

What is Contributing to Injuries in Adolescent Athletes, and What are the Physical and Psychological Consequences – Luis F. Sandoval Jr.

Introduction

- Youth sports participation = physical & mental benefits
- Injury rates increasing in adolescents, particularly overuse injuries^{10,1}
- Shift towards year-round competition due to early sport specialization becoming more prominent^{3,6}
- Injuries impact short & long term physical & mental health¹¹
- Positive athletic experiences in youth led to long term physical activity participation⁵

Methods

- Database: Google Scholar
- Focus on last 10 years
- Terms: Youth athlete, overuse injuries, overtraining syndrome, sport specialization, burnout, psychological
- Systematic reviews, epidemiological studies, and clinical research.

Overuse Injuries & Training Load

- Caused by repetitive stress without adequate recovery¹
- Training > Recovery = ↑ Injury Risk³
- Common injuries are stress fractures and tendonitis¹
- Periods of rapid growth leave children particularly vulnerable⁹

Early Sport Specialization

- Defined as single sport focus at a young age⁶
- Leads to year-round travel and high-volume training³
- Link between early sport specialization and increased injury risk compared to multi sport athletes⁶
- Repetitive movement patterns lead to higher levels of stress on the same bones, muscles, and joints⁶
- Children feel they have less autonomy, experience higher levels of stress and burnout⁷
- No evidence long-term performance is increased⁷

Physical and Psychological Consequences

- Chronic injuries result from repeated injuries¹
- Long-term musculoskeletal issues¹
- Reduced long term adherence to physical activity⁵
- Burnout (emotional exhaustion, withdrawal from sport)⁴
- Decreased motivation and enjoyment²
- Anxiety & stress in competitive environments⁸
- Loss of athletic identity¹¹

Injury	Common Locations
Apophysitis	Calcaneus, tibial tuberosity, medial epicondyle
Bone Stress Injury	Tibia, metatarsals, lumbar spine
Tendinopathy	Patellar Tendon (Jumper's Knee)
Epiphysiolysis	Proximal Humerus, distal radius
Patellofemoral Pain Syndrome	Anterior Knee
Osteochondritis dissecans	Capitellum

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Table 2 Burnout Symptoms

Fatigue
Depressive Symptoms (eg. Depressed mood, loss of interest in activities)
Loss of interest or motivation
Sleep disturbances
Irritability
Anxiety Symptoms (eg. Excessive worry, agitations)
Lack of concentration
Unexplained musculoskeletal complains
Weight changes
Decreased academic or athletic performance
Decreased enjoyment in sports

Conclusion

- Injury risk driven by overtraining, sport specialization, and competitive pressure^{3,6,8}
- Physical + psychological effects interconnected¹¹
- Limited longitudinal research¹¹
- Heavy reliance on self-reported data⁴
- Lack of standardized training guidelines followed³

Future Research Directions:

- Long-term athlete tracking¹¹
- Track injury recurrences, long- term physical health and development, and mental health outcomes
- Developing evidence-based guidelines for training volume, competition frequency, and recovery time³
- Mental health screenings and psychological monitoring in youth programs⁸
- Identify early signs of burnout, overuse injuries, and impact an injury may be having.
- Education for coaches and parents²
- Research into developmental differences between early specialization vs multi sport participation

References

