



**Triathlon  
CANADA**

# Triathlon Canada

## Long Term Athlete Development



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Triathlon Canada thanks Triathlon coaches, expert consultants, many NSO & PSO volunteers and Canadian Heritage – Sport Canada for contributing to the development of this publication.

## Triathlon Canada Long Term Athlete Development

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Publisher: Triathlon Canada, Larry McMahon, Director

Photo Credits: Kristine Chambers, Christopher Guy

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**Sport Canada**



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## Introduction

Sport Canada's Long Term Athlete Development (LTAD) initiative is meant to serve as a philosophy of athlete development from birth to retirement. This philosophy is a guide for all sports in the development of their training, and competition and recovery programs. Sport Canada's LTAD Guide provides a generic stage-by-stage process that considers some current knowledge on growth and development and the trainability of fundamental motor abilities. From this generic document and related source information, all national sport governing bodies were required to generate sport specific LTAD models. Several national meetings have been held and attended by members of Triathlon Canada's LTAD expert working group. These meetings served as information sharing opportunities between the Sport Canada Expert Group and the participating sports and also provided for communication between sports where collaborative across-sport initiatives could be further explored.

Triathlon Canada's LTAD Framework should be viewed as both an integrated and collaborative model that is meant to guide the optimization of athletic development for both our age-group and elite athlete development systems. This initiative will influence all stages of an athlete's development including: an individual's entry and early years in sport and physical activity; assist in developing a talent detection, selection and development plan and related processes; inform the training and competitive approaches congruent with the various stages; and encourage lifelong participation in the sport of triathlon in Canada.



## Guiding Principles of Triathlon Canada's LTAD

The following guiding principles are central to Triathlon Canada's Long Term Athlete Development Framework:

- That our programming directs athletes towards doing the right thing at the right time.
- That our athletes are encouraged to achieve stage specific outcomes prior to undertaking activities associated with the subsequent stage.
- That our training programs are tailored to the individual based on the nature of their development and considers their physical, psychological and social characteristics.
- That triathlon will work with, and not in opposition to, or repeating the work of, other sports that triathletes are participants within during their early years of development.

## Benchmarks of Success

For our LTAD approach to work, agreement and participation will be required by all levels and partners in our sport (from community clubs through to the Provincial Sport Organizations (PSOs); and from the athletes, coaches, sport scientists, administrators, and board members involved in the sport of triathlon). Our sport requires an inter-organisational approach with high levels of collaboration between swimming, athletics and other sport partners.

It is hoped that the information presented communicates a clear vision and set of guidelines that will be integrated in all policy related to Triathlon Canada and its various programs and partners. Further, each region and their related partners will be asked to construct their own approach so that important features of Triathlon Canada's LTAD framework will be situation specific, thus optimizing the implementation of important actions based on the various guidelines developed as a result of our LTAD critical analysis and review.



To assist coaches and parents, specific information has been provided for each developmental phase along with the presentation of specific implications that pertain to our long term athlete development philosophy and set of guiding principles. It is hoped that this will allow parents and coaches to be aligned with what is important in the development of the countries future elite and recreational triathletes.

In particular, three general principles for progression through the developmental phases were considered. In order for athletes to be considered as ready for progress to the next phase of development, the athlete should:

- demonstrate the physical preparedness and capacity required to succeed at the next level (see description of PHV and performance standards below);
- demonstrate the psychological preparedness and capacity required to succeed at the next level (see individual outcomes criteria contained within the description of each stage); and
- demonstrate a degree of competitive mastery at the current level.

It is important that all stakeholders (administrators, coaches, parents, and athletes) adhere to these criteria so that an athlete's learning and development can be optimized towards the achievement of positive and appropriate experiences in their chosen sport.

## Peak Height Velocity

One of the fundamental principles of our LTAD framework is that it does not use the individual's chronological age as a sole measure of maturation. The concern with chronological age is that it does not account for an individual's varying rate of physical maturity. Some individuals mature early while others are delayed by up to several years before reaching their true level of physical maturation. As a result, using chronological age to inform the athlete's programming can put excessive demands on late maturing individuals, or leave early maturing athletes apathetic and unchallenged.

In order to be able to fully individualize training for every athlete, it is essential that we identify each athlete's peak height velocity (PHV) to assist with the determination of the individual's level of readiness for various physical training areas of emphasis along with the prescription of the corresponding training loads (volume, intensity, duration, etc.). Specifically, PHV refers to the period of growth and development when the individual's growth is undergoing the most rapid period of change. For this reason, PHV is used towards informing, generally, when important developmentally significant events will occur. For example, it can be said that one can program general increases in the overall volume of training with respect to an athlete's PHV.



## Implications For Parents

Relying on PHV rather than chronological age means that parents will have to pay more attention to their child's growth rate in order to determine their child's approximate developmental phase. While PHV can occur at about 12 years of age in girls and about 2 years later in boys, tremendous individual variation exists. Prior to this milestone, the focus for all childhood sport should be on having fun, learning to play, and developing excellent fundamental skills across a broad range of physical activities (Bar-Or, 1983). Be aware that the establishment of PHV should not be interpreted as the go ahead for large increases in training.

## Implications For Athletes

Prior to the last "growth spurt" that individuals go through, it is very difficult to accurately predict the final form an athlete's body will take. As a result, it is very important to build a broad foundation of abilities and skills. If this is done properly, the athlete will be well equipped to participate in whatever sport they choose as an adult. The primary focus of all activities prior to this period of rapid growth should be on learning non sport-specific skills (agility, balance, coordination, kinesthesia, gliding, buoyancy), while building whole body awareness and learning to express one's speed (running, skating, swimming fast).

During the rapid growth phase there may be a period when these basic abilities seem to abandon the athlete. This is common and should not be cause for concern; the body is just a little behind in learning to adapt to its rapidly changing form.

After the peak of the growth phase girls will go through menarche and undergo a further series of bodily changes. These can have a significant impact on both the ability to train and perform. The accompanying hormonal changes also impact body composition and the ability to gain and retain muscle mass. For athletes involved in endurance sport, this can lead to a negative change in the athlete's power to weight ratio and can lead to a significant plateau or decrease in performance. It is important to understand that continued training, along with continued attention to all other factors can eventually lead to a resumption of previous performance ability and possibly further gains in performance in the future. Thus, it is important to be patient during this phase of an athlete's development.

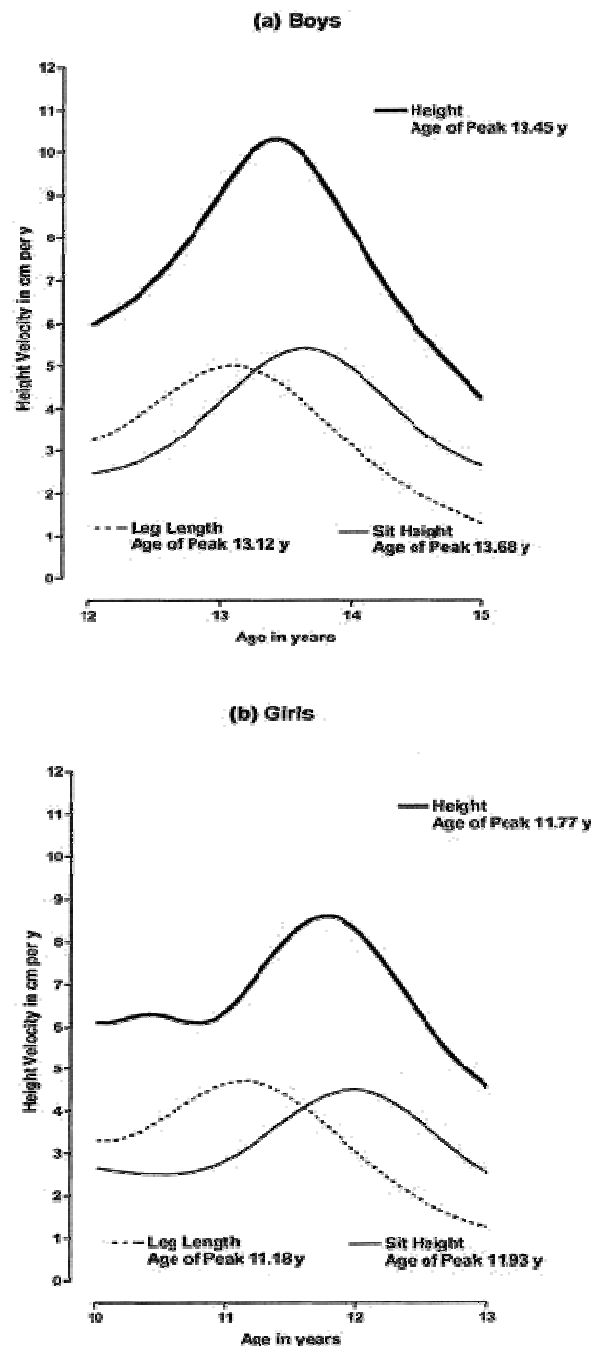
### Implications For Coaches

By keeping track of athletes' growth rates and adjusting training according to PHV, the coach should be able to provide developmentally appropriate training programs for every athlete. This will also facilitate the avoidance of early specialization of athletes and ensure a solid foundation is built prior to undertaking increasingly significant training loads during an athlete's Specializing and Investment phases of development.

There is little, if any, evidence that early exposure to rigid training programs designed to develop the primary components of fitness lead to increased levels of performance later in life (Naughton, Farpour-Lambert, Carlson, Bradney & Van Praagh, 2000). An example of growth velocity curves is shown in Figure 1 (Mirwald, Baxter-Jones, Bailey & Beunen, 2002). It is very important that coaches pay close attention to an athlete's PHV and subsequent states of physical maturation, ensuring that the prescription and emphasis of training is appropriate for each individual athlete's states and capacities.

For the sport of triathlon, PHV has the most relevance during The Sampling years (Figure 2) where most athletes can be considered Pre-PHV, and the Specializing years, where most athletes achieve PHV during this phase. Usually, two years post-PHV (PHV+2) has been established as the time when the athlete is ready for gradual increases in training loads over time.

**Figure 1. Growth Velocity Curves**





# Triathlon Canada's LTAD Framework

		Active for Life			
		Active for Life Retirement & Transition		Transfer to Long Distance Events	
Active for Life	Maintenance	10+ 9	Post PHV	<ul style="list-style-type: none"> <li>Mastery and Maintenance</li> <li>Interdependent Athlete</li> <li>Realize Physical Potential</li> <li>Career Transition</li> </ul>	<ul style="list-style-type: none"> <li>National Team</li> <li>High Performance Coaches</li> </ul>
	Investment	8		<ul style="list-style-type: none"> <li>Talent Prediction</li> <li>Identity = International Performer</li> <li>Mastery of Self-Management</li> <li>Achieving Race Consistency</li> <li>Educational Options Pursued</li> </ul>	<ul style="list-style-type: none"> <li>National Triathlon Centres</li> <li>Competition Development Coaches</li> <li>High Performance Coaches</li> <li>Development Team / National Team</li> </ul>
		7 6			
	Specializing	5	<ul style="list-style-type: none"> <li>Talent Selection</li> <li>Identity = Triathlete</li> <li>Choose to Train &amp; Compete</li> <li>Learning to Become Independent</li> <li>Domestic Competition</li> </ul>	<ul style="list-style-type: none"> <li>National Triathlon Centres</li> <li>Competition Development Coaches</li> <li>National Development Team</li> </ul>	
		4			PHV +2
		3			PHV +1
	Sampling	2	PHV	<ul style="list-style-type: none"> <li>Talent Detection</li> <li>Learning to Enjoy Effort</li> <li>Technical Mastery</li> <li>Learning to Express Speed</li> </ul>	<ul style="list-style-type: none"> <li>Kids of Steel as racing</li> <li>Provincial Sport Programs</li> <li>National Triathlon Centres</li> <li>Swim Clubs</li> <li>Summer based programs for swim clubs.</li> </ul>
		1	Pre PHV		
	Fundamentals			<ul style="list-style-type: none"> <li>Physical Literacy</li> <li>Positive Attitudes</li> <li>Fundamental Motor Ability</li> <li>Teaching Games for Understanding</li> </ul>	<ul style="list-style-type: none"> <li>Active After School Programs</li> <li>I Can Swim (Swim Canada)</li> <li>Run Jump Throw (Athletics Canada);</li> <li>Gymnastics; Kids of Steel as training</li> </ul>
	Active Start				
Phase of Athletic Development	Years Of Training	Relative Peak Height Velocity	Elite Athlete Development Emphasis		

# Phases of Athletic Development

## Active Start

The Active Start phase of development encompasses the very earliest time periods relative to an individual's physical activity experiences. From birth to about the age of six, this stage provides the foundation for lifelong physical activity through the acquisition of basic movement skills, which build toward the acquisition and development of more complex movement patterns.

Through daily, unstructured physical activity – **active play** – the individuals learn how to move through space and adapt to their surroundings. As well, it is through their play that they will begin to feel confident in their abilities and become comfortable participating in a variety of fun and challenging sports and related physical activities.

### Elite Athlete Development Emphasis

- General Mobility

### Programs Implicated

- Parents
- Community recreation initiatives



The majority of the focus for this stage of development is on learning how to play, and having fun. Unstructured physical activity should make up the majority of active play (up to 60 minutes per day) compared to structured physical activity (30 minutes per day). While this may seem like a lot, parents should remember that children should not be sedentary for more than 60 minutes at a time unless they are sleeping.

### Activities

- Active play, both unstructured and structured.
- Unstructured: tag, skipping, catch with ball or Frisbee, etc.
- Structured: pickup games of "modified" soccer, hockey, etc.
- co-recreational participation encouraged.

### Outcomes

- Child knows how to have fun at active play.
- Child is acquiring fundamental movement skills.
- Child has the ability to link movement skills together into play.

## Fundamentals

The focus of this phase of development remains fun while participating in activities that promote overall movement skills. In order to be successful at the activities performed in this stage it is critical that children have mastered the abilities taught in Active Start stage. It is also in this stage that the first window of optimal trainability occurs. The development of pure speed (lasting less than 5 seconds) should be introduced in a structured format. It is important to note that although some programs are structured and monitored, no periodization takes place.

It is at this stage that the foundations of **physical literacy** are laid. This concept is extremely important, as physical literacy is the foundation of life long participation and enjoyment of physical activity. A physically literate individual is one who “moves with poise, economy and confidence in a wide variety of physically challenging situations” (Whitehead, 2001). As well, physical literacy involves the ability to interact with one’s surroundings in appropriate and unique ways. Physical literacy is rooted in active play and is developed through fun but challenging structured play. It is not sport specific.



### Pre-PHV

Pre-pubertal children are those who have not yet gone through their adolescent growth spurt, or their period of most rapid growth (peak height velocity). Pre-pubertal children are often younger than 12 years of age if female and younger than 14 if male.

During this period, evidence suggests that there exists periods of accelerated improvement for speed in boys (ages 7-8) and girls (ages 8-9) along with accelerated improvement of motor abilities in boys (ages 7-9) and for girls (6-8).

Viru, Loko, Volver, Laaneots, Karlson & Viru (1998) suggest that this first period is characterised by an increase in rates of spring speed and explosive strength improvement, with accelerated improvements in strength or aerobic endurance not commonly demonstrated for this period.

#### Elite Athlete Development Emphasis

- Physical Literacy
- Positive Attitudes
- Fundamental Motor Ability
- Teaching Games for Understanding

#### Programs Implicated

- Active After School Programs
- I Can Swim (Swim Canada)
- Run Jump Throw (Athletics Canada)
- Gymnastics; Kids of Steel as training

## Implications For Parents

It is important to involve the child in multiple activities that promote the practice and mastery of fundamental movement skills **prior** to the introduction of sport specific skills. Several of Canada's national sport governing bodies are offering programs that specifically address these goals. Examples are the 'I Can Swim' program ([Swim Canada](#)), and the 'Run, Jump, Throw' program ([Athletics Canada](#)). It is also at this stage that the seeds of an individual's self-esteem are laid. It is essential that children are positively rewarded for participation and effort as opposed to success at any given activity throughout their fundamental phase of development. A child's motor experience appears to be closely linked to a supportive movement environment and to a motivated family that promotes AND PARTICIPATES in physical activity.

## Activities

- Structured but non-sport specific play.
- Co-recreational participation encouraged.
- Participation in a wide variety of sports.
- Development of speed using games.
- Introduction to simple rules and ethics of sports.
- Activities revolving around the school year enhanced by multi-sport camps during the summer and winter holidays.

## Outcomes

- Positive attitude toward participation in sport.
- Introduction to the foundations of physical literacy.
- Daily physical activity that is becoming well-structured but not periodized.
- Foundation in the ABC's of athleticism (Agility, Balance, Coordination) in addition to the development of speed).
- Understanding of the simple rules and ethics of sport.
- Child is becoming confident in their abilities.

## Sampling

Participants who engage in a variety of sports characterize the Sampling phase of athletic development. The activities should emphasize fun and socialization with the participants being encouraged to deliver effort while being technically sound.

Participating in many different activities or different groups helps the young athlete develop fundamental social skills, such as learning how to relate to different groups of peers, and helps increase their sense of belonging (Durand-Bush & Salmela, 2002). While activities can be structured, it is still important at this stage that the focus is on experimenting with different ways of doing things rather than achieving a goal.

Participants should be encouraged to take risks and develop the understanding that it is "ok" to fail so that they do not attach their identity to the outcome. Throughout this stage it is still important to focus on play and enjoyment as these are still the primary motivators for participating in sport. That said, it is also important that the athlete feels they are making performance improvements in whatever sport they are engaged in.

For the sport of triathlon, early specialization or volume-based training is to be avoided while full-time participation in swimming is to be encouraged. As well, the primary goal of the Sampling years is to give all athletes the skills and opportunities for draft legal Olympic distance racing. These skills are equally employable in non-drafting racing (elite or age group). However, while draft legal skills can allow for a natural progression to non-drafting, the reverse is much less likely.



### Elite Athlete Development Emphasis

- Talent Detection
- Learning to Enjoy Effort
- Technical Mastery
- Learning to Express Speed

### Programs Implicated

- Kids of Steel as racing
- Provincial Sport Programs
- National Triathlon Centres
- Swim Clubs
- Summer based programs for swim clubs

### Implications For Parents

At this stage it is primarily the parents who initiate their children's participation in sport. However, it is important to ensure that participation is voluntary and pleasurable, provides immediate gratification, and promotes intrinsic motivation (Cote, 1999). In essence, parents should foster a love of sport. By encouraging participation and rewarding effort rather than outcomes, the athlete will learn to enjoy the effort that related to the notion of deliberate practice.

Although the socialization process occurs over the course of life, socialization into sport takes place mostly during childhood and adolescence. Thus, the family is an important socializing agent in the sampling years. It is worth noting that children's early sport interest, initial sport involvement, and perception of physical ability are all strongly linked to parental beliefs and behaviors.

In the sampling years, parents are encouraged to introduce their children to sports that they feel their children have a strong interest in. Young athletes should be willing to complete the training required while enjoying the process of demonstrating effort and working towards mastery of their chosen sports, related skills, and other activities.

### Implications For Coaches

Coaches should measure performance with developmentally appropriate expectations and these should change as the athlete's potential for learning improves (Naughton, 2001). During this stage, PHV is likely to occur and coaches should be aware of the early developer who might succeed in the short term, but may struggle when peers increase in size and strength. Conversely, coaches should be patient with late developers who may be overwhelmed in some activities, but will improve rapidly later (Naughton, 2001).

Importantly, coaches need to capitalize on the onset of PHV because it is considered the second motor learning window and typically occurs at the ages of 12-16 for boys and 11-14 for girls. Coaches should introduce basic mental skills such as setting personal long and short-term goals, imagery, and self-awareness.



In addition, coaches can use the achievement of personal goals by athletes as a way to increase young athletes perceived physical competence (feeling good about how they do what they do) no matter the outcome (Naughton, 2001). Competitions do play an important role, as long as the focus is on the learning process, rather than the competition outcome.

Although athletes do not specialize at this stage it is important that potential triathletes be involved in organized swimming as one of their activities. This is due to the highly technical nature of swimming, and the fact that swim specific technical skills cannot be taught through other sports.

Running specific skills can be covered by participation in many other sports (e.g. soccer, athletics, etc.) and need not be trained in isolation from these sports.

It is also at this stage that the athletes will most likely first be exposed to triathlon in the form of Kids of Steel™ (KOS) events. Using KOS events as a mechanism of talent detection for potential future triathletes is encouraged.

During this stage participants should learn how to train and develop the skills associated with triathlon. There may be participation in complementary sports (i.e. sports which use similar energy systems and movement patterns). Athletes should begin learning the basic technical/tactical skills, and ancillary capacities, including:

- Warm up and cool down
- Stretching
- Hydration and nutrition
- Recovery
- Relaxation and focusing



## Implications For Athletes

It is during this phase that you should be participating in several sports that you have an interest in. The goal of participating in multiple sports is to learn sport-specific skills in addition to building a solid foundation non-sport-specific skills. Through all of this it is important to remember that the emphasis should be on fun and participation. You should be participating in sport because it is what you want to do, not because it is what others tell you to do.

## Activities

- Overall skill development; all basic sport skills should be learned in this stage.
- Introduction to mental preparation.
- Sport specific training two to three times a week, along with participation in other sports up to three times a week. Usually involves participation in a competitive swim program.
- Medicine ball, Swiss ball, own body strength exercises.
- Participation in competitive swim clubs during this phase is also crucial for talent detection to occur.

## Outcomes

- Talent detection.
- Athletes have learned to enjoy effort.
- Technical mastery, all general sport skills.
- Introduction to major sport specific skills.
- Learning to express speed.
- Highly intrinsic motivation.
- Physically Literacy.
- Potential for transition to Active for Life.



## Specializing

Athletes in the Specializing stage of development devote more time and effort into triathlon, while concurrently decreasing the time they devote to other sports. They should now recognize the importance of developing as “performers”, as opposed to being “participants”. The athlete should acknowledge the importance of taking personal responsibility for training, preparation, performance, and recovery. In addition, they should be motivated to bring effort consistently to practices and competitions, while becoming increasingly involved with coaches in decision-making. Lastly, participants must demonstrate coachability (accept constructive criticism, works with other coaches or athletes). In some cases, such as in the context of a Regional or National Training Centre, athletes might work with a multidisciplinary team of sport science professionals. While the workload during this stage of development increases, it is important to remember that fun and excitement remain as key motivators for continued participation (Cote, 1999).

The greatest and most obvious benefit of specialization is the acquisition, development and proficiency of motor skills related to success. An athlete, who practices a skill or set of skills with increased frequency and duration, considering he or she does so in a technically and developmentally appropriate manner, may become more proficient at the skills than one who practices them periodically and irregularly (Wiersma, 2000).

### Elite Athlete Development Emphasis

- Talent Selection
- Identity = Triathlete
- Choose to Train & Compete
- Learning to Become Independent
- Domestic Competition

### Programs Implicated

- National Triathlon Centres
- Competition Development Coaches
- National Development Team

### PHV Considerations

The pubertal phase of peak height velocity can last from 12 to 18 months and brings with it several training considerations. Importantly, a second period of accelerated rate of speed improvement has been documented and appears earlier in girls than in boys.

### Post PHV

Post-pubertal adolescents are those who have experienced their adolescent growth spurt, or peak height velocity, but have not yet reached full skeletal maturity. After peak height velocity, post-pubertal adolescents experience an accelerated increase in mass, with rapid gains in muscular development, along with further hormonal maturation. While the chronological age may vary dramatically during this phase, on average, post-pubertal females will be 13-17 years of age, and males 15-18 years of age.



Viru *et al.* (2002) demonstrated that periodic alterations in the rate of improvement for motor abilities are typical for motor development in childhood and adolescence. They state that the “periods of accelerated improvements express the pattern of biological maturation” and accordingly “certain relations have been shown between the rate of improvement of motor abilities and peak height velocity” (p. 211). As a result, PHV can be used as a guide for the trainability (NOTE: there is no evidence for this, and in fact there is evidence to the contrary, at least with respect to aerobic capacity and power) and performance of the 5 basic motor abilities: Stamina (Endurance), Strength, Speed, Skill and Suppleness (Flexibility). Thus, the need for individualization during the Specializing years is great. As well, the determination of PHV will assist coaches in determining each athlete’s readiness to engage in periodized and progressively higher volumes and intensities with their training.

### Implications For Parents

Encouragement from family members and simple enjoyment of the activity are among the factors that facilitate choosing one sport over another (Cote, 1999). It is important that family members understand the role that deliberate practice plays on technical mastery of sport specific skills as well as general athleticism. Providing positive feedback on the process of training and skill development rather than emphasizing outcomes of competitive opportunities is of critical importance.

One must also acknowledge the importance of the athlete’s other social and school activities. A balance must be achieved between training and academic excellence. Importantly, as the athlete progresses through this stage, it will be important for parents to take an interest in the athlete’s choice of sport (Cote, 1999).

It should be emphasized, though, that the athlete should be the one choosing to train and compete, with parents and siblings forming a support network for the athlete.

### Implications For Coaches

Coaches must ensure that participants’ other roles are acknowledged (e.g. other sports teams, school activities) and work in conjunction with the participants’ parents in ensuring that school performance is kept at an acceptable level. Mental skills introduced in the Sampling stage of athlete development should continue to be practiced, refined, and incorporated into many types of situations the participant will likely find themselves in, such as practice, dry land training, and around competitions (Durand-Bush & Salmela, 2002). The idea of reflection after practices or competitions should be encouraged and incorporated into the routine of the participant.

As the athlete progresses through this stage and is identified as a triathlete, the National Triathlon Centres may become involved in defining training and competitive opportunities. Likewise, coaches certified at the Competition Development level should be involved in directing the day-to-day training. Identification to a National Development Team may occur at this stage. However, the emphasis should still be on mastering domestic competition.



Coaches (and parents) must understand and plan for long-term periodization of training. The nature of the programs during the Specializing years should allow for appropriate breaks crucial for physiological and psychological recovery from training. It is critical that the athlete achieves complete rest from the sport without participation in other sports or activities. When a child reaches an age in which he or she is physiologically and psychologically mature enough to handle increased training loads, specialization at that time may be justified to optimize the positive adaptations accompanying the advanced intensity and duration of training (Wiersma, 2000).

### **Talent Identification**

During the Specializing years, the central role of the experienced coach or high performance program in identifying particular aptitudes for success cannot be underestimated. Talent is an important part of the child's overall potential and deserves recognition and encouragement from the beginning. Therefore, early talent identification is a central need for the well being of our young athletes that strive to realize their full potential. Early talent identification also reduces the negative consequences of early specialization in cases where athletes are not necessarily best suited for that specific kind of sport from an elite athlete performance point of view.

While an individual's genetic makeup is a critical component of their future potential in the sport, of equal or greater importance is the trainability of the athlete. As well, the establishment of a unique environment (i.e. the influence of deliberate practice and various support systems) also has a strong influence on athletic performance. While coaches must identify talent during the Specializing years, they must, at the same time, guard against the potential segregation of young athletes or the exclusion of late-maturation athletes.

## **Triathlon Canada's Normative Performance Standards**

One of the fundamental components of an elite athlete development model is the ability to identify performers that have the potential to progress to the next level of athletic performance in their sport. These standards are meant to be used in addition to an athlete's other physical and psychological characteristics (body type, dedication to training, degree of demonstrated intrinsic motivation, maturational status, etc.).

The normative standards provided on the following page are meant to serve athletes, coaches and sport administrators towards talent detection, selection and prediction relative to the various competitive classifications for the sport of triathlon.

These normative standards may be adjusted for early and late maturing individuals. For example, a late maturer may not be able to achieve the junior standard until near the end of their junior eligibility, while an early maturer may reach that performance standard prior to being a junior athlete. In this scenario, the latter athlete will have achieved the performance based on an adolescent body making it more difficult to express power after they have completed their physical maturation).

Provided at the end of each table are relevant National and International Governing Bodies' performance and qualification criteria. These are provided so that athletes, coaches, and administrators can see and appreciate the difference between the performances required of triathletes and their "single sport" peers.

## Normative Performance Standards: Swim and Run

		National Standards						World Standards					
		400 m		800 m		1500 m		400 m		800 m		1500 m	
Category		m:s	/100 m	m:s	/100 m	m:s	/100 m	m:s	/100 m	m:s	/100 m	m:s	/100 m
Male	Junior	5:04	1:16	10:24	1:18	20:00	1:20	4:40	1:10	9:36	1:12	18:30	1:14
	U 23	4:56	1:14	10:08	1:16	19:30	1:18	4:32	1:08	9:20	1:10	18:00	1:12
	Elite	4:48	1:12	9:52	1:14	19:00	1:16	4:24	1:06	9:04	1:08	17:30	1:10
	FINA "B"	<i>(National Standards)</i>						<b>3:58.01</b>	<b>8:18</b>		<b>15:45.12</b>		
	FINA "A"	<b>4:08.20</b>		<b>8:41.04</b>		<b>16:37.90</b>		<b>3:49.96</b>		<b>8:01</b>		<b>15:13.16</b>	
Female	Junior	5:20	1:20	10:56	1:22	21:00	1:24	4:56	1:14	10:08	1:16	19:30	1:18
	U 23	5:12	1:18	10:40	1:20	20:30	1:22	4:48	1:12	9:52	1:14	19:00	1:16
	Elite	5:04	1:16	10:24	1:18	20:00	1:20	4:40	1:10	9:36	1:12	18:30	1:14
	FINA "B"	<i>(National Standards)</i>						<b>4:20.05</b>	<b>8:54.04</b>		<b>17:04</b>		
	FINA "A"	<b>4:30.25</b>		<b>9:19.10</b>		<b>17:59.82</b>		<b>4:11.26</b>		<b>8:35.98</b>		<b>16:29</b>	

### Notes:

FINA standards are for Beijing, 2008.

FINA cells for Men's 800m and Women's 1500m are estimated based on FINA Points Charts.

National and FINA Standards are Long Course Meters.

		National Standards						World Standards					
		3000 m		5000 m		10000 m		3000 m		5000 m		10000 m	
Category		m:s	/1k	m:s	/1k	m:s	/1k	m:s	/1k m	m:s	/1k	m:s	/1k
Male	Junior	10:12	3:24	17:40	3:32	36:40	3:40	09:00	3:00	15:40	3:08	32:40	3:16
	U 23	09:48	3:16	17:00	3:24	35:20	3:32	08:36	2:52	15:00	3:00	31:20	3:08
	Elite	09:24	3:08	16:20	3:16	34:00	3:24	08:12	2:44	14:20	2:52	30:00	3:00
	"B"	<b>7:59*</b>		<b>13:44</b>		<b>28:45</b>		<b>7:49*</b>		<b>13:28</b>		<b>28:06</b>	
	"A"	<b>7:44*</b>		<b>13:19</b>		<b>27:47</b>		<b>7:45*</b>		<b>13:21</b>		<b>27:49</b>	
Female	Junior	11:42	3:54	20:10	4:02	41:40	4:10	10:12	3:24	17:40	3:32	36:40	3:40
	U 23	11:18	3:46	19:30	3:54	40:20	4:02	09:48	3:16	17:00	3:24	35:20	3:32
	Elite	10:54	3:38	18:50	3:46	39:00	3:54	09:24	3:08	16:20	3:16	34:00	3:24
	"B"	<b>9:08*</b>		<b>15:43</b>		<b>33:01</b>		<b>8:57*</b>		<b>15:24</b>		<b>32:00</b>	
	"A"	<b>8:41*</b>		<b>14:56</b>		<b>31:20</b>		<b>8:48*</b>		<b>15:08</b>		<b>31:40</b>	

### Notes:

IAAF standards are those used for 2007 World Championships.

National Standards are Athletics Canada 2007 Funding Standards.

3000m times based on same IAAF points as 5000m performance.

## Implications For Athletes

During this phase you will be developing your identity as a triathlete. This implies that you should no longer be maximally training in any of the individual sports. It is important to remember that triathlon is a bit of a compromise. By training full time as a swimmer or runner it would be possible to become better at those sports; however it is unlikely that you would develop to the point where you could achieve the same level of relative success.

As you develop as a triathlete it is important that you progress through the levels of competition from local to regional to national, mastering each level prior to moving on to the next. Participating in a national level competition prior to successfully mastering local competition can be an intimidating experience. Success in the long term will follow from mastering each level of competition sequentially.

It is also during this phase that girls will be going through a significant physical and mental change due to the onset of menarche and its associated hormonal flux. During this period there is a tendency for performance to stagnate as the power to weight ratio changes, the center of mass drops, and the amount of body fat increases.



These are normal changes that will possibly require an adaptation period. However, with continued training and focus performance gains can continue as long as the correct adjustments are made. It is important for athletes, coaches and parents to continue with effective communication during this period so that everyone's expectations are kept realistic.

## Activities

- Major focus on aerobic capacity development.
- Further develop mental skills.
- Talent selection.
- Multiple periods of training.
- Sport specific training 6-9 times per week, including other complimentary activities, eventually achieving a gradual reduction in participation in other sports

## Outcomes

- Identity = Triathlete.
- Learning to become independent; learns "what works for me".
- Emphasis on mastering domestic competition (Junior).
- Involvement in National Development Team (Junior).
- Potential for transition to Active for Life Stage if the level of performance/ability is not in line with expected international performance progression.

## Investment

The Investment phase of athlete development involves learning to value competitions and putting performance first. Athletes in the Investment stage are now completely committed to becoming international performers in the sport of triathlon and will begin moving from the Sprint distance to the Olympic distance.

Competitions are now viewed as an opportunity to apply skills and competencies that they have been developing during training and their past Sprint distance races. The concepts of personal responsibility, sacrifice, and being “competitive” are more pronounced in this stage. Therefore, it is important that athletes in this stage have a strong support system that they can rely on (Cote, 1999).

### Elite Athlete Development Emphasis

- Talent Prediction
- Identity = International Performer
- Mastery of Self-Management
- Achieving Race Consistency
- Educational Options Pursued

### Programs Implicated

- National Triathlon Centres
- Competition Development Coaches
- High Performance Coaches
- National Team



## Implications For Parents

During the Investment stage it is very important that family members provide a network of support to the athlete (Cote, 1999). This facilitates training and competition in ways not directly related to coaching or providing sport specific advice, but is still essential. Providing emotional support during times of stress, fatigue, injury, and anxiety is a very important family function that is difficult to otherwise provide.

There is also a significant financial cost associated with training and competing at this stage of development. Athletes may also be enrolled in University or College away from home, which makes providing support more difficult, but it is still important to show high levels of interest in the sport and the individual.

Differences between siblings, and the amount of attention or support provided to those who perform well, may become a point of contention that should be identified and dealt with early (Cote, 1999).

## Implications For Coaches

Significantly, it is during the Investment stage that athletes must begin to become more self-coached and slowly co-leading their own development. In addition, post-training and post-competition reflection should be encouraged and coaches should take on a more collaborative and interdependent role.

Athletes in these stages are likely to have to achieve balance among other important roles (schools, university, part-time jobs, etc). They must be highly regulated in regard to their recovery activities so that they can effectively meet the demands of training and competition.

The Investment years are distinguished from the Specializing years mainly by the extreme intensity of the athlete's commitment to the sport and the tremendous amount of training required (Cote, 1999). Intensive engagement in deliberate practice does not bring the immediate pleasure and gratification common during the sampling years, thus requiring the athlete's commitment to their sport and the willingness to 'pay the price' to be great.

Training at this stage will most likely involve both Competition Development and High Performance coaches associated with the National Training Centres. The athlete will also most likely be a member of a National Team (U23 or Senior).

### Implications For Athletes

During this phase of development athletes should be progressing from a national level to an international level of performance. The athlete also needs to be proactive in asking questions and providing some direction to the training program. This also implies that the athlete takes responsibility for their own actions away from training and acknowledges their various daily decisions and their potential impact on their training and competitive performances. This is especially important if the athlete is enrolled in some form of post-secondary education as the amount of time and energy required can be significant and can lead to high levels of general stress.



The level of performance at international competitions should also have provided an indication as to the amount of work that needs to be done to improve, and to what level the athlete can aspire to on the international stage. This information will be crucial in helping to formulate the athlete's longer-term training and performance targets. All of this information needs to be integrated into the athlete's perspective on sport and where it fits in to their life.

While athletes are encouraged to dream, they must also develop a high level of self-acceptance in regard to their current (and future) performance ability.

### Activities

- Talent prediction.
- Pursuing Educational Options (University, College).
- Training under Competition Development and High Performance coaches who may or may not be associated with a RTCs or NTCs.
- Single, double, or triple periodization.
- Integrated mental, cognitive, emotional development.
- International competition.

### Outcomes

- Identity = International Performer.
- Achieving race consistency.
- Mastered self-management.
- Mastered recovery.
- Athlete starts to direct his or her own development.
- Potential for transition to Active for Life Stage depending on performance ability.

## Maintenance—Mastery

Athletes at the Maintenance stage of athlete development have gained tremendous experience and often have great perspectives. It is important that individuals in these stages are clear about life after sport so that they can fully embrace their present athletic careers. Individuals in the mastery stage are confident, motivated, and competitive. They continuously want to improve and tinker with their performance. Therefore, they are open to new perspectives on learning, which is important as there is strong need to be competitive and innovative.

Athletes at the Mastery stage know “what works” for them yet remain open to input from their coaches and other sport science and medical professionals. As well, at this stage, athletes must be mature enough to deliver an optimal performance on demand.

### Elite Athlete Development Emphasis

- Mastery and Maintenance
- Interdependent Athlete
- Realize Physical Potential
- Career Transition

### Programs Implicated

- National Team
- High Performance Coaches



## Implications For Parents

Throughout the athletes’ development they will likely train with many clubs and work with many different coaches and sport scientists. Family, however, is consistent, and this is why many top athletes will recognize family as one of the principle reasons for their success (Durand-Bush & Salmela, 2002). Even athletes competing at the Olympic level need family to provide support to them as individuals, and not just athletes. Dealing with media, handling setbacks at high profile competitions, and committing to long training hours requires a solid and unconditional support network.

## Implications For Coaches

Athletes at this stage of development should be highly intrinsically motivated and able to provide feedback on what they need to do to succeed. The coach should be viewed as a facilitator working with the athletes and other sport scientists and specialists to ensure that the athlete gets what they need to excel at the international level.

As a performer, the athlete should be capable of coming up with novel and creative ways of approaching training and competition while at the same time, remaining committed to a coach driven philosophy and remain focused on the core processes responsible for success (e.g. training effort, effective recovery, ongoing learning and reflection). This derives from the preceding years of knowing what works for them, and how they adapt to training and competition stresses.

It will also be important for the coach to begin to transition the athlete towards either retirement or transferring to longer distance events should it become apparent that they do not possess the necessary speed required for international success at the Olympic distance.



## Implications For Athletes

The primary sport specific task of this phase is refinement of all skills and abilities in order to achieve the best possible performance at the major international competitions (World Championships, Multisport Games, Olympic Games).

Success at this level is built upon successful completion of all the phases leading up to it. It is important that athletes apply what they have learned about themselves and sport to other areas of their life and to begin to think about the transition out of competitive international sport.

## Activities

- Work with a variety of coaches and sport scientists.
- Double or triple periodized year dependent on the competition schedule.
- Athlete provides feedback on direction and composition of training.
- Training is focused on major international competitions.

## Outcomes

- Podium performances at major international competitions.
- Transfer to longer distance events.
- Transition to Active for Life stage
- Transition to Retirement.

## Active for Life

The Active for Life phase can begin at any stage of development. However, it is hoped that all individuals will choose to participate in the Active Start and Fundamentals phases prior to exiting the elite athlete development stream. Achieving the goals of these two stages will increase the possibility that the individual will choose to adhere to regular physical activity throughout their life span. This phase of development encompasses all age group competitors that participate in triathlon in addition to former elite athletes who remain active through daily activity and participation. While the participants can participate in competitions they are seen as more recreational than high performance.

## Implications For Parents

Having fun while progressing through the Active Start and Fundamentals stages thus instilling positive experiences, will increase the possibility that participants will enter this stage upon exiting the competition stream. This should not be viewed as failure. Participants can re-enter the competition stream in another sport, or re-enter later in life (although this is highly unlikely) provided that they remain active and continue to follow best training practices.

## Implications For Coaches

The majority of athletes that coaches will work with will not possess the talent required to progress through the elite athlete development stream. These athletes will eventually need to transition from the competitive form of the sport to Active for Life. This is to be expected, as not everyone possesses the necessary physical attributes to perform at the international level in a draft legal Olympic Distance event.

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