

INTRODUCTION

- Sail Grand Prix (SailGP) is a professional **mixed-gender** international sailing competition that uses high performance F50 foiling catamarans.
- F50s are operated by a **four- to six-person crew** and can reach speeds up to **99.94 km/h**.⁽¹⁾
- When competing, each team must have **at least** one female sailor.
- During its third season, **nine teams** competed in a series of **eleven grand prix** with winds ranging from **~6-40 km/h**.^(1,2)
- Each grand prix is composed of two days of high speed racing. The first day consists of three qualifying races and the second day has two qualifying races and a final match. After the completion of all grand prix, the two teams with the highest points compete in a **season finale**.

AIM

- To examine the number and type of sailor injuries, to identify the proportion of injuries for each sailor role, to compare the on-water competition injury incidence between male and female sailors, and to analyze the on-water training and competition injury incidence
- Help guide SailGP's policies, team and support staff's trainings, and equipment modifications to improve safety standards for season 4.



MATERIALS AND METHODS

- SailGP medical providers recorded sailor injuries on an electronic medical record system (EMRS).
- Documented data included the sailor role (grinder, strategist, wing trimmer, flight controller or driver), the occasion of the injury (competition, training or other), the event causing injury (during manoeuvre, non-sports participation or other) and the location and extent of the injury.
- These data were extracted from the EMRS to determine the number and type of injuries experienced by sailors, the proportion of injuries for each sailor role, the on-water competition injury incidence for male and female sailors and the on-water training and competition injury incidence.

Definitions

- Incidence was defined as the number of injuries per 1,000 hours of F50 sailing or other sport.
- Injury is defined as physical damage to a sailor's body that was reported in SailGP's EMRS.

Calculations

- To calculate the on-water training sailing hours, the number of training sessions was multiplied by the number of teams, the number of sailors onboard, and the length of each training session. It was assumed that sailing at each training session was four hours long and each team had six sailors onboard.
- To calculate the on-water competition sailing hours, each competition was split into two days. Day 1 consisted of three races with nine teams and Day 2 consisted of two races with nine teams, in addition to one race with three teams. Each race was assumed to last twelve minutes and each team was assumed to have six sailors onboard (1 female and 5 males).

RESULTS

- Injury numbers and locations included: knee [11], hand [10], head [6], ankle [5], neck [4], shoulder [4], elbow [3], thigh [3], hip [2], lumbar spine [2], wrist [2], face [1], back [1], chest [1], ribs [1], and shin [1] (Figure 1).
- Of the 57 sailor injuries documented 19 were grinders, 19 were strategists, 8 were wing trimmers, 7 were flight controllers, and 4 were drivers (Figure 2).
- During competition, injury incidence rates for females and males were 41.2 and 22.6 per 1,000 hours of F50 sailing respectively [11 male injuries, 4 female injuries] (Figure 3).
- On-water training injury incidence rates and on-water competition injury incidence rates were determined to be 2.62 and 25.72 per 1,000 hours of F50 sailing respectively (Figure 4).

INJURY LOCATION AND NUMBER

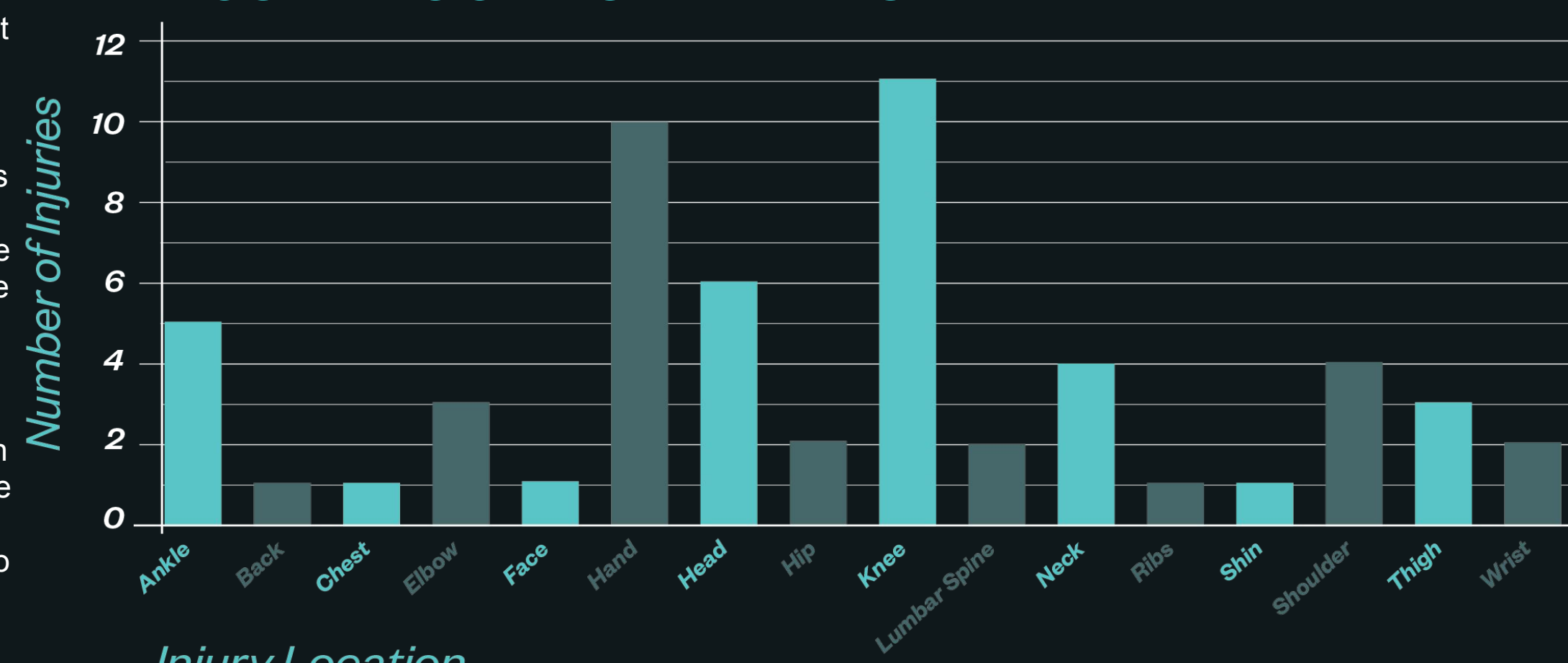


Figure 1: SailGP season 3 injury location and number.

INJURIES BY SAILOR POSITION

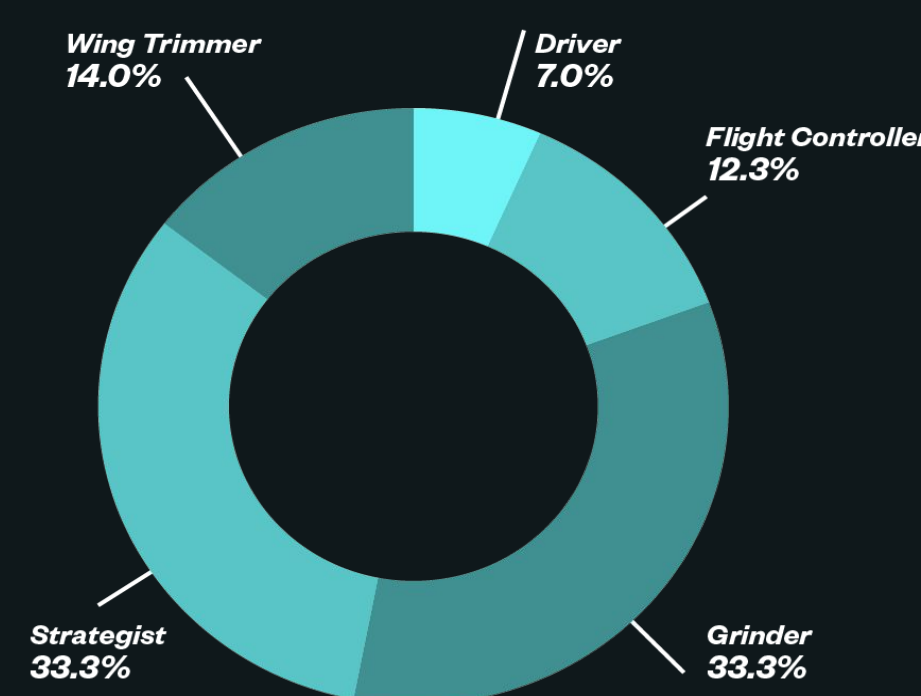


Figure 2: A pie chart displaying the distribution of injuries by position while sailing during SailGP's third season (trainings and competitions).

COMPETITION INJURY RATE BY SAILOR SEX

Females	Males
41.2	22.6

Figure 3: Competition injury incidence by sex per 1,000 F50 sailing hours during SailGP's third season.

CROSS-SPORT INJURY INCIDENCE

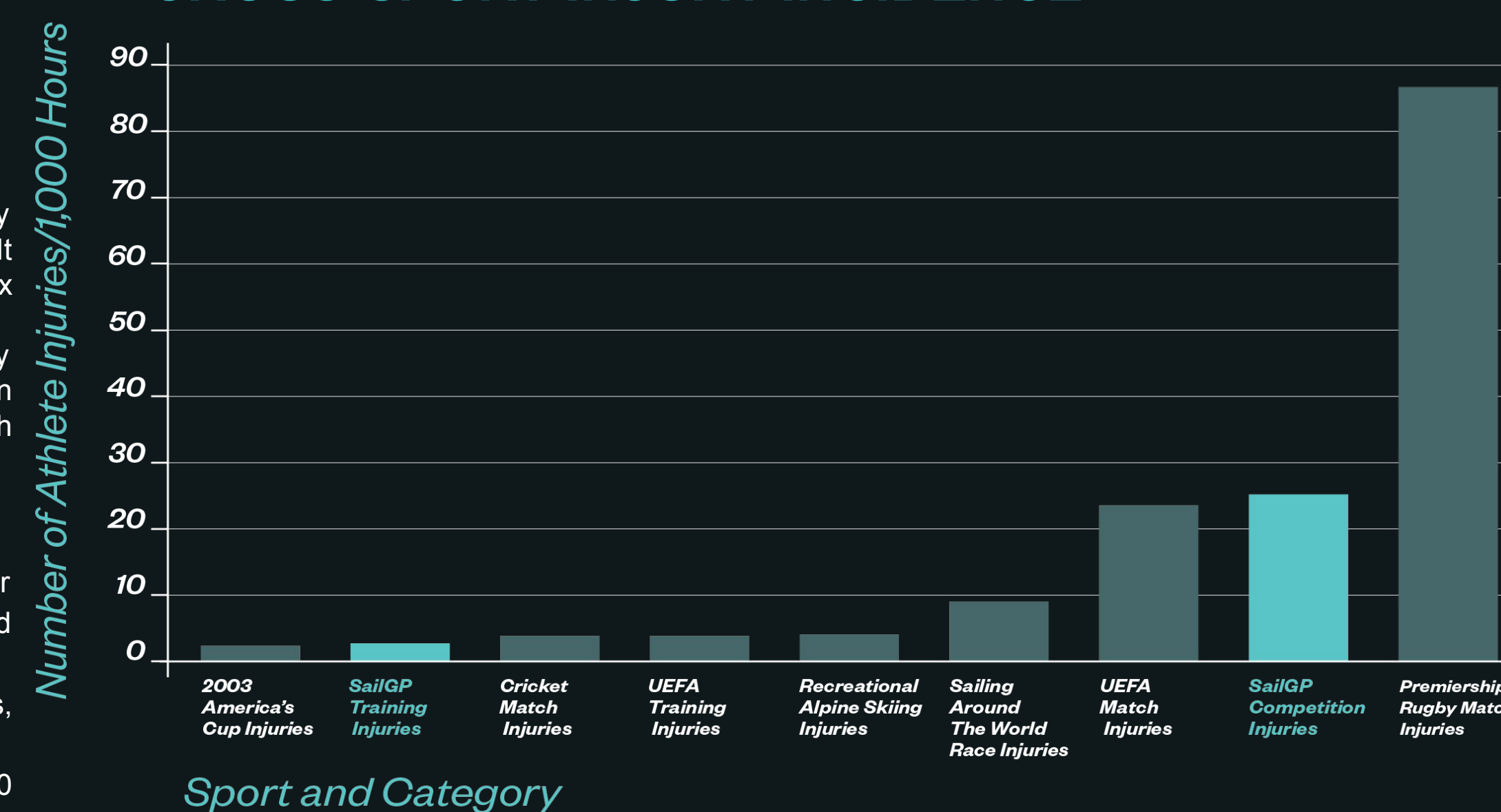


Figure 4: Injury incidence per 1,000 sport hours across multiple sailing events and high-performance sports.^(3,4,5,6)

CONCLUSION

This study is the first of its kind, as SailGP is a new platform for high performance sailing.

Findings

- Sailors injured their knees, hands, heads and ankles the most (Figure 1).
- Grinders and strategists had the highest proportion of injuries, at 33% each, while drivers had the least, at 7% (Figure 2).
- Female sailor injury incidence was roughly two times higher than male sailor injury incidence (Figure 3).
- In comparison to other sailing events, injury incidence at SailGP is high (Figure 4). According to Nathanson et al., injury rates were **9 per 1,000 hours** for an amateur around-the-world race, **2.2 per 1,000 hours** for the 2003 America's Cup, and **0.59 per 1,000 hours** for an international 2014 Olympic-class regatta.⁽³⁾ In contrast, SailGP has much higher injury incidence rates at **25.72 per 1,000 F50 sailing hours** (on-water competitions) and **2.62 per 1,000 F50 sailing hours** (on-water trainings). When compared to other high performance year-round sports, SailGP ranks still ranks high (Figure 4). SailGP was found to have a slightly larger competition/match injury incidence than the Union of European Football Associations (UEFA) [**25.72** compared to **23.8**] and a slightly lower training injury incidence than UEFA [**2.62** compared to **3.4**].

Future Research

- Future studies should use a larger data set to the improve statistical power of results.
- Future studies should examine the injuries experienced by grinders and strategists and their corresponding mechanisms of action. This will determine if improvements to equipment safety and/or tactics are needed.

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