Long Term Athlete Development Model Handbook

Revised July 2015

HKIS believes in offering a clear path to better sport, greater health, and higher achievement.

Children and adolescents need to do the right things at the right time to develop in their sport or activity. Our Long-Term Athlete Development (LTAD) model describes the things that we believe that athletes need to be doing at specific ages and stages.

Science, research and decades of experience all point to the same thing: kids and adults will get active, stay active, and even reach the greatest heights of sport achievement if they do the right things at the right times. This is the logic behind the Long-Term Athlete Development model (LTAD).

There are seven stages within the basic LTAD model:

- Stage 1: Active Start (0-6 years)
- Stage 2: FUNdamental (girls 6-8, boys 6-9)
- Stage 3: Learn to Train (girls 8-11, boys 9-12)
- Stage 4: Train to Train (girls 11-15, boys 12-16)
- Stage 5: Train to Compete (girls 15-21, boys 16-23)
- Stage 6: Train to Win (girls 18+, boys 19+)
- Stage 7: Active for Life (any age participant)

Stages 1, 2 and 3 develop physical literacy before puberty so children have the basic skills to be active for life. Physical literacy also provides the foundation for those who choose to pursue elite training in one sport or activity after age 12.

Stages 4, 5 and 6 provide elite training for those who want to specialize in one sport and compete at the highest level, maximizing the physical, mental and emotional development of each athlete.

Stage 7 is about staying Active for Life through lifelong participation in competitive or recreational sport or physical activity.

LTAD is for Everyone

LTAD is for all our students, not just elite athletes. It provides a route for athletes and participants of all levels of ability to develop from playground to Olympic podium, and it also allows individuals to choose their own training and competition goals at all points in between.

Active Start / R1 & R2

Early childhood is the time to get active. This is one of the most critical periods of development. Toddlers and preschool children are developing the neurological structures and emotional responses that will shape a lifetime of physical activity.

Movement is the child's first language. Early exposure to fundamental movement skills is essential as they form the first building blocks of physical literacy. It's critical to give children an active start through fun play and a variety of movement activities.

Physical activity is essential to developing each child's:

- Body
- Mind
- Emotions

It's not enough to hope that children will discover activity by themselves. Coaches, Parents and Teachers need to model activity for their children, and they must participate in the activity with them.

Coaches and teachers need to lead children in playful physical activities that help to fulfill their needs for daily and weekly physical activity. Structured and unstructured activities are equally important.

Accordingly, we will develop and deliver curricula and tools that support teaching age-appropriate physical activity and underline its importance.

From 0-6 years, boys and girls need to be engaged in daily active play. Through play and movement, they develop the fundamental movement skills that will provide the foundation for learning fundamental sports skills at older ages.

From ages 0-6 years, children need to be introduced to structured and unstructured active play that incorporates a variety of body movements. Children this age need to develop the ABCs of movement – Agility, Balance, Coordination and Speed.

The ABCs are essential for developing fundamental movement skills, and fundamental movement skills will later provide the foundation for fundamental sport skills. Together, fundamental movement skills and fundamental sport skills form the basis of physical literacy.
An early active start enhances development of brain function, physical coordination, gross motor skills, and posture and balance. An active start also helps children to build confidence, social skills, emotional control, and imagination while reducing stress and improving sleep.
Children in the Active Start stage should see physical activity as a fun and exciting part of everyday life.

FUNdamentals (Grades 1, 2 & 3)

Lower Primary aged school children need to be physically active every day. From reception to middle school, children need quality activity programs to develop the musculoskeletal and neurological structures that will support them for a lifetime of health and activity, as well as improved cognitive function and social well-being.

The Lower Primary school years span a period of important child development – physically, mentally and emotionally. In addition to our Physical Education curriculum, HKIS believes in offering a wide variety of opportunities to join sport and physical activity programs outside of school.

During the FUNdamental stage (females 6-8, males 6-9), children should develop fundamental movement skills, including the ABCs of Agility, Balance, Coordination and Speed.

Early elementary school age children need to participate in a variety of well-structured activities that develop basic skills. However, activities and programs need to maintain a focus on fun, and formal competition should only be minimally introduced.

Children should be exposed to a variety of sports and physical activities throughout the year, developing their interests and motivation while avoiding the danger of burnout through premature specialization.

Learning fundamental movement skills throughout this stage is a key to the overall development of physical literacy. The ABCs of Agility, Balance, Coordination and Speed are foundation blocks for developing fundamental movement skills.

The FUNdamental stage is the second of the three LTAD stages that are critical to the development of physical literacy. If children fail to develop physical literacy prior to the growth spurt in puberty, they will have limited ability to develop sport-specific skills at older ages and stages of training and development.

Obviously, this will significantly impact their desire to continue in lifelong physical activity and limit their opportunities to develop as an athlete.

Children in the FUNdamental stage are motivated primarily by the desire to have FUN. While they may participate in competitive sports where points are scored, they are far less concerned with competitive results than they are with having fun, being with friends and developing a strong self-esteem.

Children in the FUNdamental stage improve their fundamental movement skills through well-structured programs. Skill development should happen through a combination of unstructured play in safe and challenging environments and quality instruction from knowledgeable teachers/leaders/coaches in structured programs.

Children this age should not specialize in a single sport, unless they are participating in one of the few recognized early-specialization sports (e.g. gymnastics). If they have a preferred sport, they may take part in it two or three times a week, but they should participate in other sports and physical activities at least three to four times per week.

Children this age have a strong sense of what is "fair" and should be introduced to the simple rules and ethics of sports. Basic rules, tactics, decision-making and ethics of sport can be introduced.

Learn to Train (Grades 4, 5 & 6)

During the Learn to Train stage (females 8-11, males 9-12), children should be converting their fundamental movement skills into fundamental sport skills. This stage is "The Golden Age of Learning" for specific sport skills.

Children in the Learn to Train stage are ready to begin training according to more formalized methods. However, the emphasis is still on general sports skills suitable to a number of activities and we believe that a greater amount of time should be spent training and practicing skills than competing.

Children should not be tempted to specialize at this age through excessive single sport training or early position specialization in team sports. This should be avoided in most sports. Inappropriate or premature specialization can be detrimental to later stages of athlete development if the child is playing a late specialization sport. Premature specialization promotes one-sided development and increases the likelihood of injury and burnout. By this stage, children have developed clear ideas about the sports they like. Their enthusiasm and personal sense of success should be encouraged. The focus should be on playing at least 2-3 sports in different seasons through the year. Children should not focus only on one sport for an entire year.

The Learn to Train stage of LTAD is the most important stage for the development of sport-specific skills. This stage represents a sensitive period of accelerated adaptation to skills training and fine motor control. It is also a time when children enjoy practicing their skills and seeing their own improvement.

The Learn to Train stage ends when the growth spurt begins. The growth spurt disrupts coordination and motor control, making it more difficult to pick up and develop new sport skills.

While most children naturally enjoy healthy competition, skills training and practice should be the focus at Learn to Train – not winning. 70% of time in the sport should be spent in practice, and no more than

30% of time spent competing in formal games and competitions. (Competitive training activities count as part of the 70% training time.)

This is the time to focus on learning skills and to develop and refine all fundamental movement skills and learn overall sport skills. The brain is approaching adult size and complexity, and refined skill performance is easier to develop. This is an important time to work on flexibility. Stamina and strength should be developed through games, relays, and own-body weight exercises as opposed to more formalized physical training.

Train to Train (Grades 7, 8, 9 & 10)

The middle school years are an important time to develop good physical activity habits that promote health and fitness in youth. The Middle School years are important for establishing healthy body weights.
If elementary schools are ideal for developing physical literacy and fundamental skills, middle schools provide the perfect setting to develop and maintain physical fitness as they enter the growth spurt. This is also the time to continue converting fundamental movement skills into fundamental sport skills.

During the Train to Train stage (females 11-15, males 12-16), young athletes need to build an aerobic base and consolidate their sport- specific skills. Towards the end of the stage, they need to focus on strength and the anaerobic alactic energy system. Increased training hours are needed at this stage to develop each athlete's long-term potential.

The ages that define the Train to Train stage are based on the approximate onset and end of the adolescent growth spurt. This period is generally defined as ages 11 to 15 years for females and 12 to 16 years for males.

At this stage, athletes are ready to consolidate their basic sport-specific skills and tactics. It is also a major fitness development stage. The Train to Train stage makes or breaks the athlete. Athletes may exhibit special talent, play to win, and do their best, but they still need to allocate more time to training skills and physical capacities than competing in formal settings. To maximize their long-term potential, winning should remain a secondary emphasis.

General considerations during Train to Train
Emphasize suppleness (flexibility) training to accommodate the rapid growth of bones, tendons, ligaments, and muscles.

Address the sensitive periods of accelerated adaptation to strength training. For boys, the sensitive period for strength begins 12 to 18 months after PHV (Peak Height Velocity – The growth spurt). For girls, the sensitive period begins with whichever of the following occurs first in the individual: menarche or the onset of Peak Weight Velocity (PWV). Some girls will experience PWV prior to menarche, while others will experience menarche prior to PWV.
Both aerobic and strength trainability are dependent on the maturation of the athlete. For this reason, the timing of training emphasis may differ between athletes depending on whether they are early, average, or late maturers.

Athletes need to learn to cope with the physical and mental challenges of competition.
For all athletes, the use of body-size and skill-level appropriate equipment remains important.
Optimize training and competition ratios and follow a 60:40 percent training to competition ratio.

Too much competition wastes valuable training time; too little competition reduces the practical application and development of technique, tactics, and decision-making skills under realistic competition conditions.

Use talent identification to help athletes focus on two sports.
A key reason why many athletes hit a plateau during later stages of their development has to do with too much competition and not enough training during this stage.

Competition is most valuable when it is used to develop strategic and tactical understanding. The focus must be on the learning process and not the outcome.

Train to Compete (Grade 10+)

High school is an important time for teenagers to keep fit and explore opportunities in a broad range of sports and physical activities. Regular activity will help to maintain healthy body weights. It's also a chance for some to pursue excellence and achievement in sport.
Ideally, all high school students will have acquired physical literacy and fundamental skills during their elementary schooling, and they will have developed physical fitness during their middle school years. These skills and capacities are needed to participate in sport and activity at high school, and they are essential to stay active for life. Regular activity and healthy lifestyle habits will contribute to positive overall physical, emotional and psychological development.
High school may provide the only opportunity for some students to participate in structured sport and physical activity programs. High school programs can help students to identify one or two favorite sports and encourage them to take up a lifelong pursuit.

In the Train to Compete stage (females 15-21, males 16-23), athletes often choose one sport in which they will train to excel. Athletes will train to solidify their sport-specific and position-specific skills and all of their physical capacities.

At the Train to Compete stage of LTAD, this is where competition becomes "serious." Athletes enter this stage if they have chosen to specialize in one sport and excel at the highest level of competition possible.

Formal competition becomes more prominent in annual periodized training, competition and recovery plans, and includes major local and international events.

The Train to Compete stage of LTAD is a dress rehearsal for the Train to Win stage. Train to Compete maximizes all of the physical, mental, cognitive, and emotional capacities of the athlete. It also teaches the athlete how to handle the distractions of elite sport, such as travel, weather, different competition venues, media, spectators, and difficult opponents.
While winning does become a major focus during Train to Compete, coaches should help their athletes to select specific competitions that support strategic athlete development. The learning and development that occurs during these competitive events will prepare athletes for the next stage in their sporting progress, Train to Win.

Train to Win – Adults

The Train to Win stage (females 18+, males 19+) is the final stage of the LTAD high-performance stream. The HKIS LTAD plan is designed so that the stages have developed and optimized the skills, tactics, and ancillary capacities of each athlete such that they are ready to move to this final stage.

Active for Life

Active for Life is both a stage in, and an outcome of, the HKIS LTAD. It is the overall aim that in the long term, all athletes and participants will enjoy lifelong participation in a variety of competitive and recreational opportunities in sport and physical activity.
We never assume that LTAD in its current form is ever complete or final. HKIS operates from the position that it represents the best practices in coaching and athlete development, as they are understood today. By focusing on continuous improvement, LTAD will continuously evolve to accommodate new breakthroughs in sport science research, new innovations in technology, and evolving best practices in coaching. This will also ensure that LTAD reflects all emerging facets of physical activity, sport, recreation and education to ensure that it is inclusive of all types of activity.

The HKIS LTAD model is based on the model developed by the "Canadian Sport For Life".

Canadian Sport for Life *is a movement to improve the quality of sport and physical activity in Canada. CS4L links sport, education, recreation and health and aligns community, provincial and national programming. Canadian Sport for Life's* ***Long-Term Athlete Development*** *framework is a seven-stage training, competition and recovery pathway guiding an individual's experience in sport and physical activity from infancy through all phases of adulthood. Canadian Sport for Life and Long-Term Athlete Development represent a paradigm shift in the way Canadians lead and deliver sport and physical activity in Canada.*

To Learn more about the Canadian Model please see the website link below:
http://canadiansportforlife.ca/

One Page soccer Pathway:
http://canadasoccer.com/files/CSA_W2WC_Matrix_EN.pdf

Specialization (HKIS addition to LTAD)

Sports can be classified as either early or late specialization. Early specialization sports include artistic and acrobatic sports such as gymnastics, diving, and figure skating. These differ from late specialization sports in that very complex skills are learned before maturation since they cannot be fully mastered if taught after maturation. Most other sports are late specialization sports. However, all sports should be individually analyzed using international and national normative data to decide whether they are early or late specialization. If physical literacy is acquired before maturation, athletes can select a late specialization sport when they are between the ages of 12 and 15 and have the potential to rise to international stardom in that sport. Specializing before the age of 10 in late specialization sports contributes to

- one-sided, sport-specific preparation.
- lack of ABC's, the basic movement and sports skills.
- overuse injuries.
- early burnout.
- early retirement from training and competition.

Early involvement in the FUNdamentals stage and mastering basic sport skills and movements is essential in late specialization sports. Specialization occurs when an athlete chooses to train and compete in one or two sports exclusively. Specialization is inevitable and necessary for athletes who want to become high performers in their sport, but it must occur at the right age for the athlete to be successful.

Distinctions between Late-Specialization Sports

Further distinctions can be made within late specialization sports. At present, we further categorize late specialization sports as follows:

Late specialization – Early Engagement – Kinesthetic
Late Specialization – Early Engagement – Team
Late Specialization – Early Engagement – Visual
Common Late Specialization Sports
Late Specialization – Very Late or Transfer

Late Specialization – Early Engagement – Kinesthetic
The kinesthetic sports include Alpine Skiing, Freestyle Skiing, Snowboard, Luge, and Cross-Country Skiing. While these are late specialization sports, athletes need to develop a high level of kinesthetic feel for the surface they are moving on (snow or ice) at an early age; they need to engage early with snow or ice to be successful in the long term.

Late Specialization – Early Engagement – Team
Basketball, Ice Hockey, Netball, Soccer, Water Polo, and Field Hockey are late specialization sports where athletes need to develop a high level of feel for a ball or puck, with a bat or stick, in order to be successful. To develop this feel, they need to engage early in these sports to be successful in the long-term. However, since general movement skills and athletic ability are so important, early specialization in these sports is still not encouraged, as this can have a negative impact on the athlete.

Sport	Learn to Train Age	# of years	Train to Compete Age
Basketball	9	7	16
Ice Hockey	9	7	16
Netball	9	7	16
Soccer	9	7	16
Field Hockey	9	7	16

Late Specialization – Early Engagement – Visual

Tennis, Badminton, Fencing, Racquetball, and Squash are late specialization sports where athletes need to develop acute visual tracking of an object to a hand-held implement to be successful in the long term. Again, early engagement in these sports will significantly help to develop their visual tracking skills, but early specialization should still be avoided in favour of well-rounded development of movement skills and general athleticism.

Sport	Learn to Train Age	# of years	Train to Compete Age
Tennis	9	7	16
Badminton	9	7	16
Fencing	9	11	20
Squash	9	8	17

Common Late Specialization Sports

There are many sports that fall into the "common" category of late specialization, where the athlete benefits from first developing general athleticism through a variety of sports. These include:

Sport	Learn to Train Age	# of years	Train to Compete Age
Athletics (varies depending on event group)	9	6 or 7	15 or 16
Baseball (early engagement of visual tracking sports)	9	6 or 7	15 or 16
Bowling	9	6 or 7	15 or 16
Judo	9	6 or 7	15 or 16
Karate	9	6 or 7	15 or 16
Lacrosse (early engagement in visual tracking sports)	9	6 or 7	15 or 16
Rugby (large variation depending on position)	9	6 or 7	15 or 16
Sailing	9	6 or 7	15 or 16
Softball (early engagement in visual tracking sports)	9	6 or 7	15 or 16
Taekwondo	9	6 or 7	15 or 16
Weightlifting	9	6 or 7	15 or 16

Late Specialization – Very Late or Transfer

Sports that are suitable to very late specialization or transfer from other sports include Bobsleigh, Cycling, Golf, Rowing, Triathlon, Volleyball (indoor and beach), Wakeboard and Water Ski. Athletes in

these sports require high degrees of physical power to be successful; therefore, they need to be physically mature to achieve long-term success. Since these are very late specialization sports, athletes can transfer late from other sports and still find success.

Sport	Learn to Train Age	# of years	Train to Compete Age
Cycling (power and endurance to move bike)	9	9	18
Golf (power to hit for distance)	9	9	18
Rowing (power and endurance to move boat)	10	9	19
Triathlon (power and endurance)	11	8	19
Volleyball (Indoor) (power in relation to net)	9	11	20

Remember! Specializing early in a late-specialization sport – and doing only a single sport at an early age – contributes to one-sided physical preparation, one-sided technical-tactical preparation, overuse injuries, and dropout from sport and activity.