Proven Acl Prevention Essay, Research Paper

Proven ACL Prevention?

A Lady Cougar dribbles down the court on a fast-break, she goes in for a lay up; she shoots and when she lands her knee gives way and she falls to the floor gripping the knee. This has become and all to familiar picture in female athletics in recent years. Over the last decade and a half reports of injuries to knee ligaments shot up by 172%, with a large portion of those injuries belonging to female athletes. The most common ligament of the knee to be injured is the anterior cruciate ligament (ACL). Resent studies show that anterior cruciate ligament tears are six to eight times more likely to occur in female athletes than in their male counterparts. Knee injuries in females come most often from non-contact situations, such as, planting and cutting, hyperextension, and hyper-flexion. This increase risk for women has sparked interest in reaching the cause and setting up training programs to reduce these ACL injuries.

Many ideas about why women have a higher risk for ACL injuries exist. The four ligaments of the knee lend support and stability to the knee. Ligaments alone do not stabilize the knee, the hamstrings and the gastrocnemius muscles help to reduce the stress on the ACL and support the knee complex. Studies at the University of Michigan show a functional imbalance between quadriceps and hamstring muscles. Due to this imbalance females activate the quadriceps and not the hamstrings and gastrocnemius muscles to counteract the forward movement of the tibia on the femur. This imbalance tends to agree with research that states that women have a lower ham-to-quad strength ratio than that of men. The ratio for leading female athletes is less than 50% on average while the normal ratio is approximately 70%. This decreased ratio shows that the hamstrings of female athletes are slower to react to forces applied above the knee than that of the quadriceps muscles, therefore increasing the stress applied to the ACL. Recent research shows that women land with a straight or hyperextended leg from jumps as low as 20 cm high. Landing from a jump is also one of the leading mechanism for non-contact ACL injuries.

With the increase in the rate of ACL tears among female athletes, researchers are developing preventative training programs to reduce the risk factors of this injury. The leading researcher in this field is Tim Hewett, PhD, and the Director of Applied Research at the Cincinnati Sportsmedicine Research and educational foundation. Recently Dr. Hewett developed a strengthening program that focuses on decreasing the risk ACL injuries in athletes, particularly female athletes. There are three simple phases to his program; phase I, the technique, phase II, the fundamentals, and phase three, the performance.

During phase one, it is not the quantity of jumps, but the type of jump performed. This area of the program stresses the proper way to jump. Starting with ankle bounces or wall jumps does this. This particular jump gets an athlete relying on the gastrocnemius. Next Hewett’s program moves to tuck jumps, which bring the knees up to the chest, forcing the hams and quads to react to the force of landing. Landing tuck jumps without bouncing can accomplish the peak neuromuscular control of these muscles. Adding squatting to the tuck jumps increases the need for neuromuscular control of the quad and hams to stick a solid landing. When these types of activities were mastered, more difficult jumps could be added, such as 180-degree jumps. After accomplishing these types of jumps an athlete could move to the next stage. During phase II, the volume of exercises increases along with a weight program to increase the strength of the jumps. During this phase the athlete should be continuing the same jumps performed in phase I, becoming stronger and faster at each jump, progressing quickly to stage III. The performance stage says it all, optimal form and strength is the goal during this part of the program. Completing the training program alone will not decrease the risk of ACL injuries. Every athlete, male or female, has to sustain the proper form when jumping to decrease presser on the ACL.

Hewett’s results show that this program brought ham-to-quad ratios in women to almost 40% in female athletes. This finding suggests that ACL injuries in female athletes should decrease if this program is followed. These results give New Hope to understanding the causes and solutions to ACL injuries. The research done by Dr. Hewett and his associates has laid new ground for further research in this area. Other factors, such as ACL size, smaller intercondylar notch dimensions, and hormonal factors may exist. The research of ACL injuries will lead to the development of training programs to help combat the anatomical faults of the human body.