ROLLER SKATING — IS IT A DANGEROUS SPORT?

P. Y. T. TSE, MB, BS, FRACS, FRCS, FRCS, W. Y. SHEN, MB, BS, FRCS,
K. M. CHAN, MB, BS, FRCS, FRCS, FRCS(Orth), MCh (Orth) and P. C. LEUNG, MS, FRACS, FRCS
Department of Orthopaedic & Traumatic Surgery, The Chinese University of Hong Kong

ABSTRACT

A prospective survey of 111 cases of roller skating injuries within one year are reported. Males were more commonly injured than females. There was a high incidence (86%) of serious injuries, 28% of which required surgical treatment. The wrist (23%) was the commonest region involved, followed by the shoulder (20%), the elbow (15%) and the ankle (12%). Collision with other skaters and loss of control were the main factors leading to injury. Better rink discipline, instruction classes and safety publicity should be helpful in minimising accidents.

Key Words: Roller skating, Injury.

INTRODUCTION

Roller skating has rapidly become revived as a popular sport and this trend has spread to Hong Kong. With the opening of an indoor rink in the vicinity of our hospital, we observed a steady increase in the number of roller skating injuries requiring treatment. A prospective survey was therefore designed to study the epidemiology and pattern of such injuries.

PATIENTS AND METHODS

During the period from August 1985 to August 1986, all patients presenting to the Accident and Emergency Department of the Prince of Wales Hospital with injuries sustained while roller skating were recorded and followed up. A standard data form was completed for analysis. The data included demographic information, experience on roller skating, reasons for the accident, action during injury, the nature of injury, treatment and resulting disability.

Fig. 1: Age distribution of injured skaters.

A total of 111 patients were seen during the 13 months of the survey. This compared with a total of 2043 patients with sports injuries seen within the same period. There were 69 males and 42 females. The ages ranged from 10 to 39 years, with a mean of 16 (Fig. 1). 64 patients required admission into hospital for various procedures which involved the use of anaesthesia, or X-ray image intensifier screening. The

remaining 47 patients were treated by an orthopaedic registrar in the Accident and Emergency Department before discharge home. All the patients were followed up in the orthopaedic department until final discharge.

RESULTS

Of the 111 injuries, there were 81 fractures, 14 dislocations, 8 ligament injuries and 7 soft tissue injuries. Among the 95 fractures and dislocations, the upper extremity was involved in 75.8% and the lower extremity in 24.2%. There was, in addition, one case of atlanto-axial subluxation of the cervical spine, representing the most severe injury in the present series (Figs. 2, 3). The wrist was the commonest

Fig. 2: X-ray cervical spine, extension view showing normal alignment.

Fig. 3: X-ray cervical spine, flexion view showing subluxation of C1 on C2.

region involved (23%), the shoulder ranked second (20%) and the elbow third (15%) (Table 1). Over half of the fractures and dislocations required manipulative reduction or plastering (55%), 31 patients (27.9%) underwent operative treatment, the rest were treated conservatively (Fig. 4).

Eighty-two per cent of injuries occurred in a single skating rink which is situated approximately 4 km from our hospital. The majority of the victims were beginners, 10 patients were first-time skaters. Nineteen per cent were relatively experienced and had more than 100 hours of skating experience. None of the skaters received any proper coaching: 77 of them were learning on their own whilst the rest just followed the example of their friends. Skaters attributed the cause of injuries to collision with others in 66 incidents, loss of control in 30 and over-crowding in 6. The rest had a combination of causative factors. 63 skaters were skating forwards at the time of the accident, 5 were skating

Address for correspondence:

P. Y. T. Tse,
Department of Orthopaedic and Traumatic Surgery
The Chinese University of Hong Kong
Prince of Wales Hospital
Hong Kong

TABLE I
Pattern of injuries

Neck	Subluxation C1 on C2	1
Shoulder	Contusion	3
	Dislocation	5
	Fracture clavicle	9
	Fracture neck of humerus	5
Elbow	Contusion	3
	Dislocation	9
	Fracture radial head	1
	Fracture olecranon	2
	Fracture humeral condyle	2
Forearm	Fracture radius and ulna	12
Wrist	Fracture distal radius	23
	Fracture scaphoid	2
	Ligamental sprain	1
Hand	Fracture metacarpal or phalanges	2
Pelvis	Fracture coccyx	1
Hip	Fracture neck of femur	1
Knee	Fracture femoral condyle	1
	Medial collateral ligament injury	4
	Posterior cruciate ligament injury	3
Leg	Fracture tibia and/or fibula	7
Ankle	Ankle fracture	13

Fig. 4:
Methods of treatment.

backwards, 11 were turning circles, and 21 were being towed along in a human chain.

DISCUSSION

Roller skating is becoming a popular sport. Our hospital is attending to a significant number of such injuries due to its proximity to a roller skating rink in a newly developed town where the population is mostly young and active.

A number of reports have been published analysing various epidemiological and injury profiles of roller skating (Bunker, 1983; Ferkel et al, 1981; Kvidera and Frankel, 1983). In these reports, females were involved more commonly. Our series, however, showed a male to female ratio of 1.6:1. This may be explained by the more reserved attitude of the Chinese female.

An important finding from our series is the number of severe injuries requiring admission for treatment, which involved the use of anaesthesia or manipulation under X-ray image intensifier screening. Eighty-six per cent of our

patients had fractures or dislocations and 25% of them required operative treatment. This is in contrast to the reported incidence of serious injuries which ranged from 13% to 64% (Bunker, 1983; Esses et al, 1982; Ferkel, 1981; Sedlin et al, 1984). In our society, traditional Chinese bone-setting is still rife and is a popular method of treatment for minor sports injuries. Our previous survey among a group of young university students indicated that 16% of the injuries were attended by bone-setters and 13% by western trained doctors (Chan et al, 1984). Among the general public, the proportion seeking traditional treatment may be even higher. Therefore, our figures of 86% of severe injuries may be slightly biased, but this figure certainly indicated that roller skating can be a dangerous sport and deserves better control.

Most of the fractures and dislocation required a short period of hospital admission for proper assessment and treatment as there are insufficient facilities and excessive workload at the Accident and Emergency Department. The follow-up work is usually done on an out-patient basis. The pattern of injury from our series does not differ from the others. Similar to other reports, wrist injuries are still the commonest followed by the shoulder and the elbow. These patients tend to break their gliding fall by using their outstretched arms, which bears the brunt of the force. Despite the protective effect offered by 'high top' skates, ankle fractures still contributed to 12% of the injuries. A rotational mechanism is involved in all of these fractures, indicating the strong torsional forces involved. This was also noted by Ferkel et al (1981) who reported 10% of ankle fractures in their series.

Eighty-six per cent of our patients attributed their injuries to collision with other skaters and loss of control. Moreover, skaters often link up and skate in a human chain. The skater at the tail often cannot follow nor anticipate the events at the head end and were thus most vulnerable to injuries when the chain suddenly broke or came to a halt. The beginners were injured more frequently. They often complained that the more experienced usually skate at a high speed, thus threatening the inexperienced.

In order to minimise the chance of injury, the following suggestions are put forward:-

- 1. Enforcement of rink discipline might help to reduce the chaos, which we observed on several visits to the rink and thus reduce the chance of collision.
- 2. Setting aside some "beginner's hours" or "a beginner's rink" can help to separate the beginners from the regular skaters who skate at a much higher speed.
- 3. Skaters should be encouraged to join coaching classes to learn proper techniques and discipline.
- 4. The roller-skating management should improve the facilities for safety measures and provide first-aid treatment.

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