

YEAH-NAH OR NAH-YEAH

Words: ProRider / Karel Pavich Photos: Kev

Counter-steering: the process of momentarily turning the handlebars in one direction to make the bike turn in the opposite direction. Many riders are unaware they are doing it, but unless you only ever ride in a straight line, you are already counter-steering. Making yourself aware of it just means you can refine it, making you a safer and more efficient rider (read faster too if you wish).

Many motorcycle accidents are single vehicle accidents – often newer riders who don't have the correct techniques and skills in corners, curves and bends, ending up crashing. When riding at less than 20km/h, leaning the bike in the direction you want to go will cause the bike to turn, so you don't rely purely on counter-steering (it works but it happens fast, drops in hard and isn't necessarily the best plan of attack), but it's a whole different process as your speed increases.

When it comes to cornering, counter-steering is what initiates the turn. To turn to the right, PUSH the right handlebar and (if you need to, PULL the left handlebar simultaneously). The natural response of the bike is to lean in the opposite direction. Strange as it may seem, whichever direction you want to go – you will always PUSH the handlebar away from you. Once the bike is turned into the corner, you can relax the pressure on the bars, however that will depend on the corner. A decreasing radius or high speed corner may require you to counter-steer all the way through it to keep the bike turning in.



Find somewhere quiet to practice the effect of pushing and pulling the 'bars'



Pushing the right-hand bar...

...makes the bike...

...turn right



Weighting and moving body



Weighting the pegs assists the effect



Weighting the pegs helps - it speeds up the rate of change and works as part of the counter-steering technique

PRACTICE

Practice counter-steering at a speed of 30km/h or more as you approach a corner. Push the left handlebar away from you and notice how the bike will want to turn left. It's the opposite action for a right turn.

One exercise that you can do on an empty street (making sure there is no traffic behind you) is to ride S-lines across the centre of your lane, at a moderate speed (say 50km/h). Lean forward so you can reach the handlebars while keeping your elbows bent. Push on the right grip to lean right, left grip to lean left. Try not to move your torso relative to your bike, but use only your arms. Gradually make sharper S bends as you get the feel for how the steering works.

If you are unfamiliar with counter-steering, a good way to start is by being conscious of what is happening to your handlebars while in a turn. Making slight counter-steering adjustments so that you can judge the effect it has on your bike will give you a better feel for how it is working. When you start to consciously use counter-steering at the turning point of bends, your sense of control is heightened, and so is your confidence.

USE YOUR BODY WEIGHT

Shifting your weight off the bike – even just slightly, can help the bike turn in the direction you want to go, and reduce the required lean angle. It then keeps the bike more upright on the fatter contact patch of the tyre for drive out of the corner, it's not just to look cool that racers 'hang off' in the turns, obviously on the road you use the technique to a lesser extent but the physics are the same – handy in the wet too. Steering engages the whole body, not just the arms, especially on bigger, heavier bikes. The lower body has an important role to play too. Strong quad muscles will tire less quickly than your arms, so use your legs to move your body as much as possible.

PRACTICE

Shifting your weight off the seat well before the corner, (before braking so the bike stays more stable) will allow you to notice how the bike wants to turn in that direction. Moving your body weight even an inch can make a big difference to the way the bike turns into a corner.

WHERE YOU LOOK IS WHERE YOU WILL GO...FOR BETTER OR WORSE

It's a well-known fact. The bike will go in whatever direction you are looking in, so concentrate on looking where you want to go, don't get fixated on where you don't want to end up!



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GP bike or cruiser - the science still applies

THE SCIENCE

There is a reason your motorcycle has 'rake' and 'trail' and a fair chunk of that reason relates to counter-steering. The steeper your forks, the quicker it will change direction but it also makes it less stable, due to the same.

Trials bikes have steep rake and turn on a dime (useful at low speeds but terrifying at high speeds) but don't cruise around with three digits on their non-existent speedo. The other extreme is your 'raked out' chopper. The rake on those long forks makes them slow to change direction but cruisy and relaxed on a straight Texan Interstate.

For those somewhere in between, the engineers have given us an easy recipe to follow. If you string a line from axle to axle, you'll notice that as your 'bars turn to the left, most of your bike's mass actually ends up to the right of the line, due to the rake of the forks. This, in part initiates the bike dropping to the right, the opposite direction to the handlebar input. What also happens is the drive or inertia is then heading just to the right of the steering head, adding its weight to the argument. As the bike deflects the desired amount, you relax the pressure and the bike pretty much maintains a line through the bend.

If you look at a bike head-on in slow motion, you can actually see the tyre momentarily turn one way before the bike tips in the other way and the 'bars follow'. The higher the speed, the harder it is to discern visibly the counter-input used. Weighting the pegs lets you increase the rate of direction change but it's the counter-steering that initiates the turn. Even without hands on the bars, you can detect the weight shift causing the front tyre to deflect one way just before the bike tips in the opposite way. Again, the geometry of the bike is designed with this in mind.