

## MOTORCYCLE PROTECTIVE GEAR

### --the need for head protection and a second skin

By Eric Anderson

Motorcycle riders choose a method of transportation that is exciting yet relatively unprotected when compared to an automobile. Riding on two wheels brings a sense of freedom to the rider unlike anything else in the world of transportation, but should that rider have a mishap, it is essential to be wearing proper protection to minimize physical damage to the brain and body.

These types of bodily protection products are considered “cheap insurance” when compared to the pain, suffering, lost time, and medical expenses incurred because of an accident. Of course, most riders feel ***it—an accident--will never happen to them*** which is why so many haphazardly choose to ride unprotected with no helmet, no sturdy trousers, no over-the-ankle boots, no gloves, no eye protection, or no abrasion-resistant body coverings. They obviously also have never had the experience of a nurse scrubbing an abrasion wound to remove the grit and gravel or what it feels like to recover from a severe concussion.

All motorcyclists who take and pass the state testing requirement to obtain an “M class” license to ride a motorcycle must read the State’s Motorcycle Handbook or Operator’s Manual which always contains a section called “Wear the Right Gear” (or equivalent). The 3 main items listed include:

- DOT approved helmet.
- Face and/or eye protection.
- Protective apparel such as a leather or long-sleeved jacket, heavy pants, over-the-ankle closed-toe boots, and full-fingered leather gloves.

Because the brain is made of delicate nervous tissue, it is suspended in our fluid-filled, bone-dense craniums. Neurological tissue also does not “heal” like skin, bones, and muscle. Once damaged the brain is likely to remain damaged permanently depending on the severity of the accident. It is for this reason warriors of past civilizations developed “helmets” to protect their valuable heads in battle. The Vikings, Spartans, Romans, Greeks, and others knew how head protection could prolong life through or beyond a violent battle thereby preserving their abilities to function post-battle as a warrior, citizen, and family member. The same concept of head protection applies to a modern motorcyclist.

Why do many motorcyclists choose to ride a motorcycle on very hard, abrasively paved surfaces without proper protective apparel? Many riders feel that protective apparel limits their “freedom” of feeling unencumbered while enjoying wind in their face and a disappearing roadway in their rearview mirror. It is a philosophical point of view defying the logic of a safety-minded individual who knows that encountering a fall on a motorcycle is a matter of “when” and not “if.” Still, we live in a country where individuals are allowed to express themselves freely despite their increased chances of self-inflicted danger.

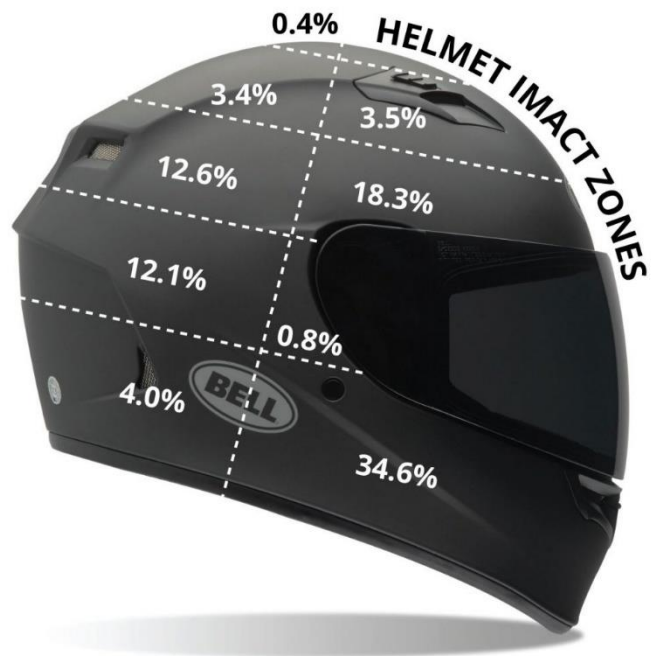
## HELMETS

All riders in “helmet states” are required to wear a U.S. DOT-approved helmet when riding a motorcycle, motor-driven cycle, or a motorized bicycle. The helmet manufacturer certifies their helmet complies with Federal Motor Vehicle Safety Standard (FMVSS) 218 which covers standards for compliance. This standard requires such a helmet to absorb impacts at many varying temperatures and from a multitude of different directions, thereby mimicking as many angles of impact in a motorcycle accident as possible. Still wearing a helmet is not a guarantee against damage or death---it is only a precautionary measure which drastically improves survivability of the rider.

“Accident” is defined in any dictionary as “an unpredictable event.” It would therefore be impossible for a helmet or protective gear manufacturer to engineer and build a product guaranteeing prevention of injury in all cases. Why? Because each “accident” is unique, thus the dynamics and forces are also totally unpredictable. Dr. Harry Hurt of the USC Accident Research Center was once quoted, “If you can tell me **exactly** how you are going to crash, I can tell you **exactly** what to wear.” The point here is no helmet (or apparel) manufacturer can be held liable for a motorcyclist’s injury because nobody can detail the “accident in advance” of the product’s manufacture. Helmets are manufactured to comply with the FMVSS 218 (or ECE in Europe) standard...period.

A full-faced helmet provides more facial protection than an open-faced  $\frac{3}{4}$  helmet or a half helmet. As is shown in the diagram, the largest percentage of impact zones on a helmet occur in the chin and jaw area.

Helmet use in America is on the rise as younger generations have now grown-up riding bicycles, roller skating, horseback riding and even rock climbing while wearing a helmet. It has become more fashionable and socially acceptable to wear a helmet for many sports and activities where falling could be a possibility. Specialized helmets for construction workers and miners have also evolved to become fashionably accepted. For many motorcyclists, the new futuristic designs are increasingly appealing, comfortable *and* functional.



## PROTECTIVE CLOTHING

Abrasion- and impact-resistant jackets and pants are sometimes called “helmets for your body.” There are no federal standards for riding apparel in the U.S., but many manufacturers engineer and produce terrific injury-saving jackets, pants, boots, and gloves. The fundamental purpose of motorcycle apparel is to provide comfort and protection from the wind, rain, heat and cold, but also from sliding and impacts experienced in an accident. Specialized apparel can also protect the rider from flying debris and the hot or moving parts of the motorcycle should it fall on the rider.

- **Wear a jacket** that covers your arms and fits snugly enough to keep from flapping in the wind yet allows you to move freely. Leather or sturdy synthetic materials with integrated body armor offers the most protection. Consider a jacket that is brightly colored or reflective. Either of these will aid in your visibility so other motorists can see you.
- **Long pants offer greater protection** than short pants. Heavy denim, leather or ballistic nylon pants with incorporated armor provide the best protection. Chaps (leather pants without a seat) worn over long pants offer an extra layer of protection for your legs.
- **Over-the-ankle boots** should be high and sturdy enough to cover and support your ankles. Soles should be made of a hard, durable, slip-resistant material. The heels should be short, so they do not catch on foot pegs or rough surfaces. Tuck in the laces so they will not catch on your motorcycle foot pegs. Training shoes, sneakers, flip-flops, or sandals are not recommended protective apparel.
- **Gloves** allow a better grip and help protect your hands from cold or abrasion related injuries. Gloves should be made of leather or similar durable material offering maximum hand and finger protection.
- **To prevent dehydration, and sun/wind burn wear a jacket, long pants, sturdy shoes or boots,** and gloves (even in warm weather). Many of these protective items are designed to be worn in warmer riding conditions without the rider overheating.
- **Stay warm. Stay cool. Stay dry. Stay hydrated. Keep comfortable.** A motorcycle rider does not have environmental controls like an auto driver has, so it is important to select proper riding gear to keep as alert as possible while continuing to make good decisions riding in traffic. Ride with a good quality rain suit onboard in case you need it.
- **Avoid long rides** where you could become fatigued, chilled, or overheated. Proper apparel will maintain normal body temperatures while allowing more focus on the ride. Take frequent breaks and ride with properly insulated, ventilated or waterproof riding gear.

# FULL GEAR **VS** FOOL'S GEAR

## HELMET

Most important piece of protective gear a rider can use. Protects against head injury, windblast, cold and flying objects. Full faced helmet recommended.

## FACE SHIELD

Saves face! Any rider who's been hit in the face by stones, insects or debris can tell you the benefits.

## GLOVES

Keep hands comfortable, functional and protected. Come in infinite variety for all seasons.

## JACKET & PANTS

Long sleeves and trousers resist abrasion and protect against sunburn, windburn, dehydration or hypothermia. Light colors or reflectives increase a rider's visibility.

## BOOTS

Provide protection against foot and ankle injuries and give you a good grip on footpegs or road surfaces.

## BOTTOM LINE

Proper riding gear protects in the event of an accident and minimized injuries, when allowing you to enjoy the sport in comfort.



## HEAD

Considered precious by knowledgeable riders and never exposed by the pros. When fully in view, allows immediate identification of untrained person not using his. Hand out rider education info on site!

## EYES, EARS & FACE

Known to experienced riders as "bug and garbage collectors." Common "bare-face" symptoms include windblast-deafening and deformed, narrow-sit, watery eyes.

## HANDS

au naturale (not for long). Known to seize into curled position when exposed to cold; not genetically evolved to withstand abrasion.

## BARE LIMBS

A phenomenon seen only on riders deemed impervious to any unavoidable accident or inclement weather. Subject to ridicule in riding circles.

## FLIP FLOPS

Terminology for what sandals, toes and feet do upon contact with road surfaces, shift lever, brake pedal, footpegs, or windblasts.

## BOTTOM LINE

Fool's gear identifies an untrained rider. Learn how to avoid embarrassment, ridicule and injury, while gaining skills and knowledge by contacting the Rider Course nearest you.

# THE MORE YOU KNOW. THE BETTER IT GETS.

The Motorcycle Safety Foundation and many State governments have provided versions of this poster to motorcycle safety training classes, DMVs, Public Safety Departments, and motorcycle dealerships.

## NEW DEVELOPING PROTECTIVE AND COMFORT TECHNOLOGIES FOR MOTORCYCLISTS

### Helmets:

- **Minimizing Rotational Acceleration** of the brain using specially designed inner layers of the helmet to moderate spinning motions of the head.
- **Improving Directionality of Sound** with improved hearing ability while wearing a helmet at lower speeds.
- **No-fog Face Shields** for improved visibility in colder, humid conditions.
- **Moisture-absorbing Helmet Liners** to avoid wet, clammy, and sweaty conditions inside the helmet.
- **Photo-chromatic, Light-adjusting Face Shields** which prevent the need of switching face shields in sunny and dark conditions.
- **Lighter Weight Carbon Fiber Shells** to improve comfort and lighten the (leveraged) load on the neck.

### Eye Wear:

- **Polarized sunglasses/goggles** to remove glare, reflection, and shadow effects.
- **Shatterproof glasses** to protect eyes in the event of a mishap.
- **Photo-chromatic, Light-adjusting Glasses, and Face Shields** to prevent the need of switching face shields (or glasses) between sunny and dark conditions.

### Fabrics and Leathers:

- **Waterproof-breathable materials** permit a more comfortable, dry ride.
- **Improved Abrasion-resistance of Ballistic Nylons** for improved protection from sliding on hard surfaces.
- **Improved Reflective Applications** for improved conspicuity at night.
- **Improved ventilation for Warm Weather Use** improves comfort and protection in warm weather riding.
- **Improved Thermo-insulation with Less Bulk** permits improved comfort in cold riding conditions without heavy, burdensome apparel.
- **Improved Mesh-based Jackets and Pants** which also provide abrasion-resistance and a platform from which to hang and hold armor pads in place over articulating joints.
- **Black heat-reflecting leather** keeps the rider cooler instead of absorbing heat.

### Armor:

- **Better Shock Absorption at Articulating Joints** like elbows, shoulders, hips, knees and back.
- **Ventilated and Mesh Armor Pads** which allow comforting ventilation in warmer temperatures.

### **Heated Clothing:**

- **Improved and Lighter Weight Undergarments** which provide “plug-in” heat from a motorcycle’s electrical power source.
- **Better Regulation to Avoid “Too Hot” and “Too Cold” Syndromes** while riding.
- **Heated Socks and Gloves Prevent Hypothermic Conditions** of the extremities while riding.
- **Optional heated hand grips** to keep hands warm in colder riding conditions are offered on many models of motorcycles or can be installed as an accessory.

### **OTHER RELATED GEAR FACTORS**

- Nighttime Riding
- Temperature Control
- Dehydration Avoidance
- Staying Dry