

TTIPS VOL. 9/22 HELMET SAFETY

“Remember that replacing a worn or damaged helmet, though sometimes expensive, is much cheaper than brain surgery.”

INTRODUCTION

Last week we reviewed a list of bicycling safety facts, finishing with a promise to focus on helmets. After reading that article, I don't need to yell through a bullhorn to convince you to wear a helmet. Past and present statistical data reaffirm the efficacy of modern helmets in preventing bicyclist injuries and deaths. If you need a few reminders, however, consider these:

- According to the Consumer Product Safety Commission (CPSC), a majority of the 80,000 cycling related head injuries treated in emergency rooms each year are brain injuries.
- The non-profit website Helmets.org cites data from the Insurance Institute for Highway Safety (IIHS), which reveals that nearly 3 out of 4 crashes (74%) involve head injuries. The same data from the IIHS shows that almost all (97%) bicycle fatalities involved cyclists not wearing a helmet.

In the first TTIPS article I said that I would consult credible, current information sources, and not rely solely on experience, opinion, rumor, or cycling culture lore as I present articles to you. Accordingly, before putting pen to paper on this topic, I did quite a bit of research on helmets.

I'm glad I did because I learned that some of the things that I thought were hard core facts concerning bike helmets are inaccurate. For example, I learned that sweat does NOT corrode, deteriorate, or otherwise damage the foam helmet liner that most of us have in our helmets. Other stuff on your hair (hairspray, shaping creams, conditioners) might be harmful in the long term to the foam, but not sweat alone. Who knew? Okay, let's go.

HELMET DESIGNS

Helmet research and development is rapidly advancing helmet design and safety, accounting for the evolution of external and internal design and materials. Most adult bike helmets are elongated from front to back. This shape has proven to offer more effective to the forehead and back of head. Modern helmets generally can be found in three types. Let's look at the three types.

In the first case, helmets have an outer plastic coating referred to as a "shell." The shell usually is impregnated with an ultra-violet (UV) inhibitor to blunt the harmful effects of UV rays on the plastic. Inside, they have a foam (polystyrene) liner. The two components are glued to each other. The shell provides lightweight strength and shape, and the foam liner absorbs crash forces as it cushions the skull during impact. That's one design.

Another design called MIPS (Multi-Directional Impact Protection System) has a design that mimics the brain's protective structure by reducing rotational forces caused by angled impacts to the head. The helmet's shell and liner are separated by a low-friction layer that allows the helmet to slide, noticeably reducing rotational trauma to the brain in the case of oblique impacts. That's another design.

Finally, some helmets have a foam liner AND a waved liner of honeycomb-like cells that flex, crumple, and glide, acting like a "crumple zone" during a crash. Manufacturers of this type claim superior protection from head injuries compared to other designs.

Generally modern helmets have an adjustment mechanism - the retention system - on the back or top of the helmet that allows the wearer to turn a knob or cylinder, or pinch a mechanism that allows right and left fingertip adjusters to fine tune the helmet fit around their head to ensure a snug and comfortable fit.

All three designs have an adjustable chinstrap that keeps the helmet properly positioned on the head during the ride and during a crash.

FIT

Have you ever seen a rider whose helmet seems to be perched on top of their head, with their forehead nearly fully exposed to a frontal crash? Sadly, it is easy for consumers to grab a helmet off the rack without helpful knowledge of how a helmet should fit. So how do you know if your helmet fits correctly? Here's how:

Place the helmet on your head. With the retention system fully open, the front brim of the helmet should rest parallel to, and above your eyebrows no more than about two to two-and one-half inches. (Make sure the top center of the helmet is directly above the top center of your skull). At this point, adjust the retention system to snug the helmet so that the helmet will remain in place when you nod your head up and down or shake your head left and right.

Generally, at this point you can touch your index finger to your forehead and slide it between the helmet and your head. Personally, I like mine a bit tighter than that. It's your choice but you don't want the helmet to move around independently as you move your head.

Now, position the side buckles on the chinstrap beneath your earlobes and secure them. Finally, buckle the chinstrap under your chin. Remove the slack by adjusting the helmet straps at the chin buckle, but you don't want your chinstrap to be skintight. You should be able to fit two or three fingers horizontal to the ground between the chinstrap and your chin.

WHEN SHOULD I REPLACE MY HELMET? WHAT ABOUT STYLE/SHAPE AND COST?

- Although rigorous tests on some very old helmets revealed that they would still work, generally you should think about replacing your helmet every two or three years. Don't know how old it is: modern helmets have a manufacture date posted on the foam liner?
- If there is a dent in shell, even if not a result of a crash, you may wish to replace your helmet
- The "beer can" effect. If you can depress the shell and it bounces back (like a beer can), you may wish to replace your helmet
- Is the shell chipping around the edge or the vents? Replace
- Is the color on the shell heavily faded? That usually indicates lots of UV exposure and material weakening
- Did you crash (hit your head)? Replace it immediately, even if there is no visible damage.
- Did you drop it hard enough to crack the foam? Replace
- Is it from the 70's? Replace
- Is the shell just foam or cloth? Replace
- Does it lack a CPSC, ASTM, or Snell sticker inside? Replace
- Can you not adjust it to fit correctly? Replace
- Notably, cost is not a good predictor of performance, but helmet shape/style seems to play a role. According to the National Safety Council, so called road helmets, which have an elongated, aerodynamic shape, tend to perform better than round, "urban" helmets, with fewer vents and thicker cells.

CAN I CLEAN MY HELMET?

- Use warm water and a mild soap on the helmet and straps. Be sure to rinse off the soap
- Use a sponge, terry cloth, or microfiber cloth
- Avoid cleaning chemicals
- Except for the replaceable Velcro cushions on the inner part of the foam liner, don't remove helmet parts

PRECAUTIONS

- Don't paint your helmet
- Avoid helmet contact with petroleum products
- Avoid helmet contact with insect repellent
- Don't use glue on your helmet
- Avoid helmet contact with resins
- Protect your helmet from excessive temperatures, like a hot car
- Protect your helmet from constant sun exposure when not riding your bike

OK riders, that's a wrap for this week.

Make Every Ride Epic
Darryl