

Advances in Protective Headgear

After more than two decades of design evolution, safety helmets for riders are now more durable and stylish than ever.

By Joanne Meszoly

When they were introduced more than two decades ago, shock-absorbing helmets for equestrians were praised by safety experts who saw their potential for reducing skull and brain injuries associated with falls. Riders, too, recognized the benefits, yet many found the bulky headgear awkward to wear and decidedly unattractive. For all the good they could do, the earliest models only vaguely resembled the headgear that riders were accustomed to wearing.

"They started out almost like a pot on your head--safe but with no styling," says Frank Plastino, president of International Riding Helmets. But in the ensuing years--especially in the last decade--helmets for riders have come a long way in their evolution and popularity. "They've gotten smaller, lighter and more attractive," Plastino continues. "And we're constantly looking for ways to improve on that."

Indeed, today's helmets not only meet specific safety requirements but offer innovative design as well. They are low profile and lightweight. Their ventilation systems facilitate airflow to keep the wearer's head cool. A variety of styles, colors and decorative features provide more options than ever before.

Many manufacturers believe that the more choices they offer, the more appealing protective headgear becomes to prospective buyers. In addition, most riders' perception of helmets--and what it says to wear one--have changed. While tradition-bound equestrians may once have discounted riding helmets largely for their looks, today's riders are increasingly choosing models with stripes and colorful shells to protect their heads in case of a fall.



In addition to traditional black, today's protective show helmets come in gray, navy and brown.

Critical Components

Whether traditional or trendy, safety helmets feature three fundamental components:

- an outer shell to help spread the impact of concussive force
- a dense foam liner to distribute the energy of a blow, reducing the force of trauma to the brain
- a retention system to keep the helmet in place.

"The brain has the consistency of Jell-O, and it moves inside the head," says equestrian safety expert Dru Malavase. During a fall, "it will move if the impact is great enough, and there's no way to stop that movement. The helmet liner slows the impact of the brain in the head. It buys you milliseconds, which makes all the difference."

"The material found in riding helmets--expanded polystyrene--is the same material used to protect television sets in their boxes, only it's lighter and much more dense," says Richard Timms, MD, chief executive officer of Troxel Performance Headgear. "But the concept is the same. If the box is dropped, the material keeps the TV from breaking." In the case of a rider tumbling from a horse, it safeguards the skull and brain. "Because of the height of a rider on a horse and the force of the fall, you need a material that's pretty hard," adds Timms.

"The helmets in our sport are designed specifically to address the height that you fall from, more so than the direction in which you may fall," says Malavase. "The height is higher than that of a bicyclist," and unlike bike helmets, riding helmets are designed to cover the back of the head, where impact often occurs.

Certification Standards

More than 50 different styles of riding helmets--produced by manufacturers in the United States, United Kingdom, Italy, Switzerland and the Netherlands--have been approved by the Safety Equipment Institute (SEI), which applies the standards of the American Society for Testing and Materials (ASTM). A not-for-profit organization, the ASTM sets manufacturing guidelines for equestrian helmets to ensure that they meet specifications to protect against head injury.

To earn ASTM/SEI certification, a riding helmet's shock-absorbing capacity is tested by dropping it on two different kinds of anvil, Malavase says. One is flat to simulate the general force of falling; the other has a 45-degree angle designed to mimic the edge of a horseshoe or the corner of a jump cup. A separate test determines whether the harness strap will hold the helmet in place.

Helmets are retested for concussion and retention after exposure to temperature extremes. "The helmet is baked for a set period of time, frozen and immersed in water or sprayed," says Malavase. "This is to make sure the helmet isn't compromised when it's left in a car in the summer and that the plastic won't shatter in the cold."

Once a helmet receives ASTM/SEI certification, samples are periodically tested to confirm that the manufacturer continues to meet safety standards.

Style Specifications

Knowing that a helmet meets the industry's requirements for safety is the most important criterion a rider can use when selecting a model to buy. Several style-related factors are worth consideration as well, including whether a helmet primarily will be used for recreational riding, schooling or showing.

Prices reflect a range of styles and features. They vary from as little as \$30 for a schooling helmet to as much as \$1,450 for one made of carbon fiber. In general, helmets can be categorized in the following way:

Traditional show helmets are modeled after the velvet-covered hunt cap. Unlike the earliest

certified helmets, which were big and bulky, today they are low profile. That is, they are made with a bit less material and designed to sit closer to a rider's head while still meeting safety requirements. Black is the standard color; some are sold in brown, navy or gray. Traditional show helmets have either a leather or nylon retention system. Some have ventilation holes or are lined with moisture-wicking fabric.

Schooling helmets are designed with recreational riding in mind. Ventilation holes and channels to assist airflow are standard to maintain rider comfort. Some models are especially lightweight. Many offer a removable visor as well as adjustable parts and fitting features. Some include a removable liner that is washable. These helmets come in gloss and matte finishes, and several colors and styles.

High-tech helmets are state of the art, particularly in terms of versatility. The outer shell may be covered by velvet, suede or a similarly textured synthetic fabric. It also can be fashioned from a smooth substance such as a rubberized polymer, composite material or carbon fiber. Several manufacturers offer a helmet with a stripe down the middle or a dual-toned center panel. Some models allow users to modify the color of the stripe using interchangeable strips; this portion of the helmet also may have built-in ventilation panels. Such styles have become popular among hunter and jumper riders.

Improvements in Fit and Comfort

Manufacturers have long worked to develop innovative ways to make minor adjustments in fit and to prevent helmets from rocking precariously backward and forward on the wearer's head. Some schooling and show helmets now include these features to tighten or loosen a helmet on the head:

- a dial at the back
- a sliding bar at the back or sides
- removable pads or padding that folds down inside a helmet to fill gaps at the front, back and sides.

While these modifications improve comfort for the wearer, says Timms, they don't substantially contribute to a helmet's ability to stay on the head. That responsibility falls to the retention system. As Timms explains it: "Think about a seat-belt system in a car versus the cushioning of the seat. The seat cushions are important in terms of driver comfort but not for function of the seat belt." The same can be said for the fitting systems in helmets, he adds.

Another way that manufacturers seek to remedy fit problems is to offer helmets with different shapes. "You may have riders with the same size but not the same shaped head," says Plastino. "We try to account for that with long oval sizes." He adds that International Riding Helmets also offers a sizing strip (available at the request of tack stores) that molds to the shape of a rider's head when heated with a hair dryer. The cooled strip is then sent to the company for optimum helmet sizing.

The introduction of protective headgear for equestrians marked a giant step forward in reducing riding-related head and brain injuries. But only recently have helmets come to be viewed as more than a necessary evil. Design innovation has yielded an array of products that riders not only want to buy but want to be seen wearing whenever they're in the saddle.

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