Playing position influences the relative age effect in senior rugby union

Kearney, P. E.

Department of Sport & Exercise Sciences, University of Chichester, UK

Correspondence to be addressed to Philip Kearney, tel. 01243 816353, e mail p.kearney@chi.ac.uk

English Abstract

Objective. – To establish whether playing position influenced the existence of the relative age effect (RAE) in senior rugby union.

Summary of facts and results. – The birth dates and playing position of 1991 senior French rugby union players registered during the 2014/15 season were obtained from an on-line statistics database. The distribution of player births was compared with the distribution of births in the general French population across the period in question. Results indicated that a RAE existed for forwards but not backline players. Back row forwards in particular showed a pronounced RAE.

Conclusion. – The existence of the RAE within senior French rugby union is influenced by player position.

Key words

Birth date; team sport

Résumé

Objectif. – – Déterminer si le poste de jeu influence l'existence d'un effet d'âge relatif (RAE) chez des rugbymen de haut niveau.

Synthèse des faits et résultats. – Les dates de naissance et les postes de jeu de 1991 rugbymen français de haut niveau ont été recueillies à partir d'une base de données statistique en ligne, lors de la saison 2014/15. La répartition des dates de naissance des joueurs a été comparée à la répartition des naissances dans la population française globale, lors de la période choisie pour l'étude. Les résultats ont révélé l'existence d'un RAE pour les joueurs avants, mais pas pour les arrières. Le poste de la troisième ligne a montré un RAE particulièrement prononcé.

Conclusion. – Le RAE chez des joueurs de rugby français de haut niveau est influencée par le poste des joueurs.

Mots clés

Date de naissance, Sport collectif

1. Introduction

Within youth sport, children are frequently assigned to groups based upon their age on a specified cut-off date (e.g., January 1st). An unintended consequence of this age-banding is that, within many high level youth and professional sport contexts, teams demonstrate an over-representation of individuals born soon after the cut-off date, and an under-representation of individuals born shortly before the cut-off date (1). This uneven distribution of birth dates is known as the relative age effect (RAE). Within team sports, playing position has been found to influence the existence of the RAE (2). Within the sport of rugby union, a RAE has been identified in professional players in France (3), however no investigation to date has considered the influence of playing position on the RAE in rugby union. Rugby union potentially accommodates a broader range of body types than many other field sports, with several playing positions associated with particular body morphologies (4). For example, scrum halves are typically the shortest players on the pitch, and their role is focused on the distribution of the ball. In contrast, lock forwards are typically the tallest players on the pitch, and their role is focused around competing for the ball in the air, and more physically demanding aspects of the game. Consequently, it is reasonable to hypothesise that the existence of RAEs in rugby union may be influenced by playing position.

2. Materials and Methods

2.1. Subjects

Subjects were senior male rugby players of French nationality registered to play during the 2014/15 season in the top three divisions of French rugby: the Top 14, Pro D2, and Federale 1. Players were initially grouped according to the main positional division in rugby union into forwards (N = 1116) or backs (N = 875). Players were also classified according to playing positions (4) (see Table 1).

2.2. Procedure

A review of an on-line database (http://www.itsrugby.co.uk/) revealed the names of 2135 players of French nationality. Dates of birth were available for 1991 of these players (93% of the sample). A sample of birth dates was validated using team rosters available on the official websites of the relevant clubs. As the reported data is freely available on-line, informed consent was not required. However, all data is reported anonymously. Data on population statistics for the years in which the players within this study were born was obtained from the United Nations Statistics Division (http://data.un.org/Default.aspx).

2.3. Data Analysis

Consistent with the selection year, players' birth dates were categorised into four quarters (Q), starting with January-February-March (Q1) and finishing with October-November-December (Q4). Chi-squared Goodness of Fit tests were used to examine whether the distribution of births differed from that of the general French population across the period in question (1974-1996). Cohen's w provided a measure of effect size, with w values of 0.1, 0.3 and 0.5 indicating a small, medium and large effect size, respectively. Where significant chi-square results were found, standardized residuals (SR) provided a post-hoc test to identify in which quarters there were significant deviations from the expected frequencies. A positive SR indicated a higher than expected number of births in that quarter. A negative SR indicated a lower than expected number of births in that quarter. SRs $\geq \pm 1.96$ were deemed noteworthy.

3. Results

A RAE was evident for the total population (Table 1). Post hoc tests revealed an under-representation of players born in Q4 (SR = -3.49). A significant RAE was evident amongst forwards, but not for backline players. Post-hoc tests revealed that amongst forwards there

was an over-representation of players born in Q1 (SR = 2.68) and an under-representation of players born in Q4 (SR = -2.43). Analysis of the more specific playing positions indicated deviations from an even distribution of births amongst back row players only. Post-hoc tests indicated an over-representation of players born in Q1 (SR = 2.66) and an under-representation of players born in Q4 (SR = -2.88).

4. Discussion

Consistent with previous research by Delorme et al. (3), a weak RAE was found in the total population of senior French rugby union players registered for the 2014/15 season. Given the nature of their role on the pitch, the finding that a RAE was present within forwards but not backline players is consistent with the finding that RAEs are typically associated with more physically demanding sports (1). More specifically, the findings indicate that back row players in particular are at risk of bias during their development in the French rugby system. Specialist forward positions such as props (typically the heaviest players on the pitch) and locks (typically the tallest players on the pitch) have particular body shapes which may lead to their being designated for a specific position early in their development. The fact that the role of back row players requires size and physical strength, but is not associated with an extreme body shape may be the reason why back row forwards demonstrate the strongest RAE. As RAEs at senior level are symptomatic of underlying problems at youth level (1), junior rugby coaches should be vigilant that relative age does not bias coaching practice, particularly in relation to back row players.

Conclusion

The relative age effect in rugby union appears to be more prominent in forward players, and in back row players in particular.

Disclosure of interest

The author declares that he has no conflicts of interest concerning this article.

References

1. Cobley S, Baker J, Wattie N, McKenna J. Annual age-grouping and athlete development: a meta-analytical review of relative age effects in sport. Sports Med. 2009;39:235–56.
2. Romann M, Fuchslocher J. Influences of player nationality, playing position, and height on relative age effects at women's under-17 FIFA World Cup. J Sports Sci. 2013;31:32–40.
3. Delorme N, Boiche J, Raspaud M. The relative age effect in elite sport: the French case. Research Quarterly for Exercise & Sport. 2009;80:336–44.
4. Delahunt E, Byrne RB, Doolin RK, McInerney RG, Ruddock CT, Green BS. Anthropometric profile and body composition of Irish adolescent rugby union players aged 16-18. J Strength Cond Res. 2013;27:3252–8.

Table 1. Relative age distribution of French rugby union players during the 2014-2015 season according to playing position.

Population (N)		Quarter of Birth					
	First	Second	Third	Fourth	χ^2	*P*	*w*
General Population	24.1%	25.8%	25.6%	24.5%			
Total (1991)	26.0%	27.7%	25.9%	20.4%	17.13	0.001	0.09
Forwards (1116)	28%	26.4%	26.0%	19.5%	17.75	0.000	0.13
Backs (875)	23.4%	29.3%	25.7%	21.6%	6.10	0.107	0.08
Prop (335)	28.4%	24.8%	27.5%	19.4%	6.56	0.087	0.14
Hooker (187)	21.9%	32.6%	24.6%	20.9%	4.36	0.225	0.15
Lock (196)	28.1%	26.0%	23.0%	23.0%	1.91	0.592	0.10
Back row (398)	30.7%	25.1%	26.9%	17.3%	15.47	0.001	0.20
Scrum half (175)	24.6%	27.4%	20.6%	27.4%	2.50	0.476	0.12
Fly half (140)	25.7%	30.7%	20.7%	22.9%	2.65	0.449	0.14
Centre (218)	23.9%	30.3%	26.6%	19.3%	3.82	0.281	0.13
Outside back (342)	21.6%	28.9%	29.8%	19.6%	7.55	0.056	0.15

Table Notes: N = number of players, χ^2 = Chi-squared statistic, *P* = probability value, w = Cohen's w.