

The Pediatric Athlete and the Dangers of Sport Specialization

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- 60 million youth 6-18 participated in sports (2008) / only 29% participating in school PE
 - Highly structured “play” focused on pitching, dribbling, tumbling instead of core physical principles of flexibility/ endurance/ balance
 - Youth sports profitable business entity
 - Success in youth sports not necessarily being healthy but attaining “elite” status of sports team



Single Sport Specialization

- Defined as intensive, year-round training in a single sport at the exclusion of other sports
- Results in higher rates of injuries and burnout
- AMSSM, AOSSM have issued statements recommending against early sport specialization, as have many athletes themselves





So Where Does This Come From?

- Ericsson and colleagues proposed the 10,000 hour rule for achieve expertise as a musician/ so this principle has been adopted by parents/others as a justification for intensive, adult-style training for sports at increasingly younger ages
- The Pay to Play Machine
- Weird way to flex for some people: through their kids
- The fable of Tiger Woods (vs. Steve Nash or Roger Federer)

Success at the Next Level?

- First need to make the HS team or competitive travel team
- Estimates for playing collegiate athletics 3.3-6.8% for men's basketball, women's basketball, football, baseball, and men's soccer
- Probability of playing professional sports 0.03%- 0.5%
- Average Athletic "scholarship" = \$10,000
 - Season/ team fees + Uniforms
 - Camps/ individual strength or fitness + sports trainers

Success at the Next Level

- “This is the Way”-?
 - Studies showing diversified sport training in early and middle adolescence may better foster elite athletic performance than early specialization by allowing a more positive transfer of skills
 - The younger the recruitment into specialized training programs, the earlier they left sports
 - Study of D1 Athletes: Avg age of specialization collegiate athletes 15.4 vs avg age noncollegiate athletes 14.2
 - Studies showing that high-volume, sport specific training did not necessarily associate with success at the international level of sporting activity

Tony Gonzalez:

California Basketball to NFL
Hall of Fame Tight End

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Julius Peppers:

Univeristy of North
Carolina Basketball to NFL All
Pro Defensive End



What about gymnastics?

- Gymnastics, figure skating, and diving may require early sports specialization for peak performance as these athlete's may be at top level at earlier ages/ before full physical maturation
- This does not discount the real risks of overuse injuries and various other concerns in a skeletally immature athlete



Sports Specialization

- Early Specialization (before puberty)
- Late Specialization with early diversification (sampling)

- Tim Duncan – NBA Hall of Famer





Consequences of Early Sport Specialization

- Body subjected to the same, repetitive microtraumas
- Direct correlation of risk with number of hours spent in sports participation
- Higher risk for
 - Higher level of sports specialization
 - Playing sport for more than 8 months a year
 - Playing sport for more hours per week than age

Risk Factors for Overuse

- Intrinsic
 - Growth-related factors
 - Susceptibility of growth cartilage to repetitive stress
 - Adolescent growth spurt
 - Previous Injury
 - Previous level of conditioning
 - Anatomic Factors
 - Menstrual Dysfunction
 - Psychological and developmental factors

Risk Factors for Overuse

- Extrinsic Risk Factors
 - Training Workload
 - Rate
 - Intensity
 - Progression
 - Training and competition schedules
 - Equipment/footwear
 - Environment
 - Sport Technique
 - Psychological Factors
 - Adult and peer influences



Common Injuries

- Injuries to physis and apophysis from repetitive stress and overuse
 - Osgood Schlatter
 - Sever's disease
 - Little League Elbow (medial epicondyle apophysitis)
 - Little league Shoulder (proximal humeral physis)
 - Gymnast wrist (distal radial physis)
 - Osteochondral lesions
 - Stress reactions and stress fractures
 - Spondylosis
 - UCL
 - Patellofemoral Pain in female athletes (concern link to later ACL injury)

Emotional

- Mood issues
- Burnout
- Overdependence on others/schedules



Red Flags for In-Office Assessment

(Smucny, Parikh, Pandya- Consequences of Single Sport Specialization in the Pediatric and Adolescent Athlete.
Orthop Clin Am 46 (2015) 249-258)

- History
 - Decreased performance despite weeks to months of recovery
 - Mood disturbances
 - Lack of enjoyment of sport
 - Presence of triggers such as high training volumes, high time demands, monotony of training, excessive number of competitions
- Physical Examination
 - Muscle tightness (positive Ober test, positive Thomas test, popliteal angle > 25, ankle dorsiflexion <5, glenohumeral internal rotation deficit)
 - Ligamentous laxity
 - Q angle > 20 degrees
 - Valgus knee collapse on single leg squat test

Summary

- Early Sports Specialization is actually counterproductive according to evidence!
 - Higher rates of injury and burnout
 - Lower rates of athletic success and performance
- For the majority of sports late specialization with early diversification is most likely to lead to elite status
- 10000 hours:
 - deliberate play (child determines activity) + deliberate practice in all sports + sports specific activity
- Make sports Fun, don't be "that guy"



