Skateboarding Injuries

14

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14.1 Skateboarding

14.1.1 Historical Overview

14.1.1.1 1940s to 1960s

Skateboarding was born at some point in the late 1940s or probably early 1950s. It has its roots in the culture of surfing, when surfers in California wanted something to surf when the waves were flat. The first skateboarders started with wooden boxes or boards with roller skate wheels attached to the bottom. In late 1944, French children were seen in the Montmartre section of Paris, riding on boards with roller skate wheels attached to them [1]. During this time, skateboarding was seen as something to do for fun besides surfing and was often called "sidewalk surfing." The first manufactured skateboards were ordered by a surf shop in Los Angeles, meant to be used by surfers in their downtime [2].

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14.1.1.2 1970s

In the early 1970s, specifically designed skateboard wheels made of polyurethane were developed. Until this point, skateboarders used clay or even metal wheels [3]. The improvement in traction and performance offered by this new material was so immense, that from the wheel's release in 1972, the popularity of skateboarding started to rise rapidly, causing companies to invest more in product development. As a result of the improved handling of skateboards, skateboarders started inventing new tricks. In particular, skating vertical walls of empty swimming pools was invented in 1976, which started the "vert" trend in skateboarding. Likewise, the "freestyle" movement in skateboarding became a much more specialized discipline, characterized by the development of a wide assortment of flatground tricks.

In March 1976, the first two skate parks were opened to the public (Skateboard City Skate Park in Port Orange, Florida, and Carlsbad Skate Park in San Diego County, California) [4]. They were the first of some 200 skate parks that would be built through 1982 [2]. However, particularly as a result of the increasing "vert" skating movement and the development of more dangerous tricks, skate parks were faced with liability concerns and increased insurance costs to skate park owners. Consequently, many parks had to close, and by the beginning of the 1980s, skateboarding had declined in popularity.

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14.1.1.3 1980s

Skateboard companies run by skateboarders mainly dominated this time period. The focus was initially on vert ramp skateboarding. However, the majority of skateboarders did not have access to ramps; therefore, street skating increased in popularity. Skaters sought out shopping centers and public and private property as a place to skate, leading to public opposition, in which businesses, governments, and property owners banned skateboarding on properties under their jurisdiction or ownership. Combined with the decline of vert skating, by 1992 only a small fraction of skateboarders remained, practicing a highly technical version of street skating.

14.1.1.4 1990s

Skateboarding during the 1990s became dominated by street skateboarding. While board styles have seen a dramatic evolution since the 1970s, they have remained mostly unchanged since the mid-1990s. The contemporary shape of the skateboard is derived from the freestyle boards of the 1980s, with a largely symmetrical shape and relatively narrow width.

14.1.1.5 2000 to Present

By 2001, skateboarding had gained in popularity again. The number of skateboarders worldwide increased by more than 60 % between 1999 and 2002 – from 7.8 to 12.5 million [2]. Many cities also began implementing recreation plans and statutes as part of their vision to make public lands more available, in particular for skateboarding. By 2006, there were over 2400 skate parks worldwide [2].

14.1.2 Skateboard Design: Parts of a Skateboard

The size and shape of the skateboards has been changing over time to meet the needs and demands of riders, reflecting the changing interests and styles of skaters. A traditional skateboard consists of three basic elements: the board (or deck), wheels, and trucks, which connect the wheels to the board and allow the board to turn [5].

14.1.2.1 Wheels

The wheels of a skateboard, usually made of polyurethane, are produced in many different sizes and shapes to suit the different types of skating. Larger sizes (55–85 mm) roll faster. Smaller sizes (48–54 mm) keep the board closer to the ground, require less force to accelerate, and produce a lower center of gravity but also make for a slower top speeds [5]. Wheels are available in a variety of hardnesses. Riders choose between wheels with minor differences in size, shape, and hardness, depending on the type of skating they want to do [6].

14.1.2.2 Deck or Board

Modern decks vary in size, but most are 20–25 cm wide and 70–85 cm long. Wider decks can be used for greater stability when transition or ramp skating. They are traditionally made from plies of sugar maple veneers, pressed together using polyvinyl glues. A grip tape, with a surface similar to fine sandpaper, is usually applied to the top surface of a board, to allow the rider's feet to grip the surface and help the skater to stay on the board while doing tricks [5].

14.1.2.3 Trucks

Attached to the deck are two metal trucks, which connect to the wheels. The trucks are further composed of two parts: the top part (called the *baseplate*) is screwed to the deck, while the axle runs through the part beneath, called the *hanger* (Fig. 14.1).

Between the baseplate and the hanger are the bushings that provide the cushion mechanism for turning the skateboard. The stiffer the bushings, the more resistant the skateboard is to turning. A bolt called a "kingpin" holds these parts together and fits inside the bushings. Thus by tightening or loosening the kingpin nut, the trucks can be adjusted loosely for better turning and tighter for more stability [5, 6].

14.1.3 Skateboarding Styles

A basic understanding of the skateboarding style or trick performed while being injured might help

Fig. 14.1 The side of a skateboard with the deck, truck, and wheels (Photo taken with permission at Railside Skateshop, Frankfurt/Main, Germany)

the physician to identify certain injuries and might allow him to estimate the severity of injury. Unfortunately, up to now, data on injuries suffered while performing specific skateboarding styles or tricks do not exist. Similarly, there are no figures for injuries suffered in competitive environments and by professional skateboarders [7]. Styles of skateboarding have evolved over time and are influenced by a number of factors, including sociocultural factors, mass media, and technology [7]. Styles can be broadly divided into two different categories: skateboarding to perform tricks and skateboarding as a means of transportation.

14.1.3.1 Freestyle Skateboarding

Probably the oldest style of skateboarding, freestyle skateboarding developed from the use of skateboards as a mode of transport in the 1960s. The style changed significantly with the introduction of *ollies* (see below) and other tricks in the 1970s and 1980s and the introduction of various obstacle elements [8].

14.1.3.2 Vert Skateboarding

Vert skateboarding has its origin, as previously described, in "pool riding" – the riding of skateboards in emptied backyard swimming pools – during the 1970s. It involves skateboard riders moving from the horizontal (on the ground) to the vertical (on a ramp or other incline) to perform tricks – hence the term "vert."

14.1.3.3 Street Skateboarding

Street skateboarding involves the use of urban obstacles like stairs and their handrails, benches, and other street furniture. Skaters perform tricks around, on, onto, or over these obstacles [8].

14.1.3.4 Park Skateboarding

Park skateboarding encompasses a variety of substyles adopted by those who ride skateboards in purpose-built skate parks. Most skate parks combine half-pipes and quarter pipes with various other "vert" skateboarding features, as well as "street" obstacles, such as stairs and rails.

14.1.3.5 Cruising

Skateboarding is done with any type of skateboard, where riders travel as fast as possible on ramps and through skate parks or general urban areas without tricks for as long as possible without stopping or touching surfaces.

14.1.3.6 Downhill Skateboarding

Noncompetition downhill skateboarding is one of the oldest styles of skateboarding and was popular in the early 1970s, [8]. Modern riders often use longboards for races, but some use regular skateboards for noncompetition downhill skateboarding.

14.1.4 Skateboarding Tricks

There are a countless number of tricks in skateboarding (Figs. 14.2, 14.3, and 14.4); the purpose here is only to give an idea of the type of performance.

Fig. 14.2 *Feeble grind. Grinds* are tricks in which the trucks of a skateboard, rather than the wheels, are used to slide along an object. This is a *grind* in which the back truck slides along a rail, while the front truck hangs over the rail's far side. Rider: Oliver Gordon. 24 September 2012, Wörgl, Austria (Photo courtesy of Nicola Debernardi)

The *hippie jump and* the *ollie* are fundamental skateboarding tricks, often used as the basis of other more complicated tricks.

14.1.4.1 The "Hippie Jump"

In the hippie jump, a skateboarder rides along on a flat horizontal surface at a certain velocity. He then jumps straight up without exerting any horizontal force on the board. This allows him to fly through the air at the same horizontal velocity as the board. As a result, the board remains directly below him and he is able to land on top of it [9].

14.1.4.2 The "Ollie"

The beginning of the ollie consists of two basic actions, occurring at roughly the same time. The first action is the skateboarder jumping up and off the board. This is accompanied by him pushing down quickly on the tail end of the board, causing it to rebound off the ground and bounce back up. The skateboarder then guides the board along with his feet as it flies through the air, enabling him to land back on top of it (Fig. 14.4) [9].

14.2 Skateboarding Injuries

In the last 20 years, there has been an explosion of both the popularity of adventure and extreme sports and the participation in these activities, with skateboarding at the forefront [10]. Professional skateboarders are able to control their bodies and their boards at speeds of up to 40 miles an hour, performing complex maneuvers and tricks using various equipments such as ramps, rails, banks, ledges, and half-pipes.

As in any other sport, youngsters and amateurs are attempting to imitate those professional athletes. However, with many recreational participants lacking the necessary skills, injuries are common and can sometimes be catastrophic.

14.2.1 Statistics and Demographics

According to the National Sporting Goods Association, in 2010 in the Unites States, nearly 8 million individuals over 7 years of age participated in skateboarding more than once [11]. The vast majority of injuries occur in males, with numerous studies reporting figures exceeding 90 % [12–14]. The average age of injured skateboarders shows a variation from the mid-to-late teens up to >20 years of age, with some studies reporting injuries in skateboarders aged 40 years and older [13, 15]. The wide variation is partially explained by the different data collection methods, from both children's hospitals and those focusing on adult medicine.

14.2.2 Skateboard-Associated Injuries

The first published report on skateboard injuries dates back to the late 1960s [16]. Since then, a continuous flow of reviews of skateboard-related

Fig. 14.3 *Stalefish*, a trick in which the rider jumps high and grabs the skateboard in the middle with his backhand, between the feet on the side of his heels (heel side). August 2012. Rider: Jake Collins, Amsterdam, the Netherlands (Photo courtesy of Nicola Debernardi)

injuries and descriptive studies have been published, warning of potentially serious or catastrophic injuries.

According to the National Electronic Injury Surveillance System (NEISS), it was estimated that approximately 144,000 injuries related to skateboard riding presented to hospital emergency departments in 2009 across the United States, with the vast majority affecting males under the age of 24 years [17]. It was further estimated that of these injuries affecting children, just over 3000 were of a serious nature [7]. In the study by Everett, the estimated skate park injury rate was 1.1 per 1000 users [18]. Fountain found a non-skate park injury rate of 7.0–7.5 per 1000 participants [19]. However, it is important to note that minor injuries and injuries of lesser severity treated in environments other than emergency departments will go unreported and are insufficiently captured by data sets.

14.2.3 Mechanisms and Environmental Location of Injury

Injuries in skateboarding may occur for a variety of reasons. Loss of balance and irregularities in the riding surface (stone, kerb, step, gaps between paving stones, etc.) account for the majority of injuries. Failure when attempting a trick or a jump, collision with a vehicle or an object, and skidding are other frequently reported mechanisms of injury. Depending on the specific trick attempted, the speed and the type of fall, the resulting injuries widely differ. Furthermore, new tricks are likely to change the pattern of injury.

Skateboarding parks are built to provide a safe and supervised area for skaters away from the dangers of traffic and to provide an environment containing specific obstacles designed for skateboarding (Fig. 14.5).

Fig. 14.4 Ollie. Rider: Sjoerd Vissers. 25 October 2012, Eindhoven, the Netherlands (Photo courtesy of Nicola Debernardi). In their tricks, skateboarders often *grab* their skateboard in different ways (Fig. 14.3) and combine aerials with rotation)

Fig. 14.5 Riding in a skateboarding park. Rider: Timothy Scott Misagal. California, USA 2014 (Photo courtesy of Nicola Debernardi)

Potential safety advantages of skateboard parks are numerous: good lighting, regularly maintained skating surfaces, routine structural inspection, and upkeep, enclosed areas that effectively eliminate external factors such as cars, buses, sidewalk cracks, street potholes, stones, and pedestrian traffic. Such distractions have been implicated as significant factors contributing to injury among in-line skaters and skateboarders. Skateboard parks avert these aspects and therefore represent a cleaner, more controlled skating area [18]. Despite this, many boarders still choose to skate on roads, footpaths, and parking lots, and in other public areas. Kyle and colleagues found that those requiring hospitalization were 11.4 times more likely to have been injured on a street by a motor vehicle than nonhospitalized injured skateboarders [20]. Not surprisingly, several hospitals report an increase in the frequency of skateboarding injuries when a skate park has opened nearby [18, 21].

Sheehan reported that fractures sustained in skate parks were more severe and had a several-fold higher risk of requiring manipulation or an invasive treatment when compared to injuries suffered on the street [21]. Explanations for these findings may be that in parks, more experienced skaters are attempting more complicated maneuvers, are skating faster, and therefore suffer more serious injuries. Studies investigating the specific impact of skate park design on injuries found that more injuries occurred in the ramp and bar areas compared to the half-pipe and gully areas [18]. It was suggested that this may be because the ramps and bars are the most popular attractions to the skate park users, since these design features have been popularized through commercially sponsored and televised skating competitions.

14.2.4 Injury Severity

Reported injury severity varies between the different studies. Konkien and colleagues reported a mean Injury Severity Score (ISS) of 10.5 points, which was comparable with in-line skating (10.6 points) and cycling (12.7 points) [22]. In an analysis by the National Trauma Databank (NTDB) including 2270 patients, the mean ISS was 8.6 (standard deviation 5.7), with 16.2 % of the patients sustaining severe (ISS ≥ 16) and 3.3 % sustaining critical (ISS ≥ 25) injuries [13]. The same analysis revealed an age-dependent injury pattern and severity of injuries. The incidence of severe injuries was more than 5 times more likely, and the incidence of critical injuries was more than 4 times more likely in skateboarders older than 16 years as compared to boarders younger than 10 years (Table 14.1) [13]. It is hypothesized that as skateboarders become older, and throughout their adolescent years, their physical attributes change, and their experience allows them to attempt more dangerous maneuvers at greater speeds. However, other studies found opposite results, with all catastrophic injuries sustained by those younger than 20 years of age, mentioning the long-held theory that younger children are more susceptible to head injury, due to their high center of mass and psychomotorial underdevelopment [7, 19].

Table 14.1 Skateboard-related injuries: incidence of injury severity score >15, and ≥25 in 2270 admitted skateboarders according to age groups

Injury severity score	Age group (years)	%	*p*-value[a]	OR (95 % CI)[a]
>15	<10	5.4	–	1.0
	10–16	13.5	0.002	2.72 (1.41–5.25)
	>16	23.7	<0.001	5.41 (2.80–10.46)
≥25	<10	1.6	–	1.0
	10–16	1.7	1.0	1.04 (0.31–3.50)
	>16	6.6	0.009	4.23 (1.31–13.72)

Modified from Lustenberger et al. [13]
Abbreviations: *OR* odds ratio, *CI* confidence interval
[a]Age group <10 years used as reference for comparison

14.2.5 Musculoskeletal Injuries

The majority of musculoskeletal injuries are minor, including bruises, superficial wounds, contusions, and sprains. Among the more serious lesions, fractures are the most common type of

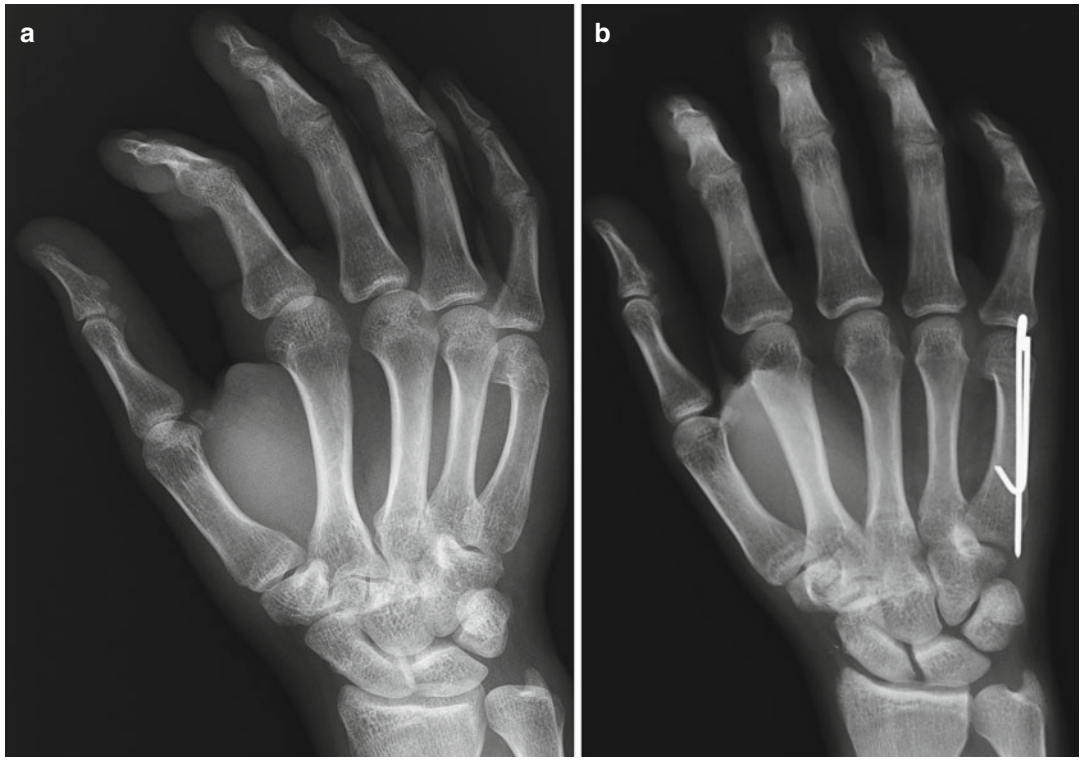

Fig. 14.6 Diagnosis (**a**) and treatment of a distal fracture (skateboarding fracture) of the fifth metacarpal bone in a skateboarder. Treatment involved surgical reduction and fixation using K-wires (**b**) (Courtesy of Dr Feletti, own case series)

skateboard-related injuries. In the literature, the incidence of fractures in patients presenting to emergency departments ranges from 8 % up to 74 % [12, 14, 23]. Due to falling on outstretched arms, the fractures most commonly involve the upper extremity with the hand, wrist and forearm as the most frequently injured site (50 % or greater in several studies) [12, 14, 22, 24] (Fig. 14.6). Olecranon fractures (also called "skateboard elbow") and fractures of the scaphoid, the metacarpal bones, and the phalanges have been reported and, however, are seen less frequently. Fractures in the lower extremity mainly involve the ankle (4.3–23 %) and foot (Fig. 14.7).

In the study by Zalavaras, approximately 6 % of the skateboard-related fractures were open [14]. In particular, open fractures of the forearm or the distal radius were reported to be almost 20 times more likely to be due to skateboarding than roller skating or scooter riding in pediatric patients. Moreover, 63 % of the open forearm fractures seen in children in this institution during the study period resulted from skateboard accidents.

Specific attention should be given to the incidence of physeal injuries. Unfortunately, relatively few studies make specific mention of physeal involvement [14, 25]. In the study by Zalavaras and colleagues, 33 % of the fractures involved the physis, with 22 % of these being displaced. Displaced physeal fractures were most commonly seen in the distal radius (57 %), followed by the distal tibia (29 %) and the distal fibula (14 %) [14].

In several studies, an age-dependent fracture pattern was discussed. Skateboarders younger than 10 years of age were at significantly higher risk of having a fracture of the upper extremity, including the humerus and radius/ulna, compared to skateboarders >16 years. Similarly, femur fractures were more likely in younger children. Contrary to this, older boarders were at higher risk

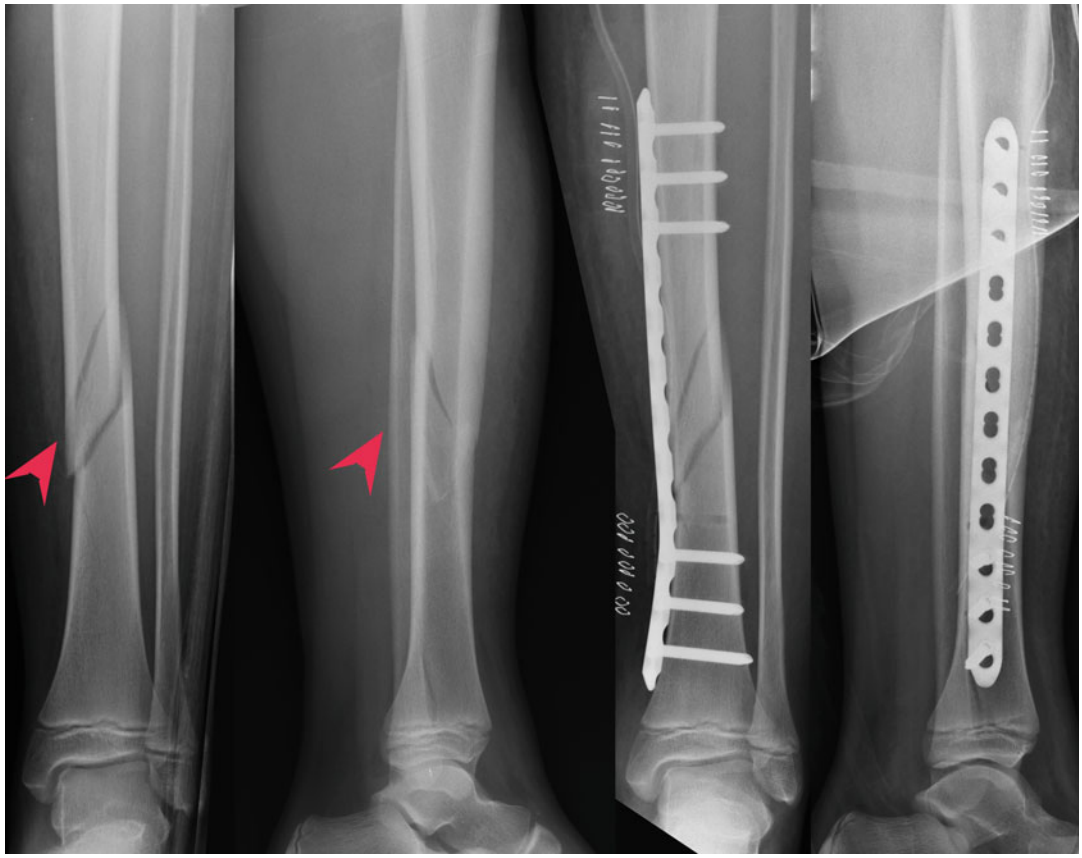

Fig. 14.7 Diagnosis (**a**) and treatment of a spiral tibial fracture in a young skateboarder. Treatment involved surgical reduction and fixation using plate osteosynthesis (**b**) (Courtesy of Dr Feletti, own case series)

for sustaining tibia or fibula fractures (Table 14.2) [13]. It can be speculated that younger children lack the coordination and balance of older children and therefore fall in a more uncoordinated way, attempting to break their fall on their outstretched arms, resulting in more upper extremity fractures. Older and more experienced children, however, attempt more complicated maneuvers and are travelling faster, putting the lower extremities at higher risk of injury.

Operative intervention, in particular for orthopedic injuries, are fractures frequently reported with 33 % of patients being operated on [13, 21]. In the study by Sheehan et al., analyzing 207 children that presented to the emergency department with skateboard- or rollerblade-related fractures, 68 % of the fractures sustained in skate parks required surgery, as opposed to 12 % from street-related injuries [21]. This resulted in a relative risk of 8.35 of a child requiring operative intervention for a fracture sustained while using a skate park. This again may be explained by the fact that in skateboard parks, more complicated maneuvers are attempted and higher speeds are achieved, resulting in more severe injuries.

14.2.6 Head and Face Injuries

Most of the head and face trauma due to skateboarding are minor, consisting of contusions, abrasions, or lacerations. Concussions are reported with an incidence ranging from <1 to 12 %. In the analysis of the NTDB, the overall frequency of traumatic brain injury (TBI) including concussions, severe traumatic brain injury

Table 14.2 Skateboard-related injuries: risk of extremity fractures in 2270 admitted skateboarders according to age groups

Fractures	Age group (years)	%	*p*-value[a]	OR (95 % CI)[a]
Extremity fractures	<10	62.0	–	1.0
	10–16	53.4	0.027	0.70 (0.51–0.96)
	>16	42.0	<0.001	0.44 (0.32–0.62)
Humerus	<10	19.3	–	1.0
	10–16	6.7	<0.001	0.30 (0.20–0.46)
	>16	0.7	<0.001	0.03 (0.01–0.07)
Radius/ulna	<10	18.2	–	1.0
	10–16	25.3	0.035	1.52 (1.03–2.25)
	>16	10.4	0.003	0.52 (0.34–0.81)
Femur	<10	19.3	–	1.0
	10–16	4.3	<0.001	0.19 (0.12–0.30)
	>16	6.0	<0.001	0.27 (0.17–0.43)
Tibia/fibula	<10	3.7	–	1.0
	10–16	14.6	<0.001	4.40 (2.04–9.51)
	>16	19.8	<0.001	6.34 (2.92–13.76)

Modified from Lustenberger et al. [13]
Abbreviations: *OR* odds ratio, *CI* confidence interval
[a]Age group <10 years used as reference for comparison

(defined as any presence of intracranial hemorrhage), and skull fractures was 36.3 %. Skull fractures were diagnosed in 16.2 %, and intracranial bleeding in 13.4 % of patients, including subdural hemorrhage (3.7 %), subarachnoid hemorrhage (2.3 %), epidural hemorrhage (1.9 %), cerebral contusions (3.5 %), and multiple bleedings (5.0 %) [13]. A recent analysis comparing NTDB data and regional data from a trauma center revealed a three times higher incidence of head and face trauma in the trauma center cohort (67.5 %) in skateboarders 18 years and older [15].

Similar to the age dependency of the fracture pattern and injury severity, a linear increase in TBI incidence was noted with increasing age, with a particularly high frequency of TBI in older skateboarders (24.1 % in skateboarders younger than 10 years, 32.6 % in patients 10–16 years of age, and 45.5 % in patients older than 16 years) (Table 14.3). A risk factor analysis for sustaining a skateboard-related TBI revealed that the use of a helmet, boarding at a designated skateboard park, and age 10–16 years were associated with a lower incidence of severe TBI. Age older than 16 years and male gender were predisposing factors for head injury. In the same study, surgical procedures required for head injuries (3.8 %) were the second most common interventions after orthopedic procedures (33 %) [13].

Little information is available on the clinical outcome or the residual effects of injuries sustained by skateboarders, in particular following head injury. While the overall mortality rate is low (<1 %), the leading cause of death in expired patients is head injury. Retsky reviewed deaths reported among skateboarders and found that more than 90 % of deaths were caused by severe head injury [26].

14.2.7 Thoracic and Abdominal Trauma

Thoracic and abdominal injuries are infrequent among skateboarders. Case reports of splenic ruptures, renal lacerations, retroperitoneal hematomas, and scroto-abdominal impalement injury associated with skateboard riding have been published [13, 24, 27, 28]. Thoracic injuries reported included rib fractures and hemo-/pneumothoraces and, however, are even less commonly reported than intra-abdominal trauma (1.2 vs. 5.6 %) [13]. Surgical interventions for thoraco-abdominal injuries mainly include laparotomies with splenectomies/splenorrhaphies as the most frequent types of procedures.

Table 14.3 Skateboard-related injuries: risk of specific head injuries in 2270 admitted skateboarders according to age groups

Traumatic brain injury	Age group (years)	%	*p*-value[a]	OR (95 % CI)[a]
Overall traumatic brain injury	<10	24.1	–	1.0
	10–16	32.6	0.019	1.52 (1.07–2.17)
	>16	45.5	<0.001	2.64 (1.83–3.79)
Skull fracture	<10	8.0	–	1.0
	10–16	15.0	0.01	2.02 (1.17–3.50)
	>16	20.3	<0.001	2.92 (1.67–.09)
Severe traumatic brain injury	<10	8.6	–	1.0
	10–16	10.8	0.348	1.30 (1.0.75–2.23)
	>16	19.1	0.001	2.53 (1.47–4.35)
Intracranial hemorrhage	<10	6.4	–	1.0
	10–16	7.8	0.494	1.24 (0.67–2.30)
	>16	16.0	0.001	2.78 (1.50–5.14)
Subdural hemorrhage	<10	1.6	–	1.0
	10–16	2.1	0.789	1.34 (0.40–4.44)
	>16	6.9	0.006	4.54 (1.40–14.69)
Subarachnoid hemorrhage	<10	0.5	–	1.0
	10–16	1.4	0.499	2.73 (0.36–20.51)
	>16	4.3	0.013	8.34 (1.13–61.37)
Epidural hemorrhage	<10	1.1	–	1.0
	10–16	1.6	0.759	1.50 (0.35–6.46)
	>16	2.6	0.282	2.47 (0.57–10.66)

Modified from Lustenberger et al. [13]
Abbreviations: *OR* odds ratio, *CI* confidence interval
[a]Age group <10 years used as reference for comparison

14.3 Protective Equipment and Prevention

Several safety measures have been advocated for skateboarders, the most common being the utilization of a helmet and extremity protective equipment such as wrist guards, elbow pads, and kneepads.

Although no studies have explicitly evaluated the use of safety equipment in the specific context of skateboarding, injury prevention patterns of similar riding styles are likely to be comparable. Bicycle helmets have been shown to have a substantial impact on the reduction and severity of head injuries. Reported data have shown that, in bicycle-related injuries, the use of a helmet can provide a 63–88 % reduction in the risk of facial, head, and brain injury [29].

Wrist guard use by skaters has been demonstrated to decrease the risk of upper extremity injury. Children without wrist guards had a tenfold increased risk of sustaining a wrist fracture. Wearing wrist guards had the potential to reduce wrist injuries by 87 % in one study [30–32]. Furthermore, cadaveric test models have demonstrated that wrist guards decrease the severity of wrist injuries and increase the energy load that the wrist can safely withstand [18]. Similar results were found for the use of elbow pads, where a reduction of elbow injuries by 82 % was observed, and for the use of kneepads, where a reduction of knee injuries by 32 % was observed [30, 32].

However, despite the obvious advantages, the use of these safety devices is still poor among skateboarders, and the compliance with its use is not 100 % even in skate parks where it is mandatory. Rates on the use of protective equipment range from as low as 5 % to over 90 % [21, 33]. The reported low rates of

acceptance might be due to the fact that this kind of equipment is still regarded as unfashionable and portrays the individual as inexperienced with limited skills.

The Committee on Injury and Poison Prevention recommends that children who ride skateboards should wear helmets (bicycle helmets or multisport helmets) and protective padding, including wrist guards, elbow pads, and kneepads, to prevent injury. The committee further recommends that skateboards should never be ridden in or near traffic and that "catching a ride," where a skater holds onto a vehicle to gain speed, should not be practiced. Moreover, communities should continue to develop skateboarding parks and encourage youth to practice there. These parks are preferred to home-constructed ramps and jumps, because they are more likely to be monitored for safety and separate the skateboarder from pedestrian and motor vehicle traffic [23].

There is a continuous and tremendous scope to improve education efforts for skateboarders and their parents, teaching them about the risks of the sport as well as techniques to avoid injury, such as proper falling and rolling, and how to attempt tricks safely. However, due to the recreational and mostly unstructured nature of skateboarding, participants tend to learn from their friends or from watching professionals, and very few receive any form of instruction before they start skateboarding [7, 34].

Key Points

- The majority of injuries affect young males.
- The most commonly reported skateboard-associated injuries are fractures of the wrist and forearm, with lower leg and ankle injuries being common as well.
- Serious injuries, in particular severe head injuries, are reported in up to 36 % of skateboarders presenting to an emergency department.
- Most injuries tend to occur from a loss of balance or due to a failed trick leading to a fall.
- Protective equipment, such as helmet, wrist guards, elbow pads, and kneepads are recommended and have the potential to significantly reduce the severity of injuries. However, the use of these safety devices is still poor among skateboarders.

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