

Heelys injuries in children

Oh D, Arjandas M, Lim K B L, Lee E H

ABSTRACT

Introduction: Heelys, a type of shoes with stealth wheels, are extremely popular among children in Singapore. The widespread availability of cheap imitations has led to a proliferation of young users. Coupled with a total lack of safety equipment and instructions, these shoes can lead to significant injuries. The purpose of this study was to examine the incidence and type of injuries sustained by children using Heelys.

Methods: During a seven-month period from February to August 2004, all children treated at the Paediatric Orthopaedic Department of the KK Women's and Children's Hospital, were asked if the injury was sustained while "heeling". All the patients were reviewed by the authors. A total of 37 patients with significant injuries sustained while "heeling" were identified. Their radiographs and clinical charts were reviewed. The patients and/or their parents were also interviewed to obtain additional information.

Results: Upper limb injuries were by far the most common. Distal radius fractures and elbow injuries predominated. None of the children used safety gear.

Conclusion: "Heeling" can lead to serious injuries despite the relatively low velocity involved. Children and their parents need to be educated on the use of safety gear.

Keywords: children, heeling, Heelys, limb injuries, sports injuries

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INTRODUCTION

Heelys™ were first introduced in the United States in 2000. Touted as "lightweight athletic shoes with stealth wheels", they sparked an immediate interest; especially among the rollerbladers and skateboarders.

They allowed the wearer to perform similar stunts with the additional freedom of converting to "normal" shoes by just shifting the weight to their toes. "Heeling" was accomplished by allowing the stealth wheel in the heel to roll, usually with the forward momentum built up by a running start.

While the original manufacturer advocates the use of safety equipment, a big draw for this shoe is the ability to "heel" anytime and anywhere, making safety gear a bother. The popularity of the original Heelys™ has also spawned many imitations. These are available at neighbourhood stores and night markets in Singapore for a fraction of the original cost, making it more accessible to children who have taken to "heeling" in a very big way, with many owning a pair of these shoes. The imitations usually do not come with any instructions for safe use. For the purposes of this study, the term Heelys is used to denote all shoes with similar stealth wheels built into the heel.

Widespread use among children with little instruction and no safety gear has led to significant injuries being seen at our hospital. However, a PubMed search revealed no studies on this subject. Our study was thus undertaken to address this deficiency.

METHODS

From February to July 2004, all patients seen at the Paediatric Orthopaedic clinic of the KK Women's and Children's Hospital for Heelys-related injuries were included. These were children who had sustained significant injuries while "heeling" and referred from our emergency department for orthopaedic assessment. The term "Heely" is used to describe all shoes fitted with wheels in the heels, regardless of origin. Many of the shoes used by the patients in this study were in fact imitations of the original Heelys™.

Data from children with minor injuries were not captured as they were not seen by our department. Those whose history of Heely use was not elicited were also not captured. Hence, it is probable that the number of injuries sustained during the study period was larger than recorded.

Department of
Paediatric
Orthopaedics
KK Women's and
Children's Hospital
100 Bukit Timah Road
Singapore 229899

Oh D, MMed, FRCSE,
Associate Consultant

Arjandas M, MBBS,
FRCSE, FAMS
Consultant

Lim KBL, FRCS,
FRCSE, FAMS
Associate Consultant

Lee EH, MD, FRCS,
FAMS
Professor and Head

Correspondence to:
Dr Derrick Oh
Tel: (65) 6357 7714
Fax: (65) 6357 7715
Email: derrickoh@
tsh.com.sg

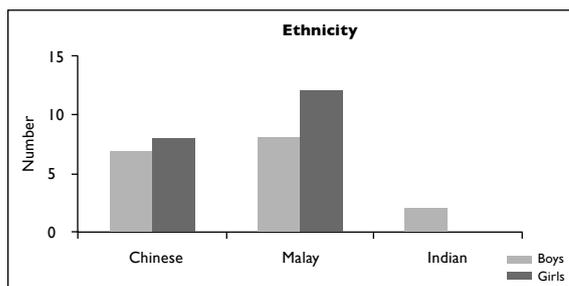


Fig. 1 Ethnicity of child.

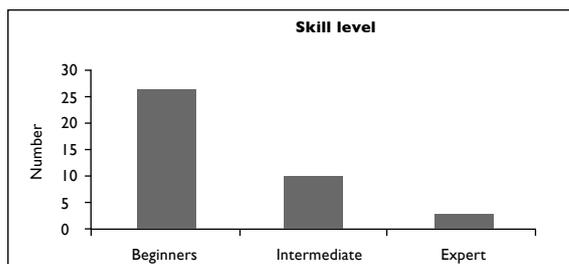


Fig. 2 Skill level as reported by child.

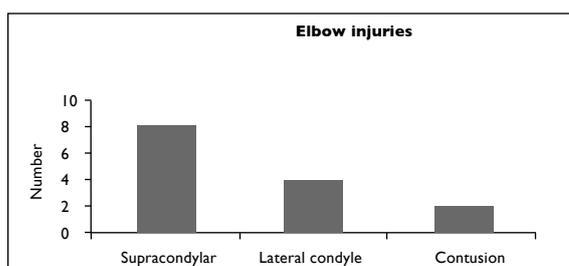


Fig. 3 Pattern of elbow fractures sustained.

RESULTS

37 patients were included in our study. The average age was 8.8 (range 4-12) years. There were 17 boys and 20 girls. The average age of the boys was older (9.5 years versus 8.2 years for girls). There were 15 Chinese, 20 Malays and two Indian children in the study (Fig. 1). 18 patients (44.8%) were injured during the school holidays or weekends. When asked to rate their own skill level, two claimed to be experts, nine were of intermediate level, and 26 professed to be beginners. The average amount of experience was about 1.5 (range 0-6) months, with 13 having had the shoes for less than one month. In fact, eight children fell on their very first attempt at “heeling” (Fig. 2). All 37 sustained their injuries while “heeling” without wearing any safety equipment. None of them were performing stunts when the injury happened. 28 patients (76%) reported slipping backward while on level ground.

Only one patient had a lower limb injury (two metatarsal fractures). The rest had upper limb injuries. 20 patients had Salter-Harris type II extra-

articular distal radius fractures (55%), 14 sustained elbow injuries (34%), one had a clavicle fracture, and one had a finger fracture. Of the 20 patients with distal radius fractures, 14 (69%) fractured their non-dominant side. The elbow injuries comprised eight supracondylar, four lateral condyle and two elbow contusions (suspicious of fracture when first seen at the emergency department). There were no open fractures sustained among our patients, possibly because of the low velocity at which the injuries occurred (Fig. 3).

Five patients (10%) required manipulation of the fracture to effect reduction, and operative management was necessary for a displaced humeral lateral condyle fracture. She was also the only patient who required admission. All 37 patients had their injured limb immobilised for an average duration of four (range 1-8) weeks. Their injuries required an average of 3.4 (range 1-6) clinic visits to resolve, including the initial emergency consult.

The average cost of the medical treatment was \$193 (range \$60 to \$1,469). The outlier who had the highest bill required admission, operative management for her displaced humeral lateral condyle fracture and subsequent removal of the implants. When this child was excluded, the average bill size shrank to \$157.

DISCUSSION

There have been numerous studies on skateboarding and rollerblading injuries but none on “heeling”. While all three share similar characteristics, “heeling” has a strong attraction for younger children. Because of the low velocities involved while “heeling”, it is erroneously perceived as being safe, even without the use of safety equipment. None of the 37 children reported using any safety equipment at the time of injury. More glaring is the fact that none of them owned any safety equipment.

The predominance of distal radius fractures is similar to that seen in rollerblading injuries⁽²⁻⁵⁾. But while few bladers would skate without their wrist guards, the same cannot be said for “heeling”. Unlike sports like rollerblading and cycling, Heelys provide a built-in versatility, allowing children to “heel” whenever the fancy strikes them. They are thus less likely to go put on safety gear first. This trend is unlikely to change.

The cost of injuries due to “heeling” is high, not just in terms of bill size but also for pain endured and time lost from activities. Each clinic visit also necessitated at least an adult to accompany the patient; at an average of 3.4 visits, this resulted in even more hidden costs. The increased number

of cases seen during holidays is to be expected; especially among children with lots of time and little supervision. Previous rollerblading studies have shown that Sunday is the most common day of the week for fractures to occur⁽¹⁾.

The lack of uniformity in equipment use meant that shoe size could not be studied as a possible variable. This could be important as a higher wheel to sole size ratio might result in more slipping. Only three of our patients declared their intention to continue using their Heelys. Interestingly, only one had parental approval to do so.

From our study, it is clear that significant injuries can occur while "heeling". Although most will recover fully, time spent in a cast is time lost from useful activity. While most of our patients appeared

to have learnt their lesson with regard to the use of safety equipment, it has been at a considerable price. We hope that with education and closer supervision, such injuries can be avoided, making "heeling" a safe and enjoyable experience.

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