' Confederations Cup Germany were considered for this study. After birth dates identification, the athletes were divided into 2 categories: first semester (birth between January 1st and July 30th), and second semester (birth between July 1st and December 31st).

Analysis for binomial non-parametric tests through SPSS 13.0 software was applied with *"test proportion"* set in 0.50 and p = 0.05.

Results

Data presented in table 1 are ordered according to final classification of each national team in the cup, from the champion team (Brazil) to the last place (Australia), facilitating the comparisons by the final position of each team.

The observed and expected frequencies of *RAE* in professional soccer players during Confederations Cup were very interesting and the results are presented in the following table.

Table 1. Observed frequencies in professional soccer players during 2005' Confederations Cup.

National Teams	Category	N	Observed Frequency	Expected Frequency	p
Brazil	1º. Sem.	15	.65		
	2º. Sem.	08	.35	.50	.210
	Total	23	1		
Argentina	1º. Sem.	13	.57		
	2º. Sem.	10	.43	.50	.678
	Total	23	1		
Germany	1º. Sem.	13	.57		
	2º. Sem.	10	.43	.50	.678
	Total	23	1		
Mexico	1º. Sem.	13	.57		
	2º. Sem.	10	.43	.50	.678
	Total	23	1		
Japan	1º. Sem.	12	.52		
	2º. Sem.	11	.48	.50	1.00
	Total	23	1		
Tunisia	1º. Sem.	13	.57		
	2º. Sem.	10	.43	.50	.678
	Total	23	1		
Greece	1º. Sem.	13	.57		
	2º. Sem.	10	.43	.50	.678
	Total	23	1		
Australia	1º. Sem.	08	.35		
	2º. Sem.	15	.65	.50	.210
	Total	23	1		

Although absolute values point to differences between two national teams that were in opposite sides of the final classification table, the results found after binomial test application did not show significant differences between the observed and expected proportions. This is in agreement with other authors observations (Helsen et al, 2005; Musch and Grondin, 2001; Barnsley et al, 1992) that there is a tendency of *RAE* dissipation as there is a missing on the cut line for age range, usually observed in main and/or professional categories.

The national teams placed between 2nd and 7th places presented similar frequencies, close to the expected frequency of 50% of players who were born in each semester of the year.

However, although statistically significant differences among the national teams in the cup were not found, an interesting fact observed is the high prevalence of athletes born in the first semester in Brazilian national team. This imbalance, close to 2/3 in the champion team, may have occurred by chance, although this situation was not observed in the national teams that were placed in the intermediary position. The same imbalance but in the inverse way was observed only in Australian national team, last placed in the final classification. We could discuss if these evidences were due to cultural factors.

We understand that this kind of study should have a deeper approach and from the analysis of representative teams of national cups and championships from each of these countries, considering even the criteria of the cut line related to age in the competitions, also including the youth categories.

Applications and discussions about *RAE* have been observed in many sports such as tennis (Edgar and O'Donoghue, 2005), baseball (Thompson et al, 1991) and ice hockey (Boucher and Mutimer, 1994). However, in soccer, as well as in other sports, this application must be done very carefully to avoid mistakes and precipitate conclusions on talent selection.

In agreement with Helsen et al (2005), we understand that in youth categories the differences related to relative age may lead to the favoring of the final performance, considering either physical or cognitive aspects, and also because of a result of the greatest motivation. In this context the competence observed and the extrinsic motivation end up favoring the adherence to the sports practice, or can influence a possible frustration and following drop off when the young athlete feels aside within his group. However, such effect may not occur in professional categories due to a non-existence of a cut line related to chronological age.

Although the practice of technical observation many time is used as a way of talent selection in youth categories, this may not be related to relative age by the fact that it can favor individuals that are favored by the maturational aspect in that moment. When using this simple method of observation, a higher importance must be given by the ones who perform this evaluation. Multidisciplinary teams should be formed to focus not only the technical aspects, but also physical, psychological, medical, among others. Predictive investigations from maturational data are much valuable in this process to avoid basic distortions that may occur when considering only chronological age.

Conclusions

Results suggest that talent selection must be done considering mainly technical, tactical, physical or psychological elements related to the match, because the *RAE* does not seem to be significant for professional soccer. It's possible that during the talent selection process in youth categories, young athletes with a high technical potential end up being cut off by an inadequate criteria adoption related to relative age.

To avoid this impairment, we detach that the adoption of criteria related only to relative age, not considering other variables involved in this process, is a terrible mistake that can lead to a non-selection of young athletes that have a great technical potential in the youth categories.

Future studies focusing the technical, physical and technical performance differences related to *RAE* and biological maturation could improve the discussion about elements considered determinant indicators of talent selection in soccer or any other sports.

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Age differences among individuals of the same age group or "school-year" is called *relative age* and its consequence is called *Relative Age Effect - RAE* (Musch and Grondin, 2001). The use of elements based on *RAE* has been observed in soccer, mainly in youth categories, and it is even more intense as early the category is. The aim of this study was to verify the frequency of *RAE* in professional soccer players who participated in Confederations Cup Germany, promoted by FIFA in July, 2005. Birth dates of all 184 soccer players (26.85 ± 3.49 years old) from 8 selections participating in 2005' Confederations Cup Germany were considered for this study. The athletes were divided into 2 categories: first semester and second semester according to birth date. Analysis for binomial non-parametric tests through SPSS 13.0 software was applied with *"test proportion"* set in 0.50 and p = 0.05. Although extreme values have been observed in two national teams, no differences were found among the national teams, suggesting that the *RAE* is a phenomenon restricted to youth categories. We conclude that the adoption of criteria related to relative age in youth categories without considering the other variables involved in the process of athletes development is inadequate, leading to a possible non-selection of young athletes with a high technical potential.

EFFET RELATIF D'ÂGE EN ATHLÈTES PROFESSIONNELS DU FOOTBALL PENDANT LA TASSE DES CONFÉDÉRATIONS 2005'- ALLEMAGNE.

Des différences d'âge parmi des individus de la même catégorie d'âge ou "école-année" s'appelle âge relatif et sa conséquence s'appelle l'Effet de Âge Relatif - *EAR* (Musch et Grondin, 2001). L'utilisation des éléments basés sur *EAR* a été observée dans le football, principalement dans des catégories de la jeunesse, et elle est bien plus tout intense que tôt la catégorie est. Le but de cette étude était de vérifier la fréquence de *EAR* dans les joueurs professionnels de football qui ont participé à la tasse de confédérations - Allemagne, favorisée par FIFA en juillet, 2005. Dates de naissance de chacun des 184 joueurs de football (± 26.85 3.49 ans de) de 8 choix participant à la tasse des confédérations 2005'- l'Allemagne ont été considérées pour cette étude. Les athlètes ont été divisés en 2 catégories : premier semestre et deuxième semestre selon la date de naissance. L'analyse pour les essais non paramétriques binomiaux par le logiciel 13.0 de SPSS a été appliquée avec l *"test proportion"* a placé dans 0.50 et p = 0.05. Bien qu'on ait observé des valeurs extrêmes dans deux équipes nationales, aucune différence n'a été trouvée parmi les équipes nationales, suggérant que le *EAR* soit un phénomène limité aux catégories de la jeunesse. Nous concluons que l'adoption des critères se soit reliée à l'âge relatif dans des catégories de la jeunesse sans considérer les autres variables impliquées en cours d'athlètes que le développement est insatisfaisant, menant à une non-sélection possible de jeunes athlètes d'un potentiel technique élevé.

EFECTO RELATIVO DE LA EDAD EN ATLETAS PROFESIONALES DEL FÚTBOL DURANTE LA TAZA DE LAS CONFEDERACIONES 2005' ALEMANIA

Las diferencias de la edad entre individuos de la misma categoría o "escuela-año" de edad se llaman edad relativa y su consecuencia se llama el *Efecto Relative Edad - ERE* (Musch y Grondin, 2001). El uso de los elementos basados en *ERE* se ha observado en fútbol, principalmente en categorías de la juventud, y es aún más tan intensa que la categoría es temprano. La puntería de este estudio era verificar la frecuencia de *ERE* en los jugadores profesionales del fútbol que participaron en la taza de las confederaciones - Alemania, promovida por FIFA en julio de 2005. Fechas del nacimiento de los 184 jugadores del fútbol (± 26.85 3.49 años de viejo) a partir de 8 selecciones que participan en taza de las confederaciones 2005' - Alemania era considerada para este estudio. Dividieron a los atletas en 2 categorías: primer semestre y segundo semestre según fecha del nacimiento. El análisis para las pruebas no paramétricas *binomial* a través del software 13.0 de SPSS fue aplicado con la *"test proportion"* fijó en 0.50 y p = 0.05. Aunque los valores extremos se han observado en dos equipos nacionales, no se encontró ningunas diferencias entre los equipos nacionales, sugiriendo que el *ERE* es un fenómeno restringido a las categorías de la juventud. Concluimos que la adopción de criterios se relacionó con la edad relativa en categorías de la juventud sin la consideración de las otras variables implicadas en el proceso de atletas que el desarrollo es inadecuado, conduciendo a una no selección posible de atletas jóvenes con un alto potencial técnico.

O EFEITO RELATIVO DA IDADE EM ATLETAS DE FUTEBOL PROFISSIONAL NA COPA DAS CONFEDERAÇÕES DA ALEMANHA/2005.

A diferença de idade entre indivíduos de um mesmo grupo etário ou "ano-acadêmico" é chamada de *idade relativa* e sua conseqüência é chamada de *Efeito da Idade Relativa - EIR* (Musch e Grondin, 2001). Indícios da utilização de elementos associados a *EIR* vêm sendo observados no futebol, principalmente nas categorias ditas de base e são mais intensas quanto maior for a precocidade da categoria. O objetivo deste estudo foi verificar a freqüência da *EIR* nos futebolistas profissionais inscritos na Copa das Confederações da Alemanha, realizada pela FIFA em julho de 2005. Um total de 184 atletas de 8 seleções nacionais foram distribuídos em 2 categorias: primeiro semestre ou segundo semestre conforme sua data de nascimento e foi aplicada análise para testes não-paramétricos *binomial* com *"test proportion"* estabelecido em 0,50 e p = 0,05. Embora valores extremos tenham sido observados em duas seleções, não foram verificadas diferenças significativas entre as equipes analisadas, sugerindo que o *EIR*, caso ocorra, é um fenômeno restrito às categorias de base. Concluímos que nas categorias de base parece-nos inadequada e indiscriminada a adoção de critérios relacionados à idade relativa, sem a consideração das demais variáveis envolvidas no processo de formação de atletas, incorrendo na possibilidade de que jovens atletas em potencial deixem de ser selecionados.

Palavras-chave: efeito da idade relativa, seleção de talentos.