

## **Ski and Snowboard School Programs: Injury Surveillance and Risk Factors for Injury**

### **FINAL EXECUTIVE SUMMARY March 2018**

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Skiing and snowboarding are two popular winter activities in Canada. Ski and snowboard school programs hosted by WinSport at Canada Olympic Park provide students, regardless of their background, with an opportunity to discover and engage in a new activity. However, participation in skiing and snowboarding carries an inherent risk of injury, as all sports do. In order to further encourage schools to extend school program participation to as many students as possible (especially younger grades), we sought to better understand the amount of risk in school programs and how to mitigate those risks.

For this research, we described the injury profile and assessed the injury risk factors among school-aged children and adolescents who participate in school-sanctioned ski and snowboard lessons hosted at a local ski area. In particular we were interested in assessing injury rates by grade group (grades 1 to 3, 4 to 6, 7 to 12) to help inform age and grade sport participation guidelines for physical education classes. Participation data came from school program enrollment forms and injury information came from ski patrol accident report forms, all of which were de-identified in compliance with the Freedom of Information and Protection of Privacy Act.

Here is what we found:

1. Out of 16260 student visits to the ski hill, there were 107 ski and snowboard-related injuries reported among school program participants during the 2013-2014 winter season. Forty of the 107 injuries were considered severe. Injuries were described as severe if the patient's final destination was the hospital or if they left the ski area by ambulance as reported on the ski patrol accident report form.
2. A trend was observed where injury rates increased with older grade groups. Although the youngest grade group (1 to 3) was shown to have the lowest rate of injury (25 per 10000 visits) and the oldest grade group (7 to 12) was shown to have the highest rate of injury (91 per 10000 visits) compared with the middle grade group (65 per 10000 outings), there were no statistically significant differences in injury rates between the grade groups.
3. When assessing additional risk factors for injury, individuals who chose snowboarding as their primary snow-sport activity showed a 3-fold greater likelihood of injury compared with skiers (Rate Ratio: 3.53, 95% CI: 2.44-5.10), and participants with self-reported intermediate and advanced/expert ability levels were significantly less likely to sustain an injury.
4. With respect to severe injuries, none were found in the youngest (1 to 3) grade group and those who snowboarded were almost 8 times more likely to sustain a severe injury compared with skiers (Rate Ratio: 7.74, 95% CI: 3.48-17.17).

**Conclusion:** Our findings suggest that very few students in grades 1 to 3 reported any injuries related to skiing or snowboarding (none of which were severe) and are at lower risk for a ski or snowboard related injury compared with other grade groups when participating in school



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sanctioned trips to the ski hill. Additionally, snowboarding as an activity appears to be an important risk factor.

School ski and snowboard programs give students an opportunity to try a new sport, and there is insufficient evidence that should prevent any grade groups (in particular grades 1 to 3) from participating in these types of activities. Our results are consistent with the most recent physical education guidelines that include younger age groups in school ski and snowboard programs.

The findings from this research have been compiled into a research article and accepted for publication in the *Scandinavian Journal of Medicine and Science in Sport*. The article was published online on February 8, 2018. The full research article can be accessed here: <https://www.ncbi.nlm.nih.gov/pubmed/29265554>.