



Injury Insight

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ER-Related longboarding and skateboarding injuries

A fair amount of research exists for skateboarding injuries, but research specific to longboarding injuries is still lacking despite its increase in popularity.¹ Injuries for both skateboarding and longboarding are commonly due to falls, resulting in upper and lower extremity injuries and head injuries.^{1,2,3} More recently, longboarding has resulted in deaths and severe injuries in Canada.^{1,4} Because of this, some municipalities have begun to implement restrictions on longboarding.¹

Purpose of this Insight

To provide an overview of longboarding and skateboarding injuries among children and youth 0–19 years old presenting at the emergency room (ER) at BC Children’s Hospital (BCCH) using the Canadian Hospital Injury Reporting and Prevention Program (CHIRPP) data from 2011–2013.

Existing Research Shows

- The majority of injuries due to longboarding and skateboarding are among males.^{1,3}
- Among females, there are more injuries due to longboarding compared to skateboarding.¹
- The mean age of the injured longboarders is 14.3 years of age and 12.7 years of age for skateboarders.¹
- Longboarding injuries occur most commonly on roads and streets, and rarely in skate parks.¹
- Injuries for non-motorized wheeled activities, such as longboarding and skateboarding, peak in the summer months between July and September.³
- Upper extremity injuries are most common for both longboarding and skateboarding.^{1,2,3}
- Head and neck injuries are more common in longboarding as compared to skateboarding.¹
- The most common mechanism of injury for non-motorized wheeled activities is due to falls.³

DEFINITIONS



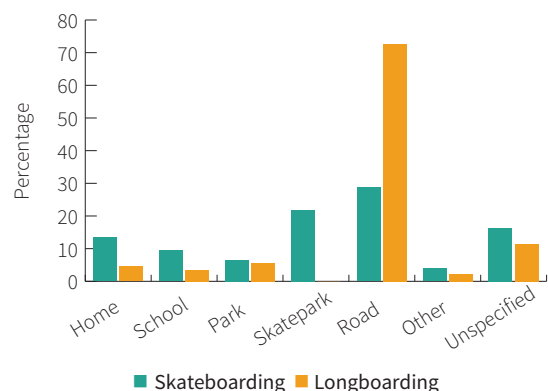
Longboarding is a classification of skateboarding that has gained popularity since the early 1990s.¹ There are distinct differences between longboarding and skateboarding, such as the board shape, size and function. Longboards are longer in length, generally 36 to 60 inches whereas skateboards are no longer than 33 inches in length. The long narrow shape and large diameter of the longboard’s wheels allow for greater speeds with more stability compared to skateboards.¹

- The prevalence of helmet use is similar for both longboarders (29.8%) and skateboarders (33.4%).¹
- Helmets are more likely to be worn if there is a legislation in place.³

Results

- There were a total of 291 cases from longboarding and skateboarding presenting at BCCH from 2011–2013.
- Falls were the most common reported mechanism of injury for both longboarding (88.6%) and skateboarding (90.1%).

FIGURE 1
Percentage of ER Visits by Location** of Injury, BCCH, 2011-2013



Note: Data were excluded when location was not indicated.

** see footnote for more details

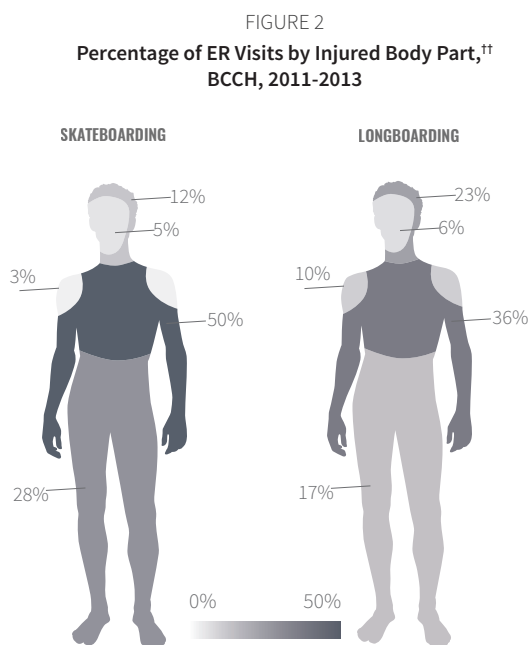
- 17.1% of longboarding injuries and 9.4% of skateboarding injuries mentioned going downhill* as a factor for the injury.

LOCATION OF INJURIES (FIGURE 1):

- Injuries most frequently occurred on the road for longboarding (72.7%) and for skateboarding (28.7%).
- 21.8% of all skateboarding injuries occurred at the skate park.

TYPES OF INJURIES (FIGURE 2):

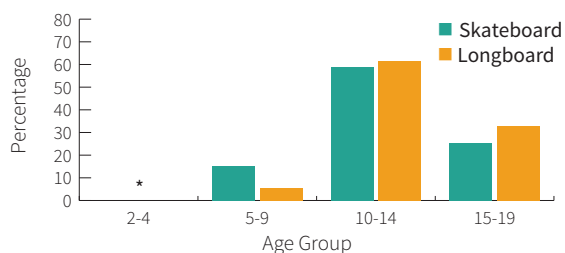
- Injuries to the upper extremities were the most common type of injury for both longboarders (36.4%) and skateboarders (49.3%). 77% of these cases mentioned falling on the outstretched hand, arm or wrist (FOOSH) in the injury event description.†
- Head and neck injuries were the second most common type of injury for longboarders (22.7%) whereas lower extremity injuries and trunk were the second most common type of injury for skateboarders (27.6%).



SEX, AGE, AND HELMET USE (FIGURES 3 & 4):

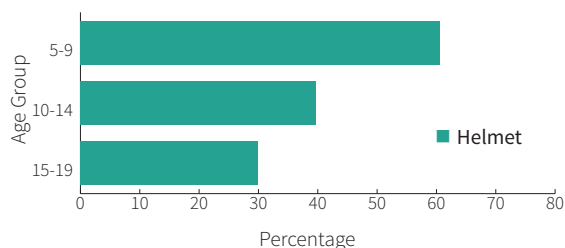
- 90.1% of ER visits by longboarders were male and 9.1% were female.
- 85.6% of ER visits by skateboarders were male and 14.4% were female.
- Longboarding (61.4%) and skateboarding (58.9%) ER visits were most prevalent among the 10-14 year olds, followed by the 15-19 year olds.
- A larger proportion of helmet use‡ was reported for younger children as compared to older children.
- 69.3% of longboarders and 41.1% of skateboarders were reported to be wearing a helmet at the time of injury.

FIGURE 3
Percentage of ER Visits by Age Group, BCCH, 2011-2013



Note: * Represents fewer than 5 cases.

FIGURE 4
Percentage of ER Visits by Age Group and Helmet Use,
BCCH, 2011-2013

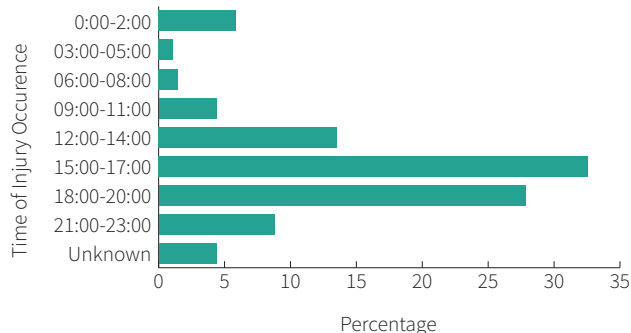


Note: * Represents fewer than 5 cases.

TIME, DAY AND MONTH (FIGURE 5):

- Injuries for longboarding and skateboarding occurred most often between 3:00—5:00pm (32.6%), followed by 6:00—8:00pm (27.8%). Peak times remained relatively consistent throughout the week.
- Longboarding and skateboarding ER visits peaked during summer months, from June to September. The highest ER visit occurrences were reported in June and August.

FIGURE 5
Percentage of Longboarding and Skateboarding Injuries by
Time of Occurrence,^A BCCH, 2011-2013



Note: Data were excluded when only AM or PM was indicated.

Limitations

- A number of cases did not specify whether safety equipment was used or not during time of injury (11.3%).
- A number of cases did not specify the time of day the injury occurred (4.1%).
- Children >18 years may not have gone to the ER at Children's Hospital; they may have been treated on an outpatient basis at another hospital or a clinic.

Evidence-Based Preventative Strategies

Preventative strategies exist in order to minimize the risk of injury due to longboarding and skateboarding.

- Wear a properly fitted helmet, two finger widths above the eyebrows and with snugly fitted chinstraps.^{1,5,6}
- When skateboarding, wear an appropriate skateboarding helmet. Skateboarding helmets are designed to protect the back of the head against multiple falls.^{6,7,8}
- Wrist guards, elbow and kneepads can reduce injury severity.^{8,9}
- Ride in the daytime and wear bright clothing.⁷
- Be aware of the rules of the road, ride in a straight line and signal other road users before turning or stopping.⁷
- Ensure your device is in safe riding condition.⁷

Bylaws

Each municipality in Greater Vancouver has its own rules and regulations around longboarding and skateboarding outlined in their bylaws. Refer to your municipalities document (street and traffic bylaw) to identify legislations in your area.

WHAT TO LOOK FOR IN YOUR MUNICIPALITY'S BYLAW:

- **Definitions:** definitions for longboarding, skateboarding, highway, roads and lanes differ in each bylaw.
- **Location:** restricted locations for longboarding and skateboarding differ in each municipality including certain prohibited streets, riding near the right of the road, streets with certain speed limits and others.
- **Helmet use:** rules and regulations differ for each municipality.
- **Headphones:** certain municipalities have rules regarding use of headphones while riding a longboard or skateboard.
- **How to ride:** certain municipalities outline rules for how to ride on a longboard or skateboard (positioning, sharing the road, crosswalk or sidewalk, riding attached or being towed by another person or vehicle).
- **Times:** some municipalities have restrictions regarding time of day (for example no boarding between dusk and dawn) for longboarding or skateboarding activities.
- **Please see your own municipality's website for more information.**



Conclusion

This *Injury Insight* provides an overview of ER visits relating to skateboarding and longboarding among children and youth. Many similarities and differences were detected among injuries to due to longboarding as compared to skateboarding. More research is required to understand longboarding injuries specifically.

REFERENCES:

- 1 Keays, G., & Dumas, A. (2014). Longboard and skateboard injuries. *Injury*, 45(8), 1215–1219. <http://doi.org/10.1016/j.injury.2014.03.010>
- 2 Huchcroft, S. A., Mcgowan, C. R., & Mo, F. (2013). Injuries related to consumer products in Canada: A systematic literature review, 33(3), pp. 15–17.
- 3 Lindsay, H., & Brussoni, M. (2014). Injuries and helmet use related to non-motorized wheeled activities among pediatric patients. *Maladies Chroniques Et Blessures Au Canada*, 34(2/3), 74-81.
- 4 CBC News (2014, September 28). Dustin Mackenize's death renews calls to make longboarding safer. CBC News. Retrieved from: <http://www.cbc.ca/news/canada/british-columbia/dustin-mackenzie-s-death-renews-calls-to-make-longboarding-safer-1.2780586>
- 5 Burkhart, T. A., & Andrews, D. M. (2010). The effectiveness of wrist guards for reducing wrist and elbow accelerations resulting from simulated forward falls. *Journal of Applied Biomechanics*, 26. Pp. 281-289.
- 6 Canada Safety Council (2014). Don't lose your head over helmet safety. Retrieved from: <https://canadasafetycouncil.org/news/dont-lose-your-head-over-helmet-safety>
- 7 Page, J. L., Macpherson, A. K., Middaugh-Bonney, T., & Tator, C. H. Prevalence of helmet use by users of bicycles, push scooters, inline skates and skateboards in Toronto and the surrounding area in the absence of comprehensive legislation: An observational study. *Injury Prevention*, 18(2), 94-97. doi:10.1136/injuryprev-2011-040029
- 8 Parachute (n.d.) Safe skateboarding. Retrieved from: <http://www.parachutecanada.org/injury-topics/item/safe-skateboarding1>
- 9 Parachute (n.d.) Wheeled activities. Retrieved from: <http://www.parachutecanada.org/injury-topics/item/wheeled-activities1>

FOOTNOTES:

* **Downhill** was a derived variable extracted from the CHIRPP Injury Even Description or Narrative, where going downhill was mentioned.

** **Location** is a derived variable taken from the variable Location in the CHIRPP data, which is the location where the injury occurred, and was further grouped into simplified variables as follows:

- Home (Own house, own apartment, own home NFS, Incl home on military base, own foster home; home [cottage or cabin] ownership unspecified; other house, other apartment, other home NFS, Incl other home on military base, someone else's foster home)
- School (School incl kindergarten through secondary, Incl CEGEP, Tertiary and adult education institutions, Incl community college, university, Royal Military College)
- Park (public park, incl local, provincial, national, conservation area, Peggy's Cove, Fort Henry, Mont-Royal)
- Skatepark
- Road (Road incl other road, Incl lane, alley, bus stop, bridge)
- Other (camping ground, camp-ground, trailer park, Stadium, arena incl community arena for curling, indoor roller hockey, roller skating, Civic Centre, Corel Centre, Bell Centre, race track, Incl horse, motorcycle, car, go-cart, other facility for land-based sport, incl soccer field, golf course, equestrian centre, other facility for sports/recreation, NEC, incl Bowling alley, pool hall, arcade, cosmic adventure, bingo hall, shop or shopping centre, pet shop)
- Unspecified

† **FOOSH** is an acronym used to define falling on outstretched hand and mentioned in the injury event description.

†† **Body Part** is a derived variable taken from the variable Body Part 1 in the CHIRPP data, which is the body part most severely injured, and was further grouped into simplified variables as follows:

- Head and neck (Spec head injury, other head injury spec by NOI, Head, INCL scalp, skull, Cervical, Neck EXL spine/spinal cord/disc/nerves/vertebrae);
- Upper Extremity (Upper arm, including (inc) humerus, Elbow, Forearm inc radius, ulna, Wrist, inc carpal bones, Hand incl metacarpals, Finger or thumb);
- Lower Extremity and trunk (Sacrum and coccyx, Thorax incl ribs, heart lung, arm pits, lower esophagus, lower trachea, Thorax incl ribs, heart, lungs armpits, lower esophagus/trachea\upper back excl scapula\lower back\pelvis, pelvic contents, bladder, buttocks, rectum, internal genitalia, Hip incl neck of femur, Knee incl patella, Lower leg incl tibia and fibula, Ankle incl tarsal bones, Foot incl metatarsals, Toe);
- Shoulder (Shoulder incl scapula and Clavicle); and
- Face: Face incl bones eyelid/periorcular area ear nose ext. mouth/jaw, Face incl eyelid/periorcular area, ear, nose, external mouth, jaw, facial bones)

‡ **Helmet Use** is a derived variable from the variables: Safety Equipment Used, Safety Device 1, Safety Device 2, Safety Device 3 in the CHIRPP data, to determine whether a helmet was worn at the time of injury.

Δ **Time of Injury Occurrence** is a derived variable from the variable Injury Time in the CHIRPP data, to group the times of injury. Times were simplified into groups and rounded up to the nearest hour when they ended in 00:30 and higher. Times where only AM or PM was indicated were included in the unknown group.