



# A PARENT'S GUIDE TO SPEED SKATING

A Speed Skating Canada LTAD Initiative

# The Core Values of Long Term Athlete Development

- LTAD CANADA 2007

*Long term athlete development is anchored in the belief that each child, player and athlete is different, with individual needs and rates of development.*

*Long term athlete development provides a framework for planning and decision-making on athlete development, NOT a rigid template .*

*Long term athlete development is concerned with the holistic development of children, players and athletes.*

*Long term athlete development stages overlap and are unique to each individual.*

*Long term athlete development recognizes the significance of transitions in the development of children, players and athletes.*

*Long term athlete development recognizes that the accumulation of deliberate practice and training age is linear and that the development of key capacities is non-linear and individualized.*



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# Speed Skating in Canada

Winter, and winter sports are fixtures of the Canadian landscape, deeply rooted in Canadian culture. Speed skating is an integral part of this culture. The first documented race in Canada occurred in 1854 on the St-Lawrence River between three officers of the British army, racing from Quebec City to Montreal.

Speed skating founded the first amateur sporting association in Canada in 1887, and the sport has been growing constantly ever since. Speed skating is now practiced in 145 clubs throughout Canada in all 10 provinces and 3 territories with more than 11,000 members. The high quality delivery of these programs has played an important role in making speed skating Canada's most successful Olympic sport, winning 51 Olympic medals between 1924 and 2006. In the 1998, 2002 and 2006 Olympics speed skating has been responsible for more than 50% of Canada's medals. While we celebrate our rich history Speed Skating Canada cannot rest on its laurels as we relentlessly seek excellence for all participants in our sport.

For Speed Skating Canada, sport is not only about results on the ice, but about personal excellence. Speed skating allows participants to develop self-esteem, sense of perseverance, self-discipline and teamwork at the same time as they develop skating skills and physical fitness. Speed Skating Canada is committed to providing a safe training and competition environment using a long term holistic approach to athlete development. We believe that sport is an apprenticeship for life.

In partnership with the provincial speed skating association and their respective clubs, Speed Skating Canada is intent on continuing their pursuit of excellence by offering high quality programs that allow participants to learn how to skate, have fun, and experience the pure thrill of speed on ice while achieving their own individual goals.

## About Speed Skating



Picture: Douglas Duncan

Speed skating can be practiced on any ice surface with an objective of skating fast; however, within the confines of organised sport two primary disciplines exist: short track and long track. The vast majority of speed skaters are introduced to the sport through short track. Once they are hooked on the sport they try long track. Speed skaters skate on long blades ranging from 30 to 45 cm (12 to 18 inches) depending the size and strength of skaters. The long blades allow skaters to apply more power to the ice and have a longer push than with hockey skates. While most skaters skate on long blades, you can easily get a feel for the skating technique and what racing is about skating with any pair of skates. For participants just learning to skate, hockey skates may be preferable. They offer more stability, and are easier to turn with.

Competitors in both disciplines race counter clockwise on an oval track, 111.12 meters for short track, and 400m in long track. While racing occurs in a counter-clockwise direction, participants are encouraged to practice skating in both directions as it helps improve agility and coordination, and maintain balanced muscular development. Long track also encompasses the rapidly growing sport of marathon racing which is skated on traditional long track ovals, as well as on frozen lakes and canals.

While short track and long track appear quite distinct on the international scene, they are very complementary for an athlete's development. In fact, prior to the arrival of indoor ovals, and the recognition of short track as an Olympic sport, short track was a popular means of cross-training for long track speed skaters.

### **Short Track Speed Skating**

**Facts :** Was started in Canada, and continues to be dominated by Canadians. Short track was first introduced to the Olympic Games as a demonstration sport at the 1988 Olympics in Calgary. It became an official medal event at the 1992 Olympics in Albertville. Canada's National Short Track team train out of two National Training Centres based in Montreal and Calgary.



Picture: Robert Strukelj

**Racing style :** Skaters compete in groups of 4 to 8 skaters at a time, as well as in relay races consisting of 4 skaters per team. Skaters advance through a series of rounds until they reach the finals.



**Distances raced** : 55M through 3000M depending on the age categories. The distances raced internationally are: 500M, 1000M, 1500M, and 3000M and the relay.

**Equipment required for beginners** : Skates, helmet, cut resistant gloves, neck-guard with bib, hard plastic shin pads, cloth and plastic skate guards, a skin suit or any other comfortable long sleeved clothing. Additional safety equipment that Speed Skating Canada recommends and some provinces and territories require includes safety glasses and cut-resistant socks. Specific details, including minimum standards for each piece of equipment have been included as part of the glossary of terms.

### **Long Track Speed Skating**

**Facts** : Is generally practiced outdoors in Canada, however, since 1987 Canada has benefitted from the indoor Calgary Olympic Oval. One of the best in the world, it has been host to the Olympic Games, World Championships and World Cups and is one of two training centres for Canada's National Long Track team. The other training centre is located in Quebec City.



Picture: Arno Hoogveld

### **Racing styles:**

**Mass Start** : 4 to 8 skaters race distances between 50M and 3000M with Short Track racing rules. Mass start is primarily a developmental event raced by skaters age 16 and under.

**Olympic Style** : Skaters race 2 by 2 against the clock with the distances ranging from 100m to 10 000m depending on the sex of competitors and their age category. The international distances are:

Men: 100M, 500M, 1000M, 1500M, 5000M, 10 000M.

Women: 100M, 500M, 1000M, 1500M, 3000M, 5000M

**Team Pursuit**: Two teams of three or four skaters race each other starting on opposite sides of the ice, the fastest team wins. Internationally, men race 8 laps and women 6.

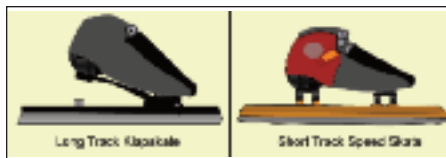
**Marathon** : Marathons are a mass start race, with all competitors starting at the same time. Distances vary from 5km up to 200km depending on the event; the most common distances raced are 10km, 25km and 50km.

**Equipment required for beginners** : Skates and warm clothing. Cut proof socks are recommended, and required by some provinces and territories. For mass start racing short track racing equipment is recommended, and required in some provinces and territories. Specific details, including minimum standards for each piece of equipment have been included as part of the glossary of terms.

## Equipment and Maintenance

There are several differences between short track and long track equipment, many of which relate to the clothing and protective equipment worn. The primary differences, however, are found with the boot and the blade. A short track boot is slightly stiffer and higher cut to provide more support for the tight corner. A short track blade is adjusted to make it easier to navigate the corner, while a long track blade is set generate power. Detailed explanations of different terms referred to in this text are available in the Glossary of Terms.

The other significant difference between the two disciplines is the skate used by elite level long track skaters known as the Klapskate. Named for the sound it makes, this skate has a detachable heel that allows



the skater a longer stride. While necessary for elite skating, the Klapskate is in no way necessary for a skater to enjoy long track skating or to get a taste of their first competitions. Most competitors skate on their short track skates, or fixed blade long track skates until their early teens before making the switch to the Klapskate.

Of particular importance when choosing equipment for speed skating is the fit of the equipment. Speed skating is about feeling the ice, therefore it is important the all equipment fits properly. Avoid boots or blades to “grow into” as this will negatively influence the capacity of the participant to acquire skills. It is also important to properly dry out all equipment between each practice and wash it regularly. Most clubs offer skate rentals for beginning skaters, while safety equipment is generally the responsibility of the participant after the first couple of practices.

### The boot

#### When selecting a speed skating boot be sure :

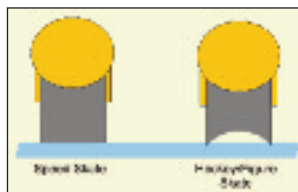
- The boot effectively supports the foot and the ankle.
- The boot allows the participant to move their knee as far forward as possible. The majority of boots have two sets of laces to make this process easier, with the second set of laces being tied above the flexion point of the ankle.
- The boot needs to be tight but comfortable without cutting off the participants’ circulation. If the boot does not fit snugly, or is not properly tied, the participant’s foot will slide around inside the boot and decrease control of the blade.



- To purchase boots that can be heat moulded. This will improve the fit and increase comfort for the participant.
- To dry the leather out slowly if the boots become wet. Drying the boot too quickly will damage the leather.
- To keep spare laces available as they can break at any time. Laces should be kept relatively short so as to avoid tripping over them.

## The Blades

Speed skating blades are quite different than those used for hockey and figure skating, not only are they longer, but they are also flat ground, see illustration. This allows the skater to glide more effectively, but also requires that speed skating blades be sharpened by hand. If speed skates are sharpened using a machine designed for hockey or figure skates it will permanently damage the blades. For more information regarding sharpening, consult the interactive lesson available at [www.speedskating.ca](http://www.speedskating.ca).



The set-up of the blades for a speed skater is just as important as the boot. For developing skaters maintaining sharp blades with a proper rocker and bend will have the most significant influence on a blade's performance, far more than the actual quality of the blade. Improper blade set up often limits a participant's ability to perform a skill, making the sport less enjoyable. Improper blade set-up is the equivalent of not properly inflating the tires on a bicycle.

### To properly maintain blades:

- Be sure to fully dry the blades after each use to prevent rust from developing.
- Store the blades in a cotton skate cover, between practices, not in plastic skate guards where condensation will accumulate on the blades and cause them to rust.
- Use a hard-plastic skate guard when going on and off the ice.
- Sharpen the blades regularly. It is best to sharpen quickly on a regular basis rather than an occasional long sharpening job.
- Check the edge of the blade with a finger nail to check for sharpness and burr. If you are able to scrape some of your nail, the blade does not need to be sharpened. When checking for burr, you want to be able to scrape your fingernail upwards on the side of the blade without catching it on a piece metal.
- Have the rocker and bend on skates checked at least twice (beginning and mid-season) per season by a club coach or equipment person.

## Competitions



Picture: Simon Pichette

Racing and competition are important parts of the speed skating experience. After all, the sport is about speed! As in many sports, speed skating races are timed and the goal is to cover a specific distance faster than other competitors. For newcomers to the sport, the majority of races will occur during practices. The distances will be determined by the coaches based on each participant's stage of development.

As participants progress in the sport, and the desire to compete increases it is possible to take part in structured competitions. Competitions occur at regional, provincial/territorial, national and international levels. The events vary within each level of competition based on the discipline (short track or long track) and the stage of development of participants. National and international levels of competitions are reserved for participants who are in stages 3, 4 and 5 of Speed Skating Canada's Long Term Athlete Development Model.

Regional and provincial/territorial levels of competition are managed by each branch. They determine the optimal competition system for the long term development of athletes within their context (number of participants, availability of ice time). Speed Skating Canada provides general guidelines for provinces and territories with regards to distances based on the participant's age. It is ultimately up to each branch to determine the best system for its members. It should then be left to the coaches to assist parents and skaters in choosing the appropriate competitions for their stage of development.

When choosing an appropriate competition it is important to look at many factors including:

1. FUN - The participant wants to race and is looking forward to the opportunity to race against people from other clubs.
2. Skating experience - How many races will the participant get to skate in one day? Will the other competitors be of a similar skill level? Does the event have a reputation as being well run? For young skaters the objective should be to skate as many races as possible in as little time as possible, with closely matched races. In terms of number of races, racing once every forty-five minutes to an hour is ideal.
3. Learning - Will the competition provide a good opportunity for the participant to learn about speed skating. Factors to consider include: Who will be coaching at the event; Which older skaters from your club will be participating to serve as mentors; Who will be participating from other clubs, etc...

4. Social/Cultural - Will the participant's friends be there? Is there a possibility to visit family and friends while at the event? Is there a possibility to visit a new city or take in new cultural or educational activities while we are at the competition.

### Competition Officials

As in many sports, speed skating depends on the involvement of numerous volunteer officials who offer their time and expertise to ensure that the competitions are both safe and fair.

Some officials will be in direct contact with competitors during competitions, while many more work behind the scenes, ensuring that the event runs smoothly. The roles of the primary officials are described below. It is important to keep in mind that if during an event there is a decision which you are not in agreement with, or an error in the results, it is the role of the coach, not the parent or competitor, to communicate with the competition officials. At no time, should a parent or competitor intervene directly with a competition official with regards to decisions made.

The chief official of a competition is the referee. The referee oversees the assignment of competitors to heats in mass start and short track, and to pairs in long track. The assistant referees work with the chief referee to ensure fair racing, each being assigned responsibility to different portions of the track. Referees have the power to disqualify and can also advance to the next round a skater who



Picture: Simon Pichette

has been knocked down by another skater that has committed a passing infraction in short track and mass start. In Olympic style racing the referee may award an opportunity to reskate a race to a participant who has been interfered with.

The starter is responsible for ensuring that all skaters receive a fair start. Short track and mass start skaters are each allowed one (1) false start before disqualification. In long track (Olympic style) one (1) false start is permitted per race.

The timers provide manual back-up to the electronic timing system and time the event when electronic timing equipment is not available. The judges determine the placing of skaters. Lap recorders keep track of the laps remaining in the race and communicate this information to the skaters. The lap recorder also rings a bell to signify when a skater or team has one lap remaining. The recorder keeps track



of race results and prepares the final standings. In major short track events the competitor's steward assigns skaters to heats.

In addition to these front line roles several track stewards work to ensure that blocks remain properly placed on the track, and that water is put on the ice to fill the ruts caused by previous races. The announcer has a very important role to play, with the possibility of creating an exciting atmosphere within the arena in addition to communicating schedule changes and race information to all participants.



Picture: Douglas Duncan

Others volunteers collect skate guards between races, post results, transport paperwork between officials, prepare food and drinks for officials, coordinate medal presentations, support media, recruit and service event sponsors, and provide maintenance functions. It is often through volunteering in these types of functions that individuals develop the interest and self confidence to become involved as technical officials.

Many parents get involved as officials while their children are participating in the sport, and some continue on long after their children's involvement, moving on to officiate national and international events. Officials play a critical role in ensuring that competitions are safe, fair and run smoothly. Speed Skating Canada, in partnership with its provincial and territorial branches offer free training for those interested in becoming officials. Contact your provincial/territorial branch for more information.

## Competition Rules

Competition rules exist to ensure that the events are fair and safe. Infractions of the rules result in disqualification from the race.

Skaters are responsible for wearing the safety equipment required by the sanctioning organisation, and will not be allowed to compete without it. A sanction is generally issued by a branch and/or Speed Skating Canada and constitutes an agreement as to which rules will be applied for the running of an event.

In short track and mass start competition, overtaking is allowed but the skater who overtakes is responsible for any collision or obstruction that results from the overtaking. A few basic rules govern passing. The lead skater has the right-of-way. The passing skater assumes responsibility for avoiding body contact. The most frequent passing infraction, called charging the block, occurs when a skater passes on the inside of the congested area near the top of the corner. An experienced skater won't let anyone pass on the inside and can, by holding his or her track, force overtaking skaters to back off or go around the outside. Skaters must remain on the outside of blocks marking the track.

Another common cause for disqualification is changing lanes or altering the course at the finish. Competitors are supposed to skate in a straight line from the end of the corner to the finish line; veering inside or outside to maintain the lead is grounds for disqualification.



Picture: Douglas Duncan

## The Long Term Development of Your Child



The Long Term Athlete Development Model (LTAD) "*Find Your Edge*" is a reference document produced by Speed Skating Canada to help guide the development of athletes in all stages of development. The Long Term Athlete Development Model is not a specific training program, but rather a tool to assist speed skaters, their parents, program administrators, officials and coaches in making sport decisions that are in the best interest of the individual's long term development. This tool is the result of collaboration between experts in speed skating, childhood growth and development, and the broader sport science

community. Their work has created a framework for training, competition and recovery for participants in all stages of the sport.

A long term approach to athlete development is about holistic development. It takes into account not only on-ice performance, but the physical, social and intellectual development of participants. Speed Skating Canada encourage participants to try not only speed skating, but as many sports as possible while they are young; something that has been done by many of today's top athletes. During the first stages of development, participants are taught the FUNdamental skills necessary to enjoy sport; motor skills and basic sporting skills such as running, jumping, throwing and skating. Participants should have a solid foundation of the FUNdamental skills before they are introduced to the notion of competition. For those interested, speed skating allows participants to further pursue the development of speed skating specific skills allowing them to achieve significant speeds. As participants reach the third stage of athlete development and beyond FUNdamental sporting skills are combined with physical and tactical training, and sport psychology to develop the skill set necessary to achieve the highest levels of performance. "*Find Your Edge*" proposes five (5) stages of athlete development, ensuring that athletes do the right training at the right time and take advantage of optimal windows of trainability.

The LTAD approach is not unique to speed skating. At least 11 leading sporting nations throughout the world have adopted an LTAD approach and Sport Canada now requires all sports that it funds to have an LTAD plan. This guide, as well as the "*Find Your Edge*" overview document are just two of the many initiatives that Speed Skating Canada is currently putting in place to support the long term development of speed skaters across Canada.



# The 5 Stages of Speed Skating Canada's Long Term Athlete Development Model

## **STAGE 1: *FUNDamentals***

Fundamental movement skills

Approximate ages: Males 6-9 years and Females 6-8 years

## **STAGE 2: *Learning to Train***

Fundamental sport and motor skills including speed skating skills

Approximate ages: Males 9-12 years and Females 8-11 years

## **STAGE 3: *Training to Train***

Building the engine and sport specific skills

Approximate ages: Males 12-16 years and Females 11-15 years

## **STAGE 4.1: *Learning to Compete***

Optimizing the engine, speed skating specific skills and fitness

Approximate ages: Males 16-18 years +/- and Females 15-17 years +/-

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## **STAGE 4.2: *Training to Compete***

Further optimizing the engine, speed skating specific skills and fitness

Approximate ages: Males 18-21 years +/- and Females 17-21 years +/-

## **STAGE 5.1: *Learning to Win***

Maximizing the engine, speed skating specific skills and fitness

Approximate ages: Males 21-23 years +/- and Females 21-23 years +/- (short track)

Approximate ages: Males 21-25 years +/- and Females 21-25 years +/- (long track)

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## **STAGE 5.2: *Training to Win***

Further maximizing the engine, speed skating specific skills and fitness

Approximate ages: Males 23 years and Females 23 years + (short track)

Approximate ages: Males 25 years and Females 25 years + (long track)

**Note:** The ages suggested for each stage, are based on average growth and development of participants and the acquisition of specific sets of skills by those participants. The specific ages will vary for each individual.

## Stage 1- FUNdamentals

*Males 6 to 9 years, Females 6 to 8 years*

*General recommendations for speed skating*

**Practices:** 1 to 3 - 45 minute practices each week

**Length of the season :** 5 to 6 months

**Competitions per season :** 0 to 6



Picture: Douglas Duncan

***During the FUNdamentals stage the most important element is that every skater has FUN.***

Participant development objectives include:

- Learning the fundamental movement skills necessary to practice the vast majority of sports. Some examples of fundamental movement skills include running, jumping, throwing, rolling, **skating** and swimming.
- Develop **Agility, Balance, Coordination and Speed**, the ABCs of athleticism as well as motor skills. This general development should also include orientation in time and space; reaction time; adaptation to objects; dexterity; and frequency of movement. Young participants may find these skills difficult at first, but with practice they will rapidly improve.
- At a young age, it is these skills and not their strength and stamina (endurance) that will help determine a child's long term athletic potential.
- Encouraging participants to try many different sports. This will allow not only a more holistic development of athletic abilities, but allow the participant to discover a sport that they are truly passionate about.
- Learning the basic speed skating position, how to start, how to push and how to turn. Skaters should learn how to perform the skills in all directions, skating forwards and backwards, as well as turning clockwise and counter clockwise.
- Participating regularly in races held during practice time, and occasionally in local competitions. The practical objective being to get a feel for racing and competition. The main objective is to have **FUN**. The results of these competitions have absolutely no bearing on the skater's long term potential.
- Fostering an understanding and appreciation of the speed skating environment including basic rules and ethical standards.
- Ensuring equipment is comfortable and fits properly.

# The ABCs of Athleticism

The ABCs of athleticism (**A**gility, **B**alance, **C**oordination, **S**peed) are the foundation on which sport skills are built. When combined with fundamental movement skills they define what is best described as the “physical literacy” of the participant. Physically literate individuals are those that people tend to refer to as the “natural athlete”. Speed Skating Canada recognizes the importance of the ABCs of athleticism and recommends practicing these skills during all training sessions. These skills can be defined as follows:



Picture: Tuan Do-duc

**A**gility refers to the ability of a participant to rapidly and voluntarily displace their body in all directions or to maintain their body in a stable position while displacing their base of support.



Picture: Mathieu Couture

**B**alance refers to the capacity of a participant to maintain their centre of gravity in a stable position, or travelling in a continuous line with the assistance of small muscle contractions.



Picture: Patrick McKoy

**C**oordination refers to the capacity of a participant to perform rapid movements which are voluntarily synchronized or de-synchronized.



Picture: Arno Hoogveld

**S**peed is defined as the time required to cover a specific distance. In reference to speed as a fundamental skill we are referring to both the frequency of movement and reaction time.



## Stage 2 - Learning to Train

*Males 9 to 12 years, Females 8 to 11 years*

*General recommendations for speed skating*

**Practices:** 2 to 4 - 60 minute practices each week

**Length of the season :** 5 to 7 months

**Competitions per season :** 4 to 8



Picture: Ghislain Mailloux

***The learning to train stage is the optimal window of trainability for the development of sport specific skills.***

During this stage, coaches will focus on the development of skating technique while participants should :

- Focus on having fun while developing general and sport specific skills.
- Continue to develop the ABCs (Agility, Balance, Coordination, Speed) of athleticism. This critical if an athlete is to reach their full athletic potential as an adult.
- Develop and refine speed skating technique integrating the ABCs. This is the optimal window of trainability for sport specific skills. Skaters who develop good technique during this stage will maintain it for life. The focus should be on skill development and not training volumes (eg. laps)
- Introduce off-ice warm-ups to participants if this has not been done during stage 1. Off-ice warm-ups provide an excellent opportunity to develop the ABCs, and allow the participant to maximise the ice time available to him or her.
- Develop endurance through games and on ice activities such as relays and obstacle courses.
- Begin to set goals when competing. At this stage, the goals should be achievable and should be process versus outcome oriented.
- Participate in training sessions that include both games and activities designed to develop specific skills.
- Focus on improving personal best times and experimenting with different race tactics during competitions.

- Continue to participate in multiple sports throughout the year. Speed Skating Canada's Long Term Athlete Development Model and the Canadian Sport For Life resource paper recommend at least two other sports in addition to speed skating.
- Try both short track and long track speed skating if this has not already been done. Practicing both disciplines offers different challenges and allows for a better long term development of the skater by diversifying the skater's skill development.
- Consider participating in summer training towards the end of this stage. This could be once a week for July or August or at summer camp. These sessions should not prevent the participation in other sports.
- Be aware of the participant's rate of growth towards the end of this stage, particularly with girls as their growth spurt may be starting. Consult the section pertaining to growth, development and training for more information.
- If the participant started late in speed skating and is not as skilled as other participants, do not be concerned, they will rapidly (within 1 to 2 seasons) catch up to skaters who have been skating for several years. In fact, many of Canada's current national team members began speed skating during stage 2.



Picture: Douglas Duncan

***The Learning to Train and Training to Train Stages  
are the most important stages of athletic preparation.  
During these stages, we make or break a skater!***

***- Find Your Edge Resource Document***

## Stages 3, 4 and 5

During stages 1 and 2 the focus of LTAD is on the development of general athletic abilities and skating skills, as well as developing the participant's confidence in these abilities. This leads the participants into stage 3. Stage 3 is a critical period in athlete development, as it is often the stage that will make or break an athlete's career.



Picture: Fran Harris

### Stage 3 - Training to Train, key considerations:

- A significant period of change for all participants both physically, psychologically and emotionally.
- Most individuals experience the onset of Peak Height Velocity (PHV) more commonly known as their growth spurt during this stage of development. Individuals of the same chronological age may have up to 4 years difference biologically. Consult the section pertaining to Growth, Development and Training for more information.
- Windows of optimal trainability for Strength, Speed and Stamina occur during this stage. Focus should be on training, not competition as the physical foundation for physical development is laid here. Overcompeting in stage 3 will result in the windows of optimal trainability being missed.
- Following PHV speed skating training volumes should increase from stage 2 to recommendations to 5 to 7 sessions per week.
- When counting training volume, count activities in all sports as well as school sports, not just activities in one specific sport. Beware of overtraining, rest and recovery is an essential part of training.
- Communication between coaches, parents and participants is critical. Coaches in all sports, as well as teachers at school need to be informed of a participant's various activities so that they can monitor fatigue and provide proper recovery time.
- The social element of sport must be maintained. When too much emphasis is placed on competition, participants often lose interest and will quit sport all together. This can lead to a negative perception of sport and a sedentary lifestyle.



- Participants may experience pressure from friends, family, coaches to specialize in a given discipline of speed skating, choose a sport, or reduce sport activities to focus on school during this stage. It is okay to specialize towards the end of this stage, however, it is not necessary.
- Participants are encouraged to make the choice to specialize when they are ready, and to be able to live out their competitive dreams in different sports. Participants who have been active in many sports, are likely to have goals that they want to achieve in each one, before they are willing to specialize.
- Participants will continue to develop and make adjustments to their speed skating technique as their physical strength and speed increases.
- Participants will be increasingly introduced to racing tactics and strategies.

#### **Stages 4 and 5, key considerations:**

- Objectives of these stages are primarily for individuals who are looking to perform at a national and international level.
- Athletes specialize in one sport, and generally one discipline train for the purpose of results at specific events. Athletes train year round, primarily within training centre programs.
- During Stage 4 the focus is on the development of physical capacity and racing skills, while Stage 5 is for refinement.
- Participants choosing not to pursue objectives at the national and international level have the opportunity to continue to race and participate in the sport in an environment adapted to their skill level. They are also encouraged to remain active participants and coaches, officials and volunteers within the sport.

For more specific information regarding stages 3 and 4 consult Speed Skating Canada's Long Term Athlete Development model and the stage specific manuals. Speak to a representative of your club, or contact Speed Skating Canada directly for more information.

## Growth, Development and Training

The rate at which a child's growth and development occurs has a significant influence on the training of athletic qualities. Children, who mature rapidly, will generally find their athletic performance ahead of average and late maturers during stage 3 of the LTAD. Interestingly, those individuals whose growth spurt (peak height velocity) occurs at an older age (late maturers) often develop into the most talented athletes, provided that they benefited from a quality training program. The higher level of talent can be related to the fact that they have benefited from a prolonged optimal window of trainability for skill development. Speed skating is full of examples of late maturing athletes who have had great international success, Cindy Klassen, Catriona Lemay-Doan, Charles Hamelin, Mathieu Turcotte, Arne Dankers, Amanda Overland, just to name a few.

The principles of LTAD rely heavily on the capacity to identify early, average and late maturers so as to develop training and competition plans that take full advantage of the optimal windows of trainability. It is possible to identify these windows by closely monitoring a child's growth, so as to detect the onset of peak height velocity (PHV).

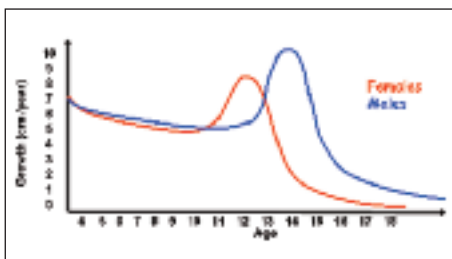


Figure 1: Canadian Sport For Life

It is possible to monitor PHV by measuring a child on annual basis, and generating a chart similar to the one shown in Figure 1. When an increase in the rate of growth is observed it is recommended that the frequency of measurement be increased to once every 3 months so as to effectively identify the peak. For more information regarding the measurement of PHV visit Speed Skating Canada's website at [www.speedskating.ca](http://www.speedskating.ca).

Parents have an important role to play in the application of the LTAD in their child's sports program. A parent is the person best positioned to stay abreast of a child's different sporting activities, and to monitoring their progression towards PHV. With regular updates regarding a child's growth and development and sporting activities the club coach will be able to effectively adapt the child's training program to meet their specific needs. While there are many people who may share the same chronological age, they are not necessarily at the same stage of development, or biological age. At the age of 14, individuals can be up to 2 years younger or older than their chronological age, meaning a spread of up to 4 years in terms of development. The picture on the left shows two 14 year old speed skaters, but are they both 14 years old biologically?



Picture: Shawn Holman

# The Optimal Windows of Trainability

When designing programs, Speed Skating Canada’s objective is to optimise the development of each participant, while taking into consideration the differences in each athlete’s growth and development. In his book, “*Sports Training Principles*” F.W. Dick identifies the five basic S’s of training and performance: Stamina (Endurance); Strength; Speed; Skill (motor and sport specific); and Suppleness (Flexibility).

Systematically developing the 5 S’s in combination with mental training and a rest and recovery plan will allow an athlete to reach their full athletic potential between the ages of 20 and 30 years old. While this may seem very far off at this point in time, the long term potential of an athlete is highly dependant on what has been done at a young age. While all physical qualities are trainable at all ages, there are significant advantages to training some qualities, while avoiding others at certain points so as to take full advantage of the optimal windows of trainability related to the growth and development of each individual. For this reason it is very important to closely monitor peak height velocity (PHV). PHV makes it possible to identify where each child is at in their growth and adjust their training in consequence. The graph in Figure 2 below identifies the optimal windows of trainability based on an average individual’s PHV chart, while the text on the next page explains each optimal window of trainability in relation to the 5 S’s of training and performance.

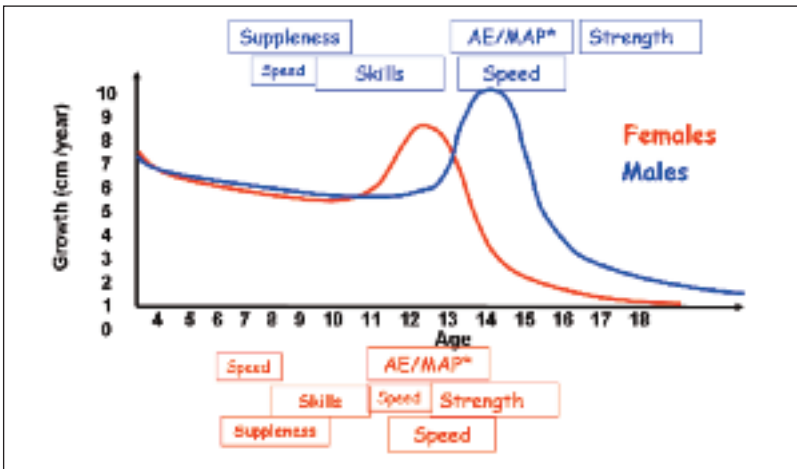


Figure 2: Canadian Sport For Life

AE = Aerobic Endurance

MAP = Maximum Aerobic Power



## **Stamina (Endurance)**

The optimal window of trainability occurs at the onset of PHV. Aerobic capacity training is recommended before skaters reach PHV. Prior to this period stamina is generally developed through games and skill development activities and not through targeted training sessions. Aerobic power should be introduced progressively as the growth rate decelerates.

## **Strength**

The optimal window of trainability for girls is immediately after PHV or at the onset of menarche (menstruation), while for boys it is 12 to 18 months after PHV.

## **Speed**

For boys, the first speed training window occurs between the ages of 7 and 9 years and the second window occurs between the ages of 13 to 16. For girls, the first speed training window occurs between the ages of 6 and 8 years and the second window occurs between the ages of 11 and 13 years. During the first window of trainability the focus should be on speed activities of 5 seconds or less, primarily focused on reaction time and improving synchronisation in rapid movements. The second window of trainability seeks to develop a more sport specific speed quality with intervals lasting up to 20 seconds.

## **Skill**

The ABCs of athleticism and the development of FUNdamental movement skills play a significant role in the development of sport skills prior to the onset of PHV. The window of optimal trainability for sport specific skill training for boys takes place between the ages of 9 and 12 and between the ages of 8 and 11 for girls. It should be noted that participants for whom the onset of PHV occurs later will benefit from a prolonged window of trainability for sport specific skills.

## **Suppleness (Flexibility)**

The optimal window of trainability for suppleness in both girls and boys occurs between age of 6 and 10 years old. Special attention should be paid to suppleness during PHV.

# Sport Nutrition



Picture: Douglas Duncan

In speed skating, as with other sports it is important to maintain good eating habits. This does not mean that a participant needs to completely change how they eat, but rather they need to adapt their eating habits to reflect a physically active lifestyle. As the level of activity increases, so does energy consumption, resulting in increased need for food; similarly, the need to hydrate increases. Water serves as a coolant through perspiration, as well transporting essential nutrients in the blood stream.

In training, as in competition nutrition plays a significant role in athletic performance. The following tips will assist participants in making healthy nutritional choices, adapted to their specific needs:

- Maintain a diet that is rich in carbohydrates (pasta, whole grains, rice, potatoes) and protein (meat, dairy products, nuts) as well as fruits and vegetables (a high source of vitamins and minerals and contribute to the consumption of carbohydrates). The diet should be consistent with Canada's Food Guide.
- Active children consume more energy than an average child. Children are also continually growing. It is therefore normal for a child to gain weight over time. If a child goes through a period of three or four months without gaining any weight it is likely that they are not consuming enough calories in a day for their level of activity.
- It is recommended that participants have a snack prior to training sessions to keep their energy level high. The snack should be taken one to two hours before the training session and should consist of food that is easy to digest.
- A water bottle should be brought to practice and used throughout, at least once every 15 to 20 minutes. Coaches will provide breaks for hydration within their practices. For health and hygienic reasons, bottles should not be shared between participants
- Water is the best option for hydration when activities last less than one hour, however, children often prefer to drink something with taste. A sport drink diluted with water (50%) or fruit juices similarly diluted are good options. If using fruit juice it is recommended to add a pinch of salt as the addition of salt will increase thirst and favour absorption by the body. If using a sport drink it is not necessary to add salt as they are already designed to optimise absorption.



- A drink rich in carbohydrates containing some protein should be taken immediately after practices. Eating or drinking something immediately after a practice helps accelerate the recovery process by quickly providing the body with the energy to replace that which has been used.

For more information on this subject speak with your club coach or consult one of the following websites:

Coaching Association of Canada's Sport Nutrition information:  
<http://www.coach.ca/eng/nutrition/index.cfm>

Canada's Food Guide, includes a section pertaining to physical activity:  
[http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/index\\_e.html](http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/index_e.html)



Picture: Douglas Duncan



## A Skater's On-ice Responsibilities

Speed skating and skating in general is a lot of fun and wonderful family activity. Speed skating prides itself on a maintaining a high ethical standard and providing a safe and welcoming environment for all, but as in all sports some risks exist. Skaters are moving at high speeds and their blades are very sharp as such accidents can happen. All participants, coaches, parents, officials and skaters have a responsibility to maintain a safe and welcoming environment. Participants always need be alert and act responsibly to maintain a safe and fun environment and can do so by following a few simple guidelines:

1. Always wear required safety equipment
2. Keep equipment in good condition, replace torn clothing, keep blades sharp, etc.
3. Be on time for practices and races during competitions.
4. Ensure that the safety mats are properly positioned, and all of the arena gates are closed before beginning to skate.
5. Do not go on the ice surface when there is machinery, such as a Zamboni on the ice.
6. Always follow the directions given by the coach.
7. Respect the rules of speed skating.
8. Always look before crossing the track so as to avoid cutting-off or skating into an on-coming skater.
9. Get up as quickly as possible after a fall.
10. Stop skating when another skater falls and does not get up quickly.
11. Be respectful of all skaters, coaches and volunteers.
12. Cheer on all participants during a competition.
13. Use positive language during both training and competition.

## A Winning Team, You and Your Child

*My parents were always very supportive of my skating but they never pushed me. It was my choice to try speed skating at age 11 after I discovered it on TV and they just let me do it. Their approach was a little more hands off than most of the other parents but I very much appreciated it because they let speed skating be my thing and I always knew I was doing it because I wanted to and not for anyone else. They always encouraged me to pursue my goals and dreams but also fostered independence, something I have come to cherish. From day one, not even once did either of my parents ever sharpen my skates! There was a good group of skaters to train with and some excellent coaches who helped me develop a good work ethic and discipline as well as learn how to train properly. I didn't have a lot of natural talent as a youngster but it didn't matter because I really loved to skate and I was supported by my parents, peers and coaches.*



Picture: Arno Hoogveld

**- Kristina Groves, 2 time Olympian  
1500m and Team Pursuit Silver medalist, 2006 Olympic Winter Games**



Picture: Arno Hoogveld

*My parents would come to every volleyball and soccer tournaments I participated in. They would attend nearly every speed skating competition and usually the practices as well. My Dad even quit hockey to join speed skating and skate with me for the last 5 years that I trained in Fort St. John. He also joined the cycling club in the summers and biked a lot with me and my brother. If not participating in the sport with me, both my Mom and Dad would volunteer at speed skating competitions. My Dad became a timer, and my Mom became a place judge, and continues to place judge at national competitions when she can.*

**- Denny Morrison,  
Team Pursuit Silver medalist, 2006 Olympic Winter Games**

Each parent will support their child in their sporting endeavours in their own unique way, but what is certain is that whatever the means taken it will have a profound impact on your child's sporting experience. It is possible to support your child by getting involved in their club, encouraging them on an ongoing basis or by doing one or many of the following items. What is most important is to ensure that your child is having fun, and that the decisions made are in the best interest of their long term development.

- Take to heart the sporting experience of your child by asking them what they liked about their practices.
- Help tie skates before practice.
- Make sure that you get your child to practice in sufficient time so your child does not feel rushed and has time to socialise with friends. Social interaction is an important part of what makes sport fun.
- Encourage all participants and not just your child during training and competition.
- Help out during practices by taking mats on and off the ice, filling water buckets, etc.
- Take a FUNdamentals Coach or Leader National Coaching Certification Program (NCCP) course and level 1 officiating course. Even if you never become a coach or an official you will better understand the coaching techniques being used to further your child's development and the rules of the sport.
- Attend a presentation about long term athlete development.
- Contribute to the administration, growth and development of your child's club, e.g., help with registration, equipment, coaching, promotion, fundraising, for the club; become a member of the club or regional association's board of directors.
- Assist with first aid when necessary, if you have the necessary training and certification.
- Become an on-ice official by taking part in a training session offered by your provincial/territorial branch. Competitions are labour intensive and require officials not only from the host club but from the participating clubs as well.
- Be sure to turn the flash off on your camera when taking pictures during training and competition. The sudden burst of light can distract participants and increases the risk of them falling.

To learn more about how to get involved in the sport, speak to a representative in your club. Getting involved will allow you to live many unforgettable moments with your child.

## Glossary of Terms

### Safety Equipment



A **full body suit**, covering the participant's arms and legs is necessary to reduce the risk of getting cut and to keep warm. It can be a skin suit that is worn in competition as shown in the illustration, or a pair of pants with a long sleeved shirt that allows the participant to have a full range of motion.



A **helmet** is required for training in all contexts of short track speed skating. For beginners any helmet that does not have a pointed segment is acceptable, however, in order to participate in sanctioned competitions competitors must wear an ASTM certified helmet.



**Safety glasses** are highly recommended for all participants and required in some provinces and territories. Glasses should be resistant to impact and have a strap that allows them to be firmly attached to the participant's head. (e.g. Racquetball glasses)



A **neck guard** with a bib is required and can be purchased at most sports stores.



**Cut resistant gloves** are required. Gloves designed specifically for competition are available; however, a leather or synthetic leather glove is suitable for beginners.



**Knee pads** are often built directly into competition skin suits; however, these knee pads often provide limited protection to the sides of the knee. A knee pad made of high density foam that protects the side of knee is recommended. Participants should avoid the hard plastic knee pads often used for rollerblading. While these knee pads offer good protection to the wearer, they pose a safety risk to other participants in event of a collision.



**Shin pads** are also often integrated into competition skin suits; however, for beginners it is recommend that participants wear a shin pad made of a hard plastic(soccer style).



**Cut resistant socks** are mandatory for competitions in some provinces and territories, and highly recommended for all. In high level competitions a cut resistant suit, which includes the socks may be required. Cuts to the ankles are among the most common, and preventable injuries suffered by speed skaters, and these socks significantly reduce the risk.

## Sharpening related terminology

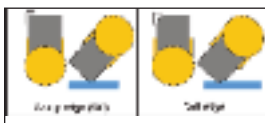
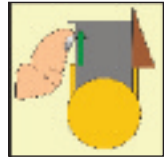


**Bend** refers to the curve of the tube and the blade. As skaters only race counter clockwise, both the left and right blade are bent into the corner (to the left). The skate is bent into the corner to assist in initiating the turn by increasing the surface area touching the ice. Bending uses the same concept as the side cut in skis. It should be noted that short and long track bends vary in size (larger or smaller radius).

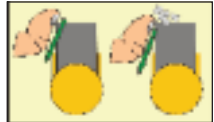


**Bender** refers to a machine used to bend a curve into the tube of the blade. This machine is used by manually pressing the tube to produce a bend in the blade of the skate.

**Burr** refers to the small amount of metal that accumulates on the edge of the blade when it is sharpened or when the blade comes in contact with dirt on the ice. Similar to checking an edge for sharpness it is possible to check a blade for a burr by using a fingernail, see illustration. A burr can prevent the blade from properly gripping the ice. It can be removed using a burr stone or other tools presented in the sharpening resources available on Speed Skating Canada's website at [www.speedskating.ca](http://www.speedskating.ca).



The **edge** refers to the corner of the blade between the flat surface and the side of the blade. Ideally, the edge remains a perfect square (90°) to allow maximum grip on the



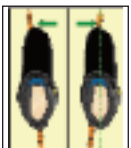
ice. It is possible to check the sharpness of the edge using a fingernail. When a blade is sharp it should shave off some of your finger nail



A **gauge** refers to an instrument used to measure both the bend and rocker of the blade. Measurements can be converted into meters to monitor and modify both the bend and rocker of the blade.



A **jig** refers to the tool used to hold the blades in place while sharpening. There are many different models available on the market such as Maple and Pennington. What is important when choosing a jig is to ensure that the blades can be placed in the jig without detaching the boot and that the blades are able to rest in the base of the jig while sharpening, as shown in the illustration.



**Off-set** refers to the displacement of the blade in relationship to the centre line of the boot. Speed skating blades are generally off-set in order to allow the skater to increase their lean before the boot makes contact with the ice.



**Rocker** refers to the radius of the blade if its surface were the outside of a circle. The radius is measured in meters. The rocker can be consistent (same radius). Variable rockers (radius changes along the blade) are more and more common as they provide a skater with more options for turning and pushing. It should be

noted that short track and long track rockers vary considerably, with the rocker being much flatter for long track.

**Stones** are used to sharpen blades by sliding the stone back and forth over the blade as described in the interactive sharpening lesson at [www.speedskating.ca](http://www.speedskating.ca). The majority of stones have two sides, a rough side for grinding and a smooth side for polishing. **Note:** *It is critical that the surface of the stone is maintained level. It is also recommended to use oil to help keep the stone clean. Aerosol oils such as WD-40 must be avoided as there are significant health side-effects of inhaling the fumes.*

### Commonly used abbreviations

The **ISU** refers to the **International Skating Union**. The International Skating Union is the international organization which governs speed skating, short track speed skating, synchronised skating and figure skating,

**SSC** refers to **Speed Skating Canada**. Speed Skating Canada is the national governing body for speed skating in Canada responsible for the coordination and development of the sport.

**LTAD** is the commonly used acronym for referring to the **Long Term Athlete Development** model. When decisions are made in relationship to the LTAD, it signifies that the decision has been made to optimise the long term development of an athlete and supported by the principles layed out in the Long Term Athlete Development resources.

**PHV** refers to Peak Height Velocity. Peak height velocity, is the moment when the maximum rate of growth in stature is achieved during a growth spurt.

**NCCP** represent the **National Coaching Certification Program**. The National Coaching Certification Program is a program that has been in place for over 30 years and managed by the Coaching Association of Canada in partnership with National Sport Organisations like Speed Skating Canada. This program oversees the training and certification of coaches for most sports in Canada, and helps ensure that every participant receives the highest quality of coaching possible.





# Notes

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## LTAD and My Child... Frequently Asked Questions

*LTAD is program for elite athletes, but my child is not interested in competition, what is the relevance for him or her?*

While LTAD does support the development of elite athletes, it is so much more. LTAD is plan rather than a specific training program designed to create the best sporting environment possible for all participants. The objective of LTAD is to provide a general framework to allow every participant to achieve their full potential by offering them the sporting foundation necessary for the participant to remain physically active throughout their life.

*My child is participating in more sports than what is recommended by LTAD, should he or she do less?*

No, the more sports that a child can experience during stages 1 and 2 the better it will be for his or her overall athletic development. The number of sports recommended by LTAD is simply a suggestion. As long as your child is having fun, practicing many sports will only enhance his or her general athletic ability; however it is important to not over do it. If your child is involved in many sports at one time be sure to communicate this to his or her coaches and watch to ensure that he or she is able to maintain a high level of energy and enjoyment in all of their sports.

*LTAD recommends 2 to 4 on-ice practices per week during stage 2. If my child skated 6 times per week he would improve much faster. Why does LTAD recommend so few training sessions?*

You are quite right, if a skater does more specific training during stage 2 they will improve more rapidly during stage 2, however, Speed Skating Canada's objective is long term development and in stage 2 the objective is to develop all-round athletes who will develop many different athletic abilities. A significant amount of research in many different sports shows that specialising in a particular sport at a young age (before the onset of PHV) results in participants quitting the sport during their teens and with a higher occurrence of overuse injuries. Very few of these athletes ever reach the international level.

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**Speed Skating Canada's Long Term Athlete Development Model is a framework for training, competition and recovery for skaters of all ages in every stage of development.**