

ACL INJURIES & PHOTOBIO-MODULATION

ACL injuries are a common and devastating injury for athletes. Treating them with laser therapy can improve recovery outcomes.

BY DR. PERRY NICKELSTON

Why does it tear so often?

The knee is supposed to be a stable joint, but unfortunately, that is often not the case. It only does what the foot will allow and the hip can control. If efficient movement and range of motion is lost in the joints above and below the knee (the ankle and hip), the knee will have too much mobility and the ACL must work harder to maintain stability. When force production from running, stepping, cutting, lunging, and squatting increases, it may push the ACL to a breaking point. It tears under the duress and stress of controlling too much force through the knee.

Muscles are designed to function in a triphasic movement pattern: concentric shortening, isometric holding, and eccentric lengthening. Most injuries occur due to the body's inability to decelerate motion and momentum. When muscles cannot control force, the ligaments are recruited to do more by the nervous system. When the neural threshold is too high, injury occurs.

Common muscles that are found weak and inhibited with ACL injuries include:

- Rectus femoris
- Gluteus maximus
- Gluteus medius
- Rectus abdominis
- Abdominal obliques

These weaknesses make athletes more vulnerable to injury.

The takeaway should be that all ACL injuries are never just a knee problem. A very effective strategy for helping ACL injuries and post-surgical rehab is to use deep-tissue laser therapy. The key to successful ACL recovery is treating both the knee and the other surrounding inhibited muscles that are listed above.

What is laser therapy?

Laser therapy is effective due to photobiomodulation, a process in which specific wavelengths of light stimulate cellular function and lead to beneficial clinical results (e.g., repair). Structures in the cells known as chromophores absorb the light and kick-start the ATP biological process of repair. Think of it like sunlight for a plant in the photosynthesis process—the light provides the energy needed to produce energy. Laser is a non-invasive, fast-acting, pain-relief modality, and patients often feel improvement after one session. Applying laser immediately before corrective therapeutic exercises helps improve range of motion and sensory awareness of the environment.



Suggested applications:

1. Apply laser to the knee as soon as possible after injury. It may be applied after surgery and can accelerate the healing process and reduce post-op pain. Typical treatment dosage of the knee is 3,000J of laser energy.
2. Apply laser to the ankle joint and bottom of the foot. Release the ankle joint with soft-tissue manipulation or distraction.
3. Apply laser to the hip joint and gluteus structure to release the hip joint.
4. After the pain decreases, start doing some movements down on the ground where the athlete is more stable. Then, slowly work to a standing position.

ACL injuries affect the entire body due to the interconnectivity of muscles and movement chains. And when it comes to ACL injuries, pain is the last thing to hit the athlete due to the body's ability to cope with movement dysfunction through compensation. Compensations occur when the brain cannot organize efficient movement patterns. So, for example, if an athlete tears their ACL, their brain will send a message that all is not well in the movement system. Take back control of the injury by using laser therapy and smart movements. Healing is a good thing—prevention is even better.

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