CANADIAN BASKETBALL ATHLETE DEVELOPMENT MODEL

CANADA BASKETBALL

We acknowledge the financial support of the Government of Canada through Sport Canada, a branch of the Department of Canadian Heritage.

Canada

Long-Term Athlete Development
December 2008

ISBN 978-0-9811969-0-9

Table of Contents

The Athlete Development Model

Overview

Canada Basketball presented their strategic plan to the country in the fall of 2003. The mission was described as:

2020 "A World Leader in Basketball"

Leading a unified basketball community to engage all in quality experiences and drive international success.

The priorities were to:

- Unify the basketball community
- Develop an enduring economic model
- Build a dynamic developmental infrastructure by improving coaching at all levels by developing a system based on principles, which encompass participation and excellence.

The Athlete Development Model (ADM) is a key step in achieving the mission. It provides a consistent framework from which coaches can work. This document has been designed with the input of sport scientists and coaches from across the country. It is a long-term player/athlete development model that illustrates to coaches, parents, volunteers and administrators at the local, provincial and national levels, the importance of a systematic and consistent approach to the development of athletes. It also recognizes the importance of participation in securing the health of the nation.

The model is to be used as a guide for coaches and administrators. This will assist them in understanding the importance of teaching particular aspects of the game to athletes at specific stages of development. It is hoped that with this systematic approach, skills and abilities needed to achieve excellence in basketball will be reachable. It will also ensure that all participants will receive the appropriate training that will produce well-rounded people and maintain a lifelong passion for the sport.

The delivery of an aligned, consistent, and systematic development system ensures that everyone's needs are being met at every level of programming. Every participant in the game will be able to see the pathways which will lead him or her to their own level of self-fulfillment. Proper application of this document will ensure that coaches are educated with respect to the needs of their players. The ability of the coach to teach these skills then becomes of paramount importance. Therefore, the development of the coach as a teacher must be the primary focus. Coaches must be supported with frequent clinics and other educational resources that are made available through Canada Basketball and the Provincial/Territorial Associations in order to stay current.

This is a growing, living document that will constantly be fed with new ideas and concepts.

> *"It takes 10 years of extensive practice to excel in anything."*
>
> -Dr. Herbert Simon, Nobel Laureate

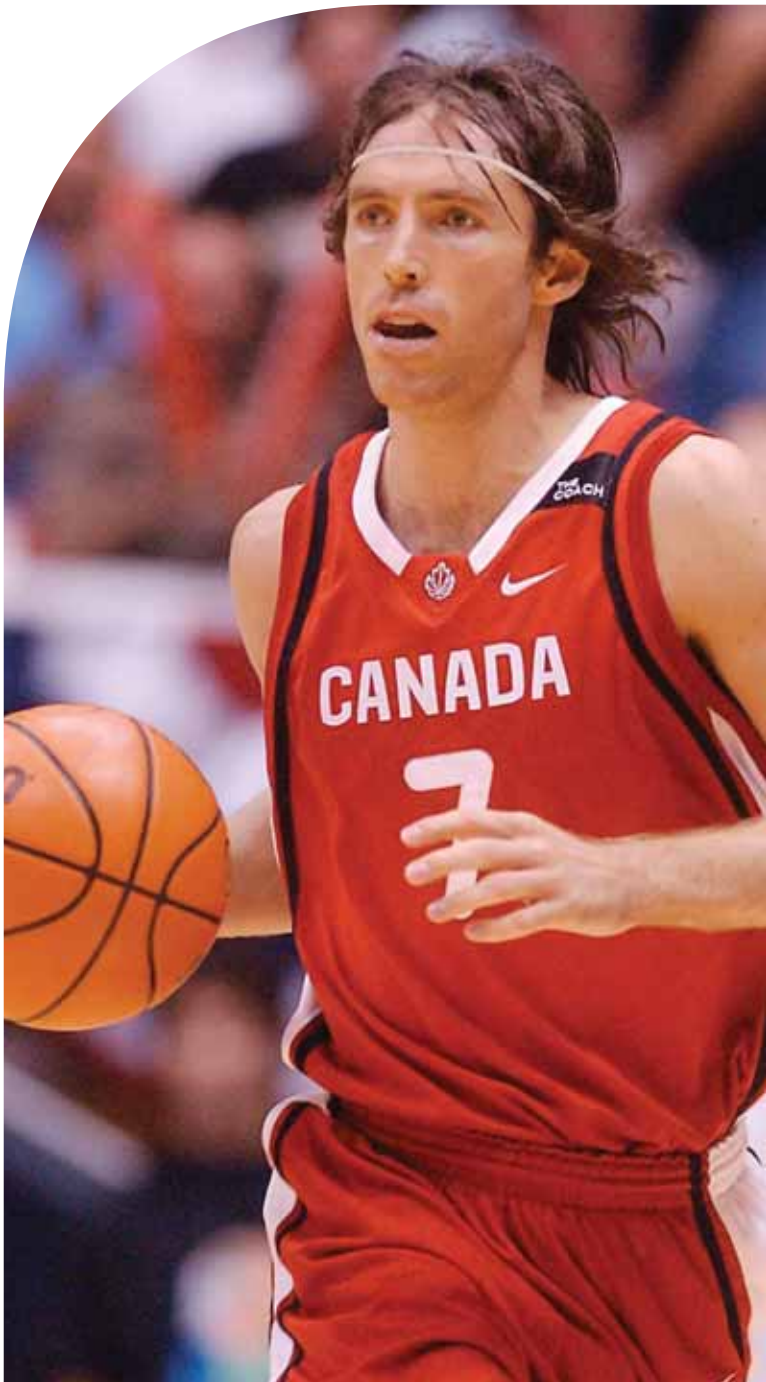


Figure 1

Athlete Development Model

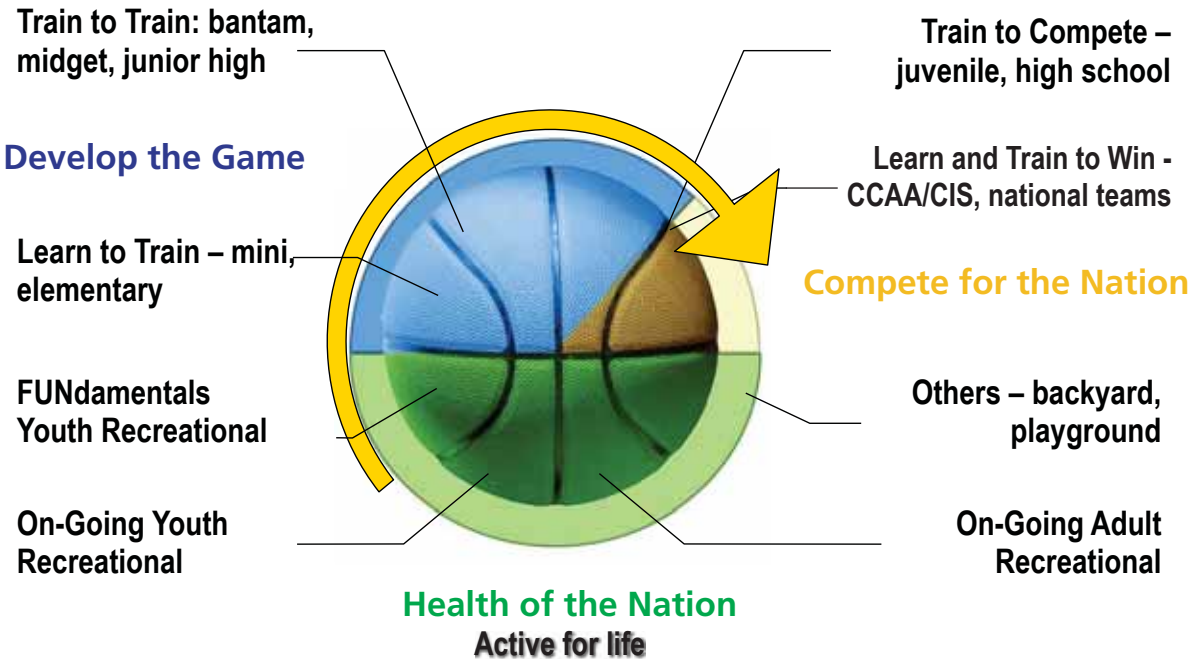
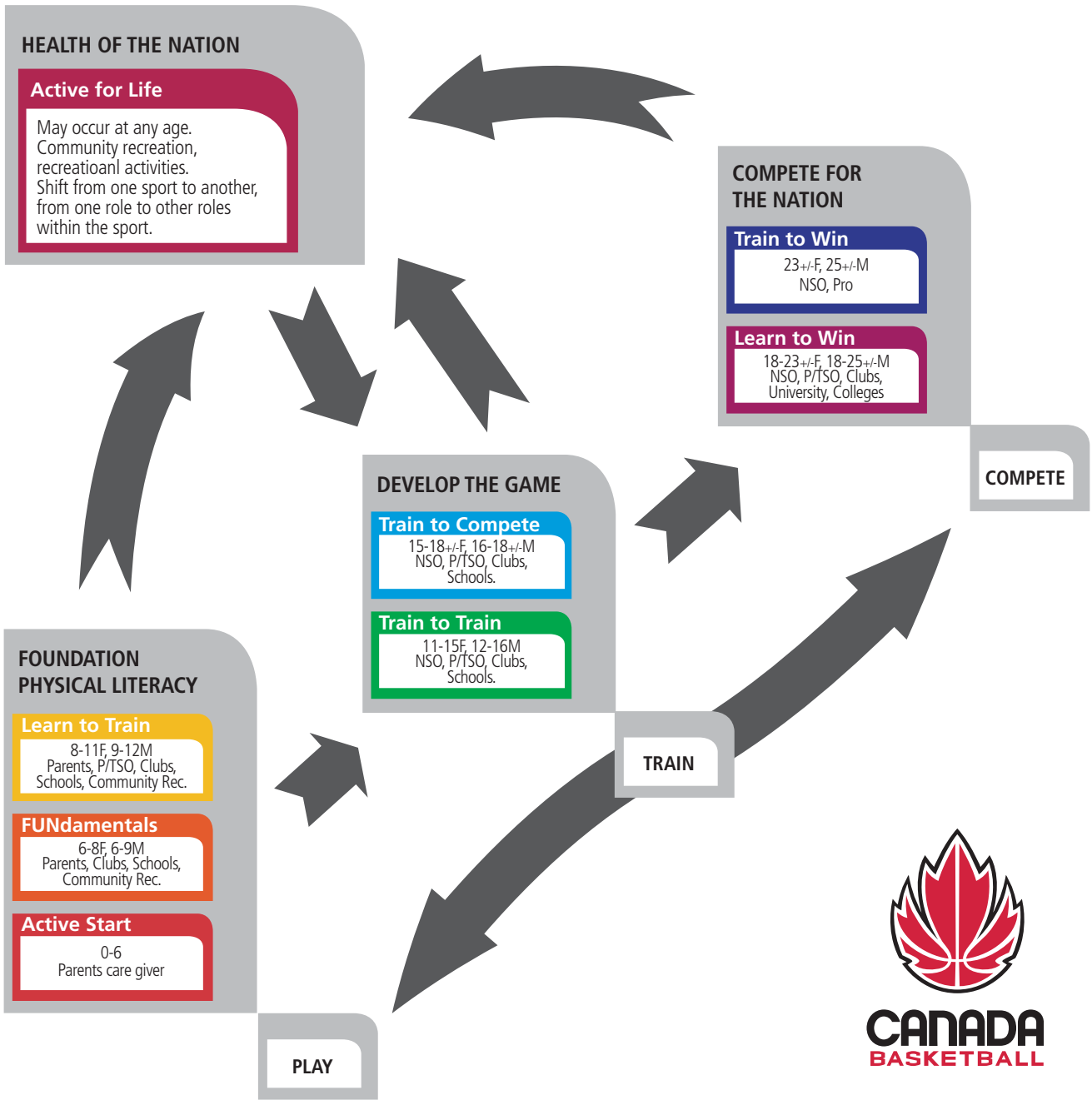


Figure 2

Canadian Sport for Life

Basketball Pathways



Stages of Development

Health of the Nation

Competition/Fun Continuum

The model recognizes that every individual chooses a different pathway in his or her quest to find self-fulfilment through the game. Basketball by its very nature is a competitive game. The level of competition falls on a continuum from having fun through participation to winning medals at the highest level of play. Closely tied to this continuum is the age of the participants and their skill levels. At a young age it is recognized that fun and participation should be the highest priority. As age increases the amount of healthy competition can increase appropriately. As skills improve competition can also increase. There does however come a point in time when participants will want to drop out of highly competitive situations to return to participatory situations which are less competitive, but provide enjoyment and needed exercise. These opportunities are crucial for the heath of the individual and the nation. It allows people of all ages to maintain their personal fitness, develop important values such as co-operation and teamwork and can alleviate many of society's pressing social problems. It gives people something to do that is positive in their life.

By following the stages of the Athlete Development Model all participants will be given the proper grounding in the age-appropriate skills needed to play the game. The participants will then be able to make the right choice as to where on the competitive continuum he or she wishes to participate. There is a slight overlap in each stage of the model. The transition from one stage to the next is often flexible rather than a concrete separation because the stages are based on developmental age rather than chronological age.

It is very important that people are able to enter the model at any stage. Allowances must be made for people who are late entering the game. Because of the way our society works, a participant's biological age will most often determine which stage he or she is entering. Coaches must be aware that specific skills may be lacking in someone who is new to the sport, but with proper coaching this can easily be overcome. Programs also need to be able to safely and effectively adapt activities to include children and adults with disabilities. We want the game to be inclusive, not exclusive.

It is important to note that the Learn to Train (L2T) and Train to Train (T2T) stages in the model are biologically based. One cannot change these facts. You cannot rush human development. Young people will mature at various paces. Research has shown that chronological age is a poor basis for athlete development models, since the musculo-skeletal and emotional development of athletes between ages 8 and 16 can vary greatly within any given age category. The content of preparation should be adjusted to the developmental levels of the players.

Canadian Sport for Life, published by the Canadian Sport Centres, states that physical activity should be fun and a required part of the child's daily life, not something required. Active play is the way young children are physically active. Basketball is a late maturation sport and therefore does not recommend any formal, adult organized basketball at the Active Start stage of development. The overall development of an athlete begins around age 6. During these years when the athlete is aged 6 to 9, it is important that they acquire fundamental movement skills. This stage is called the FUNdamental stage of the process, and the underlying message is that children should have fun in all activities. During this stage the athlete will begin to develop the basic physical, affective, cognitive and psychosocial skills. This is the foundation upon which the child's personal and athletic potential should be based. Unfortunately this is the stage that is usually neglected, because it is far too common that coaches with little or no experience are in charge of teaching a group of children. Coaches must be aware that during each stage of a child's development there are specific time periods when certain movement skills should be taught. By introducing the movement skills at the appropriate time the coach ensures that the athletes can reach their full athletic potential at some future date. By following this model, coaches will be able to meet these time frames. This experience must be extremely positive for the child. The child must be able to realize the enjoyment of success at this age. Therefore successes must be made attainable. The Canada Basketball Athlete Development Model recognizes that there are two sub-phases of the

FUNdamentals stage. The first is called the Movement phase. This is generally children ages 6 to 7 years old. Here basketball is learned through the fundamental movement skills. The second phase is the Modified Games phase which encompasses children 8 and 9 years old. Basketball is learned here through modified games such as 1-on-1, 2-on-2, etc.

The Learn to Train or Basketball Skills stage of development follows the FUNdamental stage. This is the major motor learning stage. It is often called the "skill hungry years" or the "golden age of learning" skills. One of the most important periods of motor development for children is between the ages of 9 to 12. During this time, children are developmentally ready to acquire the fundamental movement skills and fundamental sport skills that are the cornerstones of all athletic development. In addition the basic basketball skills should be emphasized, but participation in other sports is still encouraged. Basic psychological skills such as goal setting and concentration can also be introduced.

Develop the Game

The Train to Train stage follows the Learn to Train stage and focuses upon athletes between the ages of 11 to 15 for females and 12 to 16 for males. The athletes will be introduced to many of the technical and tactical parts of basketball during these years. A more strategic, structured approach to training can be adopted during these years. An emphasis is still, however, on the fundamental movement skills. These movement skills can be further developed here, hopefully under optimal conditions. These skills are developed so that the athletes have the ability to reach their full athletic potential regardless of how intense training becomes in later years.

As athletes begin to mature, the competition to practice ratio often becomes skewed to the competition. The focus is shifted from development to winning, with practices becoming few and far between. There is often too much emphasis on competing and not enough on teaching fundamentals. Even during practices, focus is sometimes shifted to practicing sets, press break or scrimmaging, before a player can make a left handed lay-up. Our focus as leaders of the next generation of players must be to develop well-rounded basketball players. This can only happen if coaches emphasize development of the individual player more so than the team.

Players need to learn the game, not a position. Individual development is the foundation.

As in the FUNdamental stage there are two distinct phases of the Train to Train stage. It is during this time when the first major split in the competition/fun continuum occurs. Many athletes will not like the shift to the competition side and want to remain active in a more recreational setting. Others choose the more competitive side of the continuum. Both sides are important. The problem is when only one side of the continuum is available for delivery.

The Training to Compete (T2C) stage of training, involves athletes aged 15 to 18+/- for females and 16 to 18+/- for males. Very specific basketball, physical and mental training should now be applied. Athletes should be introduced to all aspects of the game and should begin to refine all technical aspects and most tactical components. Athletes may also begin high performance training (i.e. provincial teams, clubs teams) and need to compete against quality competition in order to improve. A high level of intensity should be associated with all training endeavours. Individualized training is paramount.

Overview

Compete for the Nation

The next two stages of athlete preparation are the Learn to Win (L2W) and Training to Win (T2W) stages and involve athletes 18 years and older. All of their technical, tactical, physical, mental and ancillary skills and capacities should be fully established and can be refined. Shorter periods of training at high level of intensity accompanied by frequent recovery breaks to avoid burnout are recommended.

Basketball activities should be fully integrated with sport science and sport medicine programs. Athletes between the ages of 18 to 25 +/- for males and 18 to 23 +/- for females will be in Learning to Win. These athletes will be competing in the CIS, CCAA or the NCAA. Training to Win stage is 25+/- for males and 23 +/- for females. These players will be playing professionally, aspiring to represent Canada.

Health of the Nation

The final stage of the model is Retirement and Retainment or Active for Life. During this time players will be moving from very competitive situations into more recreational programs. For many highly competitive athletes this is a time of great change. A program to aid these players in this process is crucial. For many it is retraining them into different roles, such as coaches, referees and administrators within the basketball system.

It is important to note that while this does provide a path for coaches to follow, all successful players will have one thing in common - a love or passion for the game. We, as administrators, coaches, parents and volunteers, must ensure that we provide an environment that allows players to get "hooked" on basketball. If this occurs the athletes will instinctively want to learn, to challenge their full potential.

The Canadian Long Term Athlete Development Model (LTAD)

The core concept of the Canadian LTAD system and our Basketball Athlete Development Model (ADM) is that it recognizes that better athletic performances and a greater percentage of the population engaged in health-promoting, physical activity, are both outcomes of a well-developed sport development system.

LTAD is:

- optimal training, competition and recovery programming with relation to biological development and maturation
- equal opportunity for participation and competition
- and athlete-centred, coach-driven and administration, sport science and sponsor supported.

The process to develop our sport's LTAD was extensive, inclusive and comprehensive. Knowledge was sought from experts across Canada and in-depth discussions have analyzed how our sport can adjust to integrate LTAD into all that we do.

This process initiated re-thinking ALL aspects of our sport including the three most difficult tasks of changing:

1. **System Alignment:** aligning the basketball community under one set of rules.
2. **System Alignment and Integration:** developing and integrating clear pathways that allow players, coaches, officials and administrators to progress through the system. These pathways must permit players to be involved in three distinct streams: health of the nation (recreational in nature), develop the game and compete for the nation. The pathways must also integrate a positive relationship between the educational and club-delivery system.
3. **Competition Schedules:** ensure the appropriate ratio of training to competition at all ages. Within our current development system we have produced a delivery stream of basketball called "competition." This was not a planned process. For numerous reasons the majority of our developing players are playing too many games without the opportunity to gain proper practice of the skills needed to play the game.

ADM Implementation

It is hoped and encouraged that those organizations and programs that are currently providing basketball services for athletes will use this model to review their existing methodology in the development of their athletes. At each level, especially the younger levels, there are a number of implementers in each local area. It is important to emphasize here that there must be very co-operative relationships at each stage and between stages for this model to be effective.

This would mean the following:

- The set criteria for each age level be known by each local authority;
- The recognition that each local authority may not be able to deliver the information effectively;
- That each local authority make a strong effort to educate coaches according to the stage of the athletes they are coaching;
- That the current system by which coaches are educated must be altered to cater to the developmental age specific needs of athletes;
- It must be recognized that not all participants wish to reach the highest levels. Therefore, being ultra structured and specific may turn some athletes off the sport. These athletes should be placed in less time consuming and intense environments than the athlete who wishes to compete at the highest level.

Another very important part of the implementation program is the need for facilities. It is obvious that our practice-to-game ratios are out of control - i.e. we have too many games and too few practices. If we are to change this, athletes will need more practice time, which means more gym time. To get more practice time for our athletes the basketball community must work together to find gym times at affordable prices and become involved in lobbying to build more facilities.

Financial Concerns

We must find a way to keep the cost of our programs low. Basketball is traditionally a sport played by all cross sections of society. With costs constantly on the rise, we are losing some of our best athletes - i.e. some of our best athletes are not involved in programs and do not receive the proper training because they cannot afford it. This is an issue for athletes as they decide what programs to play for and one that we must seriously consider when organizing training programs.

Also the chance for recreation opportunities is dwindling as the cost and need for facilities continue to rise. If we want to address the health of the nation we need to continue to provide these recreational opportunities.

Chapter 2

10 Key Factors of LTAD

Every group that delivers basketball across this country is encouraged to look deeply at their existing practices and make decisions on what is best for the future in the sport of basketball. There are ten key factors of LTAD under which each group should examine their current practices:

1. FUNdamentals

All participants need to learn basic fundamental movement skills at the appropriate stages of development. Since the nervous system develops fast in children, movement skills that involve the nervous system need to be active at this time. These include the ABC's of agility, balance, coordination and speed. If children do not learn these at the appropriate time in their development, they might not reach their fullest potential in the future. We must recognize the difference between physical literacy and physical activity. Physical literacy is the development of fundamental movement skills and fundamental sport skills that permit a child to move confidently and with control, in a wide range of physical activity, rhythmic (dance) and sport situations. Physical literacy also includes the ability to "read' what is going on around them in an activity and react appropriately to those events. This also means a child is able to effectively move the body in all planes of the body
(See www.ltad.ca ; Developing Physical literacy: A Guide for Parents of Children Ages 0 to 12). The physically active child is energetic and on the go. This is important for maintaining health. The problem is that if a child does not learn how to move properly he/she limits their choices of physical activity at a later stage of LTAD. For example; if a child's only physical activity is walking at a younger stage what sports may this child move into in later life?

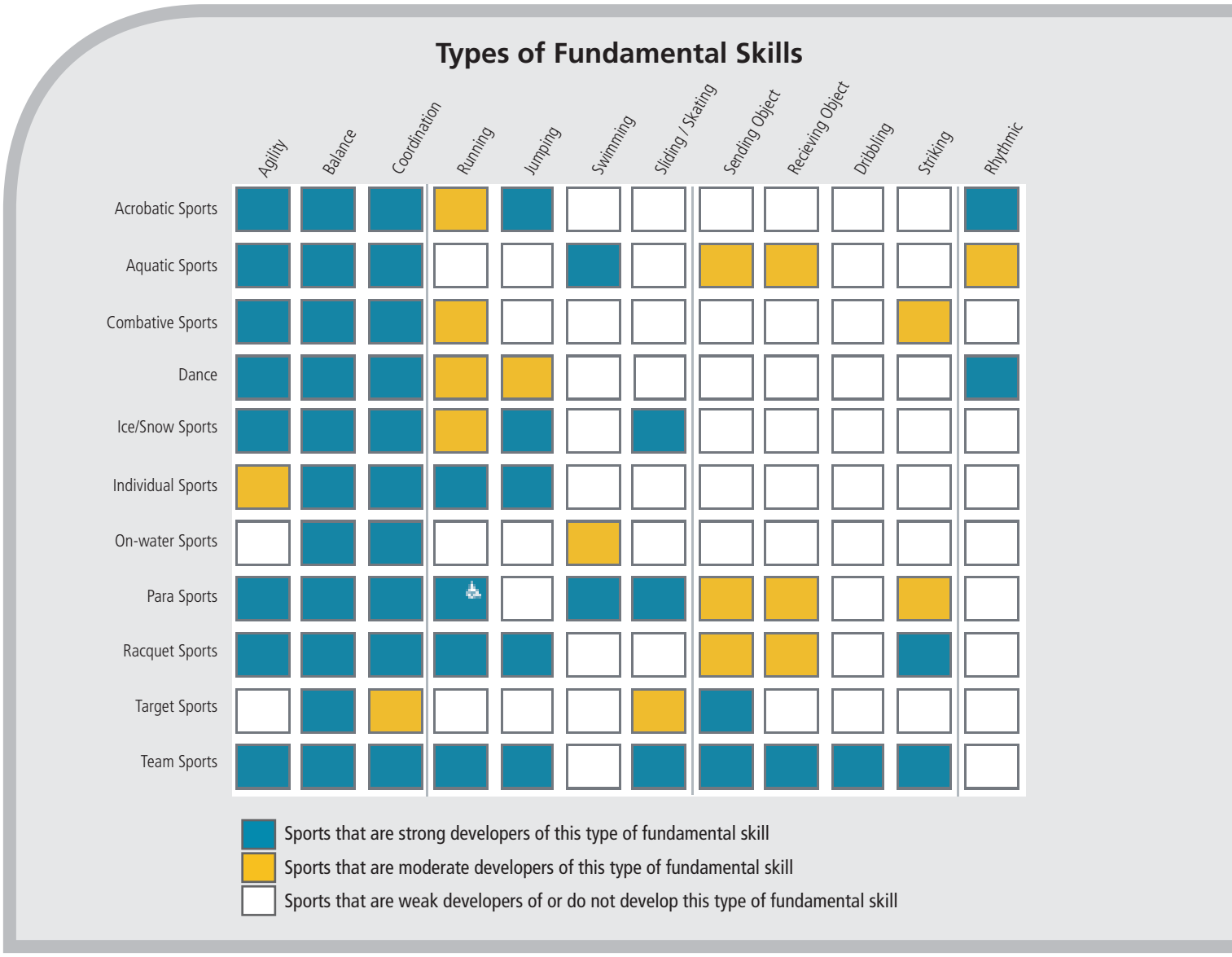
Recommendations:

- Education of parents, coaches and administrators is crucial. Informed parents will demand this be delivered to their children: (See www.ltad.ca; Canadian Sports for Life: A Sport Parents Guide and www.basketball.ca: Basketball Parent Guide for LTAD);
- Develop templates that assist the above mentioned people to plan and implement appropriate fundamental movement development;
- Develop resources that show how these movement skills can be properly taught in a fun way. Many fun playground games naturally teach these skills. It is not always about drills;
- Work to develop relationships across other sports that are delivering sport at these stages of LTAD;
- Fundamental movement needs to be a part of warm up and early season training at all stages of LTAD;
- Athletes need individualized training that focuses on improvement of areas of weakness. Fundamental movement skills cannot always be taught en masse as each child is different.

Rationale:

- Every child is an athlete and needs the proper grounding in movement in order to develop an appreciation for physical activity and therefore derive the health benefits. This will also let them make wiser decisions as to which pathway of sport to choose;
- Educated people will aid in the implementation of LTAD;
- Many weaknesses of sport-specific skills can be linked to ineffective or poorly developed movement skills. If the movement skill is not corrected first, the sport skill will suffer. A basketball example is the lay up. If a child has problem with skipping, a fundamental movement, he/she will struggle to develop the proper rhythm in executing a lay up.

Figure 3 Sports That Contribute to the Development of Fundamental Skills



2. Specialization

Early specialization in a late-specialized sport, like basketball, has been shown to lead to:

- One-sided sport-specific preparation;
- Lack of the basic fundamental movement skills;
- Overuse injuries;
- Early burnout;
- Early retirement from training and competition and often withdraw from physical activity.

Specialization is not only the concept of specialization in one sport; it is also specialization within the sport. Basketball has continually forced the tall player to play in the "post." Often this has meant the adolescent was not been allowed to use all of the skills required to play the game at the later stage of LTAD, when other late maturing players catch up and some times pass this player. Specialization has also occurred in our training sessions where coaches tend to focus more on team development rather than player development.

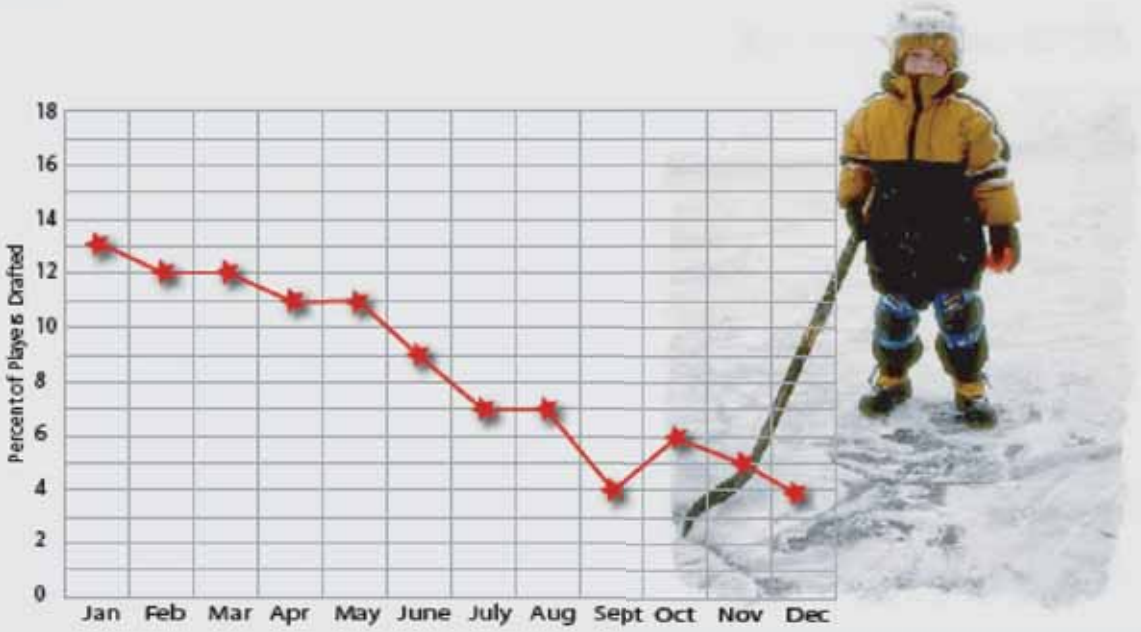
Recommendations:

- During the FUNdamental, L2T and T2T stages of LTAD we need to develop "global" players. These are players who have worked on all the skills and have trained to play every position;
- Individualized training also includes defensive work. A global player also needs to be able to defend all positions on the floor;
- Make use of offences and defences that encourage flexible positioning in the developmental stages of LTAD;
- Review our current elite system. Are we selecting provincial/national teams too early?;
- Fundamental movement skills need to be part of daily warm ups in training and in competition;
- Strategies need to be developed that allow for coaches to account for early, average and late maturers;
- Strategies need to be developed to help with athlete identification vs. athlete selection. Currently we are selecting from the players who "show up" to try out. We need to identify future players and ensure that they receive the proper multi-skilled training at the early stages of LTAD. Many are exiting our sport in the later stages of LTAD or arrive there without the necessary skills need to compete;
- Means must be found to include athletes with a disability in all stages of programming. Resources need to be developed to show coaches how this can be accomplished.

Rationale:

- Every child is an athlete and needs the proper grounding in movement in order to develop an appreciation for physical activity and therefore derive the health benefits. This will also let them make wiser decisions as to which pathway of sport to choose;
- The inability to detect the "great athlete" until after maturity;
- Reduce boredom, frustration, burn outs and drop outs;
- Ensure that all children develop the skills necessary to play at the next stage of LTAD if they wish to.

Figure 4 Distribution of Birthmonths of Drafted Ontario Hockey League, Western Hockey League, and Quebec Major League Players



3. Developmental Age

We must recognize that not all children grow and mature at the same rate. Females also mature faster than males, on average. There is a tendency to apply adult models of sport on children. Too often it is the early maturing athlete who gets to make the elite teams during puberty. This is often based on the fact that the early maturing athlete is more aggressive and can physically dominate the other players. Research has shown that very often the late maturing children become the superior athletes since they have more time to develop the fundamental movement skills and fundamental sport skills. Also the early maturing athlete, who relies on aggression and strength, often does not learn the skills at a younger age. They do not develop the coping skills needed to survive elite sport when the physical maturity playing field is level.

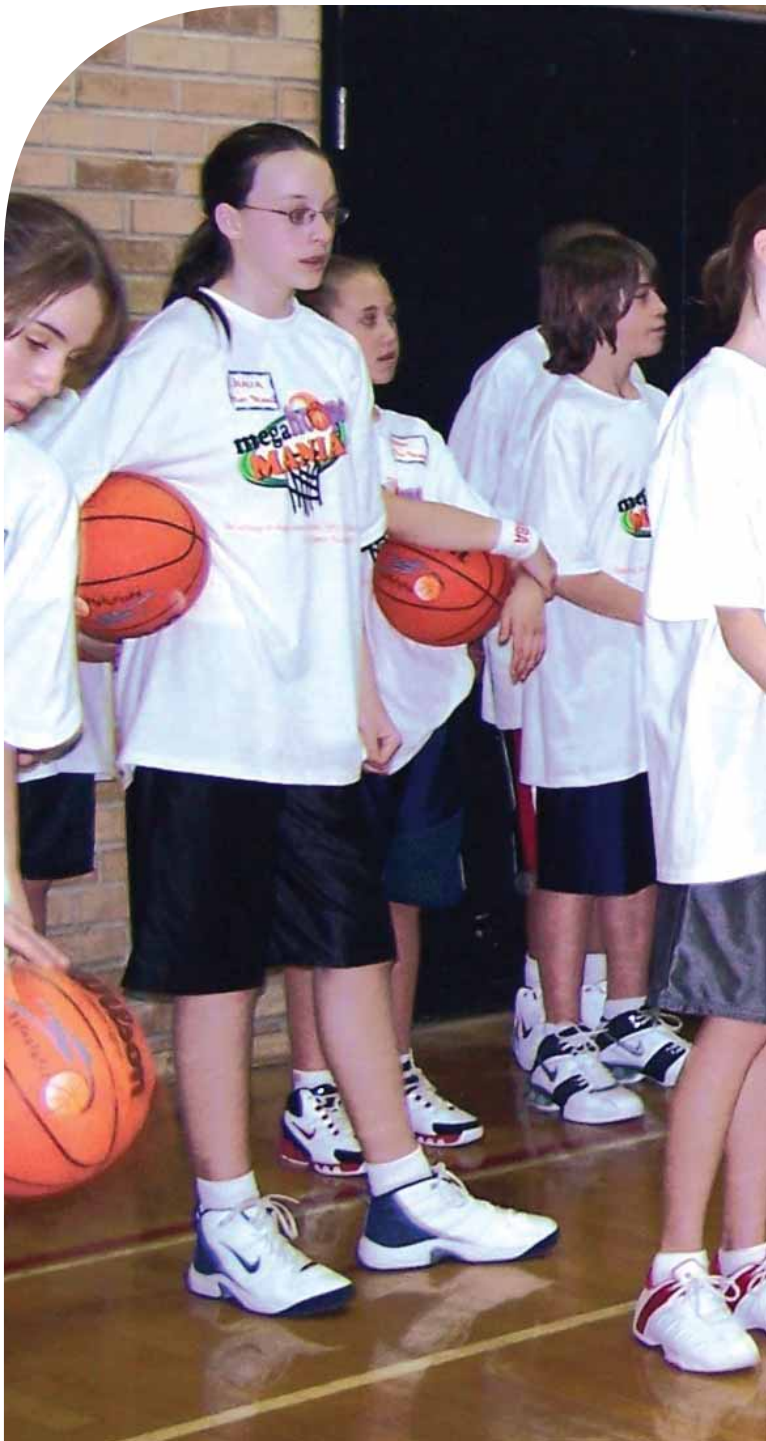
Leagues and associations that use chronological age for cut off dates, build in a natural bias to players born prior to the cut off date. If the cut off date is January 1st those players born in December are often one year less mature and therefore are often not selected. Statistics from many sports show this bias in their participation numbers. There is a big concern with the drop out rate of females from sport in their early teens.

Recommendations:

- Apply the LTAD wall chart to monitor growth;
- "Mine the data" - all associations need to look at their data to see if age-based biases are being created in their delivery system;
- "Mine the data" to see if male and female biases occur. What impact does co-ed programming have on the retention of females in sport? Special programs must be developed to keep female athletes involved;
- Use single age categories instead of multi-year;
- Educate parents, teachers, coaches and administrators (developmental age and relative age);
- Give templates to the above parties to allow them to easily implement LTAD appropriate training;
- Show coaches and teachers how training of early, late and average matures can be implemented in a team situation;
- Give opportunities for late maturing athletes to be involved in "select" programs;
- Re-evaluate and re-visit the rationale behind national/provincial championships during developmental stages;
- Develop ways to remove the age bias. For example; age on date for competitions;
- Individualized training must reflect the needs of the child;
- We must find a balance between what is appropriate for the child or adolescent in regard to their physical development and their social/emotional needs.

Rationale:

- Every child is an athlete and needs the proper grounding in movement in order to develop an appreciation for physical activity and therefore derive the health benefits. This will also let them make wiser decisions as to which pathway of sport to choose;
- Many late maturing athletes are dropping out of basketball before they have a chance to excel and withdraw from all sports and physical activity;
- Too many females are leaving sport.



- **Windows of Trainability refers to the sensitive periods of accelerated adaptation to training, which occurs prior, during and early post puberty.**
- **All systems are always trainable, thus the windows are always open; however a window is fully open during the sensitive periods of accelerated adaptation to training and partially open outside of the sensitive periods.**

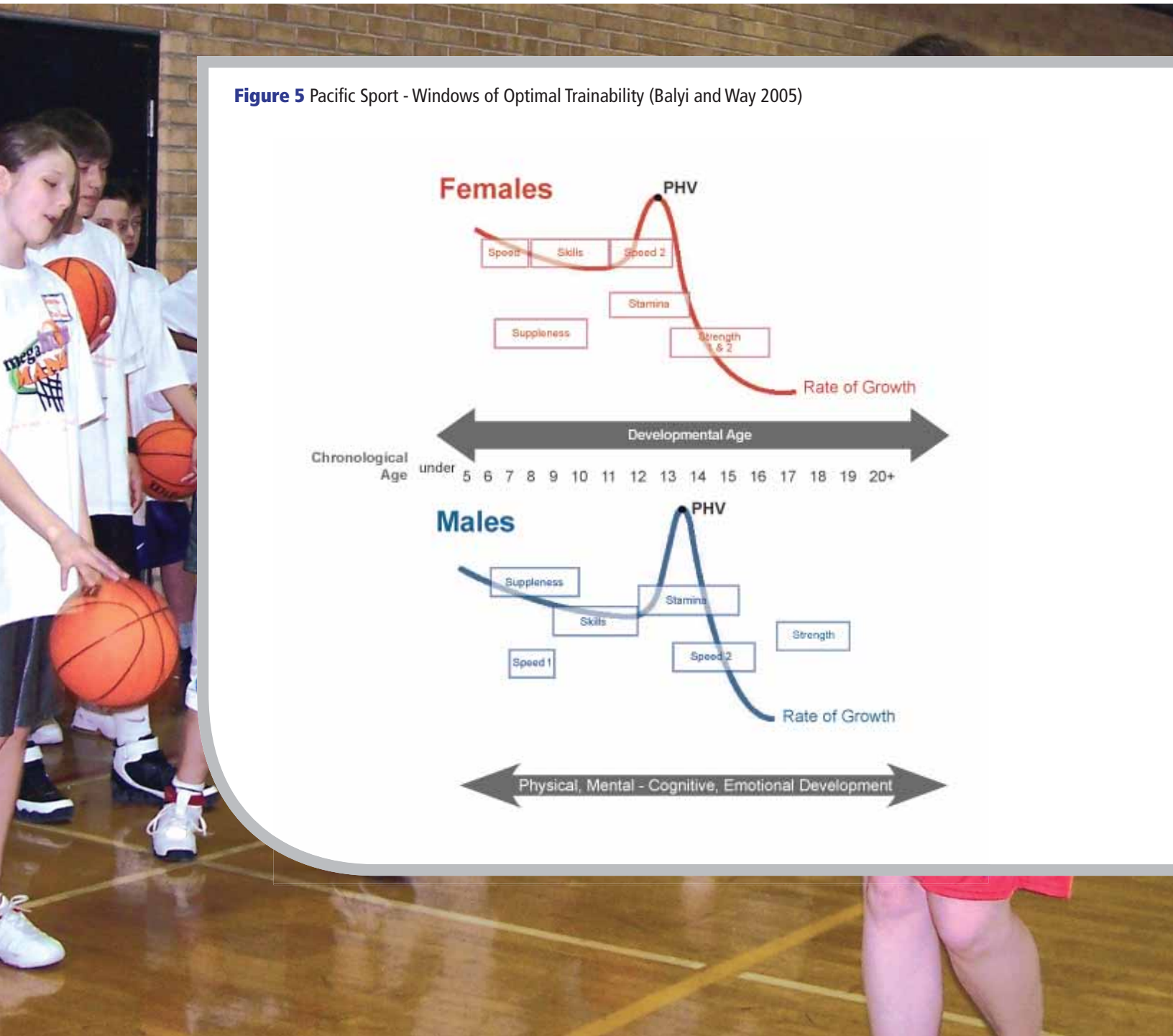


Figure 5 Pacific Sport - Windows of Optimal Trainability (Balyi and Way 2005)

4. Trainability

The majority of coaches worldwide currently design long and short-term athlete training models, as well as competition and recovery programs based on their athletes' chronological age. However, research has shown that chronological age is a poor basis for athlete development models, since the musculo-skeletal and emotional development of athletes between ages 8 and 16 can vary greatly within any given age category. Superimposing a scaled-down version of athlete training and competition models designed for adults is not a good alternative.

Ideally, coaches would be able to determine the biological age of their athletes and use this information as the foundation for athlete development models. Unfortunately, there is no reliable non-invasive procedure to identify biological age. So what can be done to remedy this situation?

One practical solution is to use the onset of the growth spurt or Peak Height Velocity (PHV) as a reference point for the design of optimal individual programs with relation to sensitive periods of trainability. Peak Height Velocity (PHV) is the age at which the rate of growth is fastest.

Prior to the onset of PHV, males and females can train together and chronological age can be used to determine training, competition and recovery programs. The average age for the onset of PHV is 12 and 14 years for females and males, respectively.

The term trainability refers to the genetic endowment of athletes, as they respond individually to specific training methods and how they adapt to them. In an athlete's development there are sensitive periods of accelerated adaptation to improvements of endurance, strength, speed and skill, which are often not considered during planning. But these periods are windows of opportunity and must be capitalized upon. They are important to recognize because it is during these sensitive periods, that children and adolescents are physiologically most receptive to acquiring skills and/or improving specific physical attributes such as strength, and endurance.

There are three chronological and two biological markers to indicate the sensitive period.

Research in this area indicates that:

- The sensitive periods for the accelerated improvement of speed and power occur for males between ages 7 and 9 and between ages 13 and 16. For females these occur between age 6 and 8 and between age 11 and 13 (chronological age);
- There is an accelerated improvement for endurance capacities after the onset of Peak Height Velocity (PHV);
- There is an accelerated improvement in strength 12 to 18 months for males after PHV occurs;
- There is an accelerated improvement in strength immediately after PHV occurs and/or the onset of the menarche (the onset of the menstrual cycle occurs usually one year after PHV);
- The sensitive period for motor skill development occurs between ages 8 and 11 for females and between ages 9 and 12 for males. Basic motor skills such as the ABC of Athletics (running, throwing, hopping, bounding and jumping), the ABC's of Athleticism (agility, balance, coordination and speed) form the basis for all sports. By age 11 or 12, or more precisely before the onset of the growth spurt, children should be able to perform these skills proficiently;
- There is full consensus among experts in this area that if physiological abilities are not developed during the sensitive periods, the opportunity for optimum development is lost and cannot be fully retrieved at a later time;
- The onset of PHV and PHV (after growth decelerates) are the reference points for optimal training programs for the development of athletes. Otherwise, adult training programs tend to be superimposed on young athletes with less than optimal outcomes;
- We need to make use of the sensitive periods and develop basic athletic skills and attributes. Once these are mastered, we can go on to introduce and develop more specialized sports specific skills.

Recommendations:

- Education - all parties need to know when the windows are, why these exist and what is appropriate training;
- Develop a resource that will make it easy for coaches and teachers to apply LTAD appropriate training;
- Make use of the LTAD wall chart to monitor PHV;
- Recognize that males and females grow at different rates;
- Reduce competition schedule to actually allow athletes to train;
- Individualized training plans;
- Avoid some traditional practices such as;
  - long slow distance running as the only method to improve aerobic capacity,
  - static flexibility training pre and post activity,
  - the use of strength training with heavy weights at inappropriate times,
  - lack of speed training in all phases of training.

Rationale:

- Every child is an athlete and needs the proper grounding in movement in order to develop an appreciation for physical activity and therefore derive the health benefits. This will also let them make wiser decisions as to which pathway of sport to choose;
- Trainability is based on scientific research;
- It allows our athletes to maximize their potential.

5. Physical, Mental, Cognitive and Emotional Development

More than just fitness and the skills of the game need to be addressed. All areas of an athlete's development must be included in sport programs. Training, competitive and recovery programs should consider mental, cognitive and emotional development of each athlete. Decision making is a major point of emphasis. A major objective of LTAD is a holistic approach to athletic development. This includes emphasis on ethics, fair play and character building throughout the various stages, an objective that reflects Canadian values. Programming should be designed considering the athlete's cognitive ability to address these concepts.

Recommendations:

- All deliverers of basketball programming need to review how they are currently developing the physical, mental and social/emotional abilities of their athletes. Also, how are ethics and values being taught and modelled within the organization;
- Decision making or "when" to use skills is to be emphasized at all stages of LTAD. This is based on keys that the athlete detects, not on coaches' commands;
- Coaches need to progress athletes through the various stages of LTAD with the goal of creating a self-reliant athlete who has the physical, mental and social/emotional skills to make their own decisions on their future;
- Work needs to be done in accounting for the differences between female and male athletes;
- We must recognize that athletes with a disability may require special attention;
- Templates need to be developed to aid all parties in delivering holistic training;
- A key component of the new NCCP is the holistic approach;
- Mental and emotional/social training needs to be delivered in conjunction with the physical training. It cannot be seen as an "add on" done outside the practice and competition site;
- Individualized training plans;
- Rewarding players solely on the basis of their physical superiority can lead to societal problems in the future. This has occurred mostly on the male side of the sport, but is becoming a problem on the female side also. Associations must check to see what "subliminal" messages are being sent though team selections, scholarships and awards.

Rationale:

- Every child is an athlete and needs to develop skills, knowledge and comfort in all areas in order to make the best decision in the future for their own well being;
- Canadians believe that sport has a more important role; more than just producing winners and losers. It has a key role in developing future leaders and positive members of society.

6. Periodization

Periodization is time management. It provides the frame work for arranging all of the pieces in an athlete's training. In order for athletes to develop, they need to plan their training in a more scientific way. At a simpler level it helps recreational athletes manage their time more effectively and ensures that they are covering all components required for a healthy lifestyle. Proper periodization provides a plan that can be evaluated in the future. This evaluation helps guide future plans. Currently the majority of coaches base their plans on past practices and on the competition schedule. More individualized plans must be developed for athletes even in team sports. Coaches need to be shown ways to maximize the training time they have with their athletes.

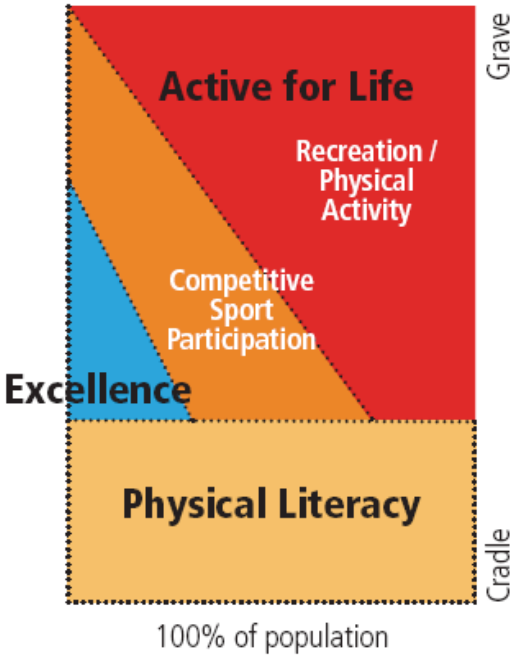
Recommendations:

- Educate all parties as to the benefits of periodization;
- Work with the "experts" to develop more team sport friendly periodization. Much of the current research is based on individual sports and is not easily adaptable to the team sport environment;
- Develop templates that show coaches how use periodization at each stage of development. Also coaches need to be made aware of what to avoid. For example; as the "big" games approach late in the season, coaches should reduce the volume of practice, not increase the length of practice to prepare for the opponent;
- More work must be done to understand the female athlete. We cannot continually push male models onto our female athletes;
- Monitor plans with a "scientific eye" to make decisions on future revisions to the templates;
- Periodization will be part of the new NCCP coaching education;
- Seasons of play must be developed in conjunction with the various deliverers of basketball so that proper periodization can occur;
- We need to establish a positive working relationship with school-based basketball in order to implement proper periodization;
- Individualized training and recovery need to be reflected in the periodization plan;
- Work with other sports to develop proper periodization with the multi-sport athlete at the beginning stages of LTAD.

Rationale:

- In order to maximize an athlete's potential, proper planning must occur in order to ensure all components are met;
- Constantly monitor the plan;
- Innovations and improvements should be monitored to judge their effectiveness;
- All children need to learn time management and planning as a future life skill.

Figure 6 Source: Canadian Sport For Life: *A Sport Parent's Guide*



7. Calendar Planning for Competition

The basketball delivery system consists of three streams: health of the nation, develop the game and compete for the nation. Another stream has crept into the delivery system that is beginning to dominate the development stage. We call it "competitive basketball." In this stream, games between 2 teams dominate. Some players are not receiving sufficient time for training. When practice to competition ratios are at a 1 to 1 or 1 to 2 ratio, quick development may occur, but performance always plateaus later. Coaches may claim that the team improves, but players are not able to work on their fundamental movement and basketball skills. Mental and social/emotional training often gets ignored. Training is dominated by strategies and tactics in preparation for the next game. In many situations, players are not receiving quality playing time. Players therefore do not get an opportunity to use their skills; they lose conditioning, lose interest and drop out of the sport at the younger stages. Often these are late maturing athletes. Our children are currently playing too many games without enough quality training. We have adopted adult models for youth sport. All sports must get a handle on this situation.

Planning and implementing of an optimal competition structure for all stages is the biggest challenge facing team sports in our country.

Recommendations:

- Education of all stakeholders in the importance of proper practice to competition ratios;
- Develop strategies to access and make better use of facilities;
- Share "best practices" that are occurring within the basketball community, but also across sports;
- Develop a positive working relationship with schools in order to work together to implement LTAD;
- Reward programs and coaches who adhere to LTAD. We must ensure that "hidden" messages are not being sent through our competition rules that encourage coaches and leagues to violate LTAD principles. Very often when associations adopt season of play without restricting the number of games, coaches attempt to "load up" with the same number of games as were played in the past;
- Improve coaching education through the new NCCP;
- Reward coaches who consistently improve players individually over time;
- Assist coaches in the concept of "training through competition." The outcome of all games is not treated as important. Some games are designed as training;
- Coaches also need to recognize the amount of time that can be used for teaching by using warm up and half times as training and teaching time.

Rationale:

- In order to allow athletes to develop holistically in all areas, they need time to train. Athletes do not develop all of the important skills they need at the later stages of LTAD by playing games;
- Sport needs to develop the school model. Students go to class to learn the skills. The game is the time to exhibit their mastery of the skills. Lessons learned at a younger age are built on in a progressive nature leading the developing child to the adult stage of competency;
- Every child, even those who just want to play recreational sports, needs to develop the important movement skills at the right time in their development;
- Too many "adult"-like games with the emphasis on winning has been shown in study after study as the main reason for youth to quit sport.

8. The 10-Year Rule

Scientific research has shown that it takes a minimum of 10 years of training for a talented athlete to reach elite levels. The trap is that many people believe that early specialization is what is needed to make this happen. "If I start young then I will be better sooner." The opposite is actually true. Most athletes only have 10 years at an elite level. If you specialize too early the likelihood of staying in the sport is diminished.

Recommendations:

- Delay specialization until the appropriate time;
- Focus on multi-sport skills in the pre-PHV (before the onset of the growth spurt during puberty) stages;
- Move to specialization in basketball after PHV. Position specialization should occur later during the T2C stage;
- Education of the parents, coaches and players is crucial to assist them in making appropriate decisions;
- To be an elite athlete you will eventually need to specialize in your chosen sport;
- Training includes multiple positive repetitions of the skills of the game. You do not become a great ball handler, passer and shooter through playing the game. Self-practice has always been a key to becoming great in these areas;
- Develop relationships with other sports to stop the vicious cycle of competing for younger and younger athletes.

Rationale:

- Every child is an athlete and needs the proper grounding in movement in order to develop an appreciation for physical activity and therefore derive the health benefits. This will also let them make wiser decisions as to which pathway of sport to choose;
- When athletes reach the point where they need to specialize they will have the foundation required to excel at their highest level and the mental freshness to put in the required time;
- Poor decisions are being made too early in a child's development. This leads to a diminished number of athletes staying in the sport in the later years when they can specialize.
- To avoid burn out at an early age;
- To avoid overuse injuries;

9. System Alignment and Integration

Groups cannot work in isolation. Sport Canada is facilitating all delivery agencies of their sport to become aligned. Players/athletes do not remain in the same delivery system throughout their entire sporting experience. Players/athletes, coaches, officials and administrators should be able to move seamlessly from one delivery system to the next. One rule set is the best example of aligning our system. Participants need to see clear pathways for players, coaches, officials and administrators. There needs to be various entry points. These pathways must be available for all three streams of sport: health of the nation, develop the game and compete for the nation.

System alignment also involves integrating all of the ancillary groups into the sport system. This includes such groups as the sport scientists, trainers, managers, sponsors, etc.

Recommendations:

- Continue the movement towards one rule set;
- Formation of an LTAD rules committee to look at modifications for each stage of development;
- Continue to grow ways to bring the basketball community together;
- Work to develop positive working relationships with all deliverers of basketball;
- Continue to educate the grassroots as to the importance of LTAD;
- Distribution of the basketball specific LTAD posters;
- Develop resources to enhance sharing;
- Engage all partners in the process;
- Engage all levels of government to assist in aligning the system.

Rationale:

- Without an aligned system we can not impact the "game";
- Sport Canada is moving to accountability. LTAD alignment is one of the key factors. Provincial sport organizations are also moving to the implementation of LTAD. This will move across ministries (i.e. health and education at the provincial level, sport and wellness at the federal level);
- An aligned system allows basketball to be a leader and have a positive influence in all areas of the Canadian Sport System and society.

10. Continuous Improvement (Kaizen)

改善

Basketball must continue to respond to research that keeps them up to date. We need input from all partners. Basketball has a sport science and medical program plan (SSMP) and is continuing to build Integrated Support Teams (IST). These are groups of world class experts who provide information to the coach on the most recent and up to date material. Group decisions are made that produce the best possible training for the athletes. No one can be the expert on all areas of a sport. We must also constantly "mine the data" to share best practices within our sport and from other sports. Change is brought about through improvement and innovation. These must be monitored to evaluate their effectiveness.

Recommendations:

- Advisory committees need to be established to analyze current practices. These committees should be a cross section of the basketball community. It is not wise to have all members from a similar background and specialists in the same stage of LTAD;
- Action plans need to be developed to determine implementation strategies;
- Measurements need to be taken to determine the impact of the strategy;
- Constant monitoring needs to be done;
- Best practices need to be shared across the country;
- Sport-specific research needs to be done to explore the concepts and ideas that are currently in use.

Rationale:

- LTAD is a living, growing process, without constant monitoring it becomes another "flash in the pan";
- By engaging all parties in the process they take ownership of LTAD.

The 10 S's of Training

The Five Basic S's (see **www.ltad.ca** for more information).

Stamina (Endurance) - The window of optimal trainability for stamina occurs at the onset of the growth spurt. Aerobic capacity training is recommended before children reach their fastest rate of growth. Aerobic power should be introduced progressively after growth decelerates.

Strength - The window of optimal trainability for females is immediately after their fastest rate of growth and at the onset of menarche (first menstruation), while for males it is 12 to 18 months after their fastest rate of growth.

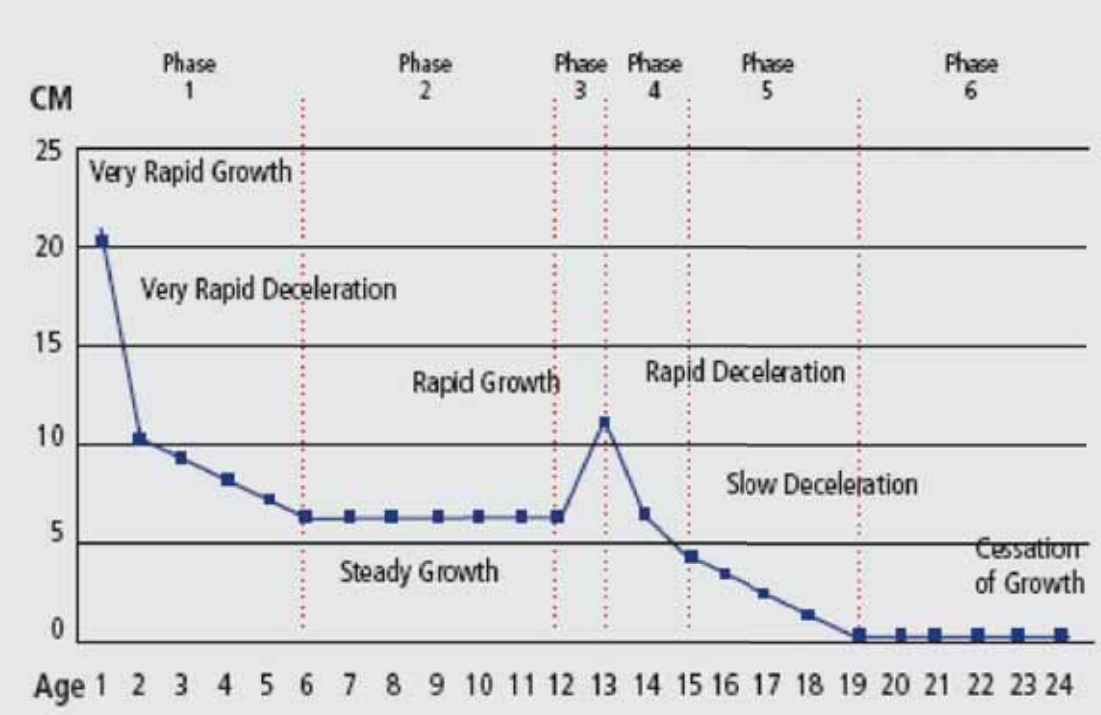
Speed - For males the first speed training window occurs between the ages of 7 and 9 years and the second window occurs between the ages of 13 and 16. For females the first speed window occurs between the ages of 6 and 8 years and the second window occurs between the ages of 11 and 13 years.

Skill - The window for optimal skill training begins at the age of 9 for males and the ages of 8 for females. This window ends at the onset of the growth spurt.

Suppleness (Flexibility) - The optimal window of trainability for suppleness in both females and males occurs between the ages of 6 and10. Special attention should be paid to flexibility during the growth spurt.

Figure 7

Phases of Measurement



The Five Additional S's

Structure

The structure/stature component links the six stages of growth to the windows of optimal trainability. Coaches and parents can use statue measurements (i.e. height) before, during and after maturation as a guide for tracking developmental age. Such tracking then allows coaches to address the critical or sensitive periods of physical development (endurance, strength, speed and flexibility) and skill development. Diagnostics for identifying strengths and weaknesses are critical for properly considering structure and statue in the design of training plans.

(p)Sychology

Sport is a physical and mental challenge. The ability to maintain high levels of concentration while remaining relaxed and confident is a skill that transcends sport and enhances everyday life. To develop the mental focus for success at high levels, young athletes need mental training that complements their physical training, designed specifically for their gender and LTAD stage. Even at young ages, mental training is critical since dealing with success and failure impacts children's continuation in sport and physical activity.

Sustenance

When the body performs physical activity, it must be replenished with a broad range of components. Sustenance prepares athletes for the volume and intensity required to optimize training and live life to the fullest. Sustenance includes nutrition, hydration, rest, sleep, and regeneration - all of which need to be applied differently to training and lifestyle plans depending on the LTAD stage. In managing sustenance and recovery, parents can assist coaches by identifying fatigue. Fatigue can come in many forms including metabolic, neurological, psychological, environmental and travel fatigue. While overtraining or over-competition can lead to burnout, improperly addressing sustenance can lead to the same results.

Schooling

In designing training programs, school demands must also be considered. Programs should account for school academic loads, timing of exams and school-based physical activities. When possible, training camps and competition tours should complement, not conflict, with the timing of major academic events at school.

Overstress should be monitored carefully, including the everyday stresses related to schooling, exams, peer groups, family, boyfriend or girlfriend relationships, and increased training volumes and intensities. Coaches and parents should work together to establish a good balance between all factors.

Socio-Cultural

Sports and physical activities often present children with social and cultural experiences that can enhance their holistic development. These experiences can broaden their socio-cultural perspective by providing increased awareness of:

- Ethnicity
- Geography
- Literature
- Diversity
- Architecture
- Music
- History
- Cuisine
- Visual art

Through periodization, annual planning, a child's activity or sport can offer much more than a simple commute between the activity venue and the home or hotel room.

Goals of the ADM

- To provide a consistent, acceptable framework for coaches to use in developing players;
- To provide consistent leadership in the development of basketball in Canada;
- To provide age and stage appropriate competition to practice ratios that will allow our players to develop the skills fitting for their stage of development;
- To place the suitable emphasis on winning required for each stage of development;
- To ensure that the fundamental movement, mental, technical and tactical basketball skills are being introduced in a systematic and timely way;
- To ensure appropriate considerations are taken to designing programs that will be inclusive and allow everyone the potential for self-fulfillment;
- To recognize the importance of quality leadership at all level of programming.

Chapter 4

Teaching the Game

Canada Basketball has developed a basketball pyramid to aid coaches in their planning and teaching of the game of basketball. The pyramid has been adapted from the Hockey Canada Player Development Pyramid to fit the unique nature of the game of basketball. The pyramid combines the progressions a coach should use when teaching basketball skills, fitness, life skills and motivation with Canada Basketball's Athlete Development Model (ADM). The ADM uses long term athlete development (LTAD) as its guide. It states that in order for athletes to achieve success at all stages of development the unique characteristics of each stage must be adhered too.

Figure 8 The Basketball Pyramid

The pyramid has four faces:

Face 1 - Basketball Skills
Face 2 - Fitness
Face 3 - Mental Skills
Face 4 - Life Skills

Figure 9 Basketball Pyramid Components

Fitness
Fundamental movements (pushing, pulling, squatting, lunging, bending, twisting and the gaits), Components of fitness (aerobic, muscular endurance, flexibility, strength, body composition). Fitness related terms (agility, balance, coordination, speed, power)

Basketball Skills
Footwork, ball handling, dribbling, passing, shooting, offence, defence

Mental Skills
Enjoyment, confidence, concentration, goals, social support and competition management

Life Skills
Leadership, responsibility, self-reliance, trust and communication

Fundamentals

These are the foundation skills or principles that all players need to learn. In learning the fundamentals, the player will be educated in the "how to" and "why to" of basic basketball. For example; if a player knows how to dribble and why to dribble, he/she has acquired the basic fundamental skill of dribbling.

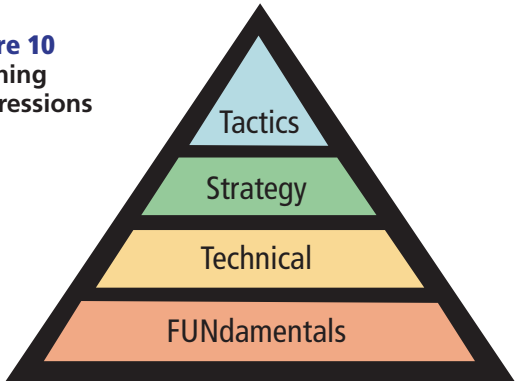
Technical

These skills are more specific in nature and involve decision making. The emphasis is on "when to" execute a skill of the game. Lots of repetition is required in order to enhance the learning of the skills. For example: if a player sees a defender's chest in front of his/her path and changes direction, the player has the technical skill of a "change of direction" dribble.

Strategy

This is the long-term plan. Here the learning takes place through exposure to real game-like conditions. The player is learning "what to do." For example: the players are taught a simple pattern or given roles or concepts to attack the defence in the half court. This would be considered the team's offensive strategy.

Figure 10 Teaching Progressions



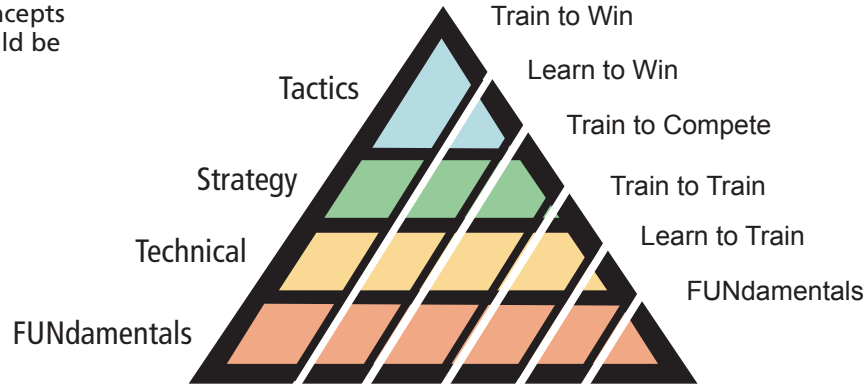
Tactics

These are the short-term adjustments that are made to the long-term plan. Tactics are very specific in nature and are used in preparation for or within a particular game. For example, the day before a game the team works on forcing players to drive left because they know the opponent can only drive right.

Long Term Athlete Development

The final element is adding the long term athlete development model to the pyramid. These triangles help show the coach what percentages of time should be spend on each element. The example below deals only with the basketball skill face. Work still needs to be done on the fitness/mental skills faces.

Figure 11 Combining Teaching Progressions with LTAD



Canada Basketball's ADM has the following stages:

Active Start: Ages: 0-6 year old females and males

The objective is to learn fundamental movements and link them into play. Physical activity is essential for healthy child development. Among its other benefits, physical activity also:

- Enhances development of brain function, coordination, social skills, gross motor skills, emotions, leadership and imagination;
- Helps children to build confidence and positive self-esteem;
- Helps to build strong bones and muscles, improves flexibility, develops good posture and balance;
- Improves fitness, reduces stress and improves sleep;
- Promotes healthy weight;
- Helps children learn to move skilfully and enjoy being active.

Physical activity should be fun and part of the child's daily life, not something required. Active play is the way young children are physically active. For this reason it is recommended to steer clear of adult organized basketball at this time. Children with disabilities are encouraged to take part in organized physical activity and active play. It is important for the healthy development of children with disabilities that they acquire the habits of lifelong activity.

Children during this time rapidly outgrow their mobility aids (such as bicycle, skipping rope, etc). Communities need to find effective ways - equipment swaps or rentals, for example - to ensure that all children have access to the equipment they need to be active.

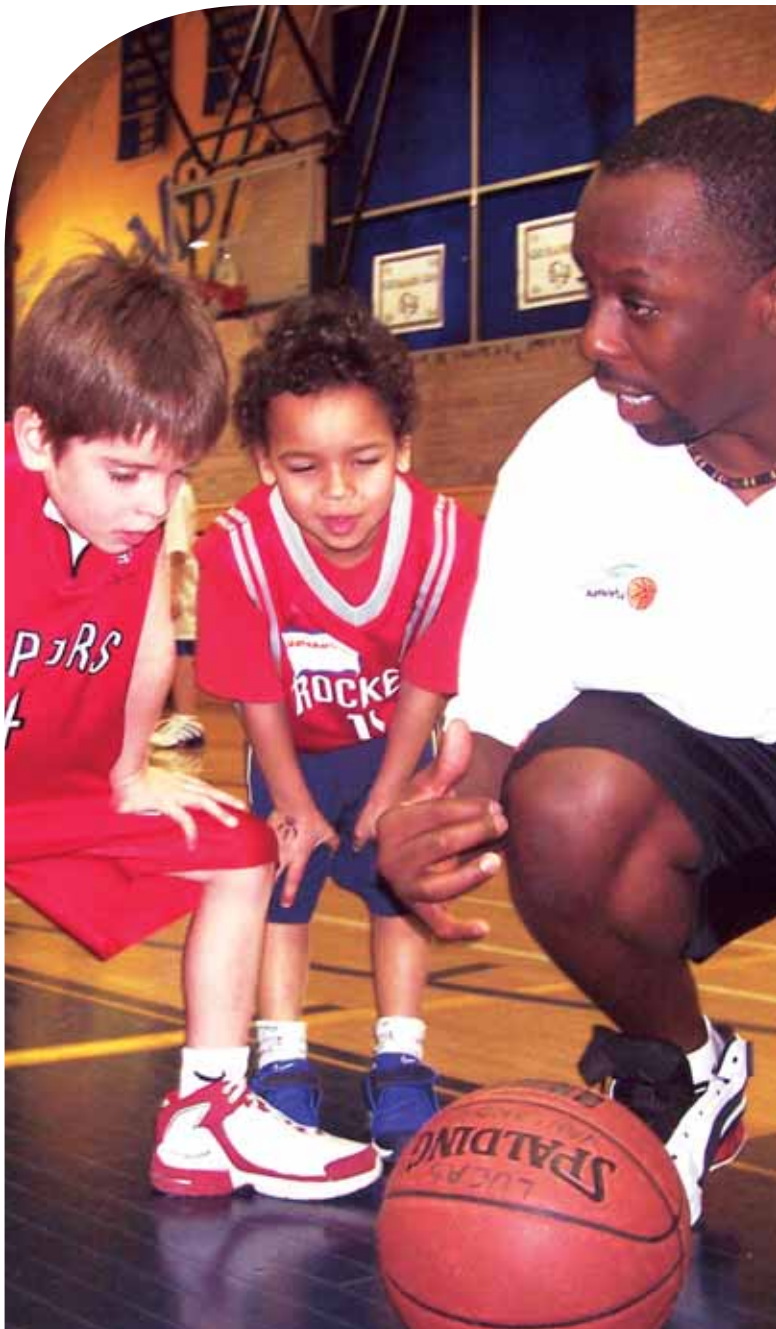
FUNdamental: Ages 6-8 year old females and 6-9 year old males

a) 6-7 for females and 6-8 for males - the emphasis is on fun games that use basketball to teach fundamental movements and introduce basic basketball skills.

b) 7-8 for females and 8- 9 for males - modified basketball games (1-on-1, 2-on-2, 3-on-3, and 4-on-4) are used to consolidate fundamental movements and aid in acquisition of the basic basketball fundamentals. During this stage the basic building blocks on which the game is built are being established. There are two parts:

1) Fundamental movements - pushing, pulling, lunging, squatting, bending, twisting and our three gaits, walking, jogging and sprinting. When these movements are combined they create things such as agility, balance, throwing, catching, jumping, etc. It is also important that players can perform these fundamental movements in the three planes of the body - the frontal, which divides the body between front and back; the sagittal, which divides the body into right and left; and the transverse which divides the body into top and bottom.

2) Basic basketball fundamentals - these include stance, footwork, dribbling, passing and shooting. It is important that the athletes again are able to perform these skills using the many planes of the body. The key fundamental in regards to motivation is enjoyment. Players need to develop a love and passion for play. The technical decisions are based around simple decisions: should I pass or shoot? Should I dribble left or right?



Chapter 4

Figure 12

FUNdamentals Movement
6-7 year old females and
6-8 year old males

To learn fundamental movement skills through basketball in a positive, inclusive and fun way.

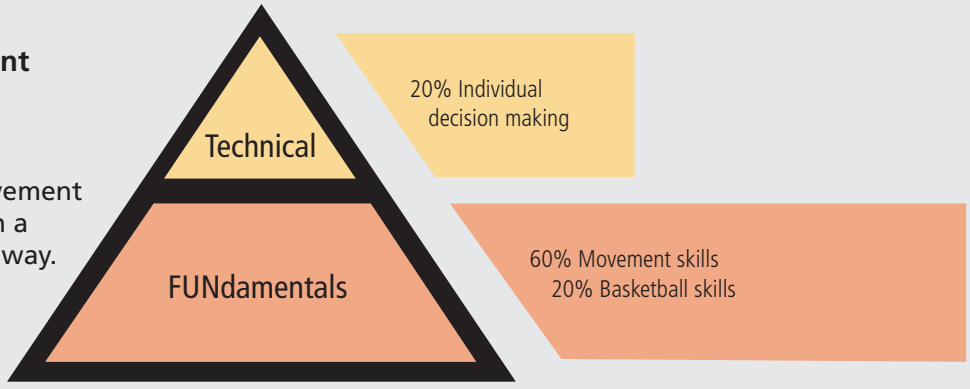
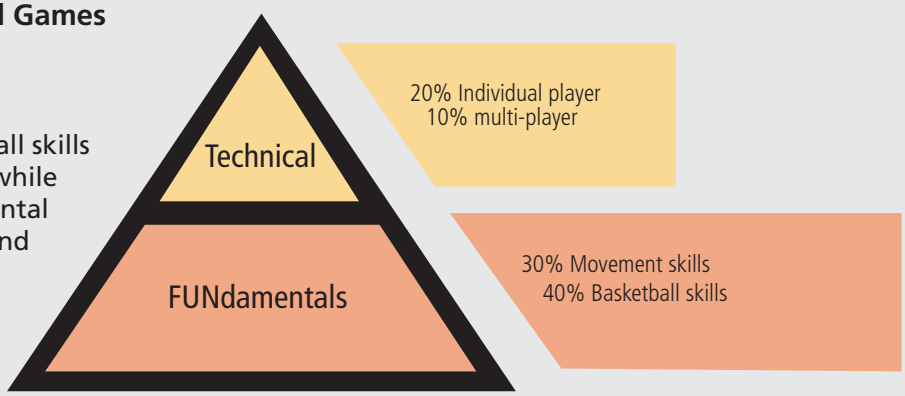


Figure 13

FUNdamentals Modified Games
7-8 year old females and
8-9 year old males

To learn the basic basketball skills through modified games while still emphasizing fundamental movement skills in a fun and inclusive environment.



Learn to Train: Ages 8-11 year old females and 9-12 year old year old males

At this stage the technical skills can start to be emphasized. The basic fundamentals are still important since many children will also use this stage as an entry level. Simple developmentally appropriate tactics can be used to allow the children to play team basketball. Emphasis is on applying the basic skills to game-like situations. The players must make decisions on when to use the skills and how the skill should be properly applied. Technical skills can be individual or multi-player. The basic strategies evolve around basic offence and defence. Emphasis is on proper spacing and understanding of team play. Fitness is done through the game. Children can do body weight activities (example push ups, lunges, squats, etc). Enjoyment is still a major component. Simple goal setting and concentration skills are also introduced.

Train to Train: Ages 11-15 year old females and 12-16 year old males

a) **11-13 females and 12 -14 males** - the emphasis is still on refining the fundamentals and consolidating the technical skills. Developmentally appropriate tactics become more important.

b) **13-15 females and 14-16 males** - players should be refining their technical skills. Some athletes will begin to become creative. Tactics such as zone offence/defence and presses/press breaks are added during this stage. Near the end of this stage, simple strategies can be employed. When various technical skills are combined to form a system of play, you have created a tactic. These are conceptual in nature and still allow the players freedom to make decisions. Teams will have tactics for transition, offence, defence etc. Individualized training is important for the player to improve.

Figure 14

Learn to Train
8-11 year old females and
9-12 year old males

To learn basic basketball skills while still emphasizing fundamental movement in a fun inclusive environment.

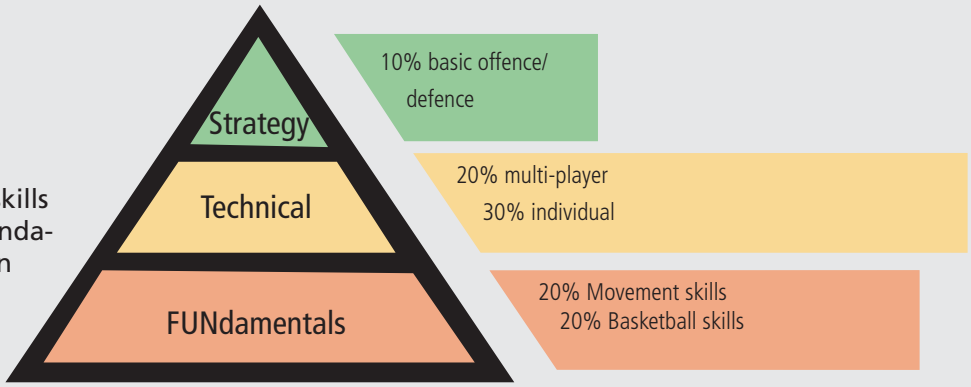
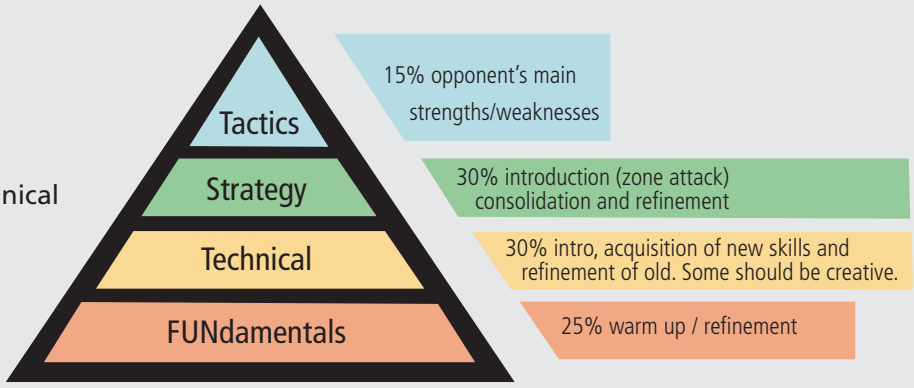


Figure 15

Train to Train
11-15 year old females and
12-16 year old males

To introduce the basic technical and strategies of "global" basketball with a more structured approach to training.



Chapter 4

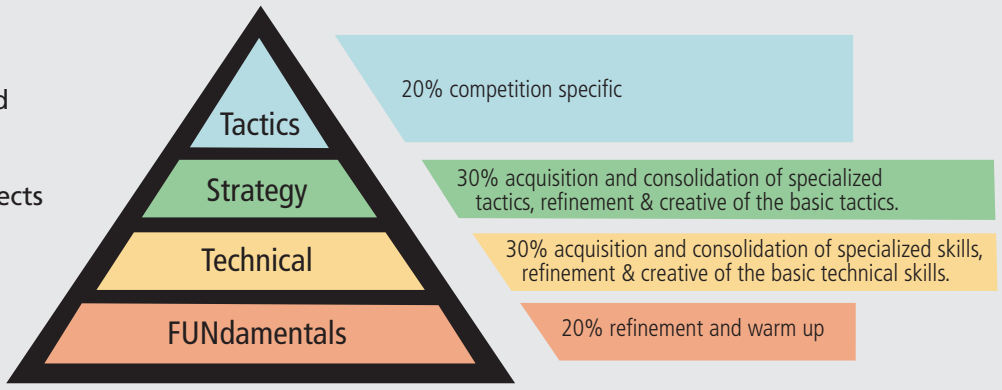
Train to Compete: Ages 15-18+/- females and 16-18+/- males

During this phase, the basic fundamentals should be taken to the creative level. Players will be introduced to many higher level technical skills that allow them to start to specialize. Players will be exposed to most if not all strategies of the game. When various technical skills are combined to form a system of play you have created a strategy. These are conceptual in nature and still allow the players freedom to make decisions. Teams will have strategies for transition, offence, defence etc. Athletes should begin to have season plans for conditioning and motivational training taking into consideration the sum of the parts of their basketball year (i.e. high school, club, provincial, national) These should be developmentally appropriate and should include quality individualized training.

Figure 16

Train to Compete
15-18+/- year old females and
16-18+/- year old males

To introduce athlete's to aspects of the game and begin to refine all technical and strategic components. The major objective of the stage is to learn how to compete under any circumstances.



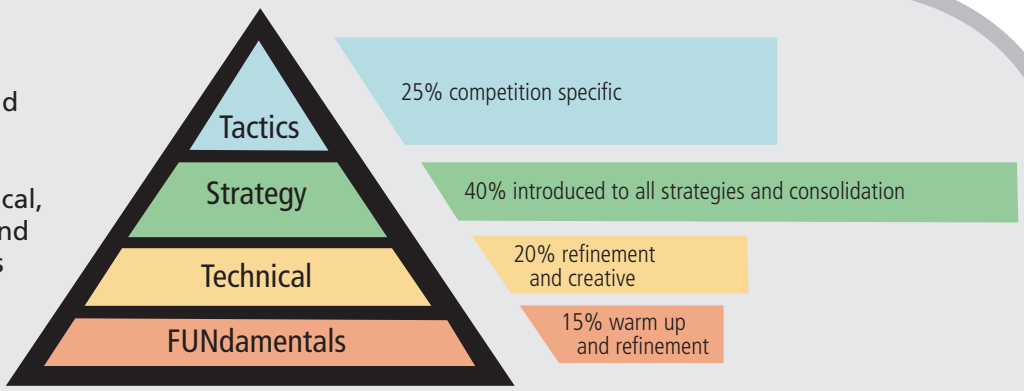
Learn to Win:
Ages 18-23 +/- females and 18-25 +/- males

The emphasis is on refinement of all technical skills. Basic tactical skills should also be in the refinement stage. Many should be in the creative stage. The athletes will have been introduced to all strategies and specialization and that is important. When a team adjusts or emphasizes a strategy in preparation for a specific opponent, the coach is applying tactic. The season plans become very specialized for each athlete.

Figure 17

Learn to Win
18-23+/- year old females and
18-25+/- year old males

To establish all of the technical, strategic, physical, mental and ancillary skills and capacities needed to compete at the highest level.



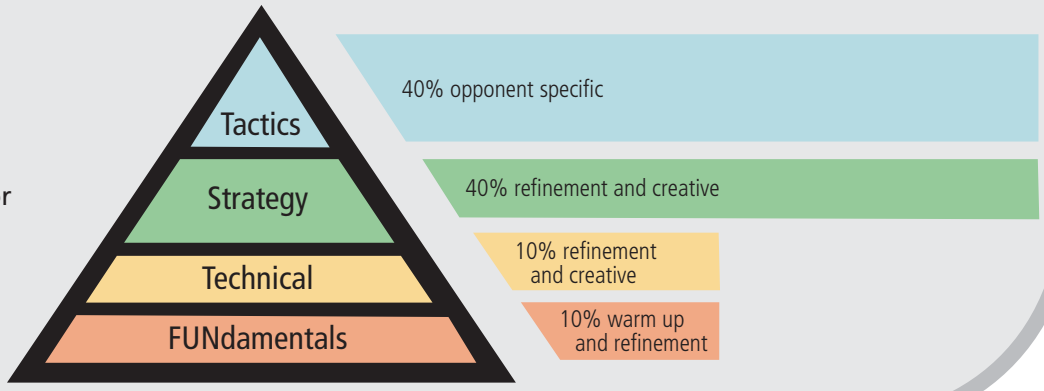
Train to Win:
Ages 23 + females and 25 + males

The athletes should be able to work on refinement and creative skills. The major emphasis can be on high level tactics and strategy. Athletes need very personalized programs. Preparation also needs to begin for retirement and transition other phases of the athletes' lives.

Figure 18

Train to Win
23+ year old females and
25+ year old males

To optimize performance for domestic and international competition.



Chapter 5

Active Start

(Ages 0-6)

Active Start To-Do List

- Provide organized physical activity for at least 30 minutes a day for toddlers and at least 60 minutes a day for preschoolers.
- Provide unstructured physical activity - active play - for at least 60 minutes a day and up to several hours per day for toddlers and preschoolers. Toddlers and preschoolers should not be sedentary for more than 60 minutes at a time except when sleeping.
- Provide physical activity every day regardless of the weather.
- Starting in infancy, provide infants, toddlers and preschoolers with opportunities to participate in daily physical activity that promotes fitness and movement skills. Provide parents and care givers with age-appropriate information.
- Ensure that children acquire movement skills that build towards more complex movements. These skills help lay the foundation for lifelong physical activity.
- Encourage basic movement skills - they do not just happen as a child grows older, but develop depending on each child's heredity, activity experiences and environment. For children with a disability, access to age and disability appropriate adapted equipment is an important contributor to success.
- Focus on improving basic movement skills such as running, jumping, twisting, wheeling, kicking, throwing and catching. These motor skills are the building blocks for more complex movements.
- Design activities that help children to feel competent and comfortable participating in a variety of fun and challenging sports and activities.
- Ensure that games for young children are non-competitive and focus on participation.
- Because females tend to be less active than males and children with disabilities less active than their peers, ensure that activities are gender-neutral and inclusive so that active living is equally valued and promoted for all children.

FUNdamental Stage

(Ages 6-8 females, 6-9 males)

The goal at this level is to learn fundamental movement skills through basketball in a positive fun way. The participants will be introduced to very basic fundamental basketball skills. *It is not to win, but rather to have fun while playing sports* and ensuring success. It is the coach's duty to guarantee success for every participant. The intended emphasis should be focused on giving children the basic fundamental movement skills; agility, balance, coordination and speed; thereby making them physically literate. Providing these basic athletic skills will build a base for the child that will enable him or her to develop to their full physical potential in later years. Players should learn good practice technique. Enjoyment of the experience is paramount and to aid this, coaches will strive to make certain that all the children will be successful in accomplishing given tasks.

POINTS OF EMPHASIS

Fundamental movement skills

- Agility
- Balance
- Coordination (throwing and catching)
- Proper running technique - forwards, sideways and backwards
- Change of speed and direction
- Jumping and landing
- Starting and stopping (jump stop, stride stop)
- Pivoting-front and reverse

Fundamental Basketball Skills

- With and without ball
- Ready Position
- Offence - triple threat stance
- Vision - play with eyes up

Ball Handling

- Ball control
- Stationary dribbling (low, high, wide)
- Movement while dribbling (running, sliding, walking, change of direction, starts, stops, low, high)

Passing Skills

- Stationary passing
- Moving passing
- Passing to a team mate
- Receiving the ball - absorbing
- Catching on the move
- Catching the ball with 2 hands, 2 eyes, 2 feet

Shooting Skills

- Squaring feet and shoulders to sight the target
- Push with both legs
- Follow through (release) - first without ball/then with ball
- Close range shots
- Lay-up progression

PLAYING PRINCIPLES

Basic Offensive Concepts

- Advancing the ball towards your offensive basket
- Shooting the ball into the basket to score
- Spacing of players (ideal spacing is 3 to 4 m)
- Cutting of players (away from the ball or towards the ball)

Basic Defensive Concepts

- Recognition of knowing when you are on defence
- Recognition of the person he/she is defending
- When defending the ball, stay between the person you are guarding and the basket
- When defending away from the ball, stay between the person you are guarding and the basket

Chapter 6

GAME MODIFICATIONS

To properly develop basketball players, we must alter the training environment of this group of athletes in order to suit their needs. The following modifications are recommended:

- Play with a smaller-sized basketball either a size 3 or 5. Small hands require small basketballs;
- Play at lower hoops. It is much easier for young players to learn to shoot correctly on hoops that are within their range. (2.60 metres is recommended);
- Reduce the number of players when scrimmaging as this allows everybody more opportunity to handle the ball. (3-on-3 or 4-on-4);
- Play player-to-player defence;
- There will be many rules violations (e.g. double dribbles, travels and other violations). Let many of them go, but explain the infraction as learning opportunity for the entire group;
- Have players play an equal amount of time of during the modified games;
- Players should be taught balanced spacing on the court. Avoid designating set positions that limit players having the opportunity to handle the ball;
- Coaches must use creative scoring principles in order to encourage learning. For example, a team scores a point for every pass completed;
- It is not recommended to keep a visible score at this time. The focus is on play and not finding the winner of the game.

DEVELOPMENTAL CHARACTERISTICS

Physical Development

Basic Characteristics

- Larger muscle groups are more developed than smaller ones;
- The cardio vascular system is still developing;
- Basic motor patterns become more developed near the end of this phase and balance is maturing;
- Females develop coordination faster than males;
- Fast twitch muscle fibre (those parts of the muscle that are responsible for athlete quickness) recruitment can contribute to future speed capacities. Speed work must be part of warm-ups when players are fresh.

Performance Capabilities

- The child's aerobic system (for activity that lasts longer than 2 minutes) is trainable but emphasis should be on the anaerobic system (for quick activities or bursts of activity that last up to 10 seconds);
- Children are more skilful in gross movements involving large muscle groups than in precisely coordinated movements involving interaction of small muscles;
- The body is very susceptible to injuries through stress or heavy pressure;
- There is improvement in speed, agility, balance, coordination and flexibility towards the end of this phase.

Performance Indicators

- The child demonstrates the ability to perform correct running, jumping, catching and throwing skills;
- The child demonstrates the ability to perform the basic movement skills of starting, stopping, change of direction, change of speed;
- The child demonstrates a progression in developing the ABC's of Athleticism (agility, balance, coordination and speed);
- The coach monitors body alignments (ankle, hip, shoulder, back). This is explained in NCCP Community Coach and Introduction to Competition;
- The child participates in as many activities as possible, ideally 4 per week (2 are basketball, 2 are other sports or activities and should be physically active for the other three days of the week).

Implication for Coach

- Basic athletic skills should be developed during this phase;
- Short duration, anaerobic activities and alactic (short bursts of energy) activities should be planned. Endurance must be developed through play and games;
- Use slow progressions in hopping and bounding. Strength training limited to the body weight of the athlete, Swiss balls and medicine balls;
- Activities should emphasize coordination and kinaesthetic sense;
- Gymnastics, diving and athletics are excellent for the development of young athletes. Obstacle courses and relays are activities that improve the child's athleticism;
- Work on speed (ability to react to stimuli and move as fast as possible to desired destination) when children fresh;
- Children should be active (not necessarily basketball) at least 4 times per week for improvements to be made.

Physical Capacities

The framework of the **Five S's of Training and Performance** will be used throughout the Athlete Development Model to describe the trainability of the various training and performance factors, namely:

- **Stamina (or endurance)**
- **Strength**
- **Speed**
- **Skill**
- **Suppleness (or flexibility)**

The Principles of Training and Performance during the FUNdamental Stage:

Stamina - At this stage, the trainability of the aerobic system is good. Aerobic training should take place in the form of games with an aerobic component. Young athletes usually have a fairly short attention span so a variety of games presented one after the other is ideal. Aerobic games on and off court should be emphasized.

Strength - Strength gains during pre-adolescence are possible. It appears that children are as trainable as adolescents or young adults but strength gains for this age group are mainly in relative strength (percentage improvements) rather than in absolute strength.

Strength gains before puberty occur through improvements in motor coordination, and through morphological and neurological adaptations. Exercise and increased muscle activation will also increase strength. It is important to remember that structural changes, such as muscle hypertrophy (muscle shrinkage), should not be expected for this age group.

Strength training can be introduced at a very early training age using the athlete's own body weight, Swiss balls and medicine balls in exercises that are fun.

Swiss ball exercises contribute to core stabilization (strengthening the muscles of the mid-section so that the centre of gravity is maintained over the base of support during movement - these result in efficient movement) and upper and lower body strength development and help to develop balance. The development of core stabilization is very important at all training ages.

Speed - two sensitive windows of time are identified in the scientific literature as potential periods for accelerated adaptation to speed training (Viru et al., 1998/1999) are:

- **Females 6 to 8 years and 11 to 13 years**
- **Males 7 to 9 years and 13 to 16 years**

The first window for speed training for both females and males is not energy system but rather Central Nervous System (CNS) training (agility, quickness, change of direction). The volume and duration of training is very low but the CNS and to some extent, the anaerobic alactic system (the system used in activities of less than 10 seconds) should be challenged.

Anaerobic alactic, power and capacity should be trained by interval training (a series of short sprints). This training should only begin during the second window of accelerated adaptation to speed training which occurs in the **Train to Train** stage.) Interval training is not recommended for the **FUNdamental** stage.

Skill - the primary importance of this stage is to develop physical literacy, including the ABC's of Athleticism - **A**gility, **B**alance, **C**oordination and **S**peed; the ABC's of Athletics - run, jump, throw. The introduction to these activities is crucially important for future athletic development. These basic fundamental movement skills should be mastered during this stage.

Physical literacy is most trainable from the ages of 5-12. It is important to note that skill trainability gradually declines after 11-12 years of age or more precisely after the onset of the growth spurt.

Suppleness - the introduction to the basics of flexibility training should be done through fun and games. The use of dynamic follow-the-leader-type activities where the children move their bodies in all directions, twisting and turning the body in different planes are desirable. Flexibility is a key training and performance factor. Optimal individual and sport-specific flexibility should be established at a very early training age.

Flexibility training should be done 5 to 6 times per week if flexibility needs to be improved. 2 to 3 sessions of flexibility training each week or flexibility training every other day will maintain current flexibility levels.

Static stretching (stretching that is done very slowly, in which a body part is held for 15-20 seconds) should be removed from warm ups. Static stretching does not prevent injuries, however fitness does. In principle, static stretching and PNF (proprioceptive neuromuscular facilitation - a limb is actively and slowly taken to its end point) should be performed 2 hours prior or 2 hours after training and/or competition activities.

Chapter 6

Mental and Cognitive Development

Basic Characteristics

- Children must be active because attention spans tend to be short;
- Children have a limited reasoning ability;
- Children should repeat movements;
- Children have blossoming imaginations.

Performance Capabilities

- Children cannot sit and listen for long periods of time;
- Children like and need to be led;
- Children should be able to experiment and create.

Performance Indicators

- The children will become restless and easily distract when listening;
- There will be hesitation in following the instruction;
- The child may have a look of confusion.

Implication for Coaches

- Use short clear, simple instructions. Children want to move and to participate in actions;
- Coaches should adopt a "follow me" approach;
- Coach must be able to provide a correct demonstration and correction of skills;
- Coaches should encourage input from children.

Psychological Skills

- The coach should provide a positive environment, based on positive reinforcement;
- The coach should provide enormous encouragement;
- The coach should keep things simple, and have a good demonstration of skills;
- The coach should encourage and promote self expression and self discovery;
- The coach should utilize activities that challenge and promote fun and success;
- The coach should emphasize effort verses outcome;
- The coach should combine males and females together in activities;
- The coach should encourage interaction with peers;
- The coach should provide an environment in which the children have fun while learning, playing and developing.

Performance Indicators

- The player should demonstrate enthusiasm and desire to play and learn in a positive environment;
- The player should demonstrate the ability to deal with simple problem-solving tasks that arise out of activities;
- The player should demonstrate the ability to understand the concept of team, as well as the concept of cooperation, respect and fair play;
- The player should focus on being the best he/she can be by trying to give his/her best effort;
- The player has fun while learning, playing and developing.

Emotional Development

Basic Implications

- The child's self concept is developing through experience and comments from others;
- Children like to be the center of focus and attention;
- Influence of peers becomes very strong;
- The child wants challenges and opportunities to experiment with all kinds of activity and movement. There is a limited fear attitude;
- The child understands the need for rules and structure.

Performance Capabilities

- Children perceive athletic experiences as a form of self expression;
- If a situation becomes threatening children tend to lose confidence;
- Children enjoy playing simple games with simple rules.

Performance Indicators

- The child will be excited to try new activities;
- Children will ask the coach to observe what he/she has done;
- Children participate with enthusiasm in an activity;
- There will be no arguing about the rules;
- Everyone is participating, no one is left out.

Implications for Coaches

- The coach needs to provide positive reinforcement on a regular basis;
- The coach needs to structure all activities so success is guaranteed;
- The coach must be able to properly assess the basic skills and provide a varied repertoire of practical opportunities for the technical and tactical development and improvement of players;
- The coach should endeavour to make children feel comfortable enough to try a variety of activities. Do not worry about mistakes of a technical nature.

Ancillary Capacities

- Activity elements of warm-up and cool down need to be introduced and implemented regularly by the coach so that the children can establish their own routines;
- Proper gym and activity apparel are important elements of sports;
- Introduction and development of healthy nutrition and hydration habits are guidelines set forth by the coach. This information should be provided to players and parents;
- Players should be introduced to a simple debriefing procedure. The coach can ask the players simple questions:
  - What did you do well today?
  - What did you learn?
  - What did you like best about today's practice?
  - It is best to draw from the players and not tell them what you observed as a coach. This should be done after the players have a chance to speak.

PRACTICAL APPLICATIONS FOR THE FUNDAMENTAL PHASE

- The various stages of physical, cognitive and emotional development are predictable, but the rate or tempo of that development is individually and genetically determined. Thus, athletes will go through the same development but at different rates;
- As many sports as possible should be included in the athlete's development. Sports such as gymnastics and athletics should be high on the list since the ABC's are taught and learned in these sports;
- Speed and power training are essential during these years to teach the central nervous system how to fire properly. This type of training should be done at the beginning of practice sessions while players are fresh;
- Use body weight for strength, endurance, agility and speed development. Keep it fun and stay within the training guidelines to avoid overtraining and burnout;
- Make everything into a game;
- Technical and tactical development should be constructed in a way that ensures success for players. Tactical solutions must be based on technical abilities;
- Remember that 3 training sessions per week is maintenance only. For young players to improve, they must be active 4 times per week (ideally, 2 are basketball, 2 are other sports or activities and should be physically active for the other 3 days of the week).

A sample practice plan for players aged 6-9 years:

- 60 minutes in length
- Warm-up including speed work and agility 5-10 min
- Technical skills and drills 35-40 min
- Scrimmage and simple tactics 10 min
- Cool down 5 min

Emphasis should be placed on:

- Acquiring the ABC's of Athletics;
- Basic basketball fundamentals;
- Playing to have fun;
- Playing games through which the rules, cooperation and fitness will be developed.

Chapter 7

Learn to Train Stage (L2T)

(Basketball Skills)
(Ages 8-11 females, 9-12 males)

This is the major motor learning stage. One of the most important periods of motor development for children is between the ages of 9-12 (Balyi and Hamilton, 1995; Brohms, 1985; Rushall; 1998; Viru et al., 1998 and 1999). During this time, children are developmentally ready to acquire the fundamental movement skills that are the cornerstones of all athletic development. The fundamental skills described previously as "physical literacy" should be taken to a higher level at this stage. In addition the basic basketball skills should be mastered, but participation in other sports is still encouraged.

Young athletes at this stage need to learn how to train at its most basic level. They should be introduced to the basic technical/tactical basketball skills and ancillary capacities including: warm up and cool down, stretching, hydration and nutrition, recovery and regeneration and mental preparation. Parents should be educated in this information (See www.ltad.ca; Developing Physical Literacy: A Guide for Parents of Children Ages 0 to 12 and Steve Nash Youth Basketball Parent's Guide.) This knowledge base is developed even further in the later stages of athlete development.

This focus on training rather than on competing should be reflected in the annual competition calendar for this group of athletes. Too many competitions waste valuable training time. Conversely, not enough competition inhibits the practice of technical skills (decision making) and learning how to cope with the physical and mental challenges presented by competitions. The key is to find the proper balance. The Competition Review for Canadian Basketball will be tasked with determining the minimum number of competitions that allows the players to apply their skills in a competitive environment and develop games sense, but do not exceed the maximum number of games that will inhibit training and development.

Focus on the process not the outcome.

POINTS OF EMPHASIS:

If fundamental movement skills training are not developed between the ages of 8 to 11 for females and 9 to 12 for males, skills may not be fully recaptured at a later time (although carefully planned and early remedial programs can contribute to limited success.) For this reason fundamental movement skills and fundamental sport skills must still be stressed during this stage.

Fundamental Movement Skills

- Developed and refined

Fundamental Basketball Skills

Ready Position - Without Ball

- Develop and refine
- Movement - change of direction, change of pace and faking
- Vision - play with eyes up, scanning

Ready Stance - With Ball

- Triple threat
- Holding the ball
- Footwork - pivoting (front and reverse), using both feet to pivot on
- Movement with ball - jump stops, stride stops
- Starting - being able to push off effectively with both feet. With and without the ball

Dribbling

- Stationary dribbling with left and right hand
- Dribbling while moving with left and right hand in all directions
- Speed dribble, control dribble, change of direction dribble with left and right hand
- Vision - be able to handle the ball while scanning the floor

Passing and Catching

- Introduction or refinement of the basic stationary passes (chest, bounce, overhead, baseball)
- Passing and catching on the move
- Passing and catching against an opponent

Shooting

- Introduce BEEF (Balance, Eyes, Elbow, Follow through), concepts of shooting should become more exact
- Introduce or refine technique for lay-ups from both sides

Developing One on One Skills

- Triple threat stance, squaring up to the basket
- Reading the defence
- Ball fakes and foot fakes (small and quick)

Getting Open
- Moving to get open
- Coming to the pass
- Pivot to be an offensive threat

Defensive Stance on the Ball
- Introduce stance
- Moving in your defensive stance while staying between the player you are guarding and the basket
- Guarding the ball - maintain a gap between the defender and ball handler

Defensive Stance Away from the Ball
- Staying between the player you are guarding and the basket
- Seeing the player you are guarding and the ball
- Helping your teammates
- Recover to the player you are guarding as he/she receives the ball

PLAYING PRINCIPLES

Offensive Concepts
- Playing with the purpose of scoring
- Playing 1-on-1
- Spacing 3 to 4 metres
- Give and go
- Cut and replace/fill
- Read the defence to attack and score

Note: More time should be spent on offensive concepts than defensive concepts in this stage.

Defensive Concepts
- On the ball strategies - staying in stance between the player being defended and the basket
- Off the ball strategies - staying near the player being defended but always seeing the ball
- Towards the end of stage introduce defensive triangle (ball-you-man)
- Sprinting back on defence

GAME MODIFICATIONS

Use a smaller ball:
- Baskets should be 2.60 metres to 2.74 metres high;
- Play more 1-on-1, 2-on-2, 3-on-3, 4-on-4 as this allows more touches of the ball then 5-on-5;
- Play player-to-player defence;
- Everyone should play every position;
- Allow some violations to occur, but explain the rules;
- Equal playing time;
- Adjustments to the court size, substitutions and the length of the game;
- Early in this stage it is not recommend that a visible score be kept. Progress to keeping score towards the end of the stage;
- Rules that encourage the use of the basic skills over-elaborate tactics and strategies are recommended. For example, whoever rebounds the ball must advance the ball up the floor.

Chapter 7

DEVELOPMENTAL CHARACTERISTICS

Physical Characteristics

Basic Characteristics

- Strength training using the athlete's own body weight should be used. Hopping and bounding can also be safely implemented;
- Speed can be trained during this stage, and this should be done during the warm-up phase of practise sessions;
- Stretching exercises should become a routine. Dynamic stretching should become a routine during the beginning of this phase, while PNF (proprioceptive neuromuscular facilitation) can be implemented towards the end of the phase;
- The central nervous system (CNS) is almost fully developed.

Performance Capabilities

- Speed, agility, balance and coordination are still improving rapidly, and are fully trainable;
- A change in the center of gravity, length of limbs and core strength will determine the content of training.

Implications for Coaches

- A combination of biological and chronological age should be used to group players;
- Short duration of anaerobic (short bursts of energy) activities is recommended;
- Use warm up to further develop CNS activities.

The Five S's of Training and Performance during the Basketball Skills Stage:

Since this is the major **SKILL** learning stage, motor development should be emphasised. Accelerated adaptation to motor skills and coordination development, is from 8-11 years for females and from 9-12 years for males. It should be noted that this is a sensitive period. If the fundamental and basic sport-specific skills are not established before ages 11 and 12 respectively, then athletes may not reach their optimal or **genetic potential**. Skills will always be trainable but skills trainability gradually declines after 11 and 12 years of age. It should be developed before the onset of the growth spurt.

Stamina, Strength, Speed and **Suppleness** should be further improved by well sequenced training. Although there is less interference between the various training adaptations during FUNdamental and L2T two stages of training, a well laid-out training, competition and recovery program will optimize the various training effects.

Training competition ratios: 75 percent training to 25 percent competition ratio is recommended by experts during the L2T stage (4:1 training competition ratio vs. the 1:1 ratio that prevails presently). More training time allows for development of fundamental movement skills, fundamental sport skills, fundamental basketball skills, decision making and physical preparation. The competition review will address this topic.

At this stage, players should train in game like situations in the form of short scrimmages or competitive games and drills.

Athletes/teams in the L2T stage following the 4:1 practice to competition ratio will be better prepared for competition in both the short and long-term, than players who focus solely on competition and winning.

Mental and Cognitive Development

Basic Characteristics

- Athletes are excited to be participating;
- Athletes are eager to perfect skills.

Performance Capabilities

- Players have a strong fear of failure;
- Individual and specific direction and structure in the learning process is required. A variety of methods to measure success is important to maintain motivation.

Implication for Coaches

- Create optimum learning environment, match skill and drill levels;
- The coach's ability to demonstrate specific skills is important;
- Positive reinforcement is imperative.

Psychological Skills

- Players have the ability to recall specific information from memory;
- Players have the ability to use knowledge to interpret and draw conclusions;
- Players must feel it is OK to make mistakes. They cannot be afraid to try something for fear of failure;
- All players must learn to become team players.

Performance Indicators for Psychological Skills

- The player demonstrates the ability to absorb and apply coaching information to deal with a variety of situations;
- The player demonstrates ability to perform as a team player;
- Emphasis should be on learning and performing to the best of ability - not on winning.

Emotional Development

Basic Characteristics

- Players can accept responsibility;
- Players enjoy cooperation both with coach and teammates.

Performance Capabilities

- Values and attitudes are created and reinforced by the group;
- Some players may be less responsive due to a fear of failure.

Implications for Coaches

- Coach must provide strong direction. Supervision should be exercised by coach;
- Coach should gradually give players responsibility;
- Coach must not play favourites. Early matures often become leaders and (written negatively) excel in physical performance. It is important to treat all players as equals.

Ancillary Capacities

- Players can learn about communication skills and values such as respect, honesty, and integrity - values in dealing with others;
- Players begin to understand and apply, in conjunction with the coach:
    - Warm up and cool down
    - Hydration
    - Nutrition
    - Respect for environment and equipment
    - Health awareness
    - Recovery and regeneration

Train to Train Stage (T2T)

(Ages 11-15 females, 12-16 males)

Train to Train, Phase 1: Females 11-13 and males 12-14

The physical capacities that need to be trained are now completely dependent on the developmental age of the individual. Coaches must be aware of the differences in maturation rates and allow for appropriate accommodation. The goal at this stage is to continue to build the athletic base. Many skills will be introduced here and these skills will be emphasized. Avoid the temptation to compensate for the lack of skills with higher level tactics. The use of zones and presses will be introduced in the second phase, at the end of this stage, when players have acquired a complete grounding in the basic skills. We want to develop basketball players as opposed to positional players. This stage can still be an entry level for many players. Recognize this fact and be aware of the stage below in order to assist the athlete in accelerating his/her learning.

POINTS OF EMPHASIS

Fundamental Movement Skills

- Refine skills previously identified in FUNdamentals

Fundamental Skills

Ready Stances - Without Ball

- Develop and refine
- Refine defensive stance
- Vision - play with eyes up, scanning

Ready Stance - With Ball

- Refine footwork-pivoting (front and reverse), using both feet for pivots
- Early decision making before the catch
- Refine movement with ball - jump stops, stride stop
- Ball handling - becoming comfortable with the ball, ball protection, vision, handling ball under defensive pressure and refining ball movements

"We need to train our young players as athletes first – develop their athletic base. Then we need to add "basketball" skills and concepts. But mostly we need to quit playing so many games and start teaching the fundamentals of the game. Kids want to learn – it is up to us to teach them."

-- Canadian Women's National Team Head Coach, Allison McNeill

Dribbling/Ball Handling

- Expand the dribbling repertoire
- Refine and develop speed, control, change of direction, retreat, and change of pace with the right and left hand
- Refine and develop the concept of dribbling against a guided defender
- Making proper reads and reactions
- Refine ability to handle the ball while scanning the floor

Passing and Catching

- Expand the passing repertoire. Add variations to the basic passes (ex. chest, bounce, overhead, baseball)
- Increasing the speed at which the ball can be passed and received
- Developing ball and pass faking concepts
- Passing and catching in guided defensive situations
- Making proper reads and reactions

Shooting

- Review and refine the BEEF (balance, elbow, eyes, follow through) concepts of shooting
- Execution of the "perfect" form shooting
- Develop shot-ready techniques - catch and shoot from a pass in a variety of directions
- Develop catch and shoot off a dribble - in a variety of directions
- Review and refine a lay-up repertoire (ex. baby hook, reverse, right hand, left hand, power, zig zag)
- Develop free throw shooting routine
- Shooting and lay-ups with a guided defender and making the proper reads
- Expand shooting repertoire (ex. off dribble, off catch, different angles, different speed, range). The emphasis should be on the above progressions

Getting Open

- Using change of direction, change of pace, sealing and a teammate
- Read and react to guided defence
- Move to the pass
- Get open in a variety of positions (ex. wing, post, guard, top, baseline)

Developing 1-on-1 Skills

- Squaring to the hoop aggressively to be a scoring threat
- Develop a one-on-one repertoire (ex. off dribble, jab fakes, shot fakes, combinations)
- Read and react to guided defence
- Play from a variety of positions

Multi-Player Manoeuvres

- Develop and refine
- Pass and catch
- Penetration principles
- Pick (ball screen)
- Screen away from the ball
- Playing without the ball
- Read and react to guided defence
- Play from a variety of positions
- Emphasize ball movement (reversals)

Transition Offence

- Develop the concept of lanes and outlets
- Recognize advantages while attacking the basket
- Read and react to guided defence
- Emphasize all players playing all positions
- Emphasize ball movement

Defence

- Introduce the concept of ball, ball-side and help-side defence

Defence on the Ball

- Refine defensive stance against an offensive player in triple threat with emphasis on ball pressure
- Develop and refine maintaining the gap and change of direction against a ball handler with emphasis on ball pressure
- Introduce and develop the concept of contesting a shot, pass and dead ball
- Introduce the concept of influencing (perimeter and post)
- Introduce and develop defending picks (on the ball screens)

Defence off the Ball

- Refine and develop stance - open and closed
- Introduce the concept of influencing (perimeter and post)
- Introduce and develop denial - open and closed
- Introduce and develop help, rotate and recovery
- Introduce and develop defending off the ball screens
- Moving from one defensive stance to another (ball stance to help stance, help stance to deny stance, etc)

Rebounding

- Introduce and develop skill of defensive rebounding (boxing out)
- Introduce and develop the skills of offensive rebounding

Transition Defence

- Introduce and develop the concept of team defensive balance (offensive rebounding and safeties)
- Defending the basket, ball and lanes in transition
- Sprinting to recovery

Chapter 8

PLAYING PRINCIPLES

Offensive Concepts

- Reading and reacting to the defence
- Playing 1-on-1
- Penetration principles - using the dribble and pass wisely, movement without the ball
- Spacing of 3 to 4 metres
- Cutting - basket cuts, ball cuts and spacing cuts (replacement)
- Introduce and develop ball screen (pick) and screens away from the ball
- Emphasize ball movement (reversals) and player movement without the ball
- Rebounding
- Communicate with teammates

In Transition

- Attacking from the middle
- Outlet passes, catching and passing the ball to the person ahead who has an advantage
- Running fast and wide
- Communicate with teammates

Defensive Concepts

- On the ball strategies - staying in stance; staying between the person being guarded and the basket (maintaining the gap), maintaining ball pressure, defending picks
- Off the ball strategies - staying near the player being guarded but always seeing the ball, using the defensive triangle, defending screens
- Concept of influencing (perimeter and post)
- All players have a responsibility in team defence
- Challenging all shots
- Rebounding
- Communicate with teammates

In Transition

- Defending the basket, defending the ball and defending a player
- Communicate with teammates

TECHNICAL SKILLS

Offence

- 1-on-1 attack to finish/to set up team-mate
- Expand on reading defender - with and without ball
- Post play - sealing
- Getting open
- Passing-entry versus pressure, post entry
- Expand ball reversal
- Pass, cut, replace
- Concepts of passing angles/lanes and create lanes
- Purposeful and efficient dribble
- Introduction of shooting footwork (right, left, etc)
- Introduction: shot selection and time/score
- Offensive spacing: 3-point line - balance out
- Rebound - follow shot
- Making use of 3-on-3 to demonstrate and practice these concepts

DEFENCE

Team Defence

- Introduce and review defensive stances - ball, deny and help
- Individual "D" to team "D"
- Concepts - deny cutter, shift/react to the ball
- Communicate your actions (cue words - ex. ball, shot, help, etc)
- Protect basket - take a charge
- Attack penetration with help
- Refine - see the ball
- Challenge shooter under control: close-out, contest
- Concept of recovery
- Footwork: shuffle to run (help)
- Full court 1-on-1 pressure
- Rebound (contact)
- Play "D" without fouling

Transition Defence

- Floor recognition
- Stop advancing of ball
- Protect basket
- Defensive responsibility
  - Communicate
  - Definition of roles
  - Ball, basket
- Sprint to passing lanes
- Sprint to half court and turn to face oncoming ball
- Stop ball, pick up checks

GAME MODIFICATIONS

- No zone defence or zone presses;
- Practice to game ratio of 4:1;
- Use a number 5 or 6 ball;
- Baskets should be 10 feet;
- Train by playing 1-on-1, 2-on-2, 3-on-3 so players can touch the ball more.

Train to Train, Phase 2:
(13-15 females, 14-16 males)

Fundamental Movement Skills

- Refine same skills as FUNdamentals stage

Fundamental Basketball Skills

Basic Motor Movement Skills - Without Ball

- Stances - offensive ready, defensive
- Movement - starting, stopping, change of direction
- Footwork - Agility, Balance and Coordination (ABC's)
- Vision - scanning

Basic Motor Skills with Ball

- Stances - triple threat, ready, shot ready
- Footwork - pivoting, balance, explosions

Dribbling - Stationary and Moving

- Push-Pull
- Behind back
- 2 ball
- Maravich drills
- Inside out to cross over
- Between legs
- Stutter
- Hop back - to go and to shot
- Spin
- Combination moves
- Off hand
- Dribbling versus pressure

Passing and Catching

- Outlet passes
- Full court passes

Shooting

- Form shooting, wall shooting
- Ready to shoot
- Shot preparation
- After a cut into 1,2 footwork
- Jump shot
- 3-point shot
- Free throws
- Under pressure

Lay-Up Skills

- From 1 foot
- From a pro hop/power layup (2-foot take off)
- Reverse
- Decision on type of finish

Perimeter Movement with Ball (1-on-1)

- Shot fake and go
- Shot fake and cross-over
- Shot fake and pull-up
- Jab step and shoot
- Jab step and go
- Jab step and cross-over
- Combinations of the above

Perimeter Movement without the Ball

- V-cut
- L-cut
- Blast cut
- Backdoor cut

Chapter 9

Post Movement without the Ball
- Sealing

Post Movement with Ball
- Drop step
- Gather step
- Turn around Jumper

Introduce Screening Situations late in the stage
- Cross
- Down
- Ball

Defensive Stance on the Ball
- Ready, point, dead
- Run-glide-run
- Hip turns
- Help
- Deny
- Ball influence
- Guarding screens - "don't get screened"

Rebounding
- Box outs
- 2 hands on the ball
- Outlet the ball/break out dribble

PLAYING PRINCIPLES

Offensive Transition
- Secure possession
- Attack the basket
- Outlet or breakout dribble
- Space the floor vertically and horizontally

Defensive Transition
- Box-out
- Keep ball out of middle of floor
- 1st man back defends basket
- Stop ball
- Match up with checks by communicating with teammates

Offensive Concepts
- Attack the basket
- Spacing is paramount
- Read the defence, read your teammates
- Be patient
- Be quick but don't hurry

Penetration and Kick Principles
- Pushing and pulling off penetration

Use of Dribble
- To advance the ball
- To attack the hoop
- To improve passing angles
- To get the ball out of trouble

Defence in the Half Court (man to man)
- Stop penetration
- Force (funnel) the ball
- Turn the ball
- Help side must see ball and man
- Help the helper (help, fill and rotate)
- Challenge all shots
- Defend all screening situations (late in the stage)

TECHNICAL OFFENCE
- Communication: verbal/non-verbal cues
- Expand on reading the defender
  - On/off ball
  - Back cuts
  - Reading overplays
  - On passing to post
- Screen on ball
- Pick and roll or pick and cut
- React to defence
- What do other players do
- 5-on-5 offence
- Concept based - attack the basket, spacing, penetration principles, passing and cutting and sealing
- Options and sequencing - spacing and balancing (3-point line)
- Screen options introduced late in the stage

1-on-1 - Shooting
- Decisions on second line of "D." Decision when meeting second line of defence (ex. pull up, floater, tear drop, etc)
- Shooting off screen
- Concept of freeing shooters - off screens: screen, shot and pass

Team Defence
- Communication: cues and team awareness
- Talk to teammates
- Rotation - help and recovery

Post "D" specific
- Screens - on and off the ball
- Hedge and recover, stab and retreat
- Concept of influencing (perimeter and post)

Improve or Refine
- Concept of area coverage: Progression
- Emphasis on not reaching and controlled defensive body position
- Guarding ball in post
- Gap as related to quickness and skill i.e. good shooter, play tight
- Trapping, double team, run & jump
- Rebounding off rotation
- Understand offensive abilities

Offensive Transition
- Define responsibilities
- Rebounder, outlet, 2nd outlet
- Anticipate possession
- Decision making
  - Individual strength
  - Advantages: time and score
- Advancing ball: pass, dribble
- Responsibilities after transition ends
  - Balance out and spacing - 3-point line
  - Set up offence

Defensive Transition
- Communication
  - Awareness
  - Pointing
- Guarding/covering the entire court
  - Stop ball earlier
  - Rebounder
  - Deny outlet
  - Defend lanes (ball u man)
- Safety - 1st player back
  - Communicate "traffic controller"

"The reason why so many athletes plateau during the later stage of their careers is primarily because of an overemphasis on competition instead of on training during these important periods (L2T and T2T) in athletic development."

-- Istvan Balyi

One Attack Concepts

Zone offensive and defensive concepts plus zone press and press break concepts will be introduced late in this stage after the players have acquired the necessary player to player defensive and offensive concepts. Coaches are reminded that the goal is to develop "global basketball players" rather than positional players.

- Using player-to-player concepts to attack zone
- Handle double teams, run & jump
- Passing to enable offensive efficiency
- Expand use of dribble
  - Advance ball, pass to post, improve angle, penetrate, retreat, control

Zone Offensive Concepts

- Using player-to-player concepts to attack zone (proper spacing, penetration principles, cutting, sealing, picks and screens)
- Passing to enable offensive efficiency (ball reversal, fakes)
- Introduce and develop specific zone concepts (overload, flatten the zone, use of gaps and seams)

Zone Defensive Concepts

- Introduce zone defensive concepts as opposed to zone defensive systems

Press and Press Breaks

- Introduce and develop pressing pick up points
- Introduce trapping concepts (pressure defence)
- Introduce concepts to breaking traps and pressing defences (press breaks and pressure releases)

GAME MODIFICATIONS

Regulation game (this includes the introduction of the shot clock) with the following modifications:

1. The aim is to ensure that athletes are able to use the basic skills in a competitive environment. When this aim is achieved coaches can then move into more complex tactical concepts such as zone defences and presses;
2. Coaches need to be aware that during this stage there is a great variation in physical ability due to maturation rates. This will greatly effect the decision that a coach makes in competitive situations. i.e. who is matched up against who in a game and what tactics you employ?
3. Coaches need to ensure that late maturing children entering the sport late are given opportunities to play;
4. Use a number 5 or 6 ball;
5. A smaller court may be considered.

DEVELOPMENTAL CHARACTERISTICS

Physical Characteristics

Basic Characteristics

- Significant changes in muscle, bone and fat tissue;
- Females begin their growth spurt between the ages of 12.5 and 14 years, while males begin between 12.5 and 15;
- The on-set of menarche for females can be anywhere from 10-16 years;
- Smaller muscle groups become more developed;
- Various parts of the body are not growing at the same rate;
- Stamina can be developed here through the use of aerobic drills by using the full length of the court. It should be noted that it is sometimes difficult to implement continuous running programs due to a lack of motivation on the part of the athletes;
- Strength training using the athletes' body weight should be continued.

Performance Capabilities

- Early in this phase, females are faster and stronger than males. Later in this phase males become faster and stronger;
- After the on-set of menarche, iron levels of females should be monitored regularly. Watch for fatigue, dizziness, irritability, headaches and dry skin;
- Speed, agility, balance and coordination are still improving rapidly, and are fully trainable;
- A change in the centre of gravity, length of limbs and core strength will determine the content of training;
- Oxygen transport system is still developing and aerobic endurance continues to increase.

Implications for Coach

- Monitor training carefully and individualize the content of training to ensure adaptation;
- Chronological age is not the most appropriate way to group players. Biological age should be used;
- Situations which cause anxiety about sexual development should be avoided;
- All basic skills need to be developed. Athletes should learn how to train during this phase;
- Some of the previously learned skills will need to be refined (re-learned), since the growth of limbs will impact techniques;
- Short duration of anaerobic activities is recommended;
- Individualized training to meet the developmental needs of the athlete;
- Use warm up to further develop CNS (Central Nervous System) activities and energy systems.

Physical Capacities

The Five S's of Training and Performance during the Training to Train Stage:

Stamina - the onset of PHV contributes to accelerated adaptation in the aerobic system. This is the time at which the athlete's aerobic system is best trained. The 11-15 year old female and 12-16 year old male athletes should be grouped during training according to biological maturation rather than chronological age, since young adolescents may be 4-5 years apart within each chronological age group.

Physical training should be organized so that early, average and late maturing athletes each have their own training group. With the onset of the growth spurt a training priority should be the aerobic system using different activities. Although the aerobic system is a priority, strengths, speed, skill and suppleness should be developed further/maintained. This is building the foundation of the aerobic base of a basketball player.

Measuring PHV

In order to estimate PHV, the University of Saskatchewan has developed a PHV calculator which requires the athlete birth date, height, sitting height and weight. The calculator provides protocols for measuring and can be used to predict adult height. See the following webpage:

http://athena.usask.ca/growthutility/phv_ui.cfm?type=1

Strength - the peak of the growth spurt (defined below) is the reference point for implementation of strength training programs. The sensitive periods of accelerated adaptation to strength training will occur **towards the end and immediately after PHV for females. The sensitive period for males will most likely occur 12-18 months after PHV for males.**

Coaches should monitor their players for the growth spurt of the PHV and the peak of PHV. These measurements accurately indicate the proper time to implement free weight programs. Standing height, sitting height and arm span should be measured quarterly after the onset of the growth spurt.

Proper weight training technique should be introduced during the "skill hungry years." This will prevent injuries from improper lifting techniques. Appropriate progressive overload procedures should be observed when implementing such programs. The training of core strength should always be a priority when training athletes of any age.

Figure 19 Growth Spurt of the PHV

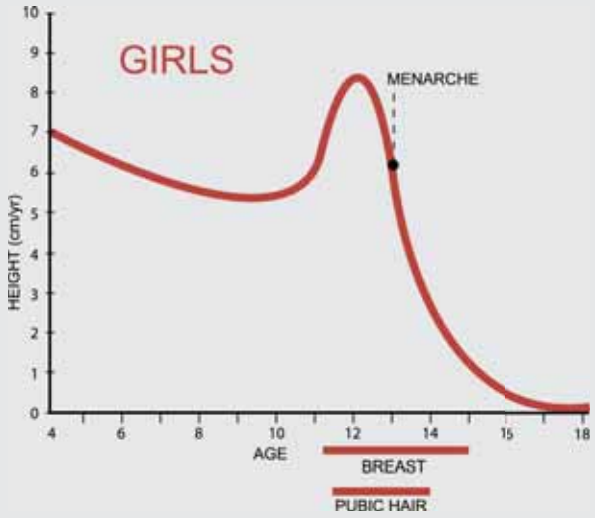
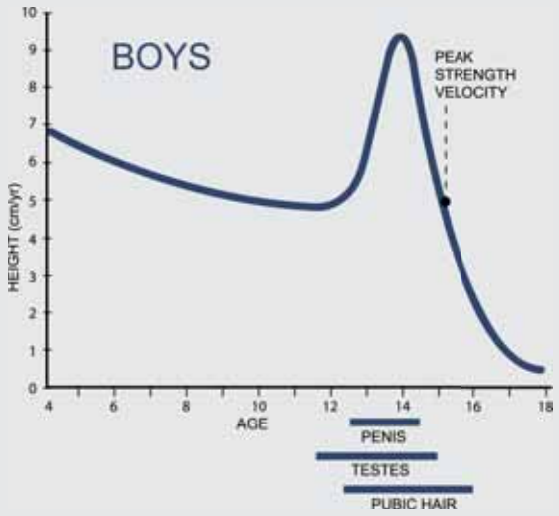


Figure 20 Growth Spurt of the PHV



Adapted from CS4L

Speed - the second speed window for accelerated adaptation is 11-13 years of age for females and 13-16 years for males (Viru, 1995; Viru et al., 1998 and 1999).

Although CNS training is still very important, anaerobic training should be introduced to females during the first part of this stage and to males during the second part of the stage. Proper progressive overloading should be ensured. Linear, lateral and multi-directional movement speed should be trained by proper sequencing of speed work with other training activities.

Speed work should be done all year round regardless of the different phases and objectives of the annual cycle. It should be done at the end of the warm up, when there is no metabolic or nervous system fatigue present and the training load should be very low (ex. speed layups from half, no more than 10 seconds of speed work).

This speed work should be in the form of anaerobic alactic power and capacity. This is energy system training (versus CNS training) and the duration of the intervals should be between 5 to 15 seconds. Agility, quickness and change of direction should be trained at the end of the warm up, avoiding accumulation of fatigue.

Skill - due to the rapid growth of athletes during adolescence, including changes in the centre of gravity, length of the arms, trunk and legs, movement skills and fundamental basketball skills should be revisited. Coaches should be patient with the players during and immediately after their growth period because different parts of the body grow at different rates. This may have a temporary adverse effect on an athlete's movement and technical skills.

Suppleness - flexibility should be monitored carefully in this stage. Static stretching and Proprioceptive Muscular Facilitation (PNF) should be used to maintain or improve flexibility. The scheduling of a stretching session that is separate from other training activities is recommended during this and the next stage of athlete preparation. Dynamic mobility and pre-habilitation (exercises that prevent injury) routines should replace static stretching in warm ups.

Flexibility training should be done 5 to 6 times per week if flexibility needs to be improved, and 2 to 3 sessions of training each week to maintain current flexibility levels. Special attention should be given to flexibility during this stage due to sudden growth.

Training Competition Ratios

Approximately 66% training to 33% percent competition ratio (3:1 training to competition ratio) is recommended by experts during the Training to Train stage. These percentages vary according the individual/team needs. Emphasis is on individual improvement over team improvement. Again, players/teams undertaking this type of preparation will be better prepared for competition in both the short and long term than players who focus solely on games. These training to competition ratios will be further evaluated by the competition review working group.

Mental and Cognitive Development

Basic Characteristics

- Players develop a new form of egocentric thought. Much emphasis is placed on self-identity;
- Players are eager to perfect skills.

Performance Capabilities

- Decision making through more complex technical training should be introduced;
- Athletes have a strong fear of failure;
- Individual and specific direction and structure in the learning process is required. A variety of methods to measure success is important to maintain motivation.

Implication for the Coach

- Create optimum learning environment, match skill and drill levels. Introduce simple coping strategies, concentration and mental imagery;
- Decision making on tactical and strategic solutions should be based upon the skill level of the athlete;
- The coach's ability to demonstrate specific skills is important. If the coach cannot demonstrate the skill, it is important to find someone who can - perhaps a player;
- Audio/visual material and video feedback will help to create mental images;
- Positive reinforcement is imperative.

Chapter 9

Psychological Skills

- Players have the ability to set long term, short term and daily training goals, which are to be personally established and progressively monitored;
- Players realize that there are a variety of procedures that can be used to achieve activation controls (ideal performance state) and that they have the ability to use them appropriately;
- These include: breathing techniques, visualization and concentration techniques;
- Players begin to understand that they must be motivated, self-disciplined and dedicated to reach their full potential;
- A player's competitive spirit begins to develop. They must learn to be positive, hard working and confident;
- Players begin to maintain balance and focus while under varying amounts of pressure;
- Players must feel as though it is okay to make mistakes. They cannot be afraid to try something for fear of failure;
- Players must be given opportunities to lead;
- All players must learn to become team players.

Performance Indicators for Psychological Skills

- Player demonstrates ability and understanding of what constitutes acceptable individual/personal best effort capabilities;
- Player begins to use goal setting, visualization imagery, mental toughness strategies and emotional control strategies;
- Player demonstrates the ability to absorb and apply coaching information to deal with a variety of situations;
- Player demonstrates ability to analyze their own levels of performance and effort. Demonstrates ability to perform as a team player;
- The athlete is able to maintain a positive self-concept through all aspects of training and competition;
- The athlete understands that the coaching emphasis is on learning and performing well as opposed to "winning."

Emotional Development

Basic Characteristics

- Players are influenced significantly by their peers;
- Players can accept responsibility;
- Players enjoy cooperation;
- Tension exists between adults and children;
- Physical, mental, and emotional maturity do not necessarily develop at the same rate.

Performance Capabilities

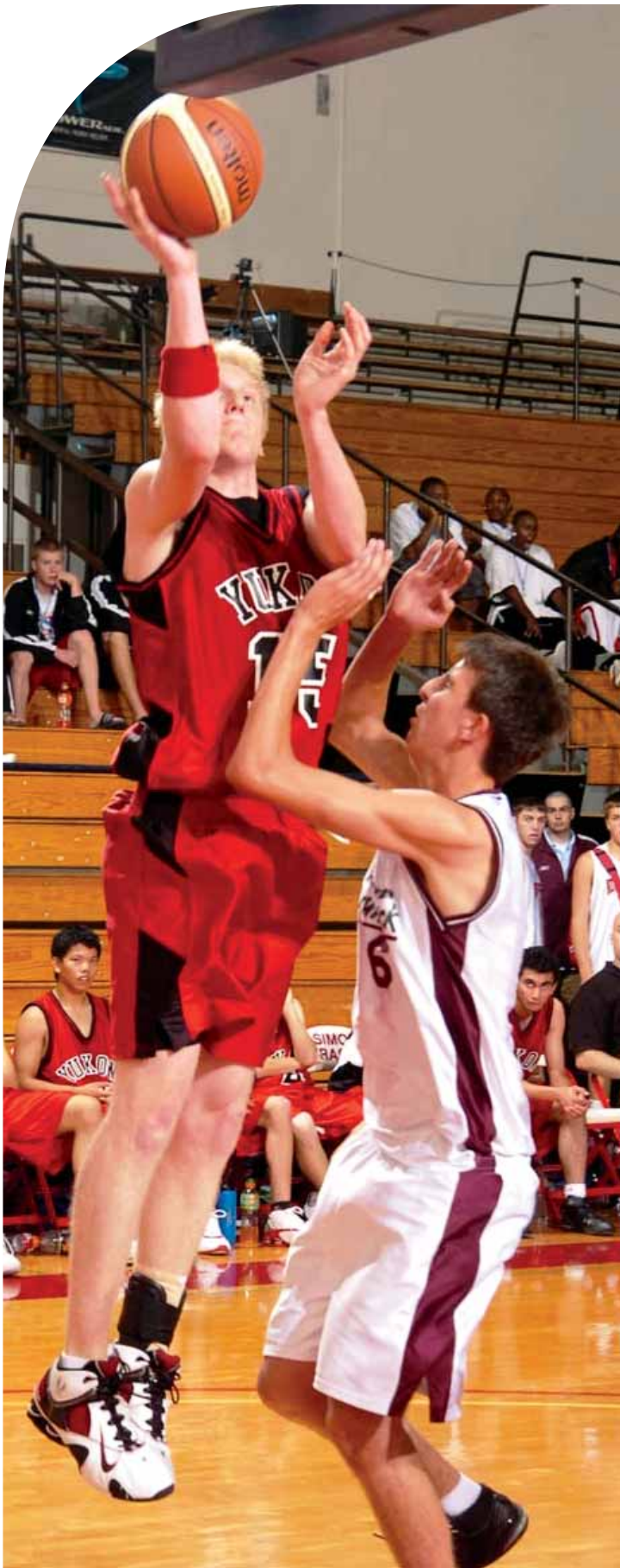
- Values and attitudes continue to be created and reinforced by the team;
- Some players may be less responsive due to a fear of failure;
- Communication channels should be kept open by the adult because all teenagers need help although they often do not recognize the need for it;
- Social activities are important events for this age group.

Implications for the Coach

- The coach must provide strong direction and supervision;
- The coach must have open communication with the athletes;
- The players need role models;
- The coach is usually more readily accepted than other adults and should endeavour to keep the lines of communication open;
- The coach must not play favourites. Early matures often become leaders and excel in physical performance. Everyone must be treated as equals.

Ancillary Capacities

- Athletes must have a passion for learning;
- Athletes can learn about having healthy lifestyles;
- Athletes can learn about communication skills such as respect, honesty and integrity in dealing with others;
- Athletes can be positive role models and set good examples through their actions;
- Athletes are expected to understand:
  - Warm up and cool down
  - Hydration
  - Nutrition
  - Respect for environment and equipment
  - Health awareness
  - Recovery and regeneration
  - Taper and peak



Train to Compete Stage (T2C)

(Ages 15-18+/- females, 16-18+/- males)

During the Train to Compete stage, high intensity individual and sport-specific training is provided to athletes year round. The major objective of this stage is to learn to compete under any kind of circumstance. Athletes who are now proficient at performing both basic and sport-specific skills, learn to perform these skills under a variety of competitive conditions during training. Consideration must also be given to athletes who are late entering into the sport. A coach must be aware that these athletes may be at the Train to Compete stage in regards to physical skills but at lower stages in terms of basketball skills. With proper coaching these late entry athletes can be brought successfully into the basketball system. Special emphasis is placed on optimum preparation by modelling training and competition. Fitness programs, recovery programs, psychological preparation and technical development are now individually tailored to a greater degree. This emphasis on individual preparation addresses each athlete's individual strength and weaknesses.

At this stage of development the serious athlete will be focused and determined to be the best player he/she can become. Athletes need significant amounts of technical and tactical feedback if they are to properly develop skills. Athletes must train at a high level of intensity and must be challenged to improve by the coaching staff.

FUNDAMENTAL SKILLS

Dribbling - Stationary and Moving

- Against disadvantage situations (2-on-1, 4-on-2, 4-on-3)

Passing and Catching

- Post entry passes (dribble and stationary)
- Skip passes

Shooting

- After a curl cut
- After a fade cut
- 3-point shot
- Jump shot off the dribble

Lay-up Skills

- Making shots with contact
- Creative finishes

1-on-1

- Attacking one on one - sweeps, cross over
- Control one on one - jab series, shot fake
- One on one off the dribble
- Hop back
- Combination moves

Post Moves (taught towards end of the stage)

- Jump hook
- Up and under
- Double pivots
- Face up and go
- Short corner shots, cuts
- High post shots, cuts
- Crab dribble series

Perimeter - Movement without the Ball

- Pass into post and relocate
- Blast cut

Movement without the Ball - Post

- Make contact defender's body
- Feet active, arms high

Introduce Other Screening Situations

- Flare
- Staggered
- Double
- Pin

Defensive Stance on the Ball

- Closeouts
- Post defence - foot work (fronting, staying ball side, movement around offensive player)

Rebounding

- Breakout dribble

PLAYING PRINCIPLES

Offensive Transition

- 1st post goes to front of the rim
- Trail post goes to the 3-point line

Defensive Transition

- Refinement of previous skill sets

Conceptual Offence

- Spacing is paramount (3.5 metres to 4.5 metres) - allow for penetration
- Play off teammates penetration
- Look for cutting opportunities
- Look for screening opportunities
- Look for opportunities to improve passing angles and make use of relay passes
- After screening move in the opposite direction of the person being screened for (2nd cutter)
- Be patient
- Be quick but don't hurry

Intelligent Movement is Based on:

- Players ability to read and react to defensive positioning
- Location of the ball
- Players should not watch ball until ready to receive it-they should watch their defender
- Movement of defence

Penetration and Kick Principles

- Move and slide to an open area on penetration
- Baseline drive-baseline drift, or fill in behind driver
- Middle drive-slide to optimum position
- Penetrate pass pass
- Post movement off penetration

Reading Screens

- Being patient and make correct reads (showing hands when ready for ball)
- Using of second cutter

Press Break

- Spacing
- 3 passing options (middle, back, sideline)
- Working against double teams
- Vertical attack - throwing over the top

Principles of Zone Offence

- Attacking GAPS of the zone
- Taking defence away from their positions
- Ball reversals
- Use of the high post
- Posts must look for screening, sealing and exit cut opportunities

Defence in the Half Court - Player-to-Player

- Attack penetration (help principles)
- Keep the ball out of post (both low and high)
- Defend all screening situations
- Deny post position
- Deny ball reversal

Principles of Zone Defence

- Communicate on every pass
- Everyone moves on every pass
- Hands up, take up space
- Keep ball out of high post
- Proper spacing (never 2 players guarding 1)

Chapter 10

STRATEGIC/TACTICAL SKILLS

OFFENCE COMMUNICATE

5-on-5

- What is the point of attack?
  - Mismatches - attack the weakness of a defender
  - Attack the weakness of the defence
  - Take advantage of the team's strengths
  - Isolation - take advantage of a player's strength
- Role identification
- Time/score
  - Specific end-of-game situations
  - Shot selection
- Special plays
  - Quick hitters
  - Sideline out of bounds (SLOB), baseline out of bounds (BLOB)
  - Foul line
- Zone attack concepts
- Prepare for junk defence
  - Box + 1, triangle + 2
- Offensive rebounding
  - Establish plan on who will rebound
  - Offensive block out, spin, etc.
- Emphasize possession of ball and value of it
- Flow and the awareness of the shot clock
  - Early clock
  - Mid clock
  - End of clock

Defence - "COMMUNICATE"

- Expansion and repetition of previous stage
- Recovery strategies
- Rebounding emphasis in all areas and defensive breakdown situations
- "Complete the defensive play" - that is, putting it all together
- Multiple defensive programs
  - Combo "D", zone presses

Transition - "COMMUNICATE"

Principles

- Decision making
  - Time/score situations
  - Player personnel
  - Advance ball
    - Advantages & disadvantages
    - Angles
  - Tempo
- Roles
  - Runners
  - 2nd outlet - new roles if 2nd outlet is used
  - Trailers - where do they go?

Transition - Offence

- Spacing/balancing out
- Post/perimeter into offensive positions
- Ball reversal - half court reversal

Transition - Defence

Communication

- More specifics
- Cue/action words - expand to full court
- Awareness of teammates - Where? Responsibilities?

Timing

- Knowing when to switch
- Depends on situation

Options within Transition

- Trapping - recovery
- Forcing
- Turning
- Run + jump
- Influencing - who has ball and where?
- Playing out of a scramble/disadvantage

DEVELOPMENTAL CHARACTERISTICS

Physical Characteristics

Basic Characteristics

- The circulatory and respiratory systems reach maturity;
- Increases in height and weight slow, and stabilization occurs in the muscular system;
- Skeletal maturation occurs in females and continues in males;
- By age 17 females have reached adult proportions whereas males do not reach such proportions until several years later.

Performance Capabilities

- Circulatory and respiratory systems are generally capable of giving maximum output;
- Muscles have grown to their mature size but strength continues to increase towards its peak in the late twenties;
- Connective tissues are still strengthening;
- Females generally gain more weight than males during this phase.

Implications for the Coach

- Aerobic and anaerobic systems can be trained for maximum output. Full sport specific energy system training should be implemented;
- Strength training can be maximized to improve overall strength development. Neuromuscular training should be optimized during this stage;
- Progressive overloading in training should be continued;
- Coaches should be aware how to deal with the subject of weight gain in an appropriate manner;
- Athletes should learn how to compete including all technical, tactical and ancillary components.

Physical Capacities

The Five S's of Training and Performance during the Training to Compete Stage:

Stamina - 8-12 weeks of training are needed to induce a significant improvement of the aerobic system. This should be done during the General Preparatory Phase (GPP). Training should be done 3-4 times per week using a variety of training methods in addition to on court practices. These training methods are:

Long Slow Distance: When using this for improvement, the exercise should last between 30-60 minutes at 70% of maximum heart rate.

Fartlek: When using this method, the duration of the exercise should be 30-45 minutes, the whole time alternating 3 minutes of "slow jogging" with 3 minutes of intense training.

Interval training: This is work or training followed by a prescribed period of rest.

Ultra-short interval training: This form of training is based on the principle that sufficiently short intervals of intense work do not produce lactic acid accumulation. It is appropriate for developing alactacid and aerobic endurance and provides the opportunity for specific skill training at competition intensity.

Strength - Strength training at this stage should be monitored very closely as athletes' bodies are changing rapidly. Also for late maturing athletes, coaches should refer to the T2T stage strength training as these athletes are still the sensitive periods of strength trainability. Diagnostics/testing will determine the content and extent of the strength program. At this stage this should be fully individualized. 2-3 sessions should be conducted during the pre-season and 1 or 2 in-season for maintenance. Core and hamstring maintenance should be done 3 times a week. Core strength training should be a priority and should be adjusted to the athletes' needs.

Speed - Fatigue interferes with speed development. Speed should be trained at the end of the warm-up when there is no metabolic or nervous system fatigue present at every single training session. Speed training should be properly periodized within the annual training program.

The type of speed that is required in basketball involves acceleration, change of direction and faking or deceiving without the ball.

Short distances of 3-10 metres should be used when training speed including changing direction (linear and lateral) and chaotic speed.

Two important details of speed are proper running technique and speed dribbling with a basketball.

Suppleness (Flexibility) - Young athletes experience sudden increases in height and body mass, therefore it is important that flexibility be trained and monitored closely and regularly.

In principle, athletes are now fully trainable in all of the Five S's of training. It is helpful to use performance tests (performance, laboratory or field tests) to identify individual needs of athletes. Identifying the strengths and weaknesses of the athletes (physical, technical-tactical, mental and ancillary capacities) will help decision making regarding training priorities.

Training Competition Ratios - The training to competition and competition specific training ratio now changes to 3:1. 40% of training is devoted to the development of technical and tactical skills, and fitness improvements, and 60% is devoted to competitions and competition-specific training. These training to competition ratios will be further evaluated by the competition review working group.

Performance Indicators

Athletes must have sport-specific training 6 times per week. The importance of individualized (this should include offensive and defensive skills) and small group work (by position and with players from different positions) is crucial to the continual development of the athlete. Individualized fitness and mental training must also be included.

There are a number of tests that can be used to measure an athlete's level of fitness. These include:

1. Vertical jump and standing long jump
2. Beep tester (Leger Boucher Test)
3. Bridges
4. Sit and reach
5. Speed and agility tests
6. Chin ups/push ups/bench press

Athletes also need to have their fundamental movements accessed before beginning strenuous training programs. Proper technique in single leg/double leg squats, lunging and balance for example, are crucial to prevent injuries; foot, ankle, knee, hip shoulder and spine alignment should be monitored and treated if necessary.

Mental and Cognitive Development

Basic Characteristics

- Generally by age 16, the brain has reached its maximum size but continues to mature neurologically for several more years;
- Critical thinking is well developed during this phase.

Performance Capabilities

- Players can cope with multiple strategies and tactics, particularly during the end of this phase;
- The capacity of self-analysis, self-correction and correction by the coach are developing.

Implications for Coach

- Coaches should encourage the refinement of all technical and tactical skills;
- Decision-making should be developed further through technical, tactical development.

Psychological Skills

- Highly specific goal setting is recommended - on a team and individual basis;
- Goal setting should be reviewed and goals should be recommitted to at certain points during the season;
- Opportunities should be provided for athletes to develop and to apply effective mental management of imagery, focus control, attentional control, and activation arousal control;
- Athletes should begin to realize what their IPS (Ideal Performance State) is and how to achieve this;
- Athletes should begin to become very competitive and start to understand what this encompasses. Winning starts to become a goal but intensity and competitiveness is still the priority. Athletes begin to understand that they can compete hard against other players while maintaining friendly relationships;
- Players should be able to accept constructive criticism to improve abilities. Coaches should constantly provide feedback and help. From a female perspective, athletes will undergo physical changes. The coach can provide information and mental strategies to help deal with these changes;
- Encourage to develop self-control in highly demanding and pressure situations;
- Leaders should begin to emerge and opportunities should be provided for them to lead;
- This is the optimum time to introduce a sports psychologist.

Performance Indicators of Psychological Skills

- Players begin to demonstrate the application of developing personal values and mental training to enhance basketball performance in both training and competitive activities;
- Players demonstrate the ability to apply the acquired mental management tools and skills to improve performance;
- Players demonstrate ability to understand the meanings of motivation, dedication and discipline;
- Players have the ability to set realistic short and long-term goals;
- Players demonstrate the ability to use independent thinking to problem solve;
- Players demonstrate the ability to compete hard, playing to win, but keep wins and losses introspective;
- Players demonstrate the ability to apply mental toughness strategies to overcome pressure situations;
- Players demonstrate the ability to accept and apply constructive criticism to improve performance;
- Players demonstrate ability to accept roles.

Emotional Characteristics

Basic Characteristics

- Peer group influence is still a powerful force;
- Players are searching for a stable, balanced self-image;
- Activities and interaction with the opposite sex are important during this phase and become a distracting influence.

Performance Capabilities

- Independent decision-making and leadership skills are becoming more developed;
- Self-concept is still very much influenced by success and failure. Coping techniques are useful;
- Male players must be aware that female athletes now face a problem of femininity versus sport development. Female players must be aware that male athletes now face a problem of relating performance to masculinity.

Implications for the Coach

- Athletes should be given the opportunity to develop through participation in appropriate leadership or responsible role (i.e. team captain), but strong dedication and discipline must be maintained;
- Positive evaluation of performance and positive reinforcement are imperative.

Ancillary Capacities

- Players must refine knowledge learned in the Train to Train stage;
- Players must begin to master the aspects of:
  - Warm-up,
  - Cool down,
  - Hydration,
  - Nutrition,
  - Personal health,
  - Injury prevention,
  - Recovery and regeneration,
  - Taper and peak,
  - Integrated pre and post competition routines
  - Environmental awareness
  - Health awareness
  - Socio-cultural
- Players must also begin to master the effects of management of media, public speaking, balance of sport and academics, and organizational skills must be introduced and refined.

PRACTICAL APPLICATIONS FOR THE TRAIN TO COMPETE PHASE

The **Train to Compete** Stage aims:

- To provide high intensity training and specificity of training all year round;
- To teach players to perform under stressful, competitive situations;
- To ensure that the athletes' training and competition programs and sport-specific technical-tactical activities are fully integrated with sport science and sport medicine programs;
- To provide training that is team and individual oriented. There will be a significant emphasis on skill development and refinement in this phase;
- Athletes begin to take ownership of their own training;
- To provide sport-specific training with both physical and mental skill emphasis. Specificity is the emphasis of this stage.

PRACTICE/GAME MODIFICATIONS

- Position-specific training;
- Emphasis of concepts, zone principles, presses and a greater emphasis on strategies;
- Players should be encouraged to work on skill development on their own time;
- The off-season training of athletes should be emphasized;
- The use of appropriate questioning and games approach in training will enhance the decision making and understanding of the game by the players.

Learn to Win Stage (L2W)

(Ages 18-23+/-females, 18-25+/-males)

At this point the athlete should have a very good understanding of all the basketball specific and position specific skills that are needed to be successful and the sport-specific fitness that is required to play. The athlete should understand that a great deal of time must be spent refining these skills in order to be competitive at the highest levels. The athletes must also understand that they must train at a high level of intensity under game/pressure situations in order to continue to improve.

Fundamental/Technical Skills

The following skills must be reviewed, emphasized, developed and refined:

- Dribbling
- Passing and catching
- Shooting form
- 1-on-1 skills - post and perimeter
- Cutting to get open in the post and on the perimeter
- Setting and reading screens
- Defensive stance and guarding the ball
- Defensive stance away from the ball
- Rebounding skills - offensive and defensive

PLAYING PRINCIPLES

Offensive Concepts

- Transition
- Half court offence (set plays) including playing without the ball
- Concept-based offence
- Penetration and kick passes
- Setting and reading screens
- Passing and relocating
- Effective use of dribble
- Attacking pressure defence
- Principles of zone offence
- Entering ball to the post
- Post movement

Defensive Concepts

- Organization of transition
- Half court concepts - man and zone
- Tactical considerations to defend opponents strengths
- Full court principles
- Forcing the ball

DEVELOPMENTAL CHARACTERISTICS

Physical Characteristics

After 10-15 years of training, it is practically impossible to increase the volume of training for an athlete. Therefore the quality/intensity and sport/individual specificity of training should be increased. Research and practical experiences have shown that for the elite athlete, the key to improvement lies in the optimal manipulation of the intensity and frequency of training.

Basic Characteristics

- Physiologically the body reaches maturity during this phase;
- Final skeletal maturation occurs at age 17-19 for females and approximately 3 years later for males.

Performance Capabilities

- All physiological systems are fully trainable.

Implications for the Coach

- Coaches should use advanced physical training techniques and programs to ensure maximum adaptation and to minimize injuries;
- Coaches should ensure that all muscle groups and body alignments are well balanced, and complemented by optimum flexibility ranges;
- Coaches, when designing training programs, should use state of the art sport science and medicine information, including results of appropriate and timely testing and monitoring. Coaches need to stay current by accessing the most up to date information. Being involved with the provincial and national sport governing body will assist in this regards;
- Coaches should be careful to monitor training to ensure that over-training and over-stress are eliminated;
- Regular appropriate medical monitoring should be conducted with additional blood tests for female athletes to prevent iron deficiency.

Chapter 11

PHYSICAL CAPACITIES

The **Learn to Win** stage of athletic development takes the Train to Compete stage one step further.

Now that the entire athlete's physical, technical, tactical, mental and ancillary capacities are fully established, the focus of training has shifted to the optimization of performance.

Stamina - The aerobic system is highly fragile and its maintenance is imperative. It is recommended that 3 aerobic sessions per week should be conducted in addition to other training and competition activities to ensure the maintenance of established aerobic power and capacity. There are several ways to accomplish this:

- Long, slow distance running can be used after training sessions in order to remove by-products of training. For more information visit www.ltad.ca;
- During sport-specific training sessions aerobic drills or interval drills can be conducted;
- Ultra-short interval training;
- Fartlek or interval sessions can be implemented as complementary training sessions;
- Non-weight bearing activities such as pool (running with a belt or swimming), stationary bike, cycling, stair climbers or rowing machines can also be utilized (especially for the very tall players).

Strength - Once an athlete has learned the proper techniques for weight training the use of heavier weights will increase neuromuscular development, rather than larger muscle mass. Male and female elite players should implement Olympic-style lifting in their training regimen to enhance strength and power development. The established strength levels can be maintained for up to 10 weeks by conducting only one training session for players every 7 to 10 days, although core and upper body strength training should be performed twice per week.

Implementing longer lower intensity periods is not beneficial for elite players. Intensity and frequency are the two key factors in the preperation of elite athletes.

Speed - Speed should be trained throughout the year and throughout a player's career. The preconditions of speed training include a rested or fully recovered nervous system so speed training must be carefully planned and sequenced within the weekly training program. Although speed is important in basketball, equally important is speed while in control of the ball.

During the competition period, the warm-up provides an excellent opportunity to fine tune the player's speed capacities. It makes sense to place speed training at the end of the warm up because there is no metabolic or nervous system fatigue present, thus the conditions are right to train speed.

Suppleness - Static (holding), dynamic (active or ballistic) and PNF (proprioceptive neuromuscular facilitation or contact) are the more common methods of maintaining or improving flexibility. Dynamic stretching should be a part of the stretching protocol when preparing for high-intensity practical situations like pre-training warm up and pre-game warm-ups. **Static stretching should not be done as part of the warm up**. Only light static stretching is recommended after high intensity training. Stretching is recommended either 2 hours before exercise or 2 hours after exercise. To improve flexibility, stretching should be done 6 times per week. Stretching should begin when light sweating has commenced.

Performance Indicators

- The player demonstrates continuous progression in establishing a high level of conditioning and strength practical to the game of basketball and continues to maintain, if not optimize, this fitness, throughout a competitive career
- Testing
- Several tests can be performed to monitor team and individual fitness
- Vertical jump and standing long jump
- Chin ups/push ups/bench press
- Crunches
- Leger Boucher test
- Sit and reach
- Speed and agility tests
- Medical examinations

Mental Characteristics

Basic Characteristics

- Neurologically the brain matures when athletes are between 19 and 20 years of age;
- There is significant understanding and acceptance of the need for rules, regulations and structure.

Performance Capabilities

- Athletes are capable of self-analysis and can correct and refine skills themselves;
- Athletes can analyze and conceptualize virtually all facets of their sport;
- Well developed information processing skills help to improve the athlete's ability to visualize verbal instructions;
- For the young adult, the rules and structure of training and competition must be perceived as clearly defined and fair.

Implications for the Coach

- Optimal performance becomes the major objective, but still not at the cost of player development;
- Principles of adult learning should be implemented;
- Athletes should be involved in decision-making and in the planning of team or group activities.

Psychological Skills

- Long term, short term and daily goals must be established;
- Players have the appropriate levels of maturity and knowledge in order to effectively use and apply the mental skills of imagery, focus control and activation/arousal control;
- Players need to focus on competing to win by focusing on effort and execution (process not outcome);
- Players must be able to compete under stressful and pressure situations that will occur during a game, therefore these situations must be duplicated in practice;
- Players begin to establish a balanced and stable self concept;
- Self-assessment strategies provide athlete with information on training and competition patterns;
- Players must be able to demonstrate self-control in demanding, pressure situations, therefore the use and practice of relaxation and visualization techniques are highly recommended;
- Players are ready to assume leadership roles, therefore the coach must understand this and provide leadership opportunities;
- The coaches should promote effective communication skills between players and coaches;
- It may still be difficult for some athletes to accept specific roles and these should be continuously communicated;
- Opportunities should be provided for athletes and coaches to strategize and exercise problem solving skills.

Performance Indicators

- Players demonstrate the ability to effectively apply mental training skills to enhance performance by:
  - Goal setting
  - Focus and distraction control
  - Activation/arousal control
  - Emotional stability
  - Positive self talk
  - Imagery
  - Self assessment
- Players demonstrate the progressive understanding of the importance of establishing strong and positive personal values to enhance their personal development;
- Players demonstrate the understanding and importance of role acceptance;
- Players demonstrate an understanding of the importance of team building to enhance individual and team performance.

Emotional Characteristics

Basic Characteristics

- There is a need to be self-directed and independent;
- Self-actualization and self-expression are important;
- Major decisions about career, education and lifestyles become a priority during this phase;
- Interaction with the opposite sex continues to be a priority and lasting relationships develop.

Performance Capabilities

- The athletes are ready to assume responsibility and to accept the consequences of their actions;
- Major changes in interest, hobbies and physical activities may occur during this phase.

Implications for the Coach

- Goal setting should be strongly emphasized to give definite direction and purpose to the athletes' overall development;
- The athletes need to be treated with respect, given direction and, provided with structure;
- Professional guidance should be made available to help athletes to make decisions about off-season and educational pursuits;
- Athletes must have ample opportunities for independent social interaction.

Ancillary Capacities

- All ancillary capacities learned in the T2C stage must be refined;
  - Warm up
  - Cool down
  - Stretching (when, what and how)
  - Hydration
  - Nutrition
  - Recovery and regeneration
  - Taper and peak
  - Integrated pre-game and post-game routines
  - Health awareness
  - Environmental awareness
  - Socio-cultural
- Advanced ancillary capacities of time management need to be continually refined to meet the changing demands of balancing sport, education, family and professional development.

PRACTICAL APPLICATIONS FOR THE LEARN TO WIN STAGE

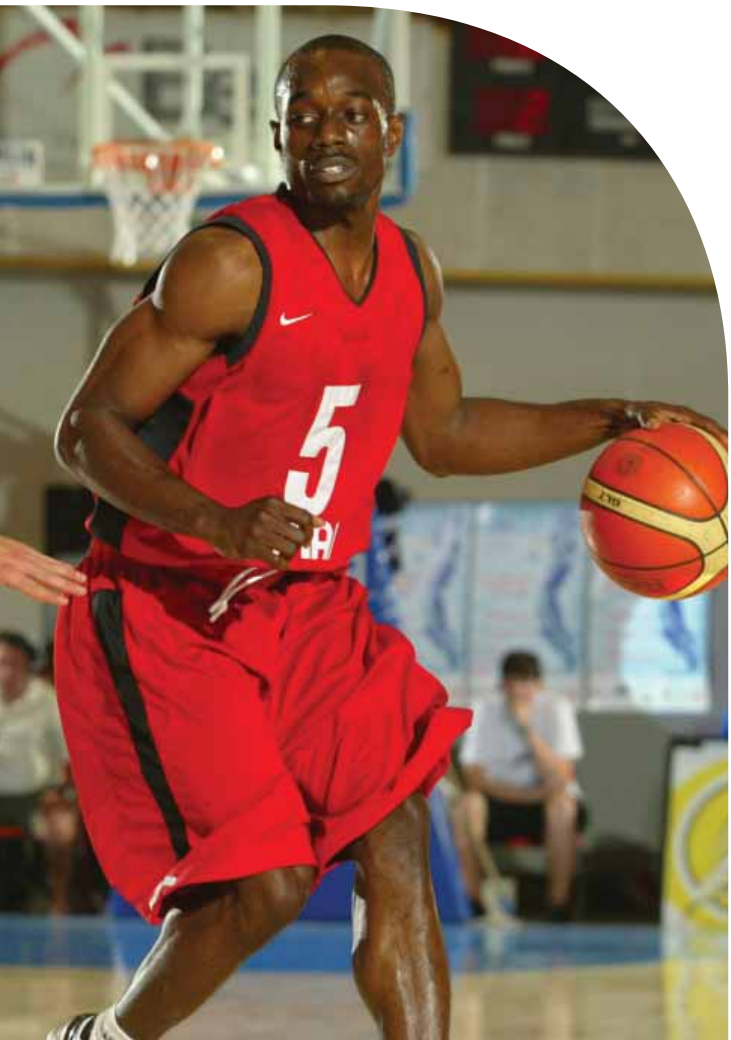
- High intensity, basketball-specific training sessions of shorter duration are recommended during this phase. Careful planning these sessions with recovery and regeneration methods will provide the training necessary for major tournaments;
- Players must have 9-15 years of training before embarking upon this stage;
- Players at this stage must be fully prepared (physically, technically, tactically, and mentally) based upon the foundation that has been built during the earlier stages;
- The concept of "more is better" is a recipe for disaster. Quality over quantity must be the goal;
- The emphasis is on attaining the player's optimal capacity and on optimal performance.

Train to Win Stage (T2W)

(Ages 23+/- females and 25+/- males)

All facets of the game have already been introduced, emphasized, developed and refined. An emphasis on refinement must still exist as it will always as improvements can be made on all technical and tactical areas throughout an athlete's career. There will be many new strategies, offensive and defensive sets and philosophies that will depend on the individual coach. A successful player will be able to adapt and accept the desired philosophy.

As in **Learn to Win**, the athlete can still make gains in terms of strength and endurance. While in the areas of speed, skill and suppleness, training must still occur for these systems to remain effective. Without the proper training of these areas, these capacities will begin to degenerate.



Athletes at this stage face conditions that are very often unique:

- Playing for the Canadian National team:
  - The continual pursuit of performance excellence; becoming a world-class athlete and representing Canada at the highest level of international competition.
  - The commitment and passion to play for multiple years.
  - Accepting different roles within the team.

- Taking personal responsibility for the continual development and implementation of:
  - Yearly training plans (Y.T.P.)
  - Personal improvement plans (P.I.P.)

- Adjusting to the lifestyle of a professional athlete:
  - Playing in a foreign country.
  - Accepting the responsibilities, expectations, and dealing with the pressures.
  - Dealing with agents.
  - Cultural adjustments; language, food, and local customs.
- Financial planning.
- Social aspect of their lives; family, friends, and personal relationships.
- Preparing to make the transition from being a high performance player to some other aspect of the game; coach, referee, administrator or an active for life player.
- Continual lifelong involvement in the growth and development of basketball in Canada.
- Being a mentor to others.

More detailed information will be developed in these areas as the Athlete Development Model matures.

Chapter 13

Active for Life Stage

The age of transition from competitive sport to lifelong physical activity.

Objective: A smooth transition from an athletes competitive carer to lifelong physical activity and participation in sport.

Basketball programs need to ensure:

- Move from one sport to another. For example the 16-year old basketball player becomes a rower or the 12 year old gymnast becomes a basketball player;
- Move from one aspect of the basketball to another. For example assisting athletes with a disability in order that they may enjoy the game;
- Move from competitive basketball to recreational activities such as hiking and cycling;
- Move from competitive basketball to volunteering as a coach, official or administrator;
- Upon retiring from competitive basketball, move to sport-related careers such as coaching, officiating, sport administration, small business enterprises or media;
- Move from highly competitive basketball to lifetime competitive basketball through age group competitions such as Master's Games.

A positive experience in sport is key to retaining athletes after they leave the competitive stream.

Basketball must make the shift from cutting athletes to re-directing them to sports where they are pre-disposed to train and perform well.

THIS MAY OCCUR AT ANY AGE

Athletes with a Disability

Not Different, But in Addition

Athletes with a Disability (AWADs) are first and foremost athletes. For this reason, virtually everything in the able-bodied Long-Term Athlete Development (LTAD) model is applicable. The able-bodied LTAD model and its resource paper, Canadian Sport for Life, should be the starting point for all athletes. No Accidental Champions (See www.ltad.ca) is therefore only concerned with additional factors that need to be considered when working with athletes with a disability.

Between 10% and 14% of Canadians have a disability and, for optimum health, it is critical that all Canadians, with or without a disability, fully engage in physical activity. Canadians with a disability who aspire to the highest levels of sport performance also need a sport system to help them achieve their goals. Canada's outstanding international success in Paralympic sport, Special Olympics and other sport for athletes with a disability is well known, but there is concern that Canada's pool of talented athletes with a disability is aging and being depleted. Canada therefore needs to develop the next generation of athletes with a disability to their fullest potential.

For this reason, and to ensure the long-term health of its population, Canada is creating a LTAD model for athletes with a disability.

Sport for individuals with a disability has grown tremendously over the last few decades. Nowadays, virtually any sport available to an able-bodied athlete can be pursued by a person with a disability at both the recreational and competitive levels. Basketball is no different.

High performance competitive basketball for athletes with a disability is organized by the Canadian Wheelchair Basketball Association which is responsible for the LTAD model for athletes with a disability. It closely parallels the LTAD model for able-bodied athletes.

At the world level, the International Paralympic Committee (IPC) is an organization that parallels the International Olympic Committee, overseeing the Paralympic Games. The Paralympic Games are held in the same city as each Olympic Games, usually 2 to 3 weeks after their close. Wheelchair basketball is a major Paralympic summer sport.

It is important that more is done to make basketball known and accessible to athletes with a disability. This requires that people involved in the sport make sure athletes with a disability are aware of the opportunities to play basketball. Also the first time the athlete has contact with the sport is crucial time for both the coach and the athlete. Both may feel a little apprehensive. It takes more courage for an athlete with a disability to try a new sport. Anything that basketball coaches and leaders can do to lessen this fear will go along way to actively inviting persons with a disability to try basketball.

Strategic Initiatives

In the development of this model a number of key issues were identified that if not properly addressed will have a major detrimental impact to Canadian basketball. It is strongly recommended that the following steps be taken to help create the basketball system that will allow all participants to achieve their goals from the time of entry until reaching the active for life stage.

First priority

System alignment - Players, coaches, officials, parents and administrators must be aware of the LTAD pathways. There needs to be a smooth transition from one stage to the next. This can only occur when all basketball deliverers within the Canadian basketball community are aligned with the LTAD model. One set of rules (the primary rules are the same, but the secondary rules are modified to be LTAD appropriate) for the game is an example.

Second priority

The coach is the single most important person in the implementation of the key principles of the LTAD model. Most of the other priorities will not occur if we do not impact the coach. Coaching education and ensuring coaching competency are key to success. Coaches need to balance the individual development of the athletes with getting the players to work together as a team.

Third priority

Competition Structure/Periodization - Many of the problems within the sport of basketball are as a result of the imbalance between competition and training. At each stage of the model appropriate practice to competition models must be adhered too. The Competition Review working group is researching and developing recommendations.

Fourth priority

Individualized Training - As stated above in the second priority the coach is responsible to balance individual development with team play. Currently the pendulum has swung to the side of team play. Coaches need to develop in players the passion to improve. Coaches need to know how to teach the skills that are appropriate for their athletes' stage of development. The coach should be able to improve that athlete so that he/she can play at the next stage if the athlete so desires. The coach should not be the limiting factor. At any stage of the LTAD model the participants will benefit immensely from improving their skills whether these are basketball, mental, physical or life skills.

Fifth priority

Monitor Growth and Development during the Growth Spurt - A key principle of the LTAD model is to recognize that athletes at different stages are not to be coached the same. The coach, parents and administrators need to understand the physical, mental and social /emotional characteristics of the children. This is especially important during puberty when each child is at a different developmental age. This is the time when most children are dropping out of sport. By monitoring growth and development during the growth spurt we will be better able to address the individual needs of the child and hopefully keep them active in sport.


12
NOVA SCOTIA

Glossary of Terms

Adaptation refers to a response to a stimulus or a series of stimuli that induces functional and/or morphological changes in the organism. Naturally, the level or degree of adaptation is dependent upon the genetical endowment of an individual. However, the general trends or patterns of adaptation are identified by physiological research, and guidelines are clearly delineated of the various adaptation processes, such as adaptation to muscular endurance or maximum strength.

Adolescence is a difficult period to define in terms of the time of its onset and termination. During this period, most bodily systems become adult both structurally and functionally. Structurally, adolescence begins with acceleration in the rate of growth in stature, which marks the onset of the adolescent growth spurt. The rate of statural growth reaches a peak, begins a slower or decelerative phase, and finally terminates with the attainment of adult stature. Functionally, adolescence is usually viewed in terms of sexual maturation, which begins with changes in the neuroendocrine system prior to overt physical changes and terminates with the attainment of mature reproductive function.

Age
Development refers to "the interrelationship between growth and maturation in relation to the passage of time." The concept of development also includes the social, emotional, intellectual, and motor realms of the child.

Developmental Age refers to the degree of physical, mental, cognitive and emotional maturity. Physical developmental age can be determined by skeletal maturity or bone age after which mental, cognitive and emotional maturity is incorporated.

Chronological Age refers to the number of years and days elapsed since birth. Children of the same chronological age can differ by several years in their level of biological maturation.

Biological Age is a variable that corresponds roughly to chronological age, determined by measures of morphological, skeletal, dental or sexual age.

Skeletal Age refers to the maturity of the skeleton determined by the degree of ossification of the bone structure. It is a measure of age that takes into consideration how far given bones have progressed toward maturity, not in size, but with respect to shape and position to one another.

Relative Age also plays an important role in coaching decisions. The relative age effect describes the observations that a greater number of performers born early in selection years are over-represented in junior and senior elite squads compared with what would be expected based on national birth rates. This means that a child born on January 1st may participate in the same programs as a child born on December 31st of the same year - although one is almost a year older than the other. It is well documented that relative age has a great advantage in athletic selection. The age group cut-off date for entry into organized youth sport is August 1st in English school sports and January 1st in Canadian Ice Hockey. In many different sports the relative age effect is clear to see.

General Training Age refers to the number of years in training, sampling different sports.

Sport-Specific Training Age refers to the number of years since an athlete decided to specialize in one particular sport.

Ancillary Capacities refer to the knowledge and experience base of an athlete and includes warm-up and cool-down procedures, stretching, nutrition, hydration, rest, recovery, restoration, regeneration, metal preparation, and taper and peak.

The more knowledgeable athletes are about these training and performance factors, the more they can enhance their training and performance levels. When athletes reach their genetic potential and physiologically cannot improve anymore, performance can be improved by using the ancillary capacities to full advantage.

Childhood ordinarily spans the end of infancy - the first birthday - to the start of adolescence and is characterized by relatively steady progress in growth and maturation and rapid progress in neuromuscular or motor development. It is often divided into early childhood, which includes pre-school children aged 1 to 5 years, and late childhood, which includes elementary school-age children, aged 6 through to the onset of adolescence.

Chronological age refers to "the number of years and days elapsed since birth." Growth, development and maturation operate in a time framework that is the child's chronological age. Children of the same chronological age can differ by several years in their level of biological maturation. The integrated nature of growth and maturation is achieved by the interaction of genes, hormones, nutrients, and the physical and psychosocial environments in which the individual lives. This complex interaction regulates the child's growth, neuromuscular maturation, sexual maturation and general physical metamorphosis during the first 2 decades of life.

Glossary of Terms

Development refers to "the interrelationship between growth and maturation in relation to the passage of time. The concept of development also includes the social, emotional, intellectual, and motor realms of the child."

The terms **"growth"** and **"maturation"** are often used together and sometimes synonymously. However, each refers to specific biological activities. Growth refers to "observable, step-by-step, measurable changes in body size such as height, weight, and percentage of body fat." Maturation refers to "qualitative system changes, both structural and functional in nature, in the organism's progress toward maturity; for example, the change of cartilage to bone in the skeleton."

Dynamic mobility involves moving parts of your body and gradually increasing reach, speed of movement, or both." Do not confuse dynamic stretching with ballistic stretching! Dynamic stretching consists of controlled leg and arm swings that take you gently to the limits of your range of motion. Ballistic stretches involve trying to force a part of the body beyond its range of motion. In dynamic stretches, there are no bounces or "jerky" movements. An example of dynamic stretching would be slow, controlled leg swings, arm swings, or torso twists.

Menarche is the first menstrual period of an individual.

Overstress means to place too much emphasis on or to be subjected to excessive physical or emotional stress.

Peak height velocity (PHV) is the maximum rate of growth in stature during growth spurt. The age of maximum velocity of growth is called the age at PHV.

Periodization is time management applied to training. Over time, it optimizes each child's improvement by providing a logical training schedule that respects each stage of development.

Physical literacy refers to the mastering of fundamental motor skills and fundamental sport skills.

PNF stretching (or proprioceptive muscular facilitation) is one of the most effective forms of flexibility training for increasing range of motion. It usually involves contracting the muscles isometrically against for 20 seconds. The muscle is then relaxed before a new stretch is applied to the muscle.

Post-natal growth is commonly, although sometimes arbitrarily, divided into 3 or 4 age periods, including infancy, childhood, adolescence, and puberty.

Puberty refers to the point at which an individual is sexually mature and able to reproduce.

Quick Hitters are early offensive entry plays or sets.

Readiness refers to the child's level of growth, maturity, and development that enables him/her to perform tasks and meet demands through training and competition. Readiness and critical periods of trainability during growth and development of young athletes are also referred to as the correct time for the programming of certain stimuli to achieve optimum adaptation with regard to motor skills, muscular and/or aerobic power.

Sensitive periods of development refer to a point in the development of a specific behaviour when experience or training has an optimal effect on development. The same experience, introduced at an earlier or later time, has no effect on or retards later skill acquisition.

Static stretching consists of stretching a muscle (or group of muscles) to its farthest point and then maintaining or holding that position, whereas Passive stretching consists of a relaxed person who is relaxed (passive) while some external force (either a person or an apparatus) brings the joint through its range of motion.

Trainability refers to the genetic endowment of athletes as they respond individually to specific stimuli and adapt to it accordingly. Malina and Bouchard (1991) defined trainability as "the responsiveness of developing individuals at different stages of growth and maturation to the training stimulus."

Ultra short Interval training is based on the principle that sufficiently short intervals of intense work do not produce lactic acid accumulation. It is appropriate for developing alactacid and aerobic endurance and provides the opportunity for specific skill training at competition intensity. It is used for training phases where' specific training is important. When this work is alternated with short rest periods, it is possible to complete a large amount of training at competition quality. Ultra-short intervals do not produce lactic acid accumulation. It is when lactic acid accumulates that fatigue becomes devastating and adequate recovery then takes a markedly greater proportion of time. Abbott A., Collins D., Martindale R., Sowerby K., Fundamental Movement Abilities Chart, Talent Identification and Development, An Academic Review, Sport Scotland University of Edinburgh 2002

Selective Bibliography

Alpine Integration Model. Alpine Canada Alpine, High Performance Advisory Committee, 1999

Armstrong, N. and Welsman, J. Young People and Physical Activity. Oxford University Press, Oxford, 1997.

Armstrong, N. and Welshman, J. Children in Sport and Exercise. British Journal of Physical Education, 28(2). Pp. 4-6, 1997.

Balyi, I. and Way, R. "Long-Term Planning of Athlete Development. The Training to Train Phase". B.C. Coach, 1995. pp. 2 - 10.

Balyi, I., Sport system building and long-term athlete development in Canada. The situation and solutions, in Coaches Report. The Official Publication of the Canadian Professional Coaches Association. Summer 2001. Vol.8, No.1, pp.25-28.

Balyi, I., "Long-term Planning of Athlete Development, Multiple Periodisation, Modeling and Normative Data" in FHS, The UK's Quarterly Coaching Magazine, Issue Four, pp. 7 - 9. May, 1999.

Balyi, I., "Long-term Planning of Athlete Development, The Training to Train Phase" in FHS, The UK's Quarterly Coaching Magazine, Issue One, pp. 8 - 11. September, 1998.

Balyi, I., "Long-term Planning of Athlete Development, The Training to Compete Phase" in FHS, The UK's Quarterly Coaching Magazine, Issue Two, pp. 8 - 11, December, 1998.

Balyi, I., and Hamilton, A. Long-term Athlete Development, Trainability and Physical Preparation of Tennis Players. In: Strength and Conditioning for Tennis. Eds. Reid, M., Quinn, A. and Crespo, M. ITF, London. 2003. pp. 49-57.

Balyi, I., and Hamilton, A. "Long-term Planning of Athlete Development, The Training to Win Phase" in FHS, The UK's Quarterly Coaching Magazine, Issue Three, pp. 7 - 9. April, 1999.

Bar-Or, O., Pediatric Sport Medicine for the Practitioner: From Physiologic Principles to Clinical Applications. New York: Springer Verlag, 1983.

Bar-Or, O., Developing the Prepubertal Athlete: Physiological Principles. In Troup, J.P., Hollander, A.P., Strasse, D., Trappe, S.W., Cappaert, J.M. and Trappe, T.A. (Eds.), Biomechanics and Medicine in Swimming VII., London: E & FN Spon. pp. 135- 139, 1996.

Bar-Or, O., Nutritional Considerations for the Child Athlete. Canadian Journal of Applied Physiology. 26(Suppl.), pp. 186- 191. 2001.

Bar-Or, O., (ed). The Child and the Adolescent Athlete. Balckwell Science Ltd. Oxford, UK, 1996.

Belov, E., "For Those Starting Artistic Gymnastics". Translated material of the Canadian Gymnastic Federation. 1995.

Blimkie, C.J.R and Marion, A., "Resistance Training during Preadolescence: Issues, Controversies and Recommendations". Coaches Report, Vol.1. No.4.1994. pp.10-14.

Blimkie, C.J.R. and Bar-Or, O., "Trainability of Muscle Strength, Power and Endurance during Childhood". In. Bar-Or, O. ed., The Child and Adolescent Athlete. London: Blackwell Scientific Publications, 1996.

Bloom, B., Developing Talent in Young People. New York: Ballantines, 1985.

Bompa, T., From Childhood to Champion Athlete. Toronto. Veritas Publishing Inc. 1995

Bouchard, C., Malina, R.M., Perusse, L. 1997. Genetics of Fitness and Physical Performance. Champaign, IL: Human Kinetics.

Calgary Health Region, 3 Cheers for the Early Years (2004).

Snactivity box: Activities for promoting healthy eating and active living habits for young children. Retrieved November 22, 2004, from www.calgaryhealthdregion.ca/hecomm/nal/child/DaycareToolkit.pdf.

Canadian Child Care Federation. (2001). Supporting your child's physical activity (Resource Sheet #52). Retrieved November 22, 2004, from www.cfc-efc.ca/docs/cccf/rs052en.htm.

Dick, Frank W., Sports Training Principles, London, Lepus Books, 1985.

Docherty, D., Trainability and Performance of the Young Athlete. Victoria: University of Victoria, 1985.

Dozois, E., (2002, November). Calgary Health Region Daycare Project: Focus group report. Prepared for the Calgary Health Region's 3 Cheers for the Early Years. Calgary, AB: Calgary Health Region.

Drabik, J., Children and Sport Training. Stadion, Island Pond, Vermont. 1996.

Selective Bibliography

Ericsson, K.A. and Charness, N., Expert Performance. Its Structure and Acquisition. American Psychologist, August 1994., pp. 725-747.

Ericsson, K.A., Krampe, R.Th., and Tesch-Romer, The role of deliberate practice in the acquisition of expert performance. Psychological Review, 1993, 100. pp. 363-406.

Lynn, M. A. T., & Staden, K. (2001, Fall)., The obesity epidemic among children and adolescents. WellSpring 12 (2), 5-6.

Hansford, C., Fundamental Movements, Presented British Canoe Union, National Conference, Nottingham Dec. 2004

Harsanyi, L., "A 10-18 eves atletak felkeszitesenek modellje." Budapest: Utanpotlas-neveles, No.10, 1983.

Haywood, K.M., Life Span Motor Development. Champaign, Il. Human Kinetics, 1993.

Health Canada. (2002a, November 22). Statistics & public opinion. Canada's physical activity guides for children and youth. Retrieved December 8, 2004, from www.phacaspc. gc.ca/pau-uap/pagguide/child youth/media/stats.html

Health Canada. (2002b, November 22). Canadian Paediatric Society, College of Family Physicians and Canadian Teachers' Federation call for urgent action to boost physical activity levels in children and youth. Canada's physical activity guides for children and youth. Retrieved December 8, 2004, from www.phacaspc.gc.ca/pau-uap/pagguide/child_youth/media/release.html and www.centre4activeliving.ca/Publications/WellSpring/2004/December.html#Snactivity accessed January 10, 2005.

International Gymnastics Federation. Age Group Development Program. CD Rom. 2000.

MacDougall, J.D., Wenger, H.A. and Green, H.J. (Eds) Physiological Testing of the Elite Athlete. Movement Publications, Inc. Ithaca N.Y., 1982.

Malina, R.M., and Bouchard, C. Growth, Maturation, and Physical Activity. Champaign, Ill.: Human Kinetics, 1991.

McWhorter, W., Wallman, H. W., & Alpert, P. T. (2003). The obese child: Motivation as a tool for exercise. Journal of Pediatric Health Care, 17, 11-17.

Nadori, L., Az edzes elmelete es modszertana. Budapest: Sport, 1986.

National Association for Sport and Physical Education. (2002). Active start: A statement of physical activity guidelines for children birth to five years. Reston, VA: American Alliance for Health, Physical Education, Recreation & Dance.

National Coaching and Training Centre: Building Pathways in Irish Sport. Towards a plan for the sporting health and well-being of the nation. Limerick, Ireland, 2003.

Norris, S.R., & Smith, D.J., 2002. Planning, Periodization, And Sequencing of Training And Competition: The Rationale For A Competently Planned, Optimally Executed Training and Competition Program, Supported By A Multidisciplinary Team. In M. Kellmann (Ed.), Enhancing Recovery: Preventing underperformance in athletes, pp.121-141. Champaign, IL: Human Kinetics.

Ready Set Go (n.d.). Ready set go: The sports web site for families. Retrieved November 22, 2004, from www.readysetgo.org.

Report of the Minister of State's (Sport) Workgroup on Sport for Persons with a Disability, 2004.

Selective Bibliography

Ross, W.D. and Marfell-Jones, M.J., Kinanthropomerty. In: Physiological Testing of the Elite Athlete.

Eds. MacDougall, J.D.,Wenger, H.A., and Green, H.J. Movement publications, Ithaca, N.Y., 1982. pp. 75 - 104.

Rowland, T., and Boyajian, A., Aerobic Response to Endurance Training in Children. Medicine and Science in Sports and Exercise, 26(5) Supplement.

Rushall, B., The Growth of Physical Characteristics in Male and Female Children. In Sports Coach, Vol.20, Summer, 1998. pp. 25 - 27.

Sanderson, L. "Growth and Development Considerations for the Design of Training Plans for Young Athletes". Ottawa: CAC, SPORTS, Vol.10.No.2.1989.

Tanner, J.M. "Growing Up." Scientific American, 1973, 9.

Tanner, J.M., Foetus into Man Physical Growth from Conception to Maturity, Second Edition, Castlemead Publications, Ware, England, 1989

Thumm, H-P., "The Importance of the Basic Training for the Development of Performance" New Studies in Athletics, Volume 1. pp.47-64, 1987.

Tihanyi, J., Long-Term Planning for Young Athletes: An Overview of the Influences of Growth, Maturation and Development. Sudbury: Laurentian University, 1990.

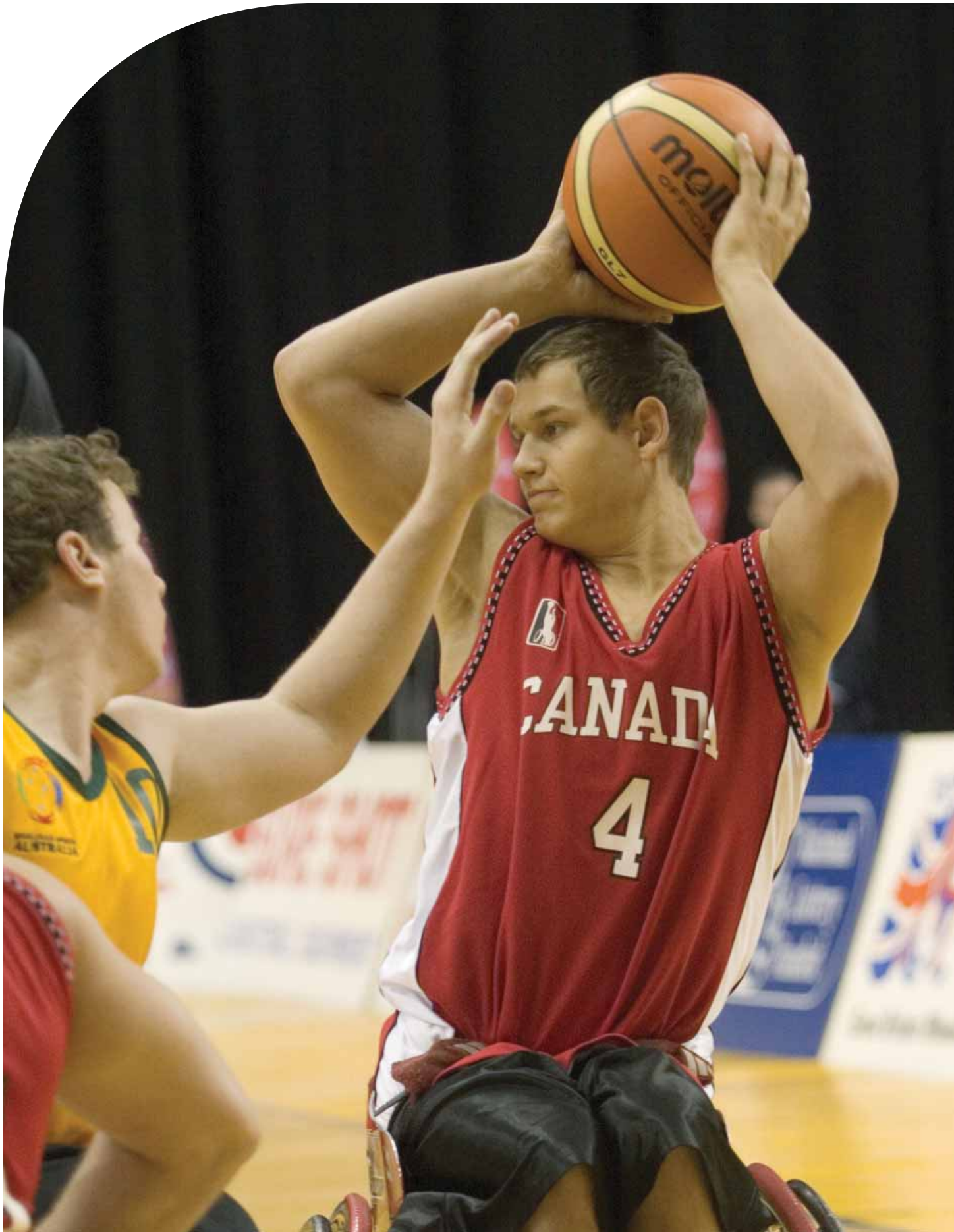
Valentine, J., (2003, Winter). Don't children get all the exercise they need from playing? WellSpring 14 (1), 6-8.

Viru, A. Loko, J., Volver, A., Laaneots, L., Karlesom, K. and Viru, M., Age periods of accelerated improvements of muscle strength, power, speed and endurance in age interval 6-18 years. In "Biology of Sport", Warsaw, V., 15 (4) 1998, 211- 227 pp.

Viru, A., Adaptation in Sports Training. CRC Press, Boca Raton, 1995. 310.p. Vorontsov, A.R. Patterns of Growth for Some Characteristics of Physical Development: Functional and Motor Abilities in Boy Swimmers 11 - 18 Years. In: Biomechanics and Medicine in Swimming VIII. Eds.

Keskinen, K.L., Komi, P.V. and Hollander, A.P. Jyvaskyla, Gunners, 1999. Vorontsov, A.R., Multi-Year Training of Young Athlete as Potential Modifier of Growth and Development (Analysis of some biological concepts). Sport Medicine in Aquatic Sports - the XXI Century, FINA World Sport Medicine Congress, 2002.

Wienek, J., Manuel d'entrainement. Paris: Vigot, 1990.


CANADA
4

Acknowledgements

This model is based on the work of Istvan Balyi (Advanced Training and Performance LTD) and the CS4L Long Term Athlete development resource paper.

The initial draft of this model was authored by former Women's National Team Head Coach Bev Smith in 2001. The second draft of the Athlete Development Model was completed in 2003 by Steve Dynie, former Coaching Development Manager of Basketball BC. The model was created through a partnership between Canada Basketball and Basketball BC. The current model is the combination of the first two drafts plus the work of the Coach Advisory Board of Canada Basketball in the fall of 2004.

Canada Basketball would like to thank the valuable contributions of the following individuals:

Istvan Balyi (Advanced Training and Performance LTD)

Bev Smith (Head Coach, University of Oregon)

Steve Dynie (Former Coaching Development Manager, Basketball BC)

Phil Langley (Consultant, Kelowna, BC)

Peter Guarasci (Member of Canadian National Team 1993-2000)

Ken Shields (Member, Basketball BC Coaching Committee)

Kathy Shields (Member Basketball BC Coaching Committee)

Tony Scott (Member, Basketball BC Coaching Committee)

Duff McCaghey (Chair, Basketball BC Coaching Committee)

Loralyn Murdoch (Member Basketball BC Coaching Committee)

Richard Hunt (Member, Basketball BC Coaching Committee)

Mike Morgan (Member, Coaching Advisory Board Canada Basketball)

Mark Hogan (Member, Coaching Advisory Board Canada Basketball)

Tim Artemenko (Member, Coaching Advisory Board Canada Basketball)

Garth McAlpine (Member, Coaching Advisory Board Canada Basketball)

Tom Oliveri (Member, Coaching Advisory Board Canada Basketball)

Jacques Miqueu (Member, Coaching Advisory Board Canada Basketball)

Jennifer Clarke (Member, Coaching Advisory Board Canada Basketball)

Jennifer Lloyd (Member, Coaching Advisory Board Canada Basketball)

Dave Constantine (Member, Coaching Advisory Board Canada Basketball)

Mike MacKay (Manager Coach Education and Development Canada Basketball)

Canada Basketball is indebted to the many coaches and volunteers for the advice and time spent reviewing this document. Special thanks for Michele O'Keefe from Ontario Basketball for the time to do most of the final edits.

Design: McAllister Media

CANADA
BASKETBALL

The Canadian Basketball Athlete Development Model