Pelvic Pain and Pelvic Floor Dysfunction in Male Athletes

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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. 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. Nickel et al. reported that 9.7% of men suffer from prostatitis-like symptoms at some point in life. No research has established the prevalence of pelvic floor dysfunction among male athletes. 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.

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, but most urologic research pertaining to sports has related to cycling. Urethritis, hematuria, testicular torsion, and impotence associated with cycling have been thoroughly documented. A few reports have documented trauma to the perineum as a result of impact against the top tube or handle bar of a bicycle, 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 documented.
mented to be a relatively rare acute condition associated with cycling.\textsuperscript{7,11} 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).\textsuperscript{7} High-flow priapism results from perineal or penile trauma that injures the cavernous artery, thereby increasing penile blood flow.\textsuperscript{5} 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.\textsuperscript{9}

**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.\textsuperscript{12,13} The pudendal nerve originates from the sacral plexus (i.e., S2-S4).\textsuperscript{14} It passes through the greater sciatic foramen, and it lies between the sacrotuberous and sacrospinous ligaments.\textsuperscript{13} 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.\textsuperscript{14} The pudendal nerve is primarily a sensory nerve that has three terminating branches: (a) inferior rectal, (b) perineal, and (c) dorsal penile.\textsuperscript{13} 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.\textsuperscript{12} 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.\textsuperscript{12} 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.\textsuperscript{4} 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.\textsuperscript{13} Manual therapy, in conjunction with biofeedback and behavioral modification, may alleviate pressure on the pudendal nerve, thereby reducing pain and dysfunction.\textsuperscript{4}

Alcock’s Syndrome is caused by repetitive pressure on the perineum, which produces transient paresthesia or hypesthesia of the penis and/or scrotum.\textsuperscript{14} 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.\textsuperscript{14} Management options include saddle adjustment or change in saddle design, medication, rehabilitation, pudendal nerve injection, and pudendal decompression surgery.\textsuperscript{13}

**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.\textsuperscript{15} LUTS is most commonly diagnosed in men secondary to prostatitis or benign prostatic hyperplasia (BPH).\textsuperscript{16} 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.\textsuperscript{15} Although BPH and LUTS often coexist, the relationship between the conditions is unclear.\textsuperscript{15}

Medication can negatively affect the renal system in young healthy men. Narcotic pain medication may disrupt the neuromuscular control of the bladder by

![Figure 1](http://commons.wikimedia.org/wiki/File:Pudendal_nerve.svg#filehistory)