



# ORIENTEERING

**A Sport  
For Life**



**Long-Term  
Participant  
Development**



**sport & recreation**

Department:  
Sport and Recreation South Africa  
REPUBLIC OF SOUTH AFRICA





## What is Long-Term Participant Development?

Long-Term Participant Development or LTPD is a model which provides a framework for an optimal training, competition and recovery schedule for each stage of athletic development. The model is based on the idea that there are a number of different physiological, mental, and emotional development stages through which a participant progresses. Each stage requires a different set of training, competition and recovery programs for optimal performance.

Importantly, this means that the model is based on the *athletic development age*, not on the chronological age, of each participant. It is therefore an inclusive model, applicable to participants at all levels of ability; novices, elite athletes, and recreational participants alike can apply the model to their specific goals.

In order to be successful, the LTPD model requires full sport system alignment and integration. As such the model is participant centred, coach driven and administration, sport science and sponsor supported. From implementation in Canada and elsewhere experience has shown that coaches who engage in the model are more likely to produce participants who reach their full potential. The SAOF is of the opinion that the combination of inclusion and optimal development offered by the LTPD model makes it the optimal framework for the development and growth of orienteering in South Africa.

In 2008 the SAOF adopted as its vision **Development Growth Excellence**. This reflects the belief that in order to grow the sport, development and roll-out of education pathways is required in order to reduce the *Barriers to Entry* inherent in the sport. This vision also recognises that excellence, which includes being internationally competitive at the highest level, will not be possible without the foundation of development and growth of the sport.

An orienteering-specific LTPD model has therefore been developed. The SAOF's LTPD model for orienteering reflects a few sport-specific requirements:

- Orienteering is a late specialisation sport, meaning that:
  - Early specialisation is not recommended
  - Some degree of physical literacy should be gained from other sports prior to specialisation
- Specific mental skills (map-reading and concentration abilities) must be developed as well as physical skills
- Orienteering is a “**sport for life**” which can and should be enjoyed irrespective of level of excellence

The development of our LTPD model was initiated as part of a SASCOC drive to increase participation in recreational sport and to assist with the identification and development of the next generation of internationally successful athletes.



## Ten Key Factors Influencing Long Term Participant Development

Research has identified ten important factors that influence participant development. Orienteering programmes built around these factors will ensure that participants can develop optimally in their chosen sport and enjoy life-long physical activity.

### ONE: Continuous Improvement

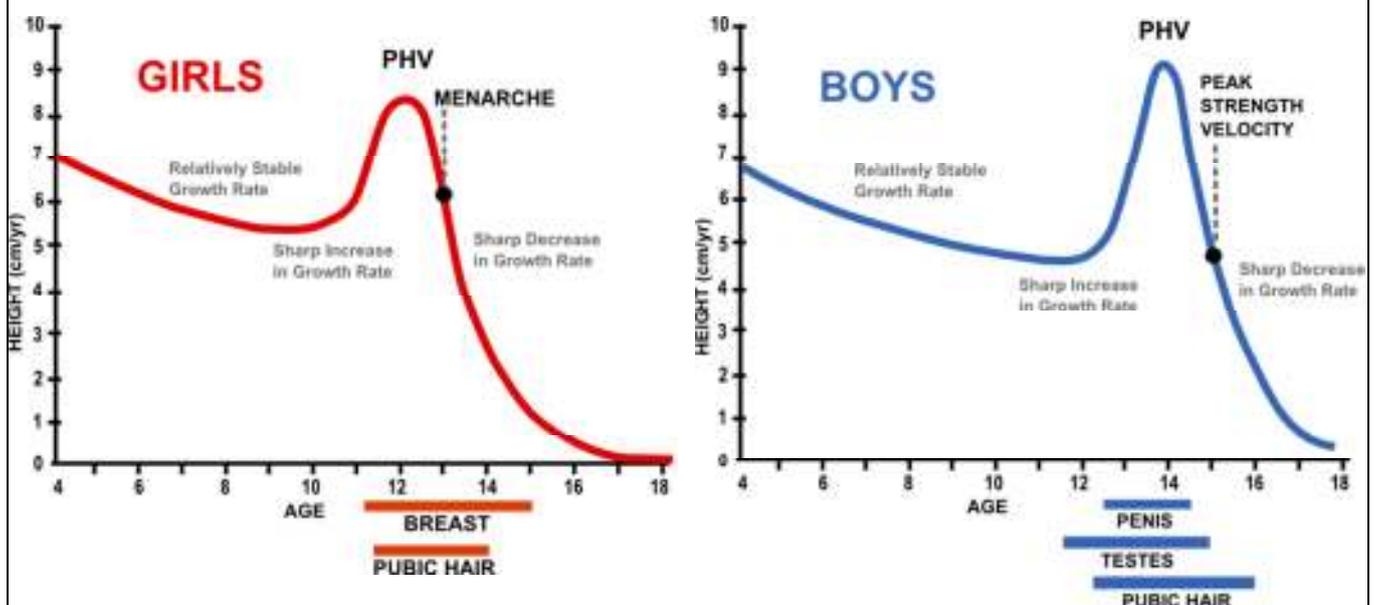
Long-term development requires a *dynamic* model; the LTPD framework must react to new observations and innovations (use of electronic timing and GPS tracking are examples of innovations affecting orienteering), and thereby evolve to reflect emerging trends in sport science, as well as in recreation, health, and education.

### TWO: FUNDamentals

Developing **physical literacy** – the fundamental movement skills (e.g. running, jumping, bounding, catching) – is critical before mastering complicated sport-specific skills and strategies. These skills may be developed through other sports, such as athletics, gymnastics and swimming; fundamental movement skills are essential for participation and enjoyment of sport, and although ideally developed before adolescence they should not be neglected at any stage of participant development.

### THREE: Developmental Age

*Chronological age* = age in years; *Developmental age* = degree of physical and mental maturity along a continuum starting at birth. Developmental age is highly individual, and the critical determining factor for when each aspect of orienteering should be introduced or emphasized. Coaches should be aware of particular time sensitive periods of accelerated adaption to training.



These figures show the Rate of Change in Height & Peak Height Velocity (PHV), Left – Girls, Right – Boys; highlighting key physical development indicators (adapted from CS4L (2005))

# Long-Term Participant Development



## FOUR: Mental development

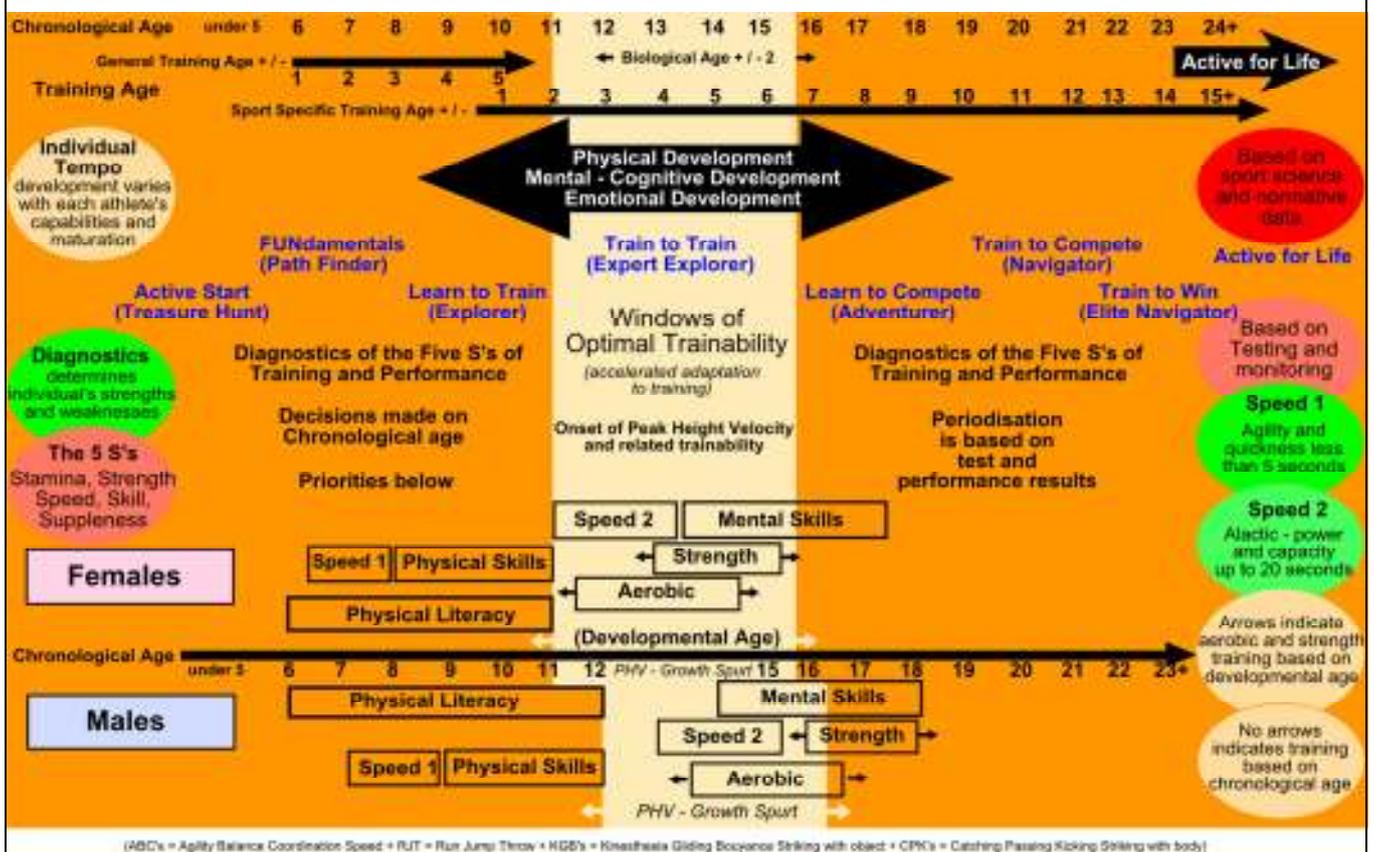
A variety of psycho-social and emotional factors influence the participant from day-to-day and also vary with developmental age. Such elements have significant effect on physical performance, and must be prioritised in long-term development.

## FIVE Specialisation

Orienteering is generally considered a late specialisation sport as complex skills (mental as well as physical) must be developed. Successful elite athletes commonly participated in a wide variety of sports as children, and such early and varied development is particularly valuable for orienteers; early exposure to several sports develop crucial skills such as: agility, balance, speed, core strength, stamina and eye-hand-foot coordination. *Too early specialisation should be discouraged as it may lead to early burn-out, under-development of basic skills, and overuse injuries.*

## SIX Trainability

During growth, there are periods of optimal trainability for particular skills, at which children are more adaptable to training. These periods depend on gender, and can be considered in terms of stamina, strength, speed, skill (physical and mental) and suppleness – which have windows of trainability occurring at different times.



Schematic summarising Optimal Trainability (modified after Balyi, Devlin, Lauzière, Moore and Way, 2006)



## The 10 S's of Training and Performance

Ten capacities (S's) need to be integrated when developing training, competition, and recovery plans. These capacities are all trainable throughout a participant's lifetime; however, there are critical, sensitive periods where training produces the greatest benefit to each participant's development. The timing of these periods is highly variable between individuals.

### Stamina (Endurance)

The window of optimal trainability occurs at the onset of the growth spurt. Aerobic capacity training is recommended before children reach PHV. Aerobic power should be introduced progressively after the growth rate decelerates.

### Strength

Emphasis on strength training is highly sport-specific, but required for high level performance in orienteering, where top athletes are generally highly efficient uphill runners and commonly competitive at elite level in cross-country running.

### Speed

Whilst explosive speed is not crucial in orienteering, the need for agility (lateral and bounding in rough terrain) is of great importance. Also with the advent of the *Sprint orienteering* format, speed (and particularly acceleration) has become important.

### Skill

Both physical and mental skills are important for orienteering. Physical literacy is the development of **fundamental movement skills** that permit a participant to move confidently and with control. It also includes the ability to "read" what is going on and react appropriately to those events. Physical literacy is the foundation of both life-long and high performance participation.

In the case of the navigational skills required for orienteering the window for optimal training is between the ages of 13 and 18, reflecting when abstract and critical thinking skills are developed. These technical orienteering skills are difficult for participants who enter the sport after this navigational skills window. In other words, participants who start orienteering late tend to struggle unless they developed the critical 3D thinking and quick analytical skills through some other route. This may explain why participants who enter the sport later in life are generally technically orientated.

### Suppleness

Suppleness is generally developed at an early age (6 – 10 years), but attention must be paid to flexibility during growth spurts (when rapid growth leads to effective muscle shortening), and later in life as flexibility aids injury prevention.

### Structure/Stature

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.

### Psychology

As a participant 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 determine podium performances. Mental training is critical at any LTPD stage as dealing with success and failure determine continuation in sport and physical activity, therefore dramatically affecting an individual lifestyle.

### Sustenance

Sustenance recognises a broad range of components with the central theme of replenishing the body, including: nutrition, hydration, rest, sleep and regeneration, all of which need to be applied to training (life) plans depending on the stage within the LTPD. Improperly addressing sustenance can lead to the same burn-out that occurs with overtraining and over-competing.

### Schooling

When possible, training camps and competition tours should complement, not conflict, with the timing of major schools academic events. Interference from other school sports should be minimised, 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

Socialisation via sport ensures that general societal values and norms are internalised via sport participation. This occurs at the community level. The nature of Orienteering, as a sport, requires particular attention to principles of fairness. It is also a sport that is close to the natural environment, which leads naturally to the promotion of eco-friendly culture.

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.



## **SEVEN: Periodisation**

Training, competition and recovery should be organised into a logical schedule to achieve optimal performance at the required time. Such a schedule should be planned to place the right activities with correct level of difficulty and intensity in a sequence which reaches the desired training and competition objectives, and avoids injuries and burn-out. Although generally planned at an annual scale, the periodisation plan can be broken down to individual sessions and weeks, as well as seen in the context of longer-term plans for years ahead.

## **EIGHT: The Ten Year Journey**

Sport science research has come to a general conclusion that ten years (or 10,000 hours) of deliberate training is required to reach elite level. Thus, **there are no short-cuts**, and elite performances require long-term planning and commitment.

## **NINE: Competition Calendar**

Sport administration must assist long-term development by planning event calendars that support and align with LTPD stages. Competitors must also take care to select competitions appropriate for their stage of development; in early stages training and development take preference over short-term success, whereas in later stages experienced participants need the challenge of varied and competitive events. This point should be carefully considered when sending orienteers overseas.

## **TEN: System Alignment**

South Africa's LTPD aims for alignment of sport activities in South Africa, integrating health and education with sport and physical activity. It is also a tool for motivating change towards more effective organisation, alignment and integration within each national sport organisation, such as Orienteering.

Enjoying a lifetime of physical activity and achieving athletic excellence are both built on a foundation of physical literacy and fitness.

LTPD recognises that physical education, school sports, recreational activities and competitive sport are interdependent.

## **The SAOF's Eight Stage Long-Term Participant Development Model**



The Orienteering-specific LTPD model distinguishes eight stages of participant development. The first three stages focus on exposure to a wide variety of activities to ensure proper development of overall motor skills and sports skills. After the first three stages, there is focus on specialisation. During subsequent phases participants strive for excellence in orienteering or transition to life-long participation in orienteering and/or other sports at a recreational or less competitive level.



## Stage 1: Treasure Hunt

( Active Start )

( All: 0-6)

The objective of the stage is to learn fundamental movements and link them together into play. Physical activity **should be fun** and a **natural part of life**. Activities include Running, Jumping, Twisting, Balancing, Kicking, Throwing and Catching.

At the Treasure Hunt stage of LTPD children begin their journey through the Youth Orienteering Challenge participation scheme and other grassroots initiatives. This scheme is supported and funded by the SAOF for implementation by the clubs at local events.



At the Fundamentals stage of LTPD the children continue their journey by being taught to orienteer independently. This is supported by the Youth Orienteering Challenge Skills Quest, which is a scheme that is supported and funded by the SAOF for implementation by the clubs at local events.

## Stage 2: Pathfinder

( FUNdamentals )

( F:6-8 ; M:6-9)

This is the time to get a basic understanding of map-reading and navigational skills. Those who are identified as having either a more genetic disposition to the sport or show keenness are encouraged to join a local club which provides the opportunity for more focused development and access to the larger orienteering community.

The emphasis during the FUNdamentals phase is on fun and participation. It will aim to **develop crucial physical capacities** such as agility, balance, co-ordination and speed (ABC'S) alongside basic orienteering-specific skills.



Coaches must encourage a positive perception of the activities. They must create a non-judgmental and unthreatening atmosphere where equal praise is given for all forms of effort. **A positive early experience of orienteering is critical to develop a future love for the sport.** Basic orienteering related skills such as understanding the map, orientating the map, folding the map, tracking position on the map relative to the ground (i.e. thumbing), are starting to be internalised during this phase.



## Stage 3: Explorer

( Learn to Train )

(F:8-11 ; M:9-12)

Orienteers should concentrate on building upon competencies learnt during the FUNdamentals stage, including motor skill and co-ordination development, with an emphasis on further development of robust Orienteering skills. Whilst participants are learning to become better participants **all programs should be fun and activity based**.



Participants are introduced to general physical conditioning and an awareness program to highlight the importance of physical development for future success in Orienteering.

It is important that both participants and coaches place a positive emphasis on the link between physical conditioning and Orienteering success. Orienteering requires a combination of endurance and strength. Not only is running efficiency important in orienteering, but so too is uphill running efficiency and the ability to run quickly over uneven terrain. Since the sport involves map reading in technical terrain and decision-making on the move, success in orienteering requires the ability to perform these functions during maximal physical effort.

## Stage 4: Expert Explorer

( Train to Train )

(F:11-15 ; M:12-16)

This is a critical stage of LTPD. In addition to maintaining the ABC's and introducing more advanced Orienteering skills, this stage is about "**Building the Engine**". Whilst it remains important that participants continue to play other sports, for variety and cross-training, the balance during this phase is now firmly toward Orienteering. Again it is emphasised that although early maturing participants are undoubtedly better athletes during childhood, research strongly suggests that late maturing children may have greater potential to reach elite levels in the long term. Important points during this phase are to maintain physical conditioning during the Growth spurt, and although a competitive but positive environment provides healthy motivation, **competition is still secondary to development**, and regular monitoring is critical.





## Stage 5: Adventurer

( Learn to Compete )

( F:15-17 ; M:16-19 )

During this stage the window for critical mental and cognitive skills is fully open and participants further develop their Orienteering skills. There should be a **focus on technical and tactical work in competitive situations**. Coaches will need to encourage participants to become more independent and will also need to create an environment conducive for the mastery of technique and development of mental toughness to perform.



Prioritisation of competition and suitable compete: train: rest ratios will need to be considered. It is important to establish a Provincial and National Junior squad (W16, M16 and W20, M20) to **provide adequate competition at the elite level**. This will offer more retention of promising young participants at this level.

During this phase important transition points take place. It will be important for coaches to consider appropriate training regimes to ensure that participants retain a balanced lifestyle during this important time.

## Stage 6: Navigator

( Train to Compete )

( F:17-22 ; M:19-23 )

During this stage participants will strive to master their Orienteering skills, including technical and tactical work in high-intensity competitive situations. This stage will see **full individualisation of all physical, recovery and mental development programs**. This will include further development of self-awareness and the ability to identify and correct weaknesses.

Participants should make the transition from national Junior to national Senior squad and be given increased international exposure. Opportunities to optimise decision making in high-intensity situations must be maximised.



Performance at the highest level is **only possible with strong mental preparation**. The participant needs to improve their ability to adjust emotions and focus to gain control over confidence and performance outcome.



## Stage 7: Elite Navigator

( Train to Win )

(F:22+ ; M:23+)

The Train to Win stage should see the participants have most of the capacities in place to perform at the highest level. There is focus on improving all three components: Physical Conditioning (internationally competitive orienteers have ground speeds of 9.15 (men) and 10.45 (women) over 3000 m), Mental Toughness and Orienteering Technique. **Experience in varied terrain and high quality technical training is critically important at this level.** Periodisation may involve multiple peak-performance periods with National and International calendars including several key events.



This stage also involves further mastery of skills, attention to detail, regular use of sport science, complete individualisation of training, medical monitoring, fine-tuned mental and physical preparation.

## Stage 8: Active for Life

(Enter at any age)

This is the stage when an individual makes the transition from competitive sport to life-long physical activity, and it may occur at any age.

Participants continue to be physically active in orienteering or in any other sport. This stage is also characterised by people who continue to be involved in the orienteering community in different capacities.

The sport system should encourage participants to move from one sport to another with ease and from one aspect of sport to another.

Active for life may also involve moving from competitive sport to one or more of: (1) other recreational activities; (2) lifelong competitive sport through age group competition such as Master's Games; (2) sport-related careers, such as coaching, officiating, sport administration, small business enterprises, or media; or (4) volunteer positions, as coaches, officials, or administrators.

Training, racing and recovery programs should fit the needs of the participants for whom they are intended. Masters participants need programs that take into account how aging affects strength, flexibility and endurance. **A positive experience in sport is the key to retaining participants after they leave the competitive stream.**





## Implementation Plan

The SAOF's current focus is our **Expansion Plan**. This plan aims to develop sustainable clubs in 5 more provinces. An integral part of this plan is to encourage new and existing clubs to expose more children to orienteering by running schools leagues. Underpinning the plan is the provision of a comprehensive *Introduction to Orienteering* training course together with a high-quality resource pack.

### Short-term objectives 3-5 years

- Deliver an awareness program to educate the SA orienteering community about LTPD and establish an LTPD framework.
- Active Orienteering clubs in 5 provinces (currently we are active in two provinces)
- Improve Participation Levels across all demographics
- Improve Performance Levels
- Target World Games Performance Improvement (2013)

### Long-term Objectives: 2020

- Active Orienteering clubs in 7 of 9 provinces
- 5 Constituted Provincial Bodies
- Further extend participation in Orienteering across all demographics.
- Improved demographic representation on administrative bodies.
- Improve international Performance further

## Coach Education and Development

The role of the coach is central to any successful introduction of a new sports system. It is therefore crucial to develop a long term coach development pathway. There are a number of specific activities that will be performed to this end.

- Development of SAOF coach qualification and accreditation system following LTPD principles.
- To seek to formalise the qualifications within National Qualifications Framework (NQF) as administered by the South African Qualifications Authority (SAQA). This is part of the SA Coach Framework project being driven by SASCO.
- To design and deliver Coach Development Workshops with special emphasis on the delivery of the Fundamentals, Learning to Train and Training to Train stages.
- Our initial emphasis is to develop a course to train teachers about Orienteering (part of Life Orientation in grade 10-12 syllabus)
- To fast-track this development by seeking partnerships with well-established orienteering nations to utilise and modify (if necessary) their systems.
- To extend our reach in delivering this material by forming strategic partnerships with organisations that already have the delivery infrastructure in place.
- To encourage existing clubs to offer more training opportunities by qualified coaches.



Orienteering, even at its most basic form, has relatively high *barriers to entry* compared to other sports. In order to host an orienteering event, one needs a map, a timing system and some basic knowledge of how to set courses that are fair to all competitors.

Even though many course variations are possible, and indeed various types of orienteering event are possible, repeated events in the same area lead to familiarity with the map and hence a reduced challenge. There is thus a need to have a range of nearby areas that are mapped. Initial exposure to the sport should be in simple terrains like school grounds or simple parklands. Some participants will quickly master these most simple of events and seek out more complicated challenges.

This progression is highly demanding on the sport. It requires maps of more technical areas (which are more expensive to produce) and it also places greater demands on officials who have to learn to set more challenging courses that still adhere to the paramount requirement that they are fair to all competitors.

This progression from Introductory-level orienteering all the way to the International-level means that an education pathway is required to ensure that organisers and officials develop the necessary skills. In the interests of maintaining standards within a growing sport it is necessary for the SAOF to develop an education pathway for officials, mappers, and coaches.

## Further Resources

Further information about our LTPD model can be found on the SAOF website:

<http://www.orienteering.co.za/ltpd/>

For more information on the South African Sport for Life project and the South African Coach Framework, visit the high-performance section of the SASCO website:

<http://hp.sascoc.co.za/>

Resources for parents can be found at the Canadian Sports for Life website:

<http://www.canadiansportforlife.ca/parents>

A wealth of additional resource papers is available on the Canadian Sports for Life website:

<http://www.canadiansportforlife.ca/resources/ltad-resource-papers>

## Acknowledgements

Credits to Pat de Klerk, Barbara de Leeuw-Morrison and Erik Borg for the pictures used in this document.