



Injury

Patellar tendinopathy (jumper's knee) is a condition usually associated with activities that require repetitive, forceful quadriceps muscles contraction. Along with patellar tendonitis and Osgood Schlatter's, these conditions affect almost half of athletes from the pro to recreational level in many sports and other activities.

Microtrauma can occur when the patellar tendon is subjected to extreme forces such as rapid acceleration/deceleration, jumping, and landing. The posterior proximal patellar tendon is subjected to greater tensile tendinous forces as compared to the anterior region, especially with jumping activities and deep squat exercises.

A recent epidemiological study showed that the average duration of substantial pain and reduced function from these conditions is nearly three years. The high prevalence, low functional scores, and chronic nature that are characteristic of these conditions can result in impaired athletic performance in some sports, especially jumping sports, as much as an acute knee ligament injury does.

Current Products

Patellar tendon straps have been used for decades for the treatment of patellar tendinopathy. There are studies that show anywhere from 70% to 80% of people wearing patellar tendon straps have reported some improvement in both acute and chronic cases of patellar tendon pain.

The compression provided by a patellar tendon strap does reduce the cross-sectional area of the patellar tendon. This means that less force can be transmitted from the quadriceps muscles to the patellar tendon. This has the effect of reducing the stress placed on the patellar tendon while allowing the user to continue with their activity.

As with many products in a variety of industries often times products are manufactured more for cost than function or are heavily based on tradition rather than innovation. The same holds true for existing patellar tendon products. Here are common themes of issues that have been reported:

Tubing or pad on the front is uncomfortable and too thick.

Tubes or padding are added to give more pressure on the patellar tendon.

Plastic buckles are too bulky, irritate the skin and don't hold tension.

Plastic buckles are the center of the compression the farther away you get from the buckle the less tension is found. Because they are a separate piece from the strap they can easily become loose.

The straps labeled one size fits all does not hold true.

These straps lack the customizable features to truly work for all sizes

The Velcro in the back of the knee irritates skin and comes undone when in use.

Anytime there is a feature or design that causes discomfort the user is less likely to wear it.

Cannot reach the level of compression desired.

Compression is what solves the issue for relieving stress on the patellar tendon. If the user can't get enough compression on the patellar tendon, than the strap fails to do its job.

Though current patellar tendon straps are effective to some degree it is clear that there is improvement to be had with overall design, comfort and performance.

MDUB Solution

A recent study by Lavagnino et al suggests that infrapatellar straps limit excessive patellar tendon strain at the site of the knee by increasing the patella-patellar tendon angle and by decreasing the patellar tendon length. How is this accomplished? Compression is the key.

Compression reduces the cross-sectional area of the patellar tendon reducing the stress and impact absorbed by the patellar tendon.

The Cross-Strap technology allows the user to adjust the pressure directly over the patellar tendon. Instead of having compression spread out across the entire front knee. Pressure is applied straight down rather than a pulling to one side or the other. You can increase your compression by having direct pressure over the needed area. Thus, the more compression the more it will prevent stress and impact on the patellar tendon. The patented Cross-Strap technology, allows compression to be applied medially or laterally if needed by tensioning the appropriate strap, the strap can be adjusted as tightly as desired, and also can be tensioned very easily while it is being worn. The Velcro attaches on the sides which doesn't affect range

of motion. The two Velcro attachments don't allow the strap to fall off during play. The wider calf cover increases comfort and decreases slippage.

The Cross-Strap is being used by athletes at all levels of competition and recreational users of all ages. They love the minimalistic design and the ease of use. Everyone who has tried our braces has become a fan and a return customer. The reason is because the MDUB Cross-Strap Technology works better than any other system.

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References

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