

Cycling answers

Your technical, legal and health questions answered by CTC's experts

Spokes subjected to higher stress need more metal

THE EXPERTS



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■ TECHNICAL NOT-SO-QUICK LINKS

Q Following on from your answer in the Feb-Mar issue Cycle, I have a question about chain quick-links. They are much easier to fit than the old system but what about removing them? Is there a special tool or technique? I have not been able to remove one other than by means of a chain rivet remover.

John Courtney, Wirral

A Yes, there is a technique. It's important to realise that the pins do not simply slide along those keyhole shaped slots. Look very closely at this photo of a Sram Powerlink, or the KMC Missinglink pictured on p50 of the last issue, and you'll see that the far end of the slot is a bit more deeply recessed than the sides.

The pins have grooves wide enough for the thicker middle of the slot, but when the pins slide fully home their heads drops into the end recesses and the outer plates move apart slightly, locking the pins in place as well as giving a bit more clearance for the inner links to bend and twist.

The pins will not slide back along those slots until the outer plates are pinched in

together, so the heads of the pins pop up out of their

recesses and their grooves line up with the slightly thicker middle of the slot sides.

If you've only just fitted the quick-link, that's not too hard to do. But after the chain's been used a bit some dirt accumulates in the clearances and grooves. To clear this dirt you have to pinch the outer plates of the quick-link really hard between thumb and forefinger whilst wiggling the chain either side of it. Once the heads of the pins have risen slightly, you then can skew thumb and forefinger sideways, sliding the plates so as to bring the pins into their holes. At that point, twist the chain sideways with your other hand, so as to wedge the quick link apart and pull the head of the nearest pin partway through the keyhole, which stops it sliding back. You can now move the pinching and skewing fingers to the other side of the quick-link and gently displace the two ends of the chain, with one half of the quick-link in each.

It's a four-stage process: pinch, wiggle, slide whilst still pinching, then separate. If you're only doing the last two things, it'll not go.

Park do make a special 'master-link pliers' tool (MLP-1), that overcomes the need to pinch and wiggle by applying brute force at the sliding stage. Skill, however, makes for a lighter toolkit.

Chris Juden

■ TECHNICAL DIFFERENT SPOKES

Q I want a pair of 700C touring wheels built. I thought I would have the rear, at least, built with 13/14g single butted spokes, assuming this would be stronger as I do some cycle



camping. The wheelbuilder says that 14/16g double butted would build a stronger wheel. Is this true or does he just not stock 13/14g spokes? It makes no sense to me! The rims are Sputnik.

John Taylor

A Wheelbuilders are craftsmen and we should respect those who exhibit skill with the nipple key, whilst recognising that their knowledge of structural engineering may be limited to what they've built before that didn't break. Mostly that'll be racing wheels. Single-butted spokes are considered too heavy for racing, so few builders have much experience of how best to use them. And yes, they seldom keep any in stock.

Your builder is half right. Double-butted do build a stronger wheel than plain gauge spokes and double-butted is what you want in half of that wheel: the left half. The thin middle of a double-butted spoke stretches more for a given tension, so the wheel can stand more weight and compress further before one of these spokes (the one at the bottom) goes totally slack – at which point the rim begins to buckle and some other spokes get a whole lot tighter! The left side of a derailleur wheel is less tight already compared to the right, so that's where those elastic double-

Undoing a quick-link is a four-stage process: pinch, wiggle, slide while pinching, then separate



butted spokes are needed, to avoid any slackening in response to small movements of the rim.

The right side spokes must be up to twice as tight due to the dishing of the wheel, to make space for all those sprockets. Such high tension stretches even plain gauge spokes enough to stop any on this side going slack, but risks over-stressing their heads. This is where spokes tend eventually to fail from metal fatigue, so this is where you want the thickened 13 gauge heads of single-butted spokes, better to withstand the extra tension in the right (chain) side of the rear wheel.

It's quite simple really: more spoke metal where tension is high, less where it's low. I call this

differential spoking. It transforms a dished wheel from a bodge that'll be okay if built extremely carefully, into a properly designed structure that'll be excellent if built just as well.

Chris Juden

■ HEALTH KNEE PAIN & CYCLING

Q I've recently started to get a pain in the outside of my knees. It started in my left knee when my bike was fully loaded then moved to both knees. I've been using clipless pedals for 18 months and find myself riding mostly unclipped with the pedal in the arch of my foot, as this is the most comfortable position. The pain comes when I'm riding

■ TRAINING RIGHT LEFT TURN

Q I'm a Bikeability instructor, teaching Year 6 pupils basic manoeuvres. I have a dilemma about what to teach them when they're turning left from a major road into minor. When I trained, the tutor advocated always moving from secondary (kerbside) to primary (within the flow of traffic) positions prior to making the left turn in. But reading the National Standard or John Franklin's *Cyclecraft* it isn't clear.

I teach not to signal too early and remaining in the secondary position for the turn, but to move out towards the primary position, holding back the traffic, if there's likelihood of being overtaken on the turn by a following vehicle.

Name and address supplied

A The answer to your question is that your road positioning depends from junction to junction. As an instructor you should understand the underlying reasons for positioning when manoeuvring.

During any turn, assess what the hazards are and decide how you would, as a cyclist, best position yourself in order to SEE AND BE SEEN. This is generally farther out in the lane than commonly thought.

Work back in the manoeuvre: are you teaching the 'Level 2' trainees to ride too close to the gutter? Is it not safer to encourage overtaking traffic to perform a proper overtaking manoeuvre by riding in the centre of the lane? The age of the trainee does not matter: the same principles apply.



Right: jason@cycling-images.co.uk

If it is safest for an adult to ride in a more dominant position, why teach a child to ride in a less safe position?

If you do take a more dominant position in the lane, many of your concerns will disappear.

However, whilst instructing, ensure that:

- all the correct looks on both sides are made;
- the trainees are aware of hazards, potholes, parked cars, etc;
- no unexpected manoeuvres are made;
- corners are not cut.

Then look at the junction. Decide on a start and an end point of the manoeuvre and draw a smooth line between the two. Try to encourage the trainees to come up with the answers themselves: different trainees will react differently so there is no wrong answer. Encourage the trainees to understand the hazards and act accordingly.

*Greg Woodford,
Senior Cycle Training Officer*

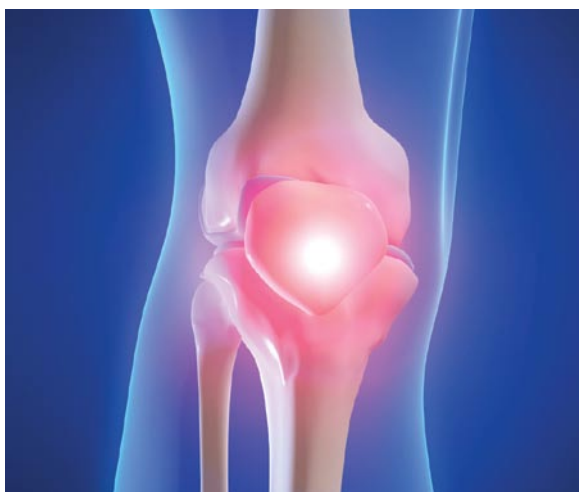
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Knee pain from cycling can often be eliminated by correct bike set-up

uphill or pushing too hard. I've been to my local bike shop and made all the adjustments; now he recommends I visit a chiropractor. He also showed me some flat pedals with a clip on one side. Do you think a chiropractor is worth a visit or should I just go for the new pedals?

John Bennett

A One of the more common causes of cyclists' knee problems, patellofemoral joint pain, was discussed in the Feb-Mar '09 issue Q&A, which can be accessed online at www.ctc.org.uk/resources/Magazine/200903054.pdf.

Pain on the outside of the knee can sometimes be due to iliotibial band syndrome, common in runners but also in cyclists. The iliotibial band is a long strip of fibrous tissue running down the outside of the thigh and connecting the pelvis with the tibia (shinbone). As it rubs repeatedly over the lateral femoral condyle bone in the knee, this causes inflammation and pain. It can sometimes be caused by having the toes pointed too far inwards on the pedals.

Firstly though, as with any persistent pain, it is sensible to

seek professional advice. So before you spend money on new pedals, I would suggest that you consult either your GP or a physiotherapist for an assessment. Your GP can refer you on to an NHS physio if appropriate, or if you prefer you can self-refer to one privately (ask for recommendations locally for a sports physio experienced in knees). Often knee pain can be improved by specific exercises, correct bike set-up and resting to allow recovery. If you feel pain, listen to your body and ease off, especially the high gears.

This may seem obvious but if clipping-in causes discomfort that is not relieved by adjusting the cleat alignment, then it would be sensible to use flat pedals. This allows you to adjust your feet to find the most comfortable knee position, at least until you have been assessed. Check your seat height is correct – a saddle that is too low can put extra stress on the front of the knee.

Dr Matt Brooks

■ TECHNICAL 10-SPEED WON'T MIX

Q I run an 11-32 XT cassette and rear mech with old 9-speed Dura-Ace STI shifters. If I get new ones, will the 10-speed road STIs also work with Shimano's new 10 spd 11-32 XT cassette and rear mech?

John Day

A Unfortunately not. Shimano's MTB 10-speed uses 50% more cable travel to make each shift, so if you want to combine dropped handlebar STI with the really low gears that only a MTB cassette and mech can



Shimano's MTB 10-speed uses 50% more cable pull than road

provide, you'd better stick with 9-speed.

As 10-speed is destined to trickle down the groupsets (next year Tiagra and Deore), this marks the beginning of the end of simple mix and match. But I daresay Jtek Engineering will shortly add another Shift-Mate version, that'll at least make it possible – if not exactly easy.

Chris Juden



Shaft drive is clean and tidy but is much less efficient than a bush-roller chain

■ TECHNICAL IN CHAINS OR SHAFTED?

Q I came across a Dutch bike with cardan shaft drive recently. I am aware that this has been around for many years and am at a loss to explain why we don't all get rid of our oily chains.

Clyde Aylin

A The reason the cyclists of the world do not lose their chains is... sheer laziness! We don't want to pedal any harder than necessary. Who would? And provided it really is oily, a bush-roller chain wastes only 3% of your energy. The two sets of right-angle gearing required for a shaft drive, on the other hand, results in losses of about 10%.

A shaft may be cleaner, but the Dutch also have an ingenious way of enclosing chains. And the reason we don't all have a chaincase is... vanity, perhaps?

Chris Juden

CONTACTING THE EXPERTS

Send health and legal questions to the Editor (details on p84). We regret that Cycle magazine cannot answer unpublished health and legal queries. Technical and general enquiries, however, are a CTC membership service. Contact the CTC Information Office, tel: **0844 736 8450**, cycling@ctc.org.uk (general enquiries) or Chris Juden, technical@ctc.org.uk (technical enquiries). You can also write to: **CTC, Parklands, Railton Road, Guildford, GU2 9JX**. And don't forget that CTC operates a free-to-members advice line for personal injury claims, tel: **0844 736 8452**.