

# Bicycling



## Winneshiek County Conservation Equipment and Recommendations:

- **Who:** Teacher discretion
- **What:** No equipment available; see Winneshiek County rental list
- **Where:** Paved trails: Prairie Farmer Recreational Trail and Trout Run Trail; Mountain Biking: extensive trail system in Decorah, contact Decorah Parks and Recreation 563-382-4158

## Introduction

Iowa has an estimated 1,200 miles of multi-use recreational trails such as rail-trails, park trails, and city trails. Trails provide diverse opportunities for physical activities including walking, jogging, hiking, skating, bicycling, cross-country skiing, snowshoeing, fishing, and wheelchair recreation. However you choose to use a trail, you will be providing yourself with benefits to your health.

Winneshiek County is fortunate to have two paved trails available for trail enthusiasts. The Prairie Farmer Recreational Trail begins in Calmar and runs through Ridgeway and just into Howard County at Cresco for a total of 20 miles. The Trout Run Trail follows a scenic 12-mile route in and around Decorah. An extensive network of mountain biking trails has also been created in the Decorah area; for more information about these trails, contact the Decorah Parks and Recreation Department.

Bicycling is an enjoyable way to travel and explore an area. Bicycles are versatile: they serve as on-road or off-road vehicles. Not only is it good exercise for you, but using a bike to get around is also good for the environment because it decreases consumption of fossil fuels. Learning how to ride bikes legally and safely will encourage bicycle users to continue biking for years to come.

## A Brief History

In 1817, a walking machine was invented that had two equal, in-line wheels, the front one steerable, mounted in a frame which you straddled. The device was propelled by pushing your feet against the ground, thus rolling yourself and the device forward in a sort of gliding walk. This enjoyed a short-lived popularity as a fad, not being practical for transportation in any other place than a well maintained pathway such as in a park or garden.

The next appearance of a two-wheeled riding machine was in 1865, when pedals were applied directly to the front wheel. This machine was known as the velocipede ("fast foot"), but was popularly known as the "bone shaker," since it was made entirely of wood. Tires were made

with metal, and the combination of these with the cobblestone roads of the day made for an extremely uncomfortable ride.

In 1870, the pedals were still attached directly to the front wheel with no freewheeling mechanism; however, solid rubber tires and the long spokes of the large front wheel provided a much smoother ride than its predecessors. The front wheels became larger and larger as makers realized that the larger the wheel, the farther you could travel with one rotation of the pedals. Riders purchased wheels as large as their leg length would allow. This machine was the first one to be called a bicycle ("two wheel").

Once metal became strong enough to make a fine chain and a sprocket small and light enough for a human to power, the next design was a return to the original configuration of two equal wheels. Only now, instead of just one wheel circumference for every pedal turn, you could vary the gear ratios and have a speed the same as with the huge front wheel. However, the bicycles still had hard rubber tires. Without the long, shock-absorbing spokes of the high wheels, the ride they provided was even more uncomfortable.

We are more familiar with the recent history of the bicycle in America: the "English 3-speed" of the '50s through the '70s, the 10-speed derailleur bike popular in the '70s, and the mountain bike of today.

### **Equipment & Supplies**

- Bicycle
- Helmet
- Optional: gloves, shoes, shoe clips, tire patch kit, tire pump

### **Parts of the Bicycle** (<http://bikes.jump-gate.com>)



## **Terms & Definitions**

**cadence** – the speed at which you turn the pedal cranks on a bike; measured in revolutions per minute (rpm), sometimes called spin rate

**gearing** – the sizes of gears available on a bike; with variable gears a cyclist going up a hill and down a hill may be spinning his or her legs at the same pace and making the same effort, but the bike travels a shorter distance with every turn of the crank while going uphill and a longer distance with every turn of the crank while going downhill

**recumbent bike** – bicycle in which the rider assumes a more-or-less horizontal position, usually reclining with the feet forward

**tandem** – bicycle built for two riders

## **Regulations**

The Iowa Department of Transportation is responsible for writing the laws that govern bicyclists. Under Iowa law, bicyclists must generally comply with the same rules of the road as the drivers of motor vehicles. Additionally, there are several regulations specific to bicycles:

- 1) If you ride at night, Iowa law requires that your bike be equipped with a white light on the front and a red light or reflector on the back, both of which must be visible for at least 300 feet.
- 2) Bicycles in Iowa may not be equipped with a siren or whistle.

In addition to the state laws, cities and towns may have ordinances regulating the operation of bicycles. Contact your local police department for more information. Check with Iowa DOT for additional state-wide regulations.

## **Skills & Strategies**

### **Fitting your helmet**

Your objective: snug, level, stable. You want the helmet to be comfortably touching the head all the way around, and to be level and stable enough to resist even violent shakes or hard blows and stay in place. It should be as low on the head as possible to maximize side coverage. The strap should be comfortably snug and the front of the helmet just above the eyebrows, or if the rider uses glasses, just above the frame of the glasses. If you walk into a wall, the helmet should hit before your nose does! When putting on the helmet, be sure the front is in front. Adjust it to the "Eye-Ear-Mouth" test developed by the Bicycle Coalition of Maine:

- When you look upward, the front rim should be barely visible to your eyes.
- The Y of the side straps should meet just below your ears.
- The chin strap should be snug against the chin so that when you open your mouth very wide you feel the helmet pull down a little bit

### **Adjusting the seat**

A very simple way to see if the seat is high enough is to sit on the bike seat while it is balanced upright against a wall, tree, or friend and then rotate the pedals backwards with your heels on the pedals. If the seat is the proper height, your legs should be fully extended at the bottom of the rotation. (Do not ride with heels on the pedals; this is just a measuring method.) You may choose to have the seat an inch or so lower for comfort.

## **Braking**

If you use the rear brake alone, the rear wheel will skid and stopping distance will be long. If you use the front brake too hard, the bicycle may flip forward. Achieve a quick, controlled stop by squeezing both brakes, but applying more pressure to the front. If the rear wheel skids, reduce force on the front brake.

## **Cornering**

Look to the inside of the turn. Don't just turn your eyes. Actually rotate your head slightly so you're looking just to the inside of the line you want to follow around the bend. Hold your outside pedal in a down position to provide counter balance for the turn, and to keep the inside pedal from catching on the ground. This will make it much easier to hold the correct line around corners. Practice cornering techniques at slow speed until you're comfortable.

## **Choosing Gears**

Don't get confused by the many choices, and don't worry about harming the bike by shifting it "wrong" — you can't hurt it as long as you slightly ease the pedal pressure when shifting (but you must pedal to shift). Understand that the correct gear is any gear that allows you to pedal comfortably at the moment. There's no right or wrong gear and there's no proper sequence to follow. Shift when your body tells you it's time for a change.

Shifting the right lever one click makes it *slightly* easier or harder to pedal, fine tuning the effort required for pedaling. Shifting the left lever makes *large* differences in pedal effort.

## **Climbing**

Stay seated to ensure that enough pressure remains on the rear tire to prevent it from slipping and skidding. Keep your chest up for optimal lung capacity.

## **Descending**

A bicycle pointed downhill can accelerate frighteningly fast. You could hit the brakes frequently to keep things under control. That might lead to skidding, wears the brake pads, and could surprise following ride partners. A sensible alternative is changing body position to slow down. By sitting taller and spreading your legs a bit, your body will catch much more air, which will slow you down parachute style. This trick only reduces some of the speed. If you really need to slow hard, use the brakes.

## **Hanging On**

Because your hands do a lot of the work while you're riding, they're prone to fatigue, even nerve damage. Most problems can be prevented by frequently changing hand positions. Every ten minutes, you should take another hand position. This will alleviate pressure on the nerves in the palms that can cause numbness and tingling, while helping to keep your upper body relaxed.

## **Pedaling**

The ball of the foot should be over the axle of the pedal. Try to maintain a steady, comfortable cadence during your ride. Choose gears that keep you from getting fatigued quickly.

## **Shifting**

Most people don't shift enough, which leads to premature drive train wear, sore knees (or worse), and one tired rider. Think of yourself as the bike's engine. Like an auto engine, you're most efficient pedaling at a certain rate, usually from 70 to 90 pedal revolutions per minute. To maintain this efficiency, shift every time you feel your pedaling rate (cadence) slow or speed up. So, on a rolling course, you'll be shifting almost constantly to maintain a steady cadence.

## Safety

- Always wear a helmet to prevent serious head injury.
- Stop at all intersections, marked and unmarked. Look both ways and use caution before continuing.
- Be seen! Wear light or brightly colored clothing to make yourself more visible.
- Be sure to keep your bike in good condition by performing regular maintenance.
- Use hand signals to warn motorists and other bicyclists of your intentions:

<b>HAND SIGNALS</b>		
		
<b>Left Turn</b>	<b>Right Turn</b>	<b>Stop</b>
<b>For a left turn, extend your left arm straight out</b>	<b>For a right turn, extend your left arm out and up, bent at the elbow</b>	<b>To signal you are stopping, extend your left arm out and down, bent at the elbow</b>
<b>Source: Teens Health - <a href="http://kidshealth.org/teen/exercise/safety/bike_safety.html">http://kidshealth.org/teen/exercise/safety/bike_safety.html</a></b>		

Trails often have unique rules. Look for posted rules and follow these basic trail guidelines:

- Wheels yield to heels: If you are on “wheels” (bicycle, skates) you must yield to those on “heels” (pedestrians, horses).
- Ride or walk to the right and pass left (just like when you drive on the road).
- Slow down when passing others. Alert them to your passing by saying “passing” or ringing a bike bell.
- Do not wander off onto private property. Stay on the trail.
- Know your location, bring a cell phone, and travel with a buddy.

## Extensions

Science: simple machines, mechanical advantage, acceleration

Math: speed, mph

Environmental Ed: biking as a form of transportation reducing fossil fuel (gas) consumption

## **Resources**

- Bike Iowa: Events, Clubs, Trails. <http://www.bikeiowa.com/default.asp>
- INHF: Safety, Iowa trails. <http://www.inhf.org/iowa-trails.cfm>
- Pedaling History. <http://www.pedalinghistory.com/PHhistory.html>
- Bike Safety. [http://kidshealth.org/teen/exercise/safety/bike\\_safety.html](http://kidshealth.org/teen/exercise/safety/bike_safety.html)
- Iowa Bicycle Coalition. <http://www.iowabicyclecoalition.org/>
- Skills and Strategies. <http://www.jimlangley.net/crank/bikingskills.html>
- Skills and Strategies. <http://www.kenkifer.com/bikepages/skills/index.htm>
- Skills & Strategies. <http://www.bikexpert.com/streetsmarts/usa/>
- Fitting Your Helmet. <http://www.helmets.org/fit.htm>