

A Study of Knee Injury Prevention in Athletes

Gianna Prucha, PA-S

Valparaiso University Physician Assistant Program

Background

Knee injuries are one of the most common injuries among athletes of all ages and races in both contact and non-contact sports. ^{1,2}

Purpose

The goal of this research is to evaluate the effect of proper preventative exercises that contribute to the reduction of knee injuries in athletes. With this information coaches, players, and providers may be able to implement these exercises to reduce future injuries.

PICOT

In young athletes, do supplemental strength exercises result in decreased incidence of knee injuries when compared with no supplemental training.

Methods and Design

Keywords: neuromuscular training, knee injuries, ACL injuries, athletes, injury prevention, multi-ligament knee injuries.

Inclusion: articles published no earlier than 2018, populations who were current or past athletes, and populations who sustained knee injuries during their sport.

Exclusion: injuries that did not involve the knee, non-sports related injuries, articles published before 2018 and non-athletes

Synthesis of Evidence

Database	Yielded	Reviewed	Included in Analysis
EBSCO	33	5	2
PubMed	334	16	6
Google Scholar	233	20	3
Total:	610	47	11

Type	Included in Analysis
RCT	1
Meta Analysis	1
Systematic Review	6
Cohort study	1
Other	2

Results

- Participation in neuromuscular training programs resulted in reduced injury incidence compared to no preventative training at all. This is particularly significant for knee injuries.³
- Exercise-based prevention programs are effective in reducing the incidence of *knee* injuries (incidence rate ratio = 0.73; 95% confidence interval [CI]: 0.61- 0.87).⁴
- Exercise-based programs are effective at reducing ACL injury rate and decreasing risk factors for ACL injury. ¹

Best Practice

Discussion

The results of these studies emphasize the importance of implementing an injury prevention program for athletes. Overall, current data reflects the benefits of these programs and the clinical importance of implementing them to prevent long term effects.

Limitations/Further study:

More research is needed to determine the cost-effectiveness of injury prevention programs (IPPs) as well as the benefits of these programs on athletes above the age of 18. Furthermore, additional research still needs to be conducted to fill in the gaps of what exercises are most beneficial and how the barriers discussed can be overcome.

Conclusion

Research shows that implementing supplemental strength exercises does decrease the incidence of knee injuries in young athletes.

References:

1. Olivares-Jabalera J, Filter-Ruger A, DosSantos T, et al. Exercise-Based Training Strategies to Reduce the Incidence or Mitigate the Risk Factors of Anterior Cruciate Ligament Injury in Adult Football (Soccer) Players: A Systematic Review. *Int J Environ Res Public Health*. 2021;18(24):13351. Published 2021 Dec 18. doi:10.3390/ijerph182413351
2. Davies MAM, Kerr ZY, DeFreese JD, et al. Prevalence of and Risk Factors for Total Hip and Knee Replacement in Retired National Football League Athletes. *The American journal of sports medicine*. 2019;47:2863-2870. doi:10.4085/1062-6050-173-16
3. Foss KDB, Thomas S, Khoury JC, Myer GD, Hewett TE. A School-Based Neuromuscular Training Program and Sport-Related Injury Incidence: A Prospective Randomized Controlled Clinical Trial. *J Athl Train*. 2018;53(1):20-28. doi:10.4085/1062-6050-173-16
4. Arundale AJH, Bizzini M, Giordano A, et al. Exercise-Based Knee and Anterior Cruciate Ligament Injury Prevention. *J Orthop Sports Phys Ther*. 2018;48(9):A1-A42. doi:10.2519/jospt.2018.0303



VALPARAISO
UNIVERSITY