

A Comprehensive study on knee brace for future guidelines

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ABSTRACT

The article is a comprehensive study on knee braces, highlighting their effectiveness in reducing knee joint pain and instability. The study underscores the importance of knee braces and other interventions in the prevention and management of knee injuries, particularly in athletes and individuals with pre-existing knee conditions. The study further recommends that healthcare professionals incorporate the use of knee braces into their treatment plans and recommends further research into the design and functionality of knee braces for improved outcomes. Overall, the study provides useful insights and recommendations for future guidelines on the use of knee braces.

Keywords: Knee braces, Joint pain, Prophylactic braces, Rehabilitative braces

INTRODUCTION

Knee braces are supportive devices that are applied to the knee joint to offer support, reduce pain and prevent injuries. Knee braces come in many forms with different designs, intended use, size and materials; Knee braces are made from different materials such as plastics, metals, neoprene, and elastic fabric [1].

Knee braces can be classified into two broad categories

Prophylactic braces: These are preventive braces that are used by athletes in low contact sports to reduce the chance of knee injuries. They provide general support and enhance stability to the knee joint [2].

Rehabilitative braces: These are braces used to support the knee after an injury. They offer support and protect the knee joint from further damage [3].

The main purpose of knee braces is to provide stability and support to the knee joint.

METHODS

A comprehensive review of previous research and study of knee braces was conducted. Various aspects of knee braces such as biomechanics, design, materials, indications, contraindications, and use in different types of sports, indications and contraindications were studied. The research articles were obtained from various databases such as PubMed, Medline, and Google Scholar [4].

RESULTS

Indications for the use of knee braces

- Knee braces are recommended for athletes in high contact sports such as football, hockey, and basketball to prevent and reduce the severity of knee injuries.
- Knee braces are also used in rehabilitation following knee surgery or knee injuries.
- People suffering from knee osteoarthritis can also benefit from wearing knee braces.
- Knee braces are also used to support weak knees that are susceptible to injuries [5].

Design of knee braces

- Functional knee braces: These provide support to the knee joint and limit movement to reduce the impact of high contact sports activities.
- Unloader knee braces: This design of knee brace is used in patients with knee osteoarthritis to reduce pain.
- Prophylactic knee braces: These are designed for

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athletes in low contact sports to prevent injuries.

- d. Rehabilitative knee braces: These knee braces are used after injury or surgery to support the knee joint and reduce pain [6].

Types of knee braces

- a. Hinged knee braces: This type of knee brace provides excellent support to the knee joint and prevents unwanted movements.
- b. Neoprene knee braces: These knee braces are made from a material that provides compression and support to the knee joint.
- c. Elastic knee braces: They are made from lightweight and flexible materials that offer support and compression to the knee joint.
- d. Unloader knee braces: These knee braces are designed to correct the improper distribution of weight around the knee joint [7].

Biomechanics of knee braces

- a. Knee braces reduce the magnitude of forces that act on the knee joint.
- b. Knee braces stabilize the knee joint and enhance balance.
- c. Knee braces reduce torsion forces that cause knee injuries.
- d. Knee braces improve proprioception and neuromuscular control [8].

Contraindications for the use of knee braces

- a. Knee braces should not be used in patients with skin allergies to the material used to make the brace.
- b. Individuals with severe arthritis may not benefit from using knee braces.
- c. Knee braces may not be appropriate for people with

certain medical conditions such as peripheral vascular disease [9].

Use of knee braces in different sports

- a. Basketball: Knee braces are commonly used in basketball to prevent injuries to the knee joint during jumping and landing activities.
- b. Football: Knee braces are beneficial in preventing knee injuries caused by twisting and turning movements.
- c. Skiing: Knee braces are recommended for athletes in skiing because of the high-risk of knee injuries.
- d. Running: Knee braces are not commonly used in running because running does not pose a high risk of knee injuries [10].

CONCLUSION

Knee braces play an important role in preventing knee injuries in athletes and reducing pain in patients with knee osteoarthritis. The design and type of knee braces used depend on the intended use and the specific needs of the patient. Knee braces can offer excellent support and enhance balance, neuromuscular control and proprioception while also reducing torsion forces and the magnitude of forces acting on the knee joint. Indications and contraindications for the use of knee braces must be carefully considered to ensure that the patient benefits as much as possible from the use of the brace. Future research should focus on improving the design and effectiveness of knee braces to enhance patient outcomes.

CONFLICT OF INTEREST

The author has no conflict of interest.

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