

**Driver's Ed. Education**  
**A Series of Specifics for Success**  
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**Article #13 - Them's the Brakes**

Until you've tried Driver's Education, you might think that braking is a no-brainer. I'll tell you; there isn't anything in this game that doesn't require serious brainwork and practice! Braking is more than simply standing on the pedal as hard as you can. There are different types of braking used for different circumstances. Let's discuss some braking strategies.

The first type of braking we'll discuss is Threshold Braking. You will be using this style under ideal dry, high grip situations. Simply put, it is braking right up to, but not more than just barely over the limit of maximum tire adhesion. Given proper conditions, you will be standing on that pedal progressively until you sense brake lock, then ever-so-slightly lifting to avoid it, then squeezing the pedal again until you sense lockup again, then releasing, then... You get the idea. We're avoiding tire smoke here, but the occasional chirp from the tires is expected, and a sign that you are getting all the braking traction there is. This type of braking is more commonly known as a "panic stop," and that is an unfortunate misnomer, for being in a panic is the last thing you need. As always, we're talking control here!

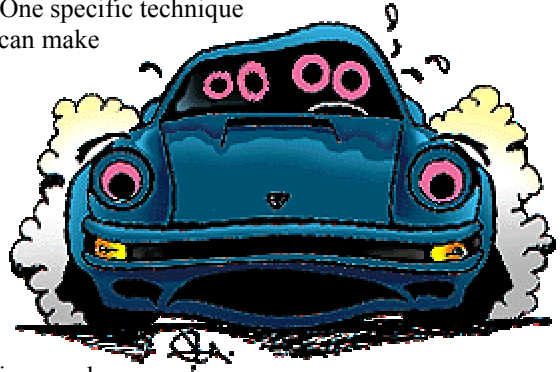
A second type of decelerating is Cadence Braking. This style is used under emergency and/or low grip situations. Essentially, you will be mimicking the function of ABS brakes by jabbing your foot up and down on the brake pedal with the strongest, fastest tempo you can muster. The idea here is that you are getting slightly more than maximum braking (threshold) for short bursts, but making sure that your tires don't lock for very long at any given time so as to maintain steering control. It sounds strange, and it is somewhat violent in application, but the results will surprise you. If you need to take evasive maneuvers to avoid a spinning car or a kid on a bicycle, you will soon see the efficacy of this technique.

One basic tenant of braking is that you should generally do so only in a straight line. Certainly, under ideal circumstances you should be done with your braking before your turn in point. However, in some instances it can be helpful and even necessary to employ a technique called Trail Braking. Trail braking logically suggests that you are going to continue your braking past the turn in point and as far into the turn as needed in order to assure that you can make the corner. It is used primarily in racing when one is attempting to go deep and out-brake an opponent

going into a corner. It can also be employed if you have overcooked your entrance a tad, or if your car just won't quite get the desired amount of front end grip to turn in as desired.

What you are doing, after slowing and downshifting, is reapplying the brakes smoothly as you head toward your apex. This keeps weight that you need for steering on the front tires, and also allows you to decelerate further to make the corner. It also tends to make the rear of the car want to pass the front, which can be potentially problematic, but desirable if properly managed. One must be ultra-vigilant and ready to apply the throttle for rear weight shift at a moments notice. This is an advanced technique, and should not necessarily be used continually. However, it is a neat little trick to have in your bag in case you need it.

One specific technique that can make trail



braking - and other situations - much more manageable is Left Foot Braking. I caution you that this is also an advanced technique that requires tremendous familiarity and, additionally, the right footwear. Getting ones feet tangled during braking is not quite an appetizing reality! Because of the rather violent nature of the sport, in general, left foot braking is most applicable to autocrossing, where it eliminates the jerky transitions between brakes and throttle application and keeps the car's attitude more stable. However, there are many places on the big tracks where I find left foot braking really helps keep a car on an even keel; the Left Hander at Lime Rock and the Off Camber at the Glen are two that spring to mind.

For autocrossing, you simply leave your left foot over the brake pedal, and your right, the throttle. For long track driving, what you are doing is completing your braking and shifting in a straight line as per normal, then sliding both your feet one-to-the-right; your left to the brake pedal and your right back to the throttle. By applying gas and brake simultaneously as needed, the car does not rise, nor fall, but "plains out" and remains completely level. This technique is tremendously useful in situations (like the turns listed above) where it always seems that the rear wheels are threatening to jump out at any moment. It can also be

effective in high traffic or low grip situations where constant re-evaluation and adjustment may be called for.

Now, one last point that ties in with Threshold Braking. There is a school of thought out there that say "Don't Brake Backwards." The message is one that seems incredibly obvious after thinking about it, yet rather illusive and typically overlooked until ruminated upon. Many drivers, not having fully explored their or their car's capabilities, have a tendency to brake harder as they approach the turn in point. In reality, a driver should perform maximum braking early in the braking cycle, gradually easing up as turn in is anticipated. This has several benefits.

First, it gets heat in the brakes in a hurry, which increases their effectiveness. Second, it levels or even lessens the accumulated heat stress in brake components by progressively easing their burden as total braking time increases. Third, it allows the car's suspension to start to level off as the turn-in point is reached, increasing cornering stability. A good concept, no?

Now, having offered this idea, I must add a caveat. Brake components are like many other things. They are used to routines. If you have been braking a certain way for a long time, your brake components may not appreciate any changes in style that you might try. The pads and rotors get broken in a certain way, and any deviation from this norm can cause undesirable effects such as glazing, warpage, hot spotting, etc. The type of pad you use also has a bearing on this. Some compounds do not like long duration braking. Others seem to only work well in this instance. You will have to experiment to see what works best for you and your brake components. Just don't be surprised if broken-in components don't appreciate a change in routine.

What do these techniques all have in common? They all need to be practiced faithfully. Each of these has its perfect application, but they won't come to fruition without first building the knowledge to understand them intimately, and the ingrained reflex to call them up in split-second times of need.

In the case of Threshold Braking without "Braking Backwards," you need to practice them in tandem. Pick a braking point and have a go. If you do things correctly, chances are you will stop well short of your turn-in point. Keep making adjustments; deepening your braking point until you find a spot that accomplishes the dual goals of maximum utilization of adhesion, and initially-high-but-gradually-descending pressure application as your intended turn-in point nears.

Regarding Cadence Braking, you'll simply have to try it. Find a remote parking lot, set up some cones or soda cans or whatever in a curving line, then

approach this "turn" at a healthy speed and try to Threshold Brake around the corner. If you keep increasing your approach speed, you'll reach a point where you experience brake lock, but cannot react quickly enough to maintain the turn, nor much steering control at all. Now try the Cadence technique of jamming your foot up and down as hard as you can on the brake pedal. With a little practice, you'll see that you can steam into that "turn" at least as hard (if not more so) and still get turned and stopped without hitting anything. Neat!

Lastly, Trail and Left Foot Braking are definitely advanced techniques that require a lot of practice and should not be used unless one is very comfortable with them. If your region or club has a skid pad or autocross school, you should not miss the opportunity to take part. Chances are they will teach these or similar techniques. Failing this, a little discretion and some smarts can find you a place to practice without getting arrested!

If one is want to go, one must eventually stop. A fast car is utterly useless without good brakes, and a proficient driver to utilize them. Don't find out too late that you should have practiced your braking. "Put a Stop To It" right off the bat!

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**by John L. Hajny**

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**I ask you to please abide by this request.**

**Thank you.**