Injuries in Elite Female Ski Jumping: Surveillance Through the 2017-18 FIS World Cup Season

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Disclosures

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Introduction

- Elite ski jumping is performed during the International Ski Federation (FIS) World Cup circuit
- Hill Size (HS) is variable in competition, and defined as the distance from the take-off table to the end of the landing area
Background

- Women first included in the World Cup in 2011, Olympics 2014
- HS (jump distance) is capped at 95% distance for women versus males
  - Due to suspicion that women are more at risk for injury
  - Since female ski jumping is relatively new, paucity of data to support or refute this notion
- FIS Injury Surveillance System (ISS) introduced in 2006
  - To monitor injury patterns and trends
  - ISS included Women’s ski jumping in 2014-15¹
Purpose

• To describe the incidence, type, etiology, and severity of injuries occurring during a single FIS Women’s Ski Jumping World Cup Season
Methods

• Prospective cohort study of 2017-18 FIS World Cup season
• All athletes representing national team ≥1 competition
• Baseline data and injury history recorded
• Prospective bi-weekly and end-of-season reports
• All injuries requiring medical attention included
Results

- 81% response rate (n=67 skiers)
- 17 injury events reported
  - 13 skiers
  - 25.4 injuries/100 athletes per season
  - 88% acute injuries
  - Knee most common location (23.5%)
    - 75% ligament ruptures
Results

• Etiology
  • 82% occurred on the ski jump hill
    • 2/3 training
    • 1/3 competition
  • Crash-landing most common mechanism
  • Length of jumps causing injury averaged 83.7% of HS
    • Only one injury on jump longer than HS
Results

• Severity
  • 59% required ≥8 days absence from training/competition
  • 3 injuries required ≥1 month absence
  • 85% of moderate/severe injuries occurred in snowing/windy conditions
Discussion

• Nearly 20% of the athletes sustained at least 1 injury
  • Limited available evidence suggests rate has remained stable\textsuperscript{1-4}
• Majority occurred on ski jump hill and resulted in time-loss
  • Relatively few classified as severe (>1 month absence)
• Only 1 concussion reported
  • Incidence has decreased since 1980’s\textsuperscript{1,5,6}
• Inclement weather may be a risk factor
Discussion

• Most injuries occurred during jumps shorter than HS
  • Suggests larger HS/longer jumps not associated with injury risk
  • Women may be safe to jump on same HS as men

• Strengths:
  • Most extensive study of female ski jumping injury epidemiology
  • Rigorous data collection

• Limitations:
  • Observational study of a small cohort, over a short time-period, with no comparison group limits strength of conclusions
  • Specifically, no direct comparison with injury rates among men
Conclusion

- Elite female ski jumpers sustain acute injuries at a high rate and a substantial proportion of the injuries result in time-loss from training and competition.

- The knee is the most common site of injury and ACL rupture is the most common diagnosis.

- It is important to continue high-quality injury surveillance for several seasons and future studies should focus on injury mechanism and gender differences in relation to injury rates and mechanism.
References


