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Prevalence of Soccer Heading in Middle School American Youth Club Soccer Players

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Background

- Soccer, America’s most popular youth sport, carries a relatively high risk of concussion injury, and heading of the ball is recognized as a specific cause.1
- 1 in 5 concussions occurred by attempted purposeful heading of the ball.2
- In 2016, the US Soccer Federation eliminated heading during practice in games for children 10 and under and implemented limited heading during practice for children between 11-13 years of age3.
- Parent concerns regarding headers for youth soccer players initiated the current study in a citizen-science participatory design framework.

Subjects

- Fifteen players from the Oceanside Breakers Soccer club (Observed team) participated in the Presidio League 2014 season, consisting of 11 weekly games for children 10 and under and implemented limited heading during practice for children between 11-13 years of age.
- Parent concerns regarding headers for youth soccer players initiated the current study in a citizen-science participatory design framework.

Methods

- Interested Parents from the team (Observed team)
- Approach Soccer Club - IRB Parental Informed Consent - Participation
- Collected baseline measures (SAC)
- Datasheet for keeping records
- Weekly Games
- 11 total games
- 11X11 players
- 2014 season
- Raters debriefed on soccer header frequency
- Sum of headers per Player
- Per Position (Observed team)
- Total headers by Opposing team
- Data Analysis

Data Analysis

- The normality of the data was confirmed using Shapiro test. Descriptive statistics was reported using Mean ± SD.
- Independent sample t-test was used to find the significant difference between the observed group vs opponent group.
- One-way ANOVA was used to find the significant difference between the forward, middle and back ward position players in the observed team.

Results

- Frequency of Soccer Heading

Table 3. Heading events at different locations of the play field (per game averages for the entire season).

<table>
<thead>
<tr>
<th>Playing Position</th>
<th>Observed team (mean±SD)</th>
<th>Opponent team (mean±SD)</th>
<th>t value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defense</td>
<td>10.34 ± 7.10</td>
<td>16.18 ± 5.19</td>
<td>1.53</td>
<td>0.139</td>
</tr>
<tr>
<td>Middle</td>
<td>18.72 ± 8.79</td>
<td>24.9 ± 2.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forward</td>
<td>14.34 ± 5.50</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

No significant differences were found between the observed team vs opponent team. Mean standardized assessment of concussion (SAC) score for the observed soccer team was 24.9±2.6 (post of 30).

Table 2. Whole season soccer heading occurrence for both the teams

<table>
<thead>
<tr>
<th>Game number</th>
<th>Observed team</th>
<th>Opponent team</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>19.36 ± 4.47</td>
<td>16.18 ± 5.19</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
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<td>3</td>
<td></td>
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<td>10</td>
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<td></td>
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<tr>
<td>11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No Significant differences were found between the observed team vs opponent team. Mean standardized assessment of concussion (SAC) score for the observed soccer team was 24.9±2.6 (post of 30).

Discussion

- The current study average number of heading was 35.5 times/match is consistent with published findings on in U13 male soccer players.
- Both teams are equally vulnerable to the heading occurrence in the soccer match.
- A positive trend between frequency of heading and the middle field playing position, also agreeing with previous data.

Limitations

- Data did not consider individual playing time, training time and lack of anthropometric details.

Future research

- Consider playing time, player’s age, race/ethnicity, length of soccer career, and previous history of sports-related concussion.
- Investigate parents’ perspective on heading frequency and the risks of concussion.

Conclusion

- High frequency of heading is observed in Middle School American Youth Club Soccer Players.
- Involvement of parents and community stakeholders is critical to translational clinical research.

References


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