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The Nuts and Bolts of Health-related Bicycling Accessories

By ACSH Staff — July 1, 2000

Many Americans engage in bicycling principally to improve their health and/or physical fitness for example, to control body weight, blood pressure, and/or plasma cholesterol concentrations, and/or to increase agility. Bicycling is useful not only toward these ends but also as a mode of physical therapy (e.g., to promote recovery from knee surgery) and as a means of stress reduction.

On the other hand, bicycling entails many health risks, even for experienced bicyclists. National statistics suggest that in the United States:

> ** every six hours a bicycle rider is fatally injured;*
> ** 49 percent of bicycle-related fatalities are younger than 17;*
> ** each year, nearly a million children are treated in a medical facility for bicycle-related injuries;*
> ** 75 percent of bicycle-related injuries that are serious or kill are head injuries; and*
> ** 50 percent of bicycle accidents are falls, 10-20 percent are collisions between bicycles, and 10-20 percent are bicycle-car collisions.*

But most bicycle accidents are preventable, and bicyclers can minimize most bicycling-related risks by knowing traffic laws, biking defensively, and using proper bicycle parts (e.g., seats and tires) and safety accessories (e.g., helmets and headlights).

Maximizing Bicycle Safety

The keys to maximizing bicycle safety are: (1) to make and to keep one's bike mechanically sound, and (2) to use parts and accessories specialized for protecting the cyclist. A bike should undergo a safety check every six months. Bicycle fit (e.g., appropriate frame height), periodic tune-ups, and proper installation of parts and accessories are essential for accident prevention. For proper functioning, rotary parts must be clean, adjusted, and lubricated.

Even if one keeps one's bike in the care of a bicycle mechanic, one should be versed enough in bicycle maintenance to tell whether the bike is safe and to make simple adjustments. The basics of bicycle maintenance are stated below.

> ** The frame should not have any breaks, and all other parts should be aligned to*

> *the frame and well fastened to it.*
> ** The wheels should not wobble.*
> ** The tires should be sound, and the amount of air in the inner tubes should be appropriate.*
> ** Cables should be taut, brake and gear controls should be secure, and brakes and gears should function smoothly.*
> ** The chain, chain ring, cogs, and derailleur (the gear shifter, adjacent to the rear axle) should be clean and lubricated.*

A bike should undergo a safety check every six months.

Bicycle Accessories for Safety and/or Comfort

In sports marketing, bicyclists constitute an enthusiastic, high-income target for gear designed to improve bicycling performance and/or to increase enjoyment or safety. As bicycling has become increasingly popular in the U.S., many specialized accessories that potentially reduce biking hazards have been introduced or streamlined. The table on page 27 specifies the most popular of such products. Below are descriptions of some accessories designed for attachment to the bike.

Lights and reflectors

Lights and reflectors are musts, even for daytime cycling. Whenever visibility is poor (as at dusk or in rain), adequately appraising the road and other objects ahead requires a headlamp whose light would be conspicuous to motorists at intersections. Although a typical bicycle headlight and ordinary batteries may suffice for occasional cycling on suburban streets, serious bicyclists would be better off with a halogen headlamp and more powerful batteries.

Reflectors are inexpensive and are mountable almost anywhere on a bike. A front reflector is always desirable, and side-mounted reflectors (e.g., on spokes) are advantageous at intersections. The up-and-down movement of reflectors on pedals makes the bicycle more noticeable to drivers behind it. A large, rear-facing reflector mounted at the back of the saddle is also desirable. More effective, however, is a rear-facing, flashing red light.

The best sunglasses for bicycling are designed to block at least 85 percent of ultraviolet and have wraparound frames (and/or wraparound lenses), large sidepieces, and shatterproof lenses.

Mirrors

Because blind spots limit the utility of rearview mirrors mounted on handlebars, bicyclers who use these mirrors alone tend to look back over their shoulders (e.g., before changing a lane) and looking back is risky. Slighter head movements suffice with a helmet-mounted rearview mirror.

Noisemakers and pennants

A whistle or a bicycle-mounted bell or horn can be a convenient means of alerting pedestrians and bicyclers. A playful-sounding horn is relatively nonprovocative (as is a friendly "Excuse me"). As

for alerting motorists, a conspicuous pennant is preferable, particularly if one's bike is a recumbent (i.e., a vehicle designed to be ridden in an almost horizontal position).

Handlebar cushions and extensions

Handlebar cushions serve as shock absorbers. Even on a surface ideal for cycling, biking with a conventional handlebar can overstress one's hands. Keeping one's arms slightly bent and occasionally changing the position of one's hands on the handlebar (and/or using handlebar extensions) can alleviate such stress.

Tire liners, tire gauges, and air pumps

Tire liners are designed to reduce the risk of accidental tire deflation (e.g., a blowout), as from glass or thorns.

Using a tire gauge can ensure that the amount of air in the inner tube is optimal for reducing the risk of tire puncture. Some small, lightweight air pumps are very efficient. A frame-mounted air pump is especially handy for counteracting an inner-tube "slow leak," or for inflating a spare inner tube, when one discovers a tire-pressure problem on the road.

Computers

Bicycle computers are the last word in cycling technology. Some can inform cyclists of their current and average speeds, how long and how far they have been traveling, and their heart rate and temperature.

Bicyclist Gear for Safety and/or Comfort

For both safety and comfort, rider accessories are as important as bicycle accessories. Below are descriptions of some personal accessories.

Helmets and related accessories

Helmets are a bicycling-safety essential, and wearing one during cycling is a legal requirement in some states and a prerequisite for participation in most organized bike rides. Wearing a bicycle helmet approved by the American National Standards Institute (ANSI) or the Snell Memorial Foundation (whose focus is helmet safety) can reduce a bicyclist's risk of sustaining a serious head injury by more than 85 percent.

Well-ventilated helmets designed aerodynamically and for high nighttime visibility are widely available. Some helmets have a built-in sun visor.

Helmets struck in a collision should be discarded and replaced.

Helmets are adaptable for comfort and to atmospheric conditions with various helmet liners, cycling caps, and headbands. Visorless helmets are combinable with a visor, which can keep rain off a cyclist's eyeglasses. A visor, goggles, or sunglasses can protect the bicycler's eyes from dust and airborne debris. Like sunglasses, tinted visors and tinted goggles can otherwise improve daytime visual comfort, even in hazy or cloudy circumstances.

Sunscreen and related items

Outdoor daytime bicycling usually entails exposure to solar ultraviolet. The possible consequences of long-term exposure to ultraviolet include cataracts, pterygium (another vision-impairing condition), permanent wrinkling of the skin, and skin cancer. They may also include macular degeneration gradual breakdown of the central part of the retina.

Ample application of a water-resistant sunblock with a sun protection factor (SPF) above 15 and with an appropriate expiration date on its label can contribute to minimizing ultraviolet damage and to preventing overheating of the body. For the best results, one should complete sunblock application at least 15 minutes before ultraviolet exposure begins. The effectiveness of sunscreens whose labels lack an expiration date may decrease significantly within a year of purchase.

The nose and ears are common skin cancer sites. On these organs and on the lips and nape, a zinc oxide preparation or a waterproof stick sunblock may well be more convenient than a liquid or jellylike sunblock. Skin eruptions are very susceptible to sunburn, and exposing them to solar ultraviolet can result in permanent discoloration of the skin.

The most important practical consideration in choosing a bicycle saddle is comfort.

Clothing can be the best protection against ultraviolet, and clothes designed as such are on the market. Garments with a loose weave are not very useful in this respect. Wearing an opaque-visored cycling cap under a visorless helmet can limit ultraviolet exposure.

The best sunglasses for bicycling are designed to block at least 85 percent of ultraviolet and have wraparound frames (and/or wraparound lenses), large sidepieces, and shatterproof lenses. Oversize lenses are better protectives against ultraviolet, wind, and airborne irritants than are typical lenses.

Garments

Cycling gloves are advisable even in warm weather. They facilitate gripping handlebars; cushion the hands; and tend to prevent blisters, cuts, and abrasions on the hands. Bright cycling gloves increase rider visibility. Heavy cycling gloves that cover the hands totally are appropriate for winter biking.

Bicycling-specific shorts, tights, jerseys, vests, and windbreakers are designed to prevent chafing, to protect the cyclist against the elements, and to minimize wind drag. The waist of some cycling shorts is high, to prevent their slipping down during a ride. Bright jerseys, particularly those with large yellow and/or orange designs, increase rider visibility.

Kneepads are principally a skating accessory in the U.S., but they are also useful for young, inexperienced bicyclers. Cycling-specific and other athletic socks can minimize chafing and blisters and absorb foot perspiration. Those who would wear standard street pants while they bike should tuck their pant legs into long, elastic socks.

The non-recessed cleats on road-biking shoes make walking awkward and a bit dangerous. Walking is easier and safer with mountain-biking and "touring" shoes, which have recessed cleats and are usually heavier than road-biking shoes.

Hydration systems

The frame-mounted plastic container has long been the commonest hydration system for bicyclists, but sophisticated systems are on the market. Those of the "camelback" variety fasten with a strap at the cyclist's back and feature a suction tube positioned to enable hands-free drinking.

Saddles, Tires, Pedals, and Related Accessories

The most important practical consideration in choosing a bicycle saddle is comfort. The width of some seats is adjustable. Others have adjustable shock absorbers. But no bicycle saddle is universally comfortable. Saddle covers and cushions can limit chafing of the derriere.

As for tires, ample width and moderate air pressure make for stability, while quality materials, close construction, ample plies and belts, and moderate air pressure make for tire durability and reduce the likelihood of a tire puncture. Tires with natural-rubber treads tend to have a better grip on wet roads than do tires with artificial-rubber treads.

Many bicycle tires have belts of manmade material such as KevlarÂ® (from DuPont). In ordinary circumstances, such belts make the tires almost impervious to glass, tacks, and other common, potentially penetrant road debris. Together, self-sealing inner tubes and Kevlar belts minimize the chances of accidental tire deflation.

Standard pedals are appropriate for bicycling novices. These pedals do not require special shoes, and one can instantly remove one's feet from them. They are not, however, very efficient or comfortable for extended cycling.

Pedals with straps or toe clips enable pulling the pedal and thereby increase efficiency. Straps and toe clips are easily combinable with many standard pedals, and they are usable on almost any type of bicycle. But neglecting to untrap a foot at the proper time can result in a fall.

"Clipless pedal" systems systems that enable pulling the pedal up without straps or toe clips are more comfortable. These work through a meshing of the pedals and special cleats. One can still neglect to release a foot opportunely, but such systems can keep one's feet in an efficient position, and they tend to prevent bump-induced foot slippage.

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