

DETERMINATION OF HEADING FREQUENCY IN YOUTH SOCCER

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INTRODUCTION

Youth participation in soccer in the United States has increased dramatically, with the American Youth Soccer Organization (AYSO) growing from nine teams in 1964 to 50,000 teams in 2005. This increase in participation has been paralleled with an increase in injuries (Witol 2003). One of the biggest debates surrounding injuries related to youth soccer involves the effects of repetitive heading (Naunheim 2003).

One of the first steps in delineating the effects of repetitive heading is determining an accurate exposure incidence. Currently, there is a lack of on-field data to quantify the incidence of heading in soccer as it relates to player position and age group. The majority of previous studies use a method of athlete reporting. These data are essential to conduct the controlled laboratory experiments needed to ultimately determine the effects of repetitive heading.

The frequent use of athlete reporting in studies relating heading frequency to findings is unreliable and a better method of estimation is required. Therefore, the purpose of this study is to explore the frequency of soccer heading in the youth population across age groups, skill levels and gender.

METHODS

Males' and females' teams ranging in ages from U13 (under 13 years old) to U18 (under 18 years old) were observed during the 2006 Canton Cup Soccer Tournament, a

weekend long tournament in Canton, MI. Only teams participating in the top two skill divisions of their age bracket were included in the study. The highest division was given the designation by the tournament of blue and the next highest level was red. A total of 124 teams playing 158 games were observed throughout the tournament. It should be noted that due to the fact that soccer is a spring sport for high school aged females in Michigan, the highest age division for the tournament was U14.

Each header that took place during the game was recorded on a data sheet that contained a grid outline of the soccer field. Both the player number and time of occurrence were noted within the specific area of the grid where the header took place. No personal identifiers were recorded. Different colors were used to denote different teams to allow for a better representation of defensive versus offensive position on the field.

RESULTS AND DISCUSSION

Significant differences between age groups were not noted for either division within the female population. However, for the male population, significant differences were noted between the U12 to U13 and U14 to U15 age groups in the red division. The only significant difference in the male blue division was between the U12 and U15 age groups. A positive linear regression was noted in the male blue division from U12 to U15 ($R^2=.9447$), however from U15 to U18 there was no significant increase with age.

A similar trend was also noted in the female population ($R^2=.9998$), but the stabilization effect with age was unable to be assessed due to the lack of data at the older age groups. Significant differences were also reported between the male and female populations across all age groups within each division ($p<0.05$). The male populations were observed to have a higher header/minute ratio than their female counterparts.

Maximum headers in one game by a single player were also monitored to determine the highest exposure incidence. The maximum number of headers in a single game by a player was 13 headers. This was observed in a U14 male blue division game. The range of maximum headers in one game by one player was from 4 to 13 headers.

The current study is limited by the fact that data was collected over a weekend long tournament and that a maximum of three games were observed for each team. Even with these limitations, important trends in the amount of headers players are experiencing and their age.

SUMMARY/CONCLUSIONS

A positive correlation was established between age and headers/minute within the higher skill levels. This occurs up until the age division of U15 at which point a plateau occurs. Although there is currently no data available for the same divisions of the female population, it is expected that there would be a similar trend based on the data available for the U12-U14 age groups. These trends are most likely due to both development of the player and comfort level with the skill. After a certain level is achieved, the overall incidence of heading stabilizes.

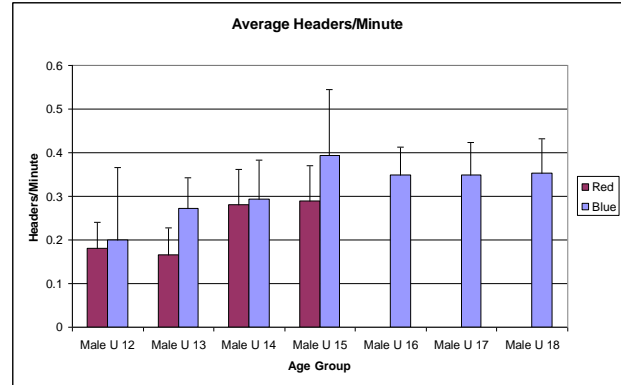


Figure 1: Number of headers/minute for the male population.

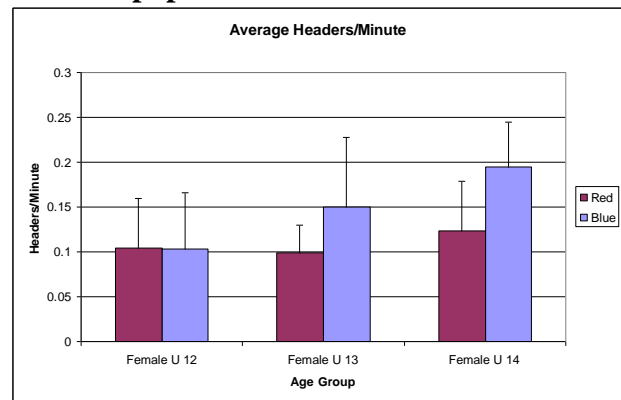


Figure 2: Number of headers/minute for the female population.

REFERENCES

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