

Backyard Positioning

If you're feeling uncomfortable on the bike and want to change your position, here are a few practical tips to begin with.

The greatest growth in cycling that I have noticed seems to be males aged between 35 and 50 who are taking up the sport at a recreational or competitive level. Often these are people who have children old enough, or job pressures that have eased enough,

to make acquiring and maintaining a reasonable level of fitness a higher priority than it may have been earlier. Perhaps they were cyclists in their youth who gave it away due to the time pressures of work and family. Sometimes they are broken down ex runners and footballers looking for a low impact sport. Maybe they have even watched the Tour de France coverage on SBS in July and come away a little inspired. There is a plethora of reasons why men (and some women) in this age group are taking up cycling.

One factor that all of these people have in common is that they don't inhabit the same body structure that they did when they were 20 years of age. Firstly there is the aging process itself, though the effects of this are often exacerbated by the sedentary, chair bound life that many of us lead. Anyone who sits at a desk or computer for a large part of their day is not going to have the ability to bend and stretch as well at 40 years of age as they did at 20. Even those who are not desk bound spend time driving to work, sitting on a bus, sitting at home in front of the television or whatever. If you want to tighten and lose function in your back, prolonged periods of sitting is one of the 'best' ways to do this. For some too, there are the residual effects of old injuries; footballers' 'dickie' knees and shoulders for example.

Where this leads, is that for many entering or re entering cycling, the process of riding a bike is not totally pain or niggle free. Common complaints that I hear about or see regularly, are lower back pain, tightness or pain in the neck and shoulders, knee pain or niggles, sore or numb hands and pressure on the perineum or genitals. All of these problems have their causes and solutions and this article will offer explanations of the causes and suggest some solutions.

Additionally these problems have two basic features-the mechanical and the individual. The mechanical aspects are your bike and your position on the bike, ie the relative placement of seat, handlebars and pedals and the rider's placement upon these. These things are relatively easy to fix as seat and bars can be adjusted or changed for more suitable ones. The individual aspect is a bit tougher than that as it relies on a given rider firstly recognising that they have a problem or problems caused by a less than adequate level of function, whether by wear and tear or by lack of structural maintenance, and then secondly, and importantly, doing something about it.

Reading an article in this magazine is not going to change your structure, but with a bit of experimentation it may allow you to change your bike to reflect the structure that lifestyle or accidents of birth, or both, have given you. The one qualifier I'll make before going any further is that I am not a health professional and any observations made here are the result of lessons learnt whilst earning a living solving these kind of issues in my Cyclefit business.

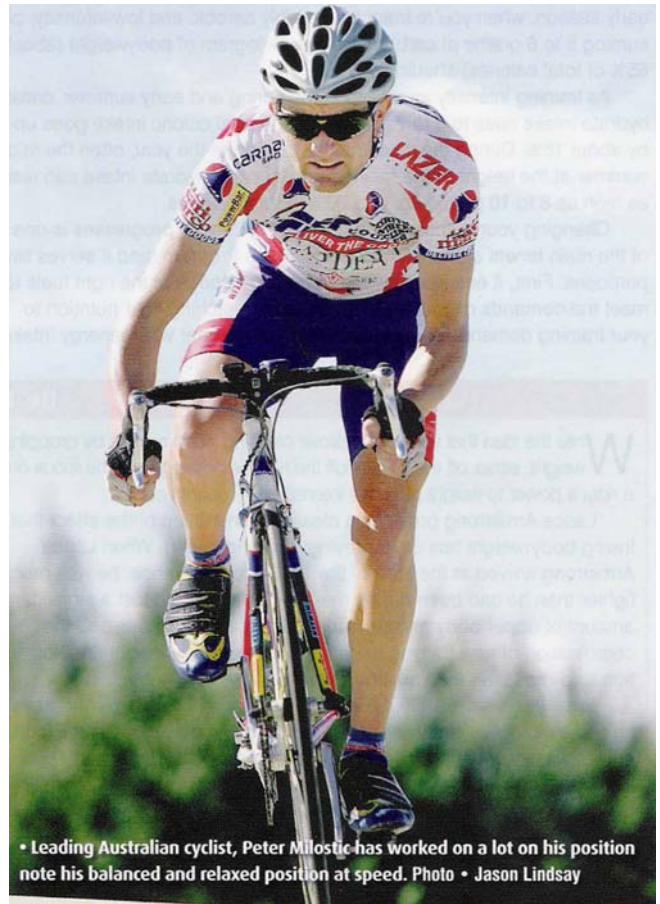
Low Back Pain

The causes of this are many and varied. The mechanical factors can be:

1. Seat height
 2. Seat placement fore and aft
 3. Handlebar height and reach to handlebars.
- Or a combination of any or all of these. The individual factors can be any, or all, of:
4. Tight hip flexors
 5. Left right asymmetries measurable or functional.

As always, the best way to explain these is to go through the possibilities one at a time.

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• Leading Australian cyclist, Peter Miroslav has worked on a lot on his position note his balanced and relaxed position at speed. Photo • Jason Lindsay

1. SEAT HEIGHT

If a rider positions their seat too high, they will have problems, usually in the weakest link in their own chain. They may feel pain or tightness in the knees, top of the hamstrings or lower back, depending on their own makeup and function. Conversely, if the seat is set at too low a height, the hip flexors will be cramped. The problem here is that all of the hip flexors are functionally linked and one of them, the psoas crosses the hip joint (the only muscle to do so) and attaches to the five lumbar and lowest thoracic vertebrae in the lower spine. If the psoas or related muscles affecting it are restricted and tighten unnecessarily, it is not hard to understand why there would be pain or discomfort in the lower back.

Often back pain will occur only on one side or be more pronounced on one side. This is always to do with asymmetries between left and right sides and I'll deal with that when we get to it.

So how do you accurately set seat height?

There are many rules of thumb out there that you may have read or heard

of, such as your inseam measurement multiplied by various numbers, the heel of the foot on the pedal, etc. All of these rules of thumb have validity at some level but none are necessarily much use in any particular case. There are too many variables. There are differences in the height of various pedal, cleat and shoe sole thicknesses, a wide variety of pedalling techniques as well as relative foot size, to mention just a few.

One fairly straightforward method that can be applied by anyone is to ride up a moderately steep hill in a gear that works you hard; 70 to 80 rpm is ideal. Under these circumstances, most riders will drop their heels more than at the higher cadences of flat riding. This in turn causes the legs to extend more than riding at the higher cadences typical of riding on the flat. If you think your seat is too low, then raise it in 3 mm (1/8 of an inch for the old blokes) increments till you feel that you are no longer reaching the bottom of the pedal stroke with power and control. Once this occurs, lower the seat to the last point where there was power and control at the bottom of the stroke. Don't think particularly about your pedalling technique, do what comes naturally to you. If in doubt, it is better to be a touch low than a little too high.

One trap that can often occur is when changing brands or models of seat. The distance from centre of seat rail to top of seat can vary as much as 25 mm (1 inch) on quality racing seats and much more than that if we include

the fat, soft 'comfort' style of seats. If you have had no problems with seat height and only develop issues after changing to a new type of seat, this is a likely culprit.

If there is any doubt in your mind that your seat is too high then reverse the above process and ride up that hill as described and lower the seat incrementally. My experience is that more people sit too low than too high but I'll talk more about that when we talk about left and right asymmetries.

2. SEAT PLACEMENT FORE AND AFT.

This plays a much greater role in causing or preventing low back pain than is generally realised.

Perhaps the best way to explain this is to describe the pedalling process briefly. The job of the gluteus or buttock muscles (the largest and most powerful muscle in the body) aided

by the hamstrings is to extend the hip, ie, to push the femur or thigh bone (the leg's primary lever) down. At the same time the job of the quadriceps is to extend the knee or in other words to straighten the lower leg. If well positioned on the bike, the hamstrings and calves working together in eccentric contraction aid the quads in extending the knee. Ideally this should be happening in approximate harmony and equilibrium spreading the pedalling load over all the available musculature of the leg.

The further forward the seat is in relation to the bottom bracket (the axis of rotation of the cranks), the more the quadriceps will come into play. The further back the seat is, the more the glutes and hamstrings will be loaded. Mass production bicycle frame design owes more to the needs of keeping unit costs down than it does to the requirements of human beings. The upshot of this is that a majority of riders using standard seats and seat posts have their seats further forward than ideal. This does not apply to everybody, but certainly a majority. As the seat moves forward, the quadriceps are loaded up and many riders know well the dead or lactic feeling in the quads after a tough or hilly ride. This can be particularly apparent if walking upstairs or hills after a solid workout on the bike.

This is a sign that the quads are being over utilised. One of the quadriceps, the rectus femoris, is both a quadriceps (extender of the lower leg) and a hip flexor (lifter of the upper leg). In practice this means that overuse of the quads has an effect on the other hip flexors, including the psoas mentioned previously that attaches to the lower back. This in turn means that overuse of the quadriceps and concurrent under use of the gluteus muscles and hamstrings that counter, balance them, puts pressure on the lower back. To add to this scenario is the fact that for many, many people, their hip flexors are over tight before they ever throw a leg over a bike.

The effects of quad overload on the lower back can be anything from negligible, perhaps only making its presence felt after an unusually hard or hilly ride or possibly an increase in volume or intensity of training, to acute, preventing a rider from riding any real distance.

Having the seat too far back is less common than having the seat too far forward. If the seat is too far back for a given rider then lower back pain can also be the result, but for quite different reasons. In these cases the increased forward bending required can cause the hyper flexion of the lumbar and or lower thoracic spine. If this is the case, the onset of problems is generally sooner and more acute in most cases than the converse situation with the seat too forward.

So where to put the seat fore and aft?

Much as I dislike 'rules of thumb', the best advice I can give is to follow a centre of balance approach. Assuming the handlebars and feet on the pedals are positioned well, and I'll get to that in time, the seat position fore and aft should be such that you can ride in the drops of the bars on an indoor trainer in a big gear and take your hands off the bars without then falling uncontrollably forward. Ideally, you should teeter a bit on that point of balance but be able to hold the hands off position for a short period without having to lift the torso or pull the arms back. My experience is that if you can do that well, all but the severely dysfunctional will be close to the mark.

Again there is a trap if you have a position that you are happy with and change seat models or shapes. If this is the case, go through the process described above again, don't measure the seat position fore and aft. The length of quality seats can vary by 50 mm (2 inches) and so the distance of the seat nose behind the bottom bracket can vary tremendously for the same body position. Equally, the shape of various seats can cause the rider to sit in different places relative to a given length.

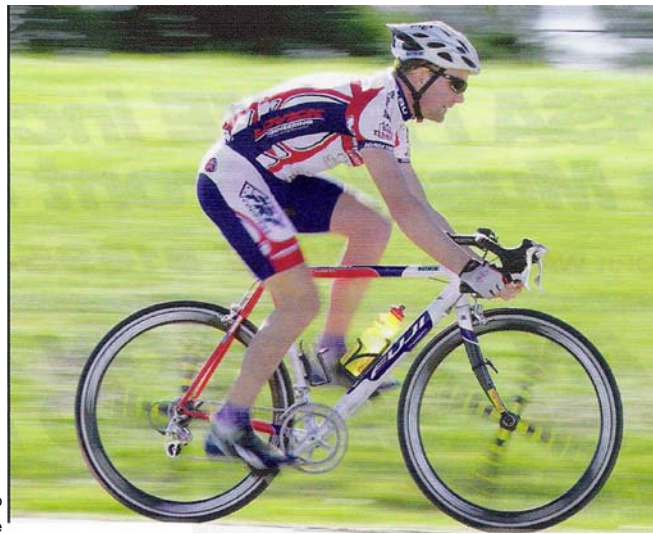


Photo. JasonLindsay

3. HANDLEBAR HEIGHT AND REACH

Let's assume that your seat height and fore and aft placement is correct but you still have discomfort in the lower back. The height of the handlebars and the distance that you have to reach to them are a likely cause. Bending further down than you can comfortably reach can cause

hyperflexion of the lower back. Equally, reaching too far out to the handlebars can have the same result. Ideally, the bars should be situated so that rider can reach the bar tops adjacent to the stem, the drops and the brake hoods.

How to do this well?

When on the drop bars you should be able to have unlocked elbows naturally without forcing it and at the same time be able to look forward without using all of your ability to extend the neck. When riding with hands placed on top of the bars there should be no sensation of bearing a lot of weight and again the elbows should be relaxed and unlocked. One trap that occurs here is that there will always be more weight on your hands in an indoor situation on a trainer than there will be on the road out of doors. This is because indoors you don't have a 30 + kph wind hitting you in the chest as you do out of doors.

There should always be some weight on the hands but no more than is necessary to steer and control the bike with ease. Any more than this is unnecessary and over time can lead to problems.

To be continued next issue.

Steve Hogg is the owner of Cyclefitcentre.com / Pedal Pushers bike shop in Rosebery, Sydney. Steve has positioned over 7,000 road and MTB cyclists and triathletes, including World Championship and Olympic medallists. .

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