Vocal cord dysfunction exercise-induced laryngeal obstruction (VCD-EILO) is a medical condition that affects the normal breathing cycle during intense exercise. As described in detail in “Exercise-Induced Laryngeal Obstruction: Recognition and Management for the Sports Health Care Professional”, VCD-EILO is best described as a paradoxical vocal cord movement, contradictory in nature to a typical breathing cycle.

With VCD-EILO, the normal breathing cycle is interrupted, resulting in adduction (closing) of the vocal cords as the athlete attempts to inhale. This troublesome condition is debilitating and often affects athletic performance, causing increased stress on individuals as they struggle to inhale enough air. The exact cause is unknown and, due to its somewhat elusive presentation, this condition can often be misdiagnosed as other conditions that primarily present with shortness of breath.

The purpose of this article is to provide information on the key features of VCD-EILO and to stress how early recognition by an athletic trainer (AT) can facilitate an expedient referral to the appropriate physician for accurate diagnosis and effective treatment.

Key Points

- Vocal cord dysfunction exercise-induced laryngeal obstruction (VCD-EILO) is often misdiagnosed, resulting in treatment delays and unnecessary medications.
- Early recognition and referral by the athletic trainer to an appropriate physician is critical in obtaining an accurate diagnosis.
- The athletic trainer should include VCD-EILO in their differential diagnosis when confronted with episodes of shortness of breath or similar key features.
- Once diagnosed with VCD-EILO, an athlete should be referred to a speech-language pathologist for treatment.

A general void of knowledge exists about VCD-EILO among ATs, primarily in their ability to recognize the distinct key features of VCD-EILO but also in an AT’s unfamiliarity with a speech-language pathologist’s (SLP) possible role in treating this condition.

Due to the primary complaint of shortness of breath, VCD-EILO is often misdiagnosed as exercise-induced asthma (EIA). ATs can use the following information on key features (see Figure 1) as a guide in assisting in the differential diagnosis (DDX) and in distinguishing VCD-EILO from EIA, as well as other conditions.

Once the diagnosis is confirmed by a physician, the athlete should be referred to a SLP for therapeutic intervention. Therapy includes instruction on laryngeal relaxation exercises and diaphragmatic breathing, as well as specific respiratory control techniques. These evidence-based treatment strategies are known to be effective in
decreasing the number of episodes the athlete experiences, decreasing the intensity of each episode, and, in many cases, eliminating symptoms altogether.\textsuperscript{2,5}

The following examples of VCD-EILO in collegiate athletes serve to highlight the key points illustrated in "Exercise-Induced Laryngeal Obstruction: Recognition and Management for the Sports Health Care Professional."\textsuperscript{1}

Case #1 illustrates several of the key features associated with VCD-EILO, including rapid onset of symptoms and rapid recovery following cessation of exercise. This case is also a typical example of the role of the AT in the recognition of possible VCD-EILO and referral to an appropriate physician.

Case #2 exemplifies how accurate diagnosis can be a lengthy process and unnecessary medications can be prescribed. In this case, early recognition and referral by an AT may have led to a more timely diagnosis and appropriate treatment.

Case #3 demonstrates the importance of early referral to a SLP for evaluation and management, which includes teaching both relaxation exercises and breathing techniques to manage symptoms.

Case #4 is another example showing how delay in treatment can occur when VCD-EILO is mistaken for EIA. It is also an example of the anxiety that athletes may experience because of the negative effects VCD-EILO can have on performance.

Although each case is unique, all key features listed in Figure 1 were present in each of these cases. All four athletes have been able to manage their conditions successfully following intervention by a physician, AT, SLP, or some combination of the three. Each case is illustrative of the debilitating effects on performance of VCD-EILO, but also of the positive outcomes that can be achieved through accurate recognition and effective management.

**Case Narrative #1**

A 19-year-old athlete on the men’s intercollegiate soccer team collapsed while completing a Cooper test during preseason tryouts. The athlete completed six of eight laps when he began to feel light-headed, dizzy, out of breath, and reported difficulty with inspiration. Once he stopped exercising and the initial shortness of breath subsided, he had difficulty controlling his breathing and began to present with tingling in his fingertips, a common symptom of hyperventilation. The athlete was instructed by the athletic trainer to take short breaths in through his nose and gradually blow air out of his mouth in hopes of regulating his breathing and preventing him from further hyperventilation.

The athlete regained normal respiration within several minutes of the episode. After the return of normal respiration, history revealed that these episodes had occurred two to three times previously when training for the Cooper test or during long-distance runs; however, he did not seek medical care after these episodes.

After the initial assessment of this athlete, he did not return to play and was referred to the team physician for diagnostic testing, which included a chest radiograph showing that the lungs, the heart, and osseous structures appeared normal for his age. The athlete also underwent an electrocardiogram, which showed possible left ventricular hypertrophy and elevated ST segment, considered normal in an athletic heart. He was referred by the team physician for pulmonary function testing, with findings of normal spirometer pre- and postbronchodilator.

After completion of initial testing, the athlete followed up with the team physician and an extensive physical exam, which was unremarkable. The athlete was diagnosed by the team physician with VCD-EILO. He was educated about this disorder, reassured that this was not life-threatening and allowed to return to soccer as tolerated. Speech therapy was not used at this time but would have been the next step if any subsequent episodes had occurred. The athlete completed the season and, eight months after diagnosis, had had no further episodes.

**Case Narrative #2**

A 21-year-old female college basketball player was observed by her AT experiencing shortness of breath with significant stridor during a conditioning drill in practice. She self-managed, did not remove herself