Assessment of Abdominal Conditions in Athletes

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Gastrointestinal (GI) problems are common in athletes, and most are manifestations of benign conditions. Many abdominal conditions are related to fluid or food intake, as well as the effects of exercise on the visceral organs (illustrated in Figure 1), and can be treated by modifications in diet or training. Nonetheless, there are certain abdominal conditions that warrant immediate recognition and treatment or might represent more serious underlying medical diseases. As in all aspects of sports medicine, it is important to remember that athletes are not immune to medical problems, and thus care should not be taken to assume that symptoms are related to training. In addition, we must understand both how exercise affects certain medical problems and how certain medical diseases can affect an athlete. The purposes of this article are to discuss some of the abdominal conditions that present in athletes and to help athletic trainers and therapists and other health care providers understand and differentiate these entities and treat them effectively.

Gastrointestinal symptoms in the exercising individual can be broken down into those that affect the upper GI tract and those that affect the lower GI tract. Symptoms such as nausea, bloating, heartburn, and acid reflux occur in the upper GI tract, and diarrhea, the urge to defecate, and rectal bleeding are symptoms that occur in the lower GI tract. GI-tract symptoms can all be benign, normal responses to high-intensity exercise, but they might also be the result of a more serious condition such as inflammatory bowel disease, gastritis, duodenal or gastric ulceration, appendicitis, malignancy, or pathogenic gastrointestinal infections. In addition, conditions outside of the GI tract, such as kidney stones or kidney disease; pelvic organ disease; ectopic pregnancy; and liver, pancreatic, or spleen abnormalities, often present with abdominal symptoms. Differentiating the benign from the more serious conditions is important for those caring for physically active individuals. The athletic trainer or therapist is often the first person to evaluate an athlete with abdominal conditions, and the aim of this article is to provide a general approach to the initial evaluation and examination of the abdomen and an understanding of when referral for further evaluation is warranted.

**Symptoms of Gastrointestinal Disease**

The published literature on abdominal conditions in sports is sparse. Runner's diarrhea is likely the most common entity discussed, although runners are not the only population that have this disorder, and the many GI entities...
previously mentioned can occur in virtually all sports. In a study of recreational triathletes, 50% reported upper GI symptoms such as bloating and gas, and 27% tested positive for occult blood in their stool (Worme et al., 1990). In a study addressing the GI complaints of wrestlers, swimmers, and gymnasts, the endurance swimmers were most likely to experience problems (Strauss, Lanese, & Leizman, 1988). The presence of symptoms might correlate with increased-intensity exercise (Green, 1993) and might also be more common in endurance athletes (Butcher, 1996), among whom upper GI symptoms are reported in 58% and lower GI symptoms in 61% (Worobetz & Gerrard, 1985).

Runner’s diarrhea is commonly reported in exercising individuals. It is described as fecal urgency, loose stools, or frank diarrhea either during or directly after exercise. Women appear to be more commonly afflicted, and the symptoms are often worse with more strenuous workouts or competitive settings. In addition, recent food intake, as well as a history of preexisting GI problems such as irritable bowel syndrome, can put an individual at increased risk of experiencing runner’s diarrhea. The pathophysiology of runner’s diarrhea is unclear but is likely multifactorial, including diet, environmental conditions, GI bleeding, electrolyte and fluid shifts, autonomic nervous system activation, and underlying GI disease. Certain medications can increase GI symptoms, most notably the nonsteroidal anti-inflammatory drugs (NSAIDs), as well as antibiotics. Erythromycin is a commonly prescribed antibiotic that is often associated with nausea, vomiting, and abdominal pain. Other antibiotics also cause GI symptoms, and many can result in pseudomembranous colitis or Clostridium difficile. It is important in evaluating these athletes that a work-up be performed to exclude serious or correctable underlying disease.

Sport drinks can also contribute to abdominal complaints, and if the carbohydrate concentration is greater than 6–10%, diarrhea might occur. With concentrations higher than this, the “dumping syndrome” might occur as the result of osmotic changes in the GI tract and the resultant influx of water into the lumen of the gut to dilute the high concentration of carbohydrate. The tolerability of different fluids and food groups before exercise is highly variable, with different athletes able to tolerate different concentrations.