Talented adolescent athletes in every sport have been identified as prodigies or ‘phenoms’. For these players, the stakes are high, the potential rewards are seductive and the risks of ‘burnout’ and career-ending injury is very real. Prodigies are often sought out and promoted to a greater degree than older athletes because of their appeal by fans and sponsors, and they face pressures at an age when they are least-equipped to handle the demands. As adolescent athletes compete in an adult world, strategies are needed to identify possible risks and their causes, and programmes need to be developed to help them navigate the difficult journey through puberty and adolescence.

This article reviews evidence-based methods and actions taken by the Women’s Tennis Association (WTA) over the past 20 years to reduce risks and promote the career longevity of young professional tennis players. The WTA’s innovative Player Development Programmes (PDPs) and Age Eligibility Rule (AER) have set the standard using an evolving approach to assist adolescent athletes prepare for and develop in the competitive world of professional sport. With the goal of enhancing the sport by promoting the safety, health and well-being of the athletes, the WTA has commissioned independent sports science and medical experts to review data, take testimony from players and members of the tennis community and develop consensus recommendations on the AER and PDPs. Additionally, the WTA assembled Player Development Department staff of professional athlete development specialists to create and implement AER and PDPs. These specialists have contributed to the establishment of a new field and organisation of professional athlete development specialists known as PAADS (Professional Association of Athlete Development Specialists - www.paads.org).

THE RISKS
The health, safety and psychosocial problems facing adolescents in the adult world of professional sport and...
entertainment have been recognised for decades\textsuperscript{1,2}. These include high expectations from parents, agents, coaches, national federations, players themselves, the pressure to make money, global travel schedules and intense media attention. Training and competition at this level conflicts with the multifaceted requirements of puberty and adolescent development. Adverse consequences for some of these young people may include medical, psychological and developmental problems\textsuperscript{3,4,5} such as:

- increased risk of injury, particularly to a vulnerable growth plate,
- imbalances between strength and flexibility,
- impaired, delayed or disconnected adolescent psychosocial development,
- premature retirement from sport due to injury or ‘burnout’,
- menstrual disorders and The Female Athlete Triad,
- risks to personal safety and emotional, physical, financial, and sexual abuse,
- social isolation from peers/loneliness,
- external media pressures.

Sports Organisations can take proactive steps to reduce these adverse consequences by developing policies and programmes to assist prodigies to progress through adolescent development normally.

HISTORY

Age rules, in place since the 1960s in tennis, put limits on the amount and age at which players can participate in professional tournaments. In 1993, Player Representatives on the WTA Board of Directors, concerned about premature retirement and injuries in young professional tennis players, requested the International Tennis Federation (ITF) and WTA to review the AER. The ITF and WTA empaneled a commission of seven independent sports science and medicine experts to conduct the review and make recommendations (AER Commission). Their mission was to “promote career longevity of professional tennis players, minimise the physical and psychological effects of overtraining and to ensure the health and well-being of participants.” The AER Commission conducted a comprehensive literature review, analysed career data of top 225 players and collected direct testimony from current and retired players and members of the tennis community. Analysis of career data found that before 1993, success at an early age was a rarity and a potential liability. The younger a player turned professional, the shorter her playing career. The youngest players left the sport before their peers completed college and often did not have adequate education or resources for a career after tennis. From 1981 to 1993, 26 players turned professional before age 15 and these players had a shorter average career length (6.75 years) than players who turned pro at age 17 (8.45 years). Success on the professional tour (WTA, ITF and Grand Slam events) was attained most often by women in their mid-20s. The average age of the top 225 players in 1993 was 22.86 years (age range of 16 to 37 years) and they began participating on the tour at an average age of 15.3 years. At that time there were no 14 or 15 year-old professional female tennis players ranked in the top 225.

Oral and written testimony from players and members of the tennis community generated a list of the top 5 stressors for players. In 1994, they were: media, parents and family, travel, competition and loneliness. There was general consensus that the existing AER needed to be revised to be more stringent and phased in and that it was important to layer-on support...
They were allowed a maximum of 13 WTA-tournaments until they were 17 years of age, at which point a player could add more tournaments in a maximum of 13 WTA-wild cards or Grand Slam tournaments. Each year a player could add more tournaments in a maximum of 13 WTA-level tournaments.

The revised AER was designed to be an evolving, dynamic and flexible rule with professional tournament play limited for players aged 14 to 17. The AER is monitored, reviewed annually and linked to participation in educational programmes by players and their support teams. The AER specifically provided the following:

- No professional tournament play until age 14.
- Very limited play ages 14 to 15.
- Phased-in monitored increases for play from age 14 to 18 linked to participation in educational programmes while the adolescent is developing her game and growing as a person.
- Limitations on wild card entries, Grand Slams, exhibition matches and number of tournaments until age 18.
- Merit-based increases in play earned by a young player aged 15 to 17.
- Mandatory participation in educational programmes for parents and players.
- Registration/education/proof of certification for coaches and agents.

For example in 1995, 14-year-old players could participate in a maximum of four lower level ITF professional events with no wild cards or Grand Slam tournaments. Each year a player could add more tournaments until they were 17 years of age, at which point they were allowed a maximum of 13 WTA-tournaments. The AER is reviewed each year by the independent panel (now called the Player Development Advisory Panel or PDAP). There are procedures for outside agencies and the WTA to submit requests for changes to the PDPs and AER. As a result of this annual review, the AER has been modified several times over the past 20 years in response to changes in the structure of the circuit (e.g. ranking system changes) and rule changes.

Starting the WTA player development programmes in 1995

Players identified the WTA physical therapists/athletic trainers and massage therapists as their most helpful support on the professional tour. The staff provides on-site evaluations, treatment and rehabilitation and follow-up (i.e. during times of injury, illness or rehabilitation). The AER Commission recommended augmenting and adding training for WTA staff and having comparable on-site staff at ITF events. They also advocated adding player education and services for psychological and career counselling, a mentor programme, orientation programmes for players and families and registration for coaches and agents.

In 1995, the WTA began to require players covered by the AER to complete PDPs in order to fill in gaps in education and experience, minimise the developmental risks of training and competing full-time, and to teach life skills for not only surviving but also thriving in a professional sport environment. Core topics include safety and

---

**Table 1**

**Core programmes for the all-court professional game are:**

- **Sport Sciences and Medicine:** annual player physicals with sport performance emphasis, continuous access to WTA events to physical therapists, certified athletic trainers, massage therapists and physicians.
- **Athlete assistance:** for mental and psychological health, with help resources and a regular educational newsletter entitled “Physically Speaking”.
- **Mentoring:** Billie Jean King Power Hour.
- **Schooling:** completion of minimum educational requirements of player’s country.
- **Business education:** Rookie Hours Player Orientation completed via both online and face-to-face onsite training in all aspects of the sport and the business of tennis.
- **Online topics include:** Intro to the pros, choosing a Player Support Team member, safety & security, ScheduleZone (principles of periodisation and recovery), Tennis Anti-doping Program.
- **Onsite training includes:** Introduction to the training room (i.e. making a personal blister kit and on court kit); introduction to Athlete Assistance, Player Relations, meeting with communications and marketing personnel (i.e. attending press conferences and sponsor engagements); meeting with WTA Supervisor (i.e. observing how a draw is created), understanding the role of a tournament promoter and owner.
- **Media training.**
- **Player Support Team education** (typically completed online).
- **Accreditation:** coaches required to possess a qualified coaching certification.
- **Transitions Programme:** assistance with career guidance and skill development in programmes from financial planning, investing, earning coaching certification, public speaking/ business presentations and enrolment in university-level classes.

**Table 1:** WTA Player Development Programmes.
security, accessing health care, choosing Player Support Team personnel (coaches, agents), Tennis Anti-Doping, Tennis Integrity and an introduction to the world of professional tennis. (Table 1)

PDPs are evaluated and refined yearly to meet the needs of the players and to also reach out to their support team members – parents, family, coaches, agents, fitness trainers etc. PDPs are most effective the earlier they reach the athlete. Linked to the AER, completion of PDPs is required for players under 18 and is tied to merited increases in play where available. WTA staff also identify emerging players and engage their participation early in their careers, hold seminars at the junior circuit level and include ITF personnel in PDAP discussions.

THE 10 YEAR REVIEW – 2004

In 2004, on the 10-year anniversary of the original review, the WTA requested the PDAP to conduct a comprehensive evaluation of the AER and the PDPs. The WTA engaged independent consultants, a bibliographer and a health research and statistical analysis firm (ABT Associates) to assist with survey design and data analysis.

ABT Associates analysed the career data by first comparing the characteristics of the top 225 players in 1993 to those in 2004. They assessed career length of all 527 players who played a professional match under the age of 18 from 1970 to 2004. In conjunction with the PDAP they developed a questionnaire about the factors causing stress and the effectiveness of the AER and PDPs. The questionnaire was completed by 628 individuals. Response rates were 72% (226/315) for WTA players, 67% (259/386) for members of the international tennis community (coaches, agents, officials, sponsors, media, parents), and 69% (81/117) for sports science and sports medicine professionals. Fewer responses were received from the junior tennis community (26%, 50/199) and junior players (11%, 12/110).

The 10-year review found overwhelming support for continuance of the AER and PDPs. There was support (68 to 90%) for the principles underlying the AER including a phased-in approach and limitations on tournament play for girls under age 18. The PDPs were supported by almost all surveyed. Onsite sport science and medicine staff and services, media training, athlete assistance and referral services were the most valued programmes of players who were surveyed.

It was concluded that following implementation of the revised AER in 1995:

1. Premature retirements dropped from 7% in 1993 (29/412 players) to less than 1% (1/115);
2. Playing careers lasted 24% longer with a WTA player in 2004 73% more likely to have a 15-year career than in 1994 and
3. Stressors in professional tennis had shifted from five external factors to five intrinsic performance-based factors (Table 2). Of those players who identified expectations as a stressor, over half stated that meeting self-expectations was the issue, and fewer commented on parental expectations.

The results of the 10-year review were published in 2006 and were the most comprehensive assessment ever undertaken in any sport on age rules and developmental programmes. It is a standard to which others can refer.

EVOLUTION OF THE PDPS – 2014

The PDPs address the known stressors with proactive programmes, based on current research, and best practices. The programmes begin for a player in conjunction with her first WTA event, are required until age 18 and remain available to current WTA players of all ages and continue after retirement with the Transitions Programmes.

Table 2: Top stressors in women’s professional tennis.

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>1994</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injuries</td>
<td>Media</td>
<td>Parents and family</td>
</tr>
<tr>
<td>Travel</td>
<td>Travel</td>
<td>Competition</td>
</tr>
<tr>
<td>Length of season</td>
<td>Competition</td>
<td>Loneliness</td>
</tr>
</tbody>
</table>

**“The chase for fame and fortune at the expense of physical and emotional development is fool’s gold.”**

– Larry Scott, Former WTA CEO and Chairman
As of her first WTA level event, a player must complete a sport-specific athletic physical examination, provide proof of meeting the minimum educational requirements of her country and complete on-site sport sciences and medicine practical activities (e.g. making her own blister kit and on court kit). When a player attains a 'Rookie' status, her coach must complete online programmes such as 'Intro to the Pros', 'Safety and Security' and 'Planning her Schedule'. Coaches of minors seeking a coach credential at WTA events must first submit qualified coaching certifications.

Proper preparation and recovery – periodisation – is recognised as an important factor in competitive sport. Among tennis governing bodies, the WTA has been in the forefront of building time-off periods for its athletes during the year. Notably, there is an 8 to 10-week break for WTA off-season. The WTA created a proprietary online interactive tool called 'ScheduleZone' that educates players to plan their schedule with built-in periods of preparation, peaking for performance and then recovery and developmental blocks. Other PDPs are practical 'Rookie Hours' which involves mandatory on-site activities to learn the realities and responsibilities of being a WTA player.

As a player improves her ranking, more sophisticated education interventions are utilised. Programmes include:
- media training,
- financial education (budgeting and saving),
- Tennis Integrity Unit Orientation,
- parent, coach and agent orientations,
- meeting with the CEO and
- participation in the mentor programme.

This mentor programme is the first of its kind in professional sports and culminates in an annual 'Billie Jean King Power Hour' during the US Open.

**AER CHANGES**

Modifications to the AER have been made several times in response to circuit changes and at the request of WTA staff and third parties. The most recent modification, in 2012, was Pro Path Phase, which allows players age 15 to 17 who earn a Top 5 year-end junior ranking or reach the finals of a Junior Grand Slam singles event to earn merited increases in tournament play on the professional circuit. In order to take advantage of these merited increases, a player and her coach must complete specified educational requirements. Those requirements include online lessons, approved schedule for the year via ScheduleZone, and details of off-season activities including rest, recovery and developmental weeks. Coaches must obtain qualified coaching certification and complete online lessons. The current AER is available from the WTA’s website (www.wtatennis.com).

**Table 3**

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of pro tournaments under AER</th>
<th>Ranking</th>
<th>Participation in PDPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>4</td>
<td>Unranked – 535</td>
<td>Intro to programmes</td>
</tr>
<tr>
<td>15</td>
<td>10</td>
<td>535 to 153</td>
<td>Completed orientation, met education requirements, physical, coach &amp; parent orientation, agent registered</td>
</tr>
<tr>
<td>15</td>
<td>16</td>
<td>153 to 19</td>
<td>Matched with mentor, media training, CEO, agreed to set schedule with periodisation principles</td>
</tr>
<tr>
<td>17</td>
<td>20</td>
<td>19 to 2</td>
<td>Annual physical, participated in highest level of educational programmes</td>
</tr>
<tr>
<td>18</td>
<td>No limits</td>
<td>Ranked #1</td>
<td>Annual physical, participated in highest level of educational programmes</td>
</tr>
</tbody>
</table>


Career achievements:
- Multiple Grand Slam Champion
- Winner of Season Ending WTA Championships
- 33 singles and doubles tournament titles
- Over $27 million in career prize money

**Table 3**: Case study: one player’s journey to #1 ranking through AER and PDP. AER=age eligibility rule, PDPs=player development programmes.
THE PRESENT

The AER and the PDPs have eased the transition of younger players into the highest level of professional play on the WTA and decreased premature retirement. Many players have cited the value of the phased-in amount of play allowed by the AER. One player, who was active from 2001 to 2011 and ranked in the top 5, stated “I think the Age Eligibility Rule is a fantastic idea because all young players want to play as much as they can and I was able to take small steps to get to where I am.”

Players who have started under the AER have been able to progress to top rankings and to being ranked #1 (Table 3).

Targeted education on important topics via the PDPs is reaching a large number of players, including the top players. Since the inception of the PDPs in 1995, a total of 1600 athletes have participated. Of those players, 335 have been ranked 11-150, 36 players have reached the top 10 and 11 have achieved a #1 ranking (Table 3). The players now have an opportunity to sustain a longer career and to be equipped with the skills to mitigate the stressors and focus on performance.

Professionals in sports have stated that the WTA approach has set a standard and new ‘normal’ for the way governing bodies handle adolescent athletes.

The WTA is making plans to conduct a 20-year review of the AER and the PDPs to learn more and further quantify the results. Methods and materials similar to the review in 2004 will be used, as well as direct testimony from players and support team members.

If you would like more information about the AER, the PDPs or to contribute to the 20-year review, please contact Sarka Vitkova, svitkova@wtatennis.com.

Table 4: Participants in WTA Player Development Programmes 1995 to 2014. From 1995 to 2014, 11 players ranked #1 have completed the Player Development Programmes.

<table>
<thead>
<tr>
<th>Total participants</th>
<th>1600 players</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reached Top 10</td>
<td>36</td>
</tr>
<tr>
<td>Have been Top 11-20</td>
<td>35</td>
</tr>
<tr>
<td>Have been top 21-30</td>
<td>32</td>
</tr>
<tr>
<td>Have been top 31-40</td>
<td>45</td>
</tr>
<tr>
<td>Have been top 41-50</td>
<td>36</td>
</tr>
<tr>
<td>Total in the Top 50</td>
<td>184</td>
</tr>
<tr>
<td>Have been top 51-</td>
<td>187</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

References


Carol L. Otis M.D. F.A.C.S.M.
Chairperson, WTA Player Development Advisory Panel
Ashley Keber
Vice President | Player Relations and Player Development
Thomas Livengood
Senior Manager | Player Development and Transitions
Kathleen Stroia
M.S., PT, ATC
Senior Vice President | Sport Sciences & Medicine and Transitions
Sarka Vitkova
Manager | Player Development
USA