



A Head Worth Saving

A head that's worth saving should wear a helmet.

By Bridget Kirkwood Cook



—Photo by Jodie Potter



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Every year, between 12 and 15 million people saddle up and ride into the American sunset. Approximately 70,000 of those people will visit the emergency room with a horse-related injury. According to the National Electronic Surveillance System, which tracks ER admittances, children aged 5 to 14 years old and adults between 25 and 44 are the most likely to get injured by a horse, with head injuries being the most common reason for admission and death.

“Between 60-80 percent of equestrian deaths are due to the head, and almost all of them are to un-helmeted people,” said Dru Malavase, a board member for the Equestrian Medical Safety Association (EMSA), the group that studies horse-related accidents and co-chairman of the equestrian headgear subcommittee at the American Society for Testing and Materials (ASTM), which develops and publishes standards for manufacturing.

A six-year study on horse-related deaths in Alberta, Canada, showed that 79 percent of the deaths were due to head-related injuries, and of the 156 riders who were injured, only two of them were wearing helmets. Similarly, a Wisconsin study showed that 19 percent of horse-related injuries were to the head and that none of those riders were wearing helmets. In Kentucky, the results were the same, 80 percent of horse accidents happened to people not wearing helmets, and all fatalities were to un-helmeted riders.

While death is the outcome that makes people stop and gasp, it isn't the only devastating outcome from an accident. Head-injury accidents can lead to the onset of injury-induced epilepsy, intellectual and memory impairment, and personality changes.

“The deficits that can happen with a head injury are so horrible; a fall can be a complete



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life-changing accident for the rider and his or her family,” Malavase said. “The Special Olympics are for disabled and therapeutic riders. I’ve seen a lot of riders who previously had an un-helmeted head injury, who come back from the injury and are at the Special Olympics.

“Helmets are approximately 70 percent to 80 percent effective in either preventing any injury at all or preventing death. Because helmet acceptance has got better what we’re finding coming into the emergency room now are the un-helmeted people,” Malavase said.

Helmet head

In 1981, the Pony Club mandated the use of helmets by members. At the time, 43 percent of accidents resulted in head injury. Within a year, that dropped to 24 percent, and since the implementation of requiring riders wear a ASTM

helmet, that rate dropped even further to 12 percent. A decrease in the severity of the accidents was also seen at Pony Club. Previously, 20 percent of riders who sustained injuries were admitted to the hospital, but since helmets have been in use, less than 4 percent of riders involved in accidents at Pony Club are admitted.

Frank Plastino, president of helmet manufacturer International Riding Helmets (IRH), sees the irony in horse riders, especially children, asking if helmet usage is regulated by their sport.

“Helmets are for safety and protection. You can look at any sport where there are inherent dangers such as bicycle riding, Indy car racing and NASCAR racing, and everyone wears protective headgear because there are inherent dangers, and you need to protect yourself. We live in a safety-oriented society; whether it is

seat belts or helmets, a parent has the responsibility to say to the child, ‘If you’re going to participate in this [horse] sport, then you have to use certain safety products.’ Whether it is mandated by the organization or not, as a parent, you want to protect your child to the best of your ability, so I don’t believe that a parent should look at it if it is mandatory.

“A helmet isn’t the answer to all foreseeable ways that one can get injured, but for the most part, it will minimize the extent of damages that would be caused by an impact to the head,” Plastino said.

According to the EMSA website, minimizing the effect of an initial head injury can in fact ward off the risks of a follow-up fall. Riders who have incurred a head injury have a 40 percent chance of suffering a second fall within 12 months. This is due to the rider’s balance, coordination and reaction time being disturbed. Disturbances can include mild concussions that the rider may not even have been aware that they had sustained. Additionally, when two head injuries come in short-succession of each other, or if the second one happens before the first has properly healed, the rider is vulnerable to sudden death from second-impact syndrome that involves swelling of the brain.

Hot & heavy

A common myth is that wearing a helmet increases the likelihood of sustaining a neck injury.

“There has never been a correlation there,” Malavase said. “It was assumed that if you rode with a fixed brim attached to the helmet and if you fell on your face then it would jerk your head to the side, but that doesn’t happen. Five years ago, a small task force from my ASTM committee did testing on helmet brims to see what does happen with the mechanics and to see if there was any likelihood that brims were a hazard. The conclusion was that they are not.”

Riders also complain that helmets are hot and heavy. This is now a non-issue with newer technology and designs that have them weighing as little as 9 ounces in comparison to the average rider’s head which weighs 10-11 lbs.

Heat has also been combated by incorporating bigger vents in the helmet. Schooling helmets have the most airflow while the classier-looking competition helmets usually have hidden air-channels built in to them to make them as cool as possible.

The biggest resistance to helmets, however, is the perception that they are for dorks.

Richard Timms, MD, founder of helmet manufacturer Troxel, has worked with injury-prevention products, such as children’s car seats, and has served on the board of the National



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Head Injury Foundation. Timms is using his company to change the way helmets look in an effort to sway riders to wear them.

“Getting people to wear helmets is one of the main challenges we face in this industry. Fashion is a key motivator of helmet use for any age. In Western equestrian disciplines, fashion has been handed down through decades. Troxel decided to take the look of our helmets a step further by emulating the intricate look of Western fashion into a helmet, so we created the Cheyenne helmet, with rhinestones, embroidery and distinctive hardware.”

How helmets work

Today’s helmets can absorb up to 80 percent of the impact from a fall. This is due to the inclusion of a crushable liner – an insert that looks like foam that sits between the hard outer shell of the helmet and the lining. Old-style, hard-shell helmets offered riders little to no protection from concussion because they could not absorb the energy from the fall.

The human skull can be shattered by a 4.3-mph impact, but there is little evidence that the speed at which a horse is traveling greatly affects the degree of the injury. The height of the fall combined with gravitational forces causes the most traumas. Scientific evidence shows that a fall from two feet, or from a person’s own height, can cause permanent brain damage.

“It is how far down you are falling that causes the injury,” Malavase said. “People often say, ‘Gosh, it was a simple fall because I was only walking;’ we’ve had people killed who fell off at the walk or when they were mounting the horse.”

The severity of an impact from a fall is measured in G’s (gravities). A fall that exerts a force of up to 300 G’s may cause the recipient a minor bump or minor concussion. Between 300 and 500 G’s, the fall may cause a severe concussion. Falls up to 1,000 G’s could cause life-threatening or irreversible damage. The helmet’s job is to absorb the impact from the fall



Barrel racing legend Martha Josey visits one of her students, Jordyn Nethken, after one of her many surgeries following a fall at the Josey Junior World Championships that nearly ended Nethken’s life. —Photo courtesy of Troxel

so that less than 300 G’s make it through to the rider’s head.

“A cowboy hat does nothing to protect the rider other than protect them from rain and sun; it does not absorb any energy,” Malavase said. “The most commonly accepted threshold to stave off head injuries is 300 G’s, and an ASTM helmet has to absorb all energy making the impact on the head less than 300 G. If the helmet gets a rating of 300, it doesn’t pass; it has to be 299 or less. All of the current Safety Equipment Institute (SEI) models test far better than the standard requires.”

Manufacturers recommend that once a helmet has been involved in an accident that the helmet be destroyed and replaced.

“It is stated in all IRH products and in competitors’ products that if a rider is involved in an accident, whether that impact is severe or minor, the helmet should be destroyed and replaced,” Plastino said.

Though it may not be visible, minor impact can cause compression of the crushable liner, which will compromise

the effectiveness of the helmet in the event of another fall.

Most manufacturers will replace a helmet free of charge or offer a discount to those who send their helmet in after an accident.

“If you have a head worth saving, then you should be buying the best protection you can get, but that doesn’t mean the highest price; we’re talking excellent helmets being available on the U.S. market for under \$35,” Malavase said.

When buying a helmet, buy one that was produced in accordance with ATSM 1163 standards and has SEI certification. This information, along with the “made on” date should be on a label inside the helmet.

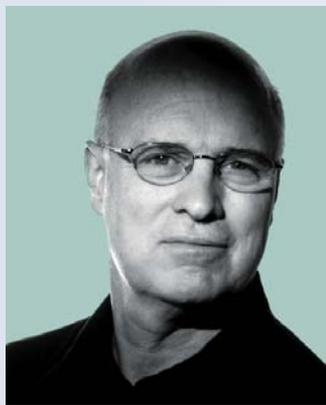
The current standard and designation is F1163.04a, which means that the last major revision to the 1163 standard was made in 2004 and that there were two revisions in 2004. The “a” means it is the second revision.

“The SEI certification is an assurance to the end-user that the company’s product has gone through quality control procedures and random testing,” Plastino explained. “That means that an auditor comes in on an annual or semi-annual basis, pulls helmets randomly and sends them off to an independent testing lab.”

Helmets are sport-specific, so horse riders should always use an equestrian riding helmet rather than one made for riding bikes or skateboards.

“A bicycle helmet is produced to a bicycle helmet standard and is not built to an equestrian helmet standard. They are two different standards and specifications. The reason for that is that there are differences between the two environments that are addressed,” Plastino said.

For a complete list of SEI certified helmets, visit www.seinet.org. For more information on the ASTM, visit www.astm.org. For more information on helmet safety, visit www.emsaonline.net. ★



Western designs by Troxel make the switch from a cowboy hat to a helmet easier for kids. A good helmet doesn’t have to be expensive or hot. These light-weight, well-ventilated helmets are perfect for everyday riding. (Left) Dr. Richard Timms, founder of helmet manufacturer Troxel

—Photos courtesy of Troxel

