LONG-TERM ATHLETE DEVELOPMENT GUIDE
FOR ATHLETES WITH A DISABILITY

CROSS COUNTRY SKI DE FOND

Cross-Country Skiing A Sport For Life


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Introduction

To a large extent, the content in Cross Country Canada's able-bodied Long-Term Athlete Development Guide "Cross-Country Skiing - A Sport for Life" is applicable to athletes with a disability as well - it is the starting point for the development of all cross-country skiers. Therefore this document, "Long-term Athlete Development Guide for Athletes with a Disability" focuses on factors that need to be considered when working with athletes with a disability - either modifications to information in the parent document or additional factors that need to be considered.

Cross-country skiing is a sport that can be enjoyed by all regardless of the type of disability – physical or intellectual.

Cross Country Canada, its divisions and clubs provide programming for both athletes with congenital physical disabilities and athletes with physical disabilities acquired later in life. In addition, sport specific technical training is provided to coaches who work with athletes with intellectual disabilities.

The purpose of this Guide, along with Cross Country Canada's National Coaching Certification Program (NCCP), is to encourage a well-informed, coordinated approach to building an effective, long-term athlete development system for cross-country skiers with a disability.

Shortcomings and Consequences Specific to Athletes with a Physical Disability

Before LTAD can be implemented successfully, the many shortcomings and resultant consequences specific to cross-country athletes with a disability must be addressed. Examples of these shortcomings and the consequences are as follows:

Shortcomings

What are the shortcomings?

- There are many different types of disabilities, which in turn means there is a wide range of athlete development considerations that needs to be understood and put into practice.
- Developmental training needs are not well understood.
- The potential for participant numbers is small in comparison to those for able-bodied sport.
- Athletes often require specialized equipment.
- Parents and guardians can be overprotective.
- Clubs are relatively new to this aspect of the sport and to date have had limited resources to work with and limited success in creating community awareness, acquiring sport-specific equipment, recruiting participants and developing the basic sport skills of the athletes in their programs.
- Lack of trained and experienced coaches.
- Lack of trained and experienced officials.

Consequences

What are the results of these shortcomings?

- It is challenging for coaches to design safe, motivating and effective athlete development programs.
- Specialized equipment can be costly and difficult to access.
- There is a lack of structured cross-country ski programs at local and provincial/territorial levels.
- Not many athletes are recruited to cross-country ski programs until after they have left rehab.
- Because most athletes with a disability enter sport later in life, there is less time to learn new sport skills and to learn to train and compete than for able-bodied athletes.
- Because of the limited number of competitive skiers, athletes sometimes progress to international-level competition within a few years.

Important Factors Influencing the Development Process for Athletes with a Physical Disability

Research points to a number of key factors that influence the development of athletes with a disability. Building programs around these factors will help athletes experience both optimal development in their chosen sport and lifelong involvement in physical activity.

1. Types of Disability

Athletes may be born with a disability (i.e. congenital disability), or they may acquire a disability later in life.

Congenital Disability

Children with a congenital disability may not have the same opportunity to learn FUNdamental movement skills as able-bodied children because they may not have the same opportunities for vigorous, physical play during their early years (the Active Start stage of development). This is sometimes due to long periods of hospitalization and the lack of suitable physical education programs, but it may also be due to parents or caregivers being overly protective, a situation that can also occur with an acquired disability. It should be recognized that children with congenital disabilities progress through LTAD stages the same way, and with similar timelines, as able-bodied children.

Acquired Disability

Athletes who acquire their disability later in life, and are then introduced to cross-country skiing, will likely have progressed through the first three or four LTAD stages already, depending on when their disability occurred. They may have to relearn some FUNdamental movement skills with their new body, but they can expect to progress through these skills at a much faster rate than the first time they went through them.

Athletes with a disability pass through the same stages as able-bodied athletes, although the ages and rate of progress may differ.

Source: No Accidental Champions

2. The Ten Year Journey

Athletes with congenital disabilities follow a development pathway similar in length to that required for able-bodied athletes, while athletes with a disability acquired later in life may reach the international level as a competitor in less than ten years post injury, depending on their level of development pre-disability.

3. The FUNdamentals

Children with a disability should acquire FUNdamental movement and sport skills (physical literacy) through fun and games, the same as able-bodied athletes do. This needs to be achieved prior to puberty.

Children have difficulty acquiring these skills because:

- Overly protective parents, caregivers, rehabilitation facility staff, teachers and coaches shield them from the bumps and bruises of childhood play.
- Most school systems don't have well-developed, adapted physical education programs.
- Coaches/programs are reluctant to include children with a disability in their activities because of a lack of resources and a lack of knowledge about how to integrate them.
- Creativity and extra effort are required to integrate an individual with a disability into a group activity where FUNdamental skills are practised and physical literacy is developed.

It is important for the acquisition of daily living FUNdamentals to take place as soon as possible after the onset of a disability. The ability to perform basic transfers from vehicle to chair, and chair to sit-ski should be acquired prior to learning basic sport skills, especially if the individual has weak upper body strength. Coaches should be aware of this because support is often focused on arranging basic living elements (i.e. transportation, finding new schools, doctor appointments, surgeries, etc.) rather than developing these important skills.

The physical literacy skills needed by children with a disability vary greatly depending on the nature and extent of their disability. They should include all the same skills learned by able-bodied children (modified as required), as well as the additional skills required for effective use of assistive devices.

Regardless of their previous physical skill, individuals who acquire a disability often have to learn new physical literacy skills in order to use a sit-ski, use a prosthetic limb or accommodate a restricted range of movement. Even if the athlete is an adult, it is critical that he/she learn the FUNdamentals of new movement and sport skills (with the new body), so that those skills can be applied to a wide range of sports and recreational activities.

NOTE: Approximately 25% of children with disabilities will require help with everyday activities, including personal care (e.g. bathing, dressing, feeding, moving about within the home), because of a medical condition or health problem.

4. Specialization

Disability sports are late specialization sports. It is critically important that children with congenital or early-acquired physical disabilities be exposed to the full range of FUNdamental movement skills before specializing in a sport. Similarly, adults with an acquired disability should master their new FUNdamental movement skills before specializing in a sport.

It is also important that children with an intellectual disability be exposed to the full range of FUNdamental movement skills before specializing in a sport.

5. Age Factors

Some congenital disabilities are known to influence childhood/adolescent development and the timing of puberty (i.e. children with spina bifida are known to experience puberty earlier than their peers). However, although the timing of puberty may vary, the sequence of development that the child/adolescent goes through is likely to remain the same.

It is important to note that due to the variations in the timing of puberty (and therefore peak height velocity), it is probable that there will be variations in the ages at which windows of optimal trainability occur. However, in the absence of definitive data to indicate otherwise, athletes with congenital disabilities should follow the same development pathway and timelines as able-bodied athletes. For those who have suffered a traumatic injury (acquired disability), no research has been done to determine when optimal training occurs.

Much more research is needed before a full understanding of these areas is achieved.

Children with intellectual disabilities often enter puberty early but complete the process later than their peers.

6. Trainability

Little or nothing is known about periods of optimal trainability for individuals with a disability. In the absence of information to the contrary, it is therefore suggested that for children with a congenital disability, the ages of optimum trainability, as shown on page 14 of "Cross-Country Skiing - A Sport for Life", be adjusted based on the observed age of puberty. Whether there are optimal periods of trainability during post-injury rehabilitation still needs to be investigated.

Medical operations and drug therapy may also delay Peak Height Velocity (PHV), Peak Weight Velocity (PWV) and Peak Strength Velocity (PSV), either as a result of training interruptions or a lengthy recovery period (months to years).

Athletes who acquire a disability after adolescence will already have gone through the periods of optimal trainability pre-disability, and an assessment will be required in order to determine what the athletes' training needs are.

More research is needed to understand optimal athlete development.

Source: No Accidental Champions

7. Training and Competition Partners

For athletes with a disability, training and competition partners are an essential and integral part of their sport experience. Therefore, it is important that the support for the training and competition partners be equal to the support for the athletes (with a disability) themselves. It is also important to match athletes and partners appropriately. For skiers in the early stages of development, finding a ski partner with comparable ski abilities is usually adequate. However, as skiers strive for higher levels of performance, it is important to have training and competition partners that are paired more closely based on physique, skill level and fitness. Recent retirees from National Ski Team and college/university racing teams often transition well into these roles.

To continue to improve sport performance, athletes' training and competition partners need to be equally committed to the sport, and they need to be recognized as athletes in their own right. As athletes with a disability improve, they may need to replace their existing - and sometimes long-term - partners with partners whose athletic performance can keep pace with theirs. Athletes cannot improve and become successful at higher levels of competition if they seriously out-perform their partners or become incompatible with a partner who is working with them.

Athletes with visual impairment cannot usually travel, train or race without a sighted guide.

Athletes with severe disabilities may not be able to participate in sport beyond the recreational level. If they are able to participate in competitive cross-country skiing they may require a custodian or companion to look after their daily needs while they are traveling, training or at races. Daily living support for athletes who require it allows them to focus more on their training and performance and less on daily logistics. On the other hand, a lack of daily living support will make their progression up the LTAD stages challenging, and may even result in health issues (e.g. untreated pressure sores).

8. Physical, Mental, Cognitive and Emotional Development

Sport can play an invaluable role in helping individuals with a disability develop self-confidence and self-worth, as well as in learning how to set and achieve personal goals.

Teens with disabilities are particularly vulnerable, and may have difficulty forming a healthy self-image. Teens with disabilities that are physically apparent will be very aware of how their appearance differs from society's desirable image. As a result, peer relationships and fitting in with a peer group are critically important to help them to establish their own unique identity.

Although self-esteem and self-image are promoted by participation in sport, few school sport programs are adapted to children and teens with disabling conditions. To better understand the disabilities of student athletes, teachers and coaches should refer to the International Paralympic Committee (IPC) website at www.paralympic.ca, or participate in National Coaching Certification (NCCP) Workshops for cross-country skiing.

Consideration of mental, social and emotional development is particularly important when working with athletes with an intellectual disability. The development of characteristics and implications for coaches needs to be interpreted in light of each athlete's mental and developmental age, rather than chronological age.

9. Periodization

There is little or no research evidence that periodization for athletes with a disability is substantially different from that for able-bodied athletes. However, there is some evidence to indicate that:

- Quadriplegic athletes do not have the ability to raise their heart rate, and as a result all adaptation is in the peripheral muscles; and
- Quadraplegics have problems with regulating their body temperature (including an inability to sweat when hot), and athletes with spinal cord injuries above T6 may experience automatic dysreflexia - a sudden rapid increase in heart rate and blood pressure that poses a serious health risk.

These factors may need to be taken into consideration when using periodization as a planning technique.

In the LTAD context, periodization connects the developmental stage the skier is in to the requirements of that stage. It is therefore an essential component of optimal sports programming and athlete development at all levels.

10. Facilities

In order to offer cross-country ski programs to individuals with a disability, it is important to have the use of a ski facility that is accessible to them. For example, ski trails need to be marked differently because a moderate downhill for an able-bodied skier may be a dangerous downhill to a visually impaired skier or sit skier. Another example would be the need for a warm building at the trail head, as the body mechanisms for keeping athletes with some disabilities warm may not be as efficient as those of an able-bodied skier.

11. Equipment

Specialized equipment may be required. A sport-specific example of this would be sit-skis or kneeling sleds, which are commonly used by skiers with disabilities. Individuals starting out rarely have this equipment, however, and this is a costly investment for clubs to undertake. To help meet this challenge, interested groups or individuals are encouraged to contact their provincial sport organizations (divisions of Cross Country Canada) for information on what is being recommended for that region.

Considerations

- **First Contact/FUNdamentals and Learning to Train**. Children need equipment designed for their age, size, strength and skill. This is critical to making early experiences positive and will pay off by encouraging a life-long love of physical activity and sport, which in turn benefits their health.
- **Training to Train through to Training to Compete**. Fitting equipment to the athlete correctly is essential for optimal performance during the "excellence" stages. For example, sit skis and kneeling sleds need to be custom made in order to fit each athlete's high performance requirements.
- **Training to Win**. The sport scientists who work with athletes at this level have to develop partnerships with equipment manufacturers in order to design the innovative world-class equipment that is required to give athletes a competitive advantage in international competition.
- **Correct Prosthesis**. For those athletes that require them, selecting the correct prosthetic limb is essential for optimal performance. For example, most individuals who ambulate throughout the household and community will find that a solid-ankle cushion heel (SACH) prosthetic foot meets their needs, while most competitive athletes would prefer to use the newly-developed dynamic response prosthetic foot (the dynamic response foot deforms under a load but retains the memory of its pre-stressed configuration and returns it to its original shape upon removal of the load).

12. Skilled Technicians and Sport Scientists

In all LTAD stages, skilled technicians play an important role in ensuring the equipment and ski preparation needs of athletes are met. In particular, skilled technicians are needed to give athletes pursuing personal excellence a competitive advantage by taking information from sport scientists and finding suitable methods of applying it to the athletes they are working with.

Sport scientists make a major contribution to physical literacy through research in the areas of optimum acquisition of skills, establishment of effective learning environments and the identification of activities and teaching methods that enhance the learning of FUNdamental movement skills. However, a particular emphasis needs to be placed on finding out more about the early skill learning of children or adults with a disability, about which little is currently known.

At the Training to Train, Learning to Compete and Training to Compete stages of LTAD, sport science can best contribute through optimization of performance techniques and a better understanding of the individualization of the interface between the athlete and their adaptive sporting equipment. This may also include strapping methods. In addition, refinement of training loads based on periodic evaluations of physiological status and development of sound sport psychology programs, both based on the developmental age of the athletes, is important.

Injury patterns have been identified for certain groups, with wheelchair athletes typically sustaining upper extremity injuries, blind athletes sustaining lower extremity injuries and cerebral palsy athletes sustaining both. Common problems affecting wheelchair athletes include autonomic dysreflexia, difficulty with thermoregulation, pressure sores, neurogenic bladder, premature osteoporosis, peripheral nerve entrapment syndromes and upper extremity injuries. Cerebral palsy athletes often have injuries involving the knee and foot due to problems with spasticity and foot deformities. Amputee athletes sustain injuries to the stump, spine and intact limbs.

Intellectually disabled athletes may also have underlying ocular and visual defects, congenital cardiac anomalies and atlantoaxial instability that predispose them to injuries.

At the Training to Win stage, athletes need state-of-the-art physiological, biomechanical and psychological testing and training prescriptions. Coaches, athletes and parents need to understand existing sport science, and sport scientists need to undertake original and applied research on sport performance techniques, training methods and equipment designed to give these athletes a competitive advantage at the international level.

13. Competition Calendar Planning

International Competition

At the international level, cross-country skiing is governed by the International Paralympic Committee (IPC), in conjunction with the IPC Nordic Skiing Technical Committee, which uses modified rules of the International Ski Federation (FIS) for all sanctioned competitions. This Committee also uses modified rules of the International Biathlon Union (IBU) for governing sanctioned competitions in the sport of biathlon.

International competition is open to athletes with a physical disability and blindness/visual impairment. A person in a wheelchair, depending on functional disability, uses a sit-ski. Athletes with blindness/visual impairment ski with a sighted guide. Male and female athletes compete in short distance, middle distance and long distance races (ranging from 2.5km (female sit-ski and relays) to 20km (male standing and blind)), or participate in a team relay using both classic or skating techniques. The first international competition was held at the 1976 Paralympic Winter Games in Örnsköldsvik, Sweden. By 2006, 24 countries were competing in the cross-country skiing and biathlon arena. Individual sprint events are now beginning to appear at World Cup, World Championships and Paralympic events.

Internationally, Canadian athletes compete in one of three categories: visually impaired, standing or sitting. Domestically, two categories are offered - standing and sitting.

Domestic Competition

At the domestic level, cross-country skiing is governed by Cross Country Canada. Athletes need access to competitions with well trained ancillary personnel such as officials, classifiers and guides, plus custodians for severely disabled athletes, to make sure that their needs are met.

Providing enough competitions to allow for optimal development opportunities is a major challenge due to the small number of athletes in the system and the fact that they are divided into many groups according to different disability types. Divisions and clubs have to be creative to ensure that athletes get opportunities that are suitable for their age, skill and fitness levels. The percentage classification system helps to reduce the scale of this challenge.

The structure of cross-country ski competitions encourages the integration of able-bodied skiers and skiers with a disability at Provincial Cup, NorAm and National Championship competitions. In 2011, for the first time, the Canada Winter Games will include categories for cross-country skiers with a disability.

Local Competition

Local, fun events with little or no focus on results can provide a non-threatening environment for introducing athletes to competition. This is also an effective way to gain exposure in the community for club programs for athletes with a disability.

Figure 1 Competitor Pathway for Athletes with a Disability

Stages of LTAD for Athletes with a Disability

While there are many similarities between athletes with a disability and able-bodied athletes, there are also some differences that can change the LTAD process.

To better understand LTAD for athletes with a disability, it is important to keep the following points in mind:

- Athletes with congenital disabilities progress through the LTAD stages at the same age as able-bodied athletes.
- The lifelong importance of an "Active Start" for children with a congenital disability cannot be over-emphasized.
- Athletes who acquire their disabilities still need to make an active start and learn (or re-learn) fundamental movement and sport skills, but they do this following their injury (which can occur at any age), using new techniques and equipment in order to maximize the potential of their remaining physical capacities.
- Athletes who acquire their disabilities may pass through the various LTAD stages at significantly different ages and much more quickly than those with congenital disabilities, and faster or slower than one another following their injury – depending on a number of factors.

The period following acquisition of a disability is understandably one of transition and great change for most individuals. Some activities in which they were previously engaged may no longer be open to them in the same way, and they may not be aware of the many sporting and recreation activities that are available. The purpose of the Active Start/Awareness and FUNdamentals/First Contact stages is, therefore, to inform individuals of the range of activities in which they can participate and to provide ways for them to experience those activities.

Research indicates that sports may only have one opportunity to create a positive environment and recruit prospective athletes. For the individuals, it may be a big step to make the first approach to a sport. If they don't have a positive first experience, they may be lost to the sport - and to a healthy lifestyle.

LTAD considerations are essentially the same for athletes with congenital disabilities as they are for able-bodied athletes.

Stages of LTAD

Active Start / Awareness	**Males and females 0 – 6 years (congenital disability)** or **<1.5 years since accident or onset (acquired disability)**
FUNdamentals / First Contact	**Males 6-9 and females 6-8 years (congenital disability)** or **About 2 years since accident or onset (acquired disability)**
Learning to Train	**Males 9-12 and females 8-11 years (congenital disability)** or **About 3 years since accident or onset (acquired disability)**
Training to Train	**Males 12-16 and females 11-15 years (congenital disability)** or **About 5 years since accident or onset (acquired disability)**
Learning to Compete	**Males 16-20(+/-) and females 15-19(+/-) years (congenital disability)** or **About 7 years since accident or onset (acquired disability)**
Training to Compete	**Males 20-23(+/-) and females 19-23(+/-) years (congenital disability)** or **About 8 years since accident or onset (acquired disability)**
Training to Win	**Males 23(+/-) and females 23(+/-) years (congenital disability)** or **>8 years after accident or onset (acquired disability) + >2 years of international racing experience**
Active for Life	**This stage can be entered at any age** *There is a better opportunity to be Active for Life if physical literacy is achieved before the Training to Train stage*

Time can vary considerably depending on the individual's response to the acquired disability and their pre-disability athletic and/or skiing experience.


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Active Start / Awareness

Able-Bodied or Congenital Disability	Acquired Disability
Ages: males and females 0 to 6 years (congenital disability)	< 1.5 years since accident or onset (acquired disability)

The goals outlined in this section supplement the goals and specific tasks for the corresponding LTAD stage in the able-bodied LTAD Guide for cross-country skiing – "Cross-Country Skiing - A Sport for Life".

The goals include:

Congenital Disabilities

- Emphasizing activities that are gender-neutral and inclusive to pro-actively encourage active living, because people with a disability tend to be less active than their peers.
- Integrated programming with CCC's Skill Development Program for children – the Bunnyrabbit Program.

Acquired Disabilities

- Developing a plan to make cross-country skiing known to prospective athletes.
- Educating individuals with a disability, and their families, about cross-country skiing opportunities that are available to them.
- Providing demonstrations and/or initiation opportunities in an appropriate setting, with qualified coaches.
- Introducing adaptive skiing equipment such as athletic sport prostheses and sit-skis.
- Assisting individuals who wish to try out the sport to find ski equipment that is appropriate for them in size, weight and design.
- Encouraging CCC clubs to offer programs for athletes with a disability.
- Creating a positive sport environment.
- Encouraging individuals with a disability to try out a variety of sports.
- Improved collaboration between coaches and medical professionals in order to monitor skiers appropriately and ensure their safety.

Note: For individuals with a late-acquired disability, the Active Start/Awareness stage usually merges with the FUNdamentals/ First Contact stage, as progress is normally rapid (depending on the individuals' stage of LTAD development in this or other sports pre-injury).

Suggested material:

- CCC Bunnyrabbit Booklet.
- NCCP Introduction to Community Coaching (ICC) Reference Material.
- Guide to Coaching Athletes with a Disability.
- Conducting a Skills Clinic for Athletes with a Disability.

FUNdamentals / First Contact

Able-Bodied or Congenital Disability	Acquired Disability
Ages: 6 to 9 years (males) 6 to 8 years (females)	About 2 years since accident or onset of disability

The goals outlined in this section supplement the goals and specific tasks for the corresponding LTAD stage in the able-bodied LTAD Guide for cross-country skiing – "Cross-Country Skiing - A Sport for Life".

The goals include:

Congenital Disabilities

- Integrated programming with CCC's Skill Development Program for children – the Jackrabbit Program.

Acquired Disabilities

- Educating athletes on the importance of having good mental skills to help them deal with their new challenges and develop themselves as athletes; introducing mental training techniques.
- Athletes successfully re-learning the FUNdamentals with their new/modified body (late-acquired disabilities). The length of this process is dependent on the individual.
- Assisting individuals to find ski equipment that is appropriate for them in size, weight and design (ongoing).
- Providing cross-country ski skill development opportunities in an appropriate setting, with qualified coaches.
- Athletes exploring a variety of sports before specializing.
- Improved collaboration between coaches and medical professionals in order to monitor the skier appropriately and ensure their safety.
- Encouraging interested individuals to become members of a CCC club.

Suggested material:

- Cross-Country Skiing - A Sport for Life.
- CCC Jackrabbit Booklet.
- NCCP Community Coaching (CC) Reference Material, including the appendix for coaching athletes with a disability.
- Canadian Paralympic Committee website: www.paralympic.ca.
  - Build a Paralympic sport club.
  - Guide to Coaching Athletes with a Disability.
  - Conducting a Skills Clinic for Athletes with a Disability.

Learning to Train

Able-Bodied or Congenital Disability	Acquired Disability
Ages: 9 to 12 years (males) 8 to 11 years (females) Change in height cue is to be utilized as a guide to appropriate programming towards the end of this stage	About 3 years since accident or onset of disability

The goals outlined in this section supplement the goals and specific tasks for the corresponding LTAD stage in the able-bodied LTAD Guide for cross-country skiing – "Cross-Country Skiing - A Sport for Life".

The goals include:

- Integrated programming with the CCC's Skill Development Program for children – the Track Attack Program.
- Building upper body strength to improve mobility, so that the individual can be involved in sport activities.
- Developing balanced antagonistic muscles (both sit-ski and standing skiers).
- Adapting dryland training techniques appropriately for skiers with a disability.
- Educating coaches and athletes about strapping.
- Increasing participation in complementary sports such as rowing, track and cycling.

Suggested material:

- Cross-Country Skiing - A Sport for Life.
- CCC Track Attack Log.
- NCCP CCI-L2T (Dryland) Reference Material - including the appendix for coaching athletes with a disability.
- NCCP CCI-L2T (On-Snow) Reference Material - including the appendix for coaching athletes with a disability.
- Canadian Paralympic Committee website: www.paralympic.ca.

Training to Train

Able-Bodied or Congenital Disability	Acquired Disability
Ages: 12 to16 years (males) 11 to 15 years (females) Programming dependent upon change in height cue (Peak Height Velocity)	About 5 years since accident or onset of disability

The goals outlined in this section supplement the goals and specific tasks for the corresponding LTAD stage in the able-bodied LTAD Guide for cross-country skiing – "Cross-Country Skiing - A Sport for Life".

The goals include:

- Achieving recommended training volume for athletes at this stage of development.
- Avoiding muscle development imbalances.
- Multiple year periodization, which is necessary in order to ensure optimal development physically, mentally and in performance, because many cross-country skiers with a disability undergo medical intervention following puberty.

Suggested material:

- Cross-Country Skiing - A Sport for Life.
- NCCP CCI-T2T (Dryland) Reference Material (under development).
- NCCP CCI-T2T (On-Snow) Reference Material (under development).
- Canadian Paralympic Committee website: www.paralympic.ca.

The Learning to Train and Training to Train stages are the most important stages of athletic preparation.

Canadian Sport for Life

Learning to Compete

Able-Bodied or Congenital Disability	Acquired Disability
Ages: 16 to 20+/- years (males) 15 to 19+/- (females)	About 7 years since accident or onset of disability.

The goals outlined in this section supplement the goals and specific tasks for the corresponding LTAD stage in the able-bodied LTAD Guide for cross-country skiing – "Cross-Country Skiing - A Sport for Life".

The goals include:

- Achieving the recommended training volume for athletes at this stage of development.
- Improving self - reliance skills and skills needed to travel independently.
- Identifying effective training and competition partners (the athlete's training partner may differ from their competition partner).

Suggested material:

- Cross-Country Skiing - A Sport For Life.
- NCCP Level 4/5 Course materials.
- NCCP CCD Reference Material (not yet developed).
- Canadian Paralympic website: www.paralympic.ca.

Training to Compete

Able-Bodied or Congenital Disability	Acquired Disability
Ages: 20 to 23+/- (males) 19 to 23+/- (females)	About 8 years since accident or onset of disability

The goals outlined in this section supplement the goals and specific tasks for the corresponding LTAD stage in the able-bodied LTAD Guide for cross-country skiing – "Cross-Country Skiing - A Sport for Life".

The goals include:

- Achieving the recommended training volume for this stage of development.
- Learning to manage international travel - identifying when a care aid is needed; dealing with additional logistical considerations caused by the disability; tailoring recovery practices to meet individual needs (resulting from the disability).
- Appropriate medical and medication management.

Suggested material:

- Cross-Country Skiing - A Sport for Life.
- NCCP Level 4/5 Course materials.
- NCCP High Performance Coaching Course materials (not yet developed).
- Canadian Paralympic Committee website: www.paralympic.ca.

Training to Win

Able-Bodied or Congenital Disability	Acquired Disability
Ages: 23+/- (males) 23+/- (females)	More than 8 years + at least two years of international racing experience

The goals outlined in this section supplement the goals and specific tasks for the corresponding LTAD stage in the able-bodied LTAD Guide for cross-country skiing – "Cross-Country Skiing - A Sport for Life".

The goals include:

- A sport system that can support committed, full-time cross-country ski athletes.
- More opportunities to be on snow.
- Differentiating the roles of guide, coach, care giver, training partner etc.

Suggested material:

- Cross-Country Skiing - A Sport for Life.
- NCCP Level 4/5 Course materials.
- NCCP High Performance Coaching Course materials (not yet developed).
- Canadian Paralympic Committee website: www.paralympic.ca.

Active for Life

This stage can be entered at any age, but ideally it will follow the Learning to Train stage or take place when an athlete leaves the competitive stream.

The To-Do List outlined in this section supplements the objectives for the corresponding LTAD stage in the able-bodied LTAD Guide for cross-country skiing – "Cross-Country Skiing - A Sport for Life".

To-Do list:

- Develop "masters" programs for skiers with a disability.
- Develop transition and exit plans for retiring athletes.
- Recruit recent athlete retirees to other roles within Cross Country Canada.

There is a better opportunity to be Active for Life if physical literacy is achieved before the Training to Train stage.

Athlete Development Pathway

Responsibility	LTAD Stages	Critical Success Factors	4 to 8 (9) years	(8) 9 to 11 (12) years	(11) 12 to 15 (16) years	(15) 16 to 19 (20) years	(19) 20 to 23 years	23 + years	Outcome
NSO	Training to Win Training to Compete Learning to Compete	• NCCP Certified coaches • Athlete selection criteria • Athlete training programs • Sustainable competitions • International competition • Sport science support • Customized equipment							National Level Athlete
P/TSO	Training to Train Learning to Train	• NCCP certified coaches • Athlete selection criteria • Athlete training programs • Sustainable competitions							Provincial Level Athlete
CLUB	FUNdamentals / First Contact Active Start / Awareness	• NCCP trained coaches • Regular training / practices • Sustainable leagues and competitions • Disability knowledge / understanding							Club Level Athlete (Active for Life)
			Athlete enters the para-sport system						


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Athlete Development Grid

LTAD Stage	Responsibility	Requirements	Key Objectives
Active Start / Awareness Demonstration and initiation into sport by Rehabilitation Centre, publicity, specific AWAD associations and special activities. Physical educators, physical therapists, friends, family, volunteers….	• Sport for Disabled Organizations (SDO). • Assisted and customized delivery through CCC clubs and other key stakeholders. • Centralized leadership and programming (i.e. Feel the Rush).	• A ski area that is accessible to athletes with a disability. • Appropriate ski equipment. • NCCP trained coaches for athletes with a disability. • Less than 18 months exerience since accident or onset (acquired disability • Medical practitioner support. • Transportation to and from ski area.	• Making access to cross-country skiing known. • Ensuring a positive environment. • Encouraging participation in many sports. • Athlete participation in Ski S'Kool Days, Club Open House Days. • Athlete participation in introductory, club-delivered, skill development programs.
FUNdamentals / First Contact Initiation to cross-country skiing by other athletes, Rehabilitation Centres, word of mouth, publicity, SDOs and special activities. CCC community coaches, physical educators, physical therapists, friends, family, volunteers….	• SDO. • CCC Clubs.	• Accessible ski area. • Appropriate ski equipment. • NCCP trained coaches for athletes with a disability. • Rehabilitation. • Regular practices during snow season. • Up to 100 hr/yr on snow. • About 2 years experience since accident or onset (acquired disability). • Medical practitioner support. • Transportation to and from ski area.	• Ensuring a positive environment. • Educating the athlete and their family on stages of development, other sports. • Athlete participation in club-delivered skill development programs. • Athlete participation in introductory competitions such as Ski Tournaments.

LTAD Stage	Responsibility	Requirements	Key Objectives
Learning to Train	• CCC Clubs	• Accessible ski area. • Appropriate ski equipment. • NCCP trained coaches for athletes with a disability. • Regular practices during snow season. • Up to 200 hr/yr (50 % on snow; 50% off-season). • About 3 years experience since accident or onset (acquired disability). • Medical practitioner support. • Transportation to and from dryland and on snow sport facilities.	• A positive environment. • Athlete participation in intermediate-level, club-delivered skill development programs. • Athlete participation in Learn-to-Ski Clinics and entry level camps specifically for athletes with a disability . • Successfully introducing athletes to structured competition through observation and through participation in low-key competitions.
Training to Train	• CCC Clubs. • CCC Divisions.	• Accessible ski area. • Appropriate ski equipment. • NCCP trained coaches for athletes with a disability. • 100-400 hr/yr. • About 5 years experience since accident or onset (acquired disability). • Medical practitioner support.	• Ensuring a positive environment. • Athlete access to advanced skill development opportunities – training camps etc. • Athlete access to an appropriate training program. • Athlete participation in regional and provincial level competitions; provincial Winter Games.
Learning to Compete	• CCC. • Divisions.	• Accessible ski area. • Appropriate ski equipment. • NCCP trained coaches for athletes with a disability. • 350-700 hr/yr. • Training camps (x4). • Provincial/Territorial Team or National Development Team. • About 7 years experience since accident or onset (acquired disability) • Transportation to and from dryland and on-snow training facilities.	• Ensuring a positive environment. • Athlete access to an appropriate training program. • Athlete competing in regional, provincial and national level competitions; provincial championships; national championships.

LTAD Stage	Responsibility	Requirements	Key Objectives
Training to Compete	• CCC.	• Accessible ski area. • Appropriate ski equipment. • NCCP trained coaches for athletes with a disability. • 350-700 hr/yr. • Training camps (x4). • National Development Team. • About 8 years experience since accident or onset (acquired disability). • Transportation to and from dryland and on snow training facilities.	• Ensuring a positive environment. • Athlete access to an appropriate training program. • Athlete competing successfully in national and international-level competitions.

Training to Win	• CCC.
	• Canadian Paralympic Committee (CPC).
		• Accessible ski area.
		• Appropriate ski equipment.
		• NCCP trained coaches for athletes with a disability.
		• 650-900 hr/yr.
		• National training camps (x3).
		• National Team.
		• More than 8 years after accident or onset (acquired disability) plus more than 2 years of international racing experience.
		• Medical practitioner support.
		• Transportation to and from dryland and on snow training facilities.
			• Ensuring a positive environment.
			• Athlete access to an appropriate training program.
			• Podium performances at:
			  • North American competitions,
			  • European circuit,
			  • IPC World Cup,
			  • IPC World Championships and
			  • Paralympic Games.

Active for Life	• Sport for Disabled Organizations (SDO). • Assisted and customized delivery through CCC clubs and other key stakeholders.	• Accessible ski area. • Appropriate ski equipment. • NCCP trained coaches for athletes with a disability. • No previous experience. • Medical practitioner support. • Transportation to and from ski area.	• Ensuring a positive environment. • Athlete participation in skill development programs. • Athlete participation in Learn-to-Ski Clinics and entry level camps specifically for athletes with a disability. • A smooth transition from the athletes' competitive career to lifelong physical activity and participation in sport.

An Integrated Development System for Athletes with a Disability

Athletes with a disability frequently operate in a sport environment that is different from that of their able-bodied counterparts. For example, skiers who are visually impaired need sighted guides, and skiers who are competitors need IPC Classifiers who can determine the classification of competition into which they best fit to ensure they have a fair opportunity to succeed when they compete. Moreover, some athletes with disabilities require personal care support or specialized personnel not found or funded in able-bodied sport situations.

LTAD, therefore, is not just about developing the athlete — it is about developing the system in which the athlete learns and performs the sport so that optimal long-term development is supported. This means making sure that the sport of cross-country skiing plans for and delivers what the athlete needs at each stage of development.

In order to achieve this objective, it is important that all the primary stakeholders acknowledge their roles and responsibilities and be aware of those of the other key groups in the developmental process. The traits or qualities of each group would include:

Parents

- Understanding that increased activity benefits their children.
- Providing encouragement, support and guidance, and making their children's involvement in cross-country skiing enjoyable; not being overly protective.
- Being educated about cross-country skiing for athletes with a disability and how their children can progress through the sport.
- Helping their children get to and from the ski area, and to deal with any barriers they encounter.

Coaches

- Completing CCC NCCP training/certification for coaches of athletes with a disability, to the level appropriate for the developmental stage of the athlete.
- Having a thorough understanding of the LTAD principles for cross-country skiers with a disability.
- Adhering to Cross Country Canada's Coaches Code of Ethics.
- Understanding where and how they fit into the broader cross-country sport "system".

Officials

- Completing CCC Officials training/certification to the level appropriate for the activity/event.
- Providing support and guidance to ensure each child's involvement in a competition is a fair and enjoyable experience.
- Being educated on IPC Rules and Regulations for competitions.
- Understanding how classifications are implemented at the various levels of competition.

Classifiers

- Completing IPC Classifier training for the sport of cross-country skiing.
- Ensuring that all athletes are classified in a manner that ensures fair competitions.

Clubs

- Providing accessible facilities for skiing, training and competition.
- Providing an appropriate support structure (specialized coaching, specialized equipment, funding, etc.).
- Delivering developmental cross-country ski programs appropriate for skiers with a disability.

Cross Country Canada/Divisions

- Ensuring appropriate programming for skiers with a disability is in place for use by clubs, coaches, officials, etc.
- Being a source of information, expertise and support in the development of athletes.

Additional Specialized Support

- Providing early identification of functional disabilities and adaptive techniques to encourage more enjoyable sport participation.
- Providing services in the area of injury prevention, sport nutrition, sport medicine and rehabilitation. Encouraging expert health care.
- Encouraging and supporting both training and competition for athletes with a disability.
- Liaising with the athlete and parent regarding the health and safety aspects of cross-country skiing with a disability.
- Timing medical intervention and operations appropriately to benefit the athlete.

Coaching Athletes with a Disability

Individuals with a disability need lifelong access to trained and knowledgeable teachers and coaches when they engage in physical activity and sport for their health and enjoyment, particularly if they want to learn a new sport. For this reason, Cross Country Canada's NCCP program includes a coach education stream specifically for training and certifying coaches for this purpose.

Teachers and coaches working with athletes in the Active Start, FUNdamentals and Learning to Train stages need to be versed in sensitization tips and techniques on introducing athletes with a disability to sport situations. It is essential for them to be able to create a positive learning environment and adapt equipment, skills and rules in order to get individuals involved and keep them involved in sport.

Coaches working with athletes in the Training to Train, Learning to Compete and Training to Compete stages need: to be specialists in working at the developmental level; to understand how to adapt physiological activities and skill development; and to have a good knowledge of classification and competition rules.

Coaches training athletes at the Training to Win stage need to have: advanced sport specific technical knowledge; knowledge of adaptations for physiological and skill development; knowledge of disability characteristics relating to cross-country skiing and the interface with equipment if specialized equipment is required; and knowledge of IPC classification and competition rules in order to be effective in their role.

Coaching: LTAD and NCCP

Athlete & Coach Development Progression

LTAD Stage	NCCP Context	AWAD Stream
Training to Win (T2W)	Competition Coaching: High Performance (CCHP)	TBD
Training to Compete (T2C)	Competition Coaching: Development (CCD – T2C)	(not finalized) 15) T2C (On-Snow) Workshop 14) T2C (Dryland) Workshop
Learning to Compete (L2C)	Competition Coaching: Development (CCD – L2C)	13) CCD (On-Snow) AWAD Module 12) CCD (Dryland) AWAD Module 11) L2C (On-Snow) Workshop 10) L2C (Dryland) Workshop
Training to Train (T2T)	Competition Coaching: Introduction (CCI – T2T)	9) T2T (On-Snow) Workshop 8) T2T (Dryland) Workshop 7) CCI (Dryland) AWAD Module 6) CCI (On-Snow) AWAD Module
Learning to Train (L2T)	Competition Coaching: Introduction (CCI – L2T)	5) L2T (On-Snow) Workshop 4) L2T (Dryland) Workshop
FUNdamentals/ First Contact	Community Coaching: (CC)	3) CC AWAD Module 2) CC Workshop
Active Start/ Awareness	Introduction to Community Coaching: (ICC)	1) ICC Workshop

Officiating for Athletes with a Disability

Cross-country ski competitions often offer categories for athletes with a physical disability (e.g. Provincial Cup, National Championships), while other cross-country ski competitions are held specifically for athletes with a disability (e.g. IPC World Cup). In addition, some multi-sport Games offer events for skiers with a disability (e.g. Canada Winter Games, Paralympic Winter Games). In each of these situations, there is a need for officials with specialized training – both cross-country ski officials (i.e. race officials and Technical Delegates) and generic sport officials (e.g. interpreters, classifiers).

Cross Country Canada's Officials' Certification Program provides educational material for this purpose. However, specialized clinics and mentorship opportunities are required in order to obtain more advanced levels of training.

Note that it is important for officials to enforce competition rules and regulations for athletes with a disability the same as they would for able-bodied athletes, to prepare them for higher levels of competition where the rules will apply. This is particularly important for classifiers, since re-classification, or being placed in a different class at an international-level competition, can be a traumatic and discouraging experience for the athlete.

Classification

Classification is a system whereby athletes are divided according to the degree of their disability in order to provide them with competitive opportunities against other athletes who are their peers in level of ability.

- **Domestic Competitions**. In Canada all standing locomotor disabled classes and all visually impaired classes are combined into one "Standing" category. All sitting locomotor disabled classes are combined into one "Sitting" category.
- **International Competitions**. At international-level competitions (IPC sanctioned events), the Standing category is split into two separate categories – "Standing" and "Visually Impaired". There is only one "Sitting" category.

Competitive events for cross-country skiers with a disability are relatively new to the sport, and definitions for the various classes of disability are still evolving. For current information on classifications, go to the IPC classification link for Cross-Country Skiing and Biathlon at: http://www.paralympic.org/release/Winter_Sports/Nordic_Skiing/Classification/.

Initially, when athletes begin competing, they are assigned provisional classification by their NSO. This allows them to compete in Canada. In order to compete internationally their classification must be verified by an international classification panel. The international panel determines whether an athlete's classification is permanent (will not change), or if a disability is transient, in which case he/she may be given a "permanent provisional" classification for that year and reevaluated on an ongoing basis.

Glossary of Terms

Access refers to the availability of programs, services and facilities to persons with a disability. It also refers to attitudes and support systems that ensure that athletes with a disability can be participating and contributing members of communities. A program, service, or facility is said to be accessible if it can be utilized by someone with a disability.

Accessibility refers to the promotion of the functional independence of individuals through the elimination of barriers.

Acquired Disability means the disability was not present at birth.

Canadian Paralympic Committee (CPC) refers to the national governing body of the Paralympic Movement in Canada. The CPC delivers programs that strengthen its objectives, including sending Canadian teams to the Paralympic Games. It also empowers persons with physical disabilities, through sport, at all levels. To view the CPC website go to www.paralympic.ca.

Congenital Disability means the disability was present at birth.

Disability is a reduction of functional ability resulting from impairment. Additional information on the different types of disabilities can be found on the IPC website at www.paralympic.org.

Impairment is an anatomic, physiological or functional loss, which may or may not result in a disability.

Inclusive (in the context of this document) means everyone can participate equitably.

Intellectual Disability refers to a condition of arrested or incomplete development of the mind characterized by impairment of skills and overall intelligence in areas such as cognition, language, and motor and social abilities. Although reduced level of intellectual functioning is the characteristic feature of this disorder, the diagnosis is made only if it is associated with a diminished ability to adapt to the daily demands of the normal social environment. An intellectual disability can occur with or without any other physical or mental disorders.

International Paralympic Committee (IPC) refers to the global governing body of the Paralympic movement. The IPC organizes both the Paralympic Winter Games and Paralympic Summer Games and serves as the International Federation for nine sports, for which it supervises and co-ordinates a World Championships and other competitions. The IPC is committed to enabling Paralympic athletes to achieve sporting excellence and to developing sport opportunities for all persons with a disability from beginner to elite levels. In addition, the IPC aims to promote the Paralympic values which include courage, determination, inspiration and equality. To view the IPC website go to www.paralympic.org.

Peak Strength Velocity (PSV) is the maximum rate of increase in strength during the growth spurt. The age of maximum increase in strength can be described as the age at PSV.

Peak Weight Velocity (PWV) is the maximum rate of increase in weight during the growth spurt. The age of maximum increase in weight can be described as the age at PWV.

Physical Disability refers to difficulty moving or coordinating a part of the body, muscle weakness, tremors and, in extreme cases, paralysis in one or more parts of the body. Physical disabilities can be congenital, such as muscular dystrophy; or acquired, such as tendonitis. Physical disabilities affect an individual's ability to:

- perform manual tasks, such as hold a pen, grip and turn a key, type on a keyboard, click a mouse button or twist a doorknob;
- control the speed of one's movements;
- coordinate one's movements;
- move rapidly;
- experience balance and orientation;
- move one's arms or legs fully, e.g., climb stairs;
- move around independently, e.g. walk any distance, easily get into or out of a car, stand for an extended period;
- reach, pull, push or manipulate objects; and/or
- have strength or endurance.

Sighted Guide is another athlete who skis with an athlete with blindness/visual impairment. In a competition guides are required to wear a bright bib with the same number as the visually impaired athlete they are guiding, and to guide them by voice only except in very specific situations where the race rules allow otherwise.

Sit-skis are two cross-country skis with an accessible chair attached to the top of them. They are used by athletes who have spinal cord injuries, leg weaknesses or amputations.

Summary

In summary, the LTAD approach to development for athletes with a disability:

- identifies the shortcomings of Cross Country Canada's athlete development system and provides guidelines to help address them;
- encourages physical activity and skill development that will improve the long-term health of Canadians;
- establishes a pathway from rehabilitation centre to podium and/or being active for life;
- integrates the needs of athletes with a disability into the design and delivery of cross-country ski programs at the club, provincial/territorial and national levels;
- encourages a coordinated effort by various partners (e.g. Canadian Paralympic Committee, Canadian Blind Sports Association) to provide an integrated athlete development system for athletes with a disability; and
- provides an opportunity for improvement.

APPENDIX

Biathlon

Biathlon is a combination of rifle marksmanship and cross-country skiing, as is Para-Nordic biathlon.

The national sport governing association for the sport of biathlon is Biathlon Canada, although Para-Nordic biathletes are represented internationally (at IPC sanctioned competitions) by Cross Country Canada.

At the international level, competitions for Para-Nordic biathletes are facilitated by the IPC. In Canada, Biathlon Canada organizes a national championship competition that includes both able-bodied biathletes and biathletes with a disability. In this case, however, the Para-Nordic biathletes are required to compete against able-bodied biathletes and use .22 caliber rifles.

In terms of training, the same principles apply to both able-bodied athletes and those with a disability. The only significant impact on training is related to techniques for pulse rate reduction during shooting activities. However it should be noted that at an IPC competition, both cross-country and biathlon events occur within the same World Cup, and athletes who compete in both sports need to be prepared to race several days in a row.

Considerations that are specific to Para-Nordic biathlon include:

- Athletes shoot in a prone position (lying down) using an air rifle, with the exception of LW10-12 athletes who can shoot from a prone or sitting position.
- The target aiming area is 3.5 centimetres and the hit area is 1.5 centimetres. The range is 10 metres.
- The athlete does not carry a rifle when skiing the competition course. The coach hands the rifle to the athlete at the shooting lane.
- There are four different race formats – sprint, individual, pursuit and relay.
- Visually impaired athletes use the EKO Aims Blind Shooting System which utilizes acoustic tones and infrared laser.
- All competitions are free technique with a classic track provided for athletes that wish to use it.
- IPC Biathlon rules are based on International Biathlon Union (IBU) rules and IPC Cross-Country Skiing rules. The numbering of the rules is according to IBU rules. IPC Biathlon rules are posted on the IPC website.

The IPC utilizes a Nordic Percentage System in order to equalize the disability time handicap for athletes within each category. The percentage is applied to the final time of each athlete, and the athlete with the lowest calculated time is the winner.

Coaches working with biathletes with a disability have the option of taking either Biathlon Canada NCCP workshops or Cross Country Canada NCCP workshops, but only Cross Country Canada offers a training stream specifically for athletes with a physical disability. This program is available for the Community Coaching level, and subsequent levels are currently under development.

Suggested resource information:

Biathlon Canada Long Term Athlete Development – Volume 1: LTAD Model

Biathlon Canada Long Term Athlete Development – Volume 2: LTAD Program

Cross Country Canada - Cross-Country Skiing A Sport For Life

Cross Country Canada - NCCP Workshops and Reference Materials

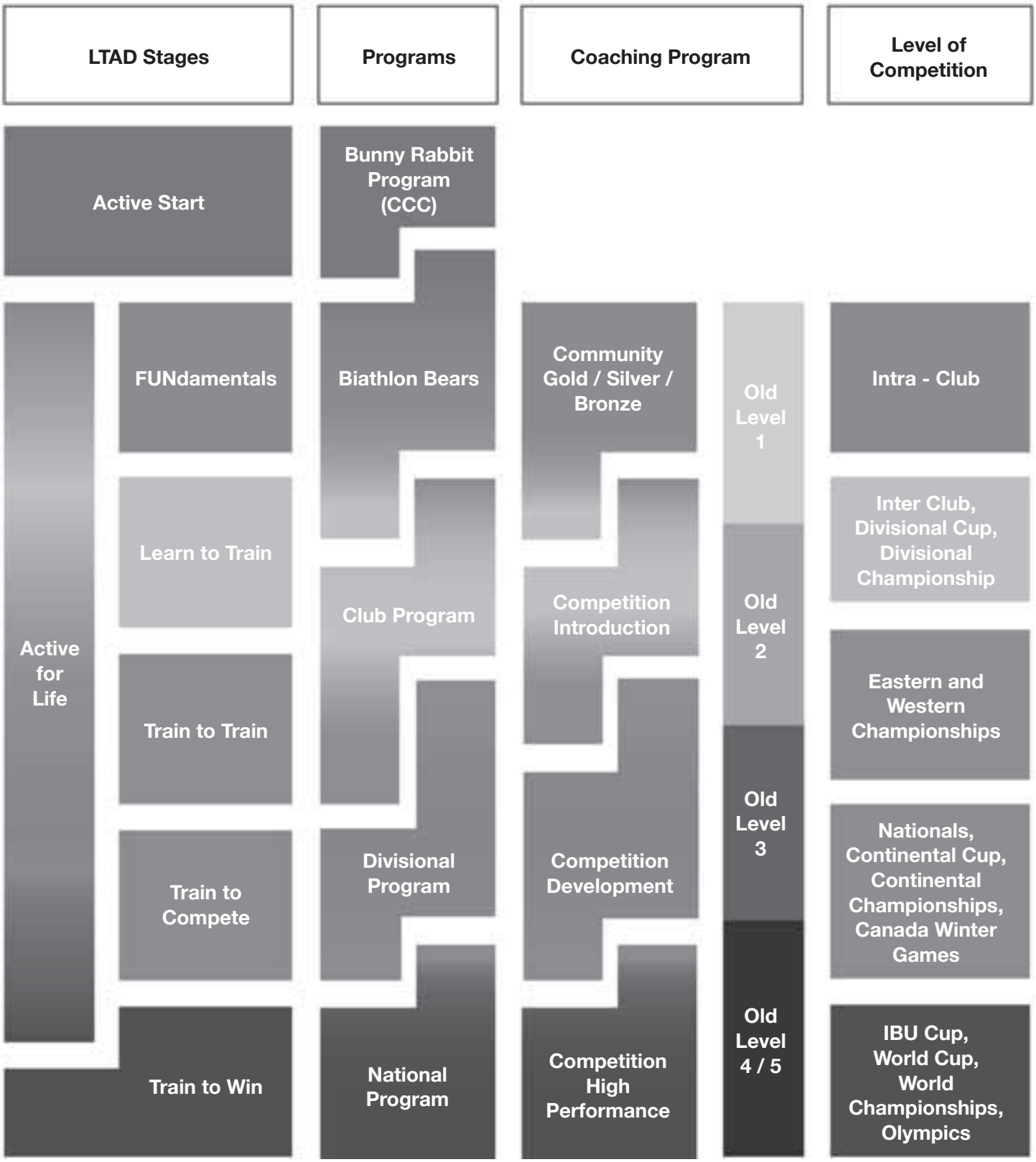
Biathlon Canada – NCCP Workshops and Reference Materials

- Biathlon Bears Reference Material (FUNdamentals/First Contact and Learning to Train stages – refer to pages 19-20)
- Biathlon Introduction to Competition IC1 (Dry) Reference Material (Training to Train stage – refer to page 21)
- Biathlon Introduction to Competition IC1 (On-Snow) Reference Material (Training to Train stage – refer to page 21)
- Biathlon Competition Development Reference Material - not yet developed (Learning to Compete stage – refer to page 22-23)

Biathlon Canada website: www.biathloncanada.ca

International Biathlon Union website: www.biathlonworld.com

Combined Participant and Coach Development Model

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APPENDIX

Special Olympics Canada

Special Olympics Canada (SOC) is dedicated to enriching the lives of Canadians with an intellectual disability through sport. The vision of this organization includes:

- providing all athletes with choices in their opportunity to train and to compete; and
- being recognized as an integral and valued part of the sport delivery system by working in partnership with sport organizations.

SOC is structured into national, provincial/territorial and regional-level programs and competitions.

Sport programming for cross-country skiers with an intellectual disability is facilitated through Special Olympics Chapters (provincial/territorial organizations). At the community level, however, Special Olympics clubs often partner with Cross Country Canada clubs to deliver their programs.

SOC provides NCCP coach development courses both at the community and competition level that are specific to working with athletes with an intellectual disability. Coaches refer to National Sport Organizations such as Cross Country Canada for sport specific training and technical development within the coach education program..

For the most part competitions for athletes with an intellectual disability are delivered through the Special Olympics organization. For example, SOC offers its own Winter Games for its athletes. The competition structure is based on a four year cycle that begins with regional qualifiers and culminates at National and World Games. Those athletes named to Team Canada have the opportunity to participate, along with more than 180 other countries, in the Special Olympics World Games. These Games alternate every two years between summer and winter competitions and are hosted around the world. In addition to Special Olympics events, there are occasional competitive opportunities made available through Cross Country Canada-delivered cross-country ski competitions.

Suggested resource information:

SOC Long Term Athlete Development for Athletes with an Intellectual Disability

CCC Cross-Country Skiing A Sport For Life

CCC NCCP Community Coach Workshops and Reference Materials

SOC website: www.specialolympics.ca/

SOC NCCP Community Initiation Reference Materials

SOC NCCP Competition-Introduction Reference Materials


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Acknowledgements and References

LTAD Task Force Committee Members

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Jeff Whiting – Cross Country Canada Para-Nordic Development Coordinator - West
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Cross Country Skiing - A Sport for Life, 2007. Cross Country Canada

Snowboarding Canada Vision 2020 – The Long-Term Athlete Development Plan for Snowboarding in Canada, 2006.

Cycling Long-Term Athlete Development Model, 2006. Canadian Cycling Association

Canadian Paraplegic Association 2003

Coaching Athletes with a Disability, Coaching Association of Canada, 2005

Special Olympics British Columbia

Canadian Sport for Life, 2005. Bayli, I.,Cardinal, C., Higgs, B., Norris, S. & Way, R. Canadian Sport Centres, Vancouver, BC. ISBN 0-9738274-0-8

To learn more about the following sport organizations, visit:

Biathlon Canada: www.biathloncanada.ca
Canadian Paralympic Committee: www.paralympic.ca
Canadian Blind Sports Association: www.canadianblindsports.org
Canadian Cerebral Palsy Sports Association: www.ccpsa.ca
Canadian Deaf Sports Association: www.assc-cdsa.com
International Paralympic Committee: www.paralympic.org
International Biathlon Union: www.biathlonworld.com
Special Olympics Canada: www.specialolympics.ca


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Cross-Country Skiing A Sport For Life

LONG-TERM ATHLETE DEVELOPMENT GUIDE

FOR ATHLETES WITH A DISABILITY

Canadian Sport Centres / Centres canadiens multisports

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