

## **Workshop on Bicycle Helmets**

### **The Need**

- You always need a helmet wherever and whenever you ride.
- You can expect to crash in your next 4,500 miles of riding, or maybe much sooner than that if you are not careful!
- Head injury causes 75% of our 700+ annual deaths from bicycle crashes. Medical research shows that a bicycle helmet can prevent 85% of cyclists' head injuries.
- Helmets are required by law in 22 states and over 190 localities, mostly for those under 16.

### **The physics of crashing**

- Forward speed is not the most important crash force, it's the fall to the pavement. Even a low-speed fall on a trail can scramble your brains.
- Car crashes are the most deadly. The closing speed with the car can be important, but at city speeds the fall after the car hits you and the second hit on the pavement can still be the hardest blow. Chances of survival are reasonable until the closing speed exceeds 25 MPH.

### **The Helmet**

- A helmet reduces the peak energy of a sharp impact.
- This requires a layer of stiff foam to cushion the blow by crushing.
- Most bicycle helmets do this with expanded polystyrene (EPS), the familiar picnic cooler foam. Once crushed, EPS does not recover. Another foam, expanded polypropylene (EPP), does recover, but is much less common.
- The helmet must stay on your head even when you hit more than once--usually a car first, and then the road. So it needs a strong strap and an equally strong fastener.
- We used to worry about what standard the helmet met, but all bike helmets sold in the US now have to meet the CPSC standard, so for bicycling that question is settled. For skateboarding there is no law, so look for an ASTM F1492 sticker.
- Pick white or a bright color for visibility to be sure that motorists and other cyclists can see you.
- Common sense tells you to look for a smoothly rounded outer shell, with no sharp snag points. Excessive vents mean less and stiffer foam contacting your head, which could concentrate force on one point. "Aero" helmets are not noticeably faster for most of us, and in a crash the "tail" could snag or knock the helmet to the side. Skinny straps are less comfortable. Rigid visors can snag or shatter in a fall.

### **Fitting**

- Make sure your helmet *fits* to get all the protection you are paying for.
- A good fit means level on your head, with the foam pads touching all around.
- Adjust the straps first so that the V on the sides meets just below your ear. Then adjust the chin strap comfortably snug.
- The helmet should not move more than about an inch in any direction, and must not pull off no matter how hard you try.
- You may have to tighten the front straps if the helmet tilts back, or the rear straps if it pushes forward.

- Be prepared to fuss with the straps a while to get things right.
- It's not enough for the helmet to just sit on your head. The straps have to hold it there or it will be knocked off when the car hits you and you may hit the pavement with a bare head.
- Bell has a system on some models with simplified fitting called True Fit.

### **Comfort Requirements**

- Coolness, ventilation, fit and sweat control are the most critical comfort needs.
- Air flow over the head determines coolness, and larger front vents provide better air flow.
- If you sweat a lot you may need a brow pad or separate sweatband.
- Weight is not an issue with today's helmets.

### **Special Problems**

- Pony tail ports are useful for anyone with longer hair. They can improve fit and comfort.
- Bald riders should avoid helmets with big top vents to prevent funny tan lines.
- Some head shapes require extra fiddling with fitting pads and straps.
- Very small heads usually need thick fitting pads.
- Very large heads require finding an extra large helmet, listed on our Web site.
- For a softer landing, seniors should pick a thicker, less dense model without huge vents.

### **When Must I Replace a Helmet?**

- Replace any helmet if you crash. Impact crushes some of the foam, although the damage may not be visible. Helmets work so well that you must look for marks or dents to know if you hit.
- Replace the buckle if it cracks or a piece breaks off.
- Even if you don't crash, manufacturers recommend replacement after three to five years. We think that depends on usage, and helmets given reasonable care are good for longer than that.
- If your helmet is from the 70's, it's time to replace it.
- No one requires you to replace your helmet, so give it some individual thought.

### **Bike Helmets for Skating?**

- The ASTM standards for biking and inline skating are identical. And CPSC says that bike helmets are fine for inline skating.
- Aggressive skating and skateboard helmets are different. They have their own ASTM standard, designed for multiple hits with less impact severity.
- If you are skateboarding and falling every day, a one-hit bike helmet is not very well designed for you. You need either a skateboard helmet certified to ASTM F1492 or a dual-certified helmet that meets both standards and can be used for biking *and* skateboarding.
- The words on the box are just ads. They may say skateboard or have a skateboarder graphic, but some of them lie. The manufacturer knows that you throw the box away.
- Inside the helmet is a sticker that tells you which standard the helmet *really* meets. Look for that sticker. For skateboarding it must say the helmet meets the ASTM F1492 skateboard helmet standard. A CPSC sticker is fine if you want to throw the helmet away after your first hit. Call that the Ten Day Helmet.

### **Warning! No Helmets on Playgrounds!**

- Anyone must remove helmets before climbing on playground equipment or trees, where a helmet can snag and choke them.
- There have been a few choking incidents, some on playgrounds and some in trees.