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The Ankle Sprain Epidemic: How Can We Help?

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Recently, J.S., a 16-year-old female soccer player treated 8 months ago for a non-contact grade II right lateral ankle sprain, sought treatment after reinjuring her ankle.

Current evidence suggests up to 40% of people who sustain an ankle sprain develop chronic ankle instability, leading to repeated ankle sprains throughout their life. These alarming statistics motivated me to compare my current practice with updated treatment recommendations for ankle sprains. Reviewing the June 2019 issue of *The Journal of Athletic Training*, which focuses entirely on ankle sprains, prompted me to modify two treatments to better serve my patient.

Initially, I recommended that J.S. wear her ankle brace for up to 6 months after her original injury. The new recommendation is to wear an ankle brace for one full year (1). New evidence suggests a patient must be injury free for one year before their risk of re-injury returns to the same level as an individual who has never sustained an ankle sprain. Wearing an ankle brace for a full year provides support and has been shown to minimize the risk of re-injury.

Another new recommendation is for patients to perform exercises that simultaneously challenge the three major sensory input channels for balance:

- 1) muscle and joint movement
- 2) vision
- 3) stimulation of the vestibular system

J.S.'s treatment included the exercise of single leg hopping on and off a dynamic surface (towel or foam) for five minutes, while being video recorded. J.S. then evaluated the video to assure she was not landing in ankle inversion or on the lateral part of the foot. In retrospect, this exercise only targeted her muscle and joint movements; her vision and vestibular system were not being challenged.

My previous experience treating concussion and traumatic brain injury patients taught me that the easiest way to begin was to challenge J.S.'s vision and then her vestibular system.

J.S. was instructed to focus her eyes on a numbered card (fixed point) placed at eye level about 5-10 feet away while performing her original hopping exercise. When focusing on the card there was a significant increase in hops with incorrect ankle and foot position during landing. J.S. practiced this skill daily for one week until she was able to land 85% of her hops accurately. (NOTE: There are many other ways to challenge vision—such as eyes open, eyes closed, fixed point of focus, moving point of focus, or strobe glasses.)

Once J.S. achieved an 85% rate of accurate landing position, it was time to challenge her vestibular system. Head turning in the horizontal plane was added to J.S.'s hopping, using the same focusing exercise described above. (NOTE: There are numerous ways to challenge vestibular skills: head turns side to side, head turns up and down, tracking a ball, etc.) J.S. was instructed to first focus her eyes on the numbered card while hopping—as she did before—and then start turning her head side to side while maintaining her eye focus on the numbered card. (See images on page 2.) During this activity, J.S. was instructed to keep the number on the card in focus. If the number became blurry, she was to slow the turning of her head. Additionally, J.S. was instructed to never lose sight of the number. If that occurred, she should decrease the range of her head rotation.

When first attempting this exercise that challenged all three sensory input channels for balance, this accomplished athlete was unable to land a single leg hop without falling over! J.S. required several attempts to successfully add head turning. J.S.



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required three weeks before she could land her hops with the correct ankle position while performing head turns.

These simple exercise adaptations created sensory input similar to playing soccer (tracking and kicking a soccer ball, running on uneven ground) and established a training environment where J.S. is unable to consciously think about her ankle during a functional activity. This over-stimulated environment allowed her to better prepare for returning to play and hopefully will prevent her right ankle injury from re-occurring.

With my future patients, I will now add visual and vestibular challenges to muscle and joint movement during the latter stages of rehab, to assure a maximum functional outcome and hopefully limit the risk of re-injury.

1. McKeon P, Donovan L. A Perceptual Framework for Conservative Treatment and Rehabilitation of Ankle Sprains: An Evidence-Based Paradigm Shift. *J Athl Train*. 2019;54: 628-638.