



**PREPARATIONS FOR YOUR BIKE
AN ARTICLE DEDICATED TO
CITY OF ARMADALE GRAND FONDO RIDERS
Applicable also to anyone keen on distance cycling**

Introduction

In all of the workshops and bike ergonomics assessments I have conducted over the past years I have always advocated that cycling really comprises of two components:

1. Your Bike (The Chassis)
2. Your Body (The Engine)

Admittedly a lot of cyclists pay more attention to 'The Chassis' as compared to 'The Engine' and this article is one of many parts dedicated towards the preparation for that long ride and not only surviving it but also recovering well for it.

Fundamentals of Bike Preparation

Bike Maintenance: I won't wax lyrical about Bike Maintenance which is the domain and expertise of qualified and properly trained Bike Mechanics.

Just make sure you pick the right one that understands the scope and extent of what they can do and focus on the mechanics of the bike.

Bike Cleaning: Once again there are sufficient articles in cycling magazines that cover the many ways and techniques and not the focus of this article though it is important for the proper mechanicals to function effectively and efficiently for you.



The Focus

This article will cover Bike Preparation from a Biomechanical and Physiological perspective and we will work in a clockwise direction starting from the Shoes-Cleats-Pedals-Seat-Reaching Angle-Stem-Handlebars.

It must be noted that this article is written from a general perspective and for specifics pertaining to the various aspects of the Bike look out for the City of Armadale Grand Fondo workshops that are coming your way in the next few months.

Cycling Shoes. A recent edition of the Australian Cyclist magazine covered a very thorough perspective on the choice of cycling shoes, pedalling and techniques to avoid foot pain. There was also an article within where I was interviewed about the link between cycling and the feet that will be worth your while to read.

Some fundamentals for your preparedness for your ride with respect to Cycling Shoes and your body includes:

1. **Feet Type.** There are certain shoe brands that cater well for the cyclist with tapered and narrow feet and others for the broader foot. Try not to be swayed into buying a shoe for the 'bling' factor but really for the comfort and endurance factor for your feet.
2. **Heel Cup.** This is where the heel inserts into. The heel cup is crucial and cycling shoes with a slight angle as you slide your feel in allow for a better grip and support especially when you are doing standing hill climbs and during the crank phase when you have to 'pull'. Some brands such as Sidi even have adjustable heel cups to suit your body's needs.
3. **Velcro and Clips.** For long distance rides it is common knowledge that the feet swell up with heat and force transmitted down on the pedals. Having adjustable clip (quick release type) for your shoes will allow you to release and control the grip of the shoes during that long distance thus making a difference to the comfort factor and reduce the chances of feel swelling and numbness. Always tighten the clip at the beginning of the foot (called the sub talar joint and then progressively down to the Velcro straps



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- towards the toes) when seeking the right grip and tension for your shoes. This makes a big difference once again during the push and pull phase of pedalling.
4. Ventilation. Choose a cycling shoe that provides for good ventilation as it also allows for expelling of hot air / heat within the shoe. When you are riding between 6 to 12 hours, this will be noticeable.

Pedals and Cleats

Some generalised guidelines here:

1. Shims. We don't recommend these days that cyclists use shims (the stuff that you place between the cleats and base of your cycling shoes. Shim do nothing to help the long arch of your feet which needs to work effectively for proper force transfer throughout the foot.
2. Inserts / Orthotics. There are off the shelf ones and custom made ones out there for cyclists with biomechanical problems of the feet. The choice of the correct orthotic that would also compliment the type of cycling shoe you use is crucial. Many cyclists especially when riding long distance think that this is not important but the feet form the fundamental stability for the whole body with force transference to the ankle-knee-hip and the spine.
3. Mouldable Cycling Shoes. There is a double edged sword with this type of shoes. If your arch or feet are biomechanically already challenged, all you are doing is moulding the insoles of these shoes to further highlight the problems in your feet. Your arch and feet positioning needs to be corrected before these moulds can work effectively like in built 'orthotics' to help your power stroke during pedalling.
4. Pedals. There are so many types in the market and beyond the scope of this article. Basically choices should be dependent on the type of feet that you have and style of riding. If you have feet that require a wider surface area for the power stroke, then take the leap and choose a pedal with a wider surface area and vice versa. There is no point using a type of pedal with a tiny surface area focused on one spot on your foot if you are prone to bunions or plantar fasciitis.



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5. Cleats. Choose cleats types with degrees of freedom also pertaining to your ride type and feet condition. No point choose zero float cleats if you already know you have underlying feet or knee problems as there is no 'give' but instead choose float angles of between 4 to 9 degrees. Many riders find extreme fatigue riding with minimal float cleats over a long distance as your body will require movement and repositioning over a long ride and will enjoy that increase degree of freedom when attached onto a stable platform. The ability of the cleats to also be released from the pedals needs to be considered especially when riding uphill and when gradients become too daunting.

Choice of Chain Rings

There will be many cyclists who will do the Dams Challenge thinking they will accomplish the distance at a much faster rate if they stuck to their big chain ring and just 'grind' through the distance. **WRONG!**

By using your small and big chain ring effectively during the variations in the terrain, you are also allowing your various muscle groups to fire at different sequences and phases and as a result allow a spread between muscle fibres as well as slow and fast twitch fibres. In other words, the chain ring and the associated cadence will make a big difference to your endurance over a long ride and will more than likely prevent unnecessary cramps when the overused muscles reaches fatigue and lactic acid overdose.

Using your chain rings also to 'sling shot' during the 'undulating aspects of the Dams Ride' permits you to keep cadence and momentum going with less use of excessive muscle force in the quadriceps and hamstrings. Having done many of the mountains in Italy and Switzerland, this the 'sling shot' technique of using gears when riding is something seriously lacking in many cyclists here.

I am not going to cover the number of teeth in the chain rings or cog configurations that can be used for the Dams Challenge as this is the domain of your discerning bike mechanic who will recommend to you the correct configuration for your age and your ability on the bike.



Saddles

The best touted saddle and the saddle used most and talked up by your friends is not necessarily the best saddle for yourself. Period.

Everyone is different and different bums have different requirements from their contouring, width, configuration, firmness and strength. Sorry to be so detailed. Therefore for a small sized bloke for me the much promoted Selle SMP wide angled saddle will do nothing for my ischial tuberosities (the parts of the pelvis that you will spend 6 to 12 hours on the Ride) and probably also cause me intermittent penile erectile dysfunction, which will definitely not please my wife!

This great saddle is however great for the bigger and heavier set male whereas my much loved Fizik Arione will do exactly the same thing to their delicate parts as the other saddle does to mine. You get the drift correct?

Then there is also the women specific geometry saddles which can and will make a difference in those long rides. Ladies if the bike shop sells you a saddle which blokes use and try and convince you that it is ok, shop elsewhere. The person selling the saddle obviously does not understand or know that women can have vaginal hernias on a saddle, UTI infections and chaffing which does the soft bits no favours.

The angle of the saddle is also crucial. Saddles have a life span especially with the style of cranking / pedalling and also the constant angling of one side to unclean. One should be checking for the correct symmetry of their saddle once every 3 months with fore and aft to see if it balanced front-back and side to side. Imbalances side to side can directly impact the pelvis and the lumbar spine causing associated low back and inter connecting spinal muscular discomfort during a long ride.

The front and back angle of the saddle should be neutral also as the converse in either way can cause similar graphic descriptions to the pelvic floor of the body.



Reach on the Bike – Saddle to Stem Distance

There are so many technical descriptions and advice on this matter and the sad truth is that if you line up say 4 cyclists all with the same bike size eg 54 cm, chances are – they will have different arm lengths, leg lengths and torso lengths with each other. In other words, the exact reach of the cyclist between saddle and stem should be personalised to suit your arm reach and that of your torso.

If you are overextending your elbows to full extension, you are already placing exponential torsional stress on your shoulders and your neck and your body will tell you all about it with discomfort and pain even after a 30-40 km ride. Imagine this position for 146 or 256 km!

There should be a slight flex in the elbows to offset the transmission of vibration and velocity forces from the bike to your body and the slight flexed position also gives you a winning chance of stopping and conducting the proper emergency braking procedure in the event of this need. You do know the proper emergency procedure for stopping on a bike when cleated on don't you?!

The angle of the spine is crucial in this set up. There are way too many people riding from their 40s and beyond who still think they have as flexible a spine as they did in their 20s. There are a few but they are really a few only.

For the majority of us 40+ and beyond the key towards long distance riding is longevity and comfort. No point getting set up in your reach distance like a boy racer as your spinal column will complain and probably give out on you within a certain amount of time. By having a 'relaxed geometry' or position which is what I ergonomically position many cyclists during their Bike Ergonomics assessments, I create for them a more stable platform for their spine which takes associated stress off their lower back and also their hamstrings. 30% of hamstring problems become or are directly associated with low back conditions and hamstrings like the quadriceps muscles are the two power house crank muscles for cycling.



Stem Length & Head Tube Height

If the reach is an issue there are things to consider with the stem length. They come in many lengths and sizes as well as carrying angles all of which is designed to suit the different arm lengths and torso lengths of cyclists who purportedly are the 'same height'.

The discerning and concerned bike shop will check for this at the point of your bike set up at purchase and change the stem to your correct angle and length. Sadly I don't see many of this which is why stem length and angles seem to be the major feature and issue plaguing cyclists causing hand and finer numbness, elbow soreness, shoulder strains and neck conditions.

For a better 'relaxed geometry' also look at the head tube and see if there are spacers within the head tube that can allow for less trunk or spinal flexion. In other ways by adjusting the number of spacers (within limit of the structural integrity of the bike) between the head tube and the handlebars, one can achieve a better reach together with variations in the stem length.

More about this in my planned workshops on Bike Biomechanics for Cyclists coming up soon.

Handlebar Width

Measure your shoulder width and then measure the width of your handlebars. If they don't correspond, you have a potential problem. Example shoulder width 40 cm, handlebar width 44 cm. This means that you are splaying your elbows at a improper angle and this will be start and the cause of elbow, wrist and hand based problems.

Having the corresponding handlebar width to that of your shoulder also make a big difference in your turning circle and ability to negotiate corners at speed and with better stability. The age old rule where the nearer you are to your centre of



gravity allowing for better stability applies with handlebars. Smaller women suffer greatly from this aspect as they are normally sold bikes with handlebars that don't suit their smaller sized frames.

Handlebar angle in relation to the brakes and the hoods can also make a difference to your braking reaction as well as long term positioning on the bike. If is angled too far upwards or downwards one can suffer from wrist pain or worse carpal tunnel syndrome.

Therefore at best a neutral position on your handlebar will make a huge difference in your long distance ride.

Disclaimer

This article has been written based on clinical experience treating cyclists who are patients and also from conducting hundreds of bike ergonomic assessments over the years.

The information provided does not portray any one individual nor does it target any specific person, agency or business but refers to the anecdotal feedback, complaints and information provided to me by cyclists who attend our clinics but also at the many cycling events that we are present at over the years.

Pathways

This comprehensive article will no doubt cause many cyclists to check their bikes and its viability for your own needs. This is the intention, to first and foremost prepare the bike for the ride before we provide further information about 'The Engine' in the coming weeks.

If you have specific questions pertaining to the following, please refer accordingly:

1. Bike Ergonomics / Emergency Braking Techniques / Cleats and Pedals – Ian Wee, Bike Ergonomist: ianwee@pihc.com.au

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2. Feet Biomechanical Issues- Jill Hunter, Biomechanical Podiatrist:
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This article has been prepared for the benefit of City of Armadale Grand Fondo riders and all those who are preparing for their next long distance challenge. Please pass it around to those who can benefit from it

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