

# PCC - Advanced Group Riding Primer

Group-ride dynamics are interesting and ever changing. As the pace and terrain changes, the pack stretches and compresses. The latter can cause some very tight quarters and even an occasional crash. In order to ride safely it's important to ride smoothly and avoid hard braking as much as possible. Inexperienced riders who panic and touch a wheel may crash. Never fear! You can avoid problems by practicing these simple rules:

1. **Stay alert at all times.** Never assume that it's safe. Keep "reading" the dynamics of the group and always leave yourself an out by keeping on opening to one side that you can escape through if there's a crash or obstacle you have to avoid.
2. **Hold your line.** This means swerving as little as possible. If you need to move left or right, do so gradually after checking the area for other riders and pointing out your move to make your fellow riders aware of your intentions. If you notice that someone is swerving, he/she's probably tired or inexperienced. Stay away from him!
3. **Don't overlap wheels.** Overlapping is putting your front wheel next to someone's rear wheel. This is asking for trouble, because if they move, they'll bump your front wheel knocking you down. Try to always be behind the bike(s) in front unless you're passing.
4. **Don't look back!** Looking back causes even skilled riders to swerve, which can cause a crash. If you must look back, ask the person next to you if you can put your hand on their shoulder. That will keep you riding straight so that when you look back, you won't swerve.
5. **Relax!** Use a relaxed grip on the handlebars, keep your shoulders down, (not up against your neck) and bring your elbows down and in so that they're slightly bent. These steps will help you stay relaxed, which allows quicker reaction time and prevents tension in the neck and shoulders that can lead to fatigue and sloppy riding.
6. **Focus on the rider(s) ahead.** Don't make the common mistake of focusing on the back wheel in front of you. Look up at the shoulders of the riders ahead and occasionally look at the road ahead and the riders up front so you can see what's going on and be prepared for sudden changes.
7. **Don't brake unless absolutely necessary.** If you must brake, do so lightly to scrub off a little speed. You can also slow down by sitting upright and catching more wind in your chest.
8. **Warn others of hazards.** Keep on the lookout for things that could cause problems and shout out a warning or point out the hazard.
9. **Pass carefully.** Sometimes you'll see the riders ahead starting to accelerate and you'll want to jump up to them. Be careful! Make sure you're not going to get cut off or cut someone else off. Usually, a moment's hesitation is all it takes to make the move safely.
10. **If you get tired move to the rear.** Fatigue causes dangerous riding, so it's safer to go to the back of the group than to be in the middle of the action. Don't just swerve and slow, though! Tell those around you that you're dropping back so it's a safe move.

## Be Prepared

You travel further and faster in the group. Be prepared for the challenges of the ride. Learn the route ahead of time to ensure you don't get lost. Also, if you know the route, it's easier to shortcut the ride if you get into trouble.

Always bring a tube, a pump, and any tools you need. Bringing a cell phone and cash is a good idea, too. And keep in mind that not all rides stop for flat tires, so you may be riding in alone if you puncture.

## Join The Fun!

Group rides can be immensely rewarding. You get a great workout, cover more distance than you would alone, and get to hang out with friends. You might even stop for coffee and conversation.

## Paceline Riding

Pacelines you see in pro racing are organized. They have specific rules. But in big groups like you find in centuries or charity rides, things will be disorganized. This can intimidate even experienced riders.

The primary purpose of riding in pacelines is to allow a group of cyclists to go faster than they could by themselves, with less effort for a given speed. Pacelines are about aerodynamics, efficiency, and cooperation, and the right combination of these factors will allow you to gobble up the miles at a rate that would be otherwise impossible. For this reason, they are useful in many aspects of the sport.

In competition, they're often the reason that non-sprinters win flat races, or sprinters win hilly ones. Racing pacelines are most often temporary coalitions of riders from opposing teams who would usually be protagonists to each other, but are cooperating for the good of the group at hand. Once the group's temporary goal is achieved, the coalition breaks down and new arrangements ensue..

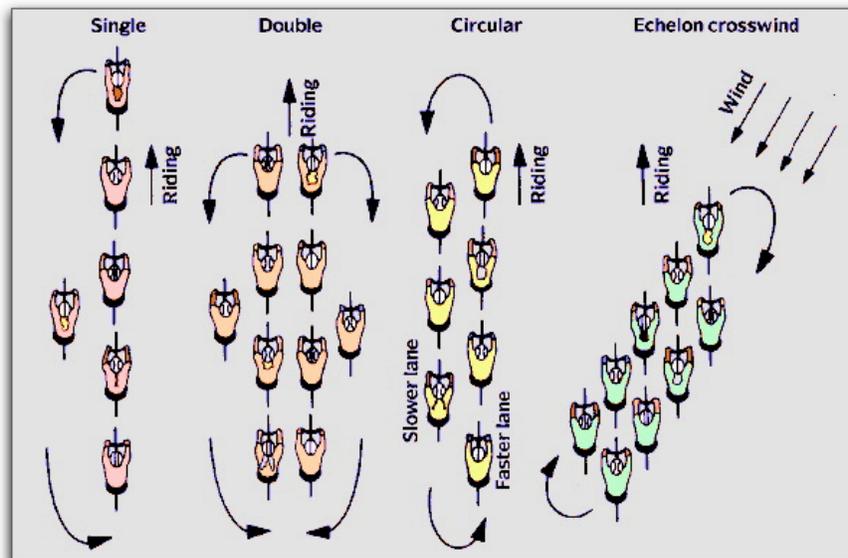
For now let's focus on paceline techniques, as they are a fundamental skill for every level of road racing from local crits to the Tour de France, the Giro d'Italia, the Volta a Portugal, or La Vuelta de España. Pacelines are not just for racers, though; any group of cyclists interested in covering a distance quicker and with less effort would do well to make use of pacelines, and most of the same techniques apply.



There are basically two types of pacelines. The single, where all the riders are in single file and each rider takes a turn at the front and then rotates around to the back; and the double, where there are two parallel lines of riders. Single pacelines are usually

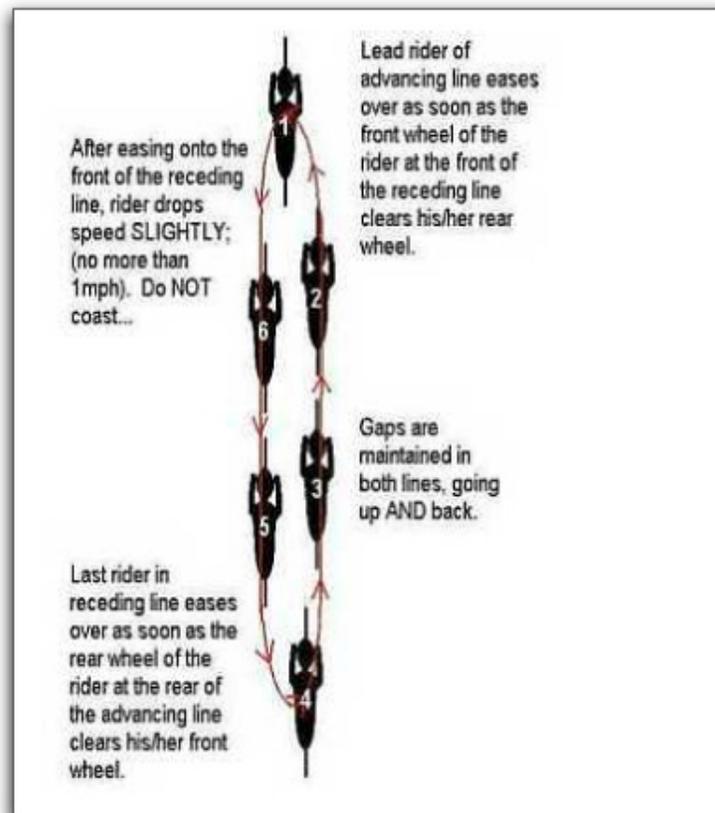
reserved for smaller groups and/or maximum speed over shorter distances. Double pacelines work best with larger groups and more open terrain. Doubles themselves can be separated into three types; mirror image, circular and echelon. Mirror-image doubles are generally used at lower speeds (and on wide roads), and work like two mirror-image single lines, with the two central lines advancing in unison and riders peeling off and falling back on both sides. The most common form of double paceline is the circular one, which rotates in one direction and functions like smoothly meshing gears, with riders rotating from one line to the other as they reach either end. The echelon is a variation of the circular that's used in strong crosswind situations, especially in racing. Like the mirror image, echelons take up a lot of road and are thus impractical in most non-closed-road situations.

Below are graphic examples of the different types of formations, with the three on the right being variations of the double paceline.



### **Double/Circular Pacelines:**

Since singles are pretty easy to grasp and require less coordination, let's take a closer look at the circular double paceline should work:



The image above shows a typical situation, with six riders rotating counterclockwise.

This tends to be the default mode for non-competitive pacelines where maximum speed is not essential, as it offers plenty of room to maneuver when you're moving backwards in the group.

But as speeds increase, and always in competition, wind direction should dictate the direction of rotation. This is because while both lines offer shelter from a direct wind, in crosswinds the proximity of the two lines allows one line to shelter the other from the side as well. By offering the advancing line more shelter, the group can go faster. Riders rotate off the front towards the side that the wind is coming from. So counterclockwise rotation is particularly effective when the wind is coming from the left, and clockwise is the best choice if the wind is coming from the right. But whichever way you're rotating, the group's speed should be constant, and rotation very smooth and even. Riders should ease off very slightly as they rotate from the front of the advancing line to the receding one, and then reaccelerate similarly as they reach the back and slide over to rejoin the advancing line. The advancing line sets the pace for the group, and riders should try to maintain that same pace when they hit the front. The group must stay in tight formation to maintain good aerodynamics, which means no big accelerations, jamming it up hills or out of corners. It also puts a premium on riding in a straight line and not making any abrupt moves.

This is a constantly rotating line, so no one should be taking long individual pulls; remember the idea of interlocking gears. This may require some restraint on the part of the stronger riders in the group, but by matching their efforts to the groups, they will end up going faster than they could on their own. The only way a stronger individual can ride away from a weaker group is if the group fails to cooperate effectively.

In a double paceline, you will need to keep an increased awareness about where the other riders are and how the group is rotating. Ideally, you will hold your spot in the rotation and follow the same rider every turn. However hills, corners, riders sitting up or taking a rest, etc. will often break the formation temporarily. So you should pay special attention at these times and be willing change positions in the rotation to keep gaps from forming. Gaps ruin the fluidity and aerodynamics of the group, and the sooner you can close them the sooner you will be back up to speed.

Echelons, seen at far right in the first illustration, are just a variation of the circular double paceline that comes into play in extreme crosswind situations. They are not often seen outside of competition, as with riders angled across the road, they aren't suitable for high-traffic areas. The primary jump in complexity from the circular double is figuring out the optimum angle and number of riders that an echelon can accommodate, which can only be learned from experience. Many of us have had the experience of being strung out in a typical, inline paceline when heavy crosswinds made shelter very hard to come by, even ten or more places back from the front. In situations like this, it's often better to break the main group into smaller ones that have room to angle themselves most efficiently for the wind conditions. In races, echelons appear spontaneously as riders well back in a normal paceline find themselves fighting the wind and react. The front part of the paceline seeks the optimum angle for wind protection, and at some point the group runs out of road. Just behind that point, a smart rider will just move across the road to a position matching the lead rider of the front echelon and a second echelon forms. And so on. The echelons function separately but within a close distance of each other, and when the course changes direction the groups can rejoin.

By extreme example, echelons illustrate how all pacelines should orient themselves. If the wind is head-on or still, it's OK for the lines of riders to be straight ahead. But whenever there is a crosswind, the front of the line (or lines) should point into the wind, with the rear of the group being angled away from it; in effect an almost-echelon. So for a wind coming from the left, the front of the group should slide towards the center of the lane to give the riders in back more shelter, and vice versa. Just remember to keep traffic in mind and don't take up a whole lane unless you have the road to yourselves.

### **Single Pacelines:**

Sometimes double pacelines are not the best solution. If there are 5 or fewer riders in a group, the constantly rotating double line becomes less effective as time spent transitioning between lines grows near or equal to the time in-line. In this case a single paceline, with riders taking pulls and rotating to the back one at a time will work better. Singles are simpler and allow more variation in pace and rotation timing. Some riders can pull longer and/or harder than others without hurting the group's cause, so long as the

variations aren't too great. When the ultimate goal is speed, each rider should make their best effort at the front, but should never sacrifice speed to do a long turn on the front.

Shorter, harder pulls that maintain a high, but constant pace will work better and avoid causing everyone in the group to slow down and then reaccelerate over and over to accommodate the lead rider. That endless cycle of intervals will doom a group in no time. You should never stay on the front too long anyway, since the inevitable variations in speed may see you getting shelled off the back when you try to tag back on the end of the line after your pull. This is especially true in racing situations, where opposing team riders may want to dump you after you take a hard pull. So do your turn and go to the back before you start to suffer, and always keep something in reserve. In crits, due to the shorter straights and tight corners, a single paceline where individuals typically pull sections is the norm. In this situation, you will often find yourself pulling to a corner, or over a hill; basically, picking points on the course that are good positions for changes of the lead rider.

Now that we're up to speed on the basics, let's finish off with a few double paceline Do's and Don'ts:

**Do rotate.** The speed advantage of riding in a paceline is 100% due to aerodynamics. It's all about staying out of the wind; the less time each rider in a group is exposed to the wind, the quicker it's possible for the group to go. So don't be a hero; a proper double paceline rotates like a set of meshing gears, and staying on the front just un-meshes the gears of the machine. It also hangs whoever who just did a turn on the front out in the wind to dry as they rotate back, wasting their energy as well as your own. Ease over into the receding line as soon as possible without interfering with the riders behind you. This gets more important the faster you're going. At 30mph+, you're going to need shelter as soon as you can get it.

**Don't be a "motor," be a "gear".** For double pacelines, it's important that everyone be aware of what speed the overall group is capable of sustaining. If, for example, the average speed is 25mph with all riders' efforts taken into account, you shouldn't dial it up to 30 when you hit the front, even if you can. The idea is for the group as a whole to go quicker, and all you'll do with repeated accelerations is ruin the cohesion of the group and eventually destroy the paceline. So stay in sync with the group and you'll all go quicker as a result. Watch your speedometer if you use one, and take your pulls at a speed matching the others. If you don't use a speedometer, just maintain the same cadence that you had sitting in the line. Let the reduced pace of the receding line bring you to the front; you don't need to accelerate to get past them.

**Do remember the accordion effect.** It's the same as in your car at a traffic light; a minor acceleration at the front gets multiplied due to the effect of reaction times as you go back down the line. In a paceline, that means riders 5 or 6 places back will have to accelerate much harder to maintain close gaps in the line, and a rider who's transitioning from the receding to the advancing line will have to sprint to get back on every time. This is very taxing, the opposite of efficient and a guaranteed way to split up a group. Most riders

who dislike pacelines and think they're really hard feel that way because of this. So make whatever pace changes you do make gradual ones. While your absolute speed might be very high, your speed changes relative to your fellow riders should be slow-motion ones.

**Don't stall the motor.** If the speed of the group is high enough, sometimes you can find yourself having trouble going fast enough to maintain the tempo of the advancing line. Admit it, we've all been there. In these situations, all you're going to accomplish by trying to maintain a set place in the rotation is stalling out the line when you hit the front. It's much better to sit on the back until you're fresh enough to do a proper turn. All you have to do is let the rider ahead in the receding line know to come on over, and leave them room to do it so they don't waste energy figuring out what you're doing. They'll appreciate it, and they'll be glad to have your smooth help at the front when you're able to get back up there.

**Do look after your mates.** If you're at the front, call out any road hazards or turns and give a hand signal so the others can pass the message back. And if you're in the line and see/hear such, make sure the message gets relayed back. One of the most annoying things that can happen in a tight bunch is to get run through a big pothole or over some broken glass just because the riders ahead of you didn't bother to call it out or pass it back. Seriously poor form! Ditto for riders at the back letting the group know about traffic behind if it's not a rolling closure situation. It's never a good idea for passing cars to catch the riders at the front unaware, and often they can't see behind the group. So let them know if there are cars behind the group, and make sure the message makes it to the front. In tight groups, everyone is dependent on each other not to cause a crash, so be smooth and predictable - don't be that guy.

**Don't get too close.** Close is aero, and aero is good; but if you're overlapping wheels, you're asking for trouble and endangering everyone behind you. You have less visibility from being close behind other riders and a reduced reaction time from the tight distance, so even a great bike handler is at a distinct disadvantage when it comes to reacting to the unexpected. This is a judgment call and depends on how well you know the habits of the other riders, but if you've watched the team time trial in the Tour de France you know even the best get into trouble sometimes when they get too close. And they do around 20,000 miles/year together; so be advised!

**Do pay attention.** Look around enough to get a feel for where everyone is in the group, and get a status update however often you need to. If you're planning to keep your group intact, make sure no one's gotten gapped when you go over hills, and if so, ease up briefly and get them back on before you really have to slow down a lot to regroup. Often those riders will be useful on the flats and waiting a moment will end up quicker than reducing the size of the group.

**Don't ride aerobars when you're in the rotation.** Ever. This won't be an issue in mass-start races as they're not allowed anyway, but it can occur outside of USCF-sanctioned events. It's fine to use them when you're at the very front of the group and in the wind, which is the only time they're really needed anyway. Not only is your bike handling

impaired when you're on aerobars, but so is your ability to quickly get to the brakes if needed. You may be a great bike handler, but you never know what's going to happen in front of you. And if the best pros in the world have trouble running tight pacelines on aerobars, we shouldn't even try!

Sooner or later you'll find yourself in a big group amid some riders with sketchy skills. It pays to learn how to survive (and also make yourself welcome) in a crowd.

**Look for Risky Riders.** These are the unsteady people who wobble, appear nervous, have a tense grip on the handlebar, and frequently grab the brakes. Avoid them! Move up to keep them behind you, or slide to the other side of the road.

**Stay at the Front.** This is easy to say but hard to do in some groups. At the front you have more control over your destiny because most crashes occur in the rear two-thirds of the bunch. It may take a bit more work to reach the front and stay there, but it's worth the effort.

**Watch the Wind.** Wind direction determines on which side the greatest draft is found. If the wind is from the right side of the road, smart riders move to the left of the wheel in front of them for greater protection. If you're doing this, beware of overlapping wheels with inexperienced riders. They may swerve and take out your front wheel.

**Be Wary on Climbs.** A major cause of group crashes is riders who stand abruptly. They slow for a second, causing the rider behind to hit their rear wheel and spill. To avoid this danger, let the gap open a bit on hills or ride a foot to either side. To avoid being the one who causes such a crash, pull your bike forward as you leave the saddle. Don't lunge and make a hard pedal stroke. Keep your speed steady. When sitting again, push the bike forward a bit.

**Practise Safety Skills.** Cycling isn't a contact sport, but it's not uncommon to have your arm brushed when riding near others in a group. It pays to learn how to bump into other riders without swerving or falling. It's easy when you practice this drill used at the [Carpenter-Phinney Bike Camps](#).

First, go with a cycling friend to a large grassy area like a soccer field. Ride side-by-side at a walking pace. Keep both hands on your bar. Start by gently touching elbows, then shoulders. As you gain confidence, lean more vigorously on the other rider. Soon, you'll be bumping each other with abandon and throwing in a few head butts for fun, all without going down. (Of course, always wear your helmet just in case.)

Riding relaxed is the key to absorbing contact without swerving. Have slightly bent elbows, a firm but not-tight grip on the bar, and loose arm and shoulder muscles. If you're relaxed, your body can absorb the shock before it gets to the handlebar.

**Here's a club cycling primer!**

**Know the group's traditions.** Some clubs like to start all rides, no matter how fast

they'll eventually become, with 20 or 30 minutes of easy warm-up. If you're impatient early, you can cause hard feelings by chafing at the bit to go faster. When you know the pattern, it's easier to be patient.

**Know what kind of ride is planned.** Will it be a fast training ride? A leisurely spin? Paceline practice? It's disruptive when most of the group is thinking one thing while one or two cyclists are on a different agenda. If an easy recovery ride is scheduled, but you're out for hard training, people are going to get angry. Be certain of the ride's goal before the start.

**Don't be a loco locomotive.** If you're having trouble taking your pulls at the front, get off quickly and slide back to get maximum draft in the paceline. It's far better to sit on the back and let others do the work than to slow everyone with valiant but sluggish turns at the front.

**Use a racing trick if you often get dropped on climbs.** As a climb begins, be nestled in the front third of the bunch. Get as much draft as possible. If you can't hold the pace, don't blow up trying. Let yourself slide back through the group but still be in contact at the top.

**Accept help on hills.** Stronger cyclists may give you a helpful push as they ride by. Don't be embarrassed by their help. They probably got towed up climbs when they were starting, too. A short push often allows you to regain your breathing and climbing rhythm so you can continue on your own.

**Pick a strong rider to follow.** If you're really having difficulty keeping the pace, get on the wheel of a good rider and mirror his (or her) technique. Use the same gear, stand when he does, take a drink as soon as he reaches for his bottle, and so on. This teaches you good cycling habits. Plus, emulating his movements takes your mind off your own effort and helps you past the hard spots.

**Don't be afraid to say the pace is too hard.** It's a good bet that other cyclists feel the same way but are reticent to speak up - or can't, because they're breathing too hard to talk! Perhaps even the riders who are setting the pace are having difficulty, but they continue to go hard out of vanity or because they think everyone else expects them to. A little communication goes a long way in making a group ride a more pleasant and productive experience.

**If you always have trouble holding the pace, look for a different group.** Find one closer to your ability level. There's no shame in rationally assessing your strength and choosing cyclists who share it. You'll actually improve faster if you ride with a group that you are on equal terms with. You'll be able to practice paceline cycling, following a wheel, riding in close quarters, cornering in a group, and other important skills.

**Don't let group cycling hurt your progress.** Frequently riding with a too-fast group will make you tired. You won't improve as rapidly as you might with more rest. A pace that's

too fast will hurt you mentally, too. You'll begin to associate cycling with pain, misery, and disappointment. Don't let your ego overpower your better judgment. An appropriate dose of humility now will pay dividends later.

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