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Early Sport Specialization in the Sphere of Long-Term Athlete Development:

The Responsibility of Parents and Soccer Coaches Involved in This Process

By Gustavo Zampieri 

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Early specialization in sport is defined by three components: training in a single sport for more than eight months a year, participating in a single sport, and abandoning other sports and sports activities to focus on just one sport. In addition, the volume of training in organized sports of over 16 hours a week can increase the risk of injuries (Myer et al., 2015). Evidence shows a relationship between early specialization and injury due to excessive training in youth. Young athletes who specialize in sports that require participation year round, with a high level of demand to develop sport-specific techniques and skills from an early age, are at a greater risk of injury (Jayanthi et al., 2013).

The desire to offer the athlete an advantage in competition, the search for scholarships, professional status, and the possibility of being labeled as elite has resulted in a significant growth in the early participation of young people in sports in the last 15 years (Feeley et al., 2015). In this context, a study points out a real need to debate the patterns of early specialization in sport, as well as their effects and impacts on youths (Myer et al., 2015). Early specialization in organized sports is not related to success at the highest level of competition, and this specialization is not physically or mentally healthy in the development process of young athletes because it discourages unstructured free play, which has many benefits in children (LaPrade et al., 2016). Feeley et al. (2015) considered that early specialization can place young athletes who are in the development process at risk of injury. Another study concluded that specialization in a single sport can lead to changes in neuromuscular control or muscle strength imbalance, increasing the risk of injury to the athlete (McGuine et al., 2017).

Moreover, there is significant evidence indicating that practice does not make perfect and that early specialization in sport, in addition to impairing the development of motor skills, is related to a high risk of injury (Matzkin, & Garvey, 2019). Another study reveals that elite athletes specialize later than near-elite athletes and start to intensify their engagement much more in late adolescence, resulting in a higher number of accumulated training hours in early adulthood (Moesch et al., 2011). Indeed, Ericsson et al. (1993) introduced the idea and stated that experts accrue more training hours during their career than their less successful peers. On the other hand, a certain degree of specialization in sports is necessary to reach elite levels; however, in most sports, intense and excessive practice in a single sport can negatively impact the development of motor skills, significantly increasing the risk of injury and psychological stress and decreasing intrinsic motivation (Jayanthi et al., 2013). Another study points out that the benefits associated with early specialization in the athlete's development are still unclear (Baker et al., 2009). Furthermore, Baker et al. suggested that sports specialization should not be analyzed in a distant way, but on an ongoing basis. Coaches play a key role in this process and are advised to focus carefully on the

factors that influence the suitability of the types of training in their sport.

Sport Diversification

Due to the aforementioned concerns associated with early specialization, a public campaign (The OneSport) has worked to raise awareness about the potential risks of early specialization and, at the same time, recommend to parents and coaches to guide their young athletes, encouraging them to practice various sports in order to develop various motor skills, with adequate rest and recovery time, recognizing good nutrition and identifying potential concerns related to well-being and health (Matzkin & Garvey, 2019). Brenner (2016) recommended that pediatricians advise parents, coaches, and athletes to keep their focus on sport diversification, learning and developing physical activities and skills, and participating and experimenting with various sports at least until the end of puberty, thus reducing the risk of injury, stress, and physical exhaustion. Evidence further reveals that, for most sports, late specialization with early diversification is more likely to bring the athlete to elite status (Jayanthi et al., 2013). On the other hand, coaches should be aware that currently there is no scientific evidence to demonstrate the mechanisms that support the effects of greater diversification in the child's developmental years.

Read et al. (2016) recommended that more research may be needed to analyze and explore the relationship between sports diversification and the improvement of motor skills and physical fitness. On the other hand, research shows that experience in various sporting activities can stimulate and promote better development of the athlete's motor skills (Myer et al., 2015). Reinforcing this statement, Granacher and Borde (2017) suggested that specialized sports training in combination with physical education promotes an improvement in conditioning and physical preparation, without affecting the long-term cognitive and academic development process.

Sport Specialization Aligned with Long-Term Athlete Development

Considering the effects of early sport specialization, coaches should have a solid knowledge of the long-term athlete development (LTAD) stages, particularly the FUNDamentals, Learn to Train, and Train to Train phases. According to Balyi et al. (2013), the LTAD model is a long-term approach to maximizing an individual's potential and involvement in sport. With seven stages (Active Start, FUNDamentals, Learn to Train, Train to Train, Train to Compete, Train to Win, and Active for Life), the LTAD model highlights the importance of having coaches working with responsibility and understanding the technique, tactics, physical and mental needs, and lifestyle of children and young people throughout their journey in sport. Long-term athlete development provides a platform for coaches to encourage and support participants of all levels to reach their potential.



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Within on this context of young athlete development, coaches, parents, and all professionals involved in this sphere must be attentive and aware of these three specific stages of the LTAD: the FUNdamental, Learn to Train, and Train to Train stages. This article focuses specifically on soccer, and how the guidelines for these phases are fundamental parameters for the planning and development of activities within a safe and effective periodization.

The Fun Stage

The FUNdamental stage of the LTAD is defined by learning all the fundamental motor skills: running and jumping, hopping and catching, throwing, and kicking. In this phase,

a child with a congenital disability could learn to use a prosthetic arm or leg, or how to use a wheelchair or walker (Balyi et al., 2013). At this stage, children should learn all the skills that can be used in sport and physical activity later in life. For example, children should participate in a variety of well-structured activities that develop agility, balance, and coordination.

Based on the basic movements developed during the “Active Start,” years 6 to 8 (for girls) and 6 to 9 (for boys) are critical for building and developing a repertoire of skills that can be adapted and maximized to establish and become foundational sports skills in the next “Learn to Train” stage of the LTAD. Considering this scenario, physical education classes and sports programs have a role of great responsibility. The only way for a child to master and become proficient in a skill is through constant exposure to activity and by having the chance to participate consistently. On the other hand, if children do not have these opportunities and have not learned a variety of skills, their involvement in the next developmental phase will suffer (Balyi et al., 2013).

In soccer, coaches should promote activities based on game-like situations that emphasize the exploration of physical skills and experimentation. Activities should help participants learn about the structure of the game, as well as direction of play and basic rules. In addition, the young soccer player must learn and develop a basic understanding of attacking and defending, as well as transitions by playing as a team. For example, soccer drills should provide opportunities for players to develop attacking actions, such as shooting, passing or dribbling forward, creating passing options, supporting the attack, and spreading out. They should also develop defensive actions, such as protecting the ball, stealing the ball, making the defensive shape compact. Individual and small-group technical exercises are recommended at this time so that the player can be comfortable with the ball. Recreational activities and fun soccer games are highly recommended at this stage.

The Golden Age

During the Learn to Train phase of LTAD, also called the golden age of learning, children (from ages 8 in girls and 9 in boys, to the onset of the growth spurt, usually around the ages of 12 for girls and 14 for boys) are more adaptable to fundamental movement and sport skills. The three or four years before puberty are crucial for a child’s development and these developed skills will provide the foundation for all athletic development in the future. At this stage, the nervous system is well developed, and the athlete can perform refined technical skills. Now is the time to develop and advance fundamental movement skills and learn overall sport skills. However, to stimulate and motivate children at this stage, activities must be fun and take place in a safe and positive environment, in order for children to learn and develop the skills that will be the basis for all their athletic development in the future (Balyi et al., 2013).

By ensuring and promoting a safe and fun environment, and with the main objective of keeping children motivated and involved in sport, parents and coaches must take care and allow space for children to grow through the great lessons that sport can teach. Learning cannot be sacrificed for the sake of winning. Children at this stage should focus on athletic development, which will result in long-term success (Balyi et al., 2013). Coaches must not limit players' decision-making opportunities and ability to read the activity from multiple perspectives. At this stage, creativity must be stimulated, as the systems and guidelines of the coaches combined with the instructions and pressures of the parents result in limited cognitive development. Making mistakes and learning about mistakes is also part of the child's development process. Children should have the freedom to make mistakes without having to worry about parental pressure or coach reactions. Self-discovery is a very important component of this phase. Balyi et al. (2013) indicated that positive experiences motivate children to want to play and practice alone too, and this should be encouraged. Unstructured play as well as deliberate play is essential for skill building at this stage of the LTAD.

In this phase, soccer coaches should teach their athletes the importance of playing as a team and what their roles are in the game. In this scenario, athletes must gain a fundamental understanding of game roles, positions, and tasks in a

team. The young player at this point must be technically proficient enough to be effective, coordinated in their movement, adaptable, and flexible in dealing with challenges and problems. In addition to the components proposed in the previous phase, coaches must structure games to develop the creation of passing lines and decision making. As an example, coaches should organize game-like situations such as 1 versus 1, 2 versus 1, 2 versus 2, 3 versus 1, 3 versus 2, 3 versus 3, and so on. The athlete should learn to change the point of attack, change the pace of the game, and switch positions in an organized way. As defensive actions, the athlete should develop notions of pressure, cover, and tactical balance.

Building the Machine

Balyi et al. (2013) presented the Training to Train phase as the most important and challenging in terms of development. At this stage, year-round competition in a single sport is not recommended for the young athlete, and they begin to refine their focus on two sports in different seasons so that the sports do not conflict with each other. In this phase of LTAD, which focuses on "building the machine," three sensitive periods of accelerated adaptation to training will occur: aerobic, speed, and strength. According to Balyi et al. (2013), considering the principles of trainability, the onset of peak weight velocity (PHV) and peak bone velocity occurs about a year after peak height velocity to coincide with peak strength velocity, making this the ideal time to develop and boost strength. The authors affirm that training and competition ratios should be 60:40, as the young athlete's body is more vulnerable to injury after the onset of the growth spurt and during PHV. Therefore, it is very important that body alignment is monitored. If any problems are identified, rehabilitation should be the priority.

In soccer, this is the moment when coaches must set goals so that their athletes can be committed to being the best player they can be for the team. The game is what drives changes in behavior, reflection, and decision making for the player, the team, and the coach. In this phase, the athlete must have a clear understanding of the meaning of role, position and assigned task in a team, and maximize their performance in and transitions between attacking and defending. Coaches must develop activities that provide tactical experiences in which the athlete's role can be aligned and synchronized with performing position-specific tasks during attacking and defending.

Conclusion

Based on evidence that points to a significant relationship between the increased risk of injury and early sport specialization, professionals and all people involved in the sports community around the world play an extremely important and essential role related to supporting children and adolescent athletes in full development. Professionals and adults involved should be aware of any signs of stress, excessive tiredness, or physical symptoms in young athletes and be prepared to take

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measures in order to correct the detected problem, making any necessary adaptations to quickly decrease the intensity, volume, and frequency of training (Myer et al., 2015). With this in mind, early specialization should be a matter that deserves deliberate attention from parents and coaches. Significant evidence indicates practice does not make perfect and early specialization in sport, in addition to impairing the development of motor skills, is related to a high risk of injury (Matzkin, & Garvey, 2019). On the other hand, Janelle and Hillman (2003) concluded that the ideal career plan is not only a question of the number of hours of training, but also a question of when training regimens occur, thus altering the statement “practice makes perfect” to “training at the right time makes perfect.”

Early specialization and diversification remain a common topic among athletes, coaches, and parents. Thus, additional research is necessary to explore this topic and provide professionals involved in the LTAD process with effective mechanisms to maximize the development of young athletes. Based on this scenario, coaches and parents play a crucial role at this stage, as they must keep their children involved in a variety of sports and activities so that they can continue to develop basic strength and flexibility, refine their ABCs (agility, balance, and coordination), and discover new sports and activities to enjoy. This is a moment of accelerated

adaptation to motor coordination training; therefore, faster games should be encouraged with the aim of developing power and resistance. Furthermore, making mistakes and learning about mistakes is also important for the child's development. Children should have the freedom to make mistakes without having to worry about their parents or coach having a negative reaction. According to Evans and Reynolds (2016), coaches must be able to identify opportunities to address errors, demonstrate this to the athlete by promoting and facilitating understanding, presenting the correct solution, and favoring means for correction and education of the movement in question.

Aligned with this idea, Smith (2020) reinforced the importance of the coaching pedagogy that must be adopted in this learning process and described a pedagogical model in which coaches must be a “bridge” between the application of sports science and athletes. This model presents four steps (say it, show it, supervise it, and share it) that coaches can easily implement in the process of learning a skill. Moreover, coaches must be capable of developing highly effective communication skills, demonstrating the technical details of the skill in a responsible and pedagogical manner, constantly supervising and evaluating performance evolution and, through effective feedback, building a favorable environment for learning and movement education (Smith, 2020).

In soccer, the LTAD phases must be followed, and activities must be structured and organized in accordance with the U.S. soccer development philosophy, which establishes that young soccer players should learn and develop to their full potential through game-like situations in an enjoyable and safe environment that supports individual growth.

Considering all the effects of early specialization, as well the phases of LTAD discussed in this article, the three or four years before puberty are crucial for a child's development. Around the ages of 9 to 12, children are most adaptable to fundamental movement and sport skills. Coaches must be able to use an effective pedagogical approach at this stage and avoid paths that promote early specialization in sport, respecting all stages of the LTAD in the development of young athletes. Parents must understand that their children are in the full development phase and that each phase has its focus, objectives, limits, and components that must be respected. However, to stimulate and motivate children at this stage, activities must be fun and taught in a safe and positive environment, for the development and learning of these skills that will be the basis for all the athletic development of this child in the future.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

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