Youth soccer coaches can prevent injuries with just 90-minutes of training

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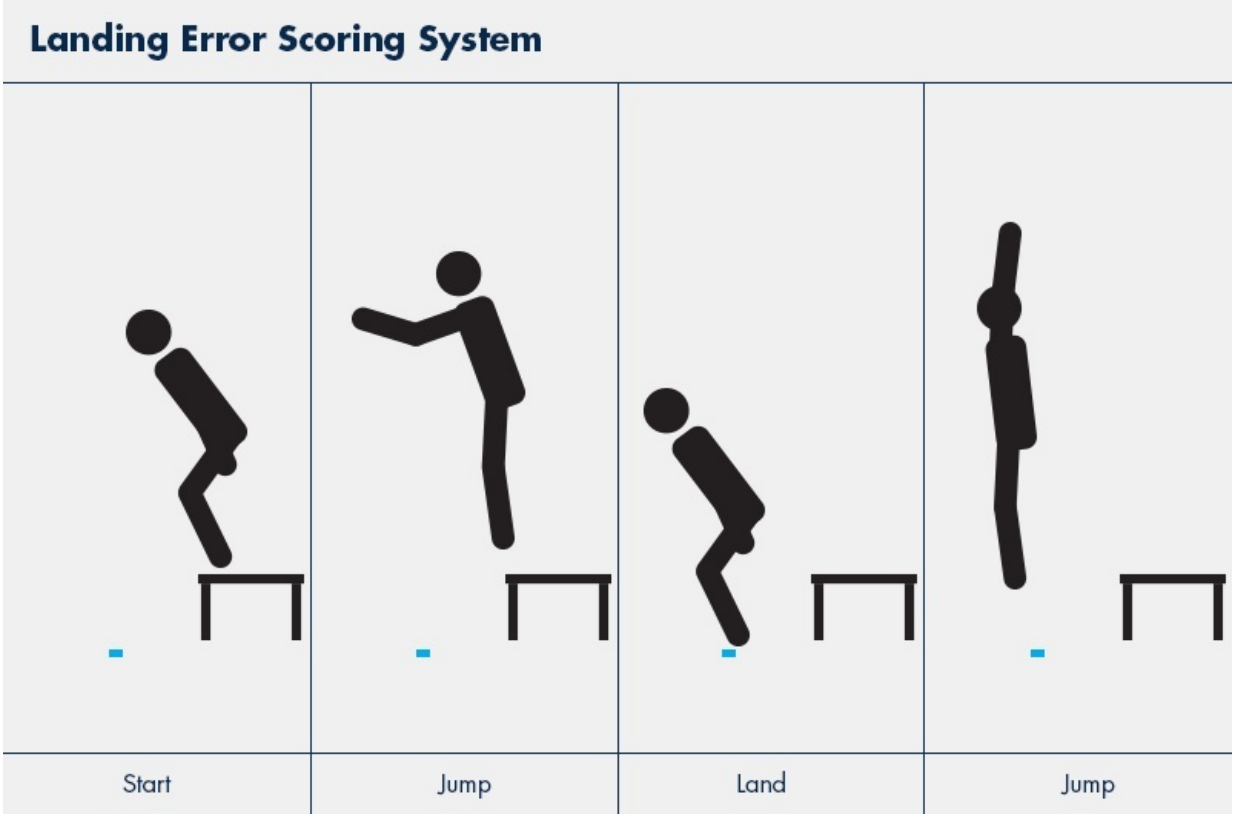

The Landing Error Scoring System (LESS) is a clinical assessment tool used to identify individuals at risk for lower extremity problems, such as ACL injury. Credit: Drexel University

It's a dreaded and increasingly common diagnosis for young athletes. An anterior cruciate ligament (ACL) knee injury, and the taxing rehab

process that comes with it, can quickly sideline a player.

Luckily, scientific research on preventing ACL injuries and osteoarthritis is progressing. The long-term implementation of preventive training programs—which include plyometrics (jump training), strengthening and other types of exercises to promote proper movement techniques—has been shown to reduce injuries and improve performance.

What's problem with these programs?

"Past research has show that injury prevention programs are absolutely successful when health care professionals implement the program. But that isn't a feasible, long-term solution," said Thomas Trojian, MD, a professor in the College of Medicine and chief medical officer for Drexel Athletics.

Beyond the time-intensive nature of preventive training programs, many youth sports programs lack the funding necessary to hire athletic trainers . And there has been limited evidence to suggest coaches could implement them without professional guidance, Trojian explained.

However, a new study shows that when coaches receive even a small amount of education about preventive training, they can be as effective as professional athletic trainers at mitigating poor movement behavior and preventing injury in young soccer athletes.

The study, published recently in the *Journal of Science and Medicine in Sport*, was conducted by researchers at Drexel College of Medicine, the University of Connecticut and California State University, Fresno.

"Whether it's a health care professional or a head coach who implements the program, it doesn't appear to make a difference, as long as the coach

is properly trained," said lead author Luke Pryor, PhD, an assistant professor at California State University, Fresno. "But, what this study also highlights, is that if you continue doing this program through multiple seasons—as a normal part of your training—you'll see greater benefits in those athletes who have the worst movement control and highest risk of injury."

To find out whether a 90-minute educational workshop could be an effective way to train coaches in how to prevent injuries, the researchers randomly assigned 12 youth soccer teams to one of two groups. During the fall season, the first group had athletic trainers lead the teams through a preventive training program before every practice, while the control group teams were instructed to perform their normal warm-up.

Credit: Gustavo Rezende/public domain

Two weeks before the subsequent spring season, coaches of all teams, including those in the control group, attended a preventive training program workshop and were instructed to implement the training as a team warm-up prior to practices and games.

The athletes were graded before and after each season using a Landing Error Score System (LESS), which evaluates specific jump-landing tasks in order to predict injury risk. During the LESS test, an athlete jumps down from a 1-foot high box and lands on the ground, and then immediately jumps vertically as high as possible. Digital cameras record the test, and afterward researchers review the video footage to identify movement errors as the participant landed, such as limited knee flexion.

While the study did not evaluate injury endpoints, such as ACL injury rate, the LESS has shown predictive capabilities for injury risk in youth soccer athletes, according to the researchers.

According to the LESS results, the preventive training program enhanced movement technique for the majority of soccer players, regardless of whether the athletes played on teams that employed athletic trainers for preventive training warm-ups.

There was also no difference between score improvements between the fall and spring seasons, suggesting that well-trained coaches can be as effective as professionals at implementing injury prevention warm-ups.

"We now know that if we use a shorter duration prevention program for coaches (10-15 minutes) can help reduce the risk of injury, and coaches are willing to do them," Trojian said.

An exciting part was the study found that, when examining only participants classified as "high injury risk" prior to the season, the athletes who received preventive training during both the fall and spring

season were three times more likely to improve injury risk classification than their peers. Because both the players and the coaches were exposed to the professional athletic trainers, the researchers do not know whether the benefits resulted from repeated bouts of injury prevention training or from the professional instruction.

"The bottom line is that we need to keep our children safe during sport. The prevalence of ACL is just too high in youth and professional athletes," Pryor said. "It's widely thought that if we target the youth populations, we may be able to correct the poor movement technique that precipitates poor movement habits in professional careers."

The researchers will use these results to continue to explore the role and ability of coaches in injury prevention implementation. They are hopeful that preventative training programs, like the one used in their study, become the status quo within the youth sport culture. This in turn, should reduce the risk of lower extremity injury throughout the athlete's career.

More information: J. Luke Pryor et al, Coach-led preventive training program in youth soccer players improves movement technique, *Journal of Science and Medicine in Sport* (2017). DOI: 10.1016/j.jsams.2017.01.235

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