



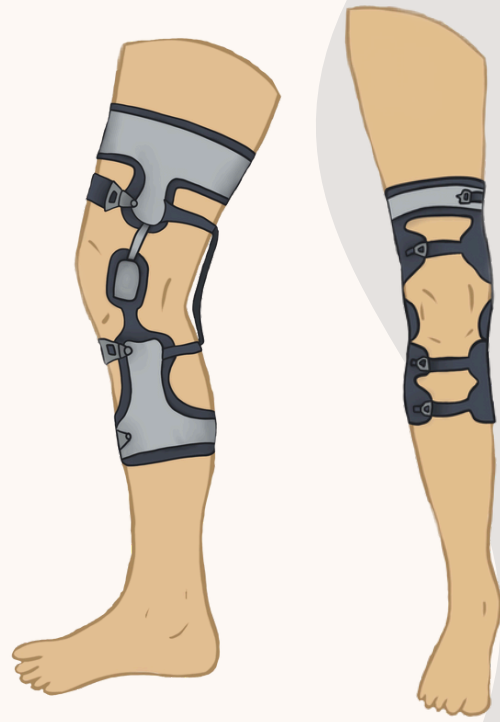
BY BIOMECHANIC
BRAINIACS

K.N.E.E.

**Kinetic kNee Everyday
Exoskeleton**

About our Device

With the K.N.E.E., you can take your squat jumps to the next level. Improve your form, enhance your performance, and protect your knees with our innovative wearable sports device.



Why the K.N.E.E.?

- Augment your squat jump!
- Help mitigate your Patellofemoral Pain Syndrome!
- Built with state of the art materials!

Intended Use

The K.N.E.E. provides a new adaptable solution to minimize joint reaction forces around the knee during squat jumps. Athletes who consistently engage in squatting and jumping motions are at a high risk of patellofemoral pain syndrome (commonly known as runners knee).

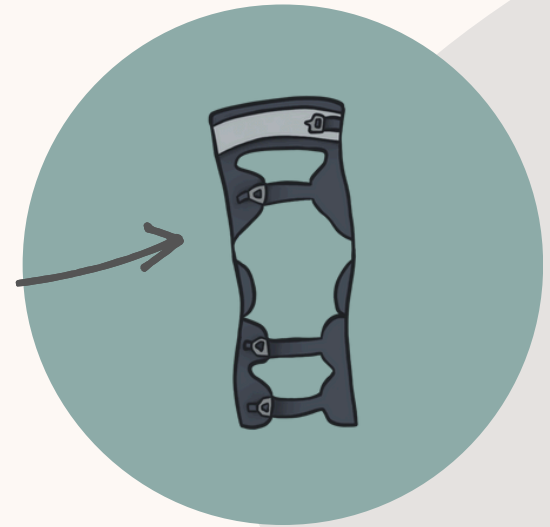
Patellofemoral pain syndrome can be caused by misalignment of the knee cap, overuse of the joint, and weak muscles surrounding the joint. If left untreated, patellofemoral pain syndrome can cause pain in and around the knee during activity, pain and soreness during extended time with the knee bent, and a general feeling of instability in the joint [1]. The K.N.E.E. acts to reduce chances of developing and aggravating patellofemoral pain syndrome by aiding in realignment of the knee cap and joint, balancing of the forces the knee is experiencing, and reducing compression of the knee during squat jumps. Additionally, our device works to augment squat jumps by increasing jump height.

Benefits of K.N.E.E.

- **Cost and availability:** We have ensured that our device is affordable and readily available. We believe that everyone should have access to tools that can improve their athletic performance and health.
- **Comfort:** With a terry cloth interior and adjustable straps, our device is designed to provide maximum comfort. We want you to focus on your training, not on discomfort.
- **Practicality:** Our device is easy to put on and take off, making it practical for everyday use. Whether you are at the gym or at home, you can easily incorporate our device into your training/workout routine.
- **Reducing joint forces and alignments:** By aligning the knee and providing additional support, our device helps to reduce the forces exerted on the knee joint. This can help to prevent injuries and improve long-term joint health.

Front View

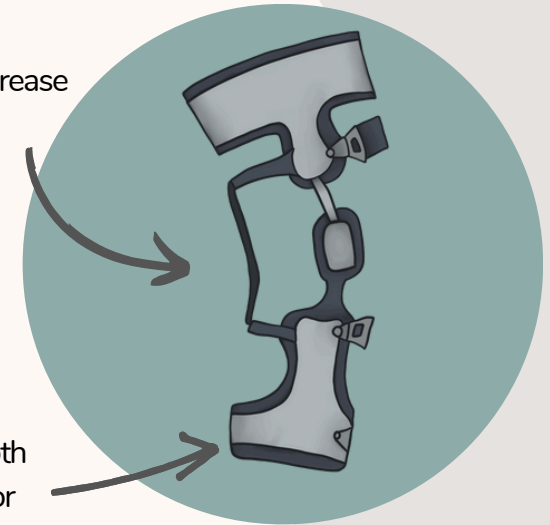
Works to reduce strain on the knee joint



Side View

Exoskeleton exterior to increase jump height

Terry Cloth interior for maximum comfort



Back View



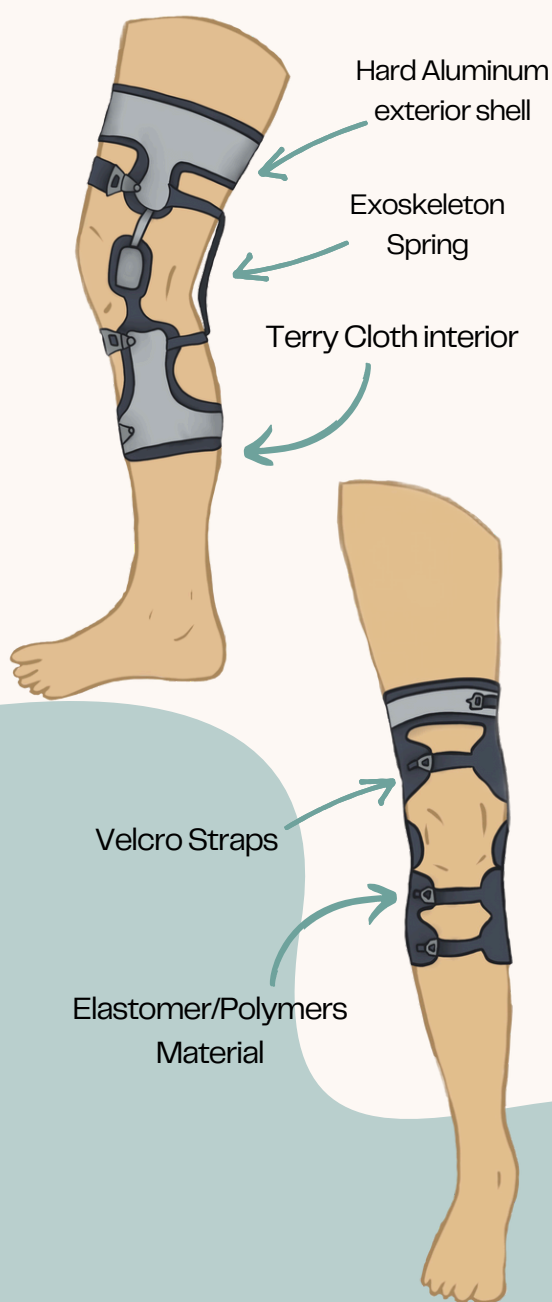
Product Details

- **Knee Alignment:** Our device focuses on aligning the knee to ensure proper form during squat jumps. This helps to prevent injuries and improve performance.
- **Hard Aluminum Knee Brace:** The brace is made of hard aluminum, providing the necessary rigidity while keeping the device lightweight. This ensures optimal support and durability.
- **Terry Cloth Interior:** The interior of the brace is lined with terry cloth, offering a soft and comfortable fit. It also helps to absorb sweat, keeping the knee dry during workouts.
- **Velcro Straps:** The device is equipped with adjustable velcro straps for easy attachment to the knee. This ensures a secure fit for users of all sizes.
- **Side Hinge:** A hinge on the side allows for free movement, ensuring that the device does not restrict your natural motion during exercises.
- **Exoskeleton Spring:** The exoskeleton part of the device acts like a spring, providing additional support during squat jumps. Passive knee exoskeletons have been shown to increase vertical jump height by 6.4% [10].

Materials Used

The purpose of using the following materials is to create a device that is comfortable, durable, and effective in enhancing sports performance. The materials are able to withstand the forces exerted during squat jumps, provide the necessary support to the knee, and be comfortable for the wearer. Moreover, they are able to transmit data accurately for real-time analysis and tracking, which can help in improving performance and preventing injuries [6][7][8].

- **Hard aluminum:** It is used for the knee brace due to its strength and lightweight. It provides the necessary rigidity for the brace while keeping the device lightweight [2]. The hard aluminum brace can provide support and alignment to the knee, reducing the strain on the joint [4][5].
- **Terry cloth:** It is used for the interior of the knee brace. It is soft, absorbent, and provides comfort to the wearer [2].
- **Velcro straps:** They are ideal for securing the device to the knee. They are adjustable and easy to use [2].
- **Elastomer/Polymers material:** This is used for parts of the device that need to be flexible, such as the exoskeleton part, by distributing forces evenly and further reducing the risk of injury. It is lightweight, flexible, durable and used in many health and fitness related sports bands [2][3].
- **Fluoroelastomer:** This material is used for the spring as it is partially fluorinated synthetic rubber, engineered to endure demanding processing and functional environments [9].



Squat jumps are an incredible workout when done right. K.N.E.E. works to help you get the most of your workout without putting too much strain on your knee joints!

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