

Cycle helmets

Cycle helmets are designed to work as shock absorbers for your head. In a fall, the primary danger is not cuts or grazes to the scalp but the impact energy to your brain, which can slosh about your skull like you've been hit by a boxer. The helmet's job is to soak up as much of this energy as it can. It does this by compressing and crushing.

Cycle helmets are made mostly from a thick layer of expanded polystyrene (EPS), which is what does the crushing. This is covered with a plastic shell. That's meant to flex a bit on impact to distribute the shock through a wider area of EPS beneath and thereby soak up more energy. The shell should also skid on the ground.

To achieve a secure fit, a helmet cradles the back of the head with a harness that's adjustable with a ratchet or dial. Most have removable foam pads inside to improve comfort and fine-tune the fit. A buckled chinstrap keeps the helmet in place.

Helmet limitations

The protective capabilities of cycle helmets are often exaggerated. A bicycle helmet is not a motorcycle helmet. Cycling is an energetic activity and for any helmet to be tolerable it must be light and well ventilated, or you would swiftly overheat. This limits the amount of protection available.

Cycle helmets are designed to protect the head from a fall from a bicycle at impact speeds of around 13mph where there is no other vehicle involved. That's all: simple falls and not at high speeds. They have extremely limited capacity in crashes involving motor vehicles, which account for 93% of serious cycling injuries and fatalities.

Nevertheless, a fall by itself – whether from a bicycle or not – can be serious. Helmets are of greatest use not as protection from traffic (where they are largely superfluous) but rather where falling is relatively common: among young or learner cyclists, for example; among mountain bikers, who ride on trickier terrain; and for cyclists on icy roads.

Wear and care

If you choose to wear a helmet, it's vital to wear it correctly. The helmet must protect the forehead. Don't wear it at a jaunty angle on the back of your head. The brim should be no more than a couple of fingers' width above your eyebrows and just visible in the top of your vision.

The straps should be fairly snug but not tight. The 'Y' of the straps should meet just under each earlobe. You should be able to get one or two fingers under the chinstrap (a useful precaution while buckling a child's helmet to prevent pinched skin) so that it doesn't constrict your throat, but the strap shouldn't hang loose. It takes time to sort the strapping and cradle arrangement on a new helmet until it's just right. Take that time.

Of course, the helmet must fit to begin with. If it's loose on the head then it could slip out of position. Try it for size in the shop, as you would with shoes. Some head shapes fit some helmets better than others.

Cycle helmets are designed to crumple. If you have a fall and bang it then you should replace it. Even if it's not visibly damaged there may be hairline cracks in the EPS that will prevent it functioning

properly next time. Some manufacturers have a crash-replacement policy, which it's worth asking about in the bike shop. You send off your crashed helmet and they'll send you a new one.

Even if you don't crash your helmet it will still have a limited lifespan. Most manufacturers suggest five years – a fair guideline. Given a good degree of care a helmet might be used for longer. That means avoiding unnecessary knocks when it's being stored or carried, not putting anything heavy on top of it, and letting it dry out naturally if it gets wet. Those are all good precautions for a helmet in any case.

If your child is wearing a cycle helmet then make sure you remove it in any situation in which he or she can climb – such as at a play park. Children have been hanged by their helmet straps after falling and being held off the ground when the helmet has snagged on something.

Which helmet?

Helmets are made from fairly inexpensive materials. A more expensive helmet won't necessarily offer better protection. What it will offer is lighter weight, better ventilation and more style.

Style is important in a helmet, insofar as a lack of style may be a barrier to wearing the helmet at all. Geeky looks are a particular issue with teenage children. Ventilation matters more the further and faster you ride. Racers need it; infants in child-seats don't. Weight is something all cyclists want less of, but with modern cycle helmets weighing around 250g - 350g, it's not the issue it used to be.

The standard cycle helmet is an open shell formed of ribs and vents. Helmets for mountain biking have a detachable peak, which can be just as handy to keep the sun or rain out of your eyes for other types of cycling. Only for riding hard on drop handlebars is the peak a problem – you can't see where you're going! Helmets for infants are much deeper at the rear to protect the back of the head better.

You'll sometimes see riders doing stunts – on jump bikes or BMX's – wearing hard-shell helmets that look more like skateboarding or climbing helmets. These are tough but less well ventilated. Teenagers like them, however.

Also hotter but offering more protection – most especially to the chin and face – are full-face helmets. These look like motorcycle helmets, although they're much lighter and more fragile. They're worn almost exclusively by downhill mountain bikers, who need protection much more than they need ventilation.

Double standards?

Most cycle helmets on sale today are not as tough as those on sale in the early 1990s. Then most conformed to the Snell B90 standard. Apart from the later and slightly tougher Snell B95 standard, it was – and still is – the most stringent test for cycle helmets. Each helmet is impacted more times and with more energy, on a wider variety of anvil shapes than it would be in any other helmet standard. So a helmet has to stand up to tougher blows to pass. What's more, repeat tests are done on helmets taken from shop shelves.

The certificates you will usually see on helmets are EN 1078 (for the European market), CPSC (for the US market) and AS/NZ 2063: 1996 (for the Australian/New Zealand market). None of these is as thorough a test as Snell – according to UK helmet testing laboratory Head Protection Evaluations. The British Medical Association also favours Snell certification over the other standards.

Helmets sold in the EU have to pass EN 1078, a European-wide standard that supplanted Britain's own (and slightly better) BS 6863 in 1997. They may also pass some of the other standards.

Since there is no obligation to wear a cycle helmet at all, you don't have to wear a helmet approved to EN 1078 – or any other standard. However, if there are helmets that offer measurably better protection while also providing good weight, ventilation, comfort, and value for money, clearly they're a better buy. For that reason, Snell B90 or B95 certified helmets are most highly recommended – see <http://www.smf.org>.

It's a bit more complicated than that though, because helmet manufacturers often produce different models of helmet – with the same name but meeting different standards – for different markets around the world. While there are quite a few full-face helmets that meet Snell standards, only a handful of 'normal' helmets that are readily available in the UK do so.

Do I have to wear one?

In short: no. Compulsory cycle helmet laws do exist in some form in a number of countries, including Australia, New Zealand, parts of the United States (notably California), Canada, Spain and Sweden. Attempts have been made to pass such laws in the UK – most recently in 2004 – but have failed.

Intuitively, compulsory helmet wearing sounds like it would be a step forward in cycle safety. Insurance companies seem to think so: they have attempted to reduce payments to cyclists who have been hit and injured by drivers while they were not wearing helmets. Presumably these un-helmeted cyclists were 'asking for it, your honour...' And there are lots of anecdotes from cyclists along the lines of 'my bicycle helmet saved my life'. Of course, we don't know if it did or not. The number of fatal head injuries to un-helmeted cyclists would suggest not.

Either way, the anecdotes don't reflect the big picture. Statistics do. That's why there's resistance to compulsory helmet wearing among UK cyclists. Not because of a libertarian dream to feel the wind in one's hair, but because the safety data, unlike the anecdotes, doesn't support mandatory usage. (Note well that word 'mandatory'. Hardly anyone is against helmet usage. It's the legal obligation that's the sticking point.)

Cycling is not a dangerously risky activity. Per mile, you're more likely to be killed while walking than cycling. Six times more pedestrians – and 18 times more car drivers – suffer lethal head injuries than cyclists. Yet no one is advocating pedestrian or car helmets, apart from those for Formula One racing drivers. The British Medical Association has calculated (as 'life years gained' versus 'life years lost') that the benefits to health from regular cycling outweigh all the risks by a factor of 20 to 1.

It is curious that the countries with the highest levels of cycling and the lowest levels of risk to cyclists are those where cycle helmet wearing is negligible – for example, the Netherlands and Denmark.

In countries where helmets have been made compulsory, cycling levels have fallen – by an average of 30% in Australia – without a matching fall in head injuries. And Australia now trails the United States as the most obese country on the planet.

There is strong evidence that helmets help prevent scalp injuries. Beyond that, the evidence is hotly contested. It seems likely that helmets lessen the effect of impact injuries in those circumstances for which they're designed. Yet, at the same time, it's quite possible that they increase the incidence of rotational brain injuries and neck injuries.

So should you wear one? Only you can answer. At the end of the day cycling is good for you, and is not, in the grand scheme of things, dangerous. If wearing a helmet makes you feel safer and thus more likely to cycle, it's worth wearing one. If having to wear a helmet makes it less likely you would cycle, then don't wear one – or just wear one in those circumstances that you think it necessary or

useful. 'Sometimes' is just as valid a response as 'always' or 'never': many experienced cyclists always wear a helmet for mountain biking but don't wear one for road riding.

For lots more information on this topic, have a look at the Bicycle Helmet Research Foundation website: <http://www.cyclehelmets.org>