American Physical Therapy Association

1111 North Fairfax Street
Alexandria, VA 22314-1488
703 684 2782
703 684 7343 fax
www.apta.org

NEWS RELEASE

IN OBSERVANCE OF NATIONAL BIKE TO WORK DAY, PHYSICAL THERAPISTS OFFER TIPS FOR PROPER BIKE FIT

Poor Fit Can Contribute to Pain and Injury Risk

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Contact: Jennifer Rondon
703.706.3216
jenniferrondon@apta.org

ALEXANDRIA, VA — Riders across the country will take to the streets on Friday, May 15, in celebration of National Bike to Work Day. In support of their efforts and enthusiasm, the American Physical Therapy Association (APTA) offers tips for reducing the risk of bicycle-related injury through proper bike fit.

APTA member Erik Moen, PT, CSCS, a Seattle-based "Elite Level" coach through the United States Cycling Federation, says, "The first thing I ask of any patient complaining of bicycling-related pain is to bring the bicycle in to check for a proper fit. In most instances, a poor bike fit is the root of their problem."

Moen, who races on the road in cyclocross and in a cycling arena called a velodrome, says that the most common bike fit errors include saddle heights that are either too high or too low, handlebar reach that is either too long or too short, and misalignments of the pedal and shoe. He recommends cyclists do the following to ensure proper bike fit:

Seat/Saddle. Be sure the seat, or saddle, is level. If you are sliding too far forward from a forward-tilting saddle then too much weight is being placed on your hands, arms, and lower back. If the seat is tilted backwards then you may place undue strain on your lower back and possibly experience saddle-related pain. A physical therapist can measure proper saddle height by measuring knee angle at the most extended position of the knee in common pedaling.

The saddle should also be a comfortable distance from the handlebars. If it is too close then extra weight will be placed on the mid-back and arms; too far away and extra strain will be placed on the lower back and neck.

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Handlebars. Handlebar position will affect hand, shoulder, neck, and back comfort. The higher the handlebars, the more weight will be placed on the saddle. Generally, taller riders should have lower handlebars in relation to the height of the saddle. According to Moen, “Proper handlebar position allows for shoulders to roughly make a 90 degree angle between the humerus and trunk.” Trunk angle for the road bike cyclist is 25-35 degrees and for comfort/recreational riding is 35-90 degrees. Moen notes that riders should re-examine their bicycle fit after bad falls or crashes, due to possible re-orientation of handlebars, brakehoods, cleats, or the saddle.

Knee to Pedal. A physical therapist can also measure the angle of the knee to the pedal. The closer the angle is to 35 degrees, the better function the cyclist will have and with less stress on the knee. For the road cyclist, the angle should be 30-35 degrees. The recreational cyclist should have a 35-45 degree angle.

Foot to Pedal. The ball of the foot should be positioned over the pedal spindle for the best leverage, comfort, and efficiency, Moen notes. A stiff-soled shoe is best for comfort and performance.

“Pedaling is a skilled activity that requires aerobic conditioning,” Moen says. “You should make it your goal to work toward pedaling at 80-90 revolutions per minute (advanced at 90-105 rpm). Pedaling at this rate will lessen your chance of injury.”

Physical Condition

“Good flexibility of the hamstrings, quadriceps, and gluteal muscles is crucial because these muscles generate the majority of the pedaling force and must ideally move through the pedal-stroke at 80-90 revolutions per minute.” He adds, “Proper stretching, balance, and flexibility exercises help with coordination of cycling-related skills such as breaking and cornering.” Moen also cautions that changes in riders’ strength and flexibility affect the ability to attain certain positions on the bicycle and also may require them to re-examine their bike fit.

Moen points to bicycle accessories on the market—such as softer handlebar tape, shock absorbers for the seat post and front fork, cut-out saddles, and wider tires—that help to bring comfort to the sport. “Cycling should be about enjoyment, not pain,” concludes Moen. “Proper bicycle fit will minimize discomfort and possible overuse injury, maximize economy, and ensure safe bicycle operation. Proper bicycle fit will make your ride a lot more pleasurable.”

Tips for avoiding bike-related injuries follow this press release. APTA’s online brochure, “Bike Right, Bike Fit” can be found in the “consumer tips” section of APTA’s consumer Web site, www.moveforwardpt.com .

AMERICAN PHYSICAL THERAPY ASSOCIATION’S TIPS FOR AVOIDING BIKE FIT RELATED INJURIES

Postural Tips

- Change hand position on the handlebars frequently for upper body comfort.
- Keep a controlled but relaxed grip of the handlebars.
- *When pedaling, your knee should be slightly bent at the bottom of the pedal stroke. Avoid rocking your hips while pedaling.*

Common Bicycling Pains

- **Anterior (Front) Knee Pain**. Possible causes are having a saddle that is too low, pedaling at a low cadence (speed), using your quadriceps muscles too much in pedaling, misaligned bicycle cleat for those who use clipless pedals, and muscle imbalance in your legs (strong quadriceps and weak hamstrings).
- **Neck Pain**. Possible causes include poor handlebar or saddle position. A poorly placed handlebar might be too low, at too great a reach, or at too short a reach. A saddle with excessive downward tilt can be a source of neck pain.
- **Lower Back Pain**. Possible causes include inflexible hamstrings, low cadence, using your quadriceps muscles too much in pedaling, poor back strength, and too-long or too-low handlebars.

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- **Hamstring Tendinitis**. Possible causes are inflexible hamstrings, high saddle, misaligned bicycle cleat for those who use clipless pedals, and poor hamstring strength.
- **Hand Numbness or Pain**. Possible causes are short-reach handlebars, poorly placed brake levers, and a downward tilt of the saddle.
- **Foot Numbness or Pain**. Possible causes are using quadriceps muscles too much in pedaling, low cadence, faulty foot mechanics, and misaligned bicycle cleat for those who use clipless pedals.
- **Ilio-Tibial Band Tendinitis**. Possible causes are too-high saddle, leg length difference, and misaligned bicycle cleat for those who use clipless pedals.

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Physical therapists are highly-educated, licensed health care professionals who can help patients reduce pain and improve or restore mobility — in many cases without expensive surgery or the side effects of prescription medications. APTA represents more than 74,000 physical therapists, physical therapist assistants, and students of physical therapy nationwide. Its purpose is to improve the health and quality of life of individuals through the advancement of physical therapist practice, education, and research. In most states, patients can make an appointment directly with a physical therapist, without a physician referral. Learn more about conditions physical therapists can treat and find a physical therapist in your area at www.moveforwardpt.com. Join APTA on Facebook and Twitter.