Sports Specialization

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Orthopedics

Why Sports for Youth?

Physical Benefits

- Decreased obesity
- Better sleep
- Strength benefits
- Cardiovascular benefits
- Bone health
Why Sports for Youth?

Psychosocial Benefits

Self confidence

Friendships

Purpose

Alternative to more nefarious activities

Sports Specialization

DEFINITION: SPORTS SPECIALIZATION

• Focus on one sport
• Year round

AOSSM has defined EARLY SPORTS SPECIALIZATION

• Participation of one sport at the exclusion of other sports
• More than 8 months per year
• Prior to age 12
Why Specialize?

- Scholarship
- Win
- Improve skills
- Certain sports demand it

Certain Sports Require Specialization for Success

Competitive gymnastics  Ballet  Golf
Fencing  Competitive cheer
Specialization Possibly Harmful?

Baseball  Football  Softball  Soccer

Odds of Playing College

<table>
<thead>
<tr>
<th>Men</th>
<th>Overall % HS to NCAA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseball</td>
<td>7.1%</td>
</tr>
<tr>
<td>Basketball</td>
<td>3.4%</td>
</tr>
<tr>
<td>Cross Country</td>
<td>5.4%</td>
</tr>
<tr>
<td>Football</td>
<td>6.9%</td>
</tr>
<tr>
<td>Golf</td>
<td>6.0%</td>
</tr>
<tr>
<td>Ice Hockey</td>
<td>11.9%</td>
</tr>
<tr>
<td>Lacrosse</td>
<td>12.4%</td>
</tr>
<tr>
<td>Soccer</td>
<td>5.5%</td>
</tr>
<tr>
<td>Swimming</td>
<td>7.0%</td>
</tr>
<tr>
<td>Tennis</td>
<td>5.0%</td>
</tr>
<tr>
<td>Track &amp; Field</td>
<td>4.8%</td>
</tr>
<tr>
<td>Volleyball</td>
<td>3.5%</td>
</tr>
<tr>
<td>Water Polo</td>
<td>4.8%</td>
</tr>
<tr>
<td>Wrestling</td>
<td>2.9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Women</th>
<th>Overall % HS to NCAA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basketball</td>
<td>3.8%</td>
</tr>
<tr>
<td>Cross Country</td>
<td>7.1%</td>
</tr>
<tr>
<td>Field Hockey</td>
<td>10.0%</td>
</tr>
<tr>
<td>Golf</td>
<td>7.1%</td>
</tr>
<tr>
<td>Ice Hockey</td>
<td>24.5%</td>
</tr>
<tr>
<td>Lacrosse</td>
<td>12.6%</td>
</tr>
<tr>
<td>Soccer</td>
<td>7.1%</td>
</tr>
<tr>
<td>Softball</td>
<td>5.4%</td>
</tr>
<tr>
<td>Swimming</td>
<td>7.4%</td>
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<tr>
<td>Tennis</td>
<td>4.7%</td>
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<td>5.6%</td>
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</tbody>
</table>

1% receive scholarship
Sports Specialization: Why Do We Care?

• Growing body of literature to suggest that early sports specialization contributes to
  • Injuries: Acute & Overuse
  • Burnout
  • Depression

Sports Specialization

• The Business of Youth Sports
• Estimated $9-15 billion industry
• Families spend thousands of dollars/year
  - Travel teams
  - Showcases
  - High level private coaching
  - Personal trainers/performance
Sports Specialization

Studies Showing Association with Specialization and Injury


## MLB Pitch Smart 2014

<table>
<thead>
<tr>
<th>Age</th>
<th>Daily Max (Pitches in Game)</th>
<th>Required Rest (Pitches)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 Days</td>
<td>1 Days</td>
</tr>
<tr>
<td>7-8</td>
<td>50</td>
<td>1-20</td>
</tr>
<tr>
<td>9-10</td>
<td>75</td>
<td>1-20</td>
</tr>
<tr>
<td>11-12</td>
<td>85</td>
<td>1-20</td>
</tr>
<tr>
<td>13-14</td>
<td>95</td>
<td>1-20</td>
</tr>
<tr>
<td>15-16</td>
<td>95</td>
<td>1-30</td>
</tr>
<tr>
<td>17-18</td>
<td>105</td>
<td>1-30</td>
</tr>
<tr>
<td>19-22</td>
<td>120</td>
<td>1-30</td>
</tr>
</tbody>
</table>
AAP/AOSSM/Pitch Smart Recommendations

- No year round pitching (<8 months preferred)
- No pitching while fatigued
- Follow pitch-count and rest guidelines
- Do not pitch on 2 simultaneous teams
- Do not catch and pitch
- No curveball until 14, slider at 16
- Appropriate strength & conditioning
- Watch yourself at showcases
- Put away the radar gun

Risk Factors for Elbow and Shoulder Injuries in Adolescent Baseball Players

A Systematic Review

Am J Sports Med. April 2018

- Age, height, multiple teams, velocity, arm fatigue
- Pitches per game for shoulder injuries
- GIRD, shoulder adduction not significant
AAP/AOSSM/Pitch Smart Recommendations

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PRiSM – Pediatric Research in Sports Medicine

- Multidisciplinary society dedicated to furthering knowledge to improve the care of young athletes
- Multiple Research Interest Groups
- Sports Specialization Group
2017-18 Project

- Multicenter, multi-region athlete self-reported study of teenage soccer specialization and its effects on injuries
- Online survey hosted by Qualtrics. IRB approved for link distribution via email, social media, flyers
- 761 completed surveys by soccer players age 12-18. 431 female

Specialization Correlated with Knee Injuries

Table 2. Odds ratios for specialization category, volume recommendations, and history of various injury types. Reference categories are Specialization (low) and not training more than 8 months/year in soccer.

<table>
<thead>
<tr>
<th>Specialization</th>
<th>Overuse Knee Injury</th>
<th>Acute Knee Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate</td>
<td>1.18 (0.60, 2.35)</td>
<td>1.38 (0.82, 2.31)</td>
</tr>
<tr>
<td>High</td>
<td>2.05 (1.07, 3.90)*</td>
<td>1.68 (1.01, 2.78)**</td>
</tr>
<tr>
<td>Volume Recommendations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training for more than 8 months</td>
<td>1.97 (1.01, 3.86)**</td>
<td>1.40 (0.87, 2.26)</td>
</tr>
</tbody>
</table>

*P = 0.03, Wald = 4.45
** P = 0.048, Wald = 3.98
*** P = 0.048, Wald = 3.92
Overuse Injuries by sport

• Baseball – shoulder/elbow

Internal Impingement

Undersurface of supraspinatus hitting posterior superior glenoid rim

https://link.springer.com/chapter/10.1007/978-3-319-57334-2_10
https://link.springer.com/chapter/10.1007/978-3-319-57334-2_10
Elbow Issues

• Traction forces medially
  – Medial epicondyle apophysis
  – Ulnar collateral ligament

• Compression forces laterally
  – Osteochondritis dissecans

Soccer

• ACL injuries

• Patellofemoral pain
Prevention of Knee Injuries

• Sportsmetrics
• US club soccer “11+”
• CHOP “ready set prevent”
• Santa Monica ACL prevention project (US Soccer)

Swimmer’s Shoulder

• Repetition of bad technique = injury

• PT & relative rest
• Prehab & maintenance
Water Polo Shoulder Injury

• 25-80% of elite players age 16-33
• Acute dislocation and chronic overuse pain
• Need proper swim & shot technique

Track/Cross Country

• Stress fractures
  – Tibia/foot/femur
• Shin splints
• Foot pain
Lots of Organizations Have Position Statements

AAP

Sports Specialization and Intensive Training in Young Athletes

Joel S. Brenner, MD, MPH, AAP Council on Sports Medicine and Fitness

Others

• AMSSM
• AOSSM
• NATA
• European College of Sport Science

Summary

• Sports are good
• Odds of scholarship are small
• Specialize by late adolescence if at all
• Follow published guidelines to avoid psychological and physical consequences