From pond to podium … As Americans we are a competitive people and our country places a tremendous importance on winning. In some cases it is to our detriment, but there can be no doubt our society rewards and cherishes excellence. In ice hockey we have grown from our seat at the kids table to one with the grown-ups. We are now competitive at every event that we enter. Yet for American's second best has never been good enough. If you look at our results in men's hockey at the global table, we are currently ranked 5th by the International Ice Hockey Federation. Our results at both the senior men's and U20 championships rarely bring us to the podium. We are now the 2nd largest enrolment country within the IIHF and yet we have not grown into our potential.

The developmental system in the US has evolved over time. Our current structure was not one that was planned; it is one that just evolved into a multi faceted organization with many different avenues. While diversity is one of our great attributes as a nation, a clear pathway to excellence has never been defined by USA Hockey. Ten years ago, to address some of the issues within our system, USA Hockey took a bold step with the creation of the National Team Development Program. The NTDP has raised the bar on elite player development within the United States. Ten years ago you rarely heard the word development within the hockey community, now it is the buzz word. The NTDP has played an important role as we have grown into a challenger at each event. However, as Americans we are not content with second place. It is now time to move from challenger to champion.

Change is the only path that will move us towards our goal. As the old saying goes, "If you always do what you have always done, then you will always get what you've always got."

Rational Behind A Hockey LTAD Model
This project began as a plan to evaluate and develop an expanded high performance track for elite athlete development. We started with a review of research that has taken place in child and athletic development around the globe. Elite performance studies from multiple sport bodies, governments as well as other endeavors such as music were evaluated. Through the review of current research it was quickly concluded that to truly address elite player development, a completely new way of looking at USA Hockey's structure must be undertaken. Based upon the several key facts that the research has brought to light, critical development begins at a very early age. As children mature they progress through the same developmental stages and certain aspects of these stages must be addressed at the appropriate time intervals. Without developing skills and certain physical and mental attributes at the proper time, the long-term prospects of becoming a truly elite player are diminished.

The research has shown that we cannot just focus on older players, an encompassing strategy must be followed. As we evaluated the current research, variations of Istvan Balyi's, LTAD model are being employed around the globe by more than 50 government health ministries, and sport National Governing Bodies (including, Sweden and Czech Republic in ice hockey). Within our own sport, there can be no doubt that the Swedes and Czech's produce high-end NHL players. Their numbers are especially impressive when one considers the populations and player numbers from those counties.

Long Term Athlete Development (LTAD) is a generic, conceptual framework for athlete development in sport that can be used as a basis on which to 're-align,' or make more consistent, existing systems and structures. It has been developed by Balyi, an internationally recognized coach educator, and is based upon a consensus of evidenced research about how young people develop

sporting ability, linking more closely the coaching and development of players to their physical and psychological growth.

It should be recognized that much of LTAD is nothing new. The majority of the research on which it is based is widely accepted, and has been used to underpin physical education teaching for many years. The difference that LTAD brings is a 'packaging' of this theory for mass understanding and a mechanism for applying the theory to better integrate whole sports development systems i.e. coaching, training, playing, competition, etc. It is also important that our USA Hockey membership understand that it is not just our hockey-specific people that are endorsing a LTAD plan but that sports science and development experts from around the globe endorse this model and are adopting this methodology for their own sports. (England, 2005)

All young people follow the same pattern of growth and development, although there will be significant differences between individuals in the timing and magnitude of these changes (Armstrong & Welsman, 1997). In relation to physical activity, there are five key phases of growth and development. The relevant 'stage' of the draft LTAD hockey model for each phase of growth and development is described below. (England, 2005)

Phase of growth & development	Stage of draft LTAD hockey model	Approx. ages
Late childhood	FUNdamentals	Male 6-9 years Female 6-8 years
Adolescence - early puberty	Learn to Train	Male 9-12 years Female 8-11 years
Adolescence - late puberty	Train to Train	Male 12-16 years Female 11-15 years
Early adulthood	Learn to Compete	Male 16-18 years Female 15-18 years
Early adulthood	Train to Compete	Male 19-23 years Female 18-21 years
Adulthood	Train to Win	Male 19+ years Female 18+ years

Attachment A outlines the phases of growth and development in more detail.

LTAD Foundation Of Research, Principles and Tools
The LTAD model has at it's foundation a number of different elements from sport and child development science. When considering the structure of any high-performance program these elements must also be considered.

10 Year – 10,000-Hour Rule
It takes years of organized practice to become an expert performer. The research shows this is true of developing any skill, such as learning to play an instrument or playing sport. This is sometimes referred to as the '10 year – 10,000-hour rule' relating to the need to practice for three hours a day for 10 years. Many researchers believe this is just a minimum. The bottom line is that it takes an enormous amount of work to become an elite athlete. This is done through a diverse sports movement and sports skills background. Once this foundation is laid, it takes years of deliberate practice to develop an elite performer at the highest level.

This is an area where support from the NCAA and NHL can have a huge impact and this development plan would fit into their needs. (10 year – 10,000 hour rule) It is a long process to reach the highest levels and the data supports this. A significant number of players that play in the NHL were never drafted. This means that at 18 and 19 years of age nobody was even willing to take a late round flyer on their potential to make it. Hockey is not an early specialization sport and our programs must include a long-term developmental pathway that provides opportunities for our elite players into their early 20s.

FUNdamentals
All sports begin with basic fundamental movement and core sports skills. The A,B,C's of movement skills include Agility, Balance, and Coordination, while core sports skills include running, jumping, skating and throwing. It has been shown that children who have a strong, broad-based foundation in the fundamental movements and sports skills from a variety of sports, increase their potential for future success in sports. Whether this is confidence to lead a healthy, active life in sport, or to become an elite athlete, this strong foundation in the FUNdamentals will help children reach their full potential.

Specialization
Sports are classified as ether early or late specialization sports. Ice hockey is classified as a late specialization sport. Specialization at an early age limits the children from acquiring a broad spectrum of athletic movements and skills that may limit or put a cap on their overall athletic potential. When players specialize too early they can create imbalances in musculature, increase the potential for burn out and cap their athletic potential by not developing a broad base of athletic movement skills.

Windows of Optimal Trainability
There are identifiable stages during a child's physical and psychological development that offer optimum opportunities to develop particular attributes such as basic movement skills (agility, balance and co-ordination); basic sports skills (running, jumping, throwing, skating, and striking), and physical attributes speed, endurance, and strength). Missing these optimum opportunities has been shown to significantly affect a child's ability to reach his or her full potential, whether that is playing at club or international level.

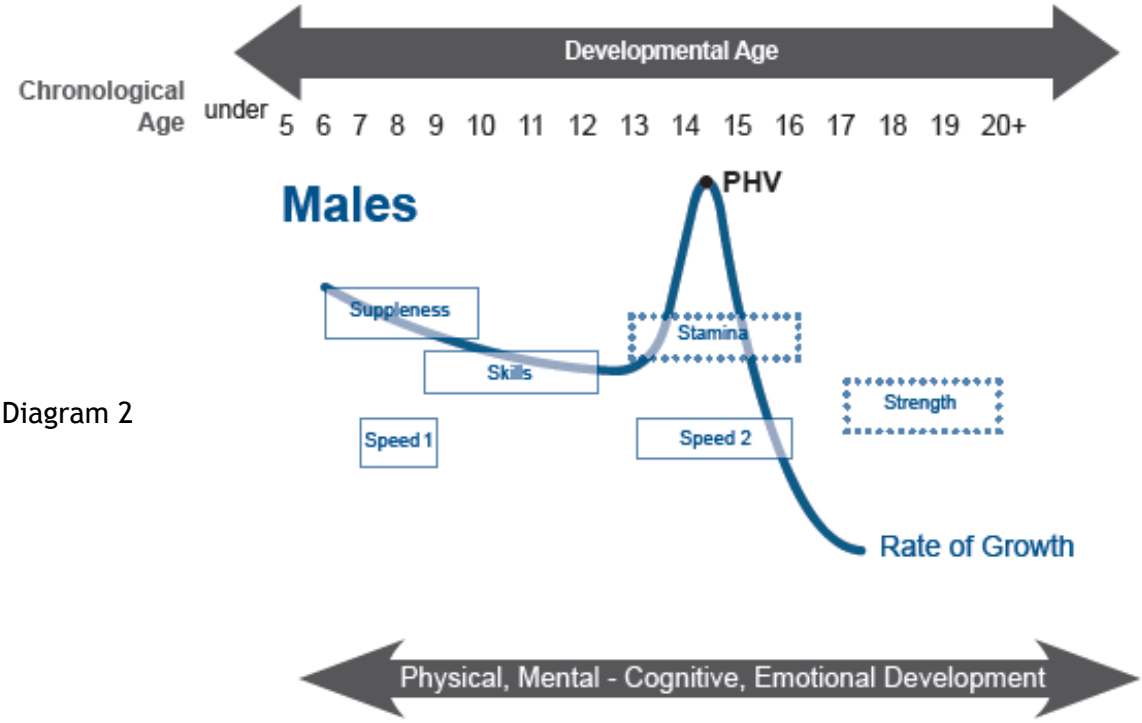
In our current system, training in early years focuses on outcomes (winning) rather than processes (optimal training). Damage done between age 6-10 and 10-16 cannot be fully corrected (players/athletes will never reach there genetic potential) and ***National Training or Sport Centers receiving mediocre athletes -regardless of money and expertise, cannot recover from the "damages" of earlier training! (Balyi)***

Elite player development and a sound structure at the 12 and Under level for broad-based skill development are not mutually exclusive. What do we currently produce in the US? We have an over abundance of above average players … very few truly elite players at the very highest levels (NHL), especially when our numbers are taken into consideration. This is due to a lack of the proper focus on training through the appropriate 'window of optimal trainability'.

Diagram 2 (from PacificSport, Balyi et Way, 2005) illustrates windows of optimal trainability for male athletes. These critical windows provide accelerated adaptation to training, and if skipped or missed decrease a child's chance to reach his or her full potential. It must be kept in mind that all systems are always trainable, yet with smaller degrees adaptation to training over time. In our current system the window of opportunity on skills development (9-12) is missed through over-competition and under-training.

These critical periods vary between individuals as each child is unique in his or her genetic makeup. While these critical periods follow general stages of human growth and maturation, scientific

Diagram 2



evidence shows that humans vary considerably in the magnitude and rate of response to different training stimuli at all stages. Some players may show potential for excellence at age 11, while others may not indicate their promise until age 15 or 16. Consequently, a long-term approach to player development is needed to ensure that players who respond slowly to training stimuli are not 'shortchanged' in their development. (Wellness to World Cup, 2008)

The five trainable physical capacities and windows of optimal trainability are:

Stamina (Endurance): The optimal window of trainability occurs at the onset of peak height velocity (PHV). This is more commonly known as the adolescent growth spurt. Aerobic capacity training is recommended before athletes reach PHV. Aerobic power should be introduced progressively after growth rate decelerates.

Strength: The optimal window of trainability for girls is immediately after PHV or at the onset of the menarche, 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 and 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.

Skill: The window for optimal *skill training for boys takes place between the ages of 9 and 12* and between the ages of 8 and 11 for girls.

Suppleness (Flexibility): The optimal window of trainability for suppleness for both genders occurs between the ages of 6 and 10. Special attention should be paid to flexibility during PHV.

Additional capacities have been identified that must also be considered throughout and athletes development and in addition to the five physical capacities make up a holistic approach to training.

Structure/Stature: The height of a person, before, during and after maturation can be utilized by a coach or parent. Tracking growth as a guideline for developmental age can allow for planning to take advantage of the critical 'windows of optimal trainability.'

Psychology: Sport is a physical and mental challenge. The ability to maintain high levels of concentration, yet remain relaxed with the confidence to succeed, is a skill essential to long-term performance in sport. This skill also has the potential to transcend sport and affect our everyday lives. To develop the mental toughness for success at highest levels, training programs are required that address the specific gender and LTAD stage of players. The training programs should include key mental components identified by sport psychologists: concentration, confidence, motivation, and handling pressure. As a player progresses through LTAD stages, the mental training aspect will evolve from having fun and respecting opponents, to visualization and self awareness, to goal setting, relaxation, and positive self-talk. To master the mental challenge of sport, these basic skills are then tested in increasingly difficult competitive environments. Ultimately, the planning, implementing, and refining of mental strategies for high-level competition will have a large impact on podium performances. Consequently, the mental training program is critical at all stages of LTAD, as dealing with success and failure will determine continuation in the game and physical activity in general, dramatically affecting both active lifestyle and podium performance. (Wellness to World Cup, 2008)

Sustenance: This category refers to all aspects of replenishing the body for sports and general health. It covers a wide range of topics from nutrition and hydration to rest and recovery. Fatigue, whether it comes from a single practice/competition or builds up over time through a lengthy schedule can be combated through a proper lifestyle. Where our children become elite athletes or we look for better performance in school or just to lead a healthier life, we will all thrive better with better education and following a plan that replenishes our physical and mental needs.

School: Sports schedules must consider the demands placed upon children from an academic perspective. Education must be emphasized, and the demands of sport should compliment the academic schedule, not conflict with it. The stress of class work, examinations, boyfriend/girlfriend issues, and school peer groups play a role in the fatigue and stress levels over our athletes. Coaches and parents must monitor these factors to balance the sports schedule to allow for maximum development both on the ice and in the classroom.

Biological Age Vs. Chronological Age

Biological Age should be considered through our development and identification process. As an example, one only need look at the number of early month birth dates that make up our Under 17 and Under 18 National teams. Our current system forces players into a compete to win, 'Peak by the Weekend' system that rewards early-maturing players who may not have the ability to be elite

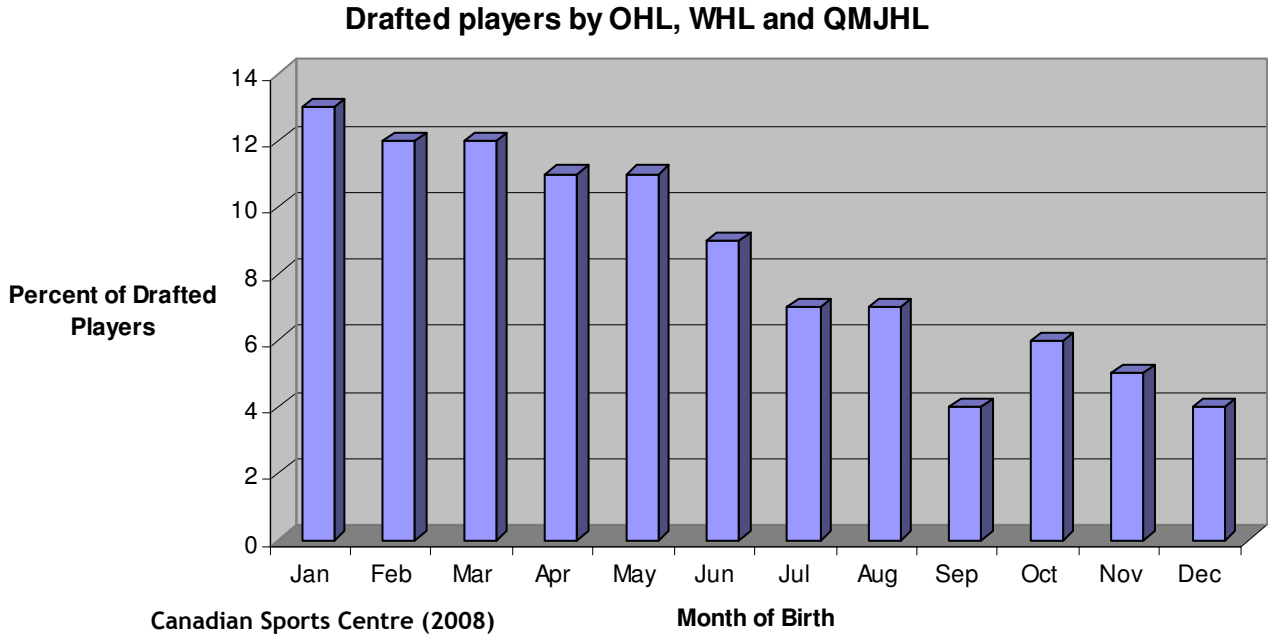
12 year old female athletes

14 year old male athletes

performers. Late-developing players are excluded and cut, consequently leaving the sport or segregated to a recreation program that limits their training opportunities. These late developers may have huge long term-potential but are eliminated from our system.

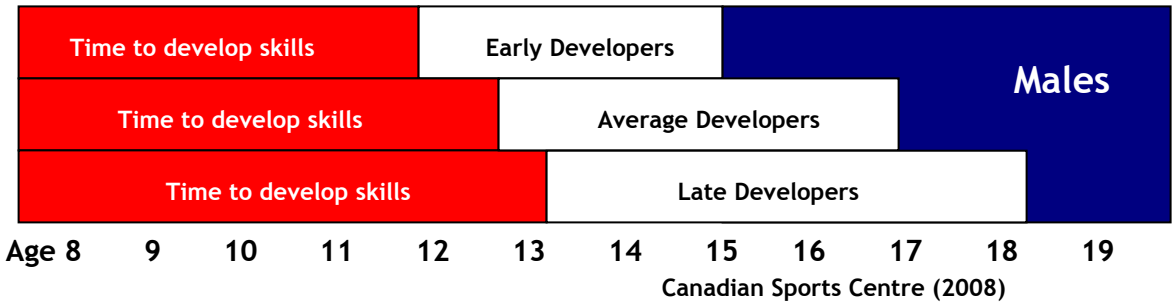
All children follow the same growth and development stages.

Currently, most athletic training and competition programs are based on chronological age. However, athletes of the same age between ages 10 and 16 can be 4 to 5 years apart developmentally. Thus, chronological age is a poor guide to segregate adolescents for competitions. Because hockey is a contact sport, early-maturing players are favored within our youth structure. The late developer is eliminated when he may possess better long-term athletic ability.



From the attached chart it is obvious that in the Canadian developmental system potential late month birth date players have been excluded form the high-performance track. It would be highly unlikely that there were less players with long-term athletic potential born in the last quarter of the year than in the first quarter.

Training Age refers to the age where athletes begin planned, regular, serious involvement in training. The tempo of a child's growth has significant implications for athletic training because children who mature at an early age have a major advantage during the Training to Train stage compared to average or late maturers. However, after all athletes have gone through their growth spurt, it is often later maturers who have greater potential to become top athletes provided they experience quality coaching throughout that period. (England Field Hockey, 2005)



Not all players will have the potential to become elite players. The draft LTAD hockey model recognizes this by offering two levels of content from the Train to Train stage forward. The high performance content is aimed at those players who have been identified as potential elite performers, while the standard content offers a reduced level of commitment more appropriate to the majority of players who will form the basis of club teams of the future. The split between the levels of content at the early part of the Train to Train stage are relatively small as it is deemed to be such an important stage in developing a broader base of potential elite players. However, the differentiation between hockey and other sport may necessitate the divergence at this stage. It is important to note that the research suggests that there can be numerous players that follow the standard track through the Train to Train and into the Train to Compete stages that will have the potential to become elite performers. This is especially true if they have a diverse sports movement background through playing multiple sports during the FUNdamemtal and Learn to Train stages.

Periodization

Periodization is the practice of segmenting the calendar year into to appropriate time intervals for preparation, competition and rest and recovery. Athletes at different stages of their development require different training plans to optimize their development through their growth and maturation. The science behind periodization has been used on the international stage to great success in many, many sports. Unfortunately, sometimes a sport's traditions are placed in front of the athletes needs when planning a periodization schedule. This has an impact on maximizing the player's development.

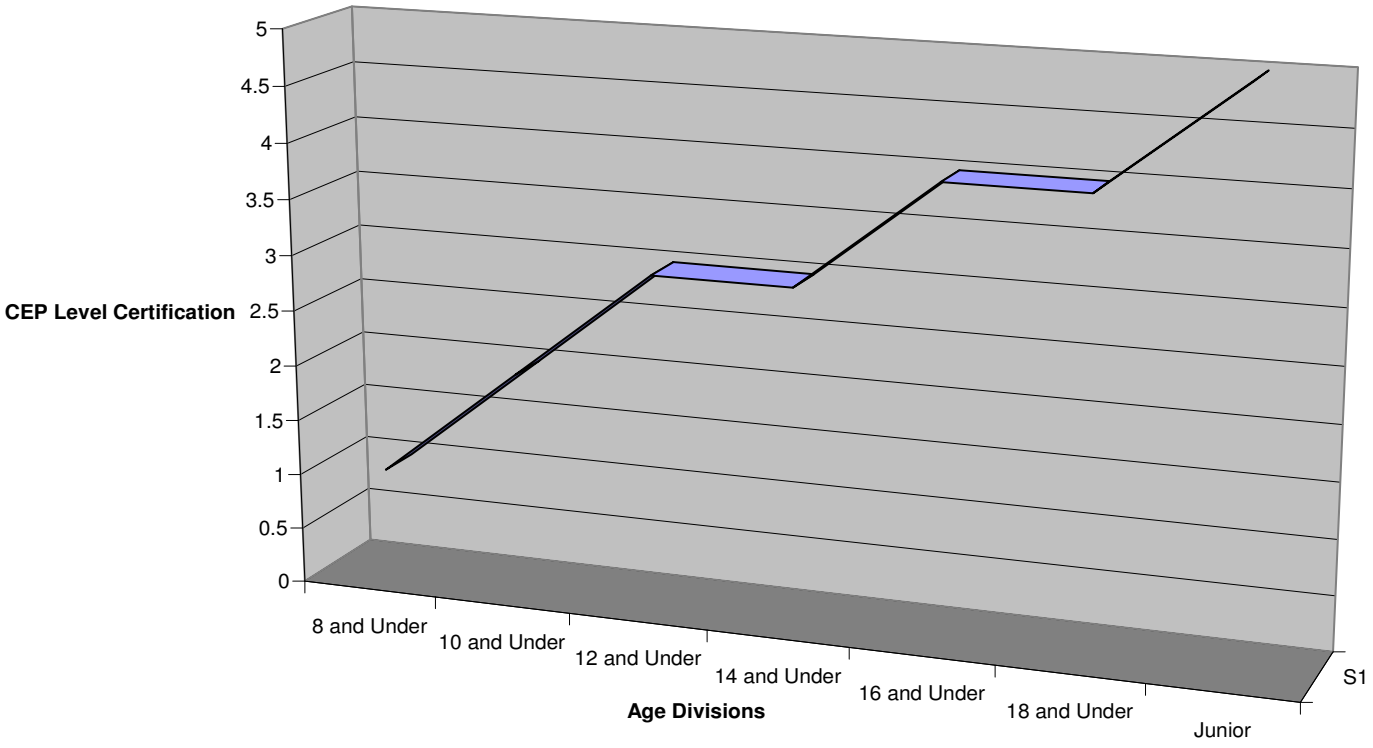
Training To Competition Ratios

Through a child's growth and maturation the athletic development needs change through different stages. The appropriate training-to-competition ratios need to be adhered to in order to maximize a player's time and potential. When a heavy emphasis is place on competition at an early age, two situations occur. One, ice time is directed toward games, which reduces the amount of quality deliberate practice time. And two, the focus becomes more outcome-based (winning) and less process-driven (learning the game). There are all kinds of arguments put forth as to why we must allow the imbalance in our training to competition ratios to continue, and certainly the 1-to-1 ratio has its place within the recreational Hockey for Life track. However, for our Tier 1 programs that are supposedly on the elite development path, the correct ratios must be adhered to at the appropriate ages.

Coaching Education Program Re-alignment

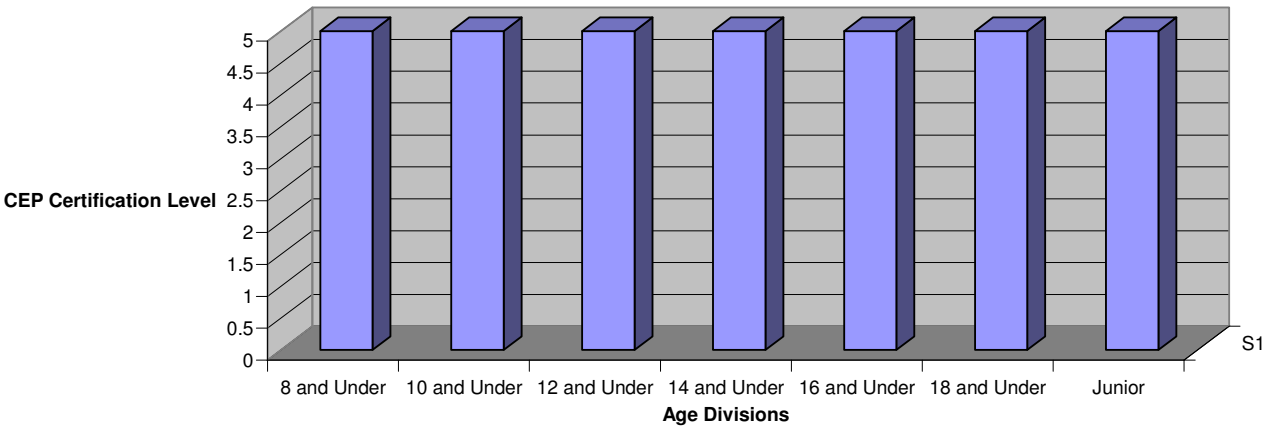
One of the key aspects in maximizing a players potential is the quality of instruction that players receive at an early age. In the strong European hockey playing nations, clubs have their best coaches working with the younger players. These coaches are well trained and understand what is appropriate at each age. Their job is focused on developing players for the pro team within the club. Many specialize in 8 and Under to 12 and Under age divisions. These coaches are rewarded within their system for promoting their players. They take pride in working within these divisions as it is one of the most important positions within the club.

Current USA Hockey CEP Track



Here in North America, the more experienced coaches are place on the track of working with the older players. Unfortunately, this is not where there experience is needed most. Under the current CEP certification structure we encourage this backward configuration. A coach must have a higher certification level to coach the older players. What we need is a track that allows for someone to advance and become a Level 4 or Level five Mite coach. Each certification class that the coach takes would track an ever more detailed curriculum on working strictly with the 8 and Under classification.

Proposed USA Hockey CEP Certification



Long Term High Performance Goals for USA Hockey

With 30 NHL teams, and roughly 23 players on each NHL roster, there are approximately 690 regular players each season in the league. Last season, we had about 140 American players in the NHL, which equates to about 20 percent of the league. Canadians make up about 50 percent and the rest of the league is comprised of Europeans with approximate percentages CZE 7, SWE 6, RUS 4, FIN 4, SVK 2, other 4. (NHL Stats December 2007) For USA Hockey the first goal should be to increase our percentage of players in the NHL to 30 percent. This would mean an increase of about 70 players for a total of roughly 210 each season in the NHL. To attain a goal of 210, we need to have on average, 40+ new players entering the NHL each season. If the average NHL career is five years, we would be losing an average of 40+ players each season to retirement.

The goal to reach 30 percent will be a tough task and not one achievable in the short term. As our percentage grows, we will be eliminating percentage points from other great hockey playing nations. We have seen a rapid growth in our current percentage within the past five years. A major contributing factor has been just simple growth in USAH player numbers. The more kids we have playing the more that have a chance to develop to the highest level. USAH saw a player registration growth from 195,000 in 1990-91 to 439,000 in 2000-2001. That is over 100 percent growth. As this enlarged player pool has come of age with the NHL we are finally seeing it's impact. The problem faced by USAH as well as the other hockey playing nations is that our numbers are stagnate. Growth in Canada is probably at or near its limit. With the current U.S. economy and the high cost to play our sport, growth by USAH is probably limited. To increase our percentage of NHL players we will need to do a better job with the players we already have.

Even if USA Hockey begins a high-performance program with 13 year olds, it will take 8 to 10 years for those players to mature to NHL age (21 to 23 years old). The real impact would not be felt for 12 to 15 years as a restructuring for Squirt hockey starting with 9-year-olds would take 12 years for them to reach 21 years of age. The first wave of 13-year-olds could help us come close to that 30 percent and a true developmental system starting with 9-year-olds could push our numbers to as high as 35 percent or 240 American players in the league. This would however require a major cultural change within our current structure and would necessitate a huge marking campaign and endorsement from the NHL to accomplish.

System Alignment

The framework for long-term athlete development is influenced by many factors. We have clubs, schools, and ice arena facilities all with varying interests. To maximize a player's development hockey needs the various entities to work together and become mutually supportive as each has its part to play in advancing our game. Players will best develop in a system that is clearly defined, logically structured, and based upon consistent principles. We need a structure that is athlete centered and looks at the individual player's development. (Wellness to World Cup, 2008) In a team sport, it is appropriate to look at the collective whole and to provide the direction and lessons that only a team sport can provide. However, we must always consider that each individual is at a different point through the stages of his or her development; early maturer or late maturer for example. The goal is to define our sports system with a pathway that addresses the needs of each individual and maximizes their development as they progress through our system. The LTAD model shows us that at the earlier ages, both the Hockey for Life group and the ones that end up as high-performance players, should initially be held to the same pathway. Our current sport system mistakenly allows for the separation of the perceived Hockey for Life group and the perceived high-performance group, before any reliable determination can possibly be made. To maximize all players potential, we need the major parties to re-evaluate current practices and base new practices on current legitimate research, instead of commonly held beliefs in sports myths and the old "that's the way it has always been done" attitude.

As an example of the recent success in the use of the LTAD model when applied to a sports system, we have included a recent article titled “No Longer Swimming in Circles.”

Change is not easy, and to reach the podium consistently will not be easy. So when you got out of bed today and started to think about our great sport, were you one of the few who thought “how far I can push the limits of what I do and how fast I can accelerate the rate of change in my sport?”

Was that you?

No Longer Swimming in Circles

How LTAD inspired training techniques lead to sporting success

When Alain Lefebvre was hired as Technical Director of FNQ Fédération Natation de Quebec (Quebec Swimming) he was given carte blanche to revitalize a stagnant swimming program. Following his implementation of Long-Term Athlete Development (LTAD) practices after year 2000, the first wave of Quebec swimmers from the revised program are now racking up successes nationally and internationally.

Lefebvre undertook a pilot project to implement LTAD-based swim practices in 80 swim clubs throughout the province after a year of on-the-ground research. This included dramatic changes to the competition structure for younger swimmers. “The system was an important part of the problem,” explains Alain. “You can make improvements to coaching, but success will be limited if the system works against your goals.”

What was done?

LTAD is a framework that defines the sporting experience in stages based on chronological age and physiological age. At younger ages, these are defined as Active Start, Fundamentals, Learn to Train. As an athlete enters the teen years and progresses in a sport, the stages keep pace with their development in the Train to Train, Train to Compete and Train to Win stages.

“As everyone knows intuitively, a developing child has evolving capabilities, physical and mental,” explains Richard Way, Canadian Sport for Life project leader. “Yet traditionally sport competition does not consider this.”

While adult swimmers win by going from one end of the pool to another in the shortest time, this doesn’t mean that children and youth should use the same measure of success. Indeed a winning result is a process of doing many things well: a start, a stroke, a turn and a finish. All require different technical abilities, and yet these specifics are often overlooked in early training. Changing the measure of success to encourage correct technique for young swimmers has been key to Quebec Swimming’s success.

In Quebec prior to 2002, swimmers had to achieve a time standard by the age of 11 to be eligible to compete in a race. Achieving this standard encouraged young swimmers to focus on a single stroke and discouraged learning other strokes. Both swimmers and parents would complain about practicing other strokes because the competition structure rewarded those who swam fast in one category. This early specialization inhibited the mastery of different swim techniques at the best window of trainability – when swimmers are young children.

In 2002, FQN changed its competition structure. At the beginner’s level, instead of timing a 100m race, the competition was broken down into a series of important technical skills. Swimmers would compete on time to complete turns, the number of strokes plus time over duration, kicking, and their start times. This encouraged swimmers to improve the important swimming skills in the Learn to Train stage, which is the optimal window of trainability for skill development. Today, FQN has norms for each of these skill sets and can measure performance against provincial norms to provide bronze, silver or gold for certain results.

The result is that swimmers win while learning crucial techniques to become better swimmers. Another upside: there are more opportunities to win, and even if your turns are shaky, your starts might win you a medal – a big plus for a young swimmer.

Today, no 100m races exist in Quebec for swimmers 12 and under – swim racers do 50m races which are shorter, less tiring and emphasize speed. They also swim 200m, 400m, 800 and 1500m events, which develop aerobic qualities better suited for their physiological development at that stage. Results now show performance of 100m when they are older hasn't suffered at all despite the fact that no one is racing this distance when they're young.

When a swimmer reaches 14 years old, time standards are required to race, but the only way to achieve the standard is through the 200m Individual Medley (IM) - an event with four different strokes & turns - and 200m freestyle or 400 IM and 400 freestyle. This requires swimmers to develop well-rounded swimming skills and allows both fast-twitch swimmers (muscles which make you go fast) and aerobic swimmers (muscles which help you to go far) a chance for success.

At 15 years of age, swimmers can now focus on a single stroke, but even then, after they've raced 'their race,' a swimmer can also enter whatever event they want to swim at the swim meet.

Overcoming resistance
In his first year on the job, Alain and Claude Picard visited each of Quebec's 80 swim clubs twice. In his second year (April 2001), Alain held a series of meetings with coaches of the 11 regions (8-15 coaches per region). These sessions introduced the future rule changes according to the LTAD principles for the following September. While all the coaches agreed with the LTAD principles, the proposed rule changes were controversial. In the end the proposed competition structure was implemented by all regions with the proviso that it be reviewed and open for changes the following year. Each year thereafter, the 100 plus coaches regrouped, again by region, and made some changes, as they have every year since to improve implementation. But the key modifications remain.
"In a democratic society the only way to make a change is to modify the competitive structure to change behavior." Orjan Madsen, Sport Physiologist

The results?
Those young 'guinea pigs' who began the pilot project in 2002 are now 17-year-old junior athletes. In the final quarter of 2007, six of those juniors produced Top 10 (provincial – national – international) performances according to the FINA point system. The changes in training to facilitate broad-based swimming techniques is resulting in single athletes beating provincial records in more than one stroke and some athletes up to four strokes.

After implementing a LTAD approach to swimming, Quebec has had a dramatic improvement in performance. In the 1990s swimmers annually set about 10 to 25 new provincial age group records. 2001, was the province's best year with 39 records broken. Now as the 'young guinea pigs' race in age groups, the records are being broken at an unprecedented rate: 65 provincial records were set in 2005, 91 in 2006, 87 in 2007 and this year the first three months have seen 47 new records!

At the next level, Quebec has traditionally made up about 10 to 15 percent of the national team. With the LTAD generation now reaching maturity, the province now makes up 25 percent of

Canada's team. The future looks even brighter as last year Quebec swimmers set seven new national records, and in the first two months of 2008 they set another nine new national records.

"Quebec athletes have a tradition of being strong sprinters," points out Alain. "Now they're breaking records at longer distances – the 200m and 400m."

There's More

The changes are also bolstering membership. For 15 years provincial membership has been stable; now it increases 2 to 4 percent every year, and while Alain isn't sure, he suspects the increase is partly from a reduced number of lapsed members. Perhaps a new format for swim meets in Quebec is a factor. A meet now cannot exceed five hours – a relief for parents and swimmers who used to spend hours poolside waiting for a single race.

What's Next?

Alain is surveying his national-level coaches to identify the non-technical skills that gifted athletes need to be successful on the international scene. "The first time they experience jet lag should not be on their way to a World Cup nor should it be the first time they are coached by a different person," explains Alain. "These are all experiences they need to be successful." As well, for some Quebec athletes, English instructions on the pool deck is a stressor contributing to poor performances. Alain encourages billeting at meets outside of Quebec so athletes can become more comfortable with English in a friendly environment.

While many sports in Canada are just beginning to implement changes based on LTAD, FNQ is seeing the results of their changes seven years ago. Their early leadership and commitment to LTAD in training and competition has vaulted them ahead as national leaders in Canada's emerging international success in swimming.

USA Hockey Model
Long-Term Athlete Development Stages

FUNdamentals Late Childhood M 6-9 years F 6-8 years 8 and Under Mites	The objective of the FUNdametals stage is to learn all fundamental movement skills and build overall motor skills. This phase of growth and development is characterized by rapid growth. Generally larger muscle groups are better developed which makes it easier for players to perform 'large' movements rather than precise coordinated movements involving the interaction of many smaller muscles. Consequently the emphasis should be on developing basic movement skills in a fun way – the FUNdamentals: ABCs: Agility, Balance, Coordination, Speed KGBs: Kinesthetics, Gliding, Buoyancy RJTs: Running, Jumping, Throwing CPKs: Catching, Passing, Kicking, Striking Young people should be encouraged to learn simple sports skills, including striking skills to develop hand-eye coordination and gliding skills to improve balance and coordination. Activities and games should emphasize coordination and learning through repeating movement, but as attention spans are short, variety and structure are essential. As there is little difference developmentally between girls and boys at this stage, mixed activities are encouraged. Participation in a variety of activities and sports helps to develop basic movement skills, and endurance can be developed through playing fun games and activities. Young people are more suited to longer bursts of low intensity activity at this stage of their development, rather than short bursts of high intensity activity. The emphasis must always be on FUN rather than winning. The first window of accelerated adaptation to speed occurs at ages 6 to 8 for girls and 7 to 9 for boys. Bypassing the specialized skill development in the FUNdamentals stage is detrimental to the child's future engagement in physical activity and sport.
Learning to Train Early Puberty M 9-12 years F 8-11 years 10 and Under Squirts 12 and Under Peewee	Speed, agility and coordination are still improving rapidly during this phase. With this improvement of fine motor movement all core skills can be introduced and mastered. This is the key phase for learning good technique, and so quality training, including applying skills in game scenarios, should take precedence over competition results. This is reflected by an emphasis of 70% training, 10% competition specific training[1] and 20% competition[2]. Research shows that failing to utilize this period of growth for skill development will mean that a player is unlikely to reach his or her full potential. Players should learn how to train during this phase, and be encouraged to understand the need to develop fitness, hockey skills and tactical awareness in all playing positions. Players will be developing the mental capabilities to enable decision making in more complex game situations. Participation in complementary sports will enhance players' learning and understanding of skills and decision making in games. Young people are still more suited to longer bursts of low intensity activity at this phase of their development, but will also be undergoing growth spurts that will affect coordination. Once their body has adapted, skills may need to be re-learned or refined as a result of these changes in relative limb lengths. Players will be developing physically and mentally at different rates so chronological age (i.e. from birth date) may not be the most appropriate way to group players. As much as possible, players should be given individual specific direction and structure within their training to recognize that development is occurring at different rates for each player. Evaluators should avoid choosing early physical developers simply because they are stronger or faster – a rounded view of players' long-term potential should be encouraged.

1 Competition specific training is scrimmaging, exhibition games, etc.
2 Competition is sanctioned competition, league play, tournaments, playoffs, etc.

USA Hockey Model
Long-Term Athlete Development Stages

Training to Train Late Puberty M 12-16 years F 11-15 years 14 and Under Bantam 16 and Under Midget	Research shows that this phase of development is key for the development of various aspects of fitness. Toward the end of this phase, young players will be better able to deal with the demands of short bursts of higher intensity activity required for hockey. The latter end of this phase of development is the ideal time for developing speed and strength using body weight exercises, but this should be part of a program tailored to the individual due to differing rates of growth and maturation. The emphasis should remain on training during this phase, reflected in a ratio of 60% training, 20% competition specific training and 20% competition. This is also a prime skill development period, but due to better developed mental capacities, players will be more able to train under realistic game pressure, applying core skills to develop decision-making ability in a variety of playing positions. Competition should be used only to reinforce learning and refine the application of skills, not concentrate on the games outcome. Young players should ideally undertake competition only with peer groups at this delicate period of their development. As with the previous phase of development, research shows the need for physical (fitness) preparation and skill development is critical here. This will result in an increase in the training demands on young players. However, for hockey training sessions should be structured to perform the dual function of working on aspects of fitness alongside skills. Additionally, the recommendations should be viewed as a weekly 'program' that may be obtained via a number of different sources, e.g. school PE, club or other hockey coaching, and participation in complementary sports, which is still to be encouraged at this stage. It is for this reason that efforts should be made to manage individual players' sporting, academic and social commitments in order to achieve balance. This is particularly important for talented players who may be accessing coaching via a number of different sources, potentially in more than one sport. This is the stage at which the draft LTAD hockey model differentiates its content to provide guidance for all those who play hockey (standard content) and those who aspire to become elite performers (high performance content). It is recognized that at these ages there is still very little difference in recommended content as this is such an important age and many players still possess the potential to become elite performers.
Learn to Compete Early Adult M 16-18 years F 15-17 years 18 and Under Midget	This is also an important phase for fitness development, particularly for strength. The content is intended to reflect the degree of commitment required to continue a players' development either as a recreational or an aspiring elite player. The development of skills and mental capabilities will be well advanced in players at theses age groups so it is appropriate for more emphasis to be placed on competition, demonstrated by a 50% training, 25% competition specific training and 25% competition ratio. In the early part of this phase, the emphasis within competition should still be to reinforce learning, with a gradual shift to a more outcome drive emphasis. A players' ability to perform core skills and make decisions within a game situation have reached a standard at which tactical strategies can be properly applied in order to try to overcome opposing teams, at these age levels. Training will include more specific preparation for competition.

USA Hockey Model
Long-Term Athlete Development Stages

Training to Compete Early Adult M 19-23 years F 18-21 years Junior, NCAA	Fitness development is a specific component of the train-to-compete phase. As the body reaches mature status, all physical systems are ready to train for optimal performance, and strength development can begin to produce optimal body mass. The content is intended to reflect the degree of commitment required for the aspiring elite-level player. The development of skills and mental capabilities will be well advanced and so it is appropriate for more emphasis to be placed on competition, demonstrated by a proposed 40% training, 30% sports specific training and 30% competition ratio. The emphasis within competition should be much more outcome driven. This is because a player's ability to perform core skills and make decisions within a game situation have reached a standard at which tactical strategies can be properly applied in order to try to overcome opposing teams. Training will include more specific preparation for competition.
Training to Win Adulthood M 19+ years F 18+ years NCAA, NHL	This is the final stage of athletic preparation. Skill and tactical preparation will be tailored for competitions, with ratios reaching 40% training, 20% competition specific training and 40% competition. With all skill and tactical abilities fully developed, emphasis can now be placed on achieving the best possible performance in competition.

USA Hockey High Performance Structure
Development Model

LTAD Stages

Training to Win
19+ Junior, NCAA, NHL

Training to Compete
Junior, NCAA

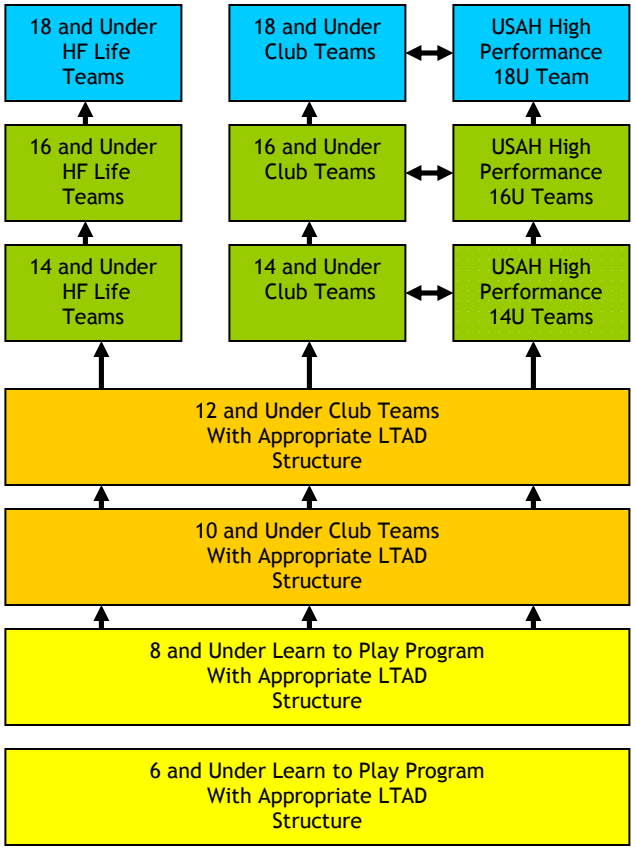
Learning to Compete
18 and Under Midgets

Training to Train
16 and Under Midgets
14 and Under Bantams

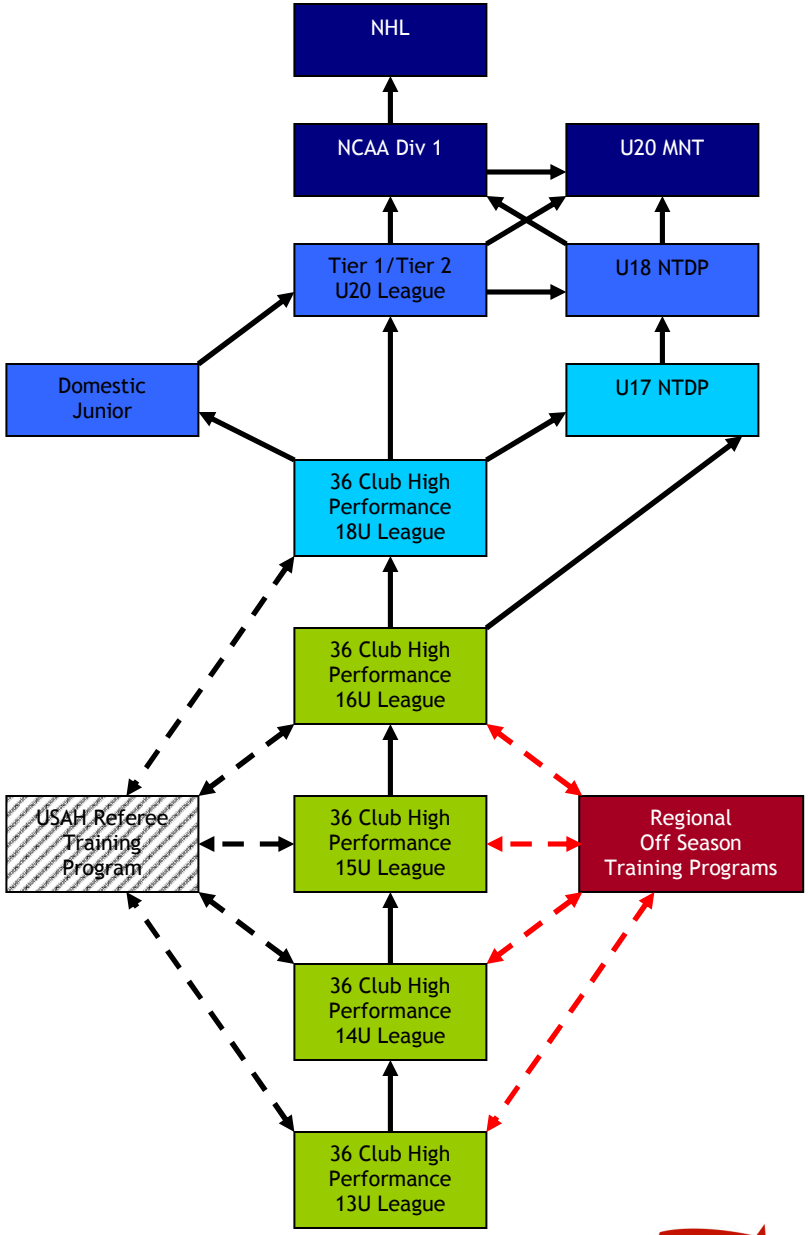
Learning to Train
12 and Under Peewee
10 and Under Squirt

FUNdamentals
8 and Under Mites
6 and Under Mites

Club Structure



High Performance Structure



USA Hockey High-Performance Program
High-Performance Track - Clubs

USAH Tier 1 Developmental Club Team 18 and Under Midgets	Within the USA Hockey club structure, a number of sanctioned high-performance clubs (HPC) will be established. These HPCs will be required to follow the designated USA Hockey protocols on training-to-game ratios and incorporate NTDP training philosophies. The HPC's will be required to run 6U, 8U, 10U and 12U programs that follow the LTAD model as a feeder system, or partner with existing Tier 2 clubs to ensure that the appropriate model is being followed. Without changes, programs at the 12U level and below, child development and sports science tells us that we will only have limited success with any new high-performance program at the older age categories. Addressing the needs of our 12U program must be at the foundation of any new high-performance model we put forth, otherwise we are not maximizing our resources. A national HPC league will be established with regional divisions. Games will only be allowed within the HPC system. This will ensure the quality-level of play. To maximize the competition environment, games will be played as three, 20-minute, stop-time periods. Competition-to-training ratios, as well as game, limits will be in place for each age bracket based upon the LTAD model. Competition within regions will be established to reduce costs. Separate 'showcase' events can provide additional cross-region play. These showcases will provide excellent competition at a reduced cost and provide scouting opportunities for the players. Ideally, a 36 team league is the goal with six regional divisions of six teams each. The U.S. will be divided into the most cost-effective travel groupings. To help increase the number of participants, HPC teams will be birth-year teams, major and minor, instead of the traditional two-year age category teams. Players should be club registered, not team registered, to allow for player movement due to injuries. Teams can carry a roster of 18 players, (10 forwards, six defenseman and two goalies). If players are injured, movement can be done freely within the club. Each HPC will field major/minor teams for players between the ages of 13-16. The minor teams at 13 and 15 will each be allowed up to three late year date-of-birth (September to December) players from the age group above them. This allows for some room to address late maturing players. At the 18 and Under category, the HPCs will field a single team. This will help to account for the attrition to NTDP, USHL, and NCAA. USA Hockey will develop a 'Best Practices' guidelines for player development and coaching for each age group to follow the appropriate LTAD model. Games will be officiated by selected USA Hockey officials that are targeted as part of the officiating high-performance track. This will ensure the highest quality game environment for players, coaches and clubs. (This has the potential to be subsidized) The appropriate off-ice components need to be included at all levels of the HPC operation. A gymnasium component to the 12U, 10U, 8U and 6U levels is a key to high performance potential. Off-ice training at all levels is necessary. As well as encouragement to play complimentary sports through the 12 and Under levels. USA Hockey will establish a mentoring program to assist in the growth and development of coaches within the high performance program. Mentors will come from the USA Hockey as well as selected collegiate and professional coaches. HPC coaches will also participate in the regional off season programs to provide more interaction with the USAH National Team coaches and selected professionals.
USAH Tier 1 Developmental Club Team 16 and Under Midgets 14 and Under Bantams	

USA Hockey High-Performance Program
High-Performance Track - Clubs

USAH Tier 1 Developmental Club Team

18 and Under Midgets

USAH Tier 1 Developmental Club Team

16 and Under Midgets

14 and Under Bantams

USA Hockey will pay particular attention and support to the 12U, 10U, and 8U coaches. These age groups are the MOST IMPORTANT in the long term success of any high performance program and should receive significant assistance. A Coaching Education Program (CEP) track will be run specifically for these age categories. Mentoring relationships with USA Hockey staff and select coaches will be established. Special workshops will be held to help address the needs of these coaches. Potentially, a level 5 track will be established for each of these age groups.

HPC coaches will also be provided an opportunity to attend the NTDP internship program. It is also possible to occasionally include an HPC coach on an staff of one of our National Teams.

The High Performance Club Structure will have oversight by the NTDP through a High Performance Director. The Director will have six high performance Managers, each with the responsibility of overseeing a six club region. These individuals will be responsible for the performance markers for each of their subordinate clubs.

Financial oversight and accountability by USA Hockey is also a necessary component. Cost and expenses will be review by USAH. While it is understood that ice time expenses vary by location and that there will be budget variations, limiting the expense for families will be a key focus. To truly develop a pool of elite players, the HPC program can't only be accessible to families with means. Options need to be explored.

Player movement into the HPCs will come by a vertical track through the 12U LTAD structured programs. This will provide a base of players that have a solid foundation in basic movement and core hockey skills to reach their potential. A horizontal transfer of players is also available through the outside Tier 1 and Tier 2 programs as later developing players pass through the maturation process. Biological age considerations must always be kept in mind.

Tryouts for each HPC team will be scheduled within the same time frame (to be established) so as not to interfere with the athletes periodization training calendar.

USA Hockey can utilize its resources to develop a player profile and tracking system for all the players within the HPC system. Progress can be monitored from year to year and players promoted to NCAA and the NHL.

As players progress, a fluid evaluation process must be followed. The top players may move up the developmental chain into the National Team Development Program after their 16U season. Players in the HPC would have the continued ability to progress to the USHL and to other domestic Junior A (NAHL, EJHL) leagues. We currently have 12 Tier 1 and 19 Tier 2 junior A teams in the United States. An increase to 16 teams at the Tier 1 level should be a short term goal - as well as an increase to 20 teams over the next 5+ years. To have a solid foundation, we must keep a pyramid structure. Players should be targeted for movement to the USHL first and then to other domestic junior leagues.

USA Hockey Club Structure
LTAD Model

USAH Develpmental Club

12 and Under Teams
Peewee

10 and Under Teams
Squirt

8 and Under
Mites

6 and Under
Mites

Learn to Play Program

The structure of our USA Hockey's 12 and Under program is an integral part of the player developmental model for both the Hockey for Life track and the High Performance track. The developmental model for both tracks is the same through the 12 and Under level.

8 & Under

Through the 8 and Under age group all competitions are run cross ice. The goal is to provide an environment that focuses on the development of the ABC's of fundamental movement skills. The emphasis is on Fun and developing a passion for the sport.

Players can be grouped into teams of like abilities, with the overall focus on evenly distributing the player ability pool across all teams. During the cross ice competitions the more advanced players may be placed against each other to balance the competition equally. Team composition is ideally at a maximum of 9 to 13 skaters per team. The goaltender position is rotated between team members.

A gymnasium component should also be included at this level. A 30 to 40 minute session prior to, or immediately following the ice sessions, should be incorporated into the basic practice plan. One gymnasium session per week for this age group. The focus should continue to be on the ABC's of fundamental movement skills. An introduction to warm-up and cool down can begin during this age bracket to enhance the future receptiveness to training. Components that enhance speed and quickness should also be incorporated to address this particular window of optimal trainability.

This age group should be encouraged to play multiple sports at different times throughout the year with no periodization schedule implemented.

The on-ice schedule should consist of a maximum of two or three ice sessions per week with the sessions no longer than 50 minutes. The occasional, monthly, four-team cross-ice jamboree can be used as the third ice session for the week.

Competition should be limited to in house at this level to reduce the time and financial commitment for players and families. Extended competition (out of town) at this level has no long-term benefit for the player.

10 & Under

At this age group, the LTAD model program should focus on the greatest level of individual skill development in order to maximize the window of optimal trainability. The prescribed 70-to-30 percent training to competition ratios should be strictly adhered to.

Club structure should incorporate teams that are grouped into teams of like abilities, with the overall focus on evenly distributing the player ability pool across all teams. Since the focus is on the developmental process and not on the game outcome, during competitions the players with greater ability levels can compete against each other with top line against top line, 2nd line against 2nd line.

Team composition will include a roster of 10 skaters and 1 goaltender. The physiological aptitudes of players at this age can easily handle the playing requirements of competing every other shift. This will increase each player's individual puck touches within the competition and make the individual game more productive in player development terms. Competitions should be limited to the local area. This is the age when club-to-club competition can be introduced. All teams within the club at this age group must be registered at the same level to help address the balancing of all teams within the association.

USA Hockey Club Structure
LTAD Model

USAH Developmental Club

12 and Under Teams
Peewee

10 and Under Teams
Squirt

8 and Under
Mites

6 and Under
Mites

Learn to Play Program

The model LTAD 10 and Under program should consist of three-to-four ice touches each week. All training sessions are in groups of two to four teams with the focus on hockey skills and small group tactical awareness. Sessions should be 60 minutes in length.

Multiple sport participation should be encouraged. A periodiaztion or double periodization schedule should be incorporated to maintain interest and help with basic skills development.

A gymnasium component must also be incorporated twice each week for 30-to-40 minutes either prior or post practice. Athleticism and hockey skills should be the focus.

All hockey in the United States is Tier 2 at the 10 and Under level. The need for extensive competition at this age is counter-productive to maximizing player potential. The more community based the club can be at these ages, the better stability that will be displayed at the later age groups.

12 & Under

At the Peewee level, teams should maintain a 70% training, 10% competition specific training and 20% completion ratio to maximize the skill acquisition optimal window of trainability. Clubs should look to provide 4 ice touches each week for all 12 and Under teams. While it is recommended that roster sizes be kept small, an expansion to 14 skaters and 2 goalies is now allowed. Shared ice practices should consist of two or three teams.

The club may begin at this level to group players onto teams of like ability. While separation on ability is now allowed, the club must field more than one team at the highest level that the club participates in at the Peewee level. As an example, if a club has enough players for three peewee teams, it would need to field two Peewee A teams and one Peewee B team and should balance the two A teams based on talent level. Two B teams and one A team are not allowed. The goal at this level is still the maximum individual development with a process drive model not an outcome based model.

Clubs should look at structuring their organization as broadly as possible through the Peewee age categories. Limit player cuts for the top level of play to as few as possible. Player retention at the top level should be the goal. Competition and the limiting of positions at the top level will be introduced at a later time. By keeping the base wide, it allows the more skillful players to have greater success and it allows for the lesser players to emulate the better players. Both situations are beneficial for the individuals involved.

At the Peewee level, the focus should be on individual skills and small group tactics.

USA Hockey High-Performance Program
Regional High-Performance Off-Season Training

USAH – NTDP Regional Off-Season Training Programs

14 and Under Bantams

16 and Under Midgets

USA Hockey will run a number of subsidized regional off-season training programs for 13-to-16 year olds. These programs will be utilized to provide additional low cost training time and resources to selected players within the high performance structure.

The area high-performance club coaches will be utilized as part of the staffs for the summer satellite programs in order to expose these coaches to NTDP philosophy and new training ideas. This is a continuing education and mentoring opportunity for these coaches. Lead staff (coaches) will be selected by the NTDP. This involvement by the HPC coaches is crucial to our player development structure for quality in-season training of our athletes.

Programming will be developed by USA Hockey and will include on-ice and off-ice components.

- Strength and conditioning
- On-Ice skills, tactics and habits
- Nutrition, hydration and recovery
- Mental preparation training
- Elite athlete culture and lifestyle training

Scheduling will be from May to July with a summer break around the Independence Day holiday. The schedule will conclude prior to USA Hockey's Select Camps. Training will take place three-to-four days per week with both on-ice and off-ice components on each day. The goal is to provide roughly 100 extra hours of training time to each athlete.

Attendance is mandatory for those that enroll. Each athlete is allowed three absences. On the fourth absence the player is expelled from the program and admittance in future years is subject to review.

Within the annual training calendar, the months of April and August are completely off for players in the high performance program. This is to provide the appropriate rest periods within an annual periodization calendar.

A goaltender component will also be included within the program. This will be run using the Warren Strelow curriculum, with oversight from USA Hockey's National Goalie Mentorship Program.

The training program can also be utilized in areas that do not have the high-performance club structure at the 14U, 16U and 18U levels. For example, resources could be allocated to Minnesota Hockey to help run a regional training program for selected players within that District.

Over time, the programs will allow for more contact between our USA Hockey National Team coaches and staff and youth coaches in the high-performance clubs. Establishing relationships and the cultivation of new ideas will only help athletes develop into truly elite players.

The pilot off season program that was conducted in Ann Arbor in the summer of 2008 has already shed some light on the deficiencies of our top 13-year-olds from metro Detroit. It was apparent that these players still need to grasp the concepts that they should have mastered during the Learn to Train stage. They were deficient in understanding exactly how to train and approach a practice session. This is a limiting factor in their ability to make improvements in their game. This is also a coaching issue that can be addressed by the inclusion of the club coaches in these sessions.

USA HOCKEY
LONG-TERM ATHLETE DEVELOPMENT MODEL
Draft of LTAD for Ice Hockey – Standard and High Performance Tracks

Stages of Development	Ages	Objectives for Development				Training Characterized by	Other Issues (including competition)
		Physiological	Hockey Specific	Psychological	Lifestyle		
FUNdamentals Learning FUNdamental movement skills	M 6-9 yrs F 6-8 yrs 8 and Under Mites 6 and Under Mites Learn to Play	- Basic movement skills: Agility, balance & coordination - Some basic sports skills: Running, jumping, skating, throwing, striking - Development of speed - Introductions to core stability - Principles of warm-up & cool down - Daily physical activity	- Emphasis on fun - Introduction to simple sports skills through hockey and other sports, especially speed, quickness and agility as well as striking skills to promote hand-eye coordination - use of structured programs	- Ensure motor learning issues are adopted into coaching practice - Introduction to ethics and rules	- Introduce the basics of: good cultural and lifestyle habits, nutrition, hydration, recovery - Sportsmanship - Begin parent education about these issues	- Emphasis on fun - Encourage daily activity (formal and informal) - Encourage participation in many different sports - 2X hockey p/w - Session Length 50 mins. - No periodization	- No formal competition - Encourage game play experience in a variety of sports, emphasis on learning - Some cross ice game play weekly
Learn to Train Learning FUNdamental sport skills	M 9-12 yrs F 8-11 yrs 12 and Under Peewee 10 and Under Squirt	- Basic sports skills: Jumping, skating striking - Develop speed through agility, speed & change of direction in warm-up - Introduce flexibility & exercises for strength development - Develop endurance through activity - Generic lower body and core stability	- Peak skill emphasis - Development of hockey core skills - Introduction to applying core skills in decision making situations - Basic assessment for talent identification at 12 and Under Peewee	- Ensure motor learning issues are adopted into coaching practice - Developing basic knowledge and experience in small area game play - Applying core skills in basic hockey decision making situations - Reinforcement of ethics and rules - Introduction to mental preparation	- As above - Introduce principles of tapering and peaking - Continue parental education on these issues	- Encourage daily activity (formal and informal) - Structured to enhance learning of basic sports skills, in multiple sport environment - participate in 2-3 complementary sports - 3-4X hockey p/w - Session length 60 mins. - Double periodization to aid structuring and maintain interest	- Ratio of 70% training, 10% competition specific training, and 20% competition - Informal competition to encourage application of techniques in game play Overall activity ratios: 30% hockey 30% fitness through sport 40% other sports
Train to Train Building fitness and sport specific skills	M 12-16 yrs F 11-15 yrs 16 and Under Midget 14 and Under Bantam	**Standard Content** - Major fitness development phase for: Endurance (at major growth spurt) Strength (at major growth spurt +18 months) Speed (M 13-16) (F 11-13) Continued lower body and core stability development	- Critical sports specific skills development phase - Training reflects more realistic game pressures for application of core skills to develop decision making - Competition used to reinforce learning and refining of technique, not performance. (process driven not outcome driven) - Continued assessment for selection	- Motor issues continue to be adopted in coaching practice - Players exposed to more complex decision making situations - Continuing education on mental preparation - Developing appropriate attitudes to competition e.g. 'being the best you can be' not 'winning at all costs	- Develop understanding of good cultural and lifestyle habits, nutrition, hydration and recovery - Introduction of individual management - Parental education and involvement in lifestyle management	- Begin fitness training to coincide with major growth spurt 2-3 X speed, lat/linear 2 X strength - Participation in 1-2 complementary sports - 3-4X hockey p/w - Session length 60-80 mins. Single or double periodization	- Ratio of 60% training, 20% competition specific training, and 20% competition - Competition used to reinforce learning, (process not outcome driven) Overall activity ratios: 45% hockey 35% fitness 20% other sports

Developed on the work of Istvan Balyi, an internationally recognized coach educator, and is based on a consensus of evidenced research about how young people develop sports abilities, linking more closely coaching and athletes' physical and psychological growth.

USA HOCKEY

LONG-TERM ATHLETE DEVELOPMENT MODEL – Standard and High Performance Tracks

Stages of Development	Ages	Objectives for Development				Training Characterized by	Other Issues (including competition)
		Physiological	Hockey Specific	Psychological	Lifestyle		
Train to Train Building fitness and sport specific skills	M 12-16 yrs F 11-15 yrs 16 and Under Midget 14 and Under Bantam	**High Performance Content** - Major fitness development phase for: Endurance (at major growth spurt) Strength (at major growth spurt +18 months) Speed (M 13-16) (F 11-13) Continued lower body and core stability development	- Critical sports specific skills development phase - Training reflects more realistic game pressures for application of core skills to develop decision making - Competition used to reinforce learning and refining of technique, not performance (process not outcome) - Continued assessment for selection – (U17 NTDP and Select Teams)	- Motor issues continue to be adopted in coaching practice - Players exposed to more complex decision making situations - Continuing education on mental preparation - Develop appropriate attitudes to competition aims e.g. 'being the best you can be' not 'winning at all costs	- Develop understanding of good cultural and lifestyle habits, nutrition, hydration and recovery, tapering and peaking - Introduction of individual management - Parental education and involvement in lifestyle management	- Begin fitness training to coincide with major growth spurt 2-3 X speed, lat/linear 2 X strength - Participation in 1-2 complementary sports - 4-5X hockey p/w - Session length 60-80 mins. Single or double periodization	- Ratio of 60% training, 20% competition specific training, and 20% competition - Competition used to reinforce learning, (process, not outcome driven) Overall activity ratios: 45% hockey 45% fitness 10% other sports
Learn to Compete Refining skills for particular events and competitions	M 16-18 yrs F 15-18 yrs 18 and Under Midget	**Standard Content** - Major fitness development stage for strength - Fitness and recovery program tailored to individual - Knee stability - Hockey specific core stability maintenance	-Maintain training in many different positions to avoid specialization (except goalies) - Model training and competition needs to account for periodization - Preparation under competitive conditions - Emphasis on technical and tactical preparation, event and position specific as required - Continued evaluation and selection	- Refine decision making abilities in game situations - Continued development of mental preparation skills	- Continue education on lifestyle issues - Encourage use of individual management to balance demands	- 3 x 30 min fitness through physical activity - 2-3X hockey p/w - Session length 60-90 min - Participate in 1 complementary sport	- Ratio of 50% training to 25% competition specific training, and 25% competition - Competition used to reinforce learning but becoming more outcome driven - Overall activity ratios: 50% hockey 40% fitness 10% other sports
		High Performance Content - Same as standard content but frequency and intensity adjusted for high performance athletes - Fitness and recovery program tailored to individual athlete - Core stability appropriate to needs of athlete - Include active recovery determined by individual diagnostics	- Same as standard content but frequency and intensity adjusted for high performance athletes - Continued evaluation and selection	- Refine decision making abilities in game situations - Continue development of advanced mental preparation skills for competitive environment - Develop appropriate attitudes to competition, becoming more outcome focused	- Monitor and optimize understanding of performance lifestyles, nutrition, hydration recovery, tapering and peaking - Use of individual management to balance demands - Continued parental education and involvement in lifestyle management	- Fitness training to account for strength development phase - 4-6 fitness sessions p/w - 5-6 hockey sessions p/w - Session length 60-90 min - Participate in 1 complementary sport - Double or triple periodization	- Ratio of 50% training, 25% competition specific training, and 25% competition - Competition used to reinforce learning but becoming more outcome driven - Overall activity ratios: 60% hockey 40% fitness

Periodization - Refers to the division of a calendar year into specific phases of preparation, competition and rest. During the preparation phase, the emphasis is on training in readiness for competition. A double periodization calendar year would have two cycles of these phases, i.e. preparation-competition-rest- preparation-competition-rest.

USA HOCKEY

LONG-TERM ATHLETE DEVELOPMENT MODEL – Standard and High Performance Tracks

Stages of Development	Ages	Objectives for Development				Training Characterized by	Other Issues (including competition)
		Physiological	Hockey Specific	Psychological	Lifestyle		
Train to Compete Refining skills for particular events and competitions	M 19-23 yrs F 19-21 yrs Junior, NCAA	**High Performance Content** - Major fitness development stage for strength - Fitness and recovery program tailored to individual - Knee stability - Fitness and recovery program tailored to individual athlete - Core stability appropriate to needs of athlete - Include active recovery determined by individual diagnostics	- Model training and competition needs to account for periodization - Preparation under competitive conditions - Emphasis on technical and tactical preparation, event and position specific as required - Same as standard content but frequency and intensity adjusted for high performance athletes - Continued evaluation and selection	- Refine decision making abilities in game situations - Continue development of advanced mental preparation skills for competitive environment - Develop appropriate attitudes to competition, becoming more outcome focused	- Monitor and optimize understanding of performance lifestyles, nutrition, hydration recovery, tapering and peaking - Use individual management to balance demands - Continue education in lifestyle management	- Fitness training to account for strength development phase - 4-6 fitness sessions p/w - 5-6 hockey sessions p/w - Session length 60-90 min - Double or triple periodization	- Ratio of 40% training, 30% competition specific training, and 30% competition - Competition used to reinforce learning but much greater emphasis placed on competition outcome - Overall activity ratios: 60% hockey 40% fitness
Train to Win Maximizing Performance in Competition	M 19+ yrs F 18+ yrs Junior, NCAA, NHL	**High Performance Content** - High Intensity, high volume training - Continued speed, strength and endurance development - Training tailored for individual peak performance - Physical preparation tailored to peak for major competitions - Frequent breaks in program for recovery - Daily recovery program	- Program tailored to needs of individual athlete - Continued development of technical and tactical skills - Technical and tactical preparation tailored to peak for major competitions - Ongoing assessment and selection	- Program tailored to needs of individual athlete - Advanced mental preparation modeled to account for periodization	- Monitored high performance lifestyle - Individual management program	- 4-6 fitness sessions p/w - 6-8 hockey sessions p/w - Session length 60-90 min - Double or triple periodization	- Ratio of 30% training, 20% competition specific training, and 50% competition - Competition becomes outcome driven - Overall activity ratios: 65% hockey 35% fitness

Developed on the work of Istvan Balyi, an internationally recognized coach educator, and based on a consensus of evidenced research about how young people develop sports abilities, linking more closely coaching and athletes' physical and psychological growth.

High-Performance Periodization Calendar
Rough Estimates

Teams	Sept				Oct				Nov				Dec				Jan				Feb				Mar				Apr				May				Jun				July				Aug			
HPCs - High Performance 18U																																															
HPCs - High Performance 16U																																														
HPCs - High Performance 14U																																														
16 and Under																																														
14 and Under																																														
12 and Under																																														
10 and Under																																														
8 and Under																																														
6 and Under																																														

Note: USAH National Championships are the first week in April. Select Camps are moved to a two-week block in July. Active rest periods are located around the Christmas holidays and the July 4th holiday. The transition rest periods occur at the conclusion of playoffs either in mid-March or the first week in April if a team progresses to USAH Nationals.

In the HPC track, if we are suggesting that players use May, June and July for satellite training and Select Camps a (preparation phase), then time must be built in for the rest phase.

Competition

Preparation

Rest Recovery

Active Rest

USAH Registration Numbers 2006-07

Division	Number	High Performance Teams	Players	Percentage
13 & 14	52,869	13 - 36 at 18	648	
		14 - 36 at 18	648	
			1300	2.5%
		13 – 24 at 18	432	
		14 – 24 at 18	432	
			864	1.6%
15 & 16	41,250	15 - 36 at 18	648	
		16 - 36 at 18	648	
			1300	3.2%
		15 – 24 at 18	432	
		16 – 24 at 18	432	
			864	2.1%
17 & 18	26,752	Combined - 36 at 18	648	2.4%
		Combined – 24 at 18	432	1.6%

The Minnesota drop off between 13/14 and the 15/16 divisions is more than 4,000 players, by far the largest … not dropping hockey, just dropping out of our USAH system.

30 teams at each age category gives 540 players or about 100 less per age. Total players effected 3250 to 2750

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