

**Recommendations from ThinkFirst for Safe Tobogganing/Sledding**

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**Tobogganing/Sledding**

## **ThinkFirst's Position Statement on Community Action for Safe Tobogganing**

The issue of tobogganing and sledding safety is of major current interest to municipalities because of the recent occurrence of catastrophic injuries and deaths. In 2007, the City of Vaughan developed the Vaughan Injury Prevention Action Group for Safety in Sports and Recreation which is an organized, multidisciplinary, evidence-driven effort to investigate the issue of toboggan safety in its jurisdiction, and to determine what action, if any, is warranted and/or required of city officials. ThinkFirst, Canada was asked to participate in this activity and to prepare a background document outlining the current safety concerns about tobogganing/sledding. This position statement should be useful to any other jurisdiction wishing to improve the safety of this great winter activity.

It is of historical interest to note that this issue is one of the oldest to gain the public's attention at the community level among citizens, officials, and the media. Indeed, the Toronto Tobogganing Controversy of 1912 (1) occurred because of injuries at popular tobogganing hills in the city, notably Riverdale and High Park. Safety concerns at these bustling hills forced the civic government at the time to intervene after *The Star* charged that "Considering the thousands who daily use the slides, the city could well afford" safety improvements. Obstacles such as barbed wire, trees, and other sliders were responsible for many injuries and public calls were made for the city to do something lest "some unfortunate be taken home a corpse." After that the city of Toronto assumed a greater responsibility for tobogganing in its parks. It is reported that the hills were upgraded and maintained, and police were assigned to them. Over the years tobogganing/sledding has remained a popular activity, and in a study in 1996 by the Ontario Ministry of Tourism and Recreation found that 0.5% of Ontario's population participated in these activities (2).

### **Risk of Injury in Tobogganing/Sledding- Annual Incidence, Gender, Age.**

In terms of research, current injury databases can inform the decisions to be made by municipalities. ThinkFirst has documented the risks of tobogganing in its forthcoming book on catastrophic injuries in sports and recreation in Ontario (3). With respect to tobogganing and sledding ThinkFirst reported that tobogganing is a very high risk activity. In terms of risk to the participant which is calculated in terms of the number of catastrophic injuries per 100,000 participants, tobogganing/sledding ranked #4 in the province behind diving, snowmobiling and parachuting, and ahead of known, and seemingly "risky" activities such as hockey, skiing and bicycling. The individual risk of a catastrophic injury in tobogganing/sledding was approximately 38 people for every 100,000 participants, and males and females were affected almost equally(4). Almost half the injuries were in children less than 11 years of age, and one-third were 11-20 years of age. Thus, approximately 80% were 20 years of age or less. During each year from 1986-95, approximately 15 tobogganers sustained catastrophic injuries, and at least one died each year. Head, spinal, abdominal and facial injuries were the major types of catastrophic injuries that occurred.

## **Types of Injuries and Toboggans and Sleds.**

Further, the ThinkFirst study found that particular types of sleds or toboggans were associated with increased risk of injury(4). The most “dangerous” type of sled was considered to be the GT snow racer style, with two back skis and a single front ski for steering. However, 59% of injuries reported by these authors occurred on other types of sleds/toboggans. Generally, the participant’s spine is more susceptible to injury in sleds in which the participants are in the sitting position, such as inner tubes, toboggans, and the popular snow-racers (or “GT” racer), while the abdomen and head are more susceptible in sleds/toboggans ridden in the prone position, such as crazy/magic carpets (5).

According to a report by the Ontario Injury Prevention Resource Centre (6), 1731 visits were made by tobogganers to emergency departments in Ontario in 2004/5, 82% of which were a result of collisions with objects. The remaining injuries resulted from collisions with people. Most tobogganing hospitalizations involved children 4-10 years old, and again, there were almost equal numbers of girls and boys. The head (27%) and limbs (upper=27%, lower=26%) were the most common sites of injury for those who visited an emergency room for treatment, and about 90% were discharged home without being admitted to hospital. For hospitalized cases, the lower limb (47%) was most frequently the site of injury, with head (19%) and back/chest/abdomen/or pelvis injuries comprising 25% of hospitalization injuries. The lowest rates of emergency department visits were seen in the Toronto region, while the highest rates occurred in the North region.

## **Mechanisms of Injury**

The most common mechanism of tobogganing/sledding-associated injury has been previously reported as falling to the ground while sliding (40.1%), following by collision with an obstacle (32.6%), collision with another person (15.3%), getting a body part caught in the sled (7.3%), sliding into a dangerous area (e.g. street or river; 2.4%), and injury sustained while carrying/pulling a sled (1.0%) (7). In a study from Ottawa similar findings were reported: 33% occurred as a result of collision with objects/obstacles, 28% due to falls, and 16% sliding off of “jumps”(7). The study from Ottawa and another study from Pennsylvania(8) found that the majority of the serious injuries involved collision with motor vehicles. In the ThinkFirst study, the most frequent mechanism of injury was collision with a tree, and this occurred in 20 of the 62 catastrophic injuries. Other mechanisms were collisions with parked or moving vehicles, collisions with other tobogganers coming down or walking up the hills, and collisions with protruding rocks, metal poles or metal posts (4). In the four fatalities in the ThinkFirst study, two struck trees and had a head injury, one was sledding down a driveway on to the street and was struck by an automobile, and one was on a crazy carpet struck by a toboggan. If injuries are classified according to age, the most common mechanism of injury in younger riders ( $\leq 9$ ) is collision with an obstacle (39%) while the most common mechanism in older riders ( $\geq 10$ ) is falling off of a sled (47.6%) as reported by the Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP) (9).

## **Injury Location and Time**

In the CHIRPP Report(9) the most common location of tobogganing/sledding-associated injuries was an outdoor recreation area (59.5%), followed by the home yard (17.8%), daycare or school (6.9%), and transportation areas such as a walking path, parking area, or road (1.7%). The Ottawa study(7, 10) reported that 70% of tobogganing/sledding-related injuries occurred on non-designated tobogganing/sledding hills in more northern communities in Canada reported similar findings (10, 11). The Sudbury study reported that 51% of injuries occurred on weekends(10).

### **Prevention of Tobogganing/Sledding Injuries.**

Historically, it is of interest to look back at the “Toronto Tobogganing Controversy” to examine early prevention efforts (1). In 1912, the lobby to regulate sledding in Toronto won out (temporarily) and banned sledding on Sundays and everyday after 10:30pm. However, a rigorous opposition stirred among various groups including labourers (who contended that working 12 hour shifts in industry and commerce meant that Sundays and evenings were their only opportunities for recreation) and civil libertarians (who believed that physical recreational decisions were outside the scope of government action). Today, there are numerous examples of acceptable municipal regulation of sports/recreational activities to enhance safety, such as the necessity age in Ontario for those less than 18 years of age to wear bicycle helmets (in some provinces such as Nova Scotia, this law applies to all ages). It is important to ensure that whatever guidelines or regulations that are developed should not reduce participation. Tobogganing is a great winter sport, and active participation should improve health and counteract major problems such as diabetes and vascular disease, but must be done safely. However, we believe that tobogganing/sledding-associated injuries can be significantly decreased while maintaining the fun and excitement of these activities. In view of the high incidence of head injuries, helmets must be used, especially in youngsters. In the CHIRPP report (9) less than 1% of injured patients had worn any safety device such as a helmet, while a report from the Hospital for Sick Children in Toronto found that only 1 of 25 children admitted to due to tobogganing-related injuries had been wearing a helmet (12).

Most injuries in the ThinkFirst study were deemed to be preventable by the health care professionals who reported the injuries (4). The risk factors identified including lack of adult supervision of younger children, sledding on non-designated hills or hills with obstacles and proximity to roads. ThinkFirst’s study of other winter activities such as skiing and snowboarding indicates that helmet use reduces head injuries (13). Regulations requiring helmet use while sledding, or sledding only on designated hills, might impact more negatively on poorer families and individuals, and reduce participation, and so effort must be made to counteract this possibility.

As was the case in the past, the media can help to educate the public about issues of health and safety. We have recently seen the media can raise awareness about the issue of

toboggan injuries and help educate sledders about common injuries and prevention methods.

**Recommendations for Cities and Towns to Enhance the Safety of Tobogganing/Sledding, as adapted from ThinkFirst’s Study (4).**

The following are the actions that cities and towns should consider:

1. **Designate, develop and maintain well-designed sledding/tobogganing hills.** The hills should be regularly inspected and closed if conditions are dangerous (i.e. icy).
  - a. Safe hills are located at a safe distance from dangerous areas such as roads, rocks, rivers, lakes and parking lots.
  - b. Safe hills are free of obstacles such as trees, rocks, fences, benches, metal poles, etc.
  - c. Safe hills have a sufficiently long, clean run-out at the bottom of the hill, free of obstacles.
  - d. Safe hills have dedicated areas for climbing up the hill, distinct from the designated area for sledding.
  - e. Safe hills are closed at dusk unless adequate lighting is provided by the local government.
  - f. Erect signage to inform sledders and parents of the proper use of the hill, and the designated hours of operation.
  
2. **Develop an educational program for safe tobogganing. Parents, schools, daycares and community agencies should be targeted.** The program would teach the following principles of safe tobogganing
  - a. Teach children to slide down the middle of the hill, and climb up the side of the hill.
  - b. Children also need to learn to move away from the bottom of the hill quickly after a slide, and to watch for oncoming sledders
  - c. All children, but especially those under 10, should be supervised when tobogganing
  - d. Ensure that the sled/toboggan is free of broken or protruding parts, and that children are seated properly while riding
  - e. Sitting upright is the only safe position. Lying prone and head first can lead to serious head injury. Keep arms and legs tucked in.
  - f. Ensure that all participants wear properly fitted helmets, especially for children under 10 years of age. Hockey, ski, snowboarding or multi-purpose helmets are best
  - g. Ensure children are warmly dressed (layers are best) and avoid sledding on icy hills and when conditions are too cold
  - h. Avoid “racer” type sleds that have a single front ski that can be steered. This type of sled puts the child in an unsafe sitting position and can attain speeds much greater than many children can control

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