Girton College Freshers Cycle Survival Booklet

At Girton basic cycling skills and being able to fix simple problems with your bike are incredibly important to your daily life. This booklet summarises some key skills to improve you and your bike's wellbeing and hopefully save you money!

Basic Safety:

1. *How to correctly wear a bicycle helmet*
2. *Road positioning, signalling and rules of the road*
3. *How to look behind you*
4. *Legal requirements and equipment recommendations*

Basic bike maintenance

5. *How to adjust your saddle height*
6. *How to fix a puncture*
7. *How to check your brake pads for wear*
8. *How to put a chain back on*

Advanced bike maintenance

9. *How to index your gears*
10. *How to adjust your brakes (v-brakes)*

If you need more in-depth information about safe cycling and bike maintenance visit the British Cycling website :
https://www.britishcycling.org.uk/knowledge/bike-kit
Please contact the JCR Bike Rep at jcr-bike@girton.cam.ac.uk with any questions you may have about the content, or any feedback.

(Xi Shen) Version 1.0, 23/09/2018
(Andrew Lam) Version 2.0, 01/10/2019

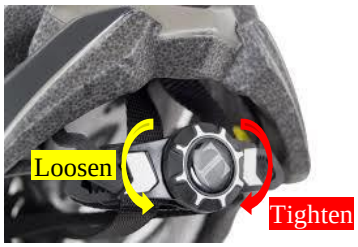
1. How to wear a bicycle helmet

(with reference to Cyclescheme guide)

If worn correctly, a bicycle helmet can reduce the risk of serious head injuries in the event of a fall. The Porters and the Bike Rep recommend that students always wear a helmet when cycling.

Step 1: Finding your size. Using a measuring tape, measure horizontally around your head, above your ears and 2-3cm above your eyebrows (the circumference of your head). Do consider the ability of the helmet to accommodate and beanies/ear warmers/head warmers that you might need during winter.

Step 2: Adjusting the fit at the back of the head. Leave the chin straps unfastened for now. Wear the helmet so the front of the helmet sits about an inch above your eyebrows. Most helmets will have some form of ratchet or retention mechanism that sits at the back of your head. Adjust this until the helmet feels snug but not uncomfortable.



Now shake your head briskly from side to side, like you're indicating 'no'. The helmet should move with your head and not come loose. Then, without shaking your head, bend over so the top of your head is pointing at the floor. Even with the chinstrap undone, the helmet should fit snugly enough that it stays on.

Step 3: Adjusting the chinstraps. The straps at the side of the helmet should meet just under your earlobes (at make a ‘Y’ shape). The chin strap should be loose enough that you can yawn without it digging in, but snug enough that you can get only a finger or two underneath. You need to get it right so that the helmet won't move about on your head. Be aware that the straps can work loose over time, so you may need to readjust them later.

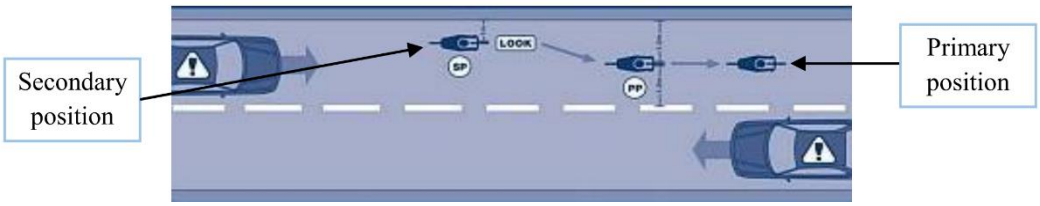
Here’s an illustration of a correctly worn helmet: Note the sidestraps that meet below the earlobe and note that the helmet covers at least half of the forehead.

2. Road positioning, signalling and rules of the road

(with reference to British Cycling Bikeability course)

Adopting a safe road position allows the cyclist a safe zone to manoeuvre in (to avoid obstacles etc.) and can discourage drivers from dangerous actions. There are 2 road positions, and you are free to switch between them.

Primary position: This refers to riding in the centre of the lane (which is very



much allowed!) and is often the safer position for narrow roads where there is no space for a cyclist and a car to travel side-by-side safely, or when a cyclist wants to make a right turn. Riding in the primary position is also often called taking the lane. When riding in primary position, you should travel at a reasonable speed but if traffic is building up behind you and the road is clear, you may wish to adopt the secondary position to allow traffic to pass.

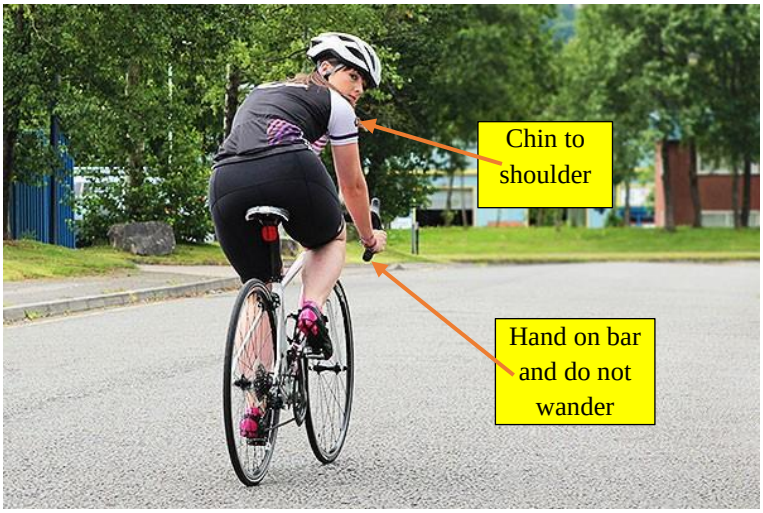
Secondary position: The secondary position is usually not less than 0.5m from the edge of the road/kerb and will put the cyclist towards the left of the lane. The secondary position is most commonly used when the road is wide enough for safe overtaking, and if adopting the secondary position does not compromise the cyclist's safety, in Cambridge the secondary position is typically used as the roads are wide.

Signalling: Using hand signals is important to let other road users know of your intent to turn left/right. To signal a right turn/change of lane, raise your right hand as shown in the picture to the right. Please look behind you before signalling to avoid extending your hand into the path of an incoming cyclist or car! Give yourself plenty of time by signalling early and holding the signal for 2-3 counts.

Obeying road rules: As part of traffic and responsible road use, it is important that cyclists obey the rules of the road including (but not limited to): stopping for red lights and zebra crossings, obeying one-way traffic rules, and not cycling on the pavement/sidewalk.

3. How to look behind you

Occasionally you will want to look behind you while cycling, e.g before signalling and turning/ to see if anyone is overtaking. Here are some tips on how to do it safely.



Practice: For any new skills, it is recommended to learn and practise on an empty stretch of road. Start by riding at a medium pace. Keep both hands on your handlebar. (Usually you should start freewheeling but it depends on road incline and condition) Then move your head to either direction until your chin touches your shoulder. At this position you should be able to sufficiently see behind you. You should only need to look back at most 1 second at a time. If you start to swerve, do not panic. Look forward and correct your path. It is common for rider to go where they are looking. By practising, you can keep a straight line even looking behind you. Practise this move 3 to 4 times before attempting it in traffic.

In traffic: Many people incorporate looking back and signalling. Be ware of the traffic in front of you as they might be slowing down for the junction. So, judge your speed and path before you look back to check if there are incoming vehicles and then signal.

4. Legal requirement and recommended equipment

In the UK it is **illegal** to ride without a working front and rear light (white for the front and red for the rear). **You will be pulled over by police and fined.** We always recommend students to carry a spare pair of bike lights. If you are caught short without a pair of working lights, please consider pushing your bike back to college or use your cell phone's flashlight as a makeshift front light to improve visibility.

Mudguards are also very useful accessories for the Cambridge winter months.

5. How to adjust your saddle height

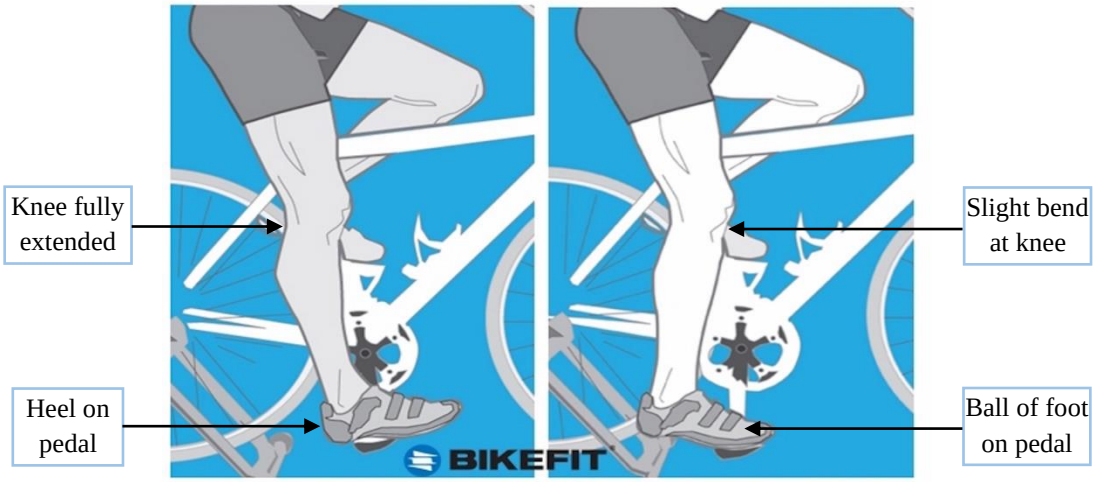
(with reference to Cycling UK)

Having your saddle at the correct height sets you up for more efficient cycling by allowing good extension and recruitment of the leg muscles.

Step 1: Loosen the seat post clamp bolt –depending on your bike you may need a spanner, an Allen key, or it could just be a lever you can flip with your fingers.

Step 2: Adjust saddle height. Keep increasing/decreasing the saddle height until, with your heels on the pedals, your knee is fully extended when the pedal is at its lowest point. Ensure the seat post clamp is securely fastened before riding the bike.

When pedalling normally with the balls of your feet, your leg should be slightly bent with the pedal at its lowest position.



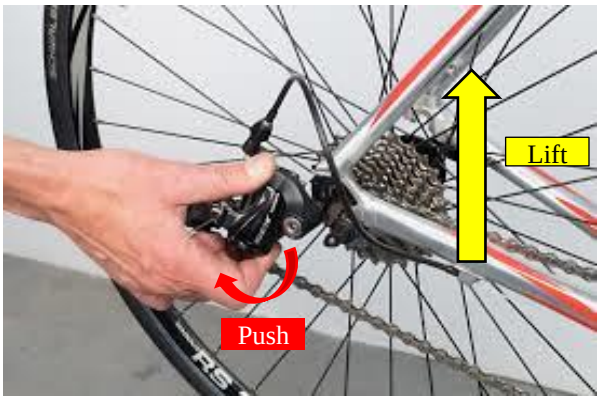
If, while pedalling with your heels on the pedals, you feel like you are reaching too far for the pedals and/or rocking from side to side when pedalling, then your saddle might be too high. Lower your saddle height until you no longer rock from side to side and/or feel like you are stretching too much.

6. How to fix a puncture *(with reference to RCUK and Bike Radar)*

Learning how to deal with a puncture can mean the difference between cycling and walking to your destination. You have 2 options: patch the inner tube and continue riding with it or replace it with a new inner tube. This section covers the latter option but can be applied to the former after the tube has been repaired.

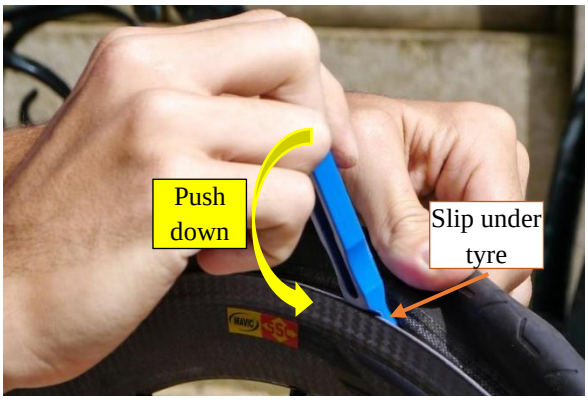
Step 1: Remove the wheel. You will need to undo any wheel nuts and/or quick release skewers, and undo your brake calipers/arms to do this. The rear wheel is a little trickier due to the drivetrain/ chain, but can be accomplished equally easily by:

- shifting into your hardest gear in the rear
- pushing the rear derailleur body backwards to clear the cogs with one hand (gently), while lifting the rear of the bike up with the other hand, and then
- unhooking the chain from the cogs



After the wheel has been removed, lay your bike down carefully on its left (non-drivetrain) side, or prop it up using a bike repair stand.

Step 2: Unhook the tyre. The easiest way to do this is with tyre levers Make sure the inner tube is mostly (if not already entirely) deflated. Slip the lever end of the tyre lever under the bead of the tyre. Then push down hard on the end of the lever and lift a section of the tyre up.



Some tyre levers will have hooks on the end to attach them to the spokes to hold them in place at this point. Perform the same action with the second lever (about 5-6cm away from the first one) while making sure the first one stays in place. Once you've lifted that second part of the bead, it should sit outside the rim, and

it should be possible to slide the tyre lever around inside the bead of the tyre, pulling it all out of the rim. If not, you might need to repeat with a 3rd tyre lever before you can slide a lever around the tyre. One side of the tyre should remain within the metal, do not remove the tyre from the wheel completely.

Step 3: Remove the inner tube. After one side of the tyre bead has been unseated and it outside the rim, pull the inner tube out, taking care near the valve. If you have a Presta valve, you may need to unscrew a small ring on the valve before you can remove it from the wheel. Now you can either patch it up or bring out a new tube. The remaining steps are the same for both the patched-up tube and the new tube.

Step 4: Check for the cause of the puncture. Find the hole on the inner tube, and check the corresponding area on the tyre and/or rim to see if anything sharp is still inside the tyre or poking out from the rim. Remove any sharp debris/thorns/etc. carefully, and inspect the whole tyre and rim again to be sure that no other sharp objects are present that could cause another puncture.

Step 5: Replace the inner tube. Pump the inner tube up slightly just so that it holds its shape. Insert the inner tube valve all the way through the valve hole and tuck the whole inner tube in so that it is roughly under/inside the tyre.

Step 6: Reseat the tyre. Starting from the end opposite the valve, push the bead of the tyre back into the rim and work your way around using both thumbs. Seating the last bit of the tyre may be difficult and might require the use of tyre levers to push the last section of tyre over the rim. After reseating the tyre, check and make sure that no section of inner tube is trapped in between the bead of the tyre and the rim. If there is, unhook a small portion of the tyre near the trapped inner tube and reseat the tyre.

Step 7: Reinflate the tyre. Reinflate the tyres to within the manufacturer's recommended pressure range. This can be commonly found printed on the side of the tyres.

7. How to check your brake pads for wear

(with reference to RCUK and REI)

Brake pads are critical to your safety while cycling, and it is important that they are replaced when worn otherwise they will not work effectively.

Step 1: Find the wear indicator line. This only applies to rim brake pads. Most pads will have a wear line to indicate when they should be replaced. Pictures below show rim brake pads that still have useful life left (L: road bike caliper brake pad, R: V-brake pad):

If there is no wear indicator line, the grooves on the brake pads themselves can be used as an indicator of wear.

Step 2: Check brake pad wear. If the pads have worn past the wear indicator, or if the grooves are shallow (or are completely gone!), then it is time for the brake pads to be replaced.

The picture on the right compares a new brake pad (top) to a worn one (bottom)

NB: Disc brake pads. To inspect disc brake pads, the wheel needs to be removed. Disc brake pads often start with about 3-4mm of material. They should be replaced when there is about 1mm left of material on the pads.

8. How to put the chain back on

A dropped chain is the most common mechanical fault and can happen on any bike ride. It can be frustrating, but it is very easily fixed.

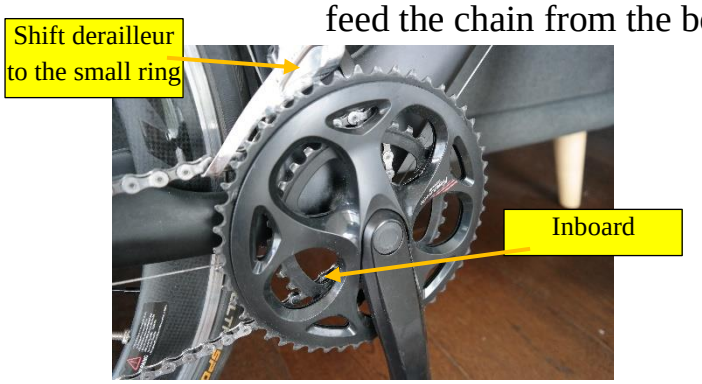
Step 1: Stop pedalling, dismount in a safe area

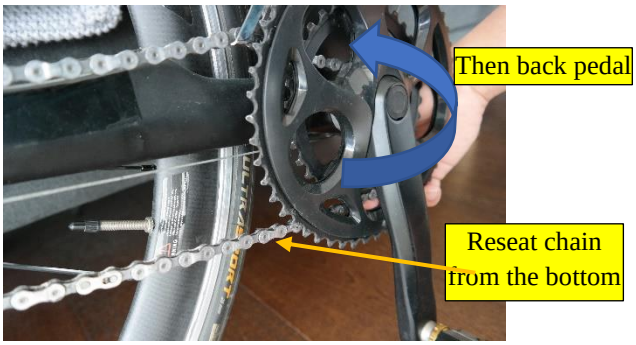
When your chain come loose, your drivetrain will either suddenly lose resistance or completely seize up. Do not panic, move to a safe space, stop and get off your bike. Inspect your chain and identify the cause of the problem. Below are the most common problems you will encounter, multiple problems can occur one after the other.

Step 2: Inspect and repair

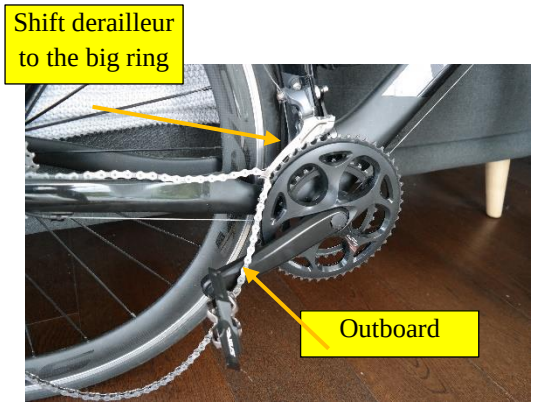
<u>Dropped chain in the front ring(s)</u>

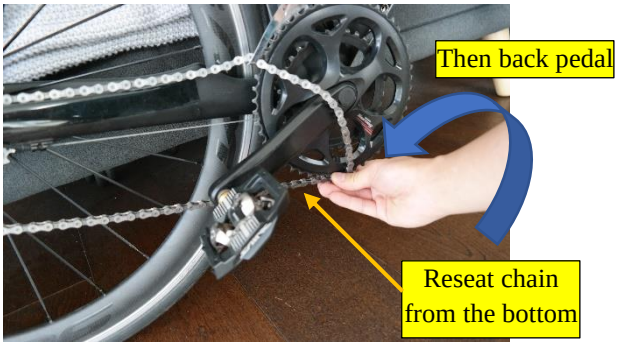
- If you only have 1 chainring in the front, lift a small amount of the bottom loop of the chain onto the ring and backpedal, this will reattach the chain to the whole chainring
- If you have more than 1 chainring, the position of your front derailleur is important when you reseat the chain, this can be altered by changing gear.
    - <u>Inboard dropped chain:</u>
        - Shift your front derailleur to the smallest chainring, then feed the chain from the bottom to the smallest chainring.





    - <u>Outboard dropped chain:</u>
        - Shift your front derailleur to the largest chainring, then feed the chain from the bottom to the largest chainring.





Dropped chain in the rear

This is less common but possible, the chain may have jammed between the frame and the gears or the gears and the spokes of the wheel. To free the chain, you need to pull it (with a considerable amount of force), be careful not to cut yourself on the chain or gears. Sometimes trying to take the rear wheel off will help. After you free the chain, put it back onto the nearest cog. Then flip the bike over or lift the bike up by the saddle and pedal the bike forward. That will reseat the chain on its own.

9. How to index (align) your gears

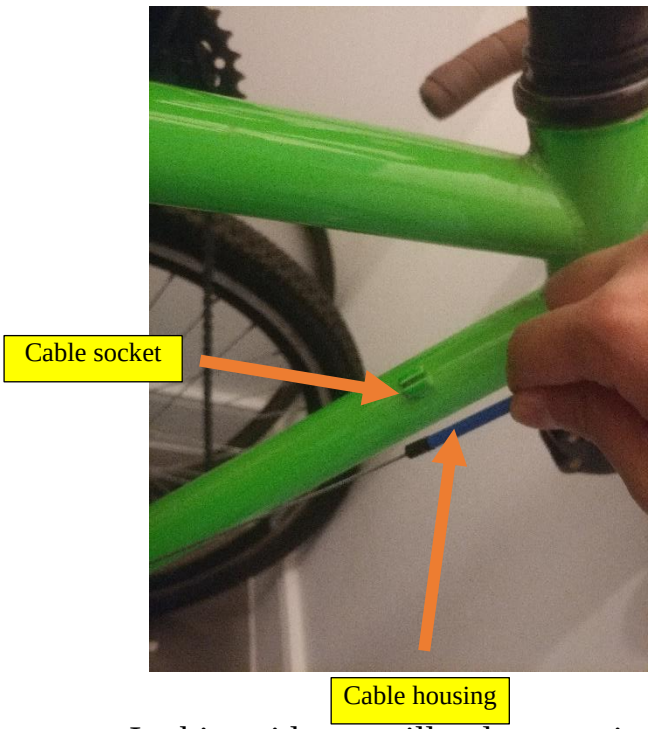
You have to index (align) your gears when one or more of the following problems occurs:

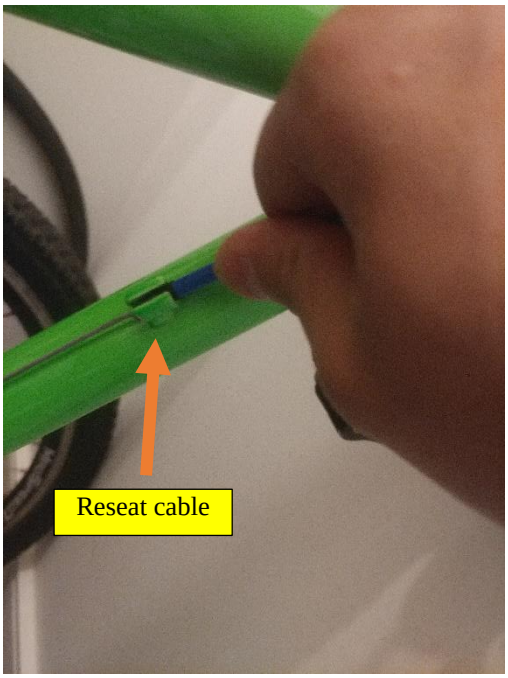
1. Gears won't shift up or down perfectly with one click
2. Gears are well indexed, but the chain keeps dropping off of either end of the cassette or chainrings
3. Chain slipping, jumping and generally misbehaving

If the gears on your bike are properly indexed, each click of the shifter will cause a single shift up or down the gears, front or rear. If you find you're skipping a gear or that your shifting is getting stuck, then there's a good chance you need to adjust your indexing.

Indexing problems can be caused by cable stretch, which is a normal part of the bedding-in process for new bikes or cables.

It can also be a simple problem of the cable housing being pulled out of a socket. Check along the cable length and if you see cables dangling, simply pull the cable housing and put it back into the socket. This might require some force.



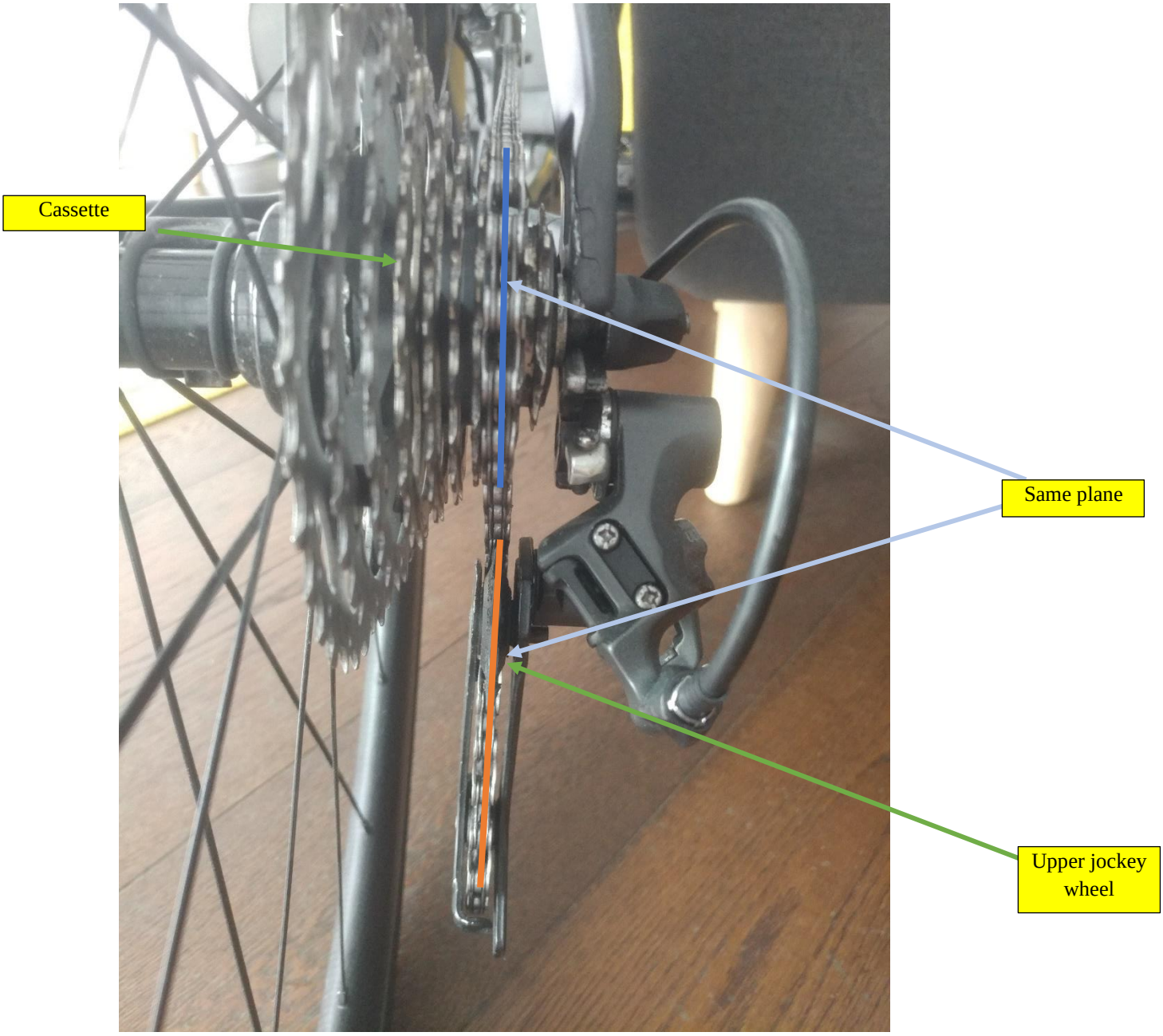


In this guide we will only cover in depth on indexing the rear derailleur. For a misaligned front derailleur, it will involve undoing the cable clamp bolt and pulling it taught while retightening the bolt.

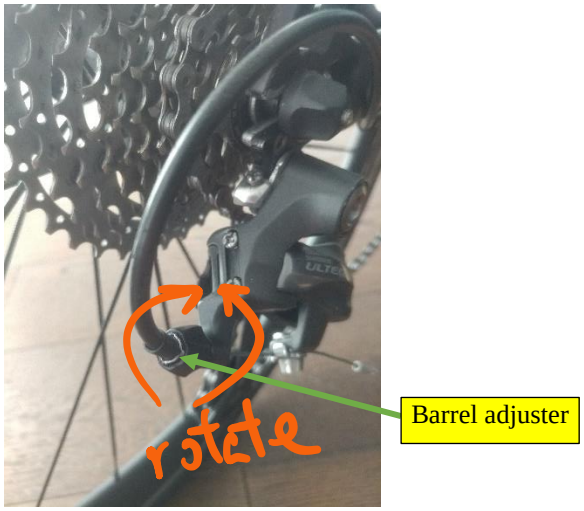
Step 1 (Check if your rear derailleur is out of alignment):

Flip your bike over, shift the rear gear to the smallest cog on the rear cassette (cluster of gears) while rotating the crank. Now, push the shifter exactly 2 clicks up the cassette while again rotating the crank. Allow the shift to happen and stabilise, then wait for the wheel to come to a full stop by pulling the brake on.

After that look at the gear that the chain is on. Check if it is the second cog up from the smallest and to see if the upper jockey wheel (the cog on the derailleur closest to the main cluster of gears) is on the same plane as the gear. If the gears are not in the same plane or if it is not on the right cog, indexing is required.



Step 2: (Turning the barrel adjuster)



At the back of any modern derailleur, there will be a barrel adjuster that you can rotate clockwise and anticlockwise. It adds (anticlockwise) and reduces (clockwise) tension in the cable. The more tension in the cable, the more the derailleur will more inwards towards the wheel side and vice versa.

If the derailleur is close to the wheel to be on the same plane as the cog, simply turn it clockwise until it is visually in the same plane as the desired cog.

If the derailleur is too far from the wheel to be on the same plane as the cog, simply turn it anticlockwise until it is visually in the same plane as the desired cog.

To double check, rotate the crank gently and you should not hear any clicking from the gears. Try shifting up a gear to see if the chain makes it to the next cog and not make a clicking rubbing noise. If it makes a noise, not shift or both, you will have to rotate the barrel adjust slightly to make the noise disappear or the make the gear shift.

The general rule is that first, make the bike shift into the gear it should be in. Secondly, when you are trying to quiet down the gears, if the noise is more intense after you turn the barrel adjuster, you turned it the wrong way.

If the misalignment is so severe that the barrel adjuster bottoms out while turning clockwise, you might have to unbolt the cable retaining bolt and retighten it while putting max tension on the cable. But that should be left with experienced mechanics or your bike rep.

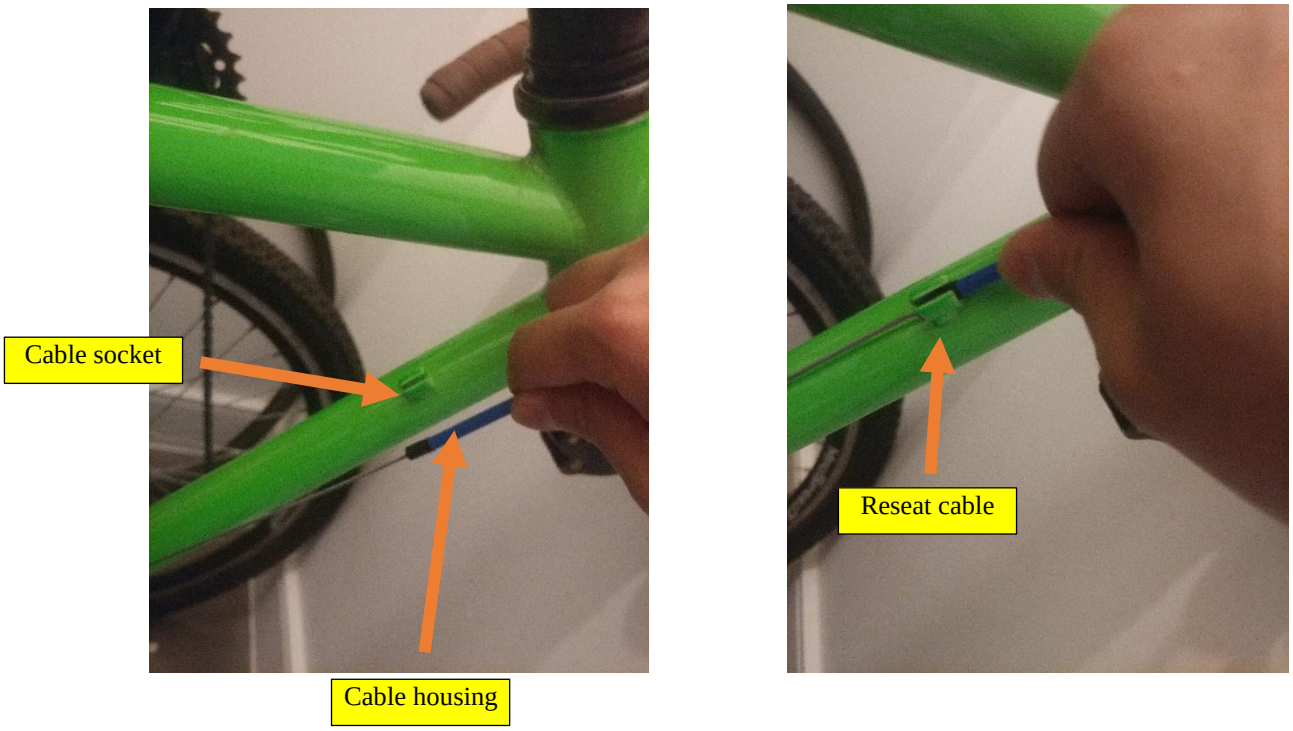
10. How to adjust your brakes (v-brakes) {1-No brakes!}

When you brake pad wears the distance between your pads and the rim surface increases, that means the calliper must push further inboard for the pad to contact the rim for braking. And that also means that you will have to pull the brake lever in more for the brake to engage. At a certain point, the lever will hit your handlebar before any braking happens and that is very dangerous.

In this section, I will should you how to tighten the cable so the brake will work normally.

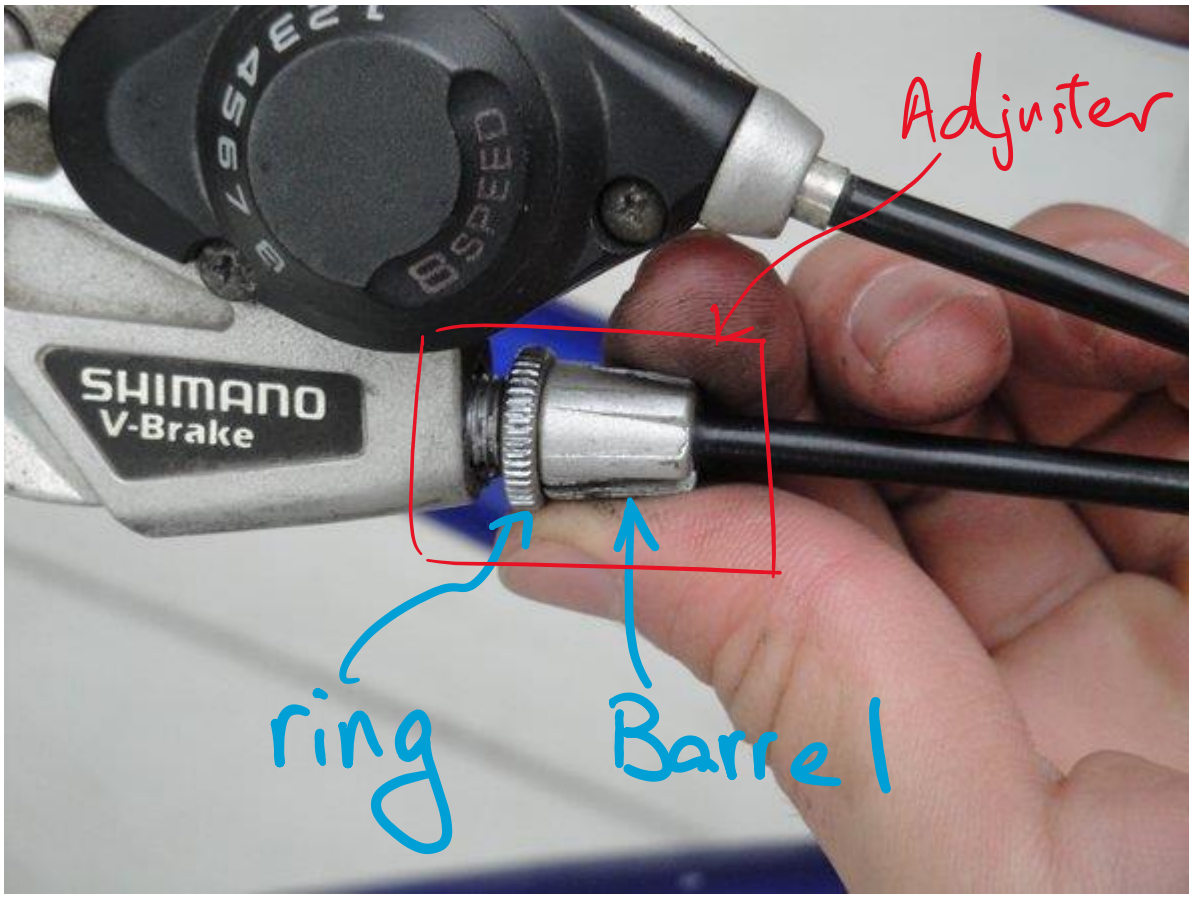
Step 1 (Check if your brake line is intact):

Sometimes when your brake mysteriously stops working after you park at a bike rack, it can be a simple problem where the cable housing has been pulled out of its socket. Check along the cable length and if you see cables dangling, simply pull the cable housing and put it back into the socket. This might require some force.



If the brake line is intact and you can feel pressure when you pull on the brake lever, advance to step 2.

Step 2 (Wind in the barrel adjuster):



On most flat handlebar brakes, there will be a barrel adjuster at the cable end of the lever. They come in 2 parts, the retaining ring and the barrel. Turn both the ring and the barrel anticlockwise. You should be able to see the cable being pushed outwards from the brake lever. You should also see the brake calliper moving inward. Check the brake feel every 1 or 2 turns of the adjuster.

Step 3 (Locking it in place):

When you are comfortable with the lever pull and biting point of the brake (ensure the pads are not actually touching the rim), hold the barrel bit of the adjuster still and rotate the ring bit clockwise until it returns to touching the brake lever body. That will lock the threads in place.

If your adjuster is already at its maximum extension and cannot be unscrewed more, you will have to adjust the cable clamp bolt itself or replace the brake pads. These should be left for experienced mechanics or your bike rep.

How to adjust your brakes (v-brakes) {2-Rubbing brakes}

Sometimes you feel like it is taking far more effort to cycle than before even when the wind is not strong. I can assure you it is not your fitness that is the problem. It is probably that your brakes are rubbing.

In this section we will go through a rough guide on how to space your brake pads back out the cheap way. Though this problem is very common it is the hardest to fix and will come back to plague you every so often. The best fix is to do a completely new cable service and break barrel lubrication which the local bike shops will happily charge you for doing the service. But at the meantime, this temporary fix can last you a while.

Solution: (Tighten the tension bolt)

Winding in the tension bolt increases the force in the return spring. This pushes the pads away from the rim. This bolt can be quite tight, thus be careful not to strip wthe head of the bolt. Pull the brake lever every half turn of the bolt to see if the pads are separated from the brake.

Check also if the other side touches the rim. If it does, you went too far. You can either decrease the tension on the side you worked on, or you can increase the tension of the other side that is rubbing.

It is a very fine adjustment and will take some time to perfect.

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