

Sports Medicine

FOR THE PRIMARY CARE PROVIDER

Sleep for health and recovery

By Scott Deihl, ATC, PTA



Every human needs it. Not having enough can have serious effects on your health and performance. Sleep is often a forgotten part of health and recovery. Sleep deprivation can lead to serious medical conditions, including heart disease, hypertension, lack of sex drive, depression, decreased growth hormone production, obesity and poor decision making.

Stages of Sleep

There are five stages of sleep. It takes approximately 90 minutes to complete all five stages. Stages one and two are classified as light sleep in which muscle activity and breathing slow down. Stages three and four are deep sleep zones. This is when growth hormone secretion occurs, which is part of the repair and restoration function of sleep. Stage five is known as rapid-eye movement (REM) phase. This is when most dreaming occurs.

Strategies to Improve Sleep

In order to optimize sleep, one must create an environment in the bedroom that supports slumber. Recommendations include:

- Keep the bedroom as dark as possible. Use blackout curtains to block outside light.
- Use a white noise generator or fan to reduce outside noise.
- Keep the room temperature cool at approximately 66 to 72 degrees Fahrenheit.
- Use a dim night light or motion sensor light for bathroom trips.
- Cover the alarm clock light.

Once the bedroom environment is optimal for rest there are other factors to consider prior to going to bed:

- Limit caffeine consumption after 3 p.m. Caffeine has a half-life of five to eight hours depending on the individual.
- Limit alcohol consumption late in the day. Alcohol disrupts REM sleep and causes sleep interruptions from getting up during the night to emptying the bladder.

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Dear Fellow Health Care Provider,



I hope this finds you well and enjoying the summer months!

Enclosed you will find the latest edition of our primary care sports medicine newsletter, a biannual newsletter of seasonal sports topics. We hope you find the information useful and appreciate any feedback you have to enhance our efforts.

For questions, feedback and inquiries about future issues, please contact Tracie Kirkessner at tkirkessner@PennStateHealth.psu.edu or me at msilvis@PennStateHealth.psu.edu.

Enjoy,

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Sacroiliac joint dysfunction

By Shawn Phillips, MD

Low back pain is a common cause of disability in the United States and can have many causes. Sacroiliac (SI) joint dysfunction is a condition that causes pain at one of the two joints between the bone at the bottom of the spine (“sacrum”) and the large bones of the pelvis (“ilium;” plural, “ilia”). SI joint dysfunction is a common cause of lower back pain in the athlete and active adults. It can be acute (for example, after a fall) or chronic (for example, associated with repetitive activities). Diagnosis of SI joint dysfunction is often difficult because its symptoms may be similar to those of other causes of lower back pain.

Risk factors for SI joint dysfunction include hypermobility or hypomobility of the SI joint ligaments, tightness of musculature of the hip, pelvis, and lower back, trauma to the hip/pelvis and arthritic changes within the SI joint.

Symptoms of SI joint dysfunction include pain on one side of the low back/pelvis that is often also felt in the buttocks on the same side. Occasionally, SI joint pain can be felt in the back of the thigh. It is often made worse by walking or running. At times, patients find it difficult to sit with any pressure on the side of the pain.



Diagnosis of sacroiliac joint dysfunction is made through a thorough history and physical exam. Pain at the SI joint is often made worse by maneuvers that either compress or stretch the joint. Evaluation will also include an assessment of the lower back and hip, as tightness of these muscles can put extra strain on the SI joint. X-rays are usually normal in people with SI joint dysfunction and are usually unnecessary. Advanced imaging, such as magnetic resonance imaging (MRI), is not usually needed to diagnose SI joint dysfunction, and is not ordered as part of the initial evaluation. Imaging may be ordered if another condition, such as a stress fracture is suspected.

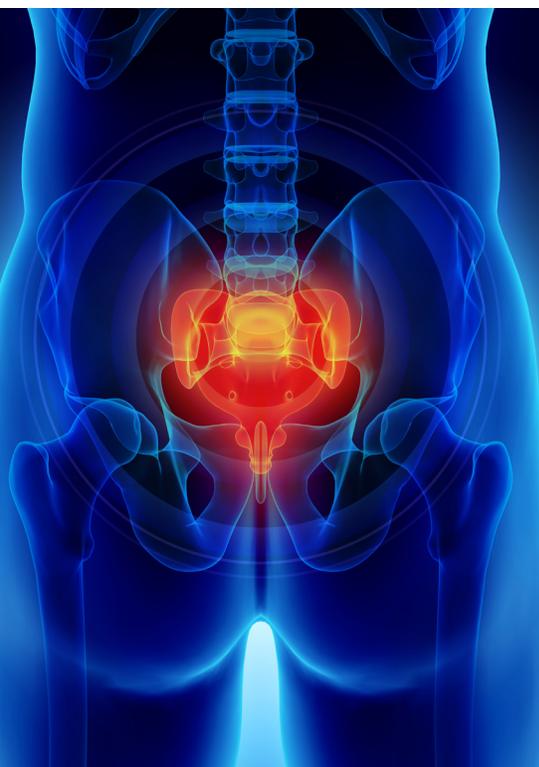
Treatment of SI joint pain depends on how long it has been present and its severity. Anti-inflammatory medications and activity modification may be considered initially. Referral to a physical therapist to evaluate SI joint dysfunction is a mainstay of management. Oftentimes, they will prescribe exercises to improve flexibility of tight hip and pelvic musculature and to strengthen core spine and abdominal musculature. Mobilization or manipulation of the SI joints can sometimes be helpful. A SI belt may also be prescribed in an attempt to compress the SI joint and relieve pain.

For cases that are not improving with these interventions, injection of the SI joints with steroids or other medication can help relieve pain and inflammation. These injections are often performed with imaging such as ultrasound or with X-rays, to make sure that the medication makes it into the joint.

For extreme cases, surgery may be considered. This usually requires fusion of the SI joint to prevent any motion from taking place that can irritate the joint.

The best way to prevent the development of SI joint pain is to maintain good flexibility of the muscles around the hip, such as the hip flexors, the hamstrings, the iliotibial band and piriformis. Good core muscle strength also helps prevent excess strain on the SI joint and may help to prevent injury.

For athletes with SI joint dysfunction, return to play is usually allowed according to the athlete's tolerance. It is often important for athletes to continue strengthening and flexibility exercises as part of their routine training. For SI joint pain that occurs in season, modification of the practice schedule and activities can help minimize worsening of symptoms.



Imaging Pearls

By Matthew Silvis, MD

Your first patient of the morning is a 54-year-old man complaining of intermittent left knee pain for the past six months. The pain is located over the medial aspect of the knee and he notes occasional swelling. He has never experienced locking of the knee and doesn't complain of instability. He denies hip or ankle pain. No trauma—symptoms began after an awkward twisting motion when playing golf. You note some medial joint line tenderness on exam with a mild effusion. He has full range of motion and normal strength. You know you need imaging but aren't sure what modality or views are best. How should you proceed?



When evaluating a patient with a musculoskeletal complaint, knowing what imaging study to order is critical to an appropriate evaluation. Start simply before ordering more expensive tests. Obtain plain radiographs before more advanced imaging modalities. When ordering plain radiographs, if imaging a long bone (i.e. femur), include the joints above and below. Obtain images in at least two planes perpendicular to one another (anterior-posterior and lateral) to evaluate for fracture. If a growth plate injury suspected, you may need to image the asymptomatic limb for comparison. If the joint is a weight bearing joint, as long as the patient is able, obtain weight bearing images.

Magnetic resonance imaging (MRI) applies a strong magnetic field with radiofrequency to create an image. Consider MRI for evaluation of the spine (i.e. disks), joints (i.e. ligaments, cartilage, menisci) and soft tissues (i.e. tendons, muscle).

Computed tomography (CT) uses X-rays to produce tomographic images. CT scan offers axial visualization of bone, muscle and fat. The bone visualization is excellent, but soft tissue is less so. Consider CT to evaluate complex fracture and for fracture healing. Arthrography consists of injecting a contrast agent into a joint, either alone or combined with CT or MRI. Consider arthrography for the evaluation of intra-articular structures like the labrum of the hip or shoulder. Bone scan utilizes a radioisotope that demonstrates blood flow and metabolic activity. Bone scan is used for infection, tumor and fracture. This modality is not used as commonly in sports medicine with the rise of MRI. Ultrasound is an emerging modality offering a dynamic, real-time assessment of soft tissue structures and can be performed in the office. Ultrasound is increasingly utilized to guide injections into difficult to reach joints, tendon sheaths, etc. and to provide dynamic evaluation of structures such as the iliopsoas tendon of the hip or ulnar collateral ligament of the elbow.

Ask yourself the following questions before ordering imaging studies:

- Will imaging change management?
- Are there previous imaging results that provide diagnostic management information?

When in doubt, call the radiologist to clarify the best initial imaging exam if needed. The radiologists at Penn State Health are receptive to questions. Take into account available technology and patient allergies. Provide the radiologist with a thorough history (for instance, include more information than just “knee pain”), and always ensure that you include provider contact information so emergent findings can be communicated easily.

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- Avoid having a large meal prior to bed. Sleeping after eating a large meal can increase acid reflux. Limiting food and fluid intake two to three hours prior to bedtime will help with uninterrupted sleep time.
- Avoid heavy thought processing tasks. Write down a list of projects, to dos and creative thoughts. Meditation may assist in “quieting” your brain.
- Turn off all electronic devices at least 30 minutes before bed. This includes televisions, computers, tablets and phones. Light from these devices prevents the brain from producing melatonin, a hormone that regulates sleep.
- Read before bed. Ensure that it is not a brain stimulating crossword puzzle or thrilling murder mystery.

- Avoid intense exercise two to three hours prior to bedtime. The body's core temperature rises for four to six hours after a workout, making it difficult to allow for sleep.
- Take a bath or shower. Warm water helps to relax and destress.
- Wear proper pajamas. Tight clothing and socks should be avoided. The inability for the body to regulate its temperature and cool down will inhibit deep sleep.
- Create a sleep journal. Document how you feel in the mornings and reflect on successful strategies.

Sleep is essential for good health. Modifying your bedtime routine and making sleep a priority will result in positive physical and mental benefits.

RESEARCH IN BRIEF:

Is the preparticipation physical examination replacing the annual well-child examination among student-athletes?

By Eldra W. Daniels, MD, MPH; Cayce Onks, DO, MS; Robert Gallo, MD; Matthew Silvis, MD

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PURPOSE: Historically, the preparticipation physical examination (PPE) has been reported to be the only contact with a medical provider. The purpose of our study is to evaluate whether student-athletes who have participated in our PPEs also receive routine well-child care. Additionally, we investigated parental perspectives regarding what should be included during the PPE.

METHODS AND STUDY DESIGN: Cross-sectional study. Survey distributed to parents of student-athletes during six school sponsored, multiple-station format PPEs at three high schools. Descriptive statistics were used to characterize and summarize the data set.

RESULTS: Two-hundred eighty-eight surveys were completed. Overwhelming majority of student-athletes (90.9 percent) had both a well-child examination and PPE annually. Twenty-six parents (9.16 percent) used the PPE as their child's annual health assessment and 25 (8.68 percent) believed the PPE was identical to the well-child examination. Two-hundred fifty-two parents (89.4 percent) believed that EKGs prevented sudden cardiac death in sports and 217 (78.1 percent) believed that EKG screening should

be performed during the PPE. One-hundred fifty-seven students (54.5 percent) had a pediatrician as their primary care physician and 102 students (35.4 percent) had a family medicine physician. Students with a pediatrician were more likely to see their doctor more than once a year compared to students with a family medicine physician ($p < 0.001$).

CONCLUSIONS: The majority of student-athletes complete both a well-child examination and a PPE annually. Student-athletes with a pediatrician are more likely to see their physician for visits in addition to their well-child check compared to those with a family physician. Parents believe screening EKGs should be performed and that they are effective in preventing sudden cardiac death.

SIGNIFICANCE: Historical beliefs that the PPE is used for well-child care appears to be inaccurate today. Parental perception of what should be performed and what is being performed are in contrast.

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