

## IN THIS CHAPTER

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- » Exploring the perfect bike (or bikes) for you
- » Measuring the benefits of bike riding

# Chapter 1

# Almost Everything You Need to Know about Bicycles

The bicycle is mankind's most efficient machine: gloriously simple, and simply glorious in its ability to move us around quickly and easily. Harnessing just two wheels and a little leg (or battery) power lets us roll around town faster and easier than walking and sometimes helping us transport goods, perform services, and even transport friends and family.

Riding a bike means freedom and independence. It provides transportation to school and work — or increasing opportunities for education and income. But that's not all: Cycling is fun! It provides exercise and a chance to take in some fresh air. It allows people to see more of an area to explore than walking, and we can experience it better than driving.

In this chapter, I explain the basics of this remarkably simple machine, which has stood the test of time (with a few innovations along the way). Granted, there is a lot of the technology that goes into modern racing bikes and long-travel full-suspension mountain bikes, but they are all based on easy-to-understand principles and mechanics. Let's take a quick look at how the modern bicycle came to be and how it works.

# Recognizing Where Bicycles Come From

In about 1818, Baron Karl von Drais invented the Velocipede, more commonly referred to as the “running machine” or “hobby horse” (shown in Figure 1-1), which wasn’t much more than two wheels attached to either end of a plank of wood to sit on. Riders scooted along on them by kicking the ground like Fred Flintstone, much the way kids use Balance Bikes to learn how to ride today. (Training wheels are no longer recommended; I explain why in Chapter 7.)



**FIGURE 1-1:**  
The hobby horse.

*Credit: alexrow / Adobe stock*

Numerous iterations of the Velocipede were made throughout the 1800s, leading to “the Boneshaker” in the late 1860s (see Figure 1-2), which got its name from the extremely uncomfortable experience while riding it. (Ouch!) The boneshaker added a crankset and pedals directly to the front wheel. This meant you could pedal it, which was deemed more elegant than running atop the bike. But steering it got a little tricky — you had to turn the wheel that your feet were pedaling! Plus, speeds were limited by the size of the front wheel. These major design hiccups eventually led to the penny-farthing bike.

In the 1870s, the penny-farthing (so named because the wheels varied in size, much like the two British coins) was also known as the “high-wheel bicycle.” It introduced a much larger front wheel (see Figure 1-3). That meant riders could go faster, but, unfortunately, it put them 4 to 5 feet off the ground! Not only did this make mounting (and dismounting!) the bike a bit tricky, but falling off a bike that high could seriously hurt someone!



**FIGURE 1-2:**  
The boneshaker.

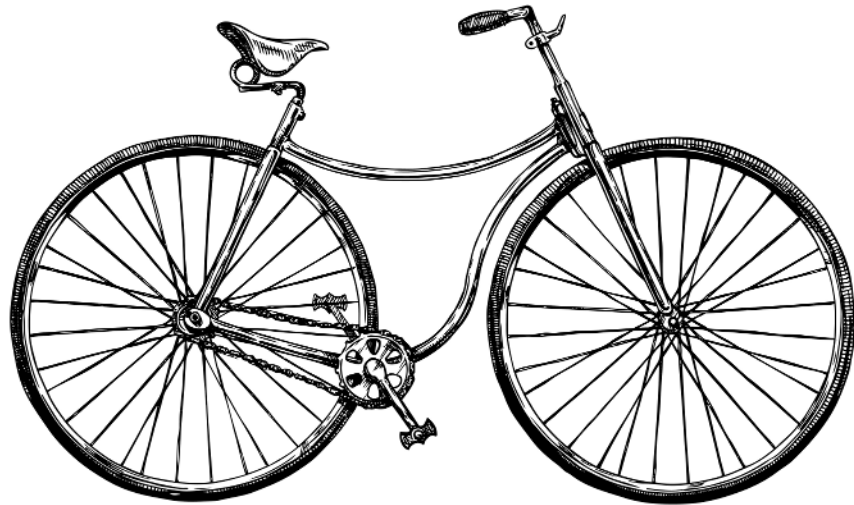
*Credit: Vizetelly / Pixabay*



**FIGURE 1-3:**  
The penny-farthing.

*Credit: Pink Badger / Adobe Stock*

The “safety bicycle” (see Figure 1-4) followed in the 1880s. So called because it has a much safer design than the penny-farthing, it incorporates the classic iteration of a double triangle design — a front triangle and a rear triangle, connected by the seat tube. Not only does this place the riders in a lower, more comfortable position, but the crankset is also finally detached from the wheel. Instead, a chain connected a chainring at the pedals to a cog on the rear wheel.



**FIGURE 1-4:**  
The safety  
bicycle.

*Credit: Oleksandr Babich / Adobe stock*

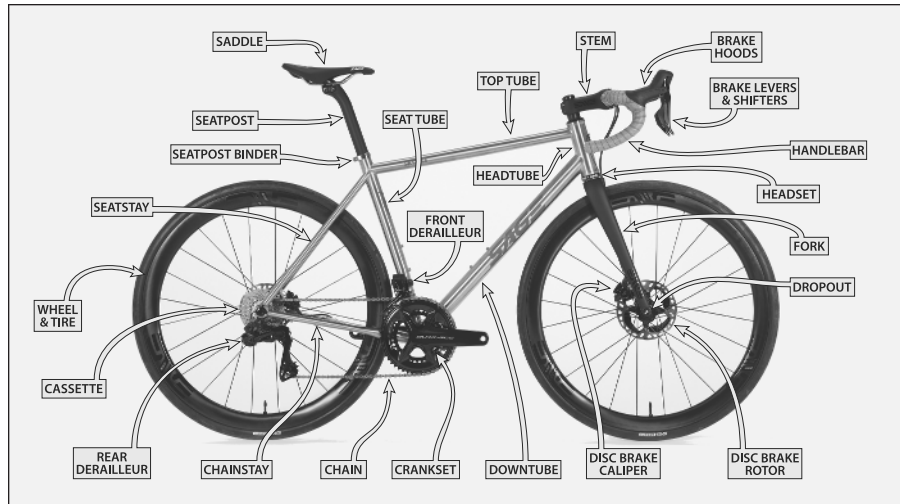
This allowed more freedom of steering, different gear ratios, and a wider range of sizes and designs to fit a wider range of riders. As you'll see, there are a *lot* of variations on this model now available, but they're all based on the original safety bicycle concept.

## Identifying the Parts of a Bicycle

Most people are familiar with the basic parts of a bicycle from when we were kids. And everyone likely has a general idea of how bicycles work, from the time we first rolled (wobbled, likely) on our own with a parent (or two) running along behind — just in case — to those days when we learned just how important brakes were as that tree closed in frighteningly fast!

With few exceptions, the bicycle still consists of just two wheels, a frame, a saddle, a handlebar, and a human-powered, pedal-driven *drivetrain*, or the pedals and gears that convert power into motion.

Take a moment to familiarize yourself with the main parts (shown in Figure 1-5) of a basic bicycle. I'll show specific examples of various styles of bikes and go into much more detail in Chapters 2 through 6.



**FIGURE 1-5:**  
The basic  
components of a  
modern bicycle.

*Tyler Benedict*

If you read this book, you'll become more familiar with other parts of the bike so that you can make informed decisions about which bike is right for you. Or, let's say you need to get something repaired and you want to meet your repair person at eye level ("You know — the crank thingy?"), this book will provide you with all the tools to know your bike inside and out.

## Producing a Bike for Every Rider

It's a great time to be a cyclist, but it may also be a confusing time to be a newbie. Nowadays, there's literally a bike for every purpose.

Not to confuse you right away, but in road riding there are race bikes, endurance bikes, criterium (or crit) bikes, climbing bikes, and aero bikes. Some bikes blend features from multiple categories to become solid all-rounders, but you can always find something for any niche — or custom build one to meet your specific needs.

Mountain bikes have cross-country (XC), downcountry (more trail-capable cross-country bikes), trail, all-mountain, enduro, freeride, and downhill. And for gravel, there are race, adventure, and bikepacking models. Cargo bikes have front loaders, rear loaders, and family haulers.

Whew! That was a lot, but don't worry. In Chapter 7, I explain every variant and help you narrow it down to the best bike for the type of riding you will do.

## Categorizing types of bikes

Here's a quick primer on the main types of bikes you'll find and where they're used.

- » **Road bike:** Skinny tires and curved handlebars are designed for going fast on roads.
- » **Gravel bike:** It's like a road bike, but with bigger tires to handle dirt and gravel roads.
- » **Mountain bike:** Flat bars, big tires, and suspension help this model tackle MTB trails and bike parks from mild to wild.
- » **Commuter bike:** This one has flat bars, medium tires, and an upright seating position, usually with storage options for getting through the city with work or school gear.
- » **Fitness/hybrid:** This upright bike with skinnier tires blends road bike speed with commuter bike comfort.
- » **Cargo bike:** Usually an e-bike, this one has mounting points for baskets, trays, bags, shelves, and other ways to transport gear and people.
- » **e-bike:** A bicycle with an electric motor to assist your pedaling, this one comes in all varieties, though you still have to pedal. Otherwise, it's a moped.

I can name more, including kids' bikes and specialty models for special use cases. Again, I'll explain all of them in great detail in Chapter 7. And I'll share tips on where and how to buy a new (or used) bike in Chapter 8.

## Weighing the Benefits of Riding a Bike

From getting in shape to saving money to exploring new areas, the benefits of riding a bike go way beyond the obvious. This section details a few of my favorite reasons for cycling.

### Taking a look at the physical health benefits

Exercise in any form is beneficial. Our human bodies are meant to move, but modern life has diminished the need for movement (or, sadly, effort).

Riding a bike is obviously exercise, but it provides so many different ways to push your body and improve its physical state. In Chapter 15, I provide tips on training

to prepare for biking adventures and explore ways to get the full benefit of seeing the world on two wheels.



WARNING

Now's a good time to remind you to check with your doctor before starting any exercise program. Cycling is an enjoyable, low-impact form of exercise that you can ease into, but (and especially if you're starting from pure couch potato status) it's a good idea to see your doctor first for a basic checkup to make sure you have no underlying health issues.

## Examining the mental health benefits

Studies have shown that physical exercise boosts blood flow to the brain, which can help you learn and concentrate better.

Dr. Peter Attia, a well-known longevity practitioner and the author of *Outlive*, says all the research he's seen (which is *a lot*) shows that regular, daily, and varied exercise is one of the most powerful ways to slow cognitive decline and boost overall vitality, too.

That's huge. Imagine boosting your performance at work or school by riding there instead of driving, with the additional perk that it's probably helping you live longer with a better overall quality of life.

And there's more.

All riding requires coordination between what you're seeing and what you're doing — braking, shifting, turning, pedaling — which helps improve coordination.

Mountain biking cranks this neuromuscular coordination to 11, introducing varied terrain and obstacles like trees, rocks, roots, drops, and jumps as well as more frequent shifting and braking. Talk about a full body *and mind* workout.

If you had to pick one full-body workout, there's not much that beats mountain biking.

## Saving money

Sure, you have to buy the bike, but any form of transportation (car, metro pass, ride sharing) is going to cost something. The beauty of a bicycle is that you get exercise while also saving money on gas or fares.

The savings go deeper if you consider how the long-term health benefits will likely offset doctors' bills for lifestyle-related conditions. Many of the most expensive and most common modern medical issues are caused by sedentary lifestyles (and a poor diet, but that's another book), and riding a bike frequently and with an intentional effort on improving fitness can reduce the likelihood of dealing with expensive health issues.

Some health insurance companies and employers even provide discounts for physical activity, so why not get all the other benefits of cycling while also saving money?