PEAK Academy
For Academic & Athletic Excellence

Hockey Long Term Athlete Development Model (LTAD)

Hockey has become a year round sport for many aspiring NHL'ers and their parents. Parents want to provide their children with the opportunity to excel to the best of their abilities and make the substantial investment in equipment, tournament fees, camps, and off ice condition programs that they hope will help their children succeed.

Over the past 15 years the number of hockey camps, schools and teams has increased tremendously. Choosing the right hockey activities and camps can be challenging, and will have a direct effect on the development of your young athlete and the level of play that they attain. The right choice of programs will help them advance through the ranks and reach their potential, whatever that may be. Choosing the wrong programs is not only a waste of money but can delay your child's development and progress in the sport, affecting their long term prospects for hockey success.

This document is designed to give you the information you need on how athletes develop so that you can make informed choices about the types of activities that are most appropriate and beneficial for your young hockey player as they continue in the sport. It is based on the Long Term Athlete Development Model that has been endorsed by Sport Canada and is being implemented throughout the Canadian sport system. We have included recommendations for the types of programs to look for at each level of development and have provided a checklist to help you evaluate a program before you sign up.

Long Term Athlete Development

Developing an elite athlete takes time, it has been shown that it takes a talented athlete 10 years or 10,000 hours of training to reach an elite level. This does not mean that everyone who puts in the time will become an elite athlete, the proper training has to be done at the right time. Many countries, including Canada (www.ltad.ca), Australia, the UK, and Ireland have started to put Long Term Athlete Development

(LTAD) models into place to ensure that young athletes are being developed according to sound training principles that take into consideration the physical, emotional and intellectual developmental level of each athlete and their individual rate of maturation rather than just their chronological age. Other countries, particularly those in the former Eastern Block have had these sorts of programs in place for many years.

Age Does not Equal Development

Children develop and mature at different rates, even as little as six months of age can make a tremendous difference in size, strength and speed of young athletes, this is particularly true as kids approach their teen years and their major growth spurt, this is why some 14 year olds are six feet tall and weight 200 pounds while others are five feet tall and weight 100 lbs. When the slotting of kids into sport programs is based on age rather than physical development an uneven playing field can develop.

Relative Age Effect

Hockey is a sport that slots athletes into competitive streams very early in their career based on age, Atom, Pee Wee, Bantam, Midget, Junior, and competitive level, House League, A, AA, AAA. The age groupings are based on the calendar year, which result in players who are born in January playing against those who are born in December. This means that even though they are playing in the same age level of hockey, one child could be almost a full year older than a team mate, which can create a significant difference in physical and emotional development. This advantage is known as the relative age effect.

The relative age effect plays a significant role in the selection of hockey players to a particular team or level of play. In a recent study of Greater Kingston Minor Hockey Association it was found that 83%, 87 of the 105 players, in the AAA system were born in the first six months of the year. This is not something that is unique to the Kingston Association. A study done on 8,000 minor hockey players in Edmonton found that 67% of the players in the top tiers of play were born in the first half of the year. This trend carries on to higher levels of hockey, a study that looked at birth dates in the OHL and WHL found that almost 65% of players in those leagues were born between January and May. This birth date bias continues onto the NHL where about 60% of players are

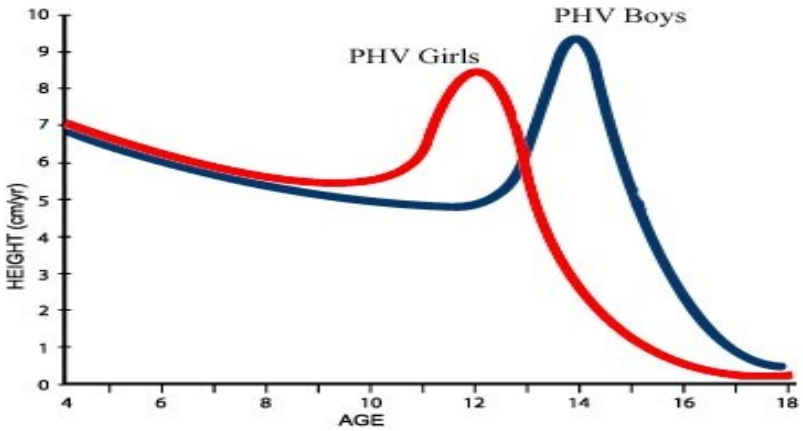
born in the first half of the year.

This does not mean that your child does not have a shot at elite hockey if they are not born in the first six months of the year but it does mean that they must be more diligent in their training and participate in programs that train the right things at the right time so that they can develop the right physical abilities to make it to a higher level of play.

Growth and Development

Growth is the change in body size as measured by height and weight. Development is the maturation process related to growth but includes social, emotional, intellectual and motor skill changes.

As a child grows their muscles, bones, connective tissue, nervous system and hormonal system all develop at different rates and different times. These differences create what have been called “windows of opportunity” for training i.e. periods of time when their body is going to adapt most effectively to certain types of training. Taking advantage of these windows of opportunity will allow your child to maximize their development and future performance, missing a window of opportunity or having the wrong training emphasis will have a long term negative effect on their performance making it more difficult for them to reach their full potential.



Growth, maturity and windows of trainability can be easily assessed by parents through the use of a marker called Peak Height Velocity (PHV). PHV is a measure of how quickly a child is growing. While children grow from birth through to about age 20, there are variations in the rate of growth (figure 1). During the first year of life a child will typically grow 25 cm, from the ages 5-10 growth rate is usually 5-6 cm per year. During puberty, growth accelerates to an average of 9 cm/year for girls and 10.3 cm/year for boys. This rate of growth continues for 24-36 months. By taking monthly measures of your child's height you will know where they are in their growth and development cycle and be able to determine the type of on and off ice programs that are most appropriate.

The Long Term Athlete Development Model

The LTAD model that is currently being used by most sports around the world has six stages:

1. Active Start
2. Fundamentals
3. Learning to Train
4. Training to Train
5. Training to Compete
6. Training to Win

The completion of each stage is crucial for success in the next stage. Trying to skip stages because you feel your child is advanced will only impede their long term progress and limit the level of play they are able to achieve.

Active Start (0-6 years old)

Daily physical activity improves the development of brain function, motor and social skills, emotions, leadership and imagination. It enhances confidence, self image, promotes healthy weight better balance, coordination, and posture. Toddlers and preschoolers should be active most of the day both in structured and unstructured play activities.

Play and games should be participation focused rather than competition

focused, with an emphasis on developing basic motor skills like running, jumping, twisting, turning, kicking, throwing and catching. These skills form the building blocks for more specific sport skills that will be developed later in life.

While it can be a challenge to incorporate into a busy family schedule toddlers and preschoolers should not be inactive for more than 60 minutes per day when they are not sleeping. This does not mean that a parent has to be doing something with them every minute of the day, it means that the space, toys and opportunity for them to play actively needs to be provided. TV and video games should be a treat rather than a babysitting device to make life easier for parents.

Choosing appropriate programs

During the Active Start formal programs are not required. Any organized activities should be play focused and designed to teach basic movement skills and social interaction. Variety is the key and specialization should be avoided.

Fundamentals (boys: 6-9 years; girls 6-8 years)

The Fundamentals stage is where athletes start to become athletes, it places emphasis on the development of specialized sports skills in a well structured, positive, fun environment. Fundamental movement skills are mastered by emphasizing the ABC's of athleticism; Agility, Balance, Coordination, and Speed.

Physically, the Fundamentals stage represents a window of trainability for speed. Speed, power and endurance should be developed using structured play games and activities. An emphasis should be placed on the development of linear, lateral and multidirectional speed using bursts of five seconds or less. Not only is this the best way of developing these physical qualities but it is also very hockey specific, where the average burst on ice is less than four seconds. Strengthening exercises using bodyweight, medicine balls and stability balls are also encouraged.

While specific sport skills are taught during this phase, true specialization is not encouraged. Participation in a primary sport 2-3 times per

week and other sporting or physical activities 3-4 times per week will develop a more well rounded athlete who will have better ability to master sport specific skills and undertake the more difficult training future stages.

This stage and the next are crucial stages for hockey players. The hockey system in Canada slots children into competitive levels very early in their careers. In some areas it is difficult to crack a AAA line up if they are not selected at a very young age. Proper development of athleticism ad speed will give your child an advantage when trying out for higher level teams even if they are smaller and younger than other players.

Choosing Appropriate programs

Organized instructional programs during this phase should emphasize the Fundamental skills of a sport in a progressive manner. In each session time is spent on the introduction and development of the skill and then time is provided to work the skill into fun, non competitive game like situations. Simply repeating the skill will not allow the transfer of the skill to game play.

During the summer, 1or 2 week long camps which incorporate a variety activities in addition to hockey skills will enhance overall skill and fitness development. During camps and on ice instructional sessions the instructor to athlete ratio of less than 10:1 is ideal.

Off ice conditioning programs can be used 1-2 times per week to enhance motor skill development. Programs that focus on teaching agility, balance, coordination and speed through game like activities and play will physically prepare the young athlete for more complex skill development in the next stage of growth. To ensure that your child is getting appropriate instruction and progression program look for instructors that have formal education in Physical Education or Kinesiology as well as NCCP (National Coaching Certification Program) certification. Because someone has played hockey at a high level or is a certified per-

sonal trainer does not mean they have appropriate training in child development and know which types of activities are best for your child at their stage of development.

Learning to Train (Boys: 9-12; Girls 8-11)

The learning to train phase is a period where the young athlete is most responsive to skill learning. Significant amounts of time should be spent on developing the key skills for hockey and incorporating them into game like situations where the child has the opportunity to experiment and try creative applications of their newly developed skills without the pressure of winning or losing.

Participation in other sports continues to play an important role in overall athletic development but should be limited to three sports. As in the previous stage, strength is developed through bodyweight and medicine ball activities while speed, power and endurance are built through structured games and play.

Choosing Appropriate programs

High quality skill programs that build on the fundamental skills already developed are key at this stage of development. Look for programs that provide not only teach the basics of skill development but include decision making and game like situations so that skills will transfer to game time performance.

Do not place too much of an emphasis on competitive game situations, worrying about systems of play and tactics takes away from the skill learning that is most crucial at this stage of development. Dedicate 70% of the time to practice and training activities and 30% of the time to competition.

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Training to Train (Boys: 12-16; Girls 11-15)

The age ranges in this stage are dependant on the start of PHV. This stage represents a period of accelerated adaptation to aerobic, speed and strength training. It is critical for parents to continue to monitor changes in height during these years as the child's growth determines the effectiveness of certain types of training. Aerobic fitness is most effectively improved at the onset of PHV while strength training is most effective in girls when the reach PHV and in boys 12-18 months after PHV. When bones, tendons and ligaments are growing rapidly there is a tendency for flexibility to decrease. Daily stretching should be part of every players routine during periods of rapid growth.

It is common to hear hockey parents proudly talk about how quickly their child has grown and how well they are doing in sports. These early maturers seem to have a definite advantage in contact and collisions sports because they are bigger and stronger than the other kids they are playing against. Do not worry if your child starts their growth spurt a little later than their peers, while it may be difficult playing against bigger kids those who grow more slowly have extra time when they are most adaptable to skill development and often become more skilled players than those who reach PHV at a younger age. When they do grow and catch up to their peers in height and weight they are ahead of the game because of their greater skill.

Choosing Appropriate programs

Off ice conditioning programs become much more important at this stage of development and should be followed 4-5 days per week. Look for programs that are individualized to meet the athlete's current fitness and stage of development. Programs for the early part of this stage should have an aerobic focus and provide an introduction to weight training technique. After PHV the emphasis should switch to maximizing strength, muscle mass and power. Programs that try to develop muscle mass too early are doomed to failure because the athlete is not physiologically ready to respond to those programs.

If the athlete has mastered basic dryland agility, coordination and balance exercises on ice conditioning and acceleration programs become the most effective way of improving speed and quickness for hockey. On ice programs should emphasize short bursts of 3-7 seconds with relatively long rest periods to enhance speed development. Longer period of skating will create fatigue that limits the players ability to improve their speed.

There is often a decline in skills during PHV as changes in body size affect timing, coordination and balance. Skill programs during this stage should reinforce fundamental technique and provide the athlete enough repeats that they learn to use their new body effectively. Skill programs should be closely linked to the off ice conditioning programs since many of the technical errors that athletes make during this stage are due to strength or flexibility problems that may need to be corrected before they can learn or perfect a skill. Competitive situations become more important at this time with 60% of time spent training and 40% of the time spent in competition. Some of the competition time should include in practice competitions where players have the opportunity to work on specific skills, systems and tactics in higher paced situations.

Training to Compete and Training to Win (Boys 16+; Girls 15+)

The final two stages of the LTAD are the training to compete and training to win stages. During both of these stages the athlete should be specialized in one sport. The most effective programs will be those that address the specific needs of the individual based on detailed testing of both physical fitness and skill. The majority of time is spent in competitive situations with 40% of time spent training and 60% of time spent competing, including competition in practices and training sessions.

Guidelines for Choosing Hockey Programs for your Young Athletes

Appropriate Programming

Is the program appropriate to the age and developmental level of your child according to the principles of Long Term Athlete development? Does it provide adequate activity time in addition to instructional time? Is there an opportunity to incorporate skill development into game like situations?

Assessment

Whether the program is on ice or off ice there should be some sort of assessment tool in place to assess starting levels and measures progress throughout the program. Not only will the assessments help you determine if your child is getting value and improvement from the program but a well designed assessment can help you determine the type of program that is most appropriate. There is no point in having your child take part in an on ice conditioning program if they do not have good skating skills, they would be better off taking some skating skill sessions before moving on to the conditioning program.

Administration

Are payment, refund, change and cancellation policies explained clearly in writing at the time you register for the program? Ask if there are any additional costs for equipment, clothing, manuals, or in the case of day camps; food and drinks.

Curriculum

Does the program have a formal curriculum that outlines the activities and progression from session to session? This ensures that there is a plan in place and the players will progress through drills and activities towards a specific goal. Programs without a formal curriculum may not have appropriate progressions or a long term goal in place, limiting their effectiveness.

Supervision

In group programs either on or off ice the instructor to player ratio should be 1:12 or less for athletes under the age of 16. This allows the instructor to safely supervise the athlete and provide feedback and instruction. Larger groups limit the quality and quantity of individual instruction that your child will receive. Older, more experienced athletes can effectively work in groups that are up to 1:25.

Instructor Qualifications

One of the most important aspects of a good camp or program is the qualifications of the instructors. On ice instructors should have at a minimum some level of NCCP Hockey Canada Coaching Certification and preferably a combination of hockey coaching certification and formal education in Physical Education or Kinesiology. Formal education in Kinesiology or Physical Education ensures that the instructor has a background in skill learning and child development that is particularly important when younger athletes are involved in the program. While it is tempting to put your child into a camp run by a former professional hockey player, their experience at the professional level does not ensure that they have the ability to properly develop younger athletes.

If you are putting your child into an off ice or dryland conditioning program instructor qualifications are equally important. A degree in physical education or kinesiology as well as professional certification through the Canadian Society of Exercise Physiology (CSEP), Ontario Kinesiology Association (OKA) or the National Strength and Conditioning Association (NSCA) should be the minimum qualifications you look for. If your child is going to be doing weight training, coaching certification through the Canadian or US weightlifting Associations or the NSCA will ensure that the instructors are competent at teaching exercise technique. The weekend certification courses that many personal trainers take do not provide training in child development. Trainers with those credentials often give adult programs to children, which are not

only ineffective but in some cases can be dangerous.

Emergency Procedures

The facility and organization running the program should have an emergency action plan in place which includes access to first aid kits, defibrillators, phones and emergency contact information for each child. At least one staff member should have training in first aid and CPR. Evacuation procedures in case of fire or other hazards should be in place.

Checklist for Choosing Appropriate Programs for Your Child

- ☐ The program takes into consideration the long term development of the child
- ☐ The program contains appropriate activities for your child's level of development
- ☐ A progressive written curriculum is in place for all on and off ice group sessions
- ☐ On Ice instructors have Hockey coaching certification
- ☐ Off ice instructors have degrees in Physical Education or Kinesiology
- ☐ Instructor to Athlete ratio is less than 12:1 for both on and off ice programs
- ☐ Opportunities are provided to incorporate skills into game like situations
- ☐ Active time is maximized for all athletes regardless of skill level
- ☐ A long term plan is in place so that the athlete can progress from one level to another at their own pace
- ☐ Feedback on progress is provided to both athletes and parents
- ☐ Assessment tools are in place to ensure that progress is occurring and when appropriate homework is assigned to help the child develop specific areas that need attention.
- ☐ Administrative policies and procedures are clearly explained.

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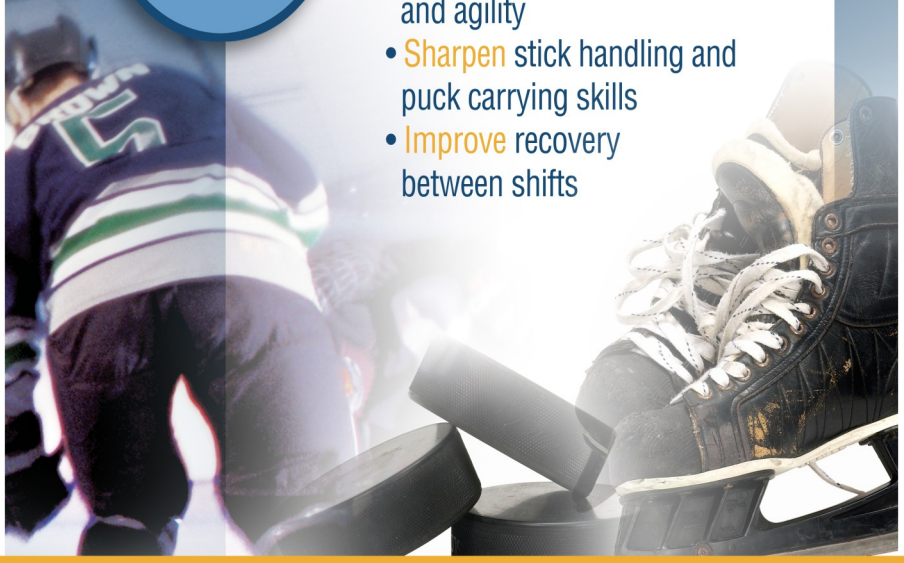

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