

The Effects of Neuromuscular Training on Injury Prevention in Youth Athletes: A Systematic Review



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Introduction

- 40 million athletes participate in youth sports yearly
- Sports account for 40% of childhood injury
- NMT increases motor unit coordination, dynamic joint stability, and trunk control for efficient and safe force production

Methods

Study Design

Systematic Review of Randomized Controlled Trials

Databases

PUBMED, Journal of Strength and Conditioning, CINAHL, MEDLINE, Academic Search Ultimate

Search Terms

Injury prevention, children, exercise, athlete, youth, sport

Search # 1
January 23, 2024
n=11

Search # 2
February 9, 2024
n=0

Hand Search
February 12, 2024
n=4

Results

- NMT is more effective at reducing the risk of injury in youth athletes compared to alternative or no intervention
- Neuromuscular exercise in addition to sport-specific training and high compliance can be beneficial to reduce the risk of injury
- Varying durations of neuromuscular exercise programs and adequate compliance are key components in reducing the risk of injury in youth athletes

Components for an Effective NMT Program

Compliance

- High compliance can produce a greater protective effect from injury

Sport Specific Training

- Training rapid change-of-direction, strength, muscular power, sprinting, endurance, coordination and balance improves the proficiency of sport specific movements
- Mimics physical demands placed upon the athlete in sport reducing risk of injury

Time Duration

- Effectiveness of NMT injury prevention programs vary on factors such as program design, progressions, intensity, and participant adherence as they likely play a significant role in determining an appropriate program length
- Longer duration programs may be recommended as they allow subjects more time to adapt to the demands of their training

Purpose

- Research has not been clearly established regarding the effectiveness of injury prevention exercise programs for youth athletes
- The purpose of this study was to systematically review randomized control trials evaluating the effectiveness of neuromuscular training on injury prevention in youth athletes

PT Implications

- NMT should be implemented in HEPs and return to sport programs to protect youth athletes from injury

