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# ACL STRENGTH TRAINING
## *HIGH SCHOOL FEMALE ATHLETES*

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The Anterior Cruciate Ligament, more commonly referred to as the ACL, is one of two cruciate ligaments in the knee, and is responsible for preventing excessive forward movement of the tibia and limiting rotation of the knee. The ACL is a major structural component of the knee. ACL injuries are a serious problem for all athletes in sports that involve cutting, pivoting, and jumping. These movements can create added stress to the ACL.

The female athlete is more common to experience an ACL injury than a male athlete due to several physiological differences. Dr. Andrew Cosgarea, M.D. from Johns Hopkins lists several factors that predispose the female athlete. One of those physiological differences is the increase in mobility of joints in the female body compared to males. Also, females tend to have less muscle mass surrounding the knee, which can contribute to more instability and less control. In turn, these along with several other factors, put the female athlete at a greater risk for ACL injury compared to their male counterparts.

Unfortunately ACL injuries are a common knee injury and are not fully preventable, there are several ways to reduce the chances. A primary activity to help reduce the risk of injury is through strength training. Studies have shown strength training can improve muscle strength and correct muscle imbalances, neuromuscular control, and proprioception which can all assist in reducing the risk of ACL injuries, especially in females. A study published in the Journal of Strength and Conditioning Research concluded that female athletes who participated in a strength training program had a significantly lower risk of ACL injuries compared to those

who did not participate in a strength training program. The Journal of Orthopaedic & Sports Physical Therapy also found that female athletes who completed a six-week strength training program had improved muscle strength and balance, which helped to reduce the risk of ACL injuries. In addition to improving muscle strength and balance, strength training can also help to improve coordination and body control. These are key components to athletes because athletes with poor coordination and body control are more likely to suffer an injury compared to those with these attributes.

While strength training is a great way for helping minimize risks of injury, there are several other factors that should also be considered to help minimize risks. Practicing good technique with training and participating will help mitigate some risk of injury. With proper techniques, biomechanical function and alignment will allow the body to perform in its best possible form. Also, working to develop muscle groups evenly is ideal for bodily function. Correcting muscle imbalances will help decrease tensions placed on tissues by the stronger muscle group. Creating a balance between strength and flexibility is a must as well due to imbalances can place added stress on those tissues as well as associated structures. All of these can be implemented under supervision of coaches, athletic trainers and physical therapists to help identify possible issues and correct them. Associated with physical activity to help create muscular strength, eating a balanced diet as well and avoiding working out when overly fatigued will also reduce risks. Fueling the body properly will allow for proper muscular function and regeneration, as well as proper sleep and rest will help prevent poor techniques and assist in muscular function.

Overall, it is clear that strength training is an important part of injury prevention for female athletes, especially when it comes to ACL injuries. By improving muscle strength, balance, coordination, and body control, female athletes can reduce their risk of suffering an ACL injury and continue to perform at their best.

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