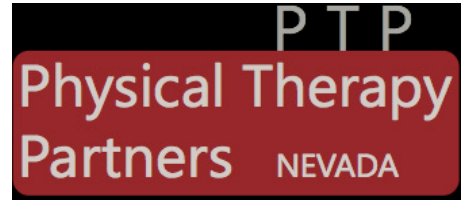


A Simple Adjustment to Improve Pedaling Power

By: Todd Norwood, Doctoral Student in Physical Therapy, University of Southern California
Intern at Physical Therapy Partners with Boyd Etter, PT and Michael Spevak, PT

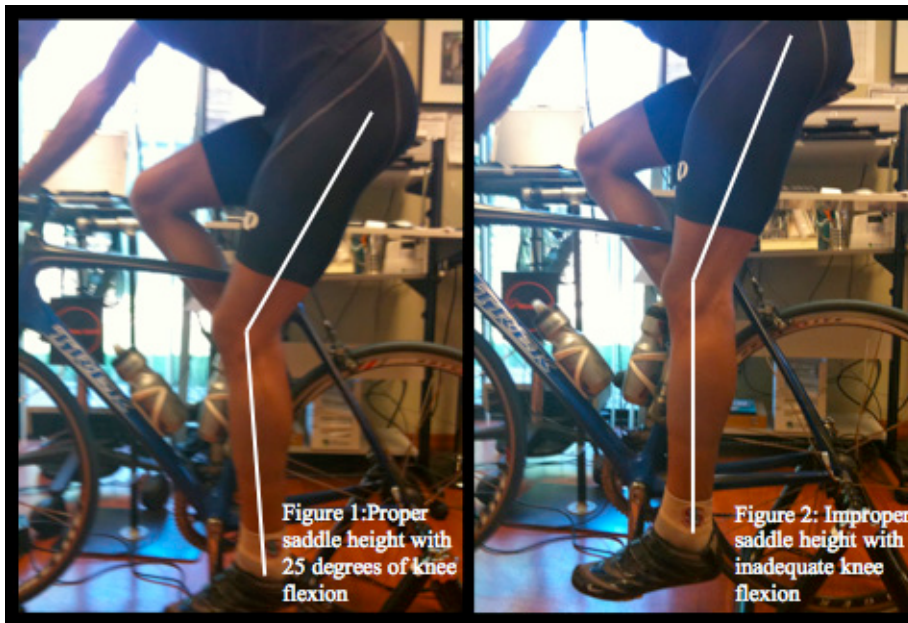
Ability to produce power anaerobically while cycling is arguably one of the most important aspects of success as a competitive cyclist. Regardless of discipline it is safe to say that no competitive event is ever won without some anaerobic effort. Of course, good anaerobic power production doesn't come without hard work and training at the appropriate intensity. But what if there was a way to improve your anaerobic power production without breaking a sweat?



It's possible, and even likely, that a small adjustment to your seat height could improve your anaerobic power output. A recent study compared the anaerobic power outputs of both cyclists and non-cyclists at three different saddle heights. The saddle heights used were based on prior research on performance and injury prevention. For performance, the optimal saddle height is said to be 109% of the rider's inseam measuring from pedal at 6 o'clock to the top of the saddle. To avoid overuse injuries, due to the repetitive motion of cycling, several studies have shown that between 25° and 35° of knee flexion at the bottom of the pedal stroke is optimal (See Fig. 1). However, for a majority subjects in the study these different methods of determining seat height did not yield the same saddle position. In most cases, 109% of inseam resulted in less than 25° of knee flexion (see Fig. 2) which could increase your risk for a knee injury.

However, the results of the study show that the optimal position for anaerobic power production may also be consistent with a seat height that allows injury prevention benefits as well. For the majority of study participants who did not have saddle position that was similar with the two methods of measurement, the results showed that greater peak anaerobic power and average (30 sec) anaerobic power was produced with the seat set such that 25° of knee flexion was achieved at the bottom of the pedal stroke. This resulted in significantly greater mean power production that the

109% of inseam length measurement and greater peak power production than both 35° at the bottom of the stroke or 109% of inseam.



The moral of the story being when it comes to anaerobic power production and injury prevention you can have your cake and eat it, too if you set your seat height based on your knee angle rather than using your inseam as a guide.