

The Bike Fit: it's no crystal ball

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I want to start by saying this *is not* an attack on any individuals who provide bike fitting services. The purpose of this commentary is to challenge fitters to elevate their care, ultimately benefiting their clients.

Many cyclists at one point in time will visit a fitter, whether it's due to injury, comfort, performance or because a peer recommends one. A fit, in short, is an evaluation of a cyclist's posture based on their five contact points: sit bones, two feet and two hands. The fitter will make adjustments to these points if they discover "suboptimal biomechanics" in order to address the client's needs. Traditional faults, for example, include rounded shoulders, curved spine or too much/little bend in the knee.

It makes biomechanical sense, for example, to raise the saddle in order to reduce knee angle and knee joint pressures. Similarly, placing a shim under the cleat hypothetically alters foot mechanics to then keep the knee from tracking too far in. These biomechanical consequences post fit are well documented [Johnston]. Its role in injury prevention or treatment, however, is realistically non-existent. In this sense, I'm here to slaughter the sacred cow and place a *large* asterisk on biomechanical models for injury prevention.

What does exist is evidence that suggests biomechanics in isolation *do not* predict injury. I'm sure at some point you have been told to stand up straight or else you'll be doomed to back pain. On the contrary, there is solid evidence to suggest posture has little to do with the likelihood of being in pain. One study for example looked at 1000+ 17 year olds and recorded factors such as rounded shoulders, forward necks and overly curved spines. Picture a slumped teenager. None of these were related to neck or back pain contrary to popular belief [Richards]. Although the studies were not on cyclists, one should wonder whether traditional beliefs of cycling posture and pain should be questioned as well.

Since traditional injury prediction models aren't scientifically accurate, using them as rule can cause unnecessary harm. Giving someone *the expectation* of pain, will in itself put someone at a greater risk of developing said pain [Webster]. It's something I unfortunately see frequently with popular fitters on social media. "Your back is curved and if we don't fix it you're going to develop stress and pain in that area." As stated earlier, this line of thinking is largely discounted by quality research. It also greatly underestimates our body's ability to adapt.

Where fitters, and many health care practitioners for that matter, can improve is in their language. If someone looks *a little* “wonky” on the bike, but is asymptomatic, unsubstantiated predictions of injury is irresponsible. Instilling fear will far outweigh the effects of a minor fitting adjustment. If it aint broke, why fix it?

Now if you're thinking of the cyclist who has a seat height that's astronomically low (we're talking 5+cm), putting in a lot of volume, but not in pain, it's still realistically a good idea to address it. This is where language, however, can be powerful. Instead of using negatives such as pain as rationale, use something positive such as power gain (see example below). Even if you're a fitter who has done 1000+ fits in your life and experienced a pattern of low seat height and knee pain, this doesn't mean pain has to be part of your word choices. Remember, expectations influence outcomes. Our mind is amazing at turning what other people say into reality (the reasons behind this are out of the scope of this paper but reach out if you're interested).

“You have to raise up that seat or you're knees are going to get wrecked and be in pain”

vs.

“You're sitting really low on the bicycle. I would like to progressively bring you up and see if you get more power and feel more comfortable sitting higher.”

What about the cyclists who are in pain? Although there aren't any quality studies on bike fitting to treat injury, in my opinion, and the opinion of many who seek it out, it is a valuable place to start. Bike adjustments can shift stress from one area to another. Consequently, a fit may serve as a crutch, giving the stressed system a second to calm down. This is where the experience of a bike fitter comes in to play. They have an idea of what has worked in the past and through trial and error can find a solution. A fit in itself, however, doesn't solve the problem. Like so many other modalities it provides a window of opportunity to start progressive loading the tissues both on the bike and in the gym.

“raising your seat will reduce anterior knee pain”

vs.

“raising your seat will take some of the pressure off the front of your knee. In my experience this has helped reduce pain. In the meantime you should focus on progressively strengthening the knee and other joints around it. You can then slowly lower the seat to your previous position or if you like the new height, you can stay there.”

As a broad statement I think a bike fit has a role to play when you are injured or in pain, can't seem to get comfortable or need to balance aerodynamics and power (wind tunnel testing). I do not recommend getting a bike fit just for the sake of getting a bike fit.

In summary, if you are a fitter, your experience is valuable and your clinical eye can help a lot of cyclists in difficulty. That being said, don't instill fear by focusing on biomechanical errors in asymptomatic clients. Additionally, be transparent that your fitting strategies are based on experience, not research. In the end it's trial and error and everyone is different. I suggest looking at the language examples above and see where you fall.

If you are a consumer of a bike fit, remember that each person is going to sit on a bicycle differently and there is no *one way* to do it. Don't listen to anyone who says you are going to develop pain. Unless they have a crystal ball, there are no absolutes. Bike fitting isn't always the be all end all when you have pain. If it is, congratulations your body most likely took its own course and successfully adapted to a new position. Physical therapy can be a great place to develop capacity and build back to previous levels.

I'm always up for learning. If you have strong evidence that speaks otherwise, I'm happy to re-evaluate my stance. Contact me at cyclingmvt@gmail.com.

Resources:

Johnston, Therese E. Biomechanical Considerations for Cycling interventions in Rehabilitation. *Journal of Physical Therapy*. 2007; 87(9)

Richards KV, Beales DJ, SMith AJ, O'Sullivan PB, Straker LM. Neck Posture Clusters and Their Association with Biopsychosocial Factors and Neck Pain in Australian Adolescents. *Journal of Physical Therapy*. 2016.

Weisman A., Masharawi Y. Does Altering Sitting Posture Have a Direct Effect on Clinical Shoulder Tests in Individuals with Shoulder Pain and Rotator Cuff Degenerative Tears? *Journal of Physical Therapy*. 2018; 99(2): 194-202.

Webster BS, Bauer AZ, Choi Y, Cifuentes M, Pransky GS. Iatrogenic consequences of early magnetic resonance imaging in acute, work-related disabling low back pain. *Spine*. 2013; 38(22): 1939-46.