

South African Sport for Life Long-Term Participant Development
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South African Sport for Life

Long-Term Participant Development

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South African Sport for Life

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‘Forging sport excellence and an active lifestyle through Long-Term Participant Development.’

Executive Summary:

South African Sport for Life (SAS4L) Long-Term Participant Development Model (LTPD) is a strategic initiative to enhance

- Health, wellness and personal fitness
- Participation in physical activity and recreational activities
- Participation in sport training and high performance sports by the citizens of South Africa – An Active and Winning Nation

It is a “win-win” strategic plan enhancing participation and performance. It is based on the concept of *physical literacy* which is the foundation of participation and performance.

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

Table of Contents

1. Glossary of Terms
2. Overview
3. An Outline of LTPD
4. Introduction
5. Sport System Alignment and Integration
6. Shortcomings and Consequences
- 7. The 10 Key Factors Influencing LTPD**
 - The FUNdamentals
 - Specialization
 - Age
 - Trainability
 - Physical, Mental, Cognitive, and Emotional Development
 - Periodization
 - Calendar Planning for Competition
 - The 10-Year Rule
 - System Alignment and Integration
 - Continuous Improvement
- 8. The 10 Ss of Training and Performance**
 - Stamina (Endurance)
 - Strength
 - Speed
 - Skill
 - Suppleness (Flexibility)
- Structure – Stature
- (p)Sychology
- Sustenance
- Schooling
- Socio-Cultural
- 9. Stages of LTPD**
 - Active Start
 - FUNdamentals
 - Learn to Train
 - Training to Train
 - Training to Compete
 - Training to Win
 - Active for Life
- 10. Impact of LTPD**
 - On Parents
 - On Coaching
 - On the Sport System
 - On Sport Science
 - On the Education System
 - On Clubs and Community Sport and Recreation
- 11. Implementation: South African Sport Working Together**
- 12. Summary**
- 13. Selected Bibliography**

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

**14. Appendix 1: Physical, Mental, Cognitive
and Emotional
Development**

15. Acknowledgements

Glossary of Terms

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

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

Age:

- **Chronological Age:** the number of years and days elapsed since birth
- **Relative Age:** refers to differences in age among children born in the same calendar year
- **Skeletal age:** refers to the maturity of the skeleton determined by the degree of ossification of the bone structure. It is a measure of age that takes into consideration how far given bones have progressed toward maturity, not in size, but with respect to shape and position to one another
- **Developmental Age** refers to the degree of physical, mental, cognitive, and emotional maturity. Physical developmental age can be determined by skeletal maturity or bone age after which mental, cognitive, and emotional maturity is incorporated
- **General Training Age** refers to the number of years in training, sampling different sports

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

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

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

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

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

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

Sensitive periods refers to the point in the development of a specific capacity when training has an optimal effect. Other factors are readiness and sensitive periods of trainability during growth of young participants, where the stimulus must be timed to achieve optimum adaptation with regard to motor skills, muscular, and/or aerobic power.

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

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

Participant

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

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

Physical Literacy . Physical literacy is defined as the mastery of fundamental movement skills and fundamental sport skills. "A physically literate person moves with poise, economy and confidence in a wide variety of physically challenging situations, is perceptive in reading all aspects of the physical environment. He/ she anticipate the movement needs or possibilities, and responds appropriately with intelligence and imagination." (Whitehead, 2001)

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

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

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

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

Overview

This consultation paper describes the 10 key factors influencing sport and physical activity development, including sport system alignment and integration and integration of the activities of the health sector, the educational sector and sport and recreation sector (see pages 14-27) . Identifies the 10Ss of training an performance (see pages 27 – 34). Describes a 7-stage pathway of Long-Term

Participant Development, a training, competition, and recovery programme based on developmental age — the maturation level of an individual — rather than chronological age (see pages 34-43). LTPD is participant centered, coach driven, and administration, sport science, and sponsor supported. Participants who progress through LTPD experience training and competition in programmes that consider their biological and training ages in creating periodized plans specific to their development needs. In addition the impact of SAS4L – LTPD will be described on pages 43 – 47.

SAS4L - LTPD

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

- is based on the physical, mental, emotional, and cognitive development of children and adolescents. Each stage reflects a different point in athlete development.
- Ensures physical literacy¹ upon which excellence and participation can be built and
- Builds physical literacy in all children, from early childhood to late adolescence by promoting quality daily physical activity in the schools and a common approach to developing physical abilities through community recreation, junior and elite sport programs.
- Recognizes the need to involve all South Africans in LTPD, including athletes with a disability.
- Ensures that optimal training, competition, and recovery programs are provided throughout an athlete's career.
- Provides an optimal competition structure for the various stages of an athlete's development.
- Has an impact on the entire sport continuum, including participants, parents, coaches, schools, clubs, community recreation programmes, provincial sport federation (PFs), national sport federations (NFs), sport science specialists, municipalities, and several government ministries and departments (particularly but not exclusively in the portfolios of health and education) at the provincial and federal levels.
- Integrates elite sport, community sport and recreation, scholastic sport, and physical education in schools.
- 'Made in South Africa', recognizing international best practices, research, and normative data.
- Supports the goals of the South African Sport Policy — ***an active and winning nation – input required from SASCOC and SRSA***
- Promotes a healthy, physically literate nation whose citizens participate in lifelong physical activity.

Introduction

SAS4L - LTPD focuses on the general framework of participant development with special reference to growth, maturation and development, trainability, and sport system alignment and integration. It incorporates information from a number of sources. It draws on the experiences

¹ Physical literacy refers to competency in fundamental motor skills and fundamental sport skills and be able to read the environment to make proper decisions, see page 14.

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

of various athlete development projects that have been implemented by different sport organizations in Ireland, the United Kingdom and Canada.

The approach was also influenced by an analysis of the empirically tested athlete development models from the former East Bloc countries, with all the positive and negative aspects of those models. In addition, sport science has provided insight and information regarding the role of growth, development, and maturation in athletic development. These sciences include pediatric exercise science, exercise physiology, sport psychology, psychomotor learning, sport sociology, and nutrition. An analysis of the literature on organizational development has also contributed significantly.

This document is fully based on and supported by the coaching and exercise science literature, but it is written particularly for coaches and technical and administrative sport leaders. Although some of the generalizations may seem to be too vague from a scientific point of view, our extrapolations are drawn because decisions must be made, despite the paucity of scientific studies and data in the area. Thus, the art of coaching plays a significant role in our model.

We recognize that the cognitive, emotional, and psycho-social development of children is an important component of maturation, but because of space constraints, the significance of these components at various stages of maturation are summarized in tables in Appendix 1 on page 54. Additional technical information on LTPD for athletes with a disability is addressed in a separate booklet (to be available in the near future).

The health and wellness of the nation and the medals won at major Games are simple by-products of an effective sport system.

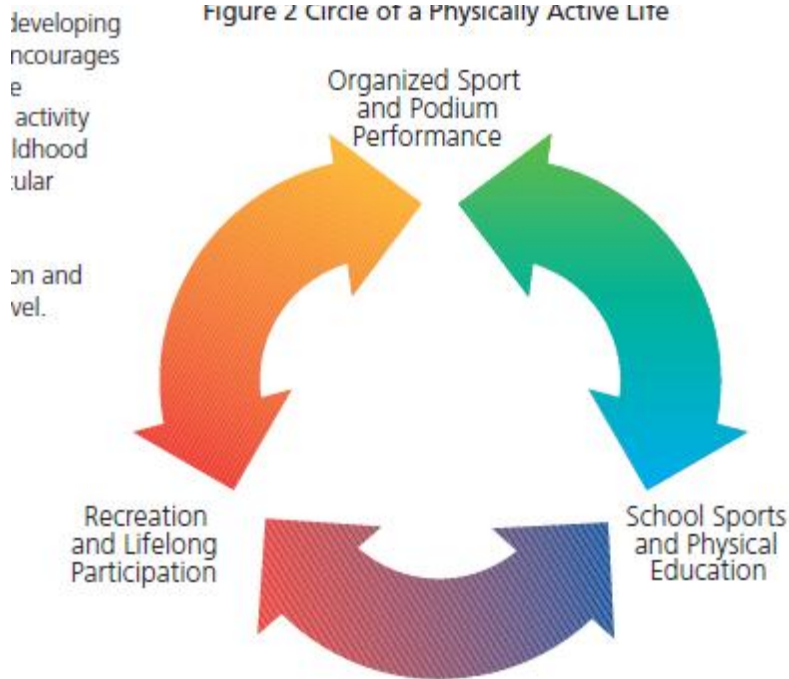
Sport System Alignment and Integration

The need for SAS4L - LTPD arises in part from the declining international performances of South African athletes in some sports and the difficulty other sports are having in identifying and developing the next generation of internationally successful athletes. In addition, participation in recreational sport and physical activity has been declining and physical education programs in the schools are being marginalized.

SAS4L - LTPD is a vehicle for change. It differs from other athlete development models because it acknowledges that physical education, school sports, competitive sports, and recreational activities are mutually interdependent.

LTPD also positively affects the quality of training and competition by taking into consideration factors such as developmental age and the sensitive periods of accelerated adaptation to training - optimal trainability. It builds athletic ability beginning with a foundation of fundamental movement skills and introduces fitness and sport skills at the appropriate developmental age. Figure 2 illustrates the recommended support system interrelationship between physical education, recreation, and podium performance.

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT



This should be re-drawn in the South African context!

SAS4L - LTAD stands in sharp contrast to the current South African sport system. Traditionally, physical education in the schools, recreational sports, and elite sport have been developed separately. This approach is ineffective and expensive. It fails to ensure that all children, including those who may choose to become elite athletes, are given a solid foundation and knowledge base — physical, technical, tactical, and mental — upon which to build their athletic abilities.

SAS4L - LTPD is an inclusive model that encourages individuals to get involved in lifelong physical activity. It does this by connecting and integrating physical education programs in the school system with elite sport programs and with recreational sport programs in the community. LTPD ensures that all children correctly learn the fundamental movement skills — since all children attend school — and that these skills are introduced during the optimum point in their physical development, which is prior to age 11 for girls and age 12 for boys. Children who are physically educated in the LTPD way will

- feel confident and be encouraged to continue to build on these skills through competitive and recreational sport activity.
- enjoy overall health benefits by developing greater physical literacy, which encourages them to be more physically active throughout their lives. Increased activity reverses the current trends in childhood and adult obesity and cardiovascular disease.
- discover a pathway to competition and excellence at the international level.

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

There is another important reason why South Africa needs SAS4L - LTPD. In past decades, we have at times attempted to patch the gaps in our sport system by borrowing concepts and systems from countries that have been achieving international athletic success. As an example, during the 1970's and 1980's, all countries tried to adapt elements from the Soviet Union and later from the German Democratic Republic. Prior to and immediately after the 2000 Olympic and Paralympic Games, many suggested that nations should try to emulate the Australian sport model. However, for South African athletes to achieve international sporting success, South Africa must develop a made-in-South Africa system that is based on our own culture, traditions, and geography and reflects our social, political, and economic realities. The South African SAS4L and LTPD approach attempts to do just that.

LTPD consists of 7 stages.

The first 3 encourage physical literacy and sport for all:

1. Active Start
2. FUNdamentals
3. Learning to Train

The next 3 focus on excellence:

4. Training to Train
5. Training to Compete
6. Training to Win

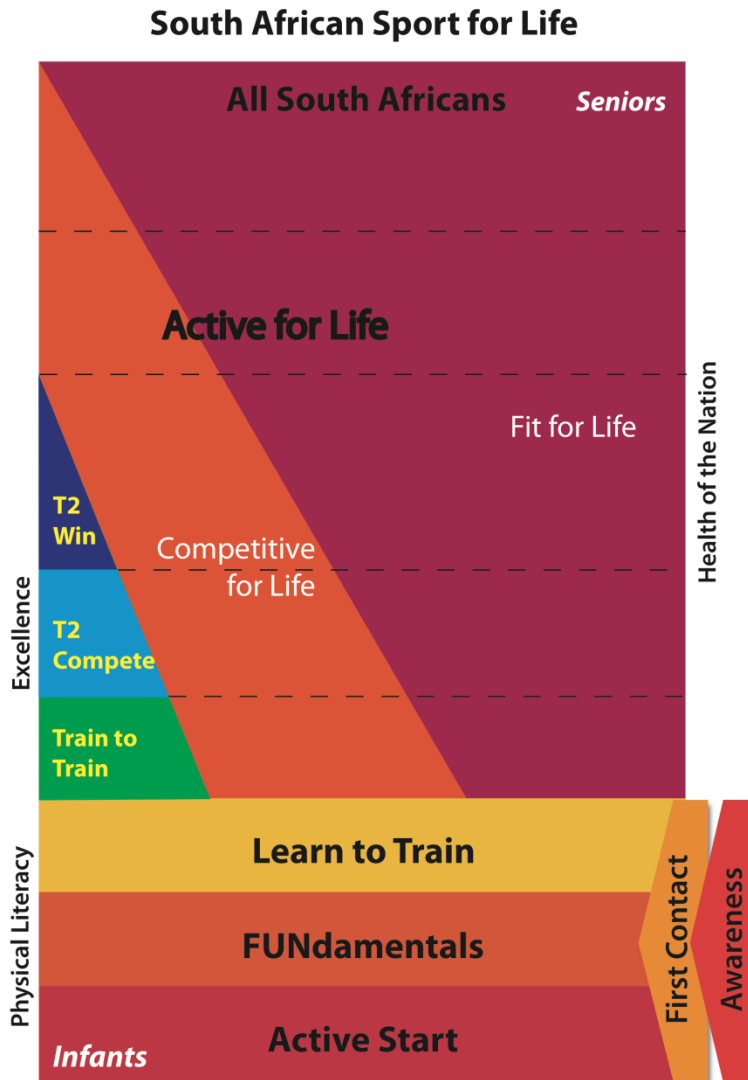
The final stage encourages life-long physical activity:

7. Active for life

LTPD as Active Start, Fundamentals and Learn to Train stages, provide for Physical Literacy, Train to Train, Train to Compete and Train to Win for excellence and transition at any age to Active for Life, for life long participation in physical activity or to participate in sport. Figure 1 bellow illustrates the Physical Literacy, Excellence and Active for Life continuum, including the Awareness and First Contact for athletes with disabilities.

DRAFT

Figure 1.



South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

Shortcomings in the South African Sport System and its Consequences

Before SAS4L - LTPD can be implemented successfully, the many shortcomings and resultant consequences that are impeding the South African sport system must be addressed.

Shortcomings

What are the shortcomings?

- Developmental athletes over-compete and under-train.
- Adult training and competition programs are imposed on developing athletes.
- Training methods and competition programs designed for male athletes are imposed on female athletes.
- Preparation is geared to the short-term outcome — winning — and not to the process.
- Chronological rather than developmental age is used in training and competition planning.
- Coaches largely neglect the sensitive periods of accelerated adaptation to training.
- Fundamental movement skills and sport skills are not taught properly.
- The most knowledgeable coaches work at the elite level; volunteers coach at the developmental level where quality, trained coaches are essential.
- Parents are not educated about LTPD.
- Developmental training needs of athletes with a disability are not well understood.
- In most sports, the competition system interferes with athlete development.
- There is no talent identification (TID) system.
- There is no integration between physical education programs in the schools, recreational community programs, and elite competitive programs.
- Sports specialize too early in an attempt to attract and retain participants.

Consequences

What are the results of these shortcomings?

- Failure to reach optimal performance levels in international competitions.
- Poor movement abilities.
- Lack of proper fitness.
- Poor skill development.
- Bad habits developed from over-competition focused on winning.
- Undeveloped and unrefined skills due to under-training.
- Female athlete potential not reached due to inappropriate programs.
- Children not having fun as they play adult-based programs. N• no systematic development of the next generation of successful international athletes.
- Athletes pulled in different directions by school, club, and provincial teams because of the structure of competition programs.
- Remedial programs, implemented by provincial and national team coaches, to counteract the shortcomings of athlete preparation.
- Fluctuating national performance due to lack of TID and a developmental pathway.
- Athletes failing to reach their genetic potential and optimal performance level.

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

To date, implementation of LTPD in Canada, Ireland, and the United Kingdom indicates that the framework provided by LTPD aids in addressing these shortcomings and enhancing sport system alignment and integration.

The 10 Key Factors Influencing SAS4L - LTPD

The following factors are the research, principles, and tools upon which SAS4L - LTPD is built.

1. The FUNdamentals

FUNdamental movements and skills should be introduced through fun and games. FUNdamental sports skills should follow and include basic overall sports skills.

- FUNdamental movements skills and FUNdamental sports skills = physical literacy.
- Physical literacy refers to competency in movement and sports skills.
- Physical literacy should be developed before the onset of the adolescent growth spurt.

Table 1 lists the wide variety of fundamental movements and skills that underpin physical literacy. They include 4 different environments: earth, water, air, and ice.

Travelling Skills

- | | | |
|-------------|---------------|------------|
| • Boosting | • Ice Picking | • Skating |
| • Climbing | • Jumping | • Skipping |
| • Eggbeater | • Leaping | • Sliding |
| • Galloping | • Poling | • Swimming |
| • Gliding | • Running | • Swinging |
| • Hopping | • Sculling | • Wheeling |

Object Control Skills

Sending:

- Kicking
- Punting
- Rolling (ball)
- Strike (ball, puck, ring)
- Throwing

Receiving:

- Catching
- Stopping
- Trapping

Travelling with:

- Dribbling (feet)
- Dribbling (hands)
- Dribbling (stick)

Receiving and Sending:

- Striking (bat)
- Striking (stick)
- Volleying

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

Balance Movements

- Balancing/Centering
- Body Rolling
- Dodging
- Eggbeater
- Floating
- Landing
- Ready position
- Sinking/Falling
- Spinning
- Stopping
- Stretching/Curling
- Swinging
- Twisting/Turning

Jess 1999, adapted Balyi and Way 2005.

The basic movement skills of 3 activities provide the base for all other sports

- Athletics: run, wheel, jump or throw.
- Gymnastics: ABC's of athleticism — agility, balance, coordination, and speed.
- Swimming: for water safety reasons, for balance in a buoyant environment, and as the foundation for all water-based sports.

Without the basic movement skills, a child will have difficulty participating in any sport. For example, to enjoy baseball, basketball, cricket, football, netball, handball, rugby, and softball, the simple skill of catching must be mastered.

It is critically important that children with a disability have the opportunity to develop their fundamental movement and sport skills. Failure to do so severely limits their lifelong opportunities for recreational and athletic success. Despite this great need, children with a disability face difficulty gaining the fundamentals because

- Overly protective parents, teachers, and coaches shield them from the bumps and bruises of childhood play.
- Adapted physical education is not well developed in all school systems.
- Some coaches do not welcome children with a disability to their activities because of a lack of knowledge about how to integrate them.
- It takes creativity to integrate a child with a disability into group activities where fundamental skills are practiced and physical literacy developed.

2. Specialization

Sports can be classified as either early or late specialization. Early specialization sports include artistic and acrobatic sports such as gymnastics, diving, and figure skating. These differ from late specialization sports in that very complex skills are learned before maturation since they cannot be fully mastered if taught after maturation.

Most other sports are late specialization sports. However, all sports should be individually analyzed using international and national normative data to decide whether they are early or late specialization. If physical literacy is acquired before maturation, athletes can select a late specialization sport when they are between the ages of 12 and 15 and have the potential to rise to international stardom in that sport.

Specializing before the age of 10 in late specialization sports contributes to

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

- one-sided, sport-specific preparation.
- lack of ABC's, the basic movement and sports skills.
- overuse injuries.
- early burnout.
- early retirement from training and competition.

Disability sports are late specialization and it is critically important that children with a congenital disability or early acquired disability be exposed to the full range of fundamentals before specializing in the sport of their choice.

Early involvement in the FUNdamentals stage is essential in late specialization sports. Many sports resort to remedial programs to try to correct shortcomings.

3. Developmental Age

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

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.”

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.

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

LTPD requires the identification of early, average, and late maturers in order to help to design appropriate training and competition programs in relation to optimal trainability and readiness. The beginning of the growth spurt and the peak of the growth spurt are very significant in LTPD applications to training and competition design.

Specific disabilities may dramatically change the timing and sequence of childhood and adolescent development.

Figure 2: Maturation in Girls and Boys (Adapted from “Growing Up” by J.M. Tanner Scientific American 1973)

South African Sport for Life Long-Term Participant Development
 RESOURCE PAPER V 3
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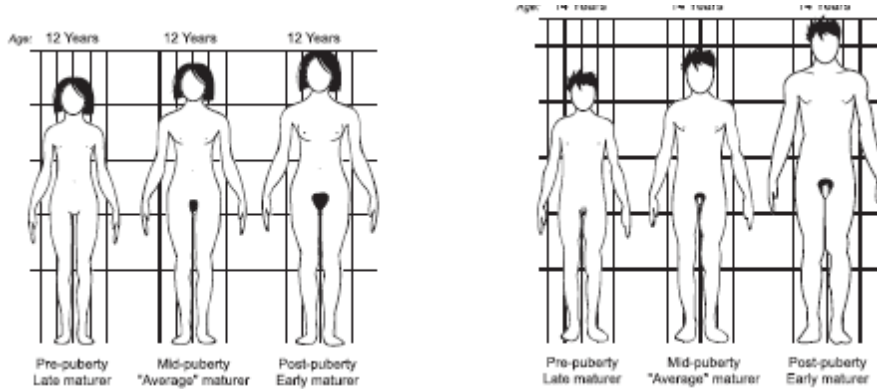
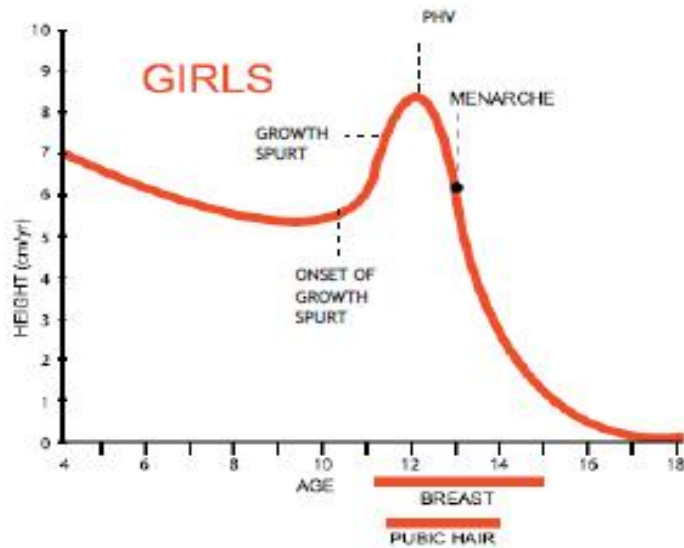


Figure 2 illustrates late, average and early maturers having the same chronological age. Finding optimal solutions with late, average and early maturing participants is a focal point of this document.

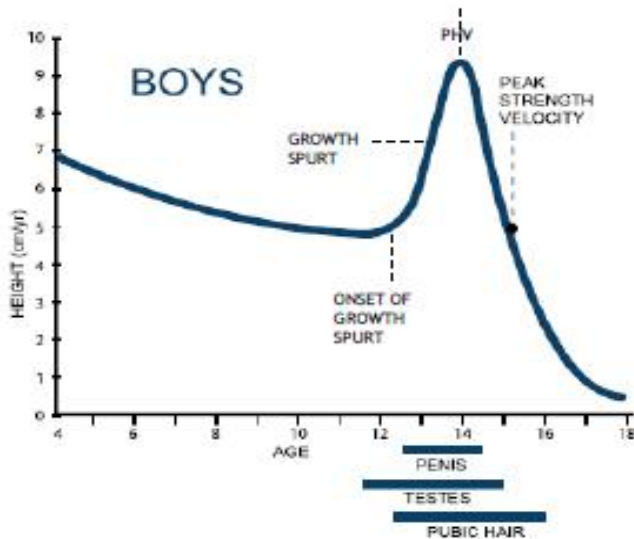
Figure 3: Maturity Events in Girls (Modified after Ross et al. 1977)



PHV in girls occurs at about 12 years of age. Usually the first physical sign of adolescence is breast budding, which occurs slightly after the onset of the growth spurt. Shortly thereafter, pubic hair begins to grow. Menarche, or the onset of menstruation, comes rather late in the growth spurt, occurring after PHV is achieved. The sequence of developmental events may normally occur 2 or even more years earlier or later than average.

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

Figure 4: Maturity Events in Boys (Modified after Ross et al. 1977)



PHV in boys is more intense than in girls and on average occurs about 2 years later. Growth of the testes, pubic hair, and penis are related to the maturation process. Peak Strength Velocity (PSV) comes a year or so after PHV. Thus, there is pronounced late gain in strength characteristics of the male athlete. As with girls, the developmental sequence for male athletes may occur 2 or more years earlier or later than average. Early maturing boys may have as much as a 4-year physiological advantage over their late-maturing peers. Eventually, the late maturers will catch up when they experience their growth spurt.

Currently, most athletic training and competition programs are based on chronological age. However, athletes of the same age between ages 10 and 16 can be 4 to 5 years apart developmentally. Thus, chronological age is a poor guide to segregate adolescents for competitions.

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

4. Trainability refers to the faster adaptation to stimuli and the genetic endowment of participants as they respond individually to specific stimuli and adapt to it accordingly. Trainability has been defined as the responsiveness of developing individuals to the training stimulus at different stages of growth and maturation.

A sensitive period of development refers to the point in the development of a specific capacity when training has an optimal effect. Other factors are readiness and sensitive periods of

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

trainability during growth of young participants, where the stimulus must be timed to achieve optimum adaptation with regard to motor skills, muscular, and/or aerobic power.

The **5 Basic S's** of Training and Performance are Stamina (Endurance), Strength, Speed, Skill, and Suppleness (Flexibility). (Dick, 1985)

Stamina (Endurance)

The sensitive period of trainability occurs at the onset of PHV. Aerobic capacity training is recommended before athletes reach PHV. Aerobic power should be introduced progressively after growth rate decelerates.

Strength

The sensitive period of trainability for girls is immediately after PHV or at the onset of the menarche, while for boys it is 12 to 18 months after PHV.

Speed

For boys, the first speed training window occurs between the ages of 7 and 9 years and the second window occurs between the ages of 13 and 16. For girls, the first speed training window occurs between the ages of 6 and 8 years and the second window occurs between the ages of 11 and 13 years.

Skill

The window for optimal skill training for boys takes place between the ages of 9 and 12 and between the ages of 8 and 11 for girls, or more precisely at the onset of the growth spurt.

Suppleness (Flexibility)

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

See further information t the 10Ss of training and performance on page xx

5. Physical, Mental, Cognitive, and Emotional Development

Training and competitive and recovery programs should consider the mental, cognitive, and emotional development of each participant.

Beyond the physical, technical, and tactical development — including decision-making skills — the mental, cognitive, and emotional development should be enhanced. One of the key objectives of LTPD is build a person and not “only” an athlete!

For a complete overview of mental, cognitive, and emotional development characteristics and their implications for the coach, refer to Appendix 1 on page 53.

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

A major objective of LTPD is a holistic approach to athlete development. This includes emphasis on ethics, fair play, and character building throughout the various stages, an objective that reflects South African values. Programming should be designed considering participants' cognitive ability to address these concepts.

6. Periodization

Simply put, periodization is time management. As a planning technique, it provides the framework for arranging the complex array of training processes into a logical and scientifically-based schedule to bring about optimal improvements in performance.

Periodization sequences the training components into weeks, days, and sessions. Periodization is situation specific depending upon priorities and the time available to bring about the required training and competition improvement. In the LTPD context, periodization connects the stage the athlete is in to the requirements of that stage.

Periodization organizes and manipulates the aspects of modality, volume, intensity, and frequency of training through long-term (multi-year) and short-term (annual) training, competition, and recovery programs to achieve peak performances when required.

Periodization, far from being a single fixed process or methodology, is in fact a highly flexible tool. When used appropriately in conjunction with sound methodology and ongoing monitoring and evaluation, it is an essential component in optimal sports programming and athlete development at all levels.

LTPD addresses this requirement by developing periodization models for all stages, taking into consideration the growth, maturation, and trainability principles that are unique to the primary development stages — the first 2 decades of life — yet seamlessly integrate with the subsequent stages of athletic performance and life.

LTPD is typically a 10- to 12-year procedure that optimizes physical, technical, tactical — including decision making — and mental preparation, as well as the supporting ancillary capacities. Within LTPD is quadrennial planning, which refers to the 4-year Olympic and Paralympic cycle for elite athletes, and the annual plan, which is based upon identified periods of athletic preparation, competition, and the transition into the next calendar plan.

Current examples of periodization models identified in the sport performance literature are designed for the sub-elite and elite senior/mature performers. There is very little information on periodization for children or adolescents or for athletes with disability.

Single, double, triple, and multiple periodization formats follow the same principles with frequently introduced prophylactic breaks; that is, programmed and prioritized recovery and regeneration elements.

South African Sport for Life Long-Term Participant Development
 RESOURCE PAPER V 3
DRAFT

- Single periodization refers to one preparatory and one competition period within the year
- Double periodization refers to two preparatory and two distinct competition periods within the year
- Triple periodization three preparatory and three distinct competitive phase
- Multiple peak periodizations refers to competing all year round while maintaining physical and technical skills.

The terminology that describes the smaller subsets of time — organized blocks of training or competition — is macro, meso, and micro cycles. Macro cycles are the largest blocks within a phase of training and are usually 8 to 16 or up to 52 weeks in length. Meso cycles are smaller blocks of time, usually about a month, two, three or four microcycles in a row. A mesocycle always ends with a recovery microcycle, following one, two or three loading microcycles. The smallest training block is often organized as a microcycle and by convention is usually 7 days.

Table 2 illustrates the phases of an annual plan for single and double periodization.

| Five Phases of A Single Periodized Annual Plan | Eight Phases of A Double Periodized Annual Plan |
|---|--|
| General Preparation Phase (GPP) Specific Preparation Phase (SPP) Pre-Competition Phase (PCP) Competition Phase <i>Peak</i> (CP) Transition Phase (TP) | General Preparation Phase (GPP) Specific Preparation Phase (SPP) 1 Pre-Competition Phase (PCP) 1 Competition Phase (CP) 1 <i>Peak One</i> Specific Preparation Phase (SPP) 2 Pre-Competition Phase (PCP) 2 Competition Phase (CP) 2 <i>Peak Two</i> Transition Phase (TP) |

Periodization is an art and a science and developmentally appropriate periodization programs should be developed for all stages of LTPD.

7. Calendar Planning for Competition

Optimal competition calendar planning at all stages is critical to athlete development. At certain stages, developing the physical capacities take precedence over competition. At later stages, the ability to compete well becomes the focus.

Table 3 outlines general recommendations for the ratio of training to competition and competition specific training. Consider how the quantity and quality of the training and competition program changes as long-term plans progress.

Table 3: Training to Competition Ratios

| Stages | Recommended Ratio |
|-------------------|-------------------------------------|
| Active Start | No specific ratios |
| FUNDamentals | All activity FUN based |
| Learning to Train | 70% training to 30% competition and |

South African Sport for Life Long-Term Participant Development
 RESOURCE PAPER V 3
DRAFT

| | |
|--|---|
| Training to Train Training to Compete Training to Win Active for Life | competition specific training 60% training to 40% competition and competition specific training 40% training to 60% actual competition and competition specific training 25% training to 75% actual competition and competition specific training Based on individual's desire |
|--|---|

- Optimal sport specific competition ratios are required for all stages of LTPD.
- Level and length of the competitive season should be aligned with the changing needs of the developmental athlete progressing through LTPD.
- Over-competition, under-training an early specialization in late specialization sports at the Learn to Train and Train to Train stages result in a lack of basic skills and fitness.
- The developmentally appropriate level of competition is critical to the technical, tactical, and mental development at all stages.
- Schedules are often 'set' for team sports by leagues and organizations and not by experts of the sports, sport scientists and coaches, making optimal training based on periodization difficult. For individual sports, individual competition schedules can be selected by the coach and athlete based on the athlete's developmental needs.

Thus, team sports have a "dictated" schedule and individual sports have a "selective" schedule.

- In most sports the structure or the system of competition has not been planned. The current system of competition is based on tradition. It should be planned to enhance optimal training and performance of the athlete depending upon their LTPD stage.
- Competitions must be designed and scheduled considering strategic planning and with due regard for the optimal performance of an athlete and the tapering and peaking requirements.
- Optimal training to competition ratios for individual sports vary greatly and must be determined on a sport specific basis.
- While international and national calendars are usually well integrated, a systematic competition review needs to be undertaken. This is one of the biggest challenges for team sports and a significant challenge for individual sports in LTPD design and implementation.

A reminder that the structure or system of competition makes or breaks athletes!

South African Sport for Life Long-Term Participant Development
 RESOURCE PAPER V 3
 DRAFT

8. The 10-Year Rule

Scientific research has concluded that it takes a minimum of 10 years and 10,000 hours of training for a talented athlete to reach elite levels. For athlete and coach, this translates into slightly more than 3 hours of training or competition daily for 10 years.

This factor is supported by *The Path to Excellence*, which provides a comprehensive view of the development of U.S. Olympians who competed between 1984 and 1998. The results reveal that

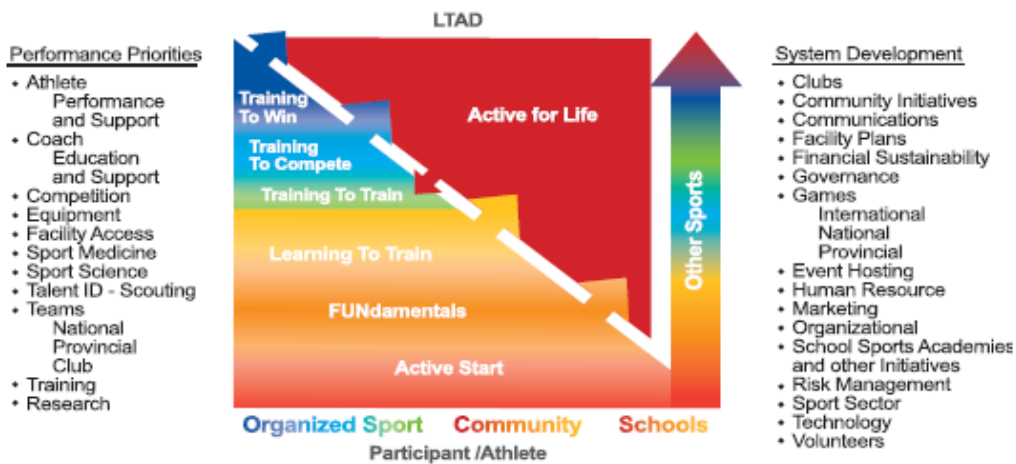
- U.S. Olympians begin their sport participation at the average age of 12.0 for males and 11.5 for females.
- Most Olympians reported a 12- to 13-year period of talent development from their sport introduction to making an Olympic team.
- Olympic medalists were younger — 1.3 to 3.6 years — during the first 5 stage of development than non-medalists, suggesting that medalists were receiving motor skill development and training at an earlier age. However, caution must be taken not to fall into the trap of early specialization in late specialization sports.

9. Sport System Alignment and Integration

Figure 6 illustrates the various performance priorities that SAS4L - LTPD addresses and the system development it effects.

Figure 6: System Alignment and Integration (Way et. al 2005)

Figure 10 System Alignment and Integration (Way et. al 2005)



South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

- SAS4L - LTPD is the core business of national, provincial, regional, and local sport organizations.
- SAS4L - LTPD is a tool for change towards full system alignment and integration.
- A seamless, sport-specific LTPD should be based on national and international normative data, both sport specific and sport science.
- LTPD plans for athletes with a disability need to be developed on a sport-by-sport basis taking into account the specific needs of individuals with a congenital or acquired disability.
- After the LTPD design is completed, a sport-specific system of competition should be established that matches the competitive needs of developmental participants and athletes² during Active Start, FUNdamentals, Learning to Train, and Training to Train stages.
- The content of training, competition, and recovery during the FUNdamentals, Learning to Train, and Training to Train stages are defined, taking into consideration the developmental levels of the athletes as these relate to the physical, technical, tactical — including decision making — and mental requirements of the sport, rather than being based on chronological age.
- LTPD is an athlete-centered approach designed around the needs of athletes and institutionalized by rationalization of the system by sport governing bodies..
- The process of designing and implementing LTPD programs is athlete centered, coach driven, and administration, sport science, and sponsor supported.
- LTPD has a strong impact on the coaching education curriculum. Developmental readiness will replace ad hoc decision-making about programming preparation.
- Activities of schools, communities, clubs, PFs, and NFs should be fully integrated through LTPD.

10. Continuous Improvement

The concept of continuous improvement, which permeates SAS4L - LTPD, is drawn from the respected Japanese industrial philosophy known as Kaizen. Continuous improvement ensures that

- SAS4L - LTPD responds and reacts to new scientific and sport-specific innovations and observations and is subject to continuous research in all its aspects.
- SAS4L - LTPD, as a continuously evolving vehicle for change, reflects all emerging facets of physical education, sport, and recreation to ensure systematic and logical delivery of programs to all ages.

² During the AS, F and L2T stages the term participants will be used, while the Excellence stages of T2T, T2C and T2W the term participant will be referred to as athlete.

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

- SAS4L - LTPD promotes ongoing education and sensitization of federal, provincial/territorial, and municipal governments, the mass media, sport and recreation administrators, coaches, sport scientists, parents, and educators about the interlocking relationship between physical education, school sport, community recreation, life-long physical activity, and high performance sport.

The 10 Ss' of Training and Performance

The original Five Basic Ss of training and performance were introduced in the Building Pathways in Irish Sport(2003), and Canadian Sport for Life: Long-term Athlete Development document (2005). Building on the physical development, an additional Five Ss' create a complete, holistic, training, competition and recovery program and a proper lifestyle.

Thus, there are 10 Ss of training and performance which need to be integrated when developing annual training, competition and recovery plans. Each of these capacities is trainable throughout an athlete's lifetime, but there are clearly sensitive periods in the development of each capacity during which training produces the greatest benefit to each athlete's improvements.

The SAS4L document also describes the various stages of LTPD and identifies the windows of optimal trainability related to the sensitive periods of the maturation process. Thus, windows of trainability refer to periods of accelerated adaptation to training during the sensitive periods of pre-puberty, puberty and early post-puberty.

The windows are fully open during the sensitive periods of accelerated adaptation to training and partially open outside of the sensitive periods.

These sensitive periods vary between individuals as each athlete is unique in their genetic makeup. While the sensitive periods follow general stages of human growth and maturation, scientific evidence shows that humans vary considerably in the magnitude and rate of their response to different training stimuli at all stages. Some athletes may show potential for excellence by age 11, whereas others may not indicate their promise until age 15 or 16. Consequently, a long-term approach to athlete development is needed to ensure that athletes who respond slowly to training stimuli are not "short-changed" in their development.

Figure 7 & 8: Windows of Accelerated Adaptation to Training (Balyi and Way, 2005)

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

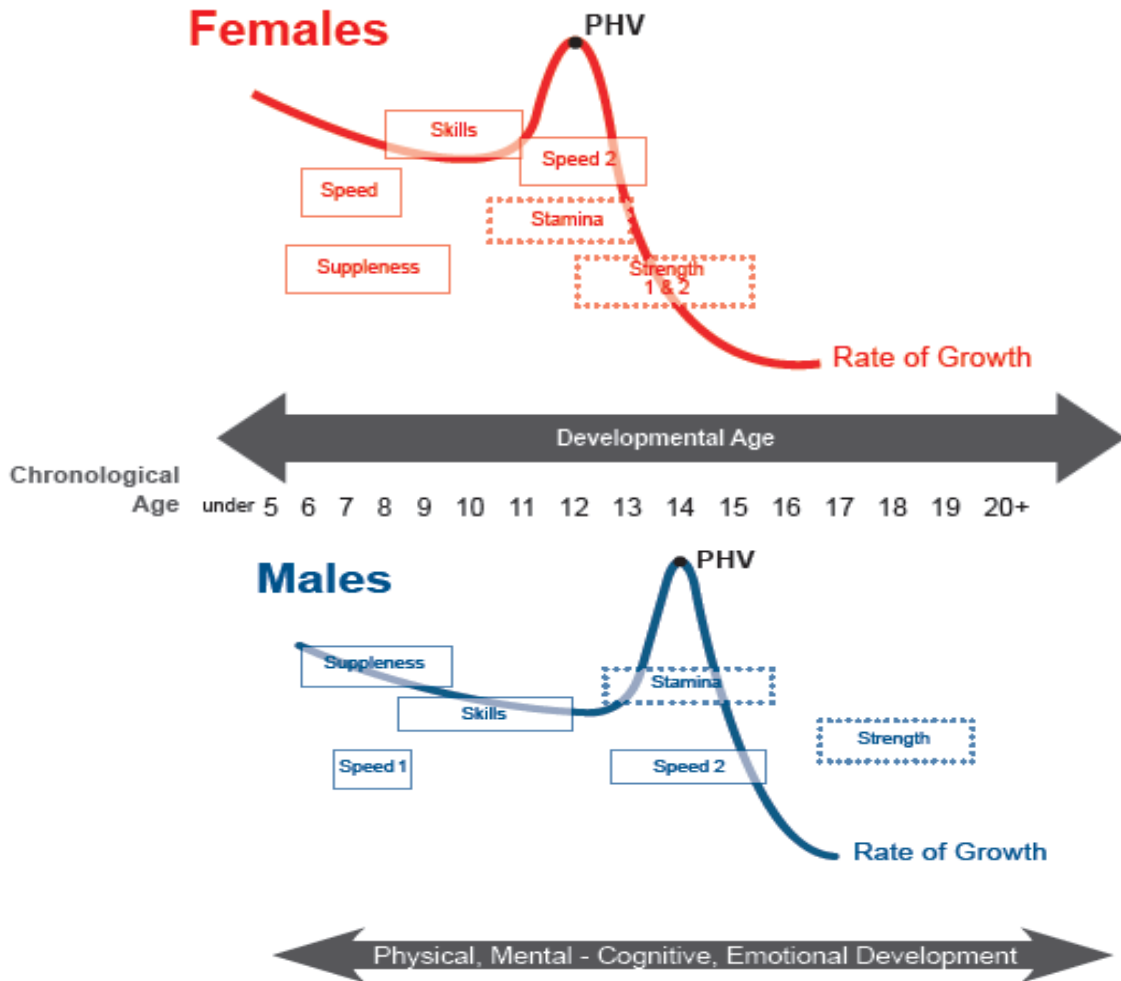
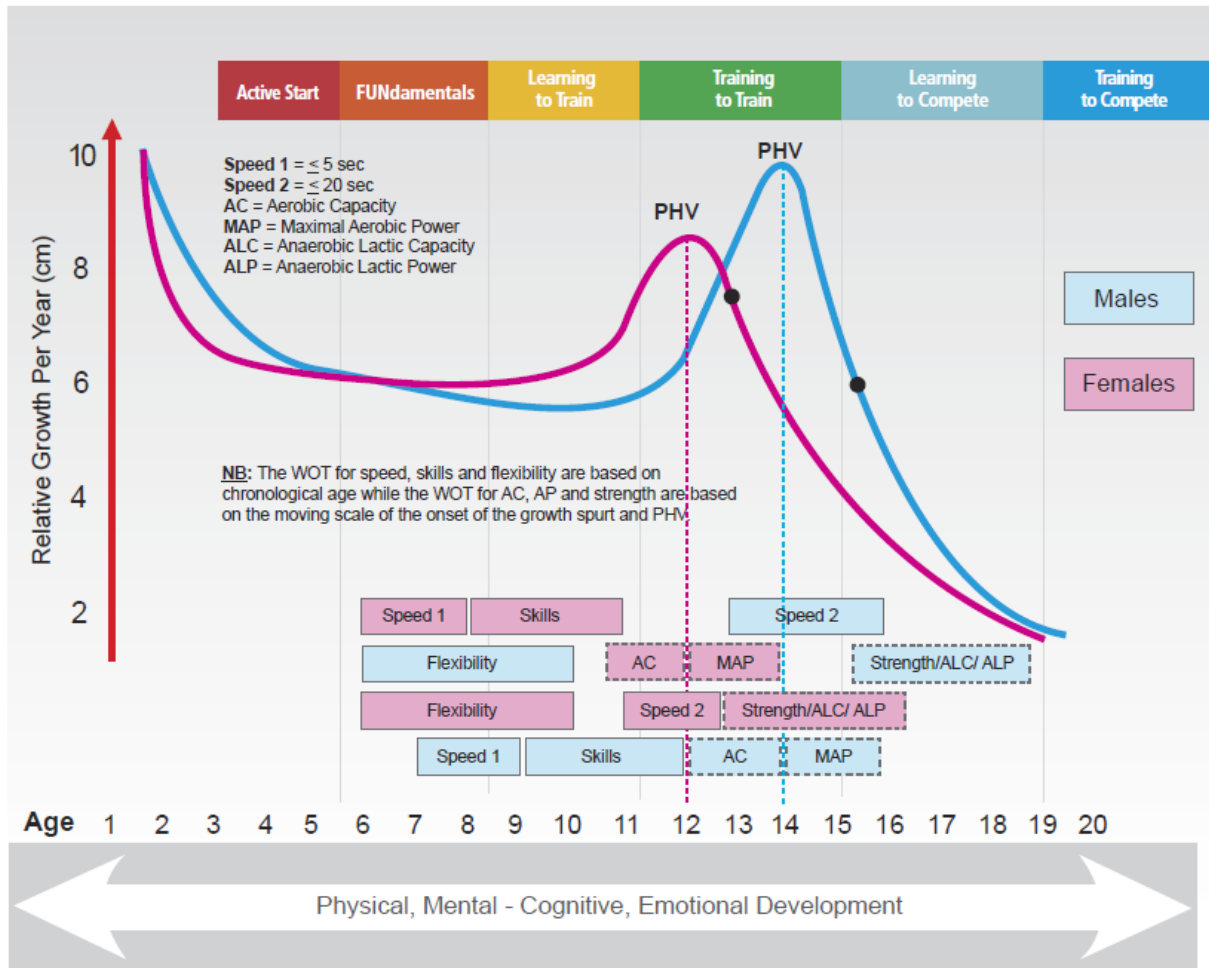


Figure 9: illustrates optimal trainability for speed, AC, MAP, ALC and ALP
Adapted from Cross Country Skiing Canada

South African Sport for Life Long-Term Participant Development
 RESOURCE PAPER V 3
 DRAFT



Stamina (Endurance)

The sensitive period for training stamina occurs at the onset of the growth spurt or Peak Height Velocity (PHV), commonly known as the adolescent growth spurt. Athletes need increased focus on aerobic capacity training (continuous or aerobic interval workloads) as they enter PHV, and they should be progressively introduced to aerobic power training (anaerobic interval workloads) as their growth rate decelerates. Sport-specific needs will determine “how much endurance is enough” in a particular sport, thus minor or major emphasis of training endurance will be defined by sport-specific and individual specific needs, (endurance or “engine” sports versus power and speed sports).

Strength

There are two sensitive periods of trainability for strength in girls: immediately after PHV or after the onset of menarche. Boys have one strength window, and it begins 12 to 18 months after PHV. Again, sport-specific needs will determine “how much strength is enough” in a

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

particular sport, thus minor or major emphasis of training strength will be defined by sport-specific and individual specific needs

Speed

There are two sensitive periods of trainability for speed. For girls, the first speed window occurs between the ages of six and eight years, and the second window occurs between 11 and 13 years (very marked differences between genders). For boys, the first speed window occurs between the ages of seven and nine years, and the second window occurs between 13 and 16 years. During the first speed window, training should focus on developing agility and quickness (duration of the intervals is less than five seconds); during the second speed window, training should focus on developing the anaerobic lactic power energy system (duration of the intervals is 10-15 seconds).

It is highly recommended that speed should be trained on a regular and frequent basis, for example, at every training session as part of the warm up. Towards the end of the warm up or immediately after the warm there is no Central Nervous System or metabolic fatigue present in the organism, and so this is an optimal time to train speed. The volume of training should be low and allow full recovery between exercises and sets. Short acceleration with proper posture and elbow and knee drive, take-off speed and segmental speed should be trained regularly outside of the window of optimal trainability for speed. In addition, proper blocks of training³ should be allocated to speed training during the periodized annual training, competition and recovery program according to seasonal and the sport-specific requirements.

Skill

Girls and boys both have one window for optimal skill training. For girls, the window is between the ages of eight and 11 years, while in boys it is between nine and 12 years or more precisely before the onset of the growth spurt. During this window, young athletes should be developing physical literacy. Physical literacy is the development of **fundamental movement skills** and **fundamental sports skills** that permit a child to move confidently and with control, in a wide range of physical activity and sport situation. It also includes the ability to “read” what is going on around them in an activity setting and react appropriately to those events. Physical literacy is the foundation of life-long involvement in physical activity and also for high performance participation.

Suppleness

The sensitive period of trainability for suppleness occurs between the ages of six and 10 years in both girls and boys. However, because of the rapid growth special attention should also be paid to flexibility during the growth spurt. The reason is that during this growth phase is characterised by rapid bone growth, which results in the ligaments being stressed and the muscles effectively shortening.

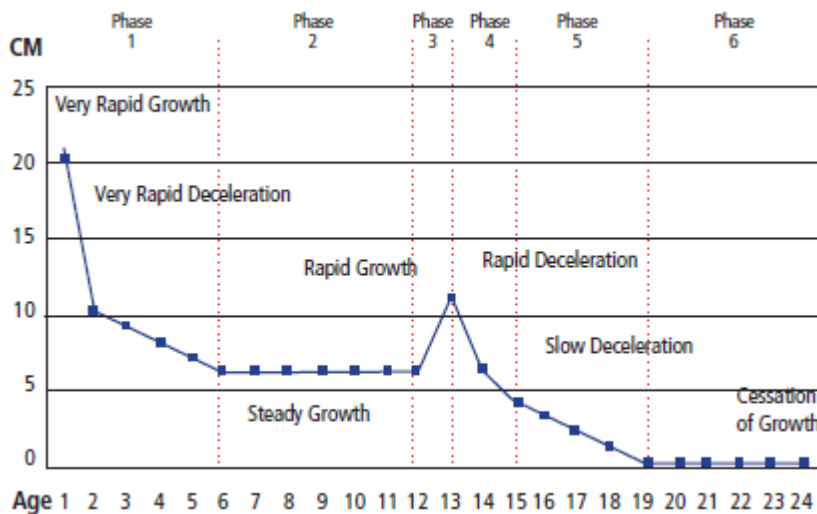
³ Block training refers to

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

It should be pointed out that the trainability of the different systems for children and youth with a disability is not well understood. Applying this information to specific athletes with a disability is a good example of coaching being an art as well as a science.

Structure / Stature

This component addresses the six stages of growth (Phase 1: very rapid growth and very rapid deceleration; Phase 2: steady growth; Phase 3: rapid growth; Phase 4: rapid deceleration; Phase 5: slow deceleration; Phase 6: cessation of growth) in the human body linking them to the windows of optimal trainability.



It recognizes stature (the height of a human) before during and after maturation guiding a coach or parent to the measurements needed to track growth. The tracking of stature as a guide to developmental age allows planning to address the **sensitive** periods of physical (endurance, strength, speed and flexibility) and skill development. Diagnostics to identify individually relevant sensitive periods of accelerated adaptation to training is essential to design and implement optimal training, competition and recovery programs. See the “Monitoring Growth in LTAD” document (www.canadiansportforlife.ca)

(p)Psychology

Sport is a physical and mental challenge. The ability to maintain high levels of concentration, remain relaxed with the confidence to succeed are skills that transcend sport to everyday life. To develop the mental toughness for success at high levels requires training programs which are designed specific to the gender and LTPD stage of the athlete. The training programs should

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

include key mental components identified by sport psychologists; concentration, confidence, motivation and handling pressure. As an athlete progresses through LTPD stages the mental training aspect will evolve from: having fun and respecting opponents; to visualization and self-awareness; to goal setting, relaxation and positive self-talk. To master the mental challenge of sport those basic skills are then tested in increasingly difficult competitive environments. Ultimately the planning, implementing and refining of mental strategies for high level competition will determine podium performances. The mental training program is critical at any LTPD stage as dealing with success and failure will determine continuation in sport and physical activity, therefore dramatically affecting an individual lifestyle.

Sustenance

Sustenance recognizes a broad range of components with the central theme of replenishing the body. This is to prepare the athlete for the volume and intensity required to optimize training or living life to the fullest. Areas addressed are: nutrition, hydration, rest, sleep and regeneration, all of which need to be applied differently to training (life) plans depending on the stage within the LTPD. Underlining sustenance is the need for optimal recovery management moving the athlete to the 24/7 model which in and after the Train to Train stage places a high degree of importance on the individual's activities away from the field of play. For proper sustenance and recovery management there is a need to monitor recovery by the coach or parent through the identification of fatigue. Fatigue can come in many forms including: metabolic; neurological; psychological; environmental and travel. While overtraining or over-competition can lead to burn-out, improperly addressing sustenance can lead to the same result. See the "Recovery and Regeneration for Long-Term Athlete Development" document (www.canadiansportforlife.ca)

Schooling

In training program design the demands of school must be considered. This is only limited to the demands placed by school sports or physical education classes. This includes integrating school academic loads, duties, school related stresses, and timing of exams. When possible, training camps and competition tours should complement, not conflict, with the timing of major schools academic events.

Overstress should be monitored carefully. Overstress refers to the everyday stresses of life, like schooling, exams, peer groups, family, boyfriend or girlfriend relationships as well as increased training volume and intensities.

Interference from other school sports should be minimized, communication between coaches who are responsible to deliver the training and competition programs are essential. A good balance should be established between all factors and the coach and the parents should be working on this together.

Socio-Cultural

The socio-cultural aspects of sport are significant and must be managed through proper planning. Socialization via sport will ensure that general societal values and norms will be

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

internalized via sport participation. This occurs at the community level. All sports require particular attention to principles of fairness.

In South Africa there exists a strong socio-cultural legacy that must be overcome. This presents an important challenge that must be addressed by active effort, i.e. Development in the South African context. South Africa is blessed with a population with a wide variation in ethnicity cultural diversity. A successful sport system must be sensitive to these factors, but at the same time embrace the opportunity that they present.

As an athlete progresses through the LTPD stages can lead to International exposure. This socialization can be broadening of perspective including; ethnicity awareness and national diversity. This can be a valuable learning experience which demonstrates that these are important factors globally that mirror those experienced locally within South Africa.

Within a national and international travel schedule, recovery can include education of competition location including; history, geography, architecture, cuisine, literature, music and visual arts. Proper annual planning including competition planning can allow sport to offer much more than simply commuting between hotel room and field of play.

Sport socialization also must address sport sub-culture. In addition, coaches and parents must guard against group dynamics which foster a culture of abuse or bullying. Ethics training should be integrated into training and competition plans at all stages of LTPD.

Overall socio-cultural activity is not a negative distraction or interference with training and competition activities. It is a positive contribution to the development of the person and the participant.

Children often choose to play a sport after the windows of optimal trainability for endurance, strength, speed, skill, and suppleness have past. These children are therefore dependent on schools, recreation programs, and other sports to provide timely training in these capacities. LTPD advocates that sports build relationships with these organizations to promote and support appropriate training. If athletes miss these training periods entirely, coaches will need to design individualized programs to remedy any shortcomings.

Stages of LTPD

Sports can be classified as early or late specialization. The stages of LTPD are based on this concept.

Early Specialization Model

1. Active Start
2. FUNdamentals / Learning to Train / Training to Train
3. Training to Compete
4. Training to Win
5. Active for Life

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

Late Specialization Model

1. Active Start
2. FUNdamentals
3. Learning to Train
4. Training to Train
5. Training to Compete
6. Training to Win
7. Active for Life

These models are general in nature and require adjustment on a sport specific basis.

Some sports, due to sport-specificity decided to introduce Learning to Compete, Train to Compete, Learn to Win and Train to Win stages. Some sports with a professionalization outlook even included a Winning for a Living stage for those athlete who make a living out of competition.

Most sports use the terminology in the chart to describe the stages of LTPD because it clearly describes what is to be done during each.

Since few sports can be categorized as early specialization sports, SAS4L - LTPD focuses on late specialization sports (see Specialization, page 22). Briefly, each early specialization sport should develop a sport-specific model; a general model would lead to serious oversimplifications. The challenge is to combine the FUNdamentals and Learning to Train stages or amalgamate them into a single stage, such as the Training to Train stage. ***For late specialization sports, specialization prior to age 10 – 12 – 14 is not recommended since it contributes to early burn-out, drop-out, and retirement from training and competition.***

Active Start

Age 0-6

Objectives

Learn fundamental movements and link them together into play.

Physical activity is essential for healthy child development. Among its other benefits, physical activity

- enhances development of brain function, coordination, social skills, gross motor skills, emotions, leadership, and imagination.
- helps children to build confidence and positive self-esteem.
- helps to build strong bones and muscles, improves flexibility, develops good posture and balance, improves fitness, reduces stress, and improves sleep.

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

- promotes healthy weight.
- Helps children learn to move skillfully and enjoy being active.

Physical activity should be fun and a part of the child's daily life, not something required. Active play is the way young children are physically active.

Organized physical activity and active play are particularly important for the healthy development of children with a disability if they are to acquire habits of lifelong activity.

Because this is a period when children rapidly outgrow their mobility aids, communities need to find effective ways — equipment swaps or rentals, for example — to ensure that all children have access to the equipment they need to be active.

Active Start To-Do List

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

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

□ Because girls tend to be less active than boys and children with a disability less active than their peers, ensure that activities are gender-neutral and inclusive so that active living is equally valued and promoted for all children.

FUNDamentals

Age: males 6-9; females 6-8

Objectives

Learn all fundamental movement skills and build overall movement skills.

Skill development in the FUNdamentals stage should be well-structured, positive, and FUN!

The first window of accelerated adaptation to speed occurs at ages 6 to 8 for girls and 7 to 9 for boys. Bypassing the specialized skill development in the FUNdamentals stage is detrimental to the child's future engagement in physical activity and sport.

No periodization takes place; however, all programs are structured and monitored. Ensure that free, unstructured play is still an integral part of the stage. Do not over structure programs!

If children later decide to leave the competitive stream, the skills they acquire during the FUNdamentals stage will benefit them when they engage in recreational activities, enhancing their quality of life and health.

FUNDamentals To-Do List

- Practice and master fundamental movement skills before sport-specific skills are introduced.
- Emphasize the overall development of the participants' physical capacities, fundamental movement skills, and the ABC's of athleticism: agility, balance, coordination, and speed.
- Teach appropriate and correct running, jumping, and throwing techniques using the ABC's of athletics.
- Emphasize motor movement development to produce athletes who have a better trainability for long-term sport specific development.
- Introduce basic flexibility exercises.
- Develop speed, power, and endurance using games.
- Encourage participation in a wide range of sports.

DRAFT

- Develop linear, lateral, and multi-directional speed with the duration of repetitions less than 5 seconds.
- Include strength training exercises using the child's own body weight as well as medicine ball and Swiss ball exercises.
- Ensure that sporting and disability equipment are size, weight, and design appropriate and that communities explore ways to share and provide access to appropriate equipment.
- Introduce children to the simple rules and ethics of sports.
- Ensure that activities revolve around the school year and are enhanced by multi-sport camps during holidays.
- Participate once or twice a week if children have a preferred sport, so long as there is participation in many other sports 3 or 4 times per week to ensure future excellence.

Learn to Train

Age: males 9-12; females 8-11

Objectives

Learn overall sports skills.

One of the most important periods of movement development for children is between the ages of 9 and 12, or more precisely before the onset of the growth spurt. This is a window of accelerated adaptation to motor co-ordination.

Avoid early specialization in late specialization sports which can be detrimental to later stages of skill and fitness development and to refinement of the fundamental sport skills.

At this stage, children are developmentally ready to acquire the general sports skills that are the cornerstones of all athletic development.

Learning to Train To-Do List

- Further develop all fundamental movement skills and teach general, overall sports skills. Otherwise, a significant window of opportunity is lost, compromising the ability of the young participants' to reach full potential.
- Develop strength using exercises that incorporate the child's own body weight as well as Medicine balls and Swiss balls.
- Introduce hopping and bounding exercises or routines, or wheeling up gradients (for participants with a disability), to aid in strength development.

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

- Further develop endurance through games and relays.
- Further develop flexibility through exercises.
- Further develop speed by using specific activities that focus on agility, quickness, and change of direction during the warm-up.
- Structure competition to address differences in training age and abilities.
- Identify sports the child enjoys and is predisposed towards success. Narrow the focus to 3 sports.
- Introduce single periodization noting that some sports such as swimming and tennis need to use double periodization to adequately address the sport's unique needs.
- Apply a ratio of 70 per cent training to 30 per cent competition. The 30 per cent ratio includes competition and competition-specific training. These percentages vary according to sport and individual specific needs. Athletes undertaking this type of preparation are better prepared for competition in both the short- and long-term than those who focus solely on winning.
- Encourage unstructured play.

Train to Train

Age: males 12-16; females 11-15

Objectives

Build an aerobic base, develop speed and strength towards the end of the stage, and further develop and consolidate sport specific skills.

During Training to Train, young athletes consolidate their basic sport-specific skills and tactics. This is a window of accelerated adaptation to aerobic, speed, and strength training. This stage is often called by many sports as the "building the engine" stage referring to the opportunities provided for physiological development during puberty.

Optimal aerobic trainability begins with the onset of PHV, the major growth spurt during maturation.

During competitions, athletes play to win and to do their best, but the major focus of training is on learning the basics as opposed to competing.

Training to Train To-Do List

- Make aerobic training a priority after the onset of PHV while maintaining or further developing levels of skill, speed, strength, and flexibility.

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

□ Emphasize flexibility training given the rapid growth of bones, tendons, ligaments, and muscles.

□ Consider the 2 windows of accelerated adaptation to strength training for females: the first occurs immediately after PHV and the second begins with the onset of menarche. For males, there is 1 window and it begins 12 to 18 months after PHV.

Note that both aerobic and strength trainability are dependent on the maturation levels of the athlete.

□ For this reason, the timing of training emphasis differs depending on whether athletes are early, average, or late maturers.

□ Learn to cope with the physical and mental challenges of competition.

□ Introduce athletes with a disability to sport-specific equipment such as wheelchairs and athletic prostheses. For all athletes, the use of body-size and skill-level appropriate equipment remains important.

□ Optimize training and competition ratios and follow a 60:40 per cent training to competition ratio. Too much competition wastes valuable training time and conversely, not enough inhibits the practice of technical/tactical and decision-making skills.

□ Use talent identification to help athletes focus on 2 sports.

□ Utilize single and double periodization as the optimal framework of preparation.

□ Train athletes in daily competitive situations in the form of practice matches or competitive games and drills.

The Learn to Train and Training to Train stages are the most important stages of athletic preparation. During these stages, we make or break an athlete!

Training to Compete

Age: males 16-23 +/-; females 15-21 +/-

Objectives

Optimize the engine and learn to compete.

Optimize fitness preparation and sport, event group/ event, and position-specific skills as well as performance.

All the objectives of Training to Train must be achieved before the objectives of Training to Compete can begin.

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

Training to Compete To-Do List

- Provide year-round, high intensity, individual event, and position-specific training.
- Teach athletes, who are now proficient at performing basic and sport specific skills, to perform those skills under a variety of competitive conditions during training.
- Place special emphasis on optimum preparation by 'modeling' high competitions in training.
- Individually tailor to a greater degree fitness programs, recovery programs, psychological preparation, and technical development.
- Emphasize individual preparation that addresses each athlete's individual strengths and weaknesses.
- Specialize in one sport.
- Utilize single, double, and triple periodization as the optimal framework of preparation.
- Change the training-to-competition and competition-specific training ratio to 40:60. Devote 40 per cent of available time to the development of technical and tactical skills and improving fitness and 60 per cent of training to competition and competition-specific training.

Training to Win

Age: males 19 +/-; females 18+/-

Objective

Podium Performances

Maximize fitness preparation and sport, event and position-specific skills as well as performance.

Training to win is the final stage of athletic preparation.

All of the athlete's physical, technical, tactical (including decision-making skills), mental, and personal and lifestyle capacities are fully established and the focus of training has shifted to the maximization of performance.

World class able-bodied and disability sport performances require world-class equipment that is fine-tuned to the demands of the event and the requirements of the athlete.

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

Training to Win To-Do List

- Train athletes to peak for major competitions.
- Ensure that training is characterized by high intensity and relatively high volume.
- Allow frequent preventative breaks to prevent physical and mental burnouts.
- Utilize single, double, triple, and multiple periodization as the optimal framework of preparation.
- Change the training to competition ration 25:75, with the competition percentage including competition-specific training activities.

Active for Life

Age: This may occur at any age

The age of transition from competitive sport to lifelong physical activity

Objective

A smooth transition from an athlete's competitive career to lifelong physical activity and participation in sport.

South Africa's sport system should encourage athletes to

- Move from one sport to another
- Move from one aspect of sport to another
- Move from competitive sport to recreational activities such as swimming, hiking and cycling or playing tennis or squash
- Move from highly competitive sport to lifelong competitive sport through age group competition such as Master's Games.
- Upon retiring from competitive sport, move to sport-related careers such as coaching, officiating, sport administration, small business enterprises, or media.
- Move from competitive sport to volunteering as coaches, officials, or administrators.

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

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

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

Impact of SAS4L - LTPD

On Parents

Few adults who were physically inactive as children become active as adults. Inactive adults tend to produce inactive children and the reverse is also true. Encouraging children to enjoy moving and promoting confidence in movement skills at an early age helps to ensure later participation in physical activity.

SAS4L - LTPD will

- provide a framework for parents to understand physical literacy and its implications on a healthy lifestyle through lifelong physical activity and on competitive sport involvement for all South Africans, including those with a disability.
- facilitate the understanding of physical, mental, cognitive, and emotional development.
- facilitate the understanding of special requirements such as proper hydration, nutrition, and recovery for the growing child.
- enable parents to help children to choose a pathway in physical activity and sport.

Impact of SAS4L -

On Coaching – SAS4L - LTPD and LTCD alignment and integration

To be successful, a participant development model such as SAS4L - LTPD requires highly skilled, certified and active coaches who understand the individual needs of participants at each stage of their development and the interventions that should be made.

LTPD will:-

- provide the basis for defining the four main coaching domains of the South African model of Long-term coach development (LTCD) (Children; participation; emerging potential/talented; high performance. Have a significant impact on the core coach education curriculum.
- have a significant impact on sport-specific coach education by the National Federations.
- identify a need for volunteer, part-time and full-time coaches who will specialize in coaching children and developmental athletes.
- Provide the basis for participant centered and individualized coaching programmes

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

Impact of SAS4L - LTPD

On Clubs and Community Sport and Recreation

South Africa's sport clubs and community centres provide broad opportunities for participation and are essential to the successful implementation of SAS4L - LTPD from playground to podium.

Input from SRSA

SAS4L - LTPD will

- identify the need for programs to deliver SAS4L - LTPD.
- inform and educate staff and parents about the benefits of SAS4L - LTPD.
- align programs with schools, clubs, and community sports.
- rationalize the competition system at the national and provincial levels and in clubs, community sport, and recreational activities.

Impact of SAS4L - LTPD

On the Sport System

Active and Winning Nation – new role of school sports

These goals can be achieved through the system-wide implementation of SAS4L - LTPD

- signal radical changes to the structure and delivery of programmes.
- cause realignment or rescheduling of competition calendars.
- provide clear pathways for progression.
- help athletes attain higher and more sustained levels of success.
- provide athlete-centred planning and decision making.
- provide a basis on which to monitor and evaluate the effectiveness of programs.
- provide a framework so that all stakeholders understand their role in programming interventions at each stage.

Impact of SAS4L - LTPD

On Sport Science

South African's sport scientists play a vital role in helping athletes and coaches to keep pace with international competition by contributing to their understanding of the science behind their sport's techniques. Sport scientists have an important role in developing new methodologies and monitoring sport science innovations around the world for continuous improvement of South African's sporting techniques.

SAS4L - LTPD will

- Encourage research into all aspects of SAS4L - LTPD, including
- Physical development.
- Mental/cognitive development.
- Emotional development and trainability and readiness factors

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

- Developmentally appropriate level of competition for all stages.
- Length of the competitive phase for all stages.
- Establish normative data for all the stages of SAS4L - LTPD.

Impact of SAS4L - LTPD

On the Education System

There is growing recognition of the urgent need for South African's school children to become much more physically active. It is imperative that the education system assumes a prominent role in addressing the significant health problems that arise from an inactive lifestyle. **SRSA, HEI and Department of Education will input further.**

SAS4L - LTPD will

- highlight the need for daily quality physical education.
- highlight the need to improve training for teachers in the elementary schools to understand the concept of physical literacy and SAS4L - LTPD and correctly model and teach fundamental movement skills and sports skills.
- encourage new courses at colleges and universities to ensure that educators and coaches are familiar with physical literacy and SAS4L - LTPD and can apply these when teaching and coaching.
- encourage the establishment of sport academies enriching the training environment during the Train to Train phase.

Impact of SAS4L - LTPD

Implementation

South African Sport Working Together

Giant steps forward have been taken by the federal and provincial Governments in endorsing the concept of SAS4L - LTPD. The same level of support must also come from municipalities, recreation centres, schools, and clubs. Acceptance of SAS4L - LTPD provides the basis on which future development of participants is planned and implemented.

To implement SAS4L - LTPD, the following actions need to be completed:

- Develop a generic South African SAS4L - LTPD to enhance the understanding and acceptance of SAS4L - LTPD to help change the culture of South African sport.
- Implement sport-specific SAS4L - LTPD models in each sport. Where appropriate, include LTPD for athletes with a disability.

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

- Review coach education in each sport and overall, based on SAS4L - LTPD factors and objectives.
- Review competition structures and schedules in each sport and overall, based on stage specific SAS4L - LTPD factors and goals, ensure developmentally appropriate competitions
- Promote the development by all sports of the full range of motor and sport skills at the FUNdamentals and Learning to Train stages.
- Develop information on the Active Start and FUNdamentals stages for use across all sports in all communities.
- Incorporate FUNdamental activities into sport-specific sessions for younger children, especially during warm-up and fun activities.
- Promote greater co-operation between sport organizations, coaches, and teachers in the scheduling of sessions and competitions.
- Formulate a cross-sport declaration on the implementation of LTPD that is supported by multisport and sport-specific organizations.

Summary (to be completed after consultation process!)

South African Sport for Life – Long-Term Participant Development

- Is a paradigm shift in South African sport
- Is a philosophy and a vehicle for change
- identifies the shortcomings in South Africa’s sport system and provides guidelines for problem solving
- provides sport system alignment and integration between
 - physical education
 - school sports
 - recreational physical activities
 - high performance sport
- provides for system alignment and integration between
 - sport and recreation sector (SASCOC and SRSA)
 - education (Department of Basic and Higher Education)
 - health (Department of Health)
- is athlete-centered from a child’s first involvement in sport to the transition to lifelong physical activity or other sport related activities

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3

DRAFT

- integrates the needs of participants with a disability into the design and delivery of sport programs
- provides a framework for reviewing current practices, developing new initiatives, and standardizing programs.
- establishes a clear development pathway from playground to podium and on to being active for life.
- provides guidelines for planning for optimal performance for all stages of athlete development
- provides key partners with a coordinated structure and plan for change
- identifies and engages key stakeholders in delivering change
- integrated with long-term coach development (LTCD)

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

Selected Bibliography

Abbott A., Collins D., Martindale R., Sowerby K., Fundamental Movement Abilities Chart, Talent Identification and Development, An Academic Review, Sport Scotland University of Edinburgh 2002

Alpine Integration Model. Alpine Canada Alpine, High Performance Advisory Committee, 1999
Armstrong, N. and Welsman, J. Young People and Physical Activity. Oxford University Press, Oxford, 1997.

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

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

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

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

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

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

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

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

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

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

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

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

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

Belov, E. "For Those Starting Artistic Gymnastics". Translated material of the Canadian Gymnastic Federation. 1995. Blimkie, C.J.R and Marion, A. "Resistance Training during Preadolescence: Issues, Controversies and Recommendations". *Coaches Report*, Vol.1. No.4.1994. pp.10-14.

Blimkie, C.J.R. and Bar-Or, O. "Trainability of Muscle Strength, Power and Endurance during Childhood". In. Bar-Or, O. ed., *The Child and Adolescent Athlete*. London: Blackwell Scientific Publications, 1996. Bloom, B. *Developing Talent in Young People*. New York: Ballantines, 1985.

Bompa, T. *From Childhood to Champion Athlete*. Toronto. Veritas Publishing Inc. 1995
Bouchard, C., Malina, R.M., Perusse, L. 1997. *Genetics of Fitness and Physical Performance*. Champaign, IL: Human Kinetics.

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

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

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

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

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

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

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

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

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

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

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

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

International Gymnastics Federation. Age Group Development Program. CD Rom. 2000.
MacDougall, J.D., Wenger, H.A. and Green, H.J. (Eds) Physiological Testing of the Elite Athlete. Movement Publications, Inc. Ithaca N.Y., 1982.

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

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

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

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

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

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

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

Ross, W.D. and Marfell-Jones, M.J. Kinanthropometry. In: *Physiological Testing of the Elite Athlete*. Eds. MacDougall, J.D., Wenger, H.A., and Green, H.J. Movement publications, Ithaca, N.Y., 1982. pp. 75 – 104.

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

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

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

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

South African Sport for Life Long-Term Participant Development
RESOURCE PAPER V 3
DRAFT

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

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

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

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

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

Viru, A. Adaptation in Sports Training. CRC Press, Boca Raton, 1995. 310.p.

Vorontsov, A.R. Patterns of Growth for Some Characteristics of Physical Development: Functional and Motor Abilities in Boy Swimmers 11 – 18 Years. In: Biomechanics and Medicine in Swimming VIII. Eds. Keskinen, K.L., Komi, P.V. and Hollander, A.P. Jyvaskyla, Gunners, 1999.

Vorontsov, A.R. Multi-Year Training of Young Athlete as Potential Modifier of Growth and Development (Analysis of some biological concepts). Sport Medicine in Aquatic Sports – the XXI Century, FINA World Sport Medicine Congress, 2002.

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

South African Sport for Life Long-Term Participant Development
 RESOURCE PAPER V 3
DRAFT

Appendix 1

Physical, Mental / Cognitive, and Emotional Development Characteristics

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

| | | | | |
|---------------------|--------------------------|--------------------------|----------------------------|------------------------|
| FUNdamentals | Learning to Train | Training to Train | Training to Compete | Training to Win |
| | Late Childhood | | Late Puberty | |
| | Early Puberty | | Early Adulthood | |

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, co-ordinated 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 quickly. of most activities. | To acclimatize children will take longer so longer warm-ups may be 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 |

South African Sport for Life Long-Term Participant Development
 RESOURCE PAPER V 3
DRAFT

| | | |
|--|--|--|
| | | 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 kinesthetic 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 neuromuscular adaptations of muscle fibers. | 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 the 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 style. | Learning is through verbal, visual, or manual means. Most children are doers! | Use a variety of learning styles to suit individual needs. |
| Imagination is blossoming. | Creativity should be encouraged. | Allow the children to play and experiment. Use their ideas to create exciting sessions. |

South African Sport for Life Long-Term Participant Development
 RESOURCE PAPER V 3
DRAFT

| | | |
|---|--|---|
| | | 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. (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 behaviors. |

South African Sport for Life Long-Term Participant Development
 RESOURCE PAPER V 3
DRAFT

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 kinesthetic 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 from 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. |

South African Sport for Life Long-Term Participant Development
 RESOURCE PAPER V 3
 DRAFT

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 behavior may change. | Communicate and accept changes, but don't let hormonal changes be an excuse for negative behavior. |
| 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. |

South African Sport for Life Long-Term Participant Development
 RESOURCE PAPER V 3
DRAFT

Late Adolescence – Mental and Cognitive Development

| Basic characteristics | General impact on performance | 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 kinesthetic 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. |

South African Sport for Life Long-Term Participant Development
 RESOURCE PAPER V 3
 DRAFT

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 acceptance of the need for rules, regulations, and structure. | The young adult must perceive the rules and structure as being clearly defined and fair. | Involve athletes in decision making and planning team or group activities. |

South African Sport for Life Long-Term Participant Development
 RESOURCE PAPER V 3
DRAFT

Early Adulthood – Emotional Development

| Basic characteristics | General impact on performance | 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. |
| Major decisions on career, education, and lifestyle are priority at some pointing this stage. | | Provide athletes with ample opportunities for independent social interaction. |

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RESOURCE PAPER V 3
DRAFT

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