# *The BOTSWANA*

# *Long Term Athlete Development Framework*

## *A framework*

***To guide sport programs in Botswana and to build an effective and sound sports pathway for all Batswana.***

BOTSWANA LTAD

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# OVERVIEW

This document outlines the principles, best practices and considerations for Botswana Sport Associations and other relevant sport organizations in Botswana, to design and implement scientifically sound and practical programs and activities for participants at all ages and levels, for productive and rewarding participation and competition in sport and physical activity in Botswana.

It is designed to provide the basis and background for a training and development process so that Batswana youth can enter the sport system and progress through appropriate levels of training and competition for their "developmental age"(i.e. their maturation level, not necessarily their chronological age in years).

It is meant to help parents, teachers, coaches and sport administrators design programs and advise youth as to the best path for development in sport and physical activity.

It is also meant to provide appropriate pathways so that as sport participants, youth and adolescents can develop their skills and interest in sport so that they can make appropriate decisions regarding participation in competitive sport and recreational physical activity, and develop a proper understanding of basic sport and activity skills that will enable them to continue to participate in sport and physical activity in later adult years.

# WHAT IS LONG TERM ATHLETE DEVELOPMENT (LTAD)

The LTAD is a process whereby sport organizations, coaches and trainers use scientific principles of human growth and development in physical, mental, emotional and cognitive components to design appropriate training, competition and recovery programs so that participants develop at appropriate rates and are not placed in unsafe and/or inappropriate training or competition situations which could potentially be dangerous or harmful, or cause them to prematurely drop out of the sport and/or physical activity system.

## LTAD…

- Recognizes the physical, mental, emotional, and cognitive stages of human growth and development of children and adolescents and identifies distinct stages of rapid and slow

change which impact different needs and special considerations for physical training and/or competition;

- Requires a basic ***"physical literacy"*** developed in early childhood years (<6 years old) upon which other physical and sport specific skills can be developed;
- Ensures that appropriate training, competition and recovery programs are provided throughout a sport participant's career;
- Provides guidance as to the frequency and intensity of training and competition through the various stages of a sport participant's career;
- Is relevant to, and has an impact on, all sport stakeholders in Botswana including participants, parents, coaches, sport leaders, medical and allied medical service providers, district and national government organizations including (but not limited to) the Ministry of Youth Sport and Culture, Department of Sport and Recreation (DSR), Botswana National Sport Council (BNSC), Botswana National Olympic Committee (BNOC) and other sport agencies and providers at the local community, district and national level in the public and private sector;
- Integrates and considers the needs and impact of elite/professional sport, community sport, and school sport;
- Considers the needs of family, education and career objectives;
- Ensures a safer sport environment for children and adolescents by respecting progressive and guided development and not advancing sport participants too far above their developmental/maturational age.

## Importance of LTAD

The LTAD is critical in providing the basis and background for a training and development process so that Batswana youth can enter the sport system and progress through appropriate levels of training and competition for their "developmental age"(i.e. their maturation level, not necessarily their chronological age in years).

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# THE VALUES OF THE BOTSWANA LTAD

- ***Highly competitive*** and ***life-long non-competitive*** sport and physical activity are equally as important and valuable to individual growth and development of all Batswana

- Physical activity through competitive sport and/or life-long sports are valuable contributors to health promotion for individuals, and for the nation

- A well designed and delivered sport system adds to the cultural development of Botswana and contributes to a well rounded and proud society

# Background & "scientific principles "for an organized approach to athlete development and child/youth activity programming

Drawing from existing documentation (e.g., Viru, 1995; Leblanc & Dickson, 1996; Coté, 1999; Canadian Sport for Life, 2005, etc.) and systems of athletic 'development' adopted by several countries over extensive periods of time, this section provides guidance and rationale as to implementation of an organized approach to long term athlete development. A number of underlying principles provide a foundation for the overall framework.

A fundamental principle concerns the need to understand, acknowledge, and accommodate the effect of growth, development and maturation of the child and, or, youth within an effective athletic program. Coach education must be aligned so that those instructing and coaching children and youth understand the human developmental process and the ramifications for productive coaching interventions.

All available literature and observational material agrees that there needs to be a substantial period of time in the early period of life (0 to 8-9 yrs of age) devoted to 'overall' movement skills and development. This period gradually gives way to a segment of time where overall sport specific skills are fostered from the basic movement skills (typically up to the age of 11-12 yrs of age). This ***'basic-to-early-to-intermediate'*** phase may also be thought of as a period of ***'physical literacy'*** development (see 'Developing Physical Literacy', 2008) designed to bring all children to some level of acceptable competency concerning general movement and basic sport skills.

However, the scientific literature also recognizes across several different elements (physical, cognitive, emotional, and psycho-social) the need to accept that every child and youth is an individual and that while an overall generic application of sport programming can be applied; some ***allowance must be made for individualization***, ***particularly through the major growth and maturation phases***. In addition, it should also be realized that certain activities are more biased towards an earlier 'specialization' or competency base than others (i.e., gymnastics, especially for females), as well as providing a basis for transferable skill sets to other activities.

Another important principle concerning athlete development is the understanding that ***children are not 'small adults', and women/girls are not the same as men/boys***. Therefore, the requirement that those coaching females have an understanding of the specific factors that concern women/girls is an extremely important one. The current literature cites differences in the type of injuries and medical conditions for female athletes (as compared to their male

counterparts), as well as the need for the careful sequencing of various forms of training once menarche has occurred.

Longitudinal monitoring and assessment of a multitude of factors (i.e., growth, skills, health, specific knowledge, training load and effectiveness, & competition outcomes) with varying degrees of focus is a hallmark of most leading athlete development systems. These activities allow for program implementation to be assessed, adapted, and reformatted as necessary. Furthermore, this ongoing scrutiny of the athletic programming also allows for the potential to advantageously use possible periods of increased sensitivity to specific forms of training. This aspect has been emphasized by a number of authors in recent years (e.g., Bar-Or, 1996; Viru et al., 1998; Kurz, 2001; Malina et al., 2004; Rowland, 2005; Balyi & Williams, 2009).

The influence of adult 'administrative behaviour' upon age group sport is very well documented with specific phenomenon such as the 'relative age effect' (birth month in relation to age group period: see 'Sportnation: A Sporting Chance', 2006, and page 30 of this document), as well as the structure and function of age group competition formats (see Way & Balyi, 'Competition is a good servant, but a poor master', 2007). In essence, this aspect reinforces the need for physical educators and coaches to implement practical strategies to utilize 'developmental age' as a guiding principle during critical child and youth phases rather than simply rely on chronological age.

Essentially, a 'long term athlete development' framework provides a guiding set of criteria with which to establish and implement a curriculum of general athletic and sport specific programming, complete with an interwoven competition experience. In addition, and seamlessly linked with the LTAD framework, each sport governing body (perhaps in partnership with 'sister' sports and/or national governing agencies in Botswana such as BNSC and BNOC) should develop an ongoing talent identification, confirmation, and targeted talent development program so as to ensure a sustainable high performance/elite athlete 'pool'. This aspect distinguishes the 'special/targeted athlete stream' from the participation-based roots of the LTAD.

Finally, the continual evaluation, and improvement of systems of athlete development, particularly as the scientific literature is expanded with the addition of pertinent work, is something that must be both expected and safeguarded by those wishing to design and implement a framework strategy.

# THE LTAD MODEL FOR BOTSWANA

The decision to design the Botswana LTAD with 4 Stages (+1) is based on a combination of factors and total population size and administrative/management' factors evidenced by the assessment research conducted by SPM consultants in the Capability Audit in 2010 and the existing Botswana National Sport and Recreation Policy. Given the limited administrative capacity and relatively low participant numbers in most Botswana NSAs it is prudent to design and implement a smaller (i.e. fewer Stages), more manageable system, but one that still follows the accepted principles of growth and development and competition, training and recovery principles. It is the number and size of the LTAD Stages that is different, not the comprehensiveness of the content and the implementation strategy.

As described elsewhere in this document there are other LTAD programs in place around the world. There are various theoretical/academic models described in the literature as well as many actual operational models. All operational models (with a few exceptions) are closely modeled on the system developed in Canada in 2002/2003 called the Canadian Sport For Life; Long Term Athlete Development (CS4L LTAD)..

All models (theoretical or operational) are based on similar scientific evidence and principles of child and adolescent growth and development. Each model determines logical breaks between age groups where similar training regimes and competition structure are best suited to participants in those age groups. Some models use 3 Stages (see Viru below, Diagram 1, Page 10) and some use 7 (see the Canadian model below, Diagram 2, Page 10), and/or various combinations of other number of stages.

Although there is much scientific evidence and research that describes the pattern of human growth and development and what characteristics are prevalent at different age brackets, there is no conclusive scientific evidence that defines at exactly what age different LTAD stages should start and stop. All models therefore make scientifically based decisions to choose slightly arbitrary, but sensible and logical age divisions. For example, obviously there is no question that 7 year olds should not be grouped with 16 year olds, however the distinction between a 7 year old, an 8 year old and a 9 year old (male or female) can vary due to human growth and development variability so it is debatable as to whether an age division between LTAD Stages should occur at 7 years, 8 years or 9 years (as an example).

Similarly, there is no scientific and conclusive evidence that has tracked LTAD models over a period of years and that shows that one model is significantly better or worse than any other.

With this knowledge in mind and based on the fact that the Canadian LTAD model is a well designed and well researched model, and has been adopted and adapted in many countries and National Governing Bodies around the world, it has been decided to base the Botswana LTAD Framework on the Canadian model in terms of material design and implementation, but to have a lesser number of Stages.

Accordingly,, although there are some similarities between the sport systems in Canada and Botswana there are some factors which must be considered in the Botswana system that require the model to be slightly modified. The Canadian model consists of 7 Stages of smaller age divisions beginning from infancy through to elite sport performance stages (and incorporating an “Active For Life” Stage which crosses through all of the Stages by participants entering and leaving different Stages as their life situations change).

Because Botswana has a smaller total population, smaller sport participant population and a less well developed sport system (based on a National Sport system audit at the time of development of this Framework in June 2010) it is more suitable for Botswana to reduce the total number of Stages by combining several of the earlier “traditional” LTAD Stages.

Diagram 1 – 3 Stage Viru LTAD Model

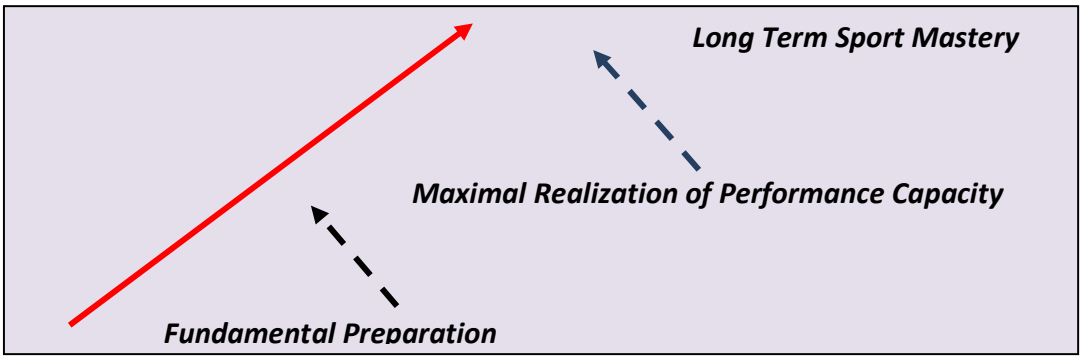
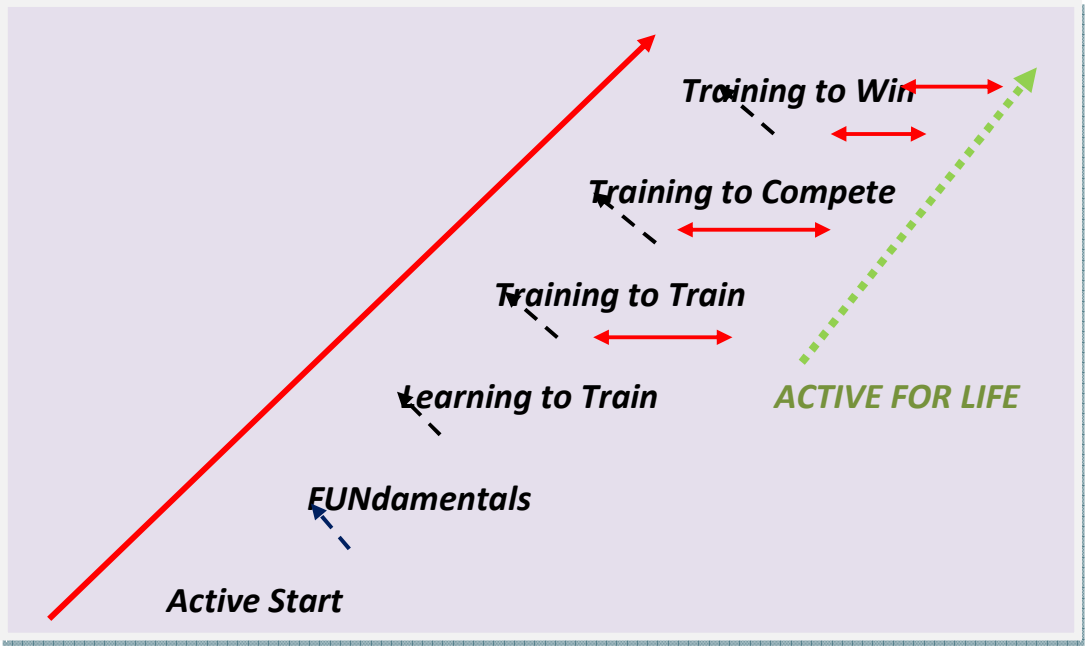
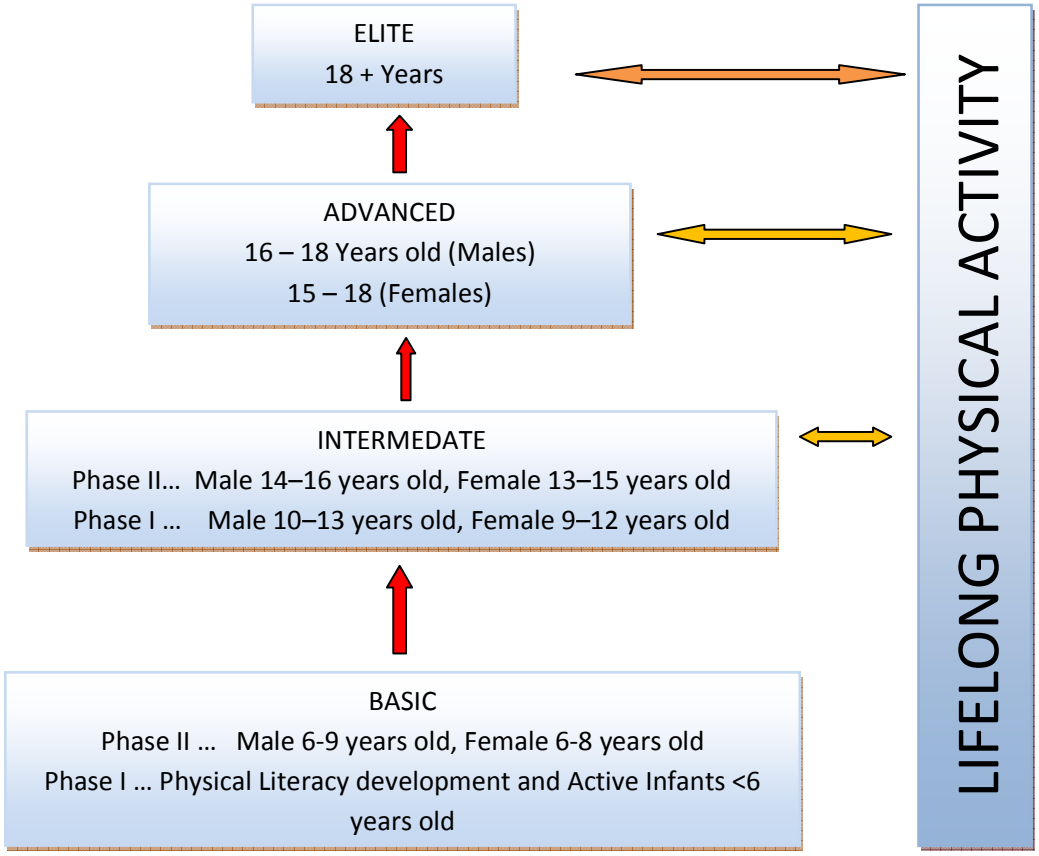


Diagram 2: The 7 Stage CS4L LTD (Canadian) Model




This will help ensure that there are adequate numbers available at each stage for good competition and programs and that there are adequate numbers of volunteers Reduction of the total number of LTAD stages will enable sport leaders and coaches to more effectively and properly administer and manage the appropriate sport programs in each LTAD stage.

# *The Botswana LTAD Stages*




- **Basic STAGE**
  Focuses on learning basic movements/skills such as running, catching, jumping e.t.c, in both structured and unstructured arrangements. The emphasis is on getting children to enjoy physical activity in safe and relaxed environments. This STAGE also incorporates mental, cognitive and emotional development.

- **Intermediate STAGE**
  Involves major skills learning including sport specific skills as well as fitness development**.** In this STAGE, athletes are taught to be creative and imaginative and also to be aware of their environment as well as to develop intrinsic motivation.

- **Advanced STAGE**
  Focuses on refining sport specific skills and general technical development and competition as well as fostering goal setting, critical thinking, positive self –image and adaptation to different conditions.

- **Elite STAGE**
  Involves training and conditioning for high performance and winning**.** It also emphasises self –analysis and continuous pursuit of excellence and effective use of mental skills of imagery, focused control and activation.

- **Lifelong Physical Activity STAGE**
  This stage focuses on encouragement and promotion of positive and healthy lifestyle through life-long participation in physical activity. People may enter the stage at any age, either for recreational purposes or as sports officials or coaches. The stage involves non-competitive participation to provide key values such as fun, health, fair play and giving back knowledge.

# DESIGNING, BUILDING AND DEVELOPING AN EFFECTIVE LTAD MODEL

Designing and implementing an effective LTAD system will require NSA's

To:

- Understand the science and theory behind LTAD systems and why they are designed the way they are.
- Understand the 'Factors that Influence' LTAD implementation
- Understand what should and should not be part of each LTAD Stage
- Understand the key Stakeholders in your Sport and/or Sport Organization who will impact and be impacted by an LTAD system
- Use the Implementation Checklists for various Stakeholders
- Follow the Guidelines for Monitoring and Continuous Improvement of LTAD implementation

# FACTORS THAT AFFECT THE LTAD

There are many factors that affect how an effective LTAD system can be developed in Botswana… whether the goal is to develop successful athletes at the elite end of the continuum or to provide opportunities for all Batswana to participate and enjoy your sport at the recreational and/or sub-elite level (or both).

The following factors should be understood and considered as you build and monitor your own LTAD program.

## 1. The 10 Year Rule

There is no such thing as "an overnight success". While it might seem that some athletes look like they suddenly 'appeared' on the scene as a successful, polished athlete; it is rarely the case. Scientific research shows us that the development of any elite, world class skill, whether it is in sport, performing arts or most forms of human endeavour take years and years of practice and training. In fact the research shows that it takes a minimum of 10 years and 10,000 hours of purposeful, deliberate training to reach elite performance levels.

On average this equates to approximately 2.5 – 3 hours per day, every day, for 10 years. Of course that doesn't mean that a 10 year old must start out training in a specific sport for 2-3

hours a day. Obviously training loads increase as athletes get older and the accumulated hours spent in multiple sports when athletes are younger all contribute to the 10,000 hour guideline (for example, Amantle Montsho, a 400m runner based in Dakar, Senegal, trains 2 hours in the morning, from 09:30 – 11:30 and 1hour 30minutes in the afternoon, from 16:30 – 18:00 which makes 3.5 hours a day. She trains six days a week from Monday to Saturday, and this means that she trains 21 hours a week).

***Remember, this is an average figure. It is not a rule written in stone that all elite athletes MUST do 10,000 hours of training, over a 10 year period. Indeed some athletes progress faster or slower than others. The development of "Centres of Excellence" and "Olympic Training Centres" and special Talent Identification and Development Programs can accelerate this in some people….. it is simply an observation of average times it takes people to excel in various endeavors.***

## 2. Foundation of Basic Physical Skills – "Physical Literacy"

Virtually all sports involve a common set of movement patterns and skills either on the ground, in the air, through or on the water, as well as control of objects and implements. (Note: In some countries, some sports also require movement on ice and snow; but for obvious reasons Botswana does not have the opportunity, or a strong reason, to specifically develop those skills and as such they will not be specifically addressed in this document)

There is a very wide variety of skills that must be introduced and developed at an early age by parents and in pre-school and/or community settings that underpin future sport movement patterns. This is commonly termed ***"Physical Literacy"***

The following Table shows a list of most of the basic Physical Literacy Skills for ground, air and water.

## Table 1 . Basic Ground, Air and Water Physical Literacy skills

| Locomotion or Travelling Skills | Object or Implement Control Skills | Balance Skills |
|---|---|---|
| Hopping<br>Skipping<br>Crawling<br>Jumping (single and double leg)<br>Leaping<br>Climbing<br>Poling<br>Running<br>Galloping<br>Bounding<br>Swinging<br>Wheeling | Kicking<br>Punting<br>Rolling (ball)<br>Striking object (with hand, bat or stick)<br>Throwing<br>Catching<br>Stopping/Trapping<br>Dribbling (with feet)<br>Dribbling (with hands)<br>Blocking | Balancing/Centering<br>Rolling<br>Dodging<br>Floating<br>Landing (single or double leg)<br>Squatting-Balancing<br>Sinking (in water)<br>Falling (through Air)<br>Spinning<br>Stopping<br>Stretching<br>Swinging<br>Twisting<br>Standing on hands<br>Standing on head |

Without exposure to these skills early in life as an infant and/or in early pre-school and Primary School a child will not progress as smoothly and rapidly as other children, and indeed they may not be able to master some sport skills and patterns at all. This will result in a child and/or adolescent struggling to enjoy sports that require basic and complex movement patterns.

It is recommended that parents, child care-givers and early childhood educators teach these skills through games and give time to practice “free play” as much as possible. It is also important that children be exposed to the “foundation sports” which incorporate many of the basic skills necessary for other sports.

The “foundation sports” are:

- ***Athletics*** – develops many of the movement, balance and object control skills required for other sports
- ***Gymnastics*** – develops many of the movement and balance skills, both in regard to movement on the ground and through the air
- ***Swimming*** – develops basic water safety skills as well as basic skills necessary for all other water sports

### *Implications for Developing Physical Literacy*

***For Parents***

Parents should allow and encourage their infants and children to experiment with different movement patterns and engage in as much free play as possible. This will allow them to become "fluent" in different movement possibilities on the ground, with equipment, and in space.

***For Child-Care Givers***

Movement skills, object control skills and balance should be encouraged through as much free play as possible as well as basic games of movement and balance. This should involve as many of the items in Table 1 as possible.

***For Teachers***

Teachers should provide basic physical literacy opportunities as well as a grade by grade "scorecard" to identify how many of the items in Table 1 have been mastered in each Grade. It is recommended that all children are provided with structured physical activity lessons each week which address basic physical literacy in early school years through specific movement modelling as well as a wide variety of games.

***For Ministry of Education***

The school curriculum should require the teaching and testing of basic physical literacy skills at all Primary School Grade levels in mandatory Physical Education classes as well as providing opportunities and equipment for in-school and after-school play time.

***For Sport Organizations/Sport Clubs***

Sport organizations and clubs should ensure through Coach Education curricula and practice that children entering their sport at the earliest ages (i.e. at the BASIC STAGE) are given as much opportunity as possible to develop the essential basic physical literacy skills relevant to that sport ***BEFORE*** attempting advanced sport specific skills and/or Technical/Tactical elements of that sport.

## 3. Early or Late Specialization

One of the fundamental principles of an effective LTAD system is that participants ***SHOULD NOT*** specialize in single sports too early because of the widely varying rate of growth and maturational development. It should also be understood that some sports are classified as ***"Early Specialization Sports"*** because they require complex movement patterns that are more easily acquired before full maturation.

These early specialization sports include artistic and acrobatic sports such as

- Gymnastics
- Diving
- Figure Skating

In a healthy sport system, with a well defined LTAD pathway, all children should be required to try a wide range of sports that expose them to different physical skills and movement patterns, as well as individual and team sports. It is recommended that children try team sports for the exposure to social interaction requirements. There is ample evidence available in the research literature that shows that exposure to a wide range of sports in the early childhood and adolescent years is an advantage in later periods of (potential) sport excellence.

Research by both the US Olympic Committee and the German Olympic Committee (separately) showed that successful Olympic athletes in a variety of different Olympic sports began to specialize in their final Olympic sport later in their career as compared to other athletes (who did not try a variety of sports).

Specializing in a single sport before the ages of 10-12 years of age (in late specialization sports) can result in

- ***Missing some of the basic physical literacy skills***
- ***Overuse injuries***
- ***Early physical and mental burnout***
- ***Early retirement or total drop-out from that sport***

## 4. Development vs. Chronological Age

Humans grow and develop in a relatively standard pattern, but at slightly different rates between individuals and in some ethnic groups around the world.

The terms “GROWTH” and “DEVELOPMENT” refer to specific biological activities and have specific definitions.

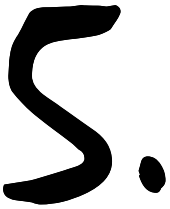
**GROWTH** – refers to visible and observable changes in elements of body size such as height, weight, body fat, and muscle mass.

**MATURATION** – refers to less easily observed changes in the body in structural and functional elements such as bone growth (cartilage, growth or closure of bone plates, hormonal changes and development of primary and secondary sexual characteristics).

**CHRONOLOGICAL AGE** – refers to the number of years and months since birth. Children of the same Chronological Age can be vastly different in Development or Maturational age.

**DEVELOPMENT or MATURATIONAL AGE** – refers to the degree of physical, mental, emotional and cognitive maturity of an individual. Physical age can by quantitatively assessed by skeletal maturity or bone age (by x-ray) after which cognitive, emotional and/or cognitive maturity can be assessed and factored into Developmental Age.

Difference in growth rates and developmental and chronological age in children and adolescents is the basis for, and the reason for, having a well designed LTAD system. It allows for the appropriate placement of children into competition so that children aren't put at risk, or they are not eliminated from the sport through premature Talent Identification or Sport (or Sport Discipline or position) Specialization.



## Trainability

Trainability is an important factor to consider when designing and implementing a LTAD program. After all, training and competition are the 2 key elements of sport at any level (the 3rd important element is Recovery).

In terms of training there is a lot of research that shows how, and how fast, various body systems such as muscles, hormones, tendons and so on respond to training, and the following information is based on that research. However, it must be noted that most research in exercise responses is based on scientific studies with adults. Research with children and adolescents is not as complete or extensive as it is in adults, so care and common sense must also be applied.

This is where the "Science of Coaching" intersects with the "Art of Coaching "(and parenting). Judgment calls will sometimes need to be made by parents and coaches as to whether it is appropriate for a child or adolescent to participate in a certain level or type of training or competition.

***So what does the Science of Training tell us?***

When a person trains regularly (or is physically active on a regular basis) they respond to a well known process of ***Stress – Recovery – Adaptation***. In other words, the training activity is a stimulus that "***stresses***" various parts of the body. If that period of training is followed by a rest or "***recovery***" period, then the body, or specifically the parts or systems of the body that were stressed will "***adapt***" and become stronger and better equipped to meet that stress if it comes again (which it will, in future training or competition sessions). A sensible sequence of training and recovery will continue to improve the various systems so a person will become fitter over time. On the other hand, a sequence of training that provides too much stress and/or too little recovery will not allow the body to adapt and instead of improving the body's systems the body will break down and become sick or injured (often called "over- training", or "over-reaching").

There are a number of factors in regards to training (apart from the Stress – Recovery – Adaption sequence just mentioned) that must be remembered in relation to a well planned LTAD program. These were also mentioned earlier in this Framework.

> ***Definition of Trainability-***
> Trainability refers to the fact that some people respond faster to some stresses or stimuli than other people. Most body systems take a certain period of time to respond and reach maximum capacity – and each system or part has a different time frame – but even with the same stimuli some people will react slightly faster or slower than others.
>
> This is important to remember when training groups of people, especially team sports. Some players or participants will not adapt as quickly as others and will not be able to move to a higher level of training as quickly as other team members.

## *Principles of Training.*

The following six 'principles' are found frequently in the training literature and provide guidance in the overall design of training programs beyond the basic levels.

- ***Specificity***: An athlete will generally respond in a manner specific to the type of training undertaken; e.g. swimming training specifically improves swimming

performance but not necessarily running performance (to the same level), and vice versa.

- ***Overload***: An athlete will respond favourably to appropriately increased training loads (volume, intensity, or in combination ('progressive overload') as compared to a consistent program.
- ***Recovery***: An athlete will make more effective progress in training when sufficient recovery and regeneration is built into the program.
- ***Variation***: This is an important factor in ensuring that continual progress is made by varying the stressors imposed on the athlete. The process of planned training (including competition, recovery and regeneration blocks) over time involves the Periodisation and sequencing of the athlete's training regime.
- ***Individualization***: An athlete will not respond to a given stimulus in an identical manner to another athlete. This is particularly important for coaches of team sports to allow for in their training programs and planning.
- ***Reversibility***: This principle concerns the fact that all training and environmental gains will be diminished once the original stimulus or maintenance stimulus has been removed. In other words if you stop training (i.e. remove the stimulus) an individual begins to "de-train" or lose fitness. The time frame for this decay will vary depending upon a number of influential factors (i.e., the actual physical or physiological parameter in question, frequency of training, training intensity, recovery time etc).

***Components of fitness***

There are a number of different components that contribute to overall fitness. The original **S**'s of training comprise of five elements (modified from F. Dick, 1985):

- ***Stamina (Endurance)***
- ***Strength***
- ***Speed***
- ***Skill***
- ***Suppleness (Flexibility)***

In addition, five further S's may be considered and these are:

- **S**tructure or stature (physical/anthropometric)
- (p)**S**ychology
- **S**ustenance (i.e., nutrition, hydration, rest, sleep etc)
- **S**chooling
- **S**ocio-cultural aspects

There are also others which are combinations of 2 or more of the above such as Power, Agility, and Coordination.

It must be noted that ….

…. each of the components of fitness is ***TRAINABLE;*** meaning each of them can improve (or decline – sometimes called ***REVERSABILITY***) at different rates as a response to training, and

…. each of these components has an ***"optimal window of trainability"*** which means that if children and adolescents attempt to train any of these components too early in their Development Age they will get very minimal results in relation to the effort and time they put into training.

This is another reason for a well planned LTAD Program … ***so that the right training is done at the right time, so as to not injure participants, and to get the best out of training***.

The optimal window of trainability for the 5 main components of fitness is shown in Table 2 and Figure 1 below.

**Table 2. Optimal Windows of Trainability (OWT) for Key Fitness Components**

| Fitness component | Optimal Window for Girls | Optimal Window for Boys | Implication |
|---|---|---|---|
| **Stamina (Endurance)** | OWT occurs at the onset of Peak Height Velocity** (PHV). Aerobic capacity training is recommended **BEFORE** athletes reach PHV. Aerobic power training should be introduced progressively after PHV and growth rate begins to decelerate. | OWT occurs at the onset of Peak Height Velocity** (PHV). Aerobic capacity training is recommended **BEFORE** athletes reach PHV. Aerobic power training should be introduced progressively after PHV and growth rate begins to decelerate. | Prior to PHV, lower level aerobic training is advised. Higher intensity sustained aerobic work closer to $VO_2$Max is not advised (for large percentage of total training time) until after PHV has been reached |
| **Strength** | OWT for Strength begins immediately **AFTER** PHV or at the onset of menarche | OWT for Strength begins 12-18 months **AFTER** PHV has been reached | Strength gains can be made with training before PHV for both boys and girls. However this is more |

| | | | |
|---|---|---|---|
| | | | from muscle recruitment changes and neurological adaptation rather than muscle/tendon growth adaptations. |
| **Speed** | For girls, there are 2 windows of opportunity. The 1st occurs between the ages of 6 – 8 years of age and the 2nd occurs between the ages of 11 and 13 years of age. | For boys, there are 2 windows of opportunity. The 1st occurs between 7 and 9 years of age and the 2nd occurs between the ages of 11 and 13 years of age | For sports where speed is an important component this is when speed and speed technique and speed drills will be most effective and reap the most rewards. |
| **Skill** | OWT is between 8 and 11 years of age | OWT is between 9 and 12 | Both these periods are relatively slow growth periods so body position, coordination and movement through space are relatively constant so skill and coordination, hand/eye and foot/eye coordination can be optimized. However, be prepared for an apparent (temporary) decline in skill execution when individuals approach PHV in the few years after this window. |
| **Suppleness (Flexibility)** | OWT occurs between 6 and 10 years of age, but should be continued through all ages of training | OWT occurs between 6 and 10 years of age, but should be continued through all ages of training | |

** See the Glossary of Terms for a definition of Peak Height Velocity (PHV) and Figure 1 for an indication of when PHV occurs.

**Figure 1. Optimal Windows of Trainability for the Key Components of Fitness (Balyi and Way, 1995)**

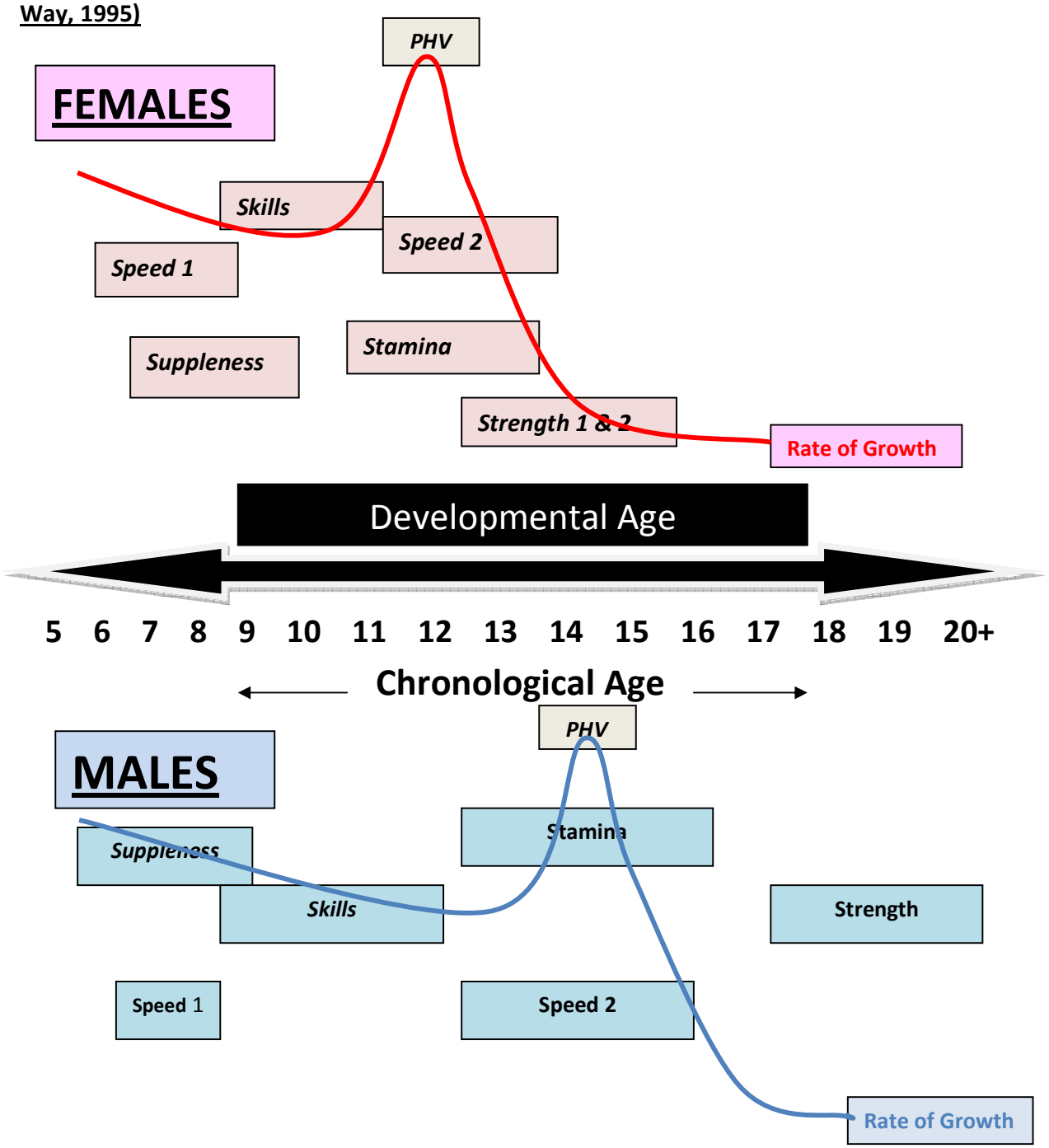



Figure 1 Illustrates the Optimal Windows of Trainability for Females and Males. Two windows — stamina and strength — are based on the moving scales of the onset of the growth spurt and PHV. The other 3 windows — speed, skill, and suppleness — are based on chronological age. The trainability of the different systems for children and youth with a disability is not well understood. Source: Bayli et al. Canadian Sport for Life: Long-Term Athlete Development Resource Paper v2

## 6. Physical, Mental, Cognitive, and Emotional Development

Training, competition and recovery programs should consider the mental, cognitive, and emotional development of each athlete.

Beyond the physical, technical, and tactical development — including decision-making skills — the mental, cognitive, and emotional development should be enhanced.

For a complete overview of mental, cognitive, and emotional development characteristics and their implications for the coach, for each Stage of the Botswana LTAD Framework refer to Appendix 1 of this document.

A major objective of LTAD is a holistic approach to athlete development. To excel in competitive sport, players must develop the mental skills necessary to control their physical performance. This includes emphasis on ethics, fair play, and character building throughout the various LTAD Stages. A formal and systematic mental training component that aligns with mental, cognitive and emotional development and the LTAD stages will help players develop the foundation for peak performance.

Specific recommendations and guidelines for emotional, psychological and cognitive factors are made later in each respective LTAD Stage in this document.

## 7. Periodisation

***Periodisation*** is the process of organizing the various components of training into a logical and safe format to allow optimal development of athletes.

As previously explained:

- there are multiple components of fitness and performance in both the physical and mental domains;
- there is a well defined process of training, recovery and adaptation that allows the body to respond to training; and
- there are different time courses of responses to training for various body systems and fitness components.

Periodisation allows coaches and athletes to organize training into sequential blocks so that certain types of training are appropriately done either before or after other types of training,

and so that certain fitness components can be developed first, so that others can be built from, and on top of them.

There are multiple models of Periodisation that include different sequences of training blocks that last for different lengths of time. Regardless of the exact model nearly all Periodisation models have several things in common.

Nearly all models have blocks of training of increasing lengths of time that build on each other. These are called micro-, meso- and macro-cycles

- ***Micro-cycles*** are the shortest blocks and are usually 7-10 days in length;
- ***Meso-cycles*** are the intermediate length cycle and incorporate several micro-cycles;
- ***Macro-cycles*** are the longest length cycle and incorporate several meso-cycles.

Recovery specific training sessions are inserted into micro- cycles to allow for appropriate training and adaptation. For example (depending on the volume and intensity of the training being done there might be a recovery session after every 1, 2 or 3 work sessions within a micro-cycle. Recovery micro-cycles are also included after 1, 2, 3 or more micro-cycles (which when all combined would make a meso-cycle).

For example

- 1 work micro cycle/1 recovery micro-cycle (1:1 ratio)
- 2 work micro-cycles/1 recovery micro-cycle (2:1 ratio)
- 3 work micro-cycles/1 recovery micro-cycles (3:1 ratio) … and so on

Usually each micro-, meso-, and macro-cycle period has a specific goal to focus on physical, mental, technical/tactical elements of training.

Periodised training and competition plans also are usually divided up into phases of training known as:

- General Preparation Phase
- Specific Preparation Phase
- Pre-Competition Phase
- Competition Phase (Peaking and Tapering)
- Transition/Recovering Phase

Each of these phases usually incorporates one or 2 meso- or macro-cycles depending on the nature of the sport and the time duration available, and incorporates alternating aspects of

training volume, training intensity and training frequency so that the desired elements are developed logically and safely.

As mentioned, there are multiple models and examples of Periodised programs. Some are designed to peak once in a year for a major competition or event (Single Periodised Plan), some are designed to have 2 peaks in a year (Double Periodised Plan) and still others have multiple peaks. The design depends on the level of performance and the specific competition/season requirements, and the stage of the LTAD Program.

In terms of how to apply Periodisation and Training-Recovery Ratios in the Botswana LTAD it is recommended to follow the guidelines below**.**

**Table 3. Guidelines for Single, Double and Multiple Peaks and Training-Recovery Micro-and Meso-Cycles for the Botswana LTAD**

| BASIC PHASE | INTERMEDIATE STAGE | ADVANCED STAGE | ELITE STAGE |
|---|---|---|---|
| | **Phase I → Phase II** | **Progression through both stages** | |
| No Periodisation | **Single Peak → Double Peak (Depending on specific performance and seasonal needs of the sport)** | **Single Peak → Double Peak → Multiple Peaks (Depending on the specific performance and/or seasonal needs of the sport)** | |
| | **Equal or nearly equal Training-Recovery Micro- and Meso-Cycles**<br>**1:1 → → → 2:1** | **Increasing ratios of Training-Recovery Micro- and Meso-Cycles as participants become more well training and competition becomes more intense and/or more frequent**<br>**2:1 → → → 3:1 → → → 4:1** | |

## 8. Planning for Competition

An important aspect of a well designed LTAD Program is the element of ***Competition***. Typically participants in any sport are eventually involved in competitions. It is the balance of frequency and intensity of competition that makes a structured LTAD program valuable to the logical and safe development of an athlete.

Essentially, a well designed LTAD program ensures the safe progression of sport participants by providing guidelines as to how many competitions they should participate in as they progress through the various stages of LTAD, as well as the recommended physical and mental intensity to which they should be exposed.

The recommendations below might need to be adjusted according to the unique nature of each sport. For example, a high impact/collision sport such as Rugby might design less competitions

for participants in the Intermediate Stage (and/or modify the rules of the game in terms of contact) than a sport such as Table Tennis. Each sport will have to consider the unique needs of their sport and design competition schedules accordingly.

Table 4 below shows a recommended ratio of Training to Competition related time for the different LTAD Stages. It must be remembered that optimal numbers and locations of competition in Botswana will be affected by low participation numbers in some sports and limited access to competition facilities. This may reduce the ideal number of competitions for some sports in Botswana and require the Training to Competition ratio to be modified.

Sport organizations are advised to factor in School sport competitions into the total number of competitions at the Primary School and Junior and Senior Secondary School level to calculate and design optimal and ideal Training to Competition ratios.

Table 4. **Guidelines for Training to Competition ratios for the Botswana LTAD**

<table>
<tr><th>BASIC PHASE</th><th>INTERMEDIATE STAGE</th><th>ADVANCED STAGE</th><th>ELITE STAGE</th></tr>
<tr><td></td><td colspan="2">Phase I → Phase II</td><td>Progression through both stages</td></tr>
<tr><td rowspan="2">No specific ratios. Competition should be very low to low intensity both physically and mentally, e.g. using modified rules; and no League or overall city, regional or national championships</td><td>No more than 70% of total time in General and Preparatory Training to 30% of total time in Competition simulation or direct Competition specific Training in Phase I (70:30)<br>↓<br>No more than 60% of total time in General and Preparatory Training to 40% of total time in Competition simulation or direct Competition specific Training in Phase II (60:40)</td><td>No more than 40% of total time in General and Preparatory Training to 60% of total time in Competition simulation or direct Competition specific Training at (40:60)</td><td>No more than 25% of total time in General and Preparatory Training to 75% of total time in Competition simulation or direct Competition specific Training in Elite Stage. (25:75)</td></tr>
<tr><td>No national Championships</td><td>No national Championships until at least Phase II ( 12-16 years for Males, 11-15 for Females)</td><td colspan="2">Regional, National and International Championships for both Stages</td></tr>
</table>

Competition is one of the best ways for participants to improve their skills, but remember that LTAD protects against participants being exposed to too high quality and too high an intensity competition too early in their development pathway.

The consequence of pushing children and adolescents too quickly into high level competition is that they may not have the skills, fitness and/or mental focus to compete with older more experienced participants. This could result in

- learning the wrong skills and technique which could be difficult to correct later on in their development pathway;
- injury; and
- loss of motivation, burn out and/or total drop out because they feel as though they can't keep up with other children.

## 9. Talent Identification, Talent Selection and the Birth Month Effect

At some stage in the LTAD process sport organizations will seek to identify and select the most talented participants in their sport and provide special opportunities for them to develop under expert coaching and more controlled development than they might get in their local community, school and/or club.

In this context it is important to develop a systematic national program of testing of youth at appropriate ages in order to identify potential talent based on various anatomical, physiological and psychological markers that might indicate above average potential for 1 or more sports. This will be coordinated with improvements in sport infrastructure of coaches, clubs, facilities, officials and Sport Sciences/Sports Medicine support, so that Botswana NSAs can ***develop*** potential sport talent after it has been ***identified***.

There are some subtle differences in direction and definition to consider in the Talent Identification/Selection process

***Talent Identification***

Usually refers to the direct identification of potential talent in 1 or more sports based on tested markers that are thought to predict future talent. Most research has shown that with the exception of a few early specialization sports it is counter-productive to attempt to predict and identify future potential talent until ***at least 14 or 15 years*** of age***. In other words specific Talent Identification and/or specialization should not occur until the very end of the Intermediate Stage or the Beginning of the Advanced Stage (except for the early specialization sports previously mentioned).***

***Talent Selection***

Usually refers to selection of potential elite athletes based on their current performance levels from participants already participating in that sport. This usually occurs at Championship events or specially designed selection trials (e.g. Open Try-Outs). Similar to the issue of Talent Identification process described above ***this is not recommended to begin to occur until Phase II of the Intermediate Stage.***

***Birth Month Effect***

It has been shown in many professional and national teams that there is a significant effect of when children are born in relation to that sport's season (or talented athlete selection period) and whether they are identified as potentially talented athletes and/or go on to play internationally and/or professionally. Participants who are born in the early months of the selection time period have a significantly greater chance of being selected and making future elite teams than those born at the end of the time period. This is obviously due to the large range of growth and development in children and adolescents. .

***Implications for the LTAD Program***

The obvious implication of this effect is that if (potentially) talented athletes are selected too early in the LTAD process then smaller and younger athletes may be overlooked. Even though the "overlooked" participants might continue to grow and develop physically and mentally (and may even eventually surpass their earlier developing counterparts), they might be overlooked for early selection which denies them the chance to further develop with better coaching, equipment and facilities and even might cause them to drop out of sport or try a different sport because they are discouraged.

It is difficult to counter-balance this phenomenon by changing the selection period because that only shifts the birth month effect to different months. However there are several means available to help reduce the impact of birth month as follows:

- not conduct "All Star" selection processes or other Talented Athlete selection processes until at least the end of the Intermediate Stage;
- have multiple selection phases throughout the year in the late Intermediate to early Advanced Stages of the LTAD Program; and/or
- provide opportunities for Open Try-Outs in the Advanced and Elite Stages so that participants who were overlooked in the early Stages have an opportunity to re-enter the process.

# 10. Stakeholder Alignment and Integration

There are a number of important Stakeholders in Botswana sport. In order to have a complete and effective sport system it is important for all Stakeholders to work together and be in alignment in terms of roles and responsibilities and the parts they play.

It is critical to the success of a national LTAD Program for each Stakeholder to be fully involved and fully committed to the process. It is also critical for the national process to be driven and managed by the core leadership of sport in Botswana. These members are

- Botswana National Sport Council
- Botswana National Olympic Committee
- Department of Sport and Recreation
- University of Botswana

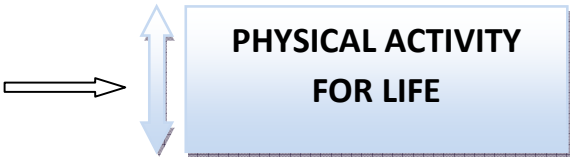
In the table below, key involvement areas of the different stakeholders groups in respect of the Botswana LTAD Stages can be seen in summary. Further details are found in Appendix 2

**Table 5. Roles and Responsibilities of Stakeholders in the Botswana national sport system in relation to the LTAD process**

| CORE BOTSWANA LTAD STAGES | | | | |
|---|---|---|---|---|
| BASIC<br>0-9 yrs Male<br>0-8 Females | INTERMEDIATE<br>10-16 yrs Males<br>9-15 Females | ADVANCED<br>15-18 yrs Males<br>16-18 yrs Females | ELITE<br>18 + years Male and female | PHYSICAL ACTIVITY FOR LIFE<br>No age restriction |
| Parents Family | Parents Family | Parents Family | Parents Family | Parents Family |
| Sport Clubs | Sport Clubs | Sport Clubs | Sport Clubs | Sport Clubs |
| Primary Schools, BOPSA, | Primary Schools, BOPSA, | Secondary Schools, BISA | | |
| Ministry of Education | Ministry of Education | Ministry of Education | | |
| | | | Tertiary Institutions of Higher Learning, BOTESA | Tertiary Institutions of Higher Learning, BOTESA |
| | | | Armed Forces | Armed Forces |
| National Sport Associations | National Sport Associations | National Sport Associations | National Sport Associations | National Sport Associations |
| Ministry of Local Government | Ministry of Local Government | Ministry of Local Government | Ministry of Local Government | Ministry of Local Government |
| | | BNOC | BNOC | BNOC |
| BNSC | BNSC | BNSC | BNSC | BNSC |
| Ministry of Youth Sport and Culture | Ministry of Youth Sport and Culture | Ministry of Youth Sport and Culture | Ministry of Youth Sport and Culture | Ministry of Youth Sport and Culture |

# THE STAGES OF LTAD

- **The Basic Stage**
- **The Intermediate Stage**
- **The Advanced Stage**
- **The Elite Stage**




***(Physical Activity for Life incorporates sport and physical activity participants at all ages and Stages beyond the Intermediate Stage)***

The next sections describe the core elements of each LTAD stage as well as considerations for Implementation, Monitoring and Evaluation.

It must be remembered by sport leaders, coaches, parents and administrators when building the LTAD Stages that the guidelines are simply that …. ***guidelines***; and that there is some flexibility between stages depending on

- whether a sport is an early or late specialization sport; or
- between and within individuals who have different physical growth curves and mental/emotional development than others.

Careful monitoring by sport organizations and administrators to ensure that children and adolescents are not being pushed into too much or too high intensity training and/or competition too early in their development.

During the ***Intermediate Stage*** children and adolescents will specifically need to be closely monitored so that training and competitions are gradually increased from when they first enter the Stage (at about 9 years of age for Females and 10 years of age for Males). The LTAD Botswana is designed more towards Late Specialization sports, which applies to most sports in Botswana.

Sports that are truly early specialization sports (e.g. gymnastics and diving) should consider adjusting the LTAD so that children are exposed to Phase I and Phase II of the Intermediate Stage slightly earlier than shown in the diagrams on page 10 of this LTAD.

The following section provides the key considerations, Checklists of activities and detailed descriptions of the parallel Mental Skills, implications and suggested Actions for coaches and athletes that must be considered and observed when building your sport specific program.

# BASIC STAGE

0 – 9 years (Males)

0 – 8 years (Females)

## ***Key considerations for the BASIC Stage***

- **LEARN ALL FUNDAMENTAL MOVEMENT SKILLS – *PHYSICAL LITERACY***
- **BUILD ENJOYMENT AND A LOVE OF BEING PHYSICALLY ACTIVE**
- **BUILD MASTERY OF MORE COMPLEX MOTER SKILL PATTERNS FROM BASIC MOTOR SKILLS**

- ✓ Unstructured AND structured physical activity and/or sports and games should be introduced to children in this age group in a fun, safe and non-pressured environment;
- ✓ Parents, Teachers and Child-Carers should encourage children to be active and explore their physical abilities by allowing them to climb, run, jump, throw, hit and other key physical movement patterns described previously in this manual on page 16;.
- ✓ Parents, Teachers and Child-Carers should encourage children to invent games and free play and experiment with designing rules so as to help them understand game structure and structured rules in later stages
- ✓ Parents, Teachers and Child-Carers should teach and encourage proper nutrition through healthy eating behaviours, good food choices and maintaining proper energy balance;
- ✓ Schools should provide adequate free play time, as well as some structured time to learn and practice basic physical literacy skills during formal physical education classes;
- ✓ Sport organizations should provide non-competitive opportunities for children to try their sport with small games and/or modified rules;
- ✓ Sport organizations and schools should have a range of modified equipment so that children can safely try sports or activities without threat of injury or difficult skill execution caused by miss-sized equipment;

- ✓ As children progress to the final years of the BASIC Stage they need to be exposed to physical literacy skills in a more structured and monitored environment, through Physical Education literacy scorecards or through standardized testing by sport organizations;
- ✓ No specific Periodisation or competition peaking should occur in this stage;
- ✓ Children should be exposed to and encouraged to try as many different sports and activities as they can without judgment or criticism.

## CHECKLIST FOR IMPLEMENTATION OF THE BASIC STAGE

### PARENTS, FAMILY

- Provide opportunities for infants at the earliest possible age to move and balance in 3 dimensions
- Provide an opportunity for infants to move over different terrains with and without shoes everyday
- Provide opportunity for child to freely explore their physical space and physical abilities every day
- Provide at least 30-60 minutes per day where the child is free to move, balance and climb (with safe supervision)
- Provide an opportunity for children to invent their own games and rules
- Begin an awareness of proper eating behaviours and healthy food choices

### SCHOOL, CHILD-CAREGIVERS

- Ensure that Teacher/ Coaches are aware of Botswana LTAD (and other models)
- Ensure that children get at least 30-60 minutes of free play time per day (before, during and after school)
- Ensure that children receive at least 2 periods of structured physical activity per week where all physical literacy skills are taught, practiced and tested
- Provide access to school facilities for pre-school community children to play and use appropriate equipment outside of regular school hours
- Develop a school curriculum where progressively more complex gross motor skills are taught as children progress through Primary School
- Include nutrition knowledge as part of the basic school curriculum
- Ensure that children are fluent in basic physical literacy skills before they are taught or coached in basic sport skills and recruited onto school sport teams

### SPORT ORGANIZATIONS

- Encourage young children to try your sport in a safe and non-competitive environment
- Encourage children in your sport to try other sports as well as your own.
- Ensure that coaches know the Stages of LTAD as well as the basic science and theory behind them
- Ensure that coaches teach basic physical literacy (separately) and in game situations before starting on sport specific skills and before playing full games
- As children progress to final 2 or 3 years of Basic stage begin to develop full mastery of basic physical skills by execution at higher speeds and/or for longer periods, and in sport skill situations
- Ensure that children can move forward, backward and sideways and can hop and balance on 1 and 2 legs, and can throw, catch and kick small and large balls.
- Begin to introduce children to the rules of some games and the ethics and concepts of team

| | | |
|---|---|---|
| | Ensure that games in early Primary years (years 6-9 Males, 6-8 years Females) are non-competitive and non-pressured<br>Provide an opportunity for children to invent their own games and rules<br>Do not allow children to be totally sedentary in schools for periods longer than 60 minutes | play and teamwork (in the latter years of the BASIC stage)<br>Make allowances for children who are progressing faster or slower than most of the group, but do not allow children to move up to INTERMEDIATE Stage until after 9 years (Males) or 8 (Females) |

### Specific Physical skill development for the Basic stage

As noted above, the primary focus for physical skill development in the Basic Stage should be on the basic skills of overall Physical Literac. Basic sport specific skills should be delayed until proper mastery of basic and relevant basic physical literacy skills and not until the latter years of this stage.

Each specific sport should introduce their progressive sport skills as per the concepts and guidelines of this Stage as described above. Sport Specific skills are not described in this Framework because they are the domain of each specific National Sporting Organization.

# MENTAL SKILLS AND IMPLICATIONS FOR THE BASIC STAGE

### 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.

## Emotional Development

***Basic Implications***

- Children'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;
- Children want challenges and opportunities to experiment with all kinds of activity and movement. There is a limited fear attitude;
- Children understand 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 for Mental, Cognitive and Emotional Considerations**

- Children will be excited to try new activities;
- Children participate with enthusiasm in an activity;
- Children will become restless and easily distracted when listening;
- There will be hesitation in following the instruction;
- The child may have a look of confusion;
- Children will ask the coach to observe what he/she has done;
- There will be no arguing about the rules;
- Everyone is participating, no one is left out.

## Mental Skills Development for the Basic Stage

Small children are egocentric – actively playing is the most important objective. However, this is also the time to develop a basic awareness of the environment, and to be introduced to co-operation between athletes to build game intelligence and decision making. Children at this age gain understanding of the game through playing situations. Introduction of simple rules and ethics of sport are appropriate as well as *basic* competition opportunities and understanding of competition.

***Mental Skills Training Objectives:***

The mental skills training objectives at this stage of development are to:

- Introduce the concept of self confidence;
- Introduce concentration skills;
- Introduce the concept of perseverance;
- Gain an awareness of the importance of mental skills;

- Expose the children to positive thinking skills to build confidence and the ability to cope with stress.

***To-do list:***

- Children should learn about basic relaxation and energizing skills.
- Children should learn about creative imagery.

**Implications for Coaches**

***Environment***

- The coach should provide a positive environment, based on positive reinforcement which will reinforce a positive attitude to sport;
- 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;
- 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 athletes;
- 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.

***Instruction***

- Use short clear, simple instructions. Children want to move and to participate in actions;
- The coach should keep things simple, and have a good demonstration of skills;
- Coaches should adopt a “follow me” approach;
- Coach must be able to provide a correct demonstration and correction of skills;
- The coach should utilize activities that challenge and promote fun and success.

***Communication/feedback***

- The coach needs to provide positive reinforcement on a regular basis;
- The coach should provide enormous encouragement;
- The coach should encourage and promote self expression and self discovery;
- Encourage positive reinforcement from coaches and parents;
- Coaches should encourage input from children;

- Athletes should be introduced to a simple debriefing procedure. For example, the coach can ask the athletes simple questions such as:
    - ° 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 athletes and not tell them what you observed as a coach. Provide observations ***after*** the athletes have a chance to speak where appropriate.

**Psychological Indicators for Psychological Skills**

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

**Lifestyle**

- Promote involvement in multiple sports;
- Promote and teach safety;
- Be based on enjoyment and fun;
- Promote fair play;
- Foster a positive attitude towards activity and participation;
- Promote teamwork and personal interaction skills;
- Introduction and development of healthy nutrition and hydration habits are guidelines set forth by the coach. This information should be provided to children and parents.

# INTERMEDIATE STAGE

| | |
|---|---|
| ***Phase 1*** | ***10 - 13 years (Males), 9 - 12 years (Females)*** |
| ***Phase 2*** | ***14 - 16 years (Males), 13 – 15 (Females)*** |

## ***Key Considerations for the Intermediate Stage***

**PHASE 1**

- ✓ LEARN ESSENTIAL BASIC SKILLS OF TRAINING
- ✓ REINFORCE HEALTHY NUTRITION AND EATING BEHAVIOURS FOR SAFE WEIGHT MANAGEMENT AND ENERGY BALANCE REQUIREMENTS IN SPORT
- ✓ SINGLE SPORT SPECIALIZATION AND/OR FAST TRACKING COMPLEX TRAINING AND COMPETITION SKILLS CAN BE DETRIMENTAL TO LONG TERM DEVELOPMENT (except for early specialization sports)
- ✓ IMPORTANT PERIOD FOR DEVELOPMENT OF MOTOR CONTROL FOR CHILDREN SO THIS IS AN OPTIMAL TIME FOR CONSOLIDATION OF MOTOR COORDINATION
- ✓ IMPORTANT TIME TO BEGIN THE INTRODUCTION OF IMPORTANT TRAINING PATTERNS
- ✓ INTRODUCE CONCEPT OF PERIODISATION AND SINGLE PEAKING

**PHASE 2**

- ✓ BUILD BASE OF AEROBIC CAPACITY, SPEED, STRENGTH, COORDINATION TO PREPARE FOR HIGHER LEVEL TRAINING AND COMPETITION (in the next Stage)
- ✓ OPTIMAL AEROBIC TRAINABILITY BEGINS WITH THE ONSET OF THE MAJOR GROWTH SPURTS (approximately 11 or 12 years for Females and 14 or 15 years for Males; but individual variability will mean that this may vary earlier or later for some individuals)
- ✓ OPTIMAL STRENGTH TRAINING WINDOW OCCURS IN LATTER PART OF PHASE 2 (i.e. immediately after PHV and also at onset of menarche for Females, and 12-18 months after PHV for Males)
- ✓ CONTINUE EDUCATION AND ATTENTION TO HEALTHY EATING BEHAVIOURS, PARTICULARLY FOR FEMALE ATHLETES, AND INCLUDE

EMPHASIS ON BODY IMAGE ISSUES AND FEMALE ATHLETE TRIAD AWARENESS

- ✓ INTRODUCE TALENT IDENTIFICATION AND TALENT SELECTION PROGRAMS IN LATTER PART OF PHASE 2 (approximately 14 – 16 years for Males and Females)
- ✓ INTRODUCE MORE DETAILED PERIODISATION MODELS WITH DOUBLE PEAKS (if necessary based on demands and schedule of your sport)

## CHECKLIST FOR IMPLEMENTATION OF THE INTERMEDIATE STAGE

| PARENTS, FAMILY | SCHOOL, CHILD-CAREGIVERS | SPORT ORGANIZATIONS |
|---|---|---|
| □ Ensure that children are still encouraged to learn basic motor skills and basic sport skills | □ Ensure that Teacher/ Coaches are aware of Botswana LTAD (and other models) | □ Ensure that Coaches are well aware of Botswana LTAD (and other models) |
| □ Ensure that children are encouraged to try multiple sports in different seasons ***(and discouraged from specializing in 1 single sport)*** | □ Ensure that school curricula and school sport team training encourages mastery of basic physical literacy skills as well as combination of skills in faster and longer duration sets | □ Continue to develop and incorporate physical literacy skills into training and skill development |
| □ Resist the urge to pressure children to train and/or compete at too high a level | □ Ensure that school Physical Education and Health curricula includes content on healthy eating, eating disorders and Female Athlete Triad | □ Begin to develop basic strength, agility and coordination training in Phase 1 and progress to more advanced development (i.e. at higher speed, and stronger intensity) in Phase 2. |
| □ Follow the guidelines of sport organizations for maximum time and intensity for training and/or competition (in Phase 1) | □ Incorporate strengthening exercises with body weight activities in Phase 1, progressing to more advanced strength training activities in Phase 2 | □ Coordinate with school sport coaches to ensure appropriate ratios of Training: Competition (70% Training : 30% Competition & Competition related activities in Phase 1 and 60% : 40% in Phase 2 |
| □ Continue to encourage unstructured play which challenges and develops motor skills (e.g. running, climbing, kicking, throwing, swimming etc.) | □ Encourage participation in 2-3 sports in Phase 1 and 1-2 sports in Phase 2 | □ Coordinate with school sports to ensure a Periodised program with 1 peaking phase in Phase 1 and 1-2 peaking phases in Phase 2 (depending on needs of your sport) |
| □ Monitor nutrition knowledge, food choices and eating behaviours to avoid eating disorders, | □ Ensure that school sport coaches consider outside school sport activities when calculating appropriate ratios of Training: Competition (70% Training : 30% Competition & | □ Encourage participation in 2-3 sports in Phase 1 and 1-2 |

| | | |
|---|---|---|
| especially in female family members<br>- Become aware of onset of menarche and any irregularities and problems that may or may not be related to sport and/or sport related eating behaviours<br>- Monitor Training to Competition ratios (Phase 1 recommended no more than 70% : 30% Training to Competition and Phase 2 no more than 60% : 40%) | Competition related activities in Phase 1 and 60% : 40% in Phase 2<br>- Coordinate with outside school sports activity to ensure a Periodised program with 1 peaking phase in Phase 1 and 1-2 peaking phases in Phase 2 (depending on specific needs of the sport) | sports in Phase 2<br>- Build base of aerobic, speed, strength and flexibility capabilities (in Phase 2) to provide foundation to enter Advanced and Elite Stages later<br>- Ensure that coaches are aware of issues related to eating disorders, and body image (especially in sports where body shape, weight and image is a significant factor in performance and success such as Gymnastics, Diving, Synchronized Swimming and sport with weight categories<br>- Increase focus on flexibility during phase of rapid growth in Phase 2<br>- Begin to prepare for specific competition through development of competition strategies and simple post-competition de-briefs in Phase 2<br>- Encourage children and adolescents to continue an active lifestyle in sports (not necessarily your sport) if they choose not to continue with an Advanced or Elite focus in following stages |

## Specific Physical skill development for the Intermediate stage

The primary focus for the Intermediate Stage should be developing sport specific skills (relevant to each sport) as well as the continued development overall Physical Literacy skills (page 16 of this document).

Each specific sport should introduce their progressive sport specific skills as per the concepts and guidelines of this Stage as described above.

Sport Specific skills and skill development outlines are not described in this Framework because they are the domain of each specific National Sporting Organization.

# MENTAL SKILLS AND IMPLICATIONS FOR THE INTERMEDIATE STAGE

## *PHASE 1*

### Mental and Cognitive Development

***Basic Characteristics***

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

***Performance Capabilities***

- 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.

### Emotional Development

***Basic Characteristics***

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

***Performance Capabilities***

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

### Mental Skills Development for the Intermediate Stage

This time period is identified as the "Golden Age of learning". Sport must be oriented toward optimal learning opportunities for all. Intrinsic motivation critical to long term athlete development, is nurtured by the fun and enjoyment that fosters a desire to play. Encourage athletes to utilize imagination and creativity while increasing demands and discipline within the sport. Athletes at this stage continue to develop environment awareness and decision making skills through activities such as simple combinations, marking and running into space. Modified competitions may be included (measuring aerobic skill mastery, short duration speed) as well as an introduction to basic competition principles (pacing strategies, splitting goals).

At this stage of development athletes:

- Have the ability to recall specific information from memory;
- Have the ability to use knowledge to interpret and draw conclusions;

- Must feel it is OK to make mistakes. They cannot be afraid to try something for fear of failure;
- Must learn to become team athletes;
- Can learn about communication skills and values such as respect, honesty, and integrity - values in dealing with others.

***Mental Skills Training Objectives:***

The mental skills training objectives at this stage of development are to have athletes:

- Understand the importance of practicing basic mental skills;
- Develop an awareness of how performance unfolds from a mental perspective;
- Understand the voluntary nature of refocusing, (athletes can adjust their focus and behaviors);
- Develop an awareness of personal ideal performance states (For example: "When I am calm, I feel more relaxed and play better").

***To-do list:***

- Introduce concept of mental preparation;
- Expose athletes to a foundational mental skills framework;
- Have athletes complete a personalized 'ideal performance state assessment';
- Emphasize the development of tension control and technical cues;
- Introduce imagery skills (practicing and improving technique and self-confidence)
- Introduce relaxation skills (deep breathing)
- Introduce the concepts of constructive self talk and confident behavior;
- Promote understanding of the role of practice towards goals;
- Continue to promote concept of perseverance;
- Continue to develop concept of self confidence;
- Continue to develop concentration;
- Promote positive reinforcement for effort and achievement.

**Implication for Coaches**

***Environment***

- Create optimum learning environment, match skill and drill levels;
- Supervision should be exercised by coach;
- Coach must not play favorites. Early maturers often become leaders and excel in physical performance. It is important to treat all athletes as equals.

***Instruction***

- The coach's ability to demonstrate specific skills is important;

- Coach must provide strong direction.

***Communication/feedback***

- Positive reinforcement is imperative;
- Coach should gradually give athletes responsibility;
- Emphasis should be on learning and performing to the best of ability - not on winning.

**Performance Indicators for Psychological Skills**

- The athlete demonstrates the ability to absorb and apply coaching information to deal with a variety of situations;
- The athlete demonstrates ability to perform as a team player.

**Lifestyle**

- Promote involvement in multiple complimentary sports;
- Promote sport as a lifestyle commitment;
- Provide knowledge of the changes puberty will bring;
- Introduce discipline and structure;
- Promote an understanding of the relationship between effort and outcome;
- Continue to promote teamwork and personal interaction skills.

# *PHASE 2*

## Mental and Cognitive Development

***Basic Characteristics***

- Athletes develop a new form of egocentric thought. Much emphasis is placed on self-identity;
- Athletes 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.

## Emotional Development

***Basic Characteristics***

- Athletes are influenced significantly by their peers;
- Athletes can accept responsibility;
- Athletes 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 athletes 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.

## Mental Skills Development for Intermediate Stage

Athletes at this stage must be in an environment that encourages a passion for learning about their sport as well as how communication skills such as respect, honesty and integrity are applied in dealing with others while playing their sport. Athletes can learn about having healthy lifestyles and can be positive role models and set good examples through their actions.

One of the main focuses of this stage is the development of team work and positional role awareness and contributions (for example tasks per unit for defensive, midfield or forward positions) through small-sided games and competitive matches. For individual sports, teaching and observing individual racing tactics and including early stages of race tactical preparation should be introduced at this stage.

Athletes at this stage of development have the ability to:

- Set long term, short term and daily training goals, which are to be personally established and progressively monitored;
- 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);
- Begin to understand that they must be motivated, self-disciplined and dedicated to reach their full potential;
- Begin to develop a competitive spirit. They must learn to be positive, hard working and confident;
- Begin to maintain balance and focus while under varying amounts of pressure.

***Mental Skills Training Objectives:***

The mental skills training objectives at this stage of development are to have athletes:

- Feel as though it is okay to make mistakes. They cannot be afraid to try something for fear of failure;
- Be given opportunities to lead;

- Learn to become team athletes;
- Understand how confidence is developed to improve performance;
- Understand personal specific mental skill needs;
- Be able to set realistic, specific, process goals for the season.

***To-do list:***

- Complete a mental skills self-assessment;
- Introduce goal setting skills (short and medium term);
- Introduce skills of time management;
- Introduce athlete understanding of planning and Periodisation;
- Complete a performance plan for the season;
- Promote use of a training and performance diary/log;
- *Further* development of specific mental skills: tension control and technical cues, constructive self-talk, imagery and confident behavior;
- Introduce:
  - Basic pre-competition preparation and routine;
  - In-competition focus planning;
  - Performance monitoring (i.e., evaluating competitive performances);
- Continue to develop concentration;
- Continue to promote positive reinforcement;
- Teach patience and self-control as well as coping with winning and losing.

**Implications for the Coach**

***Environment***

- Create optimum learning environment, match skill and drill levels.
- Decision making on tactical and strategic solutions should be based upon the skill level of the athlete;
- The athletes need role models;
- The coach must provide strong supervision;
- The coach must not play favorites. Early maturers often become leaders and excel in physical performance. It is important to treat everyone as equals.
- The coaching emphasis is on learning and performing well as opposed to "just winning."

***Instruction***

- 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;

• The coach must provide strong direction.

***Communication/feedback***

• Positive reinforcement is imperative;
• The coach must have open communication with the athletes;
• Introduce simple coping strategies, concentration and mental imagery;
• The coach is usually more readily accepted than other adults and should endeavor to keep the lines of communication open.

**Performance Indicators for Psychological Skills**

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

**Lifestyle**

• Understand basic nutrition and hydration needs;
• Promote use of rest, recovery and regeneration techniques;
• Continue to promote teamwork and personal interaction skills;
• Promote positive communication;
• Promote discipline and personal responsibility;
• Promote respect for environment and equipment;
• Promote health awareness;

# ADVANCED STAGE

***15 – 18 years Males***
***16 – 18 years Females***

## *Key Considerations for the Advanced Stage*

- ✓ ENHANCE AND USE ALL PHYSICAL AND MENTAL CAPABILITIES TO PARTICIPATE IN COMPETITION
- ✓ SHIFT FOCUS IN TRAINING FROM PRIMARILY DEVELOPING PHYSICAL AND MENTAL SKILLS TO APPLYING SKILLS AND STRATEGIES IN COMPETITION
- ✓ UNDERSTANDING THE KEY ELEMENTS OF PREPARING FOR AND PARTICIPATING IN COMPETITION

## CHECKLIST FOR IMPLEMENTATION OF THE ADVANCED STAGE

### PARENTS, FAMILY

- Support adolescents in their endeavours to improve and compete
- Support adolescents who decide to be less competitive during or after this Stage and to transition to the Active For Life Stage if they choose that option.

### SCHOOL, CHILD-CAREGIVERS

- Ensure that Teacher/ Coaches are aware of Botswana LTAD (and other models)
- Coordinate with outside school sport organization(s) and coach(es) to ensure that appropriate Periodisation models are aligned (e.g. double and/or multiple peaks)
- Support decisions of participants to focus on 1 primary sport (if they choose that option)
- Teach and encourage participants how to prepare strategies and tactics for competition
- Teach and encourage

### SPORT ORGANIZATIONS

- Ensure that Coaches are well aware of Botswana LTAD (and other models)
- Provide year round high intensity training for desired event and position
- Ensure that training activities mirror necessary skills and skill combinations at intensities and durations required during competition
- Ensure that coaches are aware of safe nutrition practices (eating and hydration) and that they are aware of and sensitive to the potential of eating disorders, especially in female athletes

| | | |
|---|---|---|
| | participants to de-brief competition and build new strategies and tactics<br>- Encourage appropriate balance of training to competition (40% General Training : 60% Competition or direct competition related preparation)<br>- Ensure that coaches are aware of safe nutrition practices (eating and hydration) and that they are aware of and sensitive to the potential of eating disorders, especially in female athletes<br>- Encourage simulation or modeling of competition events in training and/or training games<br>- Support children who decide to be less competitive during or after this Stage and to transition to the Active For Life Stage | - Ensure that programs are Periodised with appropriate balance of training, recovery and competition (40% General Training : 60% Competition or direct competition related preparation<br>- Build Periodised plan and peaking periods to allow for multiple peaks if necessary according to the seasonal needs of your sport (and coordinated with Secondary School sport program<br>- Support decisions of participants to focus on 1 primary sport (if they choose that option)<br>- Ensure simulation or modeling of competition events in training and/or training games<br>- Support children who decide to be less competitive during or after this Stage and to transition to the Active For Life Stage |

## Specific Physical skill development for the Advanced stage

The primary focus for the Advanced Stage should be further developing sport specific skills (relevant to each sport).

Each specific sport should introduce their progressive sport specific skills as per the concepts and guidelines of this Stage as described above.

Sport specific skills and skill development outlines are not described in this Framework because they are the domain of each specific National Sporting Organization.

# MENTAL SKILLS AND IMPLICATIONS FOR THE ADVANCED STAGE

## 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***

- Athletes 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.

## Emotional Characteristics

***Basic Characteristics***

- Peer group influence is still a powerful force;
- Athletes 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 athletes must be aware that female athletes now face a problem of femininity versus sport development.
- Female athletes must be aware that male athletes now face a problem of relating performance to masculinity.

## Mental Skills Development for the Advanced Stage

Athletes at this stage begin to develop the skills necessary to be competitors. Athletes must reinforce and master the training principles of the previous stage as well as understand how personal health, environmental awareness, and recovery and regeneration influence performance and injury prevention. Integrated pre and post competition routines help to develop an athlete's ability to plan and assess competition, adapt to different competitive situations and to observe and adapt to opponents. This is the optimum time to introduce a

sport psychology professional. From a socio-cultural perspective athletes must also begin to master the effects of management of media, public speaking, balance of sport and academics. The development and utilization of organizational skills are critical at this stage.

Athletes at this level of development have the ability to:

- Utilize a highly specific goal setting plan on both a team and individual basis;
- Realize what their IPS (Ideal Performance State) is and how to achieve this;
- Begin to become very competitive and start to understand what this encompasses. Winning begins to become a goal but intensity and competitiveness is still the priority.
- Begin to understand that they can compete hard against other athletes while maintaining friendly relationships;
- Be able to accept constructive criticism to improve abilities;

***Mental Skills Training Objectives:***

The mental skills training objectives at this stage of development are to have athletes:

- Increase self-awareness of personal psychological performance factors in order to identify personal performance needs;
- Learn to self-evaluate psychological performance – for both training and competitive situations;
- Leverage the use of goal setting throughout the season;
- Increase athlete concentration, responsibility, discipline, accountability, goal setting, self-confidence, self-motivation, will to win and mental toughness.

***To-do list:***

- Perform an assessment of individual behavioral strengths, weaknesses and motivations as related to competitive performances (a formal meeting with a sport psychology professional is appropriate for this task at this stage);
- Identify potential in-competition distractions and create specific plans to manage each situation;
- Create specific plans to manage different environments e.g. heat/cold/rain/altitude where appropriate;
- Refine imagery skills (competition, different situations/problems, practicing the strategies);
- Refine skills for anxiety control and relaxation (breathing, Progressive Muscle Relaxation, Hypnosis);
- Refine focus and thought control – self talk/verbal cues (dealing with distractions and negative thoughts);
- Refine goal setting skills (short, mid and long term);
- Refine pre-competition preparation and in-competition game plans;
- Apply mental plans to practice sessions;

- Refine self-monitoring;
- Introduction to on-line performance monitoring for practice and competitive situations (if available).

**Implications for Coach**

***Environment***

- Athletes should be given the opportunity to develop through participation in appropriate leadership roles beyond identified "captain roles", but strong dedication and discipline must be maintained;
- Opportunities should be provided for athletes to develop and to apply effective mental management of imagery, focus control, attentional control, and activation arousal control;
- A competitive mentality should be fostered in practice and games.

***Instruction***

- Coaches should encourage the refinement of all technical and tactical skills;
- Decision-making should be developed further through technical, tactical development.
- Promote personal responsibility and involvement in decision-making
- Game appreciation and game analysis as well as the importance of being educated in the game can be fostered through watching/analyzing games on TV and National team games.

***Communication/feedback***

- Coaches should constantly provide feedback and help;
- Positive evaluations of performance and positive reinforcement are imperative;
- Coaches should encourage the development of self-control in highly demanding and pressure situations;
- From a female perspective, athletes will undergo physical changes. Coaches can provide information and mental strategies to help deal with these changes where appropriate.

**Performance Indicators of Psychological Skills**

- Athletes begin to demonstrate the application of developing personal values and mental training to enhance performance in both training and competitive activities;
- Athletes demonstrate the ability to apply the acquired mental management tools and skills to improve performance;
- Athletes demonstrate ability to understand the meanings of motivation, dedication and discipline;
- Athletes have the ability to set realistic short and long-term goals;

- Athletes demonstrate the ability to use independent thinking to problem solve;
- Athletes demonstrate the ability to compete hard, playing to win, but keep wins and losses in perspective;
- Athletes demonstrate the ability to apply mental toughness strategies to overcome pressure situations;
- Athletes demonstrate the ability to accept and apply constructive criticism to improve performance;
- Athletes demonstrate ability to accept roles.

**Lifestyle**

- Allow for and encourage individualization of ancillary supports;
- Plan career/long term sport options;
- Increased knowledge of hydration and nutrition;
- Refine injury prevention, rest and recovery strategies;
- Promote ongoing personal development;
- Focus on integration of sport, career and life goals;
- Address economic and independence issues.

# E LITE STAGE

## 18 years and older (Male and Female)

## *Key Considerations for the Elite Stage*

- ✓ MAXIMISE PHYSICAL AND MENTAL CAPABILITIES TO REACH THE PODIUM (aligned with strategic competition objectives)
- ✓ FOCUS OF TRAINING IS TO MAXIMIZE PERFORMANCE IN COMPETITION
- ✓ COMPETE SUCCESSFULLY AT NATIONAL AND INTERNATIONAL LEVELS IF POSSIBLE
- ✓ PREPARE PARTICIPANTS FOR LIFE AFTER ELITE COMPETITION AND TRANSITION TO ACTIVE FOR LIFE STAGE

## CHECKLIST FOR IMPLEMENTATION OF THE ELITE STAGE

### PARENTS, FAMILY

- Support adolescents in their endeavours to improve and compete
- Support adolescents who decide to be less competitive during or after this Stage and to transition to the Active For Life Stage

### TERTIARY INSTITUTIONS

- Support and assist athletes to balance school AND sport objectives
- Provide training and competition activities at a high level

### SPORT ORGANIZATIONS

- Ensure a high level of training and recovery to allow for optimal competition readiness and performance
- Ensure that Periodised plan(s) have appropriate levels of high intensity training and appropriate recovery sessions
- Ensure a correct balance between training and competition and direct competition related activities. (Recommended up to 25% : 75% ratio)
- Allow single and multiple peaks as necessary for the specific seasonal needs
- Teach and practice high level opponent analysis, strategy and tactical development and post-competition de-brief
- Support adolescents who decide to be less competitive during or after this Stage and to transition to the Active For Life Stage

### Specific Physical skill development for the Elite stage

The primary focus for the Elite Stage should be further developing enhanced sport specific skills (relevant to each sport).

Each specific sport should introduce their progressive sport specific skills as per the concepts and guidelines of this Stage as described above.

Sport specific skills and skill development outlines are not described in this Framework because they are the domain of each specific National Sporting Organization.

# MENTAL SKILLS AND IMPLICATIONS FOR THE ELITE STAGE

## Mental and Cognitive Development

***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.

## 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.

## Mental Skills Development at the Elite Stage

The Elite Stage is defined by the continual pursuit of performance excellence and the commitment and passion to play for multiple years in becoming a National and World-Class athlete.

Concentration and responsibility, leadership, discipline, accountability, competitive mentality must be increased as well as a refinement of the training principles from the previous stage. This requires the opportunity to practice a high degree of decision making, leadership and game analysis skills which helps athletes develop the ability to adjust game plans and adapt playing strategies to suit changing demands. Athletes should develop effective competition strategies, model all possible aspects of performance in training and learn how to leverage their strengths while ethically exploiting the weaknesses of opponents.

Athletes at this level of development have the ability to:

- Effectively use and apply the mental skills of imagery, focus control and activation/arousal control;
- Leverage effort and execution (process not outcome) as a means to competing to win;
- Establish a balanced and stable self concept;
- Utilize self-assessment strategies to provide themselves with information on training and competition patterns;
- Assume leadership roles.

***Mental Skills Training Objectives:***

The mental skills training objectives at this stage of development are to have athletes:

- Gain a comprehensive understanding of the critical factors that affect your ideal performance state;
- Have the ability to adjust emotions and focus to gain control over confidence and performance outcome(s);
- Demonstrate the ability to self-regulate and adjust focus when under pressure;
- Demonstrate the ability to perform successfully in stressful situations; become more focused and effective under pressure (that is, exhibit mental toughness);
- Demonstrate superior decision accuracy so that in-competition decisions are rarely flawed, and that errors are a consequence of conditions/situations beyond athlete control;

- Take personal responsibility for the continual development and implementation of yearly training plans and personal improvement plans.

***To-do list:***

- Consolidate well developed, refined and individualized mental skills and routines;
- Promote refocusing plans/coping strategies;
- Promote the will to win and drive for competition;
- Consolidate the ability to concentrate and refocus;
- Establish regular use of practice and game plans;
- Develop coach interaction plans where appropriate;
- Promote independent decision-making;
- Develop athlete's capacity to work in a team environment and evaluate advice from outside sources;
- Cultivate a total focus on sport performance when in competitive season;
- Use on-line performance monitoring for all competitions where available and appropriate to determine if improvements are occurring.

**Implications for the Coach**

***Environment***

- Optimal performance becomes the major objective, but still not at the cost of athlete development;
- Athletes must have ample opportunities for independent social interaction;
- Athletes must be able to compete under stressful and pressure situations that will occur during a game, therefore these situations must be duplicated or simulated in practice;
- Athletes must be able to demonstrate self-control in demanding, pressure situations, therefore the use and practice of relaxation and visualization techniques are highly recommended.

***Instruction***

- Principles of adult learning should be implemented;
- Athletes should be involved in decision-making and in the planning of team or group activities;
- Opportunities should be provided for athletes and coaches to strategize and exercise problem solving skills;
- Goal setting should be strongly emphasized to give definite direction and purpose to the athletes' overall development;
- Professional guidance should be made available to help athletes to make decisions about off-season and educational pursuits.

***Communication/feedback***

- The athletes need to be treated with respect, given direction and, provided with structure;
- The coaches should promote effective communication skills between athletes and coaches;
- It may still be difficult for some athletes to accept specific roles and these should be continuously communicated.

**Performance Indicators of Psychological Skills**

- Athletes 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;
- Athletes demonstrate the progressive understanding of the importance of establishing strong and positive personal values to enhance their personal development;
- Athletes demonstrate the understanding and importance of role acceptance;
- Athletes demonstrate an understanding of the importance of team building to enhance individual and team performance.

**Lifestyle**

- Increase knowledge on all areas related to personal well being;
- Include rest and relaxation, frequent breaks;
- Require well developed self-monitoring;
- Require a well developed and integrated support network/structure;
- Include a fully integrated sport, career and life plan;
- Adjusting to the lifestyle of a professional athlete:
    - ° Training and/or 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 athlete to some other aspect of the game; coach, referee, administrator or an active for life athlete;
- Continual lifelong involvement in the growth and development of their sport;
- Being a mentor to others (this can be introduced at any of the stages when done well).

# LIFE LONG PHYSICAL ACTIVITY STAGE

***No age restrictions. Participants can enter this Stage from any LTAD Stage and re-enter other Stages as they feel appropriate to their motivation and skill.***

## *Key Considerations for the Active for Life Stage*

- ✓ RECOGNITION THAT THIS IS A LIFE-LONG "STAGE" TO ENCOURAGE AND ENABLE ALL BATSWANA TO CONTINUE TO PARTICIPATE IN AND ENJOY SPORT AND/OR PHYSICAL ACTIVITY REGARDLESS OF WHETHER THEY HAVE EXCEPTIONAL SPORT SKILL OR WHETHER THEY CHOOSE TO DISCONTINUE HIGHLY COMPETITIVE SPORT IN THE ADVANCED OR ELITE LTAD STAGES.

- ✓ UNDERSTANDING THAT THERE IS INHERENT VALUE IN REMAINING PHYSICALLY ACTIVE THROUGHOUT YOUTH AND LATER ADULT YEARS OF LIFE

- ✓ ENCOURAGEMENT BY GOVERNMENT AND SPORTING ORGANIZATIONS TO REMAIN INVOLVED IN SPORT AS A COACH, OR OFFICIAL

- ✓ RECOGNITION AND UNDERSTANDING THAT THIS IS A PARALLEL OPTION (OR STAGE) WITH THE INTERMEDIATE, ADVANCED AND/OR ELITE STAGE AND NOT AN END STAGE THAT IS REACHED ONLY AFTER COMPLETION OF ALL OTHER STAGES OF LTAD. BATSWANA CAN ENTER THIS STAGE AT ANY POINT ALONG THE LIFE CONTINUUM AND EVEN RE-ENTER OTHER LTAD STAGES EITHER IN THE SAME SPORT OR IN NEW SPORTS.

- ✓ ENCOURAGEMENT TO TRY DIFFERENT SPORTS AND LIFESTYLE ACTIVITIES THAN THOSE ENCOUNTERED IN OTHER LTAD STAGES

## CHECKLIST FOR IMPLEMENTATION OF THE ACTIVE FOR LIFE STAGE

| PARENTS, FAMILY | SCHOOL, CHILD-CAREGIVERS | GOVERNMENT SPORT AGENCIES, BNOC, SPORT ORGANIZATIONS |
|---|---|---|
| □ Reinforcement from the earliest years that sport and | □ Education and reinforcement that participation in sport and or | □ Encourage and promote life-long physical activity and fitness as a |

physical activity is a family activity
- Participation in sport and lifestyle physical activities as a family
- Support of family members throughout each LTAD Stage and support of transition into (and out of ) Active for Life Stage

physical activity has other benefits and outcomes beyond serious competition and winning
- Recognition that some participants in sport and physical activity do not have innate high performance abilities and do not enjoy or profit from highly competitive situations
- Facilitation of participants to engage in non-competitive, lifestyle activities, by providing a range of options for students

valuable personal lifestyle choice
- Provide events and opportunities for all Batswana to remain in sport after Advanced and Elite Stages as non-competitive adult participants, coaches and/or officials
- (Sport Organizations) ensure that all LTAD Stages (but especially Basic Stage) are enjoyable and non-pressured so that participants learn critical basic skills and have fun
- (Government Agencies) ensure that Sporting organizations are encouraged to provide Active for Life related activities for all Batswana

**The key to long term retention in sport and sports clubs is not whether or not a person has innate high level physical or mental sport skills, but the fact that they have had a positive, fun and safe experience in sport.**

# LTAD STAGES FOR ATHLETES WITH DISABILITIES (AWD)

Coaches and athletes often ask whether Athletes With Disabilities (AWD) can be integrated into an LTAD system. Obviously there are some differences in and within AWD, but in terms of attitudes towards sport and physical activity and the general principles of development and training there is no reason that AWD should be treated significantly different from other athletes.

Coaches should be mindful of some physical and mobility differences with AWD however the same general considerations exist for AWD at each LTAD Stage in terms of physical progression and mental considerations. In other words, just as a coach would adapt their coaching strategy and methods for participants who have size or motor skill or ability differences with non-disabled participants, so must they adjust their strategies and methods for AWD. But this does not mean exclusion from the LTAD process.

The most important consideration for all Stages for AWD is accessibility and mobility. Coaches and sporting organizations should ensure that AWD are able to freely access all training facilities. This includes all training and competition areas including locker rooms, recovery areas, and strength training areas, and so on.

Considerations for AWD for the Botswana LTAD Stages in each stage are as follows.

## *Basic Stage*

There does not need to be special allowances for AWD. The primary focus of this stage is fun, enjoyment and allowing children to explore and develop their basic motor skill patterns, This should be no different for AWD, although obviously there will be some skills and movement patterns that AWD will not be able to do depending on their disability. AWD should be encouraged to stretch the scope and limits of their own movement and implement handling skills in the air, on the ground and in the water in the same manner as a non-disabled athlete.

## *Intermediate Stage*

### *Phase 1*

AWD should continue to develop their motor skills, continue to engage in unstructured play and learn the basic foundations of good training and recovery principles. – in the same manner as non-disabled athletes (but obviously necessarily the exact same skill level)
They should follow the same principles of training : competition ratios as laid out in the section on Intermediate Stage.

### *Phase 2*

AWD should be introduced to sport specific equipment that is used for their sport(s) and their disability.

## *Advanced Stage*

AWD should follow the same principles and guidelines of training, training: competition ratios, Periodisation and preparation for competition and review of competition as non-disabled athletes.

AWD should be introduced to International Paralympic Committee rules and guidelines for competition and classification procedures.

## *Elite Stage*

AWD should follow the same guidelines as non-disabled athletes in terms of preparing for high level competition with a focus towards optimal performance. AWD need to optimize specialized equipment necessary for their sport and disability.

## *Life-Long Physical Activity*

AWD are encouraged to maintain healthy lifestyles either through participation in physical activities for recreational purposes or as coaches and/or officials.

# IMPLEMENTATION OF AN EFFECTIVE LTAD SYSTEM

- ✓ STAKEHOLDER ROLES AND RESPONSIBILITIES
- ✓ MAKING IT HAPPEN
- ✓ MONITORING AND EVALUATING

If you have read this framework from the beginning you will have learned about the scientific principles behind a sound LTAD system, you will know the 4 key stages of the Botswana LTAD system and you will be aware of the key considerations and objectives of each stage.

Now you need to consider

- how to implement and deliver a practical LTAD model for your own sport, based on this Framework (if you are a sport leader in a Sport Association); or
- how to guide athlete development if you are a coach and/or parent.

This involves understanding roles and responsibilities, putting actual programs and guidelines in place (e.g. coach, teacher and parent education) and measuring effectiveness and monitoring outcomes of specific LTAD programs.

The key roles and responsibilities of major stakeholders are well covered in previous sections where “Key Considerations” and “Checklists for Implementation” for each stage are addressed. The checklists below represent the main responsibilities and activities, although you may think of some others unique to your sport or your position in the system.

Implementation of an LTAD system or pathway is a national responsibility of everyone in the sport system.

It is necessary for governing agencies such as BNSC, BNOC, and Department of Sport and Recreation to ensure that all sport associations and other stakeholders responsible for developing children and adolescents in sport in Botswana, have the knowledge, resources and capability to develop and implement a safe and effective LTAD plan.

Following that, it is necessary for National Sport Associations, Primary and Secondary Schools sport leaders and coaches, sport clubs, private coaches and other sport leaders to either develop plans to implement an LTAD or embrace and comply with LTAD guidelines in the sports and activities in which you are involved.

The following section outlines “The Next Steps” for you (as a sports organization, or as an individual within a sports organization) to plan and implement your LTAD Program. These are guidelines – there may be some specific activities or actions that individuals need to take; you can add those to the following and adapt to suit your circumstances as necessary.

## THE NEXT STEPS FOR….. *National Governing Agencies*

It is critical that leadership and direction comes from the very top of the Botswana sport system. The key agencies in the Botswana sport system (the Botswana National Sport Council, Botswana National Olympic Committee, the Department of Sport and Recreation) and the University of Botswana have collaborated to produce this manual.

As leaders of sport in Botswana they each must continue to collaborate to build a system that values and practices the key elements of LTAD.

To facilitate implementation of the Botswana National LTAD Framework the following checklist should be used as a guide:

- Ensure that the Botswana National LTAD Framework document is distributed to all key sport delivery agencies (National Sport Associations, Clubs, Primary and Secondary Schools and so on), as well as being posted on the respective websites;
- Coordinate with Department of Education to ensure that all Physical Education teachers, Teacher/Coaches, BISA and BOPSSA are aware of the details of the Botswana National LTAD Framework;
- Coordinate with Teacher Training Agencies and other Institutes of Tertiary Education to ensure that the principles of LTAD and the specifics of the Botswana LTAD Framework are taught in teacher and sport leader training;
- Ensure that staff at BNSC, BNOC and DSR are familiar with the principles and specifics of the Botswana LTAD Framework;
- Ensure that LTAD is appropriately developed and practiced in each sport by building it into funding and resource support policies and requirements;
- Ensure that BNSC staff are tasked with monitoring compliance with and implementation of the Botswana LTAD Framework by building specific tasks into Sport Affiliates job descriptions;
- Ensure that LTAD principles are monitored and measured by BNSC, BNOC and DSR through collection of data on participant numbers in different stages and demonstration of practices and activities in each stage;
- Ensure that the requirement for designing and implementing a LTAD program for each sport is built into National Sport Act(s) and National Sport policies.

## THE NEXT STEPS FOR….. *National Sport Associations*

National Sport Associations have the responsibility to lead and develop their sport at all levels within Botswana. They are the key stakeholder responsible for developing guidelines for participation in their sport, creating competition activities, developing coaches and officials and ensuring that their sport grows and operates ethically and effectively within Botswana.

As such, it is the responsibility of the leadership of each NSA to ensure that sport specific guidelines are developed for clubs, coaches, officials, volunteers and participants to develop a LTAD system within their sport. It is also the responsibility of the sporting organizations to monitor compliance of the LTAD system within the clubs and teams that compete under their governance.

To facilitate implementation of the Botswana National LTAD Framework the following checklist should be used as a guide:

- National Sporting Associations (NSAs) should adopt the concept and practice of effective and safe LTAD as a core policy and as a core value of their organization;
- NSAs, through their LTAD Committee (see below) should create a "LTAD Vision of the Future" to define what their sport will look like in terms of the LTAD structure in 2, 5, and 10 years. This is best reviewed and revised at least every 5 years;
- Ensure that all staff, coaches, officials and other administrators or sport leaders under the control of the NSA are aware of and practice the principles of LTAD;
- Ensure that LTAD principles and policies are included in coach education materials;
- Ensure that competition structures and training guidelines are compliant with principles and practices of LTAD as described in this Framework document;
- Establish an ***LTAD Committee*** to examine the practices of your sport and to build policies and practices that are compliant with this Botswana National LTAD Framework. This could include (but not be limited to) the following;
    - Create sport specific training, competition and performance guidelines for each LTAD stage so that parents, athletes and coaches are aware of the minimum and maximum standards, and the expectations for each stage;
    - Establish Codes of Conduct for Coaches and Clubs to follow for management of athlete development in line with principles and practices of LTAD;
    - Ensure that rules of competition (and modified rules if necessary) are structured to ensure that players are given optimal development opportunities in early Stages and optimum competition development

opportunities in later stages (e.g. substitution rules, position rules etc);

- Ensure that your sport's talent selection policies and elite athlete development programs are compliant with the guidelines of the Botswana National LTAD Framework (particularly as it relates to age of first talented athlete squads, national championships and all star team selections);

- Monitor the number and ages of participants/members of your NSO and cross-reference with club and competition rosters;
- Coordinate with Primary and Secondary School sport associations and teams to ensure that their programs are aligned with your desired competition structure, and they are aware of your LTAD programs.

## THE NEXT STEPS FOR….. *Parents and Families*

Parents and families can play a significant role in the development of athletes and sporting talent and transition through the different LTAD stages through early involvement in sport and physical activity, helping family members make wise decisions and support of family members in their sport and physical activity related decisions. Parents (and other family members) also play a significant role in encouraging a love of sport and physical activity and increasing the likelihood of family members participating in lifelong physical activity.

To facilitate implementation of the Botswana National LTAD Framework the following checklist should be used as a guide:

- Encourage participation in, and the enjoyment of sport and/or physical activity in family members from as young an age as possible;
- Encourage free movement and basic physical literacy skills as often and as much as possible;
- Encourage children to participate in structured sport in the Intermediate Stage of LTAD;
- Encourage children to try multiple sports in the Basic and Intermediate Stages and not begin to specialize until the Advanced Stage (with the exception of early specialization sports);
- Ask questions and scrutinize team and club and NSA activities to ensure that they are adhering to LTAD principles and practices;
- Ask to see NSA and/or club LTAD policy and plans;

- Support family members who choose to participate in the Advanced and Elite LTAD Stages or who choose to enter the Active For Life Stage (and/or re-enter Advanced and/or Elite Stage);
- Be an active partner with other family members in the Active For Life Stage by choosing healthy lifestyle physical activities and healthy eating and living behaviours.

## THE NEXT STEPS FOR….. *Primary and Secondary Schools*

Children and adolescents spend a considerable amount of their daily life at school between the ages of 5 and 18 years. In Botswana there is a well developed school sport structure so it is clear that early performance behaviours are often learned in schools rather than in outside school clubs and/or teams. It is critical therefore that Primary and Secondary Schools and their respective sport management associations such as BOPSSA and BISA are compliant with and support the principles and policies of the Botswana National LTAD Framework.

To facilitate implementation of the Botswana National LTAD Framework the following checklist should be used as a guide:

- Department of Education should ensure that Teachers and Teacher/Coaches are aware of and fluent in principles and practices of the Botswana National LTAD Framework;
- Department of Education should ensure that school Physical Education curricula is consistent with development of “Physical Literacy” components of the Botswana LTAD Framework;
- Department of Education and individual schools should ensure that school sport competition schedules are consistent with the national and long term objectives of National Sport Organizations;
- Ensure that Teacher/Coaches are compliant with proper Training : Competition Ratios, Periodisation and other components of each LTAD Stage as outlined in this document, in terms of alignment and combination with outside school sport commitments.

## THE NEXT STEPS FOR….. *Tertiary Institutes of Education*

Tertiary Institutes of Education such as the University of Botswana, other Universities, Colleges and Teacher Training Institutes who are responsible for the development of Teachers (and potential Coaches) and who may conduct research into Sport and Physical practices and

outcomes of Batswana play an important role in the sport system and the development and implementation of the Botswana LTAD system.

To facilitate implementation of the Botswana National LTAD Framework the following checklist should be used as a guide:

- Ensure that curricula and course content for future teachers, coaches and Sport Sciences and Sports Medicine support staff includes the details, concepts and practices of the Botswana National LTAD Framework;
- Conduct and publish research into sport and physical activity programs and outcomes;
- Collect accurate and up to date growth and development data on Batswana children and adolescents to contribute to the continued refinement of the Botswana National LTAD Framework.

# MONITORING AND CONTINUOUS IMPROVEMENT OF THE LTAD PROGRAMS

If the guidelines, recommendations and checklists outlined in this document are followed, NSAs will be able to build and deliver a sound LTAD Program for their members. However, just as it is important to build and deliver a program it is also critical to manage and monitor the effectiveness of the program so that it continues to add value to the organization and meets the needs or your members.

Monitoring should be done at the National level (primarily by BNSC and DSR) and at the sport specific level by the NSA.

In order to effectively monitor programs it is critical to

- identify and define parameters that are critical to success of the program;
- collect accurate and timely data about critical components;
- conduct formal evaluation and de-briefing sessions to review the data;
- act on and re-plan elements of the program that need to be modified.

National monitoring should include elements such as:

- Number of NSAs who have developed a LTAD program using these National guidelines, but customized to their specific NSA;
- Number of NSAs who have included LTAD relevant course material in Coach Education programs;
- Number of NSAs who have provided coaches in their system with a copy of this Manual;
- Number of NSAs who have created education material (posters, handouts, booklets, DVDs etc) for key stakeholders in their sport such as coaches, parents, Schools/Teachers, athletes;
- Individual NSA adherence to appropriate competition structure;
- Number of NSAs who track members by age, LTAD Stage and so on
- Number of NSAs who have developed specific skill, training standards and competition limits for each LTAD (and that are consistent with National LTAD guidelines);
- Number of NSAs who have a specific LTAD Committee – that meets and acts regularly.

National Sport Association monitoring should include elements such as:

- Implementation and operation of LTAD Committee (number of meetings, decisions etc);
- Tracking number of members registered in each age group and LTAD Stage;
- Entry and exit (drop out) numbers (by registration) into and out of each LTAD Stage each year;

- Number of coaches who are trained in LTAD principles;
- Number and type of injury in individuals in each LTAD Stage;
- Success of Talent Identification programs (in terms of athletes recruited or identified at each LTAD Stage and retention rates);
- Adherence to national training and competition benchmarks and minimum/maximum guidelines.

# SUMMARY

This document contains the key information and guidelines to create and maintain a National Long Term Athlete Development Program for Botswana. ***It is meant to be a "Framework" around which National Governing Agencies and National Sport Associations can build their own specific programs (it is NOT meant to lay out the specific actions and operations for each NSA to undertake to build their own unique program – each NSA should build their own sport specific LTAD program based on the guidelines in this Framework)***

Every program will be slightly different based on the unique characteristics of that sport and the members who choose to participate in that sport. This document is not meant to be the definitive document of all information and components of LTAD, but it does provide the essential framework and information necessary to allow administrators, teachers and coaches to build their own program.

The Botswana National LTAD is based on known scientific principles and practices and is modeled after other successful LTAD programs currently operating in other countries.

The LTAD Stages are:

| | | |
|---|---|---|
| ***Basic*** | **0-9 years Males;** | **0 – 8 years Females** |
| ***Intermediate*** | **10 – 16 years Males;** | **9 – 15 years Females** |
| ***Advanced*** | **16 – 18 years Males** | **15 – 18 years Females** |
| ***Elite*** | **18 + years Males** | **18 + years Females** |

**(With the concept of Active For Life running across all Stages from infancy to old age**)

# GLOSSARY AND DEFINITION OF TERMS

**Adolescence** is the period when most bodily systems become adult both structurally and functionally. Adolescence cannot be exactly defined in terms of when it begins and ends, however it is generally accepted that it starts with a "growth spurt" at which the previous rate of growth begins to accelerate. Following the initial "growth spurt", the rate of statural growth reaches a peak, begins a slower or decelerative phase, and finally terminates with the attainment of final adult height. Functionally, adolescence can also be viewed in terms of sexual maturation, during which changes in the production and release of various hormones by the neuroendocrine system lead to the attainment of mature reproductive function.

**Childhood usually** covers the ages between infancy (after the 1st birthday) to the beginning of Adolescence. During this time there is relatively steady rate of growth and maturation but a rapid progress in neuromuscular and motor development. Childhood can also be divided into ***early*** childhood, which includes preschool children aged 1 to 5 years, and ***late*** childhood, which includes elementary school-age children, aged 6 through to the onset of adolescence. Because of the changing neuromuscular and motor development patters it is in ideal time to introduce and develop basic physical skills (Physical Literacy)

**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. The rate of growth and maturation is achieved by the interaction of genetic inheritance, hormones, nutrients, and the physical and psychosocial environments to which an individual is exposed in their lives. This complex interaction regulates a person's growth, neuromuscular development, sexual development, mental and emotional development and general physical growth from Childhood to Adulthood.

**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. Both factors of growth and maturation do not progress at the same rate, or follow the same chronological time scales in children and adolescents, thus resulting in different "rates of development"

**Growth** refers to the continuous and measurable changes in humans in body size and shape. It can be measured by components such as height, weight, lean body mass and percentage of body fat

**Maturation** refers to qualitative changes in both structural and functional in nature systems of the body as a person continues to develop towards adolescence and adulthood

**Optimal Periods of development** refers to a point or points in the development of a specific behaviour or skill when experience, exposure 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 (See Optimal Windows of Trainability on Page 25)

**Peak Height Velocity (PHV)** is the maximum rate of growth in stature during the adolescent growth spurt. The age at which PHV is reached (called Age at PHV) is an important measurement point in a LTAD Program because it serves as a basis for readiness for different types of training (See Optimal Windows of Trainability on Page 25).

**Peak Strength Velocity (PSV)** is the maximum rate of increase in strength during the adolescent growth spurt. The age of maximum increase in strength is called the age at PSV.

**Peak Weight Velocity (PWV)** is the maximum rate of increase in weight during growth spurt. The age of maximum increase in weight is called the age at PWV.

**Physical literacy** refers to the mastering of basic foundational motor skills and basic sport skills. These skills (for example running, jumping, throwing, hitting and so on) are the foundations for many more advanced skills and should be developed through free and structured play during infancy and early childhood years (and typically during the Basic LTAD Stage). See page 16 for a more complete list of basic Physical Literacy skills

**Physical & Mental Readiness** refers to the child's level of different growth, maturity, and development factors that enables him/her to be suitable for the various levels of training and competition. Optimal Windows of Trainability are defined and measured but due to human variability there is some variability in exactly children and adolescents are Physically and/or Mentally ready for any specific LTAD stage.

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

**Skeletal Age** refers to the maturity of the skeleton determined by the degree of ossification of the bone structure, and is not always aligned with Chronological Age. It is a standardized 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.

**Trainability** refers to the concept that certain elements of fitness and physical and mental responses occur at different rates in different individuals of the same chronological or developmental age. In addition there are optimal time periods where some types of training

will have a faster or great training response than at other times. Malina and Bouchard (1991) defined trainability as “the responsiveness of developing individuals at different stages of growth and maturation to the training stimulus.”

**Training Effect (or Adaptation) refers** to a response, or multiple responses to stresses (bouts of exercise) that cause various anatomical, physical and/or mental changes in the body. The level or degree, and rate of Training Effect are dependent upon the level of stimulus, the quality of recovery and genetic 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 changes to muscular endurance, strength, mental qualities.

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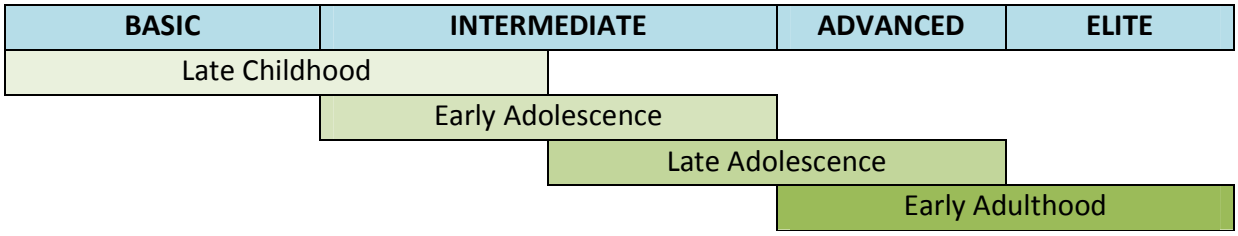
Wellness to World Cup Long Term Player Development, Canadian Soccer Association, 2009.

# Appendix 1

***The information in this Appendix has been extracted in its entirety from the Canadian Sport For Life Long Term Athlete Development Resource Paper v2***

## Physical, Mental and Cognitive, and Emotional Development Characteristics

The following ***Moving Scales*** provide a guideline on how to utilize the Physical, Mental, Cognitive and Emotional Development Characteristics tables, pointing out the overlaps at the various stages of the Botswana LTAD Stages.




| Late Childhood - Physical Development | | |
|---|---|---|
| **Basic characteristics** | **General impact on performance** | **Implications for the coach** |
| Heart size is increasing in relation to rest of body. | Endurance capacity is more than adequate to meet the demands of most activities. | Understand that the child has the capacity to keep going. |
| Anaerobic system is not developed. | There is a limited ability to work anaerobically | Plan short duration anaerobic activities. The ability to hold breath must be practiced and built up gradually. |
| A child's metabolism is less economical than an adult's. | Children use more oxygen whether it's expressed in absolute values or prorated for body weight. | Do not expect younger children to keep up with older children. |
| Large muscle groups are more developed than smaller ones. | The child is skilful in movement requiring the use of the large muscle groups. | Emphasize the development of general motor skills involving the large muscle groups. Then gradually introduce more precise, coordinated movements requiring the interaction of smaller muscle groups. |
| Children have a shorter tolerance time for exercise in extreme temperatures. | Children may show symptoms of overheating or hypothermia more | To acclimatize children will take longer so longer warm-ups may be |

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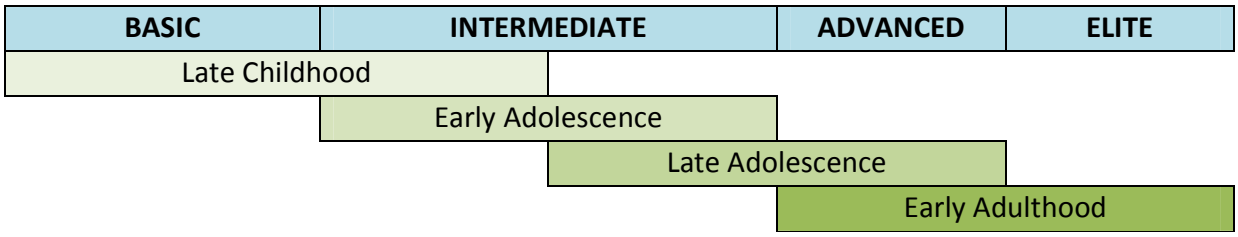
| | quickly. | required. Watch closely for signs of distress caused by extremes of temperature. |
| Children subjectively feel able to be active in the heat before physiological adaptation has occurred. | | Postpone or restrict exercise in heat or humidity and ensure that plenty of fluids are ingested. Thirst is not a good indicator of fluid need. |
| Motor patterns become more refined and the balance mechanism in the inner ear gradually matures. | Great improvement in agility, balance, co-ordination, and flexibility occurs towards the end of the stage. | Emphasize co-ordination and kinaesthetic sense when doing activities. Balance in the water using buoyancy aids is one way to develop these abilities. |
| Strength develops by the improvement in the neural pathways | There is apparent improvement in strength not brought about by the neuro-mascular adaptations of muscle fibres. | Plan coordination activities |




| Late Childhood - Mental and Cognitive Development | | |
|---|---|---|
| **Basic characteristics** | **General impact on performance** | **Implications for the coach** |
| The attention span gradually increases. | Children cannot listen or stay still for long periods | Provide short and precise instructions. Devise strategies to ensure children are listening. Children learn well by imitating and practicing correctly modeled movements. |
| Children are enthusiastic and often impatient. | Children want to move and not listen. | Do not bombard children with technical information. Give only sufficient detail for the activity to be undertaken. Keep it fun. |
| Children have very limited reasoning ability. | Children love to be led. | Direct the training and give it a tight focus with activities that are fun and well planned. Introduce imaginative ways of achieving performance goals |
| Children enjoy the repetition of activities and improve through experience. | Skill learning must be directed; children do not learn correctly just by trial and error. | Provide correct demonstrations of the basic sport skills. Personal demonstrations must be accurate |
| Children establish their preferred | Learning is through verbal, visual, | Use a variety of learning styles to |

| | | |
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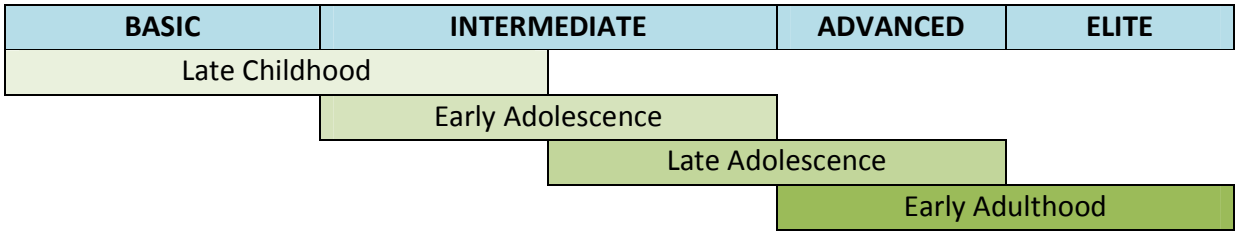
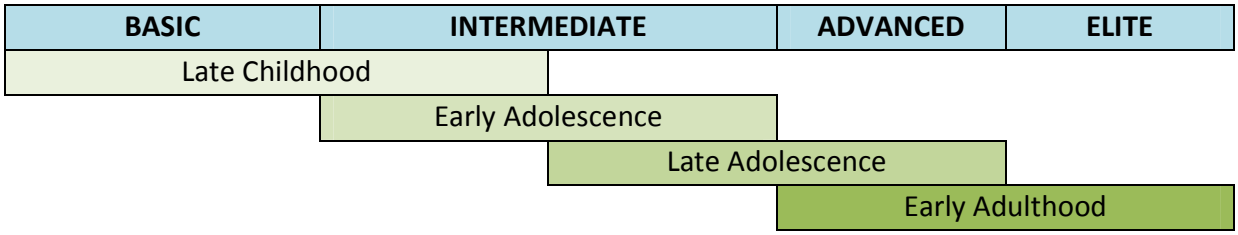
| learning style. | or manual means. Most children are doers! | suit individual needs. |
| Imagination is blossoming. | Creativity should be encouraged. | Allow the children to play and experiment. Use their ideas to create exciting sessions. Structure to encourage individuality and creativity. Sport provides an excellent vehicle for expression. |
| Language skills may be limited but are improving. | Children can't make corrections to their performance unless they understand what is being asked of them. | Use terminology that can be easily understood. Gradually introduce technical terminology. Children love long words. |

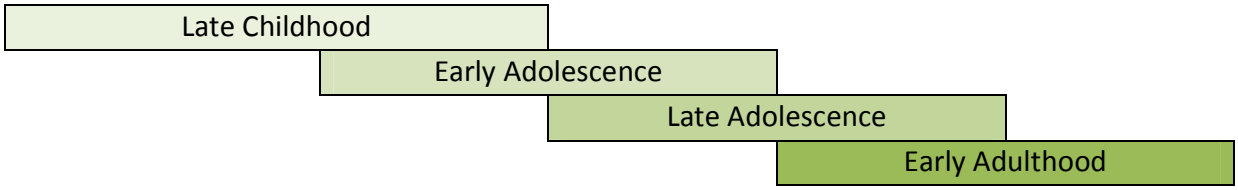



| Late Childhood - Emotional Development | | |
|---|---|---|
| **Basic characteristics** | **General impact on performance** | **Implications for the coach** |
| Children like to be the centre of attention. | | Develop this characteristic. Plan activities that guarantee success. Always move from simple to more complex when teaching a skill movement. Allow children to show their skills. |
| Children are developing their self concept. | Children tend to evaluate their performance as a whole and in terms that may be black and white. (e.g. I was brilliant, or, I was useless.) | Provide positive reinforcement to build self- esteem. Children are likely to perform the actions again if they are successful and feel good about it. Build on success. |
| Children feel secure with a routine and structure to training. | Introduce change sensitively and gradually. | Build a structure that is progressive but maintains continuity. |
| Children feel secure when coaching is constant | Children like things to be fair. | Set and maintain high levels of expectancy, but be consistent with each child. Do not let mood swings or personal situations change coaching behaviours. |

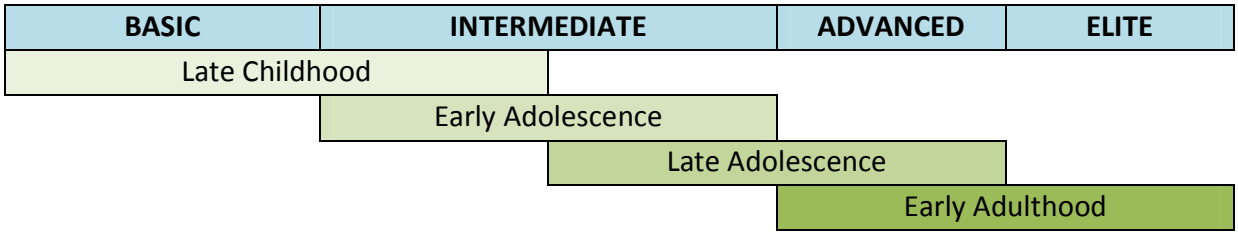



| Early Adolescence - Physical Development | | |
|---|---|---|
| **Basic characteristics** | **General impact on performance** | **Implications for the coach** |
| Significant proportional changes occur in bone, muscle, and fat tissue. | Athletes may temporarily lose some of their kinaesthetic awareness, their ability to 'know where they are'. | Because athletes will need to constantly change their positions, monitor carefully to ensure appropriate adaptations are being made. |
| Different parts of the body grow at different rates. Arm and leg length increases before the trunk. | Athletes may appear gangly and lose control of their extremities. | Make athletes aware of the effect of their changing body shape. Skills already refined may need to be re-learned. |
| Decreases in flexibility result directly from growth. | Movement may become restricted. | Emphasizes low stretching exercises. |
| Increases in growth and decreases in flexibility make adolescents prone to injury from acute impact. | Injury can result from exercise of an acute nature such as forced elongation of muscles during kicking and jumping or overuse. | Vary land-based activities and activities to avoid overuse. |
| Girls begin their growth spurt between 10 and 14 years and grow at very different rates. | Athletes are very different sizes at the same age. | Be aware that age-related groupings may not be appropriate. |
| There is a significant increase in the production of red blood cells. | The oxygen transportation system is improved. | Introduce structured aerobic training to make the most of these changes. Only short duration anaerobic training is recommended. |
| The central nervous system is almost fully developed. | Agility, balance, and co-ordination are fully trainable. | Use this period for maximum improvement in skill development. |
| Abstract thinking becomes firmly established. | Adolescents should be part of decision making processes and be more responsible for their decisions. | Base decision making for strategies on skill level. |
| A new form of egocentric thought develops. | The result may be a strong fear of failure. | Plan for success. Introduce coping strategies, including mental imagery. |
| Young people are eager to perfect their skills. | Structure successful skill learning based on individual needs. | Build on success. Be aware that athletes develop at very different rates and although early developers make early progress, include all athletes. Be aware that late developers may have greater potential. |

BASIC INTERMEDIATE ADVANCED ELITE

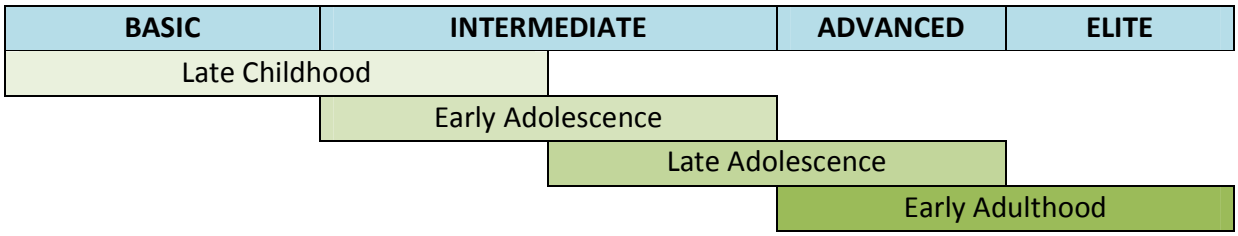



| Early Adolescence - Emotional Development | | |
|---|---|---|
| **Basic characteristics** | **General impact on performance** | **Implications for the coach** |
| Physical, mental, and emotional maturity may not develop at the same time | Athletes who look mature may not act it. Confusion or anxiety may arise. | Develop communication skills and understanding. |
| Tensions may arise between adults and adolescents. | Adolescents need help to cope with their physical and emotional changes. | Ensure two-way communication channels are always open. Allow athletes input into the decision making. |
| Hormonal activity increases. | Athletes may experience mood swings and behaviour may change. | Communicate and accept changes, but don't let hormonal changes be an excuse for negative behaviour. |
| Social interaction between males and females becomes important. | Athletes want to form friendships and it is important to allow time for them to develop positive relationships. | Try to organize social events that allow social interaction. |

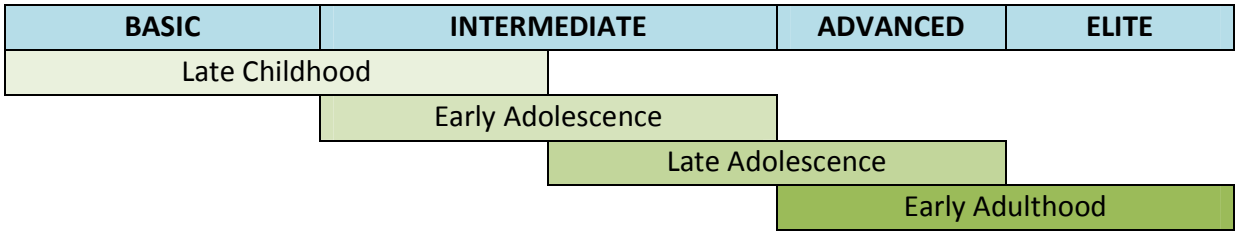



| Late Adolescence - Physical Development | | |
|---|---|---|
| **Basic characteristics** | **General impact on performance** | **Implications for the coach** |
| Post-menarche height begins to stabilize. Increase in height is about 5%. Stabilization of muscular system also occurs. | Muscles have grown to mature size, but increases in muscular strength continue into the 20s. | Maximize strength training to bring about overall improvement. Optimize neuromuscular training. |
| Skeletal maturation continues. | Connective tissue is strengthening. | Continue progressive overloading in training. |
| By 17, girls have generally reached adult proportions. | Girls proportionately gain more weight during this period. | Optimize aerobic training. Be aware of how to deal with weight gains. Teach athletes how to compete in varied circumstances. |
| Rate of improvement in motor ability declines | Rate of improvement in skill development declines. | Be aware that the rate of improvement in motor ability will be slower, but improvement will still be made. |

| Late Adolescence - Mental and Cognitive Development | | |
|---|---|---|
| **Basic characteristics** | **General consequences for performance capabilities and limitations** | **Implications for the coach** |
| Generally by 16, the brain has reached adult size, but continues to develop neurologically. | Athletes can understand the technical requirements of their sport. | Make sure athletes understand why they are doing certain things |
| Critical thinking becomes more established. | Athletes can make decisions about their training pathway. | Allow athletes input and reduce the amount of feedback and make athletes think for themselves. Develop awareness of performance by increasing kinaesthetic knowledge. |
| There should be complete understanding and acceptance of the need for rules, regulations, and structures. | Rules are seen in simplistic terms and must be clear and well defined. | Always be seen to be fair because adolescents have a strong sense of fairness in making decisions. Make athletes part of the decision-making process. |




| Late Adolescence - Emotional Development | | |
|---|---|---|
| **Basic characteristics** | **General impact on performance** | **Implications for the coach** |
| Major decisions about examinations, universities, and employment work have to be made. | There are 'pulls' on time and energy. | Build in prophylactic breaks. Be aware of external pressures. Seek professional guidance to ensure the correct career and educational pathway. |
| Peer group pressure leads to conflicting loyalties. | An athlete may give up sport because of peer pressure and the need to be seen as one of the gang. | Be sensitive in goal setting to ensure that common goals are established and met. |
| Self-actualization and self-expression are important. | | Treat athletes as adults. Share goals and work co-operatively towards them. Maintain a coach-led structure. |
| Interactions with friends of both sexes continue to be a strong priority. | | Allow time to establish independent social interaction. |




| Early Adulthood - Physical Development | | |
|---|---|---|
| **Basic characteristics** | **General impact on performance** | **Implications for the coach** |
| Physiologically, the body reaches maturity during this stage. | All physiological systems are fully trainable. | Ensure that physical training programs employ the most advanced techniques and sport science information to facilitate maximum adaptation and minimize injuries. |
| | | Ensure that all muscle groups and body alignments are well-balanced, complemented with optimum flexibility ranges. |
| | | Use state-of-the-art testing and monitoring programs. |
| | | Carefully monitor overtraining and overstress. |
| Final skeletal maturation in females occurs at about 19-20 years and in males about 3 years later. | | Organize regular medical monitoring Schedule additional blood tests for females in case of anemia. |

| Early Adulthood - Mental and Cognitive Development | | |
|---|---|---|
| **Basic characteristics** | **General impact on performance** | **Implications for the coach** |
| Neurologically, the brain matures about 19-20 years of age. | Athletes are capable of self-analyzing and correcting and refining skills. Athletes can analyze and conceptualize all facets of their sport. | Establish winning as the major objective. |
| | Well-developed information processing skills improve the athlete's ability to visualize verbal instructions. | Implement principles of adult learning. |
| There is a complete understanding and | The young adult must perceive | Involve athletes in decision |

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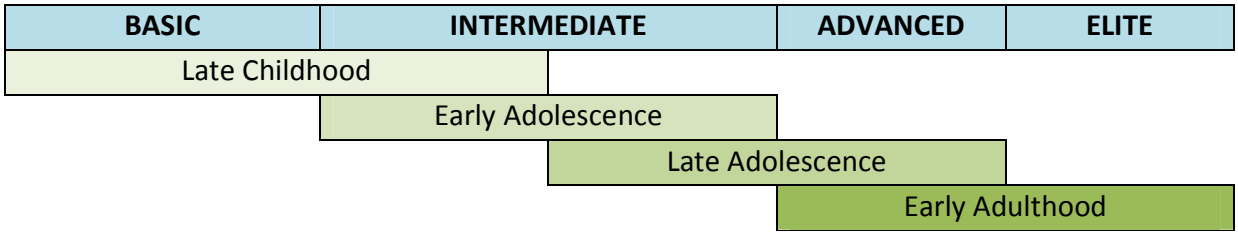
|---|---|---|
| acceptance of the need for rules, regulations, and structure. | the rules and structure as being clearly defined and fair. | making and planning team or group activities. |




| Early Adulthood - Emotional development | | |
|---|---|---|
| **Basic characteristics** | **General consequences for performance capabilities and limitations** | **Implications for the coach** |
| There is a need to be self-directed and independent. | Athletes are ready to assume responsibility and accept the consequences of their actions. | Emphasize goal setting to give definite direction and purpose to the athlete's overall program. |
| Self-actualization and self-expression are important. | | Treat athletes as adults and with respect. Remember that the coach's direction and structure remain important. |
| Major decisions on career, education, and lifestyle are priority at some point in this stage. | Major changes in interests, hobbies, and physical activities occur. | Make professional guidance available, considering off-season and educational pursuits. |
| Interactions with the opposite sex continue to be a strong priority with lasting relationships developing. | | Provide athletes with ample opportunities for independent social interaction. |

# Appendix 2

## Roles and Responsibilities of Stakeholders in the Botswana national sport system in relation to the LTAD process

| CORE BOTSWANA LTAD STAGES | | | | |
|---|---|---|---|---|
| BASIC<br>0-9 yrs Male<br>0-8 Females | INTERMEDIATE<br>10-16 yrs Males<br>9-15 Females | ADVANCED<br>15-18 yrs Males<br>16-18 yrs Females | ELITE<br>18 + years Male and female | LIFELONG PHYSICAL ACTIVITY<br>No age restriction |

**Parent/s Family**

Provide active play and physical activity opportunities for infants and children. Encourage and support healthy lifestyle and involvement in sport and physical activity from Basic to Elite Stages and support lifelong physical activity and healthy lifestyle.

**Sport Clubs**

Develop complete club structure to support sport participants at all stages of the Botswana LTAD pathway. Support and encourage appropriate training and competition guidelines. Develop coaches to understand and support LTAD principles.

**Schools, BOPSSA,**

**BISA**

Primary School Secondary School

Support of LTAD principles in Training and Competition structure of School sports, encourage teachers to obtain NSA specific Coach Education and adopt and support principles of Botswana LTAD. Make Schools more available during non-school hours for Community Sport and Free Play Programs. Align competition structure with appropriate LTAD Competition principles and National Sport Association programs. Allow flexibility in Secondary school sport programs for focused programs for sport specific talented athletes.

| CORE BOTSWANA LTAD STAGES | | | |
|---|---|---|---|
| INTERMEDIATE<br>10-16 yrs Males<br>9-15 Females | ADVANCED<br>15-18 yrs Males<br>16-18 yrs Females | ELITE<br>18 + years Male and female | ACTIVE FOR LIFE<br>No age restriction |

**Ministry of Education**

Ensure that School coaches, BOPSSA and BISA embrace and implement the concepts and principles of the Botswana LTAD into their training, competition and teacher/coach education program. Introduce and develop School "Centers of Excellence" for targeted sports and athletes.

**Tertiary Institutions of Higher Learning**

Educate and develop teachers, coaches, sport scientists, medical support staff and sport leaders to understand the principles of LTAD. Conduct research into effects of LTAD, impact of LTAD and potential enhancements to the Botswana LTAD Framework

**Disciplined Forces/Armed Forces**

Provide clubs and programs for the various sports and competitions in Botswana. Provide employment and career opportunities for potential elite/national athletes

**National Sport Organizations**

Provide a structure for the complete development of their respective sports within the Framework of the principles, concepts of best practice LTAD. Specifically embracing and implementing appropriate LTAD programs for development of athletes, coaches, officials, facilities, rules and regulations, Codes of Conduct and competition.

| CORE BOTSWANA LTAD STAGES | | | |
|---|---|---|---|
| INTERMEDIATE<br>10-16 yrs Males<br>9-15 Females | ADVANCED<br>15-18 yrs Males<br>16-18 yrs Females | ELITE<br>18 + years Male and female | LIFELONG PHYSICAL ACTIVITY<br>No age restriction |

**BNOC**

Support development of internationally competitive athletes through programs and resources in the spirit of LTAD principles and concepts. Strive to be a cooperative and supportive member of the core sport leadership group within Botswana to manage and monitor national LTAD programs.

**BNSC**

Continue to support and develop principles and implementation of LTAD programs in all Botswana sport programs. Allocate specific resources (staff and targeted funding) to ensure that National Sport Associations (and other sport leaders) have the means and information to implement an effective LTAD Program. Continue to be an effective and cooperative member of the core sport leadership group in Botswana.

**Ministry of Local Government**

Be an active contributor to the National Sports Policy and develop long term sport facility development plans to enable effective development of LTAD at all stages from Basic to Elite and Lifelong.

**Ministry of Youth, Sport and Culture/Department of Sport and Recreation**

Continue the role of key driver, coordinator, and integrator of Sport policy in Botswana. Ensure that the core sport leadership group continues to collaborate and cooperate on LTAD issues (and other issues of national sport policy and delivery). Ensure collaboration and cooperation of other Government agencies in the implementation and delivery of LATD.

# ACKNOWLEDGEMENTS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  Special thanks to Dr Kilty for her significant contribution to the content in this Framework concerning the mental cognitive and emotional development and their relationships to LTAD stages.

- **Botswana LTAD Working Group**

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- **Sport Canada/Canadian Sport Centres**

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- The various Canadian Sport National Governing Bodies whose LTAD programs served as inspiration and a model for many sections of this manual;

- **International Olympic Committee/Olympic Solidarity**

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## *Special Acknowledgement to the Canadian LTAD Model*

As mentioned above, and recognized in other places in this document, this Framework is influenced by the Canadian LTAD Model. The authors recognize and appreciate the large amount of work that has been done by Canadian researchers, authors, Sport Canada and the Canadian Sport Centers to develop the model and the implementation format upon which the Botswana LTAD Framework is heavily based.

Although this Framework has modified the number of Stages for the Botswana national model it is still based on the same scientific research and uses the same scientific references and literature used by the Canadian and other national models. As such, many parts of this document will look similar to the Canadian Sport For Life LTAD document.

The authors are grateful to the Canadian Government and people for making this information available on the public domain so that other countries such as Botswana may benefit.