Break The Bounce…to get more power from your pedal stroke
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They are in every class you teach. They travel at high cadence with little resistance. It looks painful, yet they don’t seem to be in pain. You vocally describe them as riding with a bounce, yet they don’t seem to identify themselves. As challenging as it may be for the instructor, you must…Break The Bounce.

A seemingly easy fix may be to tell your students to add more resistance. While this may help, the real solution is to correct the pedal stroke. Many of our students do not think about “how to pedal” a bike…they just know that if they push on the pedals, the wheel will move. The problem is that their pedal stroke is inefficient. Pedaling efficiency is the difference between the human power output and the actual power that is transferred to the pedals, bike, and the road. Basically, if you’re not accelerating, you’re decelerating.

So, identifying the problem is easy. Correcting it, on the other hand, takes deliberate effort and dedicated time. Developing an efficient pedal stroke is like perfecting a golf swing.

Why the bounce? Is this what inefficiency looks like?
When a student emphasizes pushing straight down in the pedal stroke without sweeping back, it forces the momentum up through the leg and hips resulting in the butt lifting off the saddle. As instructors, we tend to notice this more frequently when students are traveling at high cadences with little resistance. The inefficiency of force application and energy distribution is glaringly obvious. Pedaling at high cadences does not cause the inefficiency, but it does highlight it!

What does inefficiency feel like to a bouncer?
Outdoor cyclists tend to have a better feel for optimal cadences and efficient pedal strokes due to a great deal of trial and error on the road. It is more difficult for an indoor rider to develop the “feel” of an optimal cadence with an appropriate amount of resistance because there is no forward propulsion as a result of the energy and effort exerted. The effort of the bouncer will probably be felt in the cardiovascular system rather than the muscular system. Unfortunately, the bounce itself, is typically not felt because there is no previous “grounding” experience in the saddle to compare to.

Better than bouncing. What does EFFICIENCY feel like?
Traveling at an optimal cadence in the appropriate gear allows an outdoor cyclist to propel forward with the least amount of effort at the greatest power output. This results in a smooth and controlled pedal stroke utilizing multiple muscle groups to take up the workload. Inefficient riders rely on the quadriceps to do most of the work while efficient riders are able to engage the glutes, hamstrings, hip flexors, and calves (among other smaller muscle groups) as well. A smooth pedal stroke requires the fluid transition between all four phases of the pedal stroke engaging the muscles at various strengths throughout 360 degrees.

Break the bounce by correcting bike fit.
Power output, comfort (proper bike fit), and efficiency are all intricately related to one another. Correct bike fit allows for proper muscle recruitment, optimal cadence, optimal power generation, and pedaling efficiency. An efficient riding style and a correct bike fit are the least biomechanically stressful on the body and the least likely to cause injury. Correct biomechanics to decrease stress in the joints becomes even more important as a rider becomes stronger and more powerful because there will be a greater application of force being delivered. Review bike set-up in your Instructor Manual and revisit each student’s bike set up.

Break the bounce by explaining the pedal stroke to “phase” out inefficiency.
It is easier to divide the pedal stroke into four phases to better understand the mechanical purpose of each phase of movement. The pedal stroke is commonly described as if it were the
face of a clock. The following are the phases, purposes, and vocal cues to use to explain the phase:

**Preparatory Phase 11:00-1:00 o’clock**
- Prepares the leg and foot for the power phase
- Cue to “Push up and over 12:00 o’clock.”

**Power Phase 1:00-5:00 o’clock**
- This is where propulsion comes from as the leg and foot explode out of the Preparatory Phase.
- Peak force is at 3:00 o’clock where the most effective application of force is perpendicular to the crank.
- Cue to “Explode past 3:00 o’clock!”

**Follow-Through Phase 5:00-7:00 o’clock**
- The goal is to minimize the amount of deceleration and drag as possible.
- Do not apply a downward force. Instead, apply a tangential force to the pedals.
- If there is a continued downward pressure on the pedal described as “piston pedaling,” a force is applied on the crank arm that runs along its axis rather than perpendicular to it.
- Do not cue to scrape the mud off the bottom of the shoe.
- Cue to “Sweep back through 6:00 o’clock as quickly as you can.”

**Recovery Phase 7:00-11:00 o’clock**
- The goal is to minimize the amount of force applied to the pedal so that the Power Phase on the opposite leg is not negatively affected.
- The “recovering” leg can actually hold back the opposite leg in the power phase of the pedal stroke if it is not “unweighted” through the recovery phase.
- Cue to “Allow the foot to float in the shoe.”

**Break the bounce by practicing pedaling drills**

*Isolated Leg Drill:* Both feet must remain on the pedals at all times. Consciously work on one leg at a time. Focus on smooth transitions in all four phases of the pedal stroke.

*Toe Touch Drill:* In the Preparatory Phase, imagine pushing your foot forward in your shoe to try to touch your toes to the front of the shoe. Focus on a smooth transition from 11:00-1:00 o’clock.

*Top Only Drill:* Keep the top of the foot in constant contact with the top of the shoe. Do not push down on the pedals at any time throughout the entire pedal stroke. At the same time, do not pull up in the Recovery Phase by using excessive upward force. Focus on smooth transitions in all four phases of the pedal stroke.

*9 to 3 Drill:* Imagine driving the pedal forward from 9:00 o’clock to 3:00 o’clock “by-passing” 12:00 o’clock altogether.

*Bounce Drill:* Gradually increase cadence (about every 30 seconds) until you begin to bounce in the saddle. As soon as you notice the bounce, decrease your cadence until the bounce disappears. This is your optimal high cadence. Work on the efficiency of your pedal stroke to raise your highest optimal cadence.

*High & Low Cadence Drills:* During Interval Rides, challenge your students by inserting high and low cadence challenges as the intervals. Cadence intervals should be conducted using the greatest amount of resistance at a specific cadence until students reach either cardiovascular or muscular discomfort depending on the cadence and terrain.