Pelvic pain and pelvic floor dysfunction are terms often used to designate a wide variety of conditions. Male “pelvic pain” is typically associated with the reproductive organs, the renal system, and their supporting structures, which may affect the abdomen, rectum, genitalia, or perineum, whereas “pelvic floor dysfunction” is a term associated with the abnormal function of the organs within the pelvis, the reproductive organs, the pelvic floor musculature, or associated structures of the perineum. A consensus definition that distinguishes pelvic pain from pelvic floor dysfunction has not been reached, and their respective etiologies have not been clearly identified.1 Sacroiliac dysfunction may be related, but it is not typically included as a component of pelvic pain or pelvic floor dysfunction.

Pelvic pain occurs in 4% of men in the third decade of life and 5.3% of those in the fourth decade of life.2 Nickel et al. reported that 9.7% of men suffer from prostatitis-like symptoms at some point in life.2 No research has established the prevalence of pelvic floor dysfunction among male athletes.4 With increasing participation in rodeo, equestrian sports, and extreme sports (e.g., skateboarding, snowboarding, and BMX cycling), injuries to the pelvic floor and perineum are likely to become more prevalent. Athletic trainers and therapists should know about acute and chronic pathologies that may be classified as pelvic pain, with or without associated pelvic floor dysfunction.

Although numerous conditions may be classified as either a pelvic pain syndrome or pelvic floor dysfunction, this report will focus on those that are most common among male athletes. Lower urinary tract symptoms (LUTS), prostatitis, and pudendal neuralgia are the most common causes of pelvic pain and pelvic floor dysfunction in male athletes.2

**Acute Perineal Trauma**

The common characteristic of acute perineal trauma appears to be a “straddle” mechanism of injury. Acute perineal injuries have been reported in skateboarding, horseback riding, and bull riding,5,6 but most urologic research pertaining to sports has related to cycling. Urethritis, hematuria, testicular torsion, and impotence associated with cycling have been thoroughly documented.7 A few reports have documented trauma to the perineum as a result of impact against the top tube or handle bar of a bicycle,7,10 but none of them have addressed chronic symptoms related to pelvic floor dysfunction.

Priapism, a prolonged penile erection that is unrelated to arousal, has been docu-
mented to be a relatively rare acute condition associated with cycling. Two forms of priapism are recognized: (a) veno-occlusive, or low-flow, priapism and (b) arterial, or high-flow, priapism. Low-flow priapism is the more common condition, which results from obstruction to venous outflow following treatment for erectile dysfunction (ED). High-flow priapism results from perineal or penile trauma that injures the cavernous artery, thereby increasing penile blood flow. The time from injury to manifestation of symptoms may be prolonged (i.e., four hours to two days), but the condition should be treated as an emergency.

**Chronic Perineal Trauma and Pudendal Neuralgia**

Pudendal neuralgia is typically a chronic condition that involves sharp or stabbing pain along the distribution if the pudendal nerve, which may be associated with urinary or pelvic floor dysfunction. The pudendal nerve originates from the sacral plexus (i.e., S2-S4). It passes through the greater sciatic foramen, and it lies between the sacrotuberous and sacrospinous ligaments. As it emerges from these two ligaments, it passes through the pudendal canal (Alcock’s canal) just inferior to the insertion of the sacrotuberous ligament. The nerve then extends to the area of the pubis and divides into branches. The pudendal nerve is primarily a sensory nerve that has three terminating branches: (a) inferior rectal, (b) perineal, and (c) dorsal penile. This nerve innervates the area from the medial aspect of the ischial tuberosity to the tip of the penis, including the anus, perineum, and scrotum. Pudendal neuralgia may affect any one of the nerve branches, or all of them (Figure 1).

Several factors may contribute to development of the condition. Tightness, spasm, or inflammation of the levator ani, obturator internus, and piriformis muscles may constrict the pudendal nerve, and tightness of the sacrotuberous and the sacrospinous ligaments may entrap the nerve. During the skeletal development of a highly active adolescent male, hypertrophy of the pelvic floor muscles may cause increased the size of the ischial spine or alter its position, thereby narrowing Alcock’s canal. Spasm or inflammation of the rectum or anus, associated with irritable bowel syndrome, internal hemorrhoids, and anal fissures, may refer pain to the scrotum or penis. The chronic nature of pain and discomfort from pudendal nerve trauma can cause hypertonicity of the pelvic floor musculature. Interruption of the pain-spasm cycle is a treatment goal for this condition. Manual therapy, in conjunction with biofeedback and behavioral modification, may alleviate pressure on the pudendal nerve, thereby reducing pain and dysfunction.

Alcock’s Syndrome is caused by repetitive pressure on the perineum, which produces transient paresthesia or hypesthesia of the penis and/or scrotum. Penile arterial insufficiency is another possible cause of genital numbness and ED. These symptoms may be long-lasting when caused by repetitive microtrauma. Incorrect saddle position for cycling is a common cause of Alcock’s syndrome. Management options include saddle adjustment or change in saddle design, medication, rehabilitation, pudendal nerve injection, and pudendal decompression surgery.

**Lower Urinary Tract Symptoms**

Pelvic floor dysfunction may be associated with lower urinary tract symptoms (LUTS), which include frequent urination, urgency, nocturia, intermittent or decreased urine flow, and a sensation of incomplete bladder emptying. LUTS is most commonly diagnosed in men secondary to prostatitis or benign prostatic hyperplasia (BPH). BPH involves cellular proliferation in the periurethral zone of the prostate. The prostate begins a second growth spurt at age 25 and continues to grow throughout life. Typically, the rate of growth is slow, and symptoms of BPH do not develop until 40 years of age or later. Although BPH and LUTS often coexist, the relationship between the conditions is unclear.

Medication can negatively affect the renal system in young healthy men. Narcotic pain medication may disrupt the neuromuscular control of the bladder by
reducing the void reflex and causing some degree of urinary retention. Diuretics are often used in the treatment of hypertension, which can create urination urgency. The use of non-diuretic medication will likely alleviate the problem.

Prostatitis

The prostate gland is a walnut-sized structure that is part of the male reproductive system. Although the function of the prostate is not fully understood, its main role is to add fluid to the sperm during ejaculation. Unfortunately, prostatitis is often used as a catch-all term to collectively designate conditions that may or may not involve inflammation of the prostate gland. The traditional definition of prostatitis may include acute bacterial infection, fever, voiding dysfunction, ejaculation pain, or pain in the urethra, penis, scrotum, low back, abdomen, or perineum that persists for more than three months. The National Institute of Health has classified prostatitis in four categories (Table 1).

The most important distinction between the categories of prostatitis is the presence or absence of bacterial infection. Bacterial prostatitis is the leading cause of urinary tract infections in men. Antibiotics are often prescribed, which are effective for treatment of bacterial prostatitis. The majority of patients diagnosed with prostatitis (90% or greater) have non-bacterial prostatitis (category III). This population of prostatitis patients may be classified as having any of the following synonymous conditions: chronic pelvic pain syndrome (CPPS), urologic chronic pelvic pain syndrome (UCPPS), pelvic pain syndrome (PPS), or chronic prostatitis (CP; see Table 2).

Because CPPS (Prostatitis III and IV) is poorly understood, its treatment is non-specific. Among men younger than 50 years of age, 11% suffer from CPPS or prostatitis-like symptoms. Little research has assessed the accuracy of CPPS diagnoses, because symptoms are vague and its etiology not well understood. Diagnostic tests are not often utilized, because they are difficult, uncomfortable, and expensive to perform. CPPS is idiopathic and its diagnosis is typically based exclusively on symptoms. CPPS may have a cause that is external to the prostate gland, such as a bladder outflow or pelvic floor muscle disorder.

Beneficial therapeutic effects derived from rehabilitation, manual therapy, and biofeedback may relate to the involvement of pelvic floor musculature in the etiology of CPPS.

Treatment

Although rehabilitation, manual therapy, and biofeedback have been reported to provide positive results for the treatment of pelvic pain and pelvic floor dysfunction, clinicians who possess specialized expertise are difficult to locate. Myofascial pain and its corresponding treatment are extremely common in athletic health care. Manual therapy for myofascial release and trigger point desensitization is becoming more common in the urologic community. Zermann et al. reported an inability to contract and relax the pelvic floor muscles in 88% of their patient sample and suggested that compromise of the pelvic floor musculature may cause bladder hypertonicity, pain, urgency, and undesirable changes within the central nervous system. Anderson et al. reported moderate to marked improvement of CPPS symptoms among 72% of patients who received manual therapy and education.

<table>
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<tr>
<th>Table 1 NIH Classifications for Prostatitis</th>
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<tr>
<td>Prostatitis I</td>
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<td>Prostatitis IIIa*</td>
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<td>Prostatitis IIIb*</td>
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<td>Prostatitis IV</td>
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* Distinguishing between IIIa and IIIB has no clinical significance.

| Table 2 Commonly used terminology for Pelvic Pain and Urinary Dysfunction |
|-----------------------------|---------------------------|------------------|
| Term                        | Abbreviation | Definition           |
| Chronic Pelvic Pain Syndrome | CPPS         | Prostatitis III, Prostatodynia |
| Urologic Chronic Pelvic Pain Syndrome | UCPPS     | Prostatitis III, Prostatodynia |
| Pelvic Pain Syndrome        | PPS          | Prostatitis III, Prostatodynia |
| Chronic Prostatitis         | CP           | Prostatitis II, Prostatitis III |
| Lower Urinary Tract Symptoms | LUTS        | Urinary dysfunction/ |

10 JANUARY 2011

INTERNATIONAL JOURNAL OF ATHLETIC THERAPY & TRAINING

17

18
Athletes referred for treatment of pelvic pain or pelvic floor dysfunction should anticipate an evaluation that will include acquisition of a thorough medical history and in-depth inquiry about conditions that may have contributed to the onset of symptoms. Biofeedback testing may be performed to obtain baseline measurements of the status of the pelvic floor musculature, including activation level at rest, ability to voluntarily contract and relax, and fatigue (Figure 2). The evaluation should include assessment of lumbo-sacral function and lower extremity flexibility and both external and internal examination of the pelvic floor musculature.

Biofeedback is also used as a treatment modality to minimize hypertonicity and to restore control of the pelvic floor musculature. External manual therapy can be utilized if internal techniques are too painful. Although the treatment of this population is complicated and multilayered, in pelvic pain patients, the obturator internus (OI) often requires attention. Manual therapy that is focused on the OI muscle is often indicated, because it encircles the pudendal nerve. This muscle can be externally accessed by positioning the patient in a side-lying posture on the unaffected side (i.e., affected side directed upwardly). The clinician can palpate the ischial tuberosity, and then angle the hand supero-laterally to locate the OI muscle (Figure 3). To ensure proper hand placement, the practitioner should instruct the patient to provide resistance to manual external rotation, which will produce a palpable contraction of the OI muscle.

For internal pelvic floor manual therapy, the patient should be positioned on the unaffected side, with the upper knee pulled toward the chest, thereby facilitating internal rotation of the hip. The clinician locates the OI muscle by palpating the lateral wall of the pelvis within the rectum and providing manual resistance to external rotation of the upper hip (Figure 4).

Summary
Pelvic pain and pelvic floor dysfunction affects male athletes. More research is needed to better understand the etiologies of these conditions and their impact on male athletes. Athletic trainers and therapists need to be aware of symptoms and treatment options to effectively manage the varied conditions that may be classified as a pelvic pain syndrome or pelvic floor dysfunction.

References

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