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Biochemical and Genetic Mechanisms in the Development of Anterior Cruciate Ligament Injuries: A New Concept for Injury Prevention

Targeted Scientific Research

This project focuses on investigating the biochemical and genetic mechanisms underlying anterior cruciate ligament (ACL) injuries, aiming to develop new methods for their prevention. ACL injuries are a significant concern in both sports and general health, often leading to long-term complications such as joint instability and increased risk of osteoarthritis. By examining the genetic and biochemical factors that contribute to ACL injuries, this research seeks to identify high-risk individuals and develop personalized approaches for injury prevention.

Through an interdisciplinary approach, the project will explore the molecular and genetic profiles of individuals susceptible to ACL injuries. By understanding these factors, the project aims to establish a preventive framework that can guide interventions in individuals at higher risk, ultimately reducing the incidence of ACL injuries.

Objectives:

1. To identify biochemical markers associated with ACL injury susceptibility.
2. To investigate the genetic predisposition to ACL injuries.
3. To develop a novel prevention strategy based on genetic and biochemical insights.

Expected Outcomes:

- Identification of key genetic and biochemical markers linked to ACL injuries.
- Development of innovative strategies and interventions for preventing ACL injuries, particularly for individuals with a genetic predisposition.
- Contribution to improved rehabilitation methods for individuals recovering from ACL injuries.

The research will contribute to a deeper understanding of ACL injuries and has the potential to revolutionize preventive care in sports medicine and orthopedics.