



INJURY INCIDENCE AND ITS CORRELATION TO TIME PLAYED FOR DIVISION II MEN'S AND WOMEN'S BASKETBALL AND SOCCER OVER ONE SEASON

Ivan Palomares-Gonzales, Layne Larsen, Ashley Morataya, Jacob Fortes, Jacob Goodin Ph.D



Purpose

This study investigated the relationships of the following between four different NCAA Division II teams:

- injury rates
- injury locations
- injury severity

The study followed Men's and Women's Basketball and Soccer throughout one season to determine the relationship among injuries and playing time in games or practice.

Results

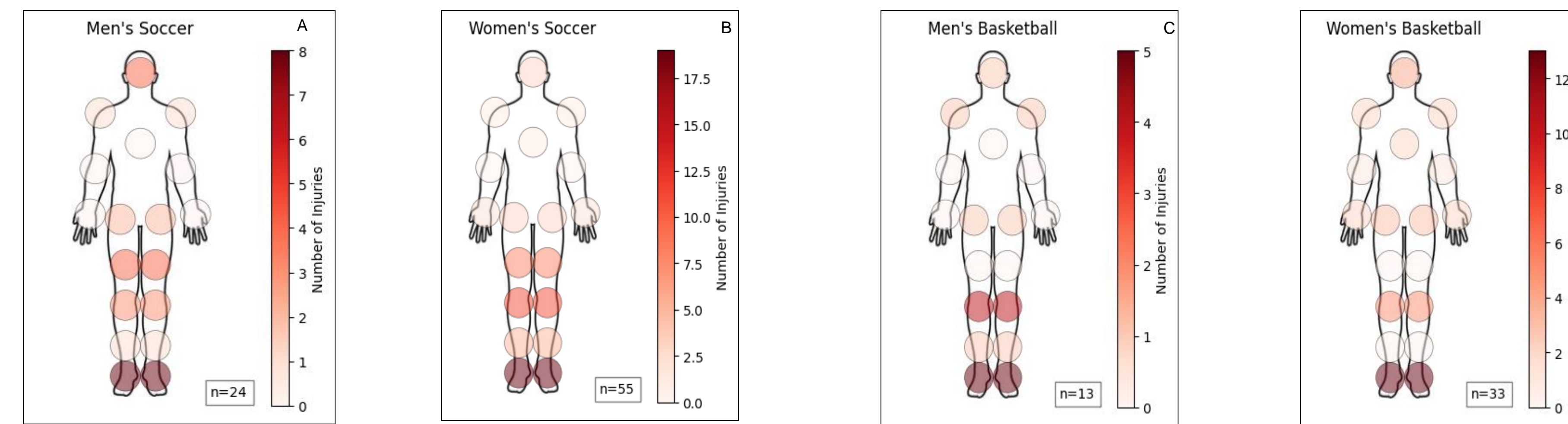


Figure 1. Frequency of team's total injuries and their location. (A) Men's soccer, (B) Women's soccer, (C) Men's basketball, (D) Women's basketball.

Methods

- Ninety-one players (47 females and 44 males) were included in this study
- Injury history was collected in collaboration with the sports medicine staff for the 2022-2023 season.
- Exposure time was collected by subtracting reported days missed due to illness or injury from total game time and practice time.
- Game time was collected from the university sports statistics database.
- All injuries were plotted over time and as heat maps to visualize injury occurrence and temporality.

Conclusions

Preliminary findings indicate that ankle injuries were the most prevalent injury location for each team (ranging from 20.0% to 30.8% of total injuries), and sprain/ligament injuries were the most common type for each team (ranging 23.6% to 46.2%). Most injuries occurred during the season (ranging from 45.5% to 62.5%). All injuries were plotted over time and as heat maps to visualize injury occurrence and temporality.

The most common injuries following the ankle were knee, foot, thigh, and head. The average days missed were high and injury incidence was lost, showing that this group had a small number of players with long-term injuries that may have skewed statistical results.

This information provides injury data points of interest that should be monitored closely by sports medicine staff and that could be potentially be reduced through pre-habilitative exercises integrated into the strength and conditioning program.



Figure 2. Frequency of injury types and time of the season for each team (a) Men's soccer off season, (b) men's soccer pre season, (c) men's soccer during season, (d) women's soccer pre season, (d) women's soccer during season, (e) women's soccer off season, (f) women's soccer post season, (g) men's basketball off season, (h) men's basketball during season, (i) men's basketball during season, (j) men's basketball post season, (k) women's basketball off season, (l) women's basketball pre season, (m) women's basketball during season

References

Halson, S. L. (2014). Monitoring Training Load to Understand Fatigue in Athletes. *Sports Medicine*, 44(S2), 139–147. <https://doi.org/10.1007/s40279-014-0253-z>



ANALYSIS OF INJURY INCIDENCE, PLAYER LOAD, AND TIME PLAYED FOR DIVISION II WOMEN'S SOCCER PLAYERS OVER ONE SEASON

Ivan Palomares-Gonzales, Layne Larsen, Ashley Morataya, Jacob Fortes, Jacob Goodin Ph.D



Purpose

This study investigated the relationships between injury rates, locations, and severities with measures of training volume in women's soccer athletes during a single season.

Methods

- Twenty-nine female athletes (20.6 ± 1.7 years, 68.9 ± 5.3 in., 162.9 ± 30.1 lb) from a collegiate NCAA Division II soccer team volunteered for this study
- Injury history was collected in collaboration with the sports medicine staff for the 2023 season
- Training data was collected using GPS tracking devices for games and practices
- Injury location, type, and severity were plotted as a time-series analysis and in relation to both minutes played and Player Load to identify injury patterns

Conclusions

Ankle injuries were the most prevalent injury location (21.8%), and sprain/ligament injuries were the most common type (23.6%). Minor injuries classified as ranging from 1-7 days were the most common time lost (65.5%), with most of those injuries happening during season (56.4%). An average of 28.7 days were missed per injured athlete throughout the season. There were 17.9 injuries per 1000 hours of on-field training. A moderate negative correlation was found between total time played or practiced and total days missed ($r=-0.697$, $p < 0.05$).

Practical Applications

The high incidence of ankle injuries and sprain/ligament injuries indicates the need for targeted prehabilitation and rehabilitation protocols focusing on these areas. Implementing injury prevention programs that address these specific injury types can potentially reduce the overall injury rate and severity. Moreover, the data-sharing framework and collaborative approach demonstrated in this study can serve as a model for other collegiate athletic teams. By fostering a culture of collaboration and systematic data collection, teams can enhance their injury prevention strategies and optimize athlete performance and availability.

Results

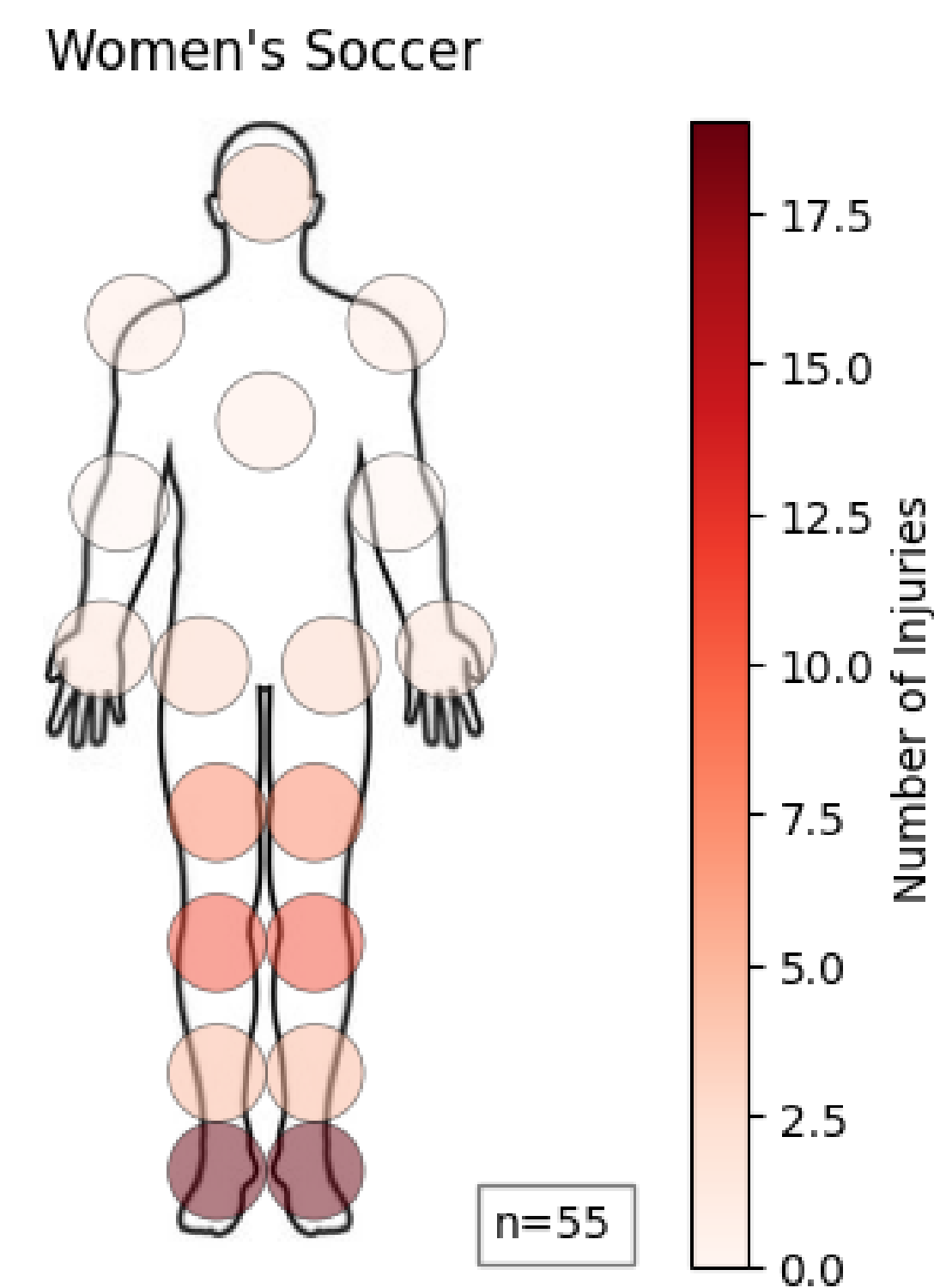


Figure 1: Frequency of injury location heat map

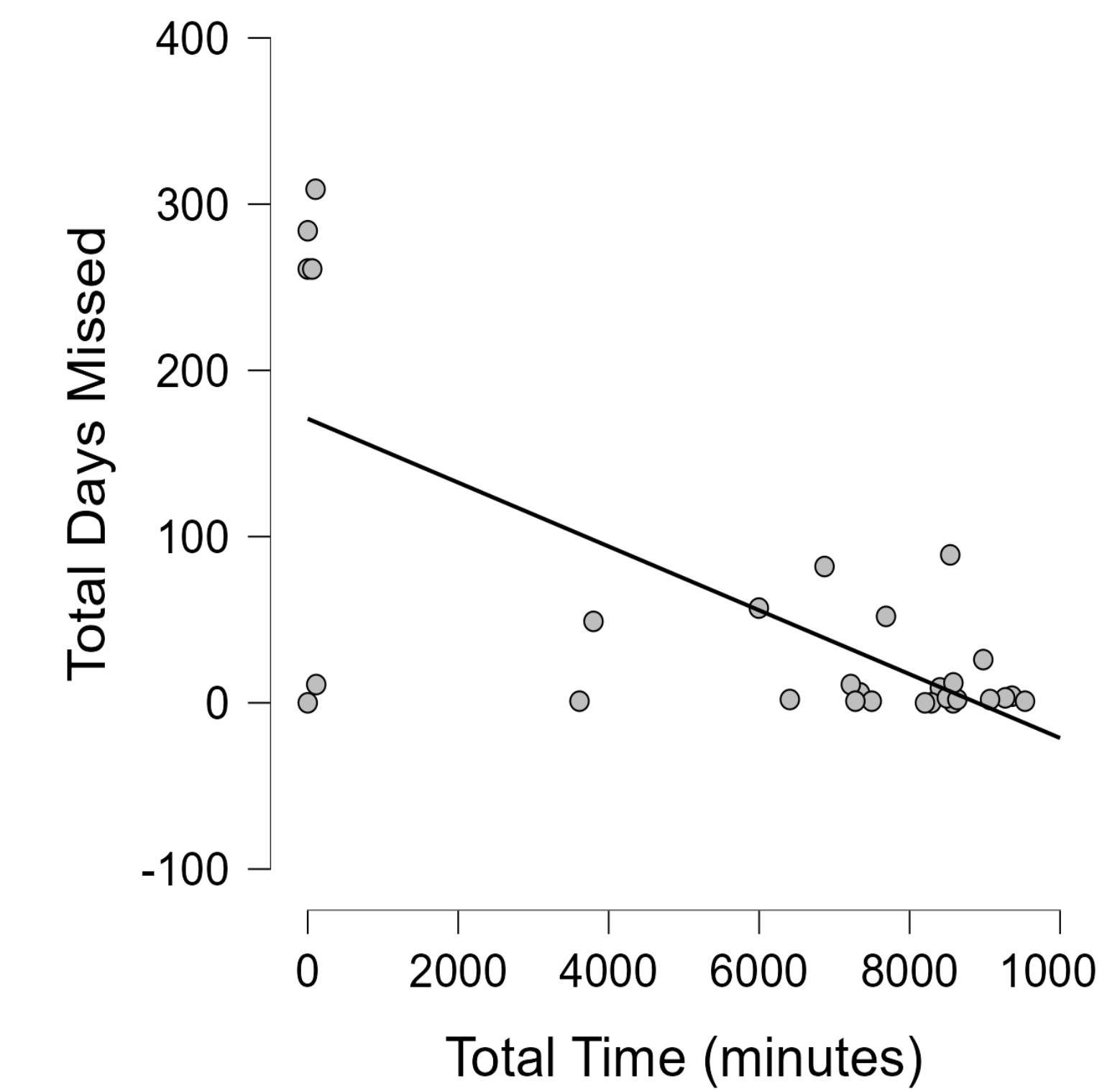


Figure 2: Correlation of total days missed compared to total time played ($r = -0.697$, $p < 0.05$)

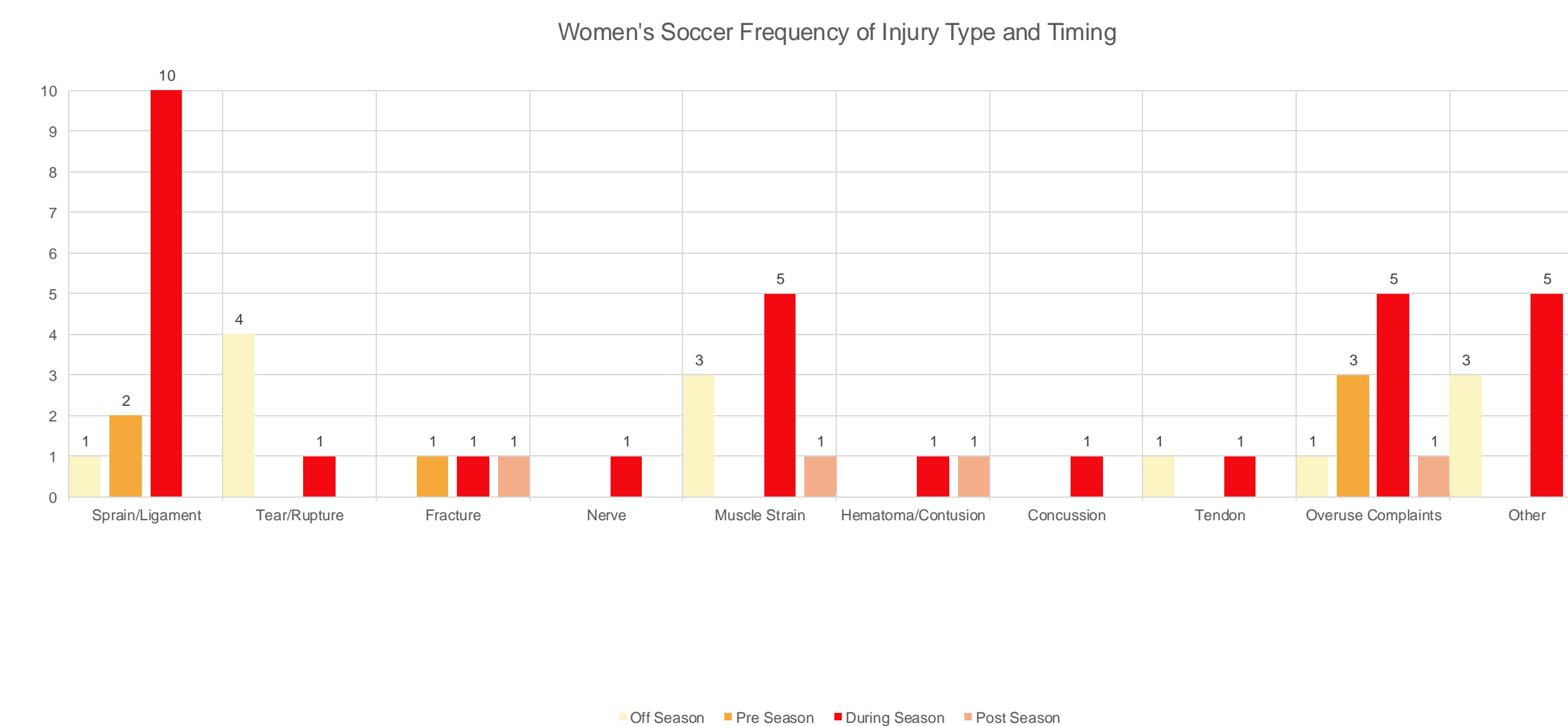


Figure 3: Frequency of injury type and its corresponding time during the season

References

Ekstrand, J., & Gillquist J. (1983). Soccer injuries and their mechanisms: a prospective study. *Medicine and Science in Sports and Exercise*, 15(3), 267-270.