Bike 101

Bicycle Safety Basics

A Guide For Grades 7-12

The Road To Safer Cycling

Today, more bicyclists and motorists are sharing the road than ever before. Unfortunately, this increase in traffic has resulted in an increase in bicycling related accidents. But it doesn't have to be this way. Bicycle riders can help prevent injury by making a point of developing their riding skills, learning about their bike's capabilities and limitations, and seeking to avoid cycling hazards. You can keep bicycling fun without sacrificing safety when you know and practice the basics. This information booklet is designed to help you do just that.

Find The Bike That Fits You Best

O.K. You want to buy a bike. Before you decide on what style is best for you, there are a few basic things you should consider:

1) What type of riding will you do? Trail and mountain, or road?

2) How much can you realistically spend on the purchase of a bike?

3) Can you afford the cost of maintaining and repairing a bike?

4) Do you have a place to store a bike?

Now that you've thought about your basic biking needs, it's time to consider the variety of bicycle styles and features available. As you compare, take into consideration the quality of major parts, such as the frame and the brakes. Avoid plastic parts that may wear quickly, or parts that can't be replaced. Compare the difference in "pedal effort." Think about whether you prefer upright or dropped handlebars. You can always stop into a bike store to look at styles, ask questions, and to test ride and compare bikes. Ideally, the bike should be assembled when purchased, if it isn't, make sure there are easy to understand directions included. Your new bike should also come with a written warranty that you should take time to review and understand before you purchase.

Bike Styles

Motocross (BMX)

Maneuverable and durable, this bike is best for off-road racing and riding around the neighborhood. Can include semi-high rise handlebars, 20-inch wheels, frame and cross-bar pads, and knobby tread tires. Many models also come with a rear coaster brake and hand brakes.

Middle Weight

Middle weight bikes are ideal for short trips over roads with moderate hills. It is larger and heavier than a motocross and easy to ride and maintain. Will stand up to rough handling and is equipped with coaster brakes.

Multi-speed Lightweight (Derailleur)

The multi-speed, lightweight bike is a road bike built specifically for long distance cycling along flat ground or on hills. Equipment includes front and rear hand brakes, dropped handlebars, and a narrow seat, padded or unpadded. Dropped handlebars allow you to lean forward to reduce wind resistance. For greater visibility in traffic, riders can sit upright by holding the top portion of the handlebars. This bike can be configured in up to 27 gear combinations. The gears are shifted by levers that are usually located on the down tube, near the handlebars, or as part of the brake lever mechanism. This multi-speed bike is ideal for both serious and general cycling enthusiasts. Its careful construction makes this bike one to handle with care.

Mountain Bike

This bike, designed to accommodate a variety of riding situations, is a good choice for multi-terrain cycling. It is outfitted with 10 or more gears vital for taking on rugged or hilly terrain. It's also an excellent choice for cycling that involves short trips around town. Handlebar positioning allows the rider to sit in an upright position enabling a broad view of traffic.

The Right Fit

(Figure A)

The most important decision any cyclist will make is deciding which bike to buy. And the most important criteria a bike must meet is how well it fits the cyclist. Buy a bike that is too large or too small, and it will be difficult to handle and uncomfortable to ride. Following are the key guidelines to getting the best fit.

1. Compare the frame and wheel size to the length of your legs. For models with a horizontal top bar, straddle the top bar while keeping both feet flat on the ground. There should be one or two inches of clearance between the rider and the bar allowing for easy mount and dismount. (Figure A)

(Figure B)

2. To check seat height, sit on the seat while someone holds the bike steady. Place the ball of the foot on pedal. When the ball of your foot is on the pedal at its lowest position, your knee should be slightly bent. (Figure B)

3. When it comes to handlebars, they should be set with grips at about seat level. Dropped handlebars should be dropped down at a 10 degree to 20 degree angle from horizontal while the upper part of the bar should be level with, or slightly below, the seat.

Master The Basics

Balance, braking and maneuvering ability are necessary cycling skills. All cyclists need to master these skills before becoming roadway users in our complex traffic system.

Practice riding on a dry, clean, level area away from traffic and free of obstructions. A school playground or an empty parking lot is a good choice. Try the following skill tests until they become comfortable and easy to perform.

Balance

Draw a chalk line about 75 feet long. Ride at a walking speed and stay on the line while keeping your head up. Maintaining a straight course at a very slow speed tests the ability to keep your balance while interacting in various cycling and traffic situations. (Figure C)

Braking

Pedal a 100-foot distance at an average speed. Then apply the brakes and come to a smooth, non-skidding stop within a distance of 10 feet without losing control. Repeat at a faster speed. Note the increase in distance required to stop. If you're riding a bike equipped with hand brakes, remember to apply the rear wheel brakes first. Note: The law requires that a bike be equipped with a brake that will enable the rider to make the braked wheels skid on dry, level, clean pavement. (Figure D)

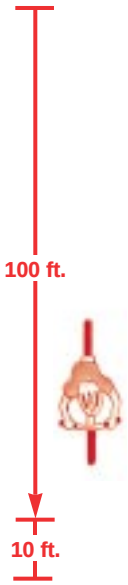
Circling

Ride several times around a circle measuring 15 feet in diameter. Then ride several times around a figure-eight course formed by two circles. Practice adjusting your balance as you change directions. (Figure E)

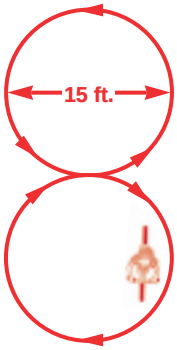
Control

Ride between two small objects, such as sponges, placed about six inches apart. Place another sponge four feet from the previous two sponges. Repeat the pattern with additional sponges. Maneuver around these obstacles to improve your ability to avoid real-life roadway obstacles. (Figure F) Or practice in an empty parking lot that has painted parking grids. Weave and maneuver your bike through the painted lines. (Figure G)

(Figure C)



(Figure D)



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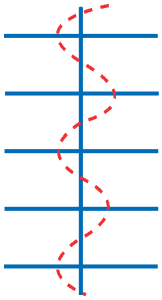

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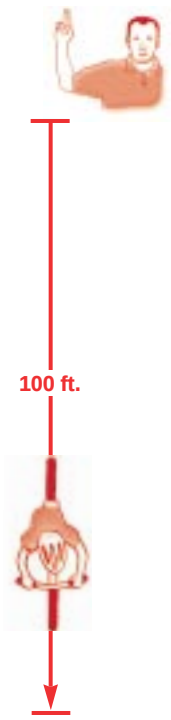


(Figure H)

Looking Back

Extend the 75-foot chalk line to 100 feet. Ask a friend to stand on the left side of the line, near your starting point. Begin riding away from your friend. He/she yells "Look!" and holds up a certain number of fingers. You must turn your head to the left and determine the number of fingers being held up, while at the same time keeping your bike on the line. Can you do both? Try the exercise a number of times. It will help you practice checking for traffic approaching from behind without swerving into a vehicle's path. Swerving left is a leading cause of bicycle accidents.

If you ride a multi-speed bike, it will take practice to shift gears smoothly and appropriately. As you get to know your bicycle, your skills and your control will improve. (Figure H)

After developing a sense of balance and control while on a bike, practice riding on wet or gravel surfaces that are away from traffic. When you can control your bike confidently, you can devote more attention to the traffic around you.

Hand Signals

Always use hand signals in advance to indicate to other bicyclists and motorists a change in your direction, or that you will be stopping.

Right Turn **Left Turn** **Stop**

Avoiding Accidents

The great majority of bicycle fatalities are the result of a collision between a bicycle and an automobile. Most bike/car crashes occur at intersections and driveways. Although there are many factors involved, statistics suggest that the cyclist may be at fault in approximately 75 percent of these accidents. The good news is that accidents can be avoided. However, you have to know what to look for and what to do.

One accident avoidance technique can be summed up in the acronym, SIPDA. It stands for Scan, Identify, Predict, Decide, and Act. Follow each step when analyzing any traffic situation as a cyclist.

Scan

Look in every direction when deciding which way to ride, particularly far ahead.

Identify

Identify any potentially hazardous traffic or obstacle that could affect your cycling path, particularly low hanging tree branches and parked vehicles.

Predict

Process the information you see, and prepare an alternate course of action you could take.

Decide

Choose the safest route for any given situation. You may have to trade off between traveling the fastest route in favor of the safest route.

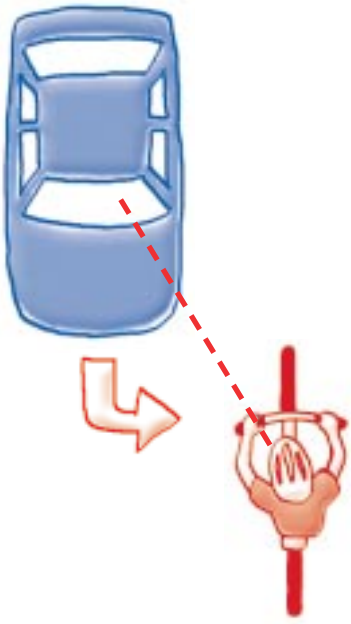
Act

Carry out your decision in a safe and courteous manner.

Every state requires cyclists and automobile drivers to obey the rules of the road. Failure to stop at a stop sign or traffic signal contributes in great measure to bicycle and motor vehicle accidents.

Stop, Look and Watch

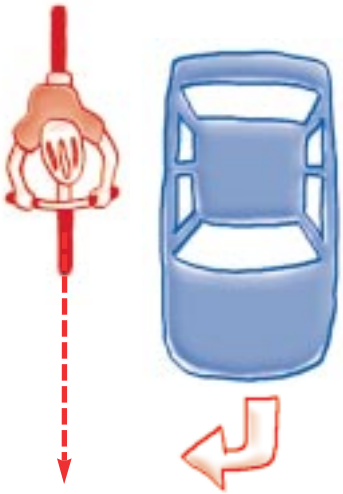
The best way to avoid accidents is by keeping alert. Always think ahead and observe what is going on around you. Bicycles aren't always easy for motor vehicle drivers to see. Ride on less traveled roads such as neighborhood streets, paths, lanes or routes especially designated for bicyclists until you are a more advanced cyclist.



Left Turning Vehicle
(Figure I)

Remember these tips to avoid hazards while bicycling:

- Avoid situations that could cause potential problems.
- Seek to avoid conflict with other vehicles.
- Never ride the wrong way against traffic.
- Always stop and look for approaching vehicles.
- Be alert for left-turning vehicles in which the driver may not see you (Figure I).
- Be prepared to yield or change positions if the driver doesn't see you.
- Scan ahead for drain or sewer gratings, their parallel bars have enough separation between to catch the wheel of your bicycle.
- Be aware of low hanging tree branches.
- Remember, you'll need more braking distance when traveling on wet roads including rain, ice, oil, mud, or roads in poor condition with loose gravel or potholes.
- Watch for the doors of parked vehicles that could swing into your path.
- Be alert for pedestrians crossing the road from between parked cars.
- Stay out of the "blind spot," or rear right line of vision, of moving motor vehicles (Figure J).



Right Turning Vehicle
(Figure J)

Maintaining Your Bicycle

Making a point of performing some basic routine maintenance on your bike will keep it in safe operating condition. Get into the habit of inspecting your bike on a regular basis, in this way you can make minor adjustments and repairs as needed yourself. Keep a basic tool kit on hand as well, including lubricant and cleaning materials. And don't hesitate to bring your bike into a bike shop for more complicated repairs.

Bicycle Maintenance Check List

- Tighten nuts, bolts and fasteners on a regular basis.
- Keep coaster brakes firmly attached to the frame, and lightly lubricated.
- Brake pads should just clear the tire rim.
- If hand brake levers touch or "bottom out" on the handlebars, they need adjusting.
- Keep brake controls lightly oiled.
- Maintain tires at correct air pressure.
- Replace worn tires.
- Locate tire leaks by filling the inner tube with air, then placing it in water and looking for where air bubbles appear.
- Wheels should spin evenly and not rub the forks or frame.
- Adjust spoke tension evenly to prevent wheel wobbling.*
- Replace broken spokes.*
- Keep the chain clean and lightly lubricated.
- Keep handlebars tight.
- Cement or glue loose handle grips to handlebars.
- The seat bolt and clamp should be kept tight, and the seat should not move when twisted.
- Replace cracked reflectors and worn out batteries and lamp bulbs.
- Wipe down all surfaces with a damp cloth then wipe dry.
- Prevent rusting by storing your bike indoors.

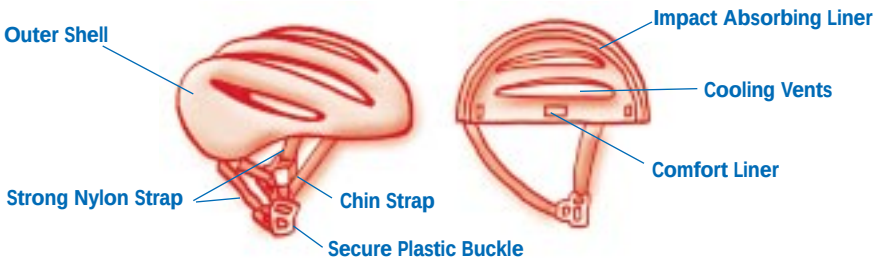
*Best if done by a professional at a bike shop.

Helmets

A helmet is the most important accessory a bicyclist should own. Every year, approximately 1,000 bicyclists are killed in the U.S., and 8 out of 10 bicycling deaths are as a result of head injuries. Wear a helmet specifically designed for bicycling. It should include a sticker identifying it as an approved helmet by one of the following organizations:

1. ASTM 2. Snell Memorial Foundation 3. CPSC

This sticker indicates the helmet has met established safety standards. Approved helmets usually have an outer shell lined with firm styrofoam. A helmet should fit snugly and not move or slide around on the rider's head. Replace any helmet that has been involved in a crash. Its ability to protect you may be compromised.



Stay Visible

Approximately 80% of cyclists involved in nighttime accidents are not seen by motorists until it is too late to avoid a collision. As a bicyclist, one of the best ways to stay safe is by taking extra care to be seen at all times. Wear light colors such as white or fluorescents during the day, and avoid bicycling at dusk or at night. If you must ride at night, take extra precautions. Wear reflective clothing or material, add reflectors to pedals and the rear and sides of your bike, as well as a headlight which is required by law when riding during hours of darkness. Front lights must be white and rear lights must be red. A leg lamp, a small battery powered light showing white in front and red to the rear that is strapped to the leg just below the knee is also recommended. And don't forget a bell or horn.

Theft Protection

Help keep your bike from being stolen with these simple tips:

- Register your bike. Local bike shops and the police department will record the serial number which they will file with a photo of your bike.
- Get a high-quality “U” lock, or padlock and a case-hardened chain. Lock your bike by placing the chain through the front wheel, the frame and then around a stationary object, or a bicycle rack.
- Store your bike in a garage, secure hallway or basement out of sight.

For more bicycling safety information,
visit our website at njcommuter.com

New Jersey Department of Transportation
CN 600, Trenton, NJ 08625-0600