



## **Brampton Cycling Club**

### **Bike Handling Skills**

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## Riding Safety and Skills

As cyclists we are vulnerable to many hazards unique to our pastime whilst using the public roads. In this document, we seek to give some helpful advise on how you can minimize your risk and how you might acquire some skills that will help you when, not if, such hazards arise.

The first thing to consider is your situational awareness. The best way to avoid a problem is to be aware of what is going on around you at all times and to anticipate potential dangers very early on as this allows you the maximum amount of time to take appropriate avoiding action.

It is inevitable that at some stage you will need to execute some kind of emergency manoeuvre whilst out riding. It may be as simple as avoiding a large pothole that you didn't see until the last minute or it could be to avoid a vehicle that is turning across your path right in front of you. It is useful to have some bike handling techniques at your disposal for just these circumstances and below we have suggested 10 skills that individually or combined can help you in just such circumstances.

A word of caution before we proceed. If you wish to learn or brush up on any of these techniques you should only do so in a location off of the public roads and away from all traffic. If you can find a soft surface to use then so much the better, and always wear your helmet and gloves. The Brampton Cycling Club accepts no liability for any injuries or damage sustained during such exercises.

Ten useful bike handling techniques;

1. Ankle Grabbing
2. Looking Back
3. Contact Drills
4. Bunny Hopping
5. Turning/Cornering
6. Stopping/Braking
7. Slow Cornering
8. The Quick Turn
9. Riding No Hands
10. SEE (Search, Evaluate, Execute)

**References** - The information provided here were obtained from the sources listed below. It has been edited for inclusion here and will be removed upon request from the original source.

PezCycling: Bike Handling Clinic  
Motorcycle "RideCourse" Basic Handbook  
Pennsylvania *BikeSafe* Program  
Utah Bicycle Rodeo Course  
Sheldon Brown  
Ned Overend's Cycling

## 1. Ankle Grabbing Leading into Object Retrieval

### Ankle Grabbing

This drill involves holding onto your leg while pedalling. What you will find is that flexibility and the length of your limbs has very little to do with success in this exercise. The real key is the ability to push the bike away from the side you are leaning to while continuing to ride in a straight line. By pushing the bike to the side and keeping your centre of gravity in the middle, you effectively bring your body lower to the ground. Start by pedalling the length of the parking lot holding your right calf with your right hand and your left hand in the drops. This should be fairly easy. Try it on the other side. Then see if you can move your hand down to your ankle and hold on to it while you pedal. Once you achieve that, you can try to pedal while holding the heel of your foot. The farther you lean your bike to the side, the lower down you will be able to reach.

### Object Retrieval

This is a natural progression from ankle grabbing. Using the same concept as the above drill, practice picking up water bottles from the ground. Ride slowly up to the bottle and, pushing your bike away from the side you are leaning to, bring yourself low enough to the ground so that you can retrieve the bottle. You can start by trying to knock the bottles over using your left hand and then your right. Move on to picking up the bottles and then putting them down without letting them fall over. From there, you can practice picking up smaller objects such as soda cans or bottle caps.

## 2. Looking Back

Basic skill that many cyclists lack is the ability to look over their shoulder without coming off their line.

**Drill One:** Ride in a straight line and practice looking over your shoulder while maintaining your straight line. Practice both sides.

**Drill Two:** For this drill, pick a partner who is roughly your size. Start by riding the length of the parking lot with your right hand on your partner's shoulder, looking over your right shoulder. Don't be afraid to lean on your partner. He will keep you going in a straight line. Once you've mastered that, practice looking over the outside shoulder. Try to really turn around and look behind you while maintaining a straight line.

### 3. Contact Drills

**Elbow Bumping** – In this drill, you'll make some light contact with your partner. With your hands in the drops, to prevent your handlebars from hooking (always protect your handlebars when riding in a tight pack), stick your elbows out and ride the length of the parking lot knocking elbows. You can use your elbows as bumpers, letting them absorb the brunt of the impact.

**Shoulder Bumping and Leaning** – Once you are comfortable with elbow touching, you can practice making direct contact with your shoulders. Once again, keep your hands in the drops to protect your handlebars. Try to stay shoulder to shoulder and progressively increase the strength as well as the length of the impact. Practice leaning into each other and holding it for a few seconds. The ultimate goal with this drill is to ride the length of the parking lot completely leaning on each other. You will be surprised at how stable you feel, even though you are wholly dependent on the other rider to keep you upright. The take away from this drill is that when you are bumped in the pack, your instinct should be to lean into the impact rather than pull away from it.

### 4. Bunny Hopping

#### **Bunny Hopping**

These skills are important, not just for safety but also to avoid flat tires and to keep your wheels true. As with the other drills, there is a natural progression here.

**Front Wheel** – Assuming your parking lot has white lines to indicate parking spaces, practice riding the length of the lot, hopping your front wheel over each line as you cross it. This is mostly done using the arms to pull up on the bars.

**Rear Wheel** – Now do the same thing but with your rear wheel. You will use your legs to pull up on the pedals and lift the rear wheel off the ground.

**Both Wheels** – Once you've mastered the front and rear wheel separately it is time to get both wheels off the ground at the same time. At a jogging speed, bend your knees, push the bike down into the ground and then burst upwards, pulling up simultaneously on the pedals and the handle bars. Once you feel comfortable jumping white lines, you can try some bigger obstacles such as soda cans or sticks.

**Advanced Bunny Hopping** – Once you can easily jump your bike over curbs and pot holes, give these advanced skills a try. Ride up to a soda can so your back wheel is even with the can. Bunny hop just the rear wheel and while it is in the air, swing it to the side, knocking the can over. Next, try a sideways

bunny hop. Ride parallel to a white line or an obstacle. Do a bunny hop and once you are off the ground, move the entire bike sideways and over the line or object. Do both these drills to the right and then to the left.

## 5. Turning/Cornering

There are three ways to take a corner on a bike. Lean the bike, lean your body and the bike and turn the handlebars. Most steering is done by leaning, but learning how to turn the bike using the handlebars can be a useful skill. By turning the handlebars instead of leaning the bike, you prevent the possibility of having the tires slide out from underneath you on a wet road or on a gravelly turn.

### *The Most Common Mistake*

The biggest mistake I see people make—and the one that can often lead to a crash—is cornering with the pedal pointing down. In other words, if you are making a right turn, then your right pedal should be up, not down. Why? Well, because as you lean your bike into a turn the pedal gets closer to the ground, it's actually possible to hit the ground with the pedal, resulting in a crash. So to repeat: for left turns, make sure your left pedal is at the highest point in the pedal stroke, and for right turns, have the right pedal at the highest point.

### *Don't Pedal While Cornering*

This leads into the second point, which is: don't pedal while cornering. You can pedal into the corner and pedal coming out of it, but while you are leaning into the corner you should be smoothly coasting through it. If you watch pros, they brake before the turn, adjusting their speed so that they can glide through the corner and then sprint out of it. If you pedal through a corner, you can hit the ground at the bottom of the pedal stroke.

### *Look Through the Turn*

As you enter a corner, look as far beyond the corner as you can in order to look out for obstacles—especially slippery gravel, potholes or glass—and find the best line through the turn. Don't try to corner fast if there are leaves or anything else on the road that could make you slip: believe me, I've crashed trying to look cool on a sandy road, and I paid the price.

### *Use Your Weight*

The vast majority of steering on a bicycle should be done by shifting your weight, not steering with your hands. As you corner, learn your body into the turn, and counterbalance by stepping more firmly on the outside pedal (the one that is down—e.g., for a right hand turn, the left pedal).

### *Leaning in Turns*

To turn a bicycle, you must lean inward toward the direction of the turn. The faster you are going, and the sharper the turn, the more you must lean. You have no choice about this, for a given speed and turn radius, the centre of gravity of the bike/rider **must** be moved sideways a particular amount or the bicycle will not balance.

What you do have control over is whether you lean the bicycle more than, less than, or the same amount that you lean your body, to get the overall centre of gravity to the place that it has to go.

### **Leaning the upper body and the bicycle together, keeping them in line as when riding straight.**

This technique has the advantage of keeping the steering axis, tire contact patches and centre of gravity all in the same plane. This preserves the proper handling characteristics of the bicycle, and makes a skid less likely. You can verify this yourself by performing an experiment suggested by [Jobst Brandt](#):

"Some riders believe that sticking out their knee or leaning their body away from the bike, improves cornering. Sticking out a knee is the same thing that riders without cleats do when they stick out a foot in dirt track motorcycle fashion. It is a useless but reassuring gesture that, on uneven roads, actually works against you. Any body weight that is not centred over the bicycle (leaning the bike or sticking out a knee) puts a side load on the bicycle, and side loads cause steering motions if the road is not smooth. Getting weight off the saddle is also made more difficult by such manoeuvres.

"To verify this, ride down a straight but rough road standing on one pedal with the bike slanted, and note how the bike follows an erratic line. In contrast, if you ride centred on the bike you can ride no-hands perfectly straight over rough road. When you lean off the bike you cannot ride a smooth line over road irregularities, especially in curves. For best control, stay centred over your bike."

## 6. Stopping/Braking

### Maximum Deceleration--Panic Stops

The fastest that you can stop any bike of normal wheelbase is to apply the front brake so hard that the rear wheel is just about to lift off the ground. In this situation, the rear brake cannot contribute to stopping power, since it has no traction.

### Won't I Go Over The Bars?

The rear brake is OK for situations where traction is poor, or for when your front tire blows, but for stopping on dry pavement, the front brake all by itself provides the maximum stopping power, both in theory and in practice.

If you take the time to learn to use the front brake correctly, you will be a safer cyclist.

### USING YOUR BRAKES

**Picture yourself on a city path. Suddenly, you notice that you're about to ride down a flight of stairs. Or you're riding on a country road and there's a bridge out just a few feet in front of you. In cases like these, your bike's brakes could save your life. But even if you don't have such a dramatic experience, you'll feel more confident and go faster if you're ready to stop quickly and smoothly.**

It takes practice to get peak performance out of your brakes. You can't just jam them on and skid to a stop as in a car. You'd fall off! Your brakes must be in good condition to give you the most control. Good bicycle brakes work powerfully and smoothly. If your brakes are weak or grabby, it's time for an overhaul. But in addition to good brakes you need to understand weight transfer and how it affects your stopping.

### HOW WEIGHT TRANSFER WORKS

When you're stopping -- in a car, on a bike or on foot -- your weight shifts to the front. You see examples of such momentum every day. When you're running and stop suddenly, you have to put a foot out in front of yourself to keep from toppling forward. In the same way, when you stop a car, its front springs squeeze down as more weight goes to the front wheels.

Your bike doesn't have springs, but the weight nonetheless goes to the front wheel. Try a little experiment: Walk along next to your bike. Squeeze the front brake lever. The bike will stop quickly, but the rear wheel will rise off the ground.



Then squeeze the rear brake lever. Braking will be weak, and the rear tire will skid.

- The same things happen when you're riding. If you rely too heavily on the rear brake, the rear wheel will skid and wear out your back tire quickly. On the other hand, you can go right over the handlebars if you use the front brake too hard.
- How, then, do you get a powerful stop without risk? There's a trick to learn. Use the rear brake as a signal to tell you how hard to apply the front brake.

### **THE REAR BRAKE'S SIGNAL**

Practice on your bike in an empty parking lot. Squeeze the front lever three times as hard as the rear, while increasing force on both brake levers at the same time. With your light force on the rear brake lever, you're braking the rear wheel only lightly.

- For a powerful stop, squeeze the brake levers harder and harder -- the front always three times as hard as the rear. The rear wheel will eventually skid. But by this time, most of the weight will be off the rear wheel, so it will skid only lightly. You won't wear a big bald spot in the rear tire -- though you will feel and hear the skid.
- The rear wheel's skidding is your signal to release the front brake a little. Once the rear wheel stops skidding, squeeze the front brake harder. Keep adjusting the force on the front brake lever to keep the rear wheel just below the point of skidding.
- This is your braking technique for straight-ahead stops on clean, dry pavement. Under these conditions, the front wheel will never skid, and you can keep the bike under control.
- You can train yourself to release the brakes whenever the bike begins to go out of control. Practice using your front brake so hard that the rear wheel actually lifts off the ground. At a very low speed, 2 or 3 miles per hour, grab the front brake lever so hard that the rear wheel lifts off. Then release the brake lever instantly. Wear your helmet!

### **BRAKING UNDER POOR CONDITIONS**

Braking technique is different when the road surface is slippery, or if you're turning. Under these conditions, the front wheel can skid. You must brake lightly and use the front brake less.

- Avoid turning and braking on a slippery surface. If your front wheel skids out, you'll fall. On pavement that is good except for a few places, look ahead for the slippery spots and bumps.

Release the brakes as you go over the bad spots, then increase force again once you're back on good pavement.

- On dirt, gravel or any surface that looks as though it might be slippery, test the surface by applying the rear brake lightly. If the rear wheel skids easily, avoid using the front brake. Keep your speed down so that, even with your reduced braking power, you can still stop. In wet weather, the streets will be more slippery and so will your rims. Dry the rims by applying the brakes ahead of time. It can take 100 feet or more before the brakes begin to work normally.
- When turning, you may have a choice to swerve out of danger or stop -- but don't try to do both at once. Practice braking on turns and slippery surfaces to get a feel for these conditions.
- Your training will pay off as you become more confident on the bike, in all types of riding situations. You never know when you might have to stop -- and the better you can stop, the more confidently you go.

### When to Use The Rear Brake

Skilled cyclists use the [front brake](#) alone probably 95% of the time, but there are instances when the rear brake is preferred:

- Slippery surfaces. On good, dry pavement, it is generally impossible to skid the front wheel by braking. On slippery surfaces, however it is possible to do so. It is nearly impossible to recover from a front wheel skid, so if there is a high risk of skidding, you're better off controlling your speed with the rear brake.
- Bumpy surfaces. On rough surfaces, your wheels may actually bounce up into the air. If there is a chance of this, don't use the front brake. If you apply the front brake while the wheel is airborne, it will stop, and coming down on a stopped front wheel is a Very Bad Thing.
- Front flat. If you have tire blowout or a sudden flat on the front wheel, you should use the rear brake alone to bring yourself to a safe stop. Braking a wheel that has a deflated tire can cause the tire to come off the rim, and is likely to cause a crash.
- Broken cable...or other failure of the front brake.

- Long mountain descents, when your front brake hand may get tired, or you may be at risk of overheating a rim and blowing a tire. For this situation, it is best to alternate between the front and rear brake, but not to use them both at once.

## 7. Slow Cornering

The ability to balance your bike at very slow speeds translates into improved bike handling skills for cyclists.

A great way to get the hang of riding through slow, tight turns is to ride in circles. You can even practice this in your driveway or yard. This tight turn drill is a precursor to learning a track-stand and its a lot more fun. At first you may want to do this drill with your feet unclipped.

The challenge is to make the circle as small as possible. This requires riding really slow and even using the brakes. The handlebar may be turned so much that you can't make full pedal strokes because your knee or foot will hit. The solution is to ratchet the pedals, making partial strokes. Do this smoothly and gently because too much force will push the front wheel and widen the circle.

It takes lots of balance to turn very tight. At times you'll be almost at a track stand. Go clockwise. Go counterclockwise. Learn to make a smooth, tight transition from one direction to the other.

## 8. Quick Turn

There are many reasons why a cyclist may have to make a quick turn. A quick turn is an emergency manoeuvre that allows the cyclist to make a sharp turn whilst still moving at speed. This manoeuvre should be practised in a controlled environment and not on the roadway where vehicle traffic is present.

The quick turn is quite different from a planned or intended turn. For a planned turn, the rider does much of the turning by leaning the bike in the direction of the turn. The bike then steers around the turn whilst the rider adjusts the handlebars to keep the bike directly under the rider. However, in a quick turn there is no time to turn by leaning the bike.

To perform a quick turn the rider does a quick flick of the handlebars in the opposite direction than you need to turn. This will cause the bike to lean in the direction that you actually intend to turn. So, for instance, if the rider flicks the handlebars to the left the bike will lean to the right (the direction in which you actually intend to turn). As soon as the bike begins to lean to the right, the rider quickly turns the handlebars to the right. This motion rapidly aligns the bike

into a natural leaned turn. It is very important that the rider keeps the pedal on the inside of the turn in the top position to avoid it striking the ground with the consequent loss of control. The manoeuvre sounds more complicated than it is and should be executed in one continuous, smooth motion.

## 9. Riding No Hands

1. Try riding one-handed with each hand. You may find that one hand is easier to ride with than the other. If you practice enough it will become easier.
2. Once you get the hang of riding one handed, try taking your hands off of the handlebars for a few seconds at a time. Keep them close so you can grab the bars again and not fall if you get nervous.
3. When you're ready to give it a try, find somewhere with lots of open space that slopes downhill slightly. This will let you coast downhill and maintain your speed without pedaling.
4. Keep your center of gravity low. Focus your weight on the seat and pedals before taking your hands off the handlebars.
5. Take your hands off the handlebars, but only lift them about one inch above the handlebars at first because then you can easily regain control of the bike by grabbing the handlebars if necessary.
6. Practice going in straight lines, eventually you will become comfortable enough to try making turns by leaning.
7. To turn while riding no-handed, move your lower body in the direction you want to turn, but try to keep a grip on the bike with your knees and keep your upper body straight. Pointing your knees in the direction you wish to turn helps.

### Tips

- Riding without your hands is all about balance, be careful not to over-correct if you feel like you are going to fall. Small corrections are very effective.
- Always wear a helmet and you might consider protective gloves while you are practicing. Always practice on some soft surface, as you will probably fall at least once!
- Pedals with toe clips can help greatly in maintaining control of a bike when riding with no hands.

- Be aware of the direction you are pointing your knees. This really affects your balance. You can also use your knees to regain balance if you are unsteadied.
- Going slower while doing this is much harder than riding at a regular speed, just like riding a bike with your hands you will be more stable while traveling faster.
- It helps to be going about 10 miles per hour, preferably 15.

## 10. SEE (Search, Evaluate & Execute)

SEE — a simple and powerful strategy — is to **S**earch, **E**valuate, **E**xecute.

It is the strategy to help you understand what is going on in traffic and to be constantly planning and implementing a course of action. To SEE is to Search for factors that might lead to risky situations, to evaluate how the factors might interact to create risk, and to Execute an action to maintain a margin of safety. To SEE is to ask yourself such questions as: What's the other person going to do? What if that driver doesn't see me? What if there's gravel in that curve ahead? What if that car doesn't yield the right-of-way at that intersection?

These everyday riding situations have some thing in common: if a strategy for dealing with them isn't employed, they can easily lead to a crash. To put it simply, you must continually SEE.

As you develop your riding skills, apply the SEE strategy to give yourself time and space. It works anywhere, and can help to ensure your safety and the safety of others.