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## **GPS-like technology helps pinpoint best methods for moving injured players**

The 15 minutes it took to remove Buffalo Bills player Kevin Everett off the field after he suffered a spinal cord injury may seem like a long time for someone needing acute medical care, but in fact, those minutes underscore how critical it is to carefully move a player with a suspected spinal cord injury off the field. It also highlights the challenges faced when needing to minimize any further movement to an injured spinal cord.

And those challenges have been the focus over the past eight years for Glenn Rechtine, M.D., professor of Orthopaedics at the University of Rochester Medical Center, and president of the American Spinal Injury Association. He and his colleagues believe they now know the best methods to move injured players off the field thanks to GPS-like technology.

Electromagnetic tracking devices, which work similar to GPS technology, can measure movement down to fractions of a millimeter, about the width of a piece of construction paper. By placing three to five of these tiny devices on the upper body of a cadaver, researchers were able to precisely measure how much an injured cervical spine moves at several important points in the process of removing a player from the field including taking off a helmet, putting on a cervical collar, and placing a player on the backboard for transportation to the ambulance.

The data was then analyzed to pinpoint which removal method produced the least amount of cervical spine movement, including the neck's rotation, flexion and lateral bending. The team's findings have been published in several journals, such as *Spine*, the *Journal of Trauma* and the *Journal of Neurosurgery Spine*. In the near future, a manuscript will appear in the *Journal of Athletic Training* showing that a modified Lift and Slide method appears to produce the least amount of movement to an injured cervical spine.

While we strive to obtain zero movement, as that is what is best to help prevent further injury to the area, we know that is not possible, Rechtine said. However, we have scientific evidence to guide us in knowing which method is the best when working with these injured players.

The most common methods for moving players off the field currently are:

- Log Roll: Where a player is gently rolled onto his/her side and the board is placed under the body.
- Lift and Slide: Where one person holds the player's head, and three people straddle the body, and together they all lift the player while a fifth person slides a board under the player.
- Modified Lift and Slide: Similar to the Lift and Slide, but uses extra people to lift the player, and holds the head a specific way.

Rechtine's research shows that the last method, the Modified Lift and Slide, produces the least movement to an injured cervical spine.

He added that having a trained team ready to go is one of the most important weapons in minimizing movement. regardless of the technique chosen, the key to a successful patient transfer hinges on having a specialized, trained and practiced team ready for such conditions, he said.

In addition to his work with athletes, Rechtine's research also has focused on how to minimize movement of an injured spinal cord once a patient is in a hospital setting.

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Working with Rechtine on this research is MaryBeth Horodyski, Ed.D., University of Florida, Bryan Conrad, M. Eng., University of Florida, and Gianluca DeIRossi, Ph.D., A.T.C., University of South Florida, and Christian DiPaula, M.D., University of Rochester Medical Center.

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