

# The Relative Age Effect in Elite Junior Soccer and Ice Hockey Players in Switzerland

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## Purpose

Identifying talented athletes at an early age has become one of the major issues in many competitive sports (Abbott & Collins, 2004). The relative age, which refers to the difference in age between children in the same selection year, has a significant influence in the talent identification process for many sports (Musch & Grondin, 2001). The primary purpose of this study was to determine, if the relative age effect (RAE) exists in elite junior soccer and ice hockey players in Switzerland.

## Method

In total 527, **344 Swiss male elite junior ice hockey** (age 15.3±1 yr) and 183 soccer players (age 15.2±1.4 yr.) were evaluated.

The **year was divided into four quarters (Q)**. Q1 included January, February, March; Q2 included April, May, June; Q3 included July, August, September and Q4 included October, November, December.

The percentage of players born in the respective quartiles was **compared to the distribution of male births in Switzerland** (expected frequencies), which were obtained from the Swiss Federal Institute of Statistics. Statistical comparisons were calculated using the chi-square test.

## Results

The RAE was found with a distribution of **Q1=53.0%**, Q2=18.0%, Q3=19.7%, **Q4=9.3%** for soccer and **Q1=42.4%**, Q2=27.6%, Q3=19.5%, **Q4=10.5%**. The month of birth distribution of football and ice hockey players differed statistically significantly from that of the general Swiss male population for the respective years (**p < .001**). The data concerning Q1 highlighted an over-representation of players, whereas a decreasing number of players were born in the subsequent months.

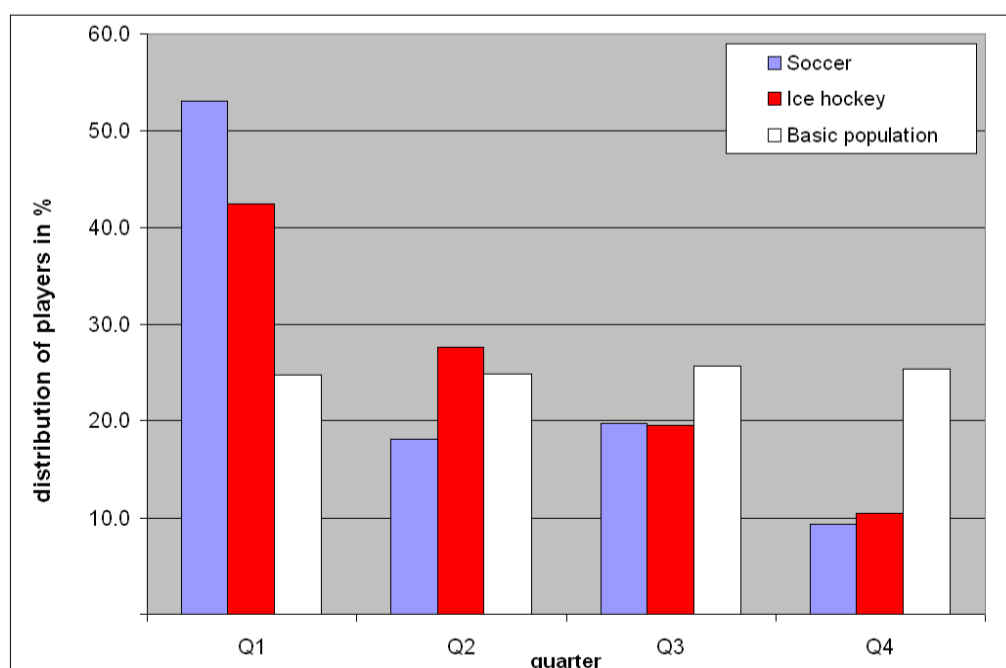


Fig. 1: Distribution of birth dates of elite junior ice hockey and soccer players in Switzerland. Significant differences of both groups to basic population ( $p < .001$ ).

## Discussion

The RAE that exists in many competitive sports worldwide is clearly evident in the selection process of elite junior soccer and ice hockey players in Switzerland. In particular, the RAE of Swiss soccer players represents **the highest value (percentage Q1) throughout Europe** (Helsen, van Winkel, & Williams, 2005) and the chance of being selected to a national team is **5-fold higher for Q1 compared to Q4**.

In general the coaches base the selection mainly on competition results and training performance (Fraser-Thomas, Coté, & Deakin, 2008). There seem to be several reasons why coaches do not take the RAE in consideration:

- the **RAE is often unknown or inadequately described**
- **coaches, clubs and federations are reluctant to change the tradition of selection** and shrink from the administrative effort
- there is no evidence that the modification of the actual system (without consideration of RAE) will result in better performance at elite level.

To avoid the RAE, following counteractions could be proposed:

- smaller age categories (e.g. half year categories)
- quotas (e.g. 25% of players per quarter of the year)
- teams differentiated by size and/or weight
- **rotating calendar cut-off dates**

We propose a more equitable slotting system into age divisions with three rotating calendar cut-off dates (e.g. 01. January; 01. May and 01. September) (tab.1).

Season (S) and cut-off date	Tertile 1 Relative age	Tertile 2 Relative age	Tertile 3 Relative age
$S_n$ , 1. Jan.	oldest	intermediate	youngest
$S_{(n+1)}$ , 1. May	youngest	oldest	intermediate
$S_{(n+2)}$ , 1. Sept.	intermediate	youngest	oldest
$S_{(n+3)}$ , 1. Jan.	oldest	intermediate	youngest

Tab. 1: Example for rotating calendar cut-off dates for players born in each birth-tertile.

## Conclusion

Our results suggest, that much of what coaches see as early talent may be explained by the relative age advantage. To avoid this effect in the future, we propose a slotting system into age divisions with three rotating calendar cut-off dates.

## References

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