The Youth Tennis Player

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Introduction

For the 1st time in American history, younger generations are expected to have shorter life spans than their parents due to the obesity epidemic.
Introduction

Physical inactivity ➔ obesity ➔
cardiovascular disease
and diabetes
Introduction

• Athletes more likely than non-athletes to attend college and earn degrees

• High school athletes make up to 95% of the highest ranking individuals in Fortune 500 companies
Benefits of Physical Activity

• Improved cardiovascular endurance and muscular fitness
• Favorable body composition
• Improved bone health
• Improved cardiovascular and metabolic health biomarkers
• Reduced symptoms of anxiety and depression
• Improved academic performance
The number one reason why boys and girls play sports is . . . ?
to have fun!
Character development

• Parents overwhelmingly cite personal and social values when describing their hopes for their children playing sport

• Children should be allowed to develop their character through a stress-free tennis environment

• With a solid foundation, the true competitor will become more effective when facing adversity
Unique demands of tennis

Few, if any, sports offer such a diverse array of opportunities for character development.
Unique demands of tennis

- No timeouts/substitutions
- No clocks/defined period of match play
- Players are all alone with little or no coaching allowed
- Competitive categories are determined by age, not size or weight (short vs tall, small vs large)
- Hundreds of thousands of split second decisions are made as player runs to ball in dynamic motion
- Singles is one on one competition and opponent’s facial expressions are readily visible
- Players can see spectators/parents as they compete
Character
Development

• Child can learn to talk his/her way through mistakes.

• Stimulate moral development

• Group lessons allow for teaching respect for others, kindness, patience, self-regulation, and control of aggressive impulses.
Tennis fosters lifetime participation at an individual, group, and family level.
Definitions

**Childhood** = development period of life from end of infancy to beginning of adolescence
- usually girls up to age 11 and boys up to age 13

**Adolescence** = period of life btw childhood and adulthood
- harder to define in chronological age due to differential maturation rates
- usually girls 12-18 and boys 14-18 yrs

**Youth/young athletes** = both children and adolescents
• Children are not mini adults.

• They differ physically, physiologically, emotionally, cognitively, and socially.
• Physiology changes over time and these changes influence how boys and girls adapt to exercise.

• There are inherent limitations to a child’s endurance and strength capacity, and these limitations begin to shift after puberty.

• Girls growth rate peaks btw 11-12, boys btw 13-14.
Strength training

Realistic goals in a prepubertal child include:
• Improved muscle strength and power
• Little or no change in muscle size
• Improved muscular endurance
• Improved body composition
• Improved strength balance around the joint
• Prevention of injury
• Improved sport performance
• Improved self confidence
Strength training

• No scientific evidence that resistance training will have an adverse effect on linear growth during childhood or adolescence or reduce eventual height in childhood.

• Very few injuries occur if program is properly designed and supervised by a knowledgeable adult.

• Performance improved with both play and resistance training.
General Strength Training Guidelines

• Begin at 7-8 yro
• 2-3 nonconsecutive days/wk
• Begin with 5-10 min dynamic warm-up
• Core (abdominal and low back)
General Strength Training Guidelines

• Child-size equipment
  • light barbells, small dumbbells, fixed machine weights
• start with low volume and low-moderate training intensities for a range of exercises and movement patterns.
• Fewer reps (1-3) and provide real time feedback after each rep to ensure safe and correct movement
• Rest periods of about 1 min adequate for most children
Recovery

• Body’s ability to return to a state of readiness following a physical and/or mental challenge.
• May be the most important component of being able to train and compete on a regular basis.
• Physical, nutritional, emotional, mental
Recovery

• Young athletes should strive to have 1-2 days off per week from competitive athletics or sport-specific training to allow for physical and psychological recovery.

• Weekly training time/volume should not increase by more than 10%.
Recovery

• Ideally young athletes should take 2-3 months off per year from the specific sport

• Be alert to the possibility of burnout if athlete c/o nonspecific muscle or joint problems, fatigue, or poor academic performance
Recovery

- If training volume/intensity are increased, daily energy requirements also need to be increased.

- Nutrition and hydration volume should also be increased in response to an increased workload.
Recovery

• During hot/humid conditions, young athletes have a more challenging time to control core body temperature.

• In children (as compared to adults),
  • have larger surface area:body mass ratio so will absorb heat quicker
  • have delayed sweating mechanisms

• May be more at risk for heat injuries in humid conditions

• When environmental conditions change, children may need longer acclimatization periods than adults
Periodization

Periodization is a training strategy that combines cycles of training with appropriate recovery on a daily, weekly, monthly, and seasonal basis.

Plans are customized to player depending on # of tournaments being played.
Periodization

• US Open players over 16 yr period

• Majority of injuries were from overuse

• Most common trend was for players to return to training or competition before adequate recovery
Overreaching vs overtraining

• Normal process of training

• Going to the edge of the cliff (but not over)

• Raise the player’s baseline strength, athleticism, and/or adaptation.
Overreaching vs overtraining

• Accumulating training/non-training stressors that can lead to detrimental long-term effect on performance.

• ~50% of athletes who play individual sports (such as tennis) overtrain.
Initiation & Specialization

• **Initiation** = age at which someone begins playing a sport

• **Specialization** = age when someone trains and competes at an advanced level in one sport throughout the year
Initiation & Specialization

Early specialization sports
sports in which peak performance is expected in middle teens (gymnastics)

Late specialization sports
peak performance expected after age 20 (basketball, football, baseball, tennis)
Initiation & Specialization

• Tennis is late-specialization sport (most players don’t peak until 20s).

• In tennis, age at which players peak has been drifting upward
Initiation & Specialization

• Late-specialization sports → general athleticism should be foundation of the athlete

• Specialization should not begin until after puberty

• Forced early specialization is associated with burnout, injuries, and dropout from sport
Specialization

• Attempting to specialize too early with tennis will lead to peak performance at a younger age (best results at junior level)

• **BUT** will not duplicate such relative results as adults
Specialization

• Research on athlete development suggests that specialization for late-specialization sports should happen around mid-teens (14-15 yr/puberty)

• Specializing around puberty allows for long-term success while avoiding short-term physical and psychological injury
Negative consequences

• **Physically immature**
  - don’t have physical skills to focus on one sport

• **Cognitively immature**
  - tennis is an open, random skill sport that requires decision making training, with variable and varied technical skills
Negative consequences

• Don’t have mental and emotional skills for singularly focused competition

• Prone to overuse and burnout (often form adult expectations and burnout)
Age of Current Pros

• Average age of top 100 ranked pro players has **increased** since 1996

• Multiple reasons including that power has become important in today’s game.

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<thead>
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<th>Year</th>
<th>Age</th>
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<td>ATP</td>
<td>1996</td>
<td>20.8 years</td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>22.3 years</td>
</tr>
<tr>
<td>WTA</td>
<td>1990</td>
<td>17.9 years</td>
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<tr>
<td></td>
<td>2009</td>
<td>21.6 years</td>
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Source: M. DeWyder, USTA Youth Tennis Symposium, 2012
Long term athletic development (LTAD)

• Developmental window important

• No amount of strength or endurance training will have a notable effect on progressive muscle size or endurance in pre-pubertal children because they have physical limitations in muscle mass growth and VO2 max.

• Thus, overly focused efforts in children can lead to no significant gain or potentially injury.
LTAD

• Multistage long-term athlete development model with a two-fold primary emphasis:

• #1: All sport initiation should be centered on fun.

• #2: It is critical to first develop an athlete before developing a player.
#1: All sport initiation should be centered on fun.
→ if kids don’t have fun, they will not want to play the sport.
LTAD

#2: It is critical to first develop an athlete before developing a player
LTAD

• This model is appropriate for late-specialization sports (such as tennis).

• Early specialization can lead to early peak.
LTAD

• Children under 6 should be largely encouraged to move and have fun

• Important to focus on athletic development and not just tennis development

• Focus on agility, balance, coordination, and speed.
Deliberate practice

• Specific training in sports that involves focused cognitive activity.

• Maximal concentration on a very specific task (tennis or athletic-competency specific) with the manner of practice taught by the teacher or coach.
Deliberate Practice

“10,000 hour rule”
10,000 hours/10 yrs of practice to acquire expertise in any domain.

Total *deliberate* practice time is most important.

The brain/nervous system has a plasticity that allows for a marked increase in performance parameters which is influenced by deliberate practice.
PRACTICE DOES NOT MAKE PERFECT. ONLY PERFECTION MAKES PRACTICE PERFECT.

Vince Lombardi
American football player
1913-1970
Deliberate Practice

• Deliberate practice is not typically perceived as fun, especially by children.

• Needs to be done in increments that are appropriate to the attention span and development of child.

• If child only engages in open play (general practice) and develops improper technique, it can take 2-3 yrs to relearn the fundamentals.
Deliberate Practice

• Deliberate practice is introduced piecemeal at an early age and becomes a more focused part of regimen after puberty.

• Coach is very important part of this transition from fun, well-rounded athletic development to more focused and specialized player development.
Deliberate practice

• A recent review of >1000 players at RTCs showed that approximately 75% of players had technical flaws that impeded their progress.

• Considerable time needed to be spent in deliberate practice/closed play to correct these flaws.

• Otherwise player could not advance optimally to his/her skill set in tennis.
Training Recommendations

• Consider training less hours/week than age (if 12 years old, train less than 12 hours/wk)

• Weekly training may potentially increase risk if exceeds 16 hrs/wk

• Limit more than 3 consecutive competitive weeks (tournaments)
Training Recommendations

• Add increased off-court tennis specific injury prevention and conditioning programs

• Consider multiple sports until adolescence with possible increased risk of injury wither early specialization especially during rapid growth periods
Competition

• Playing in youth competitions has no correlation to high school, college, or pro performance.

• Football, basketball, baseball, swimming, golf
Competition

• Competition in 12 and under children

• Focus should be on using competition as a tool for improving (not winning)

• However, child should be placed in a competitive environment in which he/she has a win/loss record of two to one (2:1) or better
Competition

If child is losing more regularly than winning, difficult to continue to have fun and the chance of losing interest in the game increases.
Competition

• If win-loss record is very high, improvement may be impaired as well.
• A major learning point of competition is to enter the competition with the result in doubt, as this fosters a creative approach to playing the game and forces technique mastery and shot selection to improve.
Competition

• Competition at this age should also focus on children playing a variety of opponents on a variety of surfaces.
• This increases versatility, which is a key component of later success.
Competition

• Doubles play should be intertwined with singles play
• Early doubles play encourages a wide variety of shot selection and a more complete mastery of the tennis court
• Pivotal for the progressive development of the tennis athlete
Parenting

• What are you trying to accomplish when you encourage your child to play tennis?

• Good tennis parenting = combination of providing support, knowing when to push, and focusing on the developmental process rather than winning

• The “optimal parent push” means motivating a child without placing undue pressure on the child to succeed
Conclusions

• Play tennis at an early age (sport initiation) but specialize after puberty
• Focus more on athleticism than tennis-specific development
• Forcing early specialization can lead to burnout and overuse injuries
• Tennis results at age 10 or 12 are not linearly predictive of future success
Conclusions

- Tennis complex skill, open loop
- Need to balance this during development
- Good technique before puberty is not predictive of later success but improper technique at a young age can delay tennis progression after puberty
- Some aspects of technique can/should be learned before puberty through deliberate practice
Conclusions

- Talent predictions are more accurate the closer they are made to peak performance.
- Identifying talent entails re-evaluation of an individual over time and that cannot be simply focused on results at a young age.
- Most top 100 players have had some success by age 14 but success at age 14 is not linearly predictive of peak performance as a world-ranked player.
Have fun!
Thank You