

## **Injuries from In-Line Skating and Skateboarding**

*This Position Statement was developed as an educational tool based on the opinion of the authors. It is not a product of a systematic review. Readers are encouraged to consider the information presented and reach their own conclusions.*

***The American Academy of Orthopaedic Surgeons (AAOS) believes that recreational in-line skating and skateboarding can be an effective way for adolescents, teenagers and adults to stay fit and active but is potentially hazardous. AAOS strongly urges riders to use proper precautions and safety equipment to prevent and minimize injuries that can occur.***

Each year millions of Americans in-line skate (which combines features of roller-skating with ice-skating by aligning rollers in the shape of a single blade) or skateboard—both activities easily reach speeds of more than 25 mph. Over 11 million Americans have taken up skateboarding and the number continues to grow. Whether moving fast or standing still, many people have sustained preventable injuries from these two sports.

Each year more and more teenagers in-line skate and/or skateboard, especially males. Both activities involve speed, balance and coordination, and can sometimes result in serious injuries. Because they are activities in which you move quickly over hard surfaces and sometimes utilize ramps or rails in which higher speeds are attained, the sports can lead to injuries that range from minor cuts and bruises to severe fractures and catastrophic brain injury.

According to the U.S. Consumer Product Safety Commission,<sup>1,2</sup> approximately 406,000 in-line skating and skateboarding injuries were treated in hospitals, doctors' offices, clinics, ambulatory surgery centers and hospital emergency rooms in 2009. Fifty-two percent of in-line skating injuries and 70 percent of skateboard injuries involve males age 18 and under. In-line skating injuries included fractures and dislocations to the ankle and wrist, as well as injuries to the head. Although head injuries were relatively less common, they can be life threatening, very expensive and cause long-term disability. Skateboarding injuries frequently include extremity sprains, fractures, contusions and abrasions. Among these, wrist and ankle fractures are the most common followed by head injuries. Most hospitalizations involve head injury. The estimated yearly cost of medical treatment due to in-line skating and skateboarding injuries is \$1.01 billion. This does not include bruises and scrapes that were never seen or treated.

To reduce the risk of serious injury, the AAOS strongly urges in-line skaters and skateboarders to follow these safety measures:

**Use quality in-line skates or skateboards.**

- The two most important qualities to look for in a pair of in-line skates are comfort and support appropriate for the user's skill level and intended use<sup>3</sup>. In-line skate boots must also fit properly to avoid irritation. The following tips should be considered:
  - Do not buy boots that put too much pressure on any area of the foot, which can result in blisters.
  - Choose the boot size at the end of the day or after training, when feet will be at their largest.
  - When selecting the size of the boot, wear the same type of sock that will be worn when skating.
  - Kick both feet into the back of the boots before buckling and skating.
  - Be certain the heel does not move up and down in the boot during skating.
- Skateboards have three parts—the deck (the board itself), the trucks (the mechanism to which wheels are attached), and the wheels. Shorter decks are best for beginners because they are easier to balance and handle. Skateboards have various characteristics for all types of riding including slalom, freestyle and speed. Some are rated for the user's weight.
- Do research ahead of time to learn about the type of equipment most appropriate for the intended use.

**Keep in-line skates or skateboard in proper working order. Inspect the equipment before every use.**

Look for problems that need repair. These can include loose, broken, or cracked parts; sharp edges on metal boards; a slippery top surface; wheels with nicks and cracks, or missing hardware. Get a professional to help to repair serious defects and replace the equipment regularly when it shows signs of excessive wear.

**Learn the basic skills of in-line skating or skateboarding, especially how to stop properly.**

Also learn slowing and turning techniques, and how to fall safely.

**Learn how to fall.**

Even experienced skaters or skateboarders can fall. Learning how to fall safely can help reduce the risk and severity of injuries. The CPSC recommends:

- If you are losing your balance, crouch down so you will not have so far to fall.
- Try to land on fleshy parts of your body when falling.
- Try to roll as you fall, which prevents your hands, wrists, and arms from absorbing all the

force.

- Try to relax, rather than remaining stiff when falling.

### **Wear proper protective equipment.**

Before using skates or skateboard, empty pockets of all hard and sharp objects and put on protective gear. Essential protective equipment includes a properly fitted helmet, wrist guards, and elbow/knee pads. Skateboarders should wear closed, non-skid, supportive shoes. Wrist guards help support the wrist and reduce the chances of breaking a bone in a fall. Knee and elbow pads reduce the severity of cuts and scrapes, and prevent gravel burns.

### **Helmet.**

To protect the head from injury, always wear a properly fitting helmet. This is true no matter what the age, level of experience or where skateboarding. A quality bicycle or multi-sport helmet should meet or exceed safety standards of the CPSC or Snell Memorial Foundation of the American National Standards Institute (ANSI). Try on several sizes and models to find a helmet that fits the head correctly and securely. Replace the helmet when it is damaged, outgrown, or at least every 5 years. Replace it sooner if the manufacturer recommends it. A properly fitting helmet:

- Is worn flat on the head with the bottom edge parallel to the ground.
- Sits low on the forehead.
- Has side straps that form a "V" shape around each ear.
- Has a buckle that fastens tightly (with room to put only two fingers between the strap and the chin).
- Has pads inside that can be installed or removed so the helmet fits snugly.
- Does not move in any direction when the head is moving.
- Does not interfere with movement, vision, or hearing.

### **In-line skate and skateboard only on smooth pavement *away from traffic*, preferably in a supervised skate park.**

- Never hold onto the side or rear of a moving vehicle while in-line skating or riding a skateboard ("skitching"). It is easy to fall or be thrown into oncoming traffic if the vehicle suddenly slows, stops or turns.
- Never use in-line skates or a skateboard in wet weather.
- Avoid crowded walkways or skating while dark.
- Always screen the area beforehand, inspecting surfaces for irregularities, rocks and other debris.

### **Be careful with tricks and jumps.**

These skills are not acquired quickly or easily. Don't take chances by going faster than experience allows, or faster than is safe for conditions or the speed of others. Tricks and jumps should be practiced only in a controlled environment, such as a skate park that has adult supervision and appropriate access to emergency medical care.

### **Stay in shape.**

Prevent injuries by keeping in top physical condition. Stretch and do conditioning exercises before and afterwards.

### **Do not use headphones while in-line skating or skateboarding.**

### **Never put more than one person on a skateboard.**

### **Be considerate of fellow in-line skaters and skateboarders.**

Be especially aware of those who are younger and/or less skilled.

### **Know what to do in an emergency.**

Accidents happen, so users should always know what to do in emergency situations. Don't panic. Call 911 for medical assistance or an ambulance.

### **Be safe, have fun.**

When proper precautions are taken, the potential for injuries can be reduced and in-line skating or skateboarding can both be relatively safe, enjoyable activities.

***The AAOS does not recommend in-line skating or skateboarding for children younger than age 5 because they are still growing and do not yet have the physical skills and thinking ability a person needs to control a skateboard and ride it safely. Children age 6 to 10 should be supervised closely by an adult or trustworthy adolescent and wear proper safety gear, including helmets, wrist guards and knee and elbow pads.***

When young children are involved in in-line skating or skateboarding accidents, they are often severely injured because they have:

- A higher center of gravity, less development and poor balance. These factors make children more likely to fall and hurt their heads.
- Slower reactions and less coordination than adults. Children are less able to break their falls.
- Less skill and ability than they think. Children overestimate their skills and abilities and are

inexperienced in judging speed, traffic and other risks.

## References:

1. American Academy of Pediatrics, 2004, reaffirmed January 1, 2009.
2. Consumer Product Safety Commission, 2009.
3. Inline Skate Resource. Inline Skate Buying Guide,  
<http://www.inlineskateresource.com/Inlineskatebuyingguide.htm>
4. Sheehan E, Mulhall K J, Kearns S, O'Connor P, McManus F, Stephens M, and McCormack D: Impact of dedicated skate parks on the severity and incidence of skateboard- and rollerblade-related pediatric fractures, *J Pediatr Orthop* 2003 Jul-Aug;23(4):440.
5. International Association of Skateboard Companies, 2009 State of the Skateboard Industry report.

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