

Developing a Non-Contact ACL Injury Program

By Dr Davis McAlister

My initial interest in non-contact ACL injuries spawned out of a personal tragedy. My oldest son tore his ACL from a helmet and shoulder pad hit to the knee of a running back that tripped and fell. He had it repaired, and we had him wear braces on both knees to protect him for the rest of the high school career until he got to his senior year. At the last practice before the last regular season game, he jumped up to bat a ball down, came down on the same leg, and tore the same ACL that had been repaired.

It was heart-wrenching enough to carry my son off the field the first time, it was even worse to have to do it a second time. To add salt to the wound, I understood what happened the first time, but I couldn't wrap my head around what happened the second time. He had knee braces, we trained, and now all of a sudden, here we are again.

I poured myself into going back to studying so that I could not only figure out what happened to my son, but also find a way to not let it happen to my other four kids nor any other athlete. I went back to the drawing board and started with the basics, making sure I did not leave any stone unturned.

From my research, I found that 80% of ACL injuries are non-contact. I was shocked at first, but after I had time to think about how many ACL's I had seen torn over the years, the majority of the ones I saw had no contact involved. I remembered seeing these injuries occur from missteps, awkward landings, and unusual movements.

Through my research, I was able to discern that there is a necessity to have an effective ACL pre-habilitation program built into the off-season program for my athletes. That research led me to conclude that there are six essential principles that an effective ACL pre-habilitation program needs to truly make a difference in their athletes' performance and decrease their chances of becoming part of that 80%.

- 1) Age: The earlier the better. Studies are showing that introduction of ACL programs in younger athletes are more effective than older athletes. There needs to be more of an emphasis on teaching techniques for foot placement, coordination and balance than play schemes, especially for youth leagues.
- 2) Biomechanics: There is a need for assessing and addressing different movement patterns that involve an increased possibility for increased knee valgus. Doing a functional movement assessment along with taking off, landing, and body position are paramount to detecting risk factors.
- 3) Compliance: Compliance rates greater than 66% have shown a rate reduction of ACL injury by 82%. Compliance less than 66% only showed a reduction rate of 44%.
- 4) Dosage: An average of studies has shown that a session should last between 20 to 30 minutes 3-4 times per week. The program should be initiated during pre-season conditioning and maintained throughout the season into off-season.

- 5) Feedback: There should be a combination of visual and verbal feedback with verbal correction cued from the coach/trainer and visual in some form of video or training film.
- 6) Exercise Variety: Training should have 3 different components: a) plyometrics, b) neuromuscular training for balance, c) strength training.

Training programs should be tiered for progression as they go through their off-season program to keep a consistent level of difficulty to challenge the athlete, but still achieve the desired gains. As the athletes are progressing toward their season cycle, drills should be intentionally incorporated into the warm-ups and drills as a point of emphasis on the importance of maintaining the footwork, balance, and coordination developed during the offseason.