Ice Skaters More Likely To Suffer Head Injuries Than Roller/Inline Skaters When They Fall

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As the winter Olympics begin and interest in ice-skating increases, more children will head to the local skating rinks. However, most parents are unaware that young ice-skaters are nearly five times more likely to suffer head and facial injuries than roller/in-line skaters. A recent study conducted by researchers at the Center for Injury Research and Policy at Columbus Children’s Hospital found that 13% of ice-skaters who fall hit their head on the ice while only 3% of roller/in-line skaters who fall hit their head on the ground. The research results are published in the February issue of the British Journal of Sports Medicine.

Most parents are unaware that young ice-skaters are more likely to suffer head and facial injuries than roller or in-line skaters. Research published in the August issue of Pediatrics found that ice-skaters experienced a greater proportion of head injuries (13%) compared with roller skaters (4%) and in-line skaters (5%). Researchers at the Center conducted the study for Injury Research and Policy (CIRP) in the Columbus Children’s Research Institute at Columbus Children’s Hospital.

Researchers analyzed 1993-2003 data from the National Electronic Injury Surveillance System of the U.S. Consumer Product Safety Commission. An estimated 1,200,000 pediatric skating injuries in children 18 years of age and younger were recorded in hospital emergency departments during the time period studied. Fifty percent of those injured were male and the most common mechanism of injury was a fall (83%).

Ice-skaters experienced a greater proportion of concussions (4%) compared to roller-skaters (0.6%) and in-line skaters (0.8%) and the proportion of facial injuries among ice-skaters was greater. The majority of roller skating and in-line skating injuries were upper extremity fractures (nearly 54% and nearly 60%, respectively). More injuries were attributed to inline skating (48%) than roller skating (35%) or ice skating (15%).

"Children should wear helmets during all recreational skating activities, especially ice-skating, because of the risk of serious head injuries," explained Christy Knox, CIRP research associate and a study author. "Wrist guards should be worn to protect against the common upper extremity fractures to the wrist and arm sustained during roller and inline skating."

During a video analysis of skating falls for a previous study, these researchers found that both ice-skaters and roller/in-line skaters tend to fall forward and almost all attempt to break their falls with their arms or hands. However, because ice skating occurs on a low friction surface, attempts to break falls with the arms and hands are often unsuccessful, resulting in the head hitting the ice leading to head and facial injuries. Since roller skaters and in-line skaters often break their falls successfully with their arms and hands, they prevent injuries to the head and face, but experience increased proportions of arm injuries.

While helmets and wrist guards have long been recommended protective gear for inline and roller skaters, no such recommendations currently exist for ice-skaters. "An immediate reaction would be to require similar gear for ice-skaters, but because most ice-skating falls are forward in direction, the standard helmet may not adequately protect the ice skater's face and front of the head from hitting the skating surface," said CIRP faculty member Dawn Comstock, PhD, who is also an Ohio State University College of Medicine faculty member and a study author.

For face forward falls, “the most effective protection for ice-skaters would need to wear a hockey-style helmet with a facemask, which most children would be unlikely to do.” says Dawn Comstock, PhD.

As the cause of injury is the head striking the skating surface, a helmet acts only as a secondary prevention mechanism to reduce the risk of injury once the head hits the ground.

Therefore, these researchers have focused their efforts on designing a wrist guard with a non-slip palm that would serve as a primary prevention mechanism against head and facial injuries. The wrist guard feature would protect against upper extremity fractures and the attached non-slip palm would prevent the outstretched hands from slipping on the ice during attempts to break a fall, thus keeping the head from striking the ice.
Knox said, "We are working to patent a new type of protective gear - a wrist guard with a non-slip palm - which should decrease the incidence of ice skating-related facial and head injuries. While this protective equipment device is not yet on the market, we hope it will be available soon. In the mean time, the best advice we can offer parents is that children should wear a well-fitted appropriately worn helmet while ice-skating to reduce the risk of head injuries."

The researchers also recommend educational interventions to promote the use of protective gear, improved engineering of safety equipment, and helmet laws for all types of skating activities.