The Effect of Single Sport Specialization in Youth Sports: Does It Increase the Risk of Injury? A Prospective Study

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Disclosure Information

**Consultant**
- Mitek
- DePuy
- Knee Creations

**Stocks**
- Johnson & Johnson
- Franklin/Keystone Biosciences
- Trice Medical
Introduction

- Youth participation in organized athletic activities has considerably increased over the last 2 decades.
  - 1997: 44 million → 2008: 60 million\(^1\)
  - 81% of Children in the United States\(^1,2\)

- Adolescents are choosing to specialize in a single sport and exclude other sports, often at an earlier age.\(^3,4\)

- Potential Motives for Early Specialization
  - Competitive advantage
  - Collegiate scholarships
  - Professional career opportunity
  - Olympic participation
Introduction

- High school athletes who trained for more than 8 months per year are 3 times as likely to report an history of an overuse knee injury.\textsuperscript{5}

- Pediatricians have raised concerns about high intensity training programs
  - The American Academy of Pediatrics has published guidelines addressing the intensity of training of specialized pediatric athletes.\textsuperscript{3}

- Physician Concerns:
  - Intense physical demands on immature musculoskeletal system.
  - Potential increased risk of overuse injuries
  - Effect on non-musculoskeletal organ systems
Aims

1. Determine the prevalence of sport specialization among high school athletes.

2. Investigate the relationship between sport specialization and athletic injuries in both a retrospective and prospective fashion.
Methods: Study Design

• Potential participants were recruited from 3 high schools within our geographic practice distribution.

• 883 Freshman and sophomore high school athletes who did not previously participate in the school athletic program were enrolled with the plan to be followed until graduation.

• Data Collection:
  • Pre-seasonal survey
    • Demographics, current sport commitment, intensity of training, and prior injuries
    • Conducted in the fall, winter and spring
  • Assessment of sport specialization by questionnaire
  • Certified Athletic Trainer records at the end of each season.
  • Athletes’ physician medical records when applicable.
## Results

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specialized</th>
<th>Non-Specialized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>365 (41.3%)</td>
<td>518 (58.7%)</td>
</tr>
<tr>
<td>Male</td>
<td>204 (40.9%)</td>
<td>295 (59.1%)</td>
</tr>
<tr>
<td>Female</td>
<td>161 (41.9%)</td>
<td>223 (58.1%)</td>
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<tr>
<td>Age of initial competitive sport participation*</td>
<td>7.3 years ± 2.7</td>
<td>8.3 years ± 3.2</td>
</tr>
<tr>
<td>Hours/week participating in organized sport activities*</td>
<td>6 hours/week</td>
<td>5 hours/week</td>
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*: significant difference, p <0.05
Results: Prevalence of Retrospective Injuries

- Injuries Reported
  - 60.2% Specialized vs. 52.3% Non-specialized (p = 0.02, OR: 1.38)
- Season ending injuries reported
  - 38.1% Specialized vs. 29.3% non-specialized (p < 0.01, OR: 1.48)
- 38.3% of specialized athletes believed specializing in one sport contributed to their previous injuries.
Results: Prevalence of Prospective Injuries

- 25 injuries occurred in 21 specialized athletes (6.8% injuries per athlete).
- 30 injuries occurred in 25 non-specialized athletes (5.8% injuries per athlete).
- There was no significant difference in the prevalence of injury in each group (p = 0.52).
Conclusions

- Over 40% of high-school athletes specialized in a sport before or during their freshman and sophomore year.

- Specialized athletes begin participating in competitive sports earlier in life, and dedicated more of their time to organized athletic activities.

- Retrospectively: Specialized athletes are more likely to have a history of sports related injuries and were more likely to have participation limiting injuries.

- Prospectively: Higher rate of injury among specialized athletes, although this relationship was not significant.
References


THANK YOU.