Youth Sport Specialization: IS IT ALWAYS BAD?

Neeru Jayanthi, M.D.
Director, EMORY Tennis Medicine
Director EMORY SM Research/Education
Co-Director Emory Youth Sports Medicine
Emory Sports Medicine Center

Neeru Jayanthi
@NeeruJayanthi

Emory Sports Medicine & Tennis Medicine physician specializing in research on safety and risks of young athletes. President STMS. Husband, Dad to 2 awesome boys

emoryhealthcare.org/sports-medicine...

Joined November 2013

385 Following 1,499 Followers
There are times when it may be appropriate to specialize.

Despite "expert" recommendations, many will still specialize.

We should still have a plan to guide training of specialized young athletes.
HOW DO YOU TRAIN A YOUNG ATHLETE PROPERLY?
EARLY SPECIALIZATION MODEL

Stage of Development
- Early
- Middle
- Adolescence

Onset of Specialization

Hours per week
- 4 years

EARLY SPECIALIZATION MODEL

Onset of Specialization

Early

Middle

Adolescence

Stage of Development

4 years
WHAT ARE THE HEALTH CONSEQUENCES OF YOUTH SPORTS INTENSE TRAINING MODELS?
YOUTH SPORT SPECIALIZATION MODELS CREATED WITH DISREGARD FOR THE HEALTH EFFECTS TO YOUNG ATHLETES

Neeru J. Jayanthi, MD*; Eric G. Post, PhD, ATC‡; Torrance D. Fabricant, MD, MPH§

*Emory Sports Medicine Center and †Department of Family Medicine, Emory University, Atlanta, GA; ‡School of Exercise and Nutritional Sciences, San Diego State University, CA; §Department of Orthopaedic Surgery, Hospital for Special Surgery, and Department of Orthopaedic Surgery, Weill Cornell Medical College, New York, NY.
"These kids are ticking time bombs": The threat of youth basketball

The good, bad, and ugly of Celtics opener

Guidelines for Youth Sports Injuries

How Parents Can Set Age-Specific Expectations
INCREASE RISK OF OVERUSE INJURY WITH SPECIALIZATION (<12 YEARS OLD)

INCREASE OPPORTUNITIES FOR FREE PLAY, WARM UPS, FUN!!

TRAIN LESS HOURS/WEEK THEN A CHILD’S AGE
Youth Soccer Participation Has Fallen Significantly in America
Mean age specialization: 9 y/o

<table>
<thead>
<tr>
<th>Table 1: Participant Characteristics</th>
<th>Total</th>
<th>Specialized</th>
<th>Non-Specialized</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of participants</td>
<td>2123</td>
<td>1320 (62.2)</td>
<td>803 (37.8)</td>
<td>n/a</td>
</tr>
<tr>
<td>Players Reporting at least 1 prior injury</td>
<td>697</td>
<td>420 (31.8)</td>
<td>277 (34.5)</td>
<td>0.20</td>
</tr>
<tr>
<td>Players reporting 1 prior injury</td>
<td>236</td>
<td>125 (20.2)</td>
<td>111 (27.8)</td>
<td></td>
</tr>
<tr>
<td>Players reporting 2 prior injuries</td>
<td>366</td>
<td>224 (36.1)</td>
<td>142 (35.6)</td>
<td>0.01</td>
</tr>
<tr>
<td>Players reporting 3 or more injuries</td>
<td>417</td>
<td>271 (43.7)</td>
<td>146 (36.6)</td>
<td></td>
</tr>
<tr>
<td>Players with Training ratio &gt;2:1</td>
<td>950</td>
<td>588 (61.9)</td>
<td>362 (38.1)</td>
<td>0.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Mean±SD</th>
<th>Mean±SD</th>
<th>Mean±SD</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, y</td>
<td>13.3±1.9</td>
<td>13.7±1.9</td>
<td>12.5±1.4</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Age of Specialization, y</td>
<td>9.2±2.1</td>
<td>9.2±2.1</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Time Spent Training for Soccer, moly</td>
<td>10.6±2.2</td>
<td>10.8±0.9</td>
<td>10.3±1.5</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Weekly training volume(^1), h/wk</td>
<td>8.7±3.6</td>
<td>8.7±3.7</td>
<td>8.7±3.3</td>
<td>0.88</td>
</tr>
<tr>
<td>Free play(^2), h/wk</td>
<td>4.5±3.6</td>
<td>4.6±3.7</td>
<td>4.4±3.5</td>
<td>0.48</td>
</tr>
<tr>
<td>Total Physical activity(^3) h/wk</td>
<td>14.0±5.6</td>
<td>14.6±5.9</td>
<td>13.2±4.8</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Training Ratio(^4)</td>
<td>2.8±2.4</td>
<td>2.8±2.4</td>
<td>2.9±2.6</td>
<td>0.55</td>
</tr>
</tbody>
</table>
SOCCER AND SPECIALIZATION

• >2100 young athletes (soccer)
• The more injuries an athlete had, the more likely they were to be specialized in soccer (Odds ratio [OR], 1.27; 95% CI, 1.08-1.50, p=.003)
• This relationship disappears with adjusting for age and volume
• No performance data

• LaBella et al.
Deliberate practice vs deliberate play

FIGURE 1 | The two-dimensional construct of domain specificity and performance orientation and each of its dichotomous counterparts. Deliberate practice framework (DP) and the elite performance through sampling pathway from the development model of sports participation (DMSP) are perceived as intersections of those dimensions.

“The Early Specialised Bird Catches the Worm!” – A Specialised Sampling Model in the Development of Football Talents

Roland Sieghartsleitner*, Claudia Zuber, Marc Zibung and Achim Conzelmann
Institute of Sport Science, University of Bern, Bern, Switzerland
Most Deliberate practice and free play

SPECIALIZED SAMPLING
Training the specialised youth athlete: a supportive classification model to keep them playing

Neeru Jayanthi,1 Heather Saffel,2 Tim Gabbett3,4

Developmental Training Model for the Sport Specialized Youth Athlete: A Dynamic Strategy for Individualizing Load-Response During Maturation

Neeru Jayanthi, MD,1*† Stacey Schley, MD,‡ Sean P. Cumming, PhD,§ Gregory D. Myer, PhD, CSCS*D,‡‖∥ Heather Saffel, MD,** Tim Hartwig, PhD,**+ and Tim J. Gabbett, PhD†‡§§
Sport specialization + workload

Biologic maturation

Biomechanical deficits

Training load progressions
SPORT SPECIALIZATION AND INTENSE TRAINING
Health and Fitness Status of Parent-Child Dyads: Tennis-Only Athletes Versus Multisport Athletes in the Competitive Adolescent Population

Andrew Schneider, BA
Neeru Jayanthi, MD
Amy Luke, PhD
Amy Bohnert, PhD
Lara Dugas, PhD

PARENTS AND CHILDREN MEET ACSM EXERCISE GUIDELINES

- “Health-Related Quality of Life and Parental Influence of Specialized Child Athletes: A Qualitative Evaluation”
- Reasonably good quality of life measures and positive experiences (as well as their parents)
- Patel, Jayanthi 2017 Qualitative parent-child study

- There is insufficient evidence to suggest that Early sports specialization leads to long term poor health related outcomes
Young Athlete Injury Outcome Study (IOS): Expanded Health-Related Quality Of Life (HRQoL) Analysis After Injury

Rajiv Verma DO, FAAFP, CAQSM, RMSK
Primary Care Sports Medicine
NorthShore University Health System
Clinician Educator – University of Chicago Pritzker School of Medicine

Emory Primary Care Sports Medicine Fellow 2018-2019

American Medical Society for Sports Medicine Annual Meeting
April 16, 2021
Results

Key Findings
- Athletes with overuse injuries had worse mobility than the general pediatric population
- Otherwise, there was no significant difference in any HRQoL domain, regardless of injury type, between injured athletes and the general pediatric population
Dr Sean Cumming (Bath University) - An idiot's guide to Growth, Maturation and Biobanding

BIOLOGIC MATURATION + BIOBANDING
INJURY REDUCTION BY BIO BANDING

Figure 2. Bio-bands of maturity for an individual male based on cumulative growth and percentage of adult height.
PHV → “Adolescent Awkwardness”
Sport Specialization and Coordination Differences in Multisport Adolescent Female Basketball, Soccer, and Volleyball Athletes

Christopher A. DiCesare, MS, CSCS*; Alicia Montalvo, PhD, LAT, ATC, CSCS†; Kim D. Barber Foss, MS, ATC*; Staci M. Thomas, MS*; Timothy E. Hewett, PhD‡; Neeru A. Jayanthi, MD§; Gregory D. Myer, PhD*

*The SPORT Center, Division of Sports Medicine, Cincinnati Children’s Hospital Medical Center, OH; †College of Health Solutions, Arizona State University, Phoenix; ‡Biomechanics Laboratories and Sports Medicine Research Center, Mayo Clinic, Minneapolis, MN; §School of Medicine, Emory University, Atlanta, GA
DECREASE:
• Significant acceleration and deceleration

MAINTAIN:
• Coordination and balance
• Core strength, and mobility,
• Re-training of fundamental and sports specific skills.

- Cumming et al.
TRAINING LOAD PROGRESSIONS

WORKLOAD MANAGEMENT AND INJURY PREVENTION;
W/ DR. TIM GABBEHT
Podcast #121
MOVEMENT FIX
I’m going to train a lot... can you still help me?
Training plans and potential outcomes differ based on an athlete’s ‘floor’ capacity.
<table>
<thead>
<tr>
<th>Moderate Risk Athlete: “Load Naïve”</th>
<th>Train + Compete with Caution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Risk assessment per associated question sets:</strong></td>
<td><strong>Action steps:</strong></td>
</tr>
<tr>
<td>□ Moderate degree of sports specialization</td>
<td>□ Increase frequency of serial monitoring</td>
</tr>
<tr>
<td>□ Suspected or low-risk overuse injury</td>
<td>□ Moderate decrease in workload</td>
</tr>
<tr>
<td>□ Workload hrs/week &lt; age</td>
<td>□ Temporarily reduce ceiling</td>
</tr>
<tr>
<td>□ Sports training ratio &gt;2:1</td>
<td>□ Return to sport with reduced/moderate rate of load progression</td>
</tr>
<tr>
<td>□ Competition:training ratio &lt;1:1</td>
<td>□ Call your sports medicine provider if persistent pain for 2 weeks or 1 week in high-risk area (low back, shoulder, elbow)</td>
</tr>
<tr>
<td>□ ACWR &gt;1.5</td>
<td></td>
</tr>
<tr>
<td>□ &lt; 85% PPAH</td>
<td>➢ Serial monitoring: weekly to monthly</td>
</tr>
<tr>
<td>□ Motor and coordination: Moderate risk</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>High Risk Athlete: “Load Sensitive”</th>
<th>STOP &amp; ADAPT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Risk assessment per associated question sets:</strong></td>
<td><strong>Call your sports medicine provider and do the following:</strong></td>
</tr>
<tr>
<td>□ High degree of sports specialization</td>
<td><strong>Action steps:</strong></td>
</tr>
<tr>
<td>□ Suspected or high-risk overuse injury</td>
<td>□ Significant decrease in workload</td>
</tr>
<tr>
<td>□ Workload hrs/week &gt; age</td>
<td>□ Reduce ceiling</td>
</tr>
<tr>
<td>□ Sports training ratio &gt;2:1</td>
<td>□ Rehabilitate and treat</td>
</tr>
<tr>
<td>□ Competition:training ratio &gt;1:1</td>
<td>□ Return to sport with slow increase in workload by &lt; 10% per week to ceiling</td>
</tr>
<tr>
<td>□ ACWR &gt; 2.0</td>
<td>➢ Serial monitoring: daily to weekly</td>
</tr>
<tr>
<td>□ 85-96% PPAH</td>
<td></td>
</tr>
<tr>
<td>□ Motor and coordination: High risk</td>
<td></td>
</tr>
</tbody>
</table>
Neeru Jayanthi
@NeeruJayanthi

Emory Sports Medicine & Tennis Medicine physician specializing in research on safety and risks of young athletes. President STMS. Husband, Dad to 2 awesome boys

emoryhealthcare.org/sports-medicine...  Joined November 2013

385 Following  1,499 Followers
Young athlete specialized

- Understand components of training athletes
- Include biologic maturation and load progression
- Let kids play...when they can!