might be more appropriate to change the name of the journal to *JOMA: Journal of the Ontario Medical Association*.

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Reference

1. Thomas J, Hoey J. Introducing *CMAJ*'s Readers' Advisory Panel [editorial]. *CMAJ* 2003;169 (7):676.

[A Deputy Editor responds:]

In our efforts to ensure that *CMAJ* readers working in community settings were represented on the Readers' Advisory Panel,[1] we overlooked the fact that so many of the physicians we selected were from Ontario. When we add new members to the panel in the future, we will try for a more balanced geographic representation.

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Reference

1. Thomas J, Hoey J. Introducing *CMAJ*'s Readers' Advisory Panel [editorial]. *CMAJ* 2003;169 (7):676.

Missing information on DEET

In their review of the safety implications of DEET (*N*,*N*-diethyl-*m*-toluamide) for children and pregnant and lactating women, Gideon Koren and associates[1] did not mention the results of animal trials involving dermal application of this repellent.

Abdel-Rahman and colleagues[2] reported diffuse neuronal cell death in the brains of adult rats after 6 days of daily dermal application of DEET. They concluded that motor deficits and dysfunction of learning and memory could ensue from these changes. Similarly, Abou-Donia and collaborators[3] observed impaired sensorimotor performance in rats at 30, 45 and 60 days after 60 days of daily dermal application of DEET. The impossibility of such studies in humans necessitates consideration of these data in any risk analysis.

It appears that the review by Koren and associates[1] deals only with acute adverse reactions and that no long-term controlled trials measuring neurologic function in humans after dermal application of DEET have been done.

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1. Koren G, Matsui D, Bailey B. DEET-based insect repellents: safety implications for children and pregnant and lactating women. *CMAJ* 2003; 169(3):209-12.
2. Abdel-Rahman A, Shetty AK, Abou-Donia MB. Subchronic dermal application of *N*,*N*-diethyl-*m*-toluamide (DEET) and permethrin to adult rats, alone or in combination, causes diffuse neuronal cell death and cytoskeletal abnormalities in the cerebral cortex and the hippocampus, and Purkinje neuron loss in the cerebellum. *Exp Neurol* 2001;172(1):153-71.
3. Abou-Donia MB, Goldstein LB, Dechovskaia A, Bullman S, Jones KH, Herrick EA, et al. Effects of daily dermal application of DEET and epermethrin, alone and in combination, on sensorimotor performance, blood–brain barrier, and blood–testis barrier in rats. *J Toxicol Environ Health A* 2001;62(7):523-41.

[One of the authors responds:]

Robert Nevin cites 2 studies on the effects of DEET in rats[1,2] without mentioning the most important variable in such research, the dose applied. Many compounds, including water, will cause toxic effects if given in large enough doses. In both studies cited by Nevin, the doses given were astronomical (between 4 and 400 mg/kg body weight), but these doses are not relevant to the use of DEET in humans. In contrast, the findings from several studies in rodents, such as that by Schoenig and colleagues,[3] have not concurred with the results obtained by Abdel-Rahman and associates[1] or Abou-Donia and collaborators.[2]

The anxiety regarding the toxic effects of DEET in young children has stemmed from a small number of widely publicized case reports of acute seizures in toddlers, as cited in our article.[4] However, our analysis suggests that an association between the seizures and use of DEET is unlikely.[4] To the best of our knowledge, no similar claim has been made regarding chronic neurotoxicity of DEET in children, and no published clinical data have been presented to support such a possibility.

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1. Abdel-Rahman A, Shetty AK, Abou-Donia MB. Subchronic dermal application of *N*,*N*-diethyl *m*-toluamide (DEET) and permethrin to adult rats, alone or in combination, causes diffuse neuronal cell death and cytoskeletal abnormalities in the cerebral cortex and the hippocampus, and Purkinje neuron loss in the cerebellum. *Exp Neurol* 2001;172(1):153-71.
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3. Schoenig GP, Osimitz TG, Gabriel KL, Hartnagel R, Gill MW, Goldenthal EJ. Evaluation of chronic toxicity and oncogenicity of DEET. *Toxicol Sci* 1999;47:99-109.
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Bodychecking in hockey

Anthony Marchie and Michael Cusimamo,[1] in reviewing some of the available research, have established that concussions are more likely to occur when hockey is played with body contact and that concussions may have serious effects on the well-being and functioning of children. In my clinical and research work, I have seen the often-devastating effects of traumatic brain injury, including concussions, from a variety of causes. As the coach of a competitive girls' hockey team, I have seen the high calibre of hockey that is possible without bodychecking. And as the parent of an 11-year-old boy, I have observed concussions occurring as the result of even "clean" bodychecks and have worried about the safety of our children.

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Reference
1. Marchie A, Cusimano MD. Bodychecking and concussions in ice hockey: Should our youth pay the price? [editorial]. *CMAJ* 2003;169(2):124-8.

Twenty-five years ago the Canadian Association of Surgeons (Western Division), of which I was a member, wrote to hockey administrators condemning the violence that was creeping into hockey. Unfortunately, as outlined by Anthony Marchie and Michael Cusimano,[1] the level of violence has only increased since then.

The commentators on CBC's *Hockey Night in Canada* have, in my view, been partly responsible for this increase. First came Howie Meeker and his admonition to "finish the check." When youngsters become old enough to play in leagues where bodychecking is allowed, they are urged by coaches and sometimes parents to finish the check — in other words, to violently hit their opponent, whether or not he or she has the puck. Then along came Don Cherry, who seems to emphasize hitting as the most important skill in hockey, with his "rock 'em, sock 'em" version of the sport.

Marchie and Cusimano[1] do not address the question of how the interpretation of the rules relates to bodychecking. Professional hockey is about entertainment and money. Thus, in professional hockey and, to a lesser degree, professional junior and minor hockey, referees are instructed in how to enforce the rules, so as not to slow the tempo of the game. What today is accepted as bodychecking would in my time have been called charging, boarding or even intent to injure.

A change in attitude is needed to curb hockey violence. Bodychecking should be curbed by enforcing established rules and dealing appropriately with the violence that permeates hockey and, some would say, society at large. Children do not need to be taught how to give or take bodychecks; rather, they should be learning how to skate, stick-handle, pass and shoot, as well as how to carry and pass the puck with their heads up, to avoid the occasional legal bodycheck.

Let's take the violence out of hockey by enforcing the rules, not by trying to remake the game.

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Reference
1. Marchie A, Cusimano MD. Bodychecking and concussions in ice hockey: Should our youth pay the price? [editorial]. *CMAJ* 2003;169(2):124-8.

There are several problems with the analysis of bodychecking and concussions by Anthony Marchie and Michael Cusimano.[1] They quote statistics from the popular media alongside those from peer-reviewed journals, their essay contains some inaccurate numbers, and they are selective in their use of the available data.

For instance, citing Honey's review[2] of articles published between 1966 and 1997, they state that there were 2.8 concussions per 1000 player-hours for participants aged 5 to 17; however, the concussion rates reported in the 4 studies reviewed by Honey[2] were 0.0, 0.5, 1.5 and 2.8, and only the last of these had data for players 5 to 17 years (the age range was narrower for the other 3 studies). Furthermore, Marchie and Cusimano neglect to share 2 major conclusions of that review:[2] that the incidence of concussion increases with the level of play and that it has been decreasing in children 5 to 14 years of age.

Elsewhere, Marchie and Cusimano use injury data from high school, university and elite-level players to support their conclusion that our children, and perhaps Canadian society as a whole, would be better off if there was no more checking at the youth level. However, the data from the cited studies[3-5] support the concept that injury rates climb along with the size and speed of the players.

The American Academy of Pediatrics also endorses the no-checking concept for children.[6] They weight heavily data from a small prospective study of hockey injuries in 150 boys, 9 to 15 years of age, over a season.[7] However, most of the 52 injuries (sustained by 44 players) were contusions, sprains and strains. Disability was defined as time away from physical activity, not days missed from school or admission to hospital. Fracture, not concussion or catastrophic injury, is why the American Academy of Pediatrics suggests that checking should be proscribed.

Current data do not support the notion that serious injury is a major risk of ice hockey at the more junior levels. It is only when speed and strength outpace judgement, in mid and late adolescence, that the game becomes hazardous. Rather than banning checking in the younger age groups, a concerted international effort should be made to rid hockey of dangerous behaviours, such as checking from behind. Catastrophic injury in football dropped dramatically when spearing was eliminated in the 1970s.[3] Surely similar rule changes could be instituted and enforced for hockey.

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7. Brust JD, Leonard BJ, Pheley A, Roberts WO. Children's ice hockey injuries. *Am J Dis Child* 1992;146:741-7.

Kudos to Anthony Marchie and Michael Cusimano[1] for their informative and valuable article regarding an issue that affects many Canadian families. However, the authors make an erroneous extrapolation. In examin-