

Canadian Academy of Sport and Exercise Medicine Position Statement: Mandatory Use of Bicycle Helmets

Richard Goudie, MD, BSc, Dip Sport Med and Jessica L. Page, MD, BSc

(Clin J Sport Med 2013;23:417–418)

INTRODUCTION

The Canadian Academy of Sport and Exercise Medicine (CASEM) has updated the position statement regarding the support for mandatory use of bicycle helmets. This revises the previous version written in 2002. This statement reflects changes that occurred during the past 10 years. There has been more focus on the adoption of the helmet as a protective device and the means to promote its use including educational and legislative efforts. These recommendations are made with the support of scientific studies and systematic reviews of existing evidence.

BACKGROUND SCIENTIFIC INFORMATION

Around the world, bicycles are used daily for transportation, exercise, and recreation. Their use is becoming more recognized as a form of environmentally protective mode of transportation. All age groups are represented among cyclists. Cycling is not without risk. Reported hospitalizations related to cycling in Canada between 1994 and 2004 represented 2% of hospitalized injuries.¹ Head injuries account for about 35% to 40% of pediatric hospitalizations resulting from bicycle-related trauma.² Much attention has been directed at bicycle safety and decreasing cycling injuries. Wearing a properly fitted helmet decreases head injuries by 63% to 88% in all ages of bicyclists.³ Helmets are also protective against upper facial injuries.³ As the protective value of wearing a helmet is recognized, efforts are now directed at encouraging cyclists to adopt this protective method. Even where education campaigns have been shown to increase the utilization of helmets,⁴ many countries are introducing helmet-wearing legislation to increase helmet use. Although safety benefits have been demonstrated, opponents to helmet legislation have concerns that ridership will decrease if people are required to wear helmets thus eliminating the health benefits of this activity. Evidence has shown increased helmet use with introduction of legislation.^{5,6} This is associated with a decreased injury rate and has not been shown to decrease ridership.^{5,7}

Multiple studies have shown consistent evidence that wearing appropriate bicycle helmets results in significant decrease in head injuries by up to 88% and facial injuries by 65%.³ However, despite this evidence, the lower cost and increased comfort of bicycle helmets, utilization of bicycle helmets has not been universally adopted. United States data in 1999 revealed that, depending on the state, 13% to 65% of children reported always wearing a helmet while cycling.⁶ A Canadian survey found that between 30% and 73% of bicyclists self-reported wearing helmets, depending on the province and the status of legislation.⁷ An observational study in Ontario, where helmets are only required by law by bicyclists under 18 years of age, found the prevalence of helmet use to be approximately 50% of all age riders on average, with use dropping to 35% in casual bicyclists (ie., noncommuters).⁸ In view of the health benefits of the activity and the demonstrated decreased injury rates, the focus has been directed in increasing helmet wear by participants.

Certain jurisdictions around the world including Australia, New Zealand, the United States, and Canada have introduced legislation in order to overcome this resistance. The population's ages affected by these new laws and the enforcement of this legislation varies among the different jurisdictions. Recent research related to the wear of bicycle helmet utilization has focused on the effectiveness of these programs. In Canada, 4 provinces mandate use by all age groups (British Columbia, Nova Scotia, Prince Edward Island and New Brunswick) and 2 mandate use by those of less than 18 years of age (Ontario and Alberta). One study noted that children cycling with adults wearing a helmet were more likely to wear a helmet (95%) versus those cycling with adults not wearing one (41%).⁹ Using self-reported data, bicyclists in a province with legislation requiring helmets for all ages were many times more likely to report wearing a helmet than those in a province with no helmet legislation (Odds Ratio, 8.99, 95% Confidence Interval, 6.87–11.75).⁷ Implementation of bicycle helmet use has not only found increased utilization but also a decrease in head injuries.^{5,7}

Based on available data, it appears that any legislation will increase the use of helmets. The varying success of these new rules appears to be multifactorial, with greatest effect in areas with lower baseline helmet use and in those where laws apply to all ages.^{10,11} Youth populations were more likely to wear a helmet when legislation applied to all ages as opposed to only 18 years and younger.⁷ The fit of a bicycle helmet is important to obtain maximum benefit from its use. One study reported a 1.96-fold increase in head injury among those who sustained injury riding a bike while wearing a poorly fitted

Submitted for publication June 12, 2013; accepted September 10, 2013.

From the Sport Safety Committee, Canadian Academy of Sport and Exercise Medicine, Ottawa, Ontario, Canada.

Corresponding Author: Richard Goudie, MD, BSc, CCFP, Dip Sport Med, 16 Fawn Cr, Barrie, ON L4N 7Z5, Canada (rgoudie@rogers.com).

Copyright © 2013 by Canadian Academy of Sport & Exercise Medicine. All rights reserved. The Canadian Academy of Sport & Exercise Medicine has granted the Publisher permission for the reproduction of this article.

helmet compared with those sustaining injury while wearing a helmet with optimal fit.¹²

There is still some sentiment that legislating the use of bicycle helmets will discourage bicycle riding.^{13,14} Interest is growing in this area of injury prevention, as the implementation of laws and education campaigns have been in effect for some time. Analysis of behavioral changes is now taking place. Early post-legislation observation in Ontario has shown no change in bicycling trends in young children between 1993 and 1999.¹² Recent research has found implementation of helmet legislation was not related to decreases in recreational and commuting bicycle use.^{7,15} Enforcement of rules is another issue mentioned by opponents of legislation. Not much available data exists regarding this aspect of law implementation. A study conducted in Georgia (United States) looked at the differences in helmet use before and after enforcement of the rules and found a definite increase in the adoption of the helmet by cyclists.¹⁶

RECOMMENDATIONS

The Canadian Academy of Sport and Exercise Medicine presents its position regarding the wearing of bicycle helmets, providing information for medical professionals and members of the general public who support the mandatory use of bicycle helmets.

The Canadian Academy of Sport and Exercise Medicine position on bicycle helmet use includes:

- That all Provincial and Territorial governments should enact comprehensive legislation mandating that bicyclists of all ages wear helmets.
- All organized sporting events associated with cycling should require mandatory use of helmets by all participants.
- The Canadian Academy of Sports and Exercise Medicine recommends that cyclists select ANSI, SNELL, CSA, or CPSC approved helmets. Effective protection requires properly fitted helmets, which includes a snug fit and coverage of the user's forehead.
- The Canadian Academy of Sports and Exercise Medicine supports programs that promote helmet usage and support affordability.

The Canadian Academy of Sport and Exercise Medicine supports the above statements based on the existing evidence showing:

- Helmet use in cyclists significantly decreases head and facial injuries
- Helmet use is increased by legislation of all-ages groups
- Legislation does not decrease participation in the activity

REFERENCES

1. Canadian Institute for Health Information. Head injuries in Canada: a decade of change (1994-1995 to 2003-2004). Toronto, Ontario. Canadian Institute for Health Information, 2006.
2. Durkin MS, Laraque D, Lubman I, et al. Epidemiology and prevention of traffic injuries to urban children and adolescents. *Pediatrics*. 1999;103:e74.
3. Thompson DC, Rivara FP, Thompson R. Helmets for preventing head and facial injuries in bicyclists. *Cochrane Database Syst Rev*. 2001; CD001855.
4. Royal ST, Kendrick D, Coleman T. Non-Legislative interventions for the promotion of cycle helmet wearing in children. *Cochrane Database Syst Rev*. 2005;CD003985.
5. Macpherson A, Spinks A. Bicycle helmet legislation for the uptake of helmet use and prevention of head injuries. *Cochrane Database Syst Rev*. 2008;CD005401.
6. Karkhaneh M, Kalenga JC, Hagel BE, et al. Effectiveness of bicycle helmet legislation to increase helmet use: a systematic review. *Inj Prev*. 2006;12:76-82.
7. Dennis J, Potter B, Ramsay T, et al. The effects of provincial bicycle helmet legislation on helmet use and bicycle ridership in Canada. *Inj Prev*. 2010;16:219-224.
8. Page JL, Macpherson AK, Middaugh-Bonney T, et al. Prevalence of bicycle helmet use in Ontario in the absence of comprehensive legislation: an observational study [podium presentation abstract]. *Clin J Sport Med*. 2010;20:239.
9. Khambalia A, MacArthur C, Parkin PC. Peer and adult companion helmet use is associated with bicycle helmet use by children. *Pediatrics*. 2005;116:939-942.
10. Cote TR, Sacks JJ, Lambert-Huber DA, et al. Bicycle helmet use among Maryland children: effect of legislation and education. *Pediatrics*. 1992; 89:1216-1220.
11. Leblanc JC, Beattie TL, Culligan C. Effect of legislation on the use of bicycle helmets. *CMAJ*. 2002;166:592-595.
12. Rivara FP, Astley SJ, Clarren SK, et al. Fit of bicycle safety helmets and risk of injury in children. *Inj Prev*. 1999;5:194-197.
13. Robinson DL. Head injuries and bicycle helmet laws. *Accid Anal Prev*. 1996;28:463-475.
14. Robinson DL. Bicycle helmet legislation: can we reach a consensus? *Accid Anal Prev*. 2007;39:86-93.
15. Macpherson AK, Parkin PC, To TM. Mandatory helmet legislation and children's exposure to cycling. *Inj Prev*. 2001;7:228-230.
16. Gilchrist J, Schieber RA, Leadbetter S, et al. Police enforcement as part of a comprehensive bicycle helmet program. *Pediatrics*. 2000;106: 6-9.