

Long-Term Athlete Development

for Athletes with an
Intellectual Disability

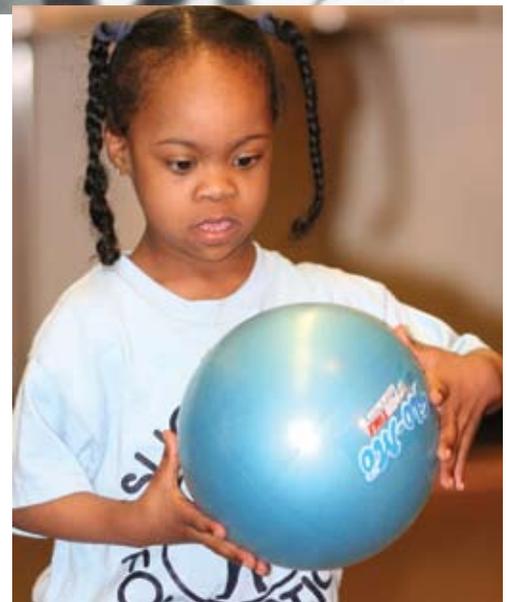
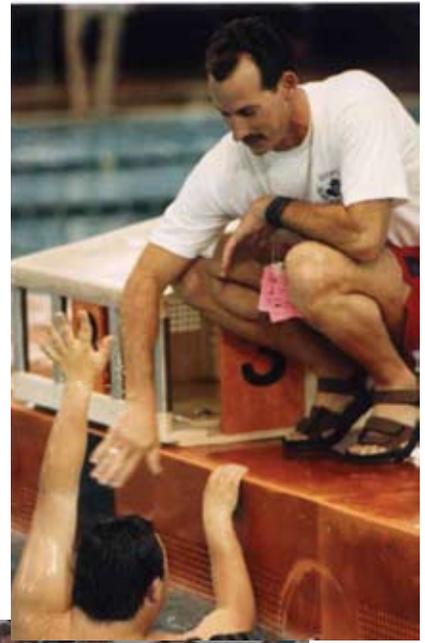


Special Olympics
Olympiques spéciaux
Canada



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EXECUTIVE SUMMARY

Special Olympics Canada (SOC) has an opportunity to extend its tradition of quality programming by injecting new ideas stimulated by Sport Canada's Long-Term Athlete Development (LTAD) model. With the ultimate aim of promoting fitness, physical literacy, and well-being, the athlete development component of this model is driven by tenets of human growth and maturation and a complementary focus on strengthening interconnections among the many systems — school, sport, and community — that provide physical activity, sport, and competition avenues for all Canadians.

This is a transformative process that offers tremendous opportunities, especially for individuals with an intellectual disability. In embracing LTAD as the framework for guiding where SOC is going in the next 5 to 10 years, 3 overarching goals are being promoted:

- Individual fitness and well-being through programming that optimizes physical literacy by referencing instruction and competition according to growth and development principles.
- Equal respect for the interests of those who wish to participate in programs for fitness, fun, and socializing and for those who are committed to pursuing personal excellence through more intensive sport training and competition.
- A system of program and competition delivery that enables Special Olympics to preserve its unique character while fostering stronger linkages with the broader sport delivery system in Canada, thereby enhancing opportunities and increasing options for athletes and ensuring organizational efficiency.

The recommendations throughout this document are based on the LTAD model and its application to sport and athletes with an intellectual disability. The SOC LTAD Working Group currently envisions 4 major areas that should be addressed as part of strategic planning and LTAD implementation.

1) Introduce Special Olympics Programs in the Active Start and FUNDamentals Stages

- At the earliest opportunity, participants should enter a variety of programs that involve structured movement education.
- Participants need to be introduced to sport at an early age to build physical literacy and develop the sport skills they need to participate in early or late specialization sports.

2) Implement Competition Planning and Structure

- SOC and its chapters should formalize a long-range Pan-Canadian competition calendar that provides competitive opportunities spanning local, regional, provincial, territorial, and national levels. This competition schedule could include options provided by other bodies such as provincial/territorial sport organizations (P/TSOs). The competition schedule must reflect athletes at the different stages of LTAD.

Let me win,
But if I cannot win,
Let me be brave in the attempt.

—Special Olympics Athlete's Oath

- The present competition structure of Special Olympics should be reviewed in light of the different stages and principles of LTAD as well as the identified gaps (page 8).
- SOC must ensure that all athletes of all abilities are challenged to be the best that they can be using a fair and meaningful system of competition.

3) Establish Partnerships

- SOC coaches and administrators need to communicate with sport-specific organizations to see how athletes, coaches, and officials can benefit from various development and competition opportunities to ensure good alignment with athletes' developmental needs.
- SOC must continue to coordinate and build relationships with national sport organizations (NSOs) to share knowledge and expertise regarding the sport-specific aspects of LTAD.
- SOC should continue to improve all programs and increase the number of initiatives that address sport for life and sport excellence.

4) Develop Coach Education

- Program design for athletes must factor in mental, cognitive, and social/emotional maturity when developing training groups and determining which competitions the athlete will attend.
- Coaches need to understand the influence of the cognitive impairment as well as any associated or multiple disabilities when developing programs to train skill, stamina, strength, speed, and suppleness for individual athletes.
- Participants should be helped to select sports according to aptitude, interest, technical skill, and physical ability. A coach/caregiver may need to do remedial work in other areas to help participants get the most out of their sport experience.
- Coaches should consult the sport-specific NSO for information on planning and periodization.
- Program leaders and coaches should use a variety of recognized testing protocols to help ensure the best possible fitness and sport preparation, be it to improve fitness and health or sport-specific performances in competition. SOC may wish to assume a leadership role in integrating appropriate testing protocols into programs based on input from experts within the NSOs and from other related fitness and physical activity fields.
- Because developing sport skills and sport-specific fitness and psychological attributes to compete effectively is a long-term process, programs should be structured accordingly.



About this Document

NSOs across Canada are undergoing an LTAD review through which sport experts are examining existing aspects of their athlete and program development in relation to LTAD principles. Consistent with this process, this document is an overview of LTAD principles as they relate to individuals with an intellectual disability.

Note: This document is focused on individuals with an intellectual disability. The terms “athlete”, “person”, and “participant” refer to individuals with an intellectual disability. The term “generic sport” refers to all sports for individuals without a disability.

The purpose of the initial overview is to

- describe LTAD and explain how the 11 key factors apply to individuals with an intellectual disability.
- identify current issues in programming for participants whether they are pursuing lifelong physical fitness or more intensive levels of training for optimal competitive performance.
- systematically and coherently outline how each stage of LTAD might apply to individuals with an intellectual disability.
- present a model that will address variations according to individual interests and will meet the needs of all individuals with an intellectual disability, addressing the importance of a sequential and coherent athlete development system.
- use the concepts presented in this document as a framework for evaluating existing programs, expanding partnerships with NSOs, and creating new initiatives.

This overview is NOT

- **a sport technical document.** Given that NSOs are undergoing a similar review of their athlete development and sport systems, this document is not intended to review the technical aspects of individual sports. The overall plans to train and teach specific sport skills will be outlined in the LTAD models being developed by each NSO. These models are inclusive of athletes with an intellectual disability and experts in this field are being consulted in their development.
- **an implementation plan.** LTAD is a framework that will guide sport development, decision making, and action into the foreseeable future. It has been described as a 5- to 10-year plan that will take time to fully implement. This document provides the basic information and tools that should be used as the basis for discussions among all stakeholders who are actively involved in providing sport and physical activity programs for individuals with an intellectual disability.
- **intended to have SOC become responsible for all training for athletes with an intellectual disability**, especially for those athletes advancing to higher levels where increased training and sport-specific expertise is required of the coaches. It is expected that new partnerships with NSOs will be identified.

The Sports of the Special Olympics

Summer Sports

Athletics (Track & Field)
Aquatics
Powerlifting
5 & 10 Pin Bowling
Rhythmic Gymnastics
Soccer
Softball

Winter Sports

Alpine Skiing
Nordic (Cross Country) Skiing
Figure Skating
Speed Skating
Snowshoeing
Floor Hockey
Curling

WHAT IS LTAD?

LTAD is a framework for developing physical literacy, physical fitness, and competitive ability, using a stage-by-stage approach. The LTAD model recognizes that physical literacy is the foundation for

- being active, healthy, and engaged in physical activity for life.
- achieving personal best performances at all levels of competition.



LTAD provides an optimal development plan for everyone to participate in physical activity. It also ensures that individuals who wish to excel in their sport of choice get the optimal training, competition, and recovery in each stage of their athletic development.

Why is LTAD needed by SOC?

While not the only organization providing sport programs to individuals with an intellectual disability, SOC is in a position to continue being a leader and an agent for change by addressing current issues in programs and enhancing opportunities that assist individuals with an intellectual disability to achieve their personal physical activity and sport goals.

Why must this be done?

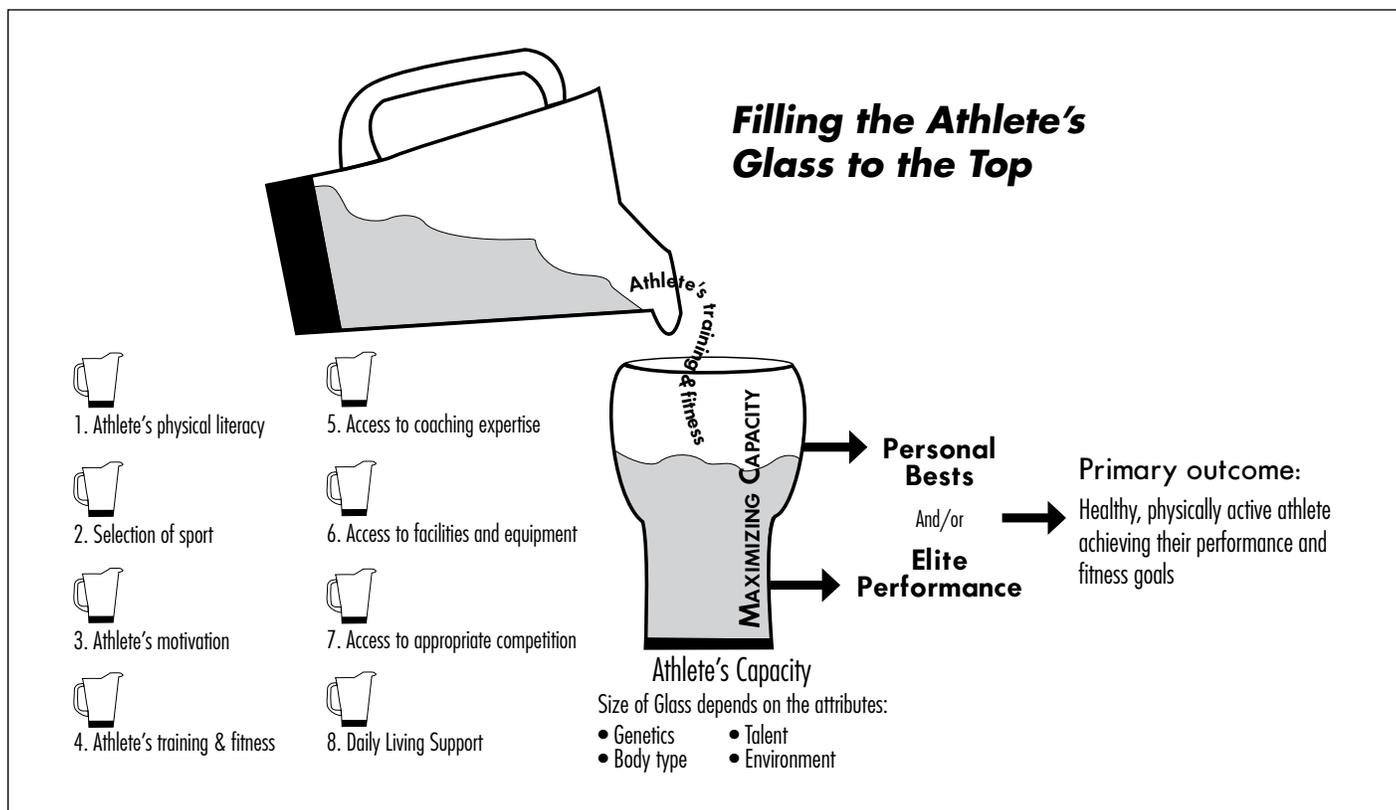
- The fitness norms of individuals with an intellectual disability tend to follow those of the general population. It is well documented that 30% of adults and 26% of children are overweight or obese. (Statistics Canada, 2004) This means that approximately 30% of Canadians with an intellectual disability are overweight or obese. In order to avoid health problems associated with physical inactivity and obesity, it is critical that all Canadians, with or without a disability, fully engage in physical activity for life.
- Individuals with an intellectual disability may enter physical activity programs, specifically Special Olympics programs, as teenagers or adults. This occurs for a variety of reasons. For example, some children start off participating in generic movement education and sport programs. In some cases, parents may not be aware of the sport opportunities available through Special Olympics. As well, other priorities such as support services, education, and medical issues may take precedence.
- While participation in sport is mainly about lifelong physical fitness and enjoyment, some may wish to pursue sport excellence by competing on the provincial/territorial, national, and international stages. Therefore, it is critical that athletes are provided with the right types of training at the right stage in their development. LTAD outlines what participants need at all stages of their sport development and the technical expertise that is needed based on the priorities for each stage.

Maximizing Capacity - Fill the Athlete's Glass to the Top

LTAD distinguishes between personal best and elite performances yet celebrates both. An athlete's personal best is about improvements in physical, technical, tactical, and psychological preparation and in skill execution and does not necessarily relate to performance outcomes in competition. Elite performance relates to competing at the National Games and on the world stage and performing to national and world-class standards. Preparation for elite performance relates to LTAD factor #11 — the 10-Year Rule (page 21). The diagram on page 8 shows many of the influences that will have an impact on the athlete's ability to achieve his or her personal best. The ultimate aim of LTAD is to optimize the "input influences" that enable individuals to achieve lifelong wellness through fitness and sport.



An athlete's potential can be thought of as a glass, with each athlete having a different size of glass (potential). Many factors influence an athlete's potential, including genetics, body type, and living environment. Additional factors can influence an athlete's performance. These factors, or performance influencers, can be thought of as what and how much can be poured into the athlete's glass as she or he prepares for competition.



How can SOC help athletes to fill their glass to the top with what is needed for personal best or elite performances?

It is important to note that daily living support may have an impact on the performance influencers and should not be forgotten. In Prince Edward Island, for example, 19.7% of Special Olympics athletes are living in a group home, foster home, or supervised apartment living. It has been suggested that these numbers may be higher in other chapters across Canada. Living arrangements and daily living support may have an impact on the athlete's ability to make choices independently of the other individuals in the residence. Therefore, sport selection, the ability to train frequently, and opportunities to compete may be affected by the athlete's living arrangements.

Mind the Gaps

At the 2006 Special Olympics National Conference, LTAD was presented to a wide variety of experts who work with athletes with an intellectual disability. The forum allowed these experts to raise issues that needed further review with respect to consistency with the philosophy of LTAD. The SOC LTAD Working Group identified a number of additional issues.

- Programs for younger Special Olympics participants are not offered consistently across the country. Some Chapters offer programs for children younger than eight years of age while others do not.
- In many cases, participants don't have the sport skills they need to play certain games effectively. As in generic sport, this limits the participant's sport choices and affects his or her feelings of competence when participating. Many participants stop participating if they are not successful.
- In some cases, individuals supervising or coaching may not have the necessary expertise in physical fitness and teaching basic sport skills. As well, individuals may not have the necessary sport-specific coaching skills to teach the technical aspects of a sport.
- SOC must continue to pursue relationships and partnerships with more NSOs.
- In some cases, athletes with national and international aspirations who systematically train are left off provincial and national teams despite elite performances in competition due to the current quota system.
- One of the purposes of competition is to motivate athletes to train systematically in order to be better prepared as a competitor and to reap the benefits of being more physically fit. In some cases, athletes increase the quantity and quality of training only once they have qualified for a higher level of competition. Increased training often results in athletes moving up to the next level of competition while athletes who do not increase their training may stay at the same level. This creates a perceived disadvantage for athletes who increase their training as part of their overall sport preparation. Ultimately, SOC would like the system of competition to encourage athletes to increase their training, aiming to qualify for the next level of competition. The divisioning process needs to be examined in order to address this issue.
- Athletes have limited opportunities to compete on a year-round basis.
- Competition is technically, physically, and psychologically demanding. As an athlete advances to higher levels of competition, these demands become more challenging. It is critical that athletes have a positive competitive experience at all levels of competition. Therefore, it is important that they be technically, physically, and psychologically ready to compete. In the future, this needs to be addressed through the selection and endorsement process.

Moving Forward - Addressing the Gaps

Following acceptance of LTAD, further discussion will begin on the issues of implementation. Implementation guidelines and procedures will be addressed and monitored through the national office following national committee policies. Committees and various working groups will be fully engaged in this process, ensuring that the best interests of all athletes are considered. Representation will be sought from Special Olympics program staff, training coaches, national team coaches, volunteers, and administrators associated with Special Olympics.

An Introduction: Individuals with an Intellectual Disability and LTAD

Intellectual disability is the leading form of lifelong disability worldwide (WHO, 2002), and with over 500 different forms of impairment subsumed within this group, it represents a highly diverse — in terms of ability, needs, and interests — collection of individuals. One source of the diversity stems from the various causes of intellectual disability. For approximately 85% of these individuals, the origin of impairment is unknown. For the remaining 15%, the impairment results from various biological causes such as chromosomal, metabolic, and genetic. Adding to this complexity, approximately 10 to 15 % have associated impairments such as fetal alcohol syndrome, autism, visual and hearing impairments, and seizure disorders. The origin of impairment and the possible presence of associated disabilities may affect development of the nervous system, hormonal systems, and general growth and maturation.

Why does this matter when talking about LTAD? It matters because LTAD is based on developmental processes that affect growth, maturation, and the best points in time to introduce specific forms of instruction and training to maximize physical literacy and proficiency in sport and physical activity. For LTAD to work, coaches need to understand the principles of growth and development and how these influence adaptation to training. This poses a particular challenge for those who coach participants with an intellectual disability because there is very little research that addresses the foundational principles of LTAD and its application to this population.

In developing this document, a comprehensive review of research relevant to LTAD was conducted (see Appendix 1, page 39). Most of this work examines two distinct groups of individuals — those with Down Syndrome and those with an intellectual disability of an unknown origin. Where appropriate, this distinction has been made, not to single out a particular group of athletes, but to accurately reflect the emphasis and information available from current research that may be useful in guiding the application of LTAD.

Down Syndrome and Intellectual Disability of Unknown Origin

Down Syndrome	Intellectual Disability (unknown origin)
<ul style="list-style-type: none"> ■ Accounts for 10% of the population with an intellectual disability ■ Is identifiable at birth ■ Has distinctive physical characteristics ■ Has the leading chromosomal form of intellectual disability ■ Chromosomal abnormalities may influence growth and development, capacity for intensive sport training and acquisition of motor skills 	<ul style="list-style-type: none"> ■ Accounts for the majority of the population with an intellectual disability ■ May not be identified until individuals enter school ■ Physical growth and maturation tend to parallel patterns in individuals without an intellectual disability (Batshaw, 2002) ■ Strength is an area that may require specific attention in training

Implementing LTAD is a long-term process that will provide ample opportunities for further research about its application and possible refinements to fully reflect physical literacy and sport development among individuals with an intellectual disability. In the interim, what is presently known from research is incorporated into the 11 LTAD Key Factors (page 11) and the 8 stages described in this document (page 23). As in generic sport, coaches may need to further adapt and individualize the LTAD framework to reflect the particular circumstances of each individual.

11 Key Factors of LTAD

Understanding the LTAD Key Features for Athletes with an Intellectual Disability

The SOC LTAD model is based on 11 key factors. This section outlines these factors and describes how they have an impact on sport programs for individuals with an intellectual disability.

Key Factor #1: FUNdamentals

Participants who are physically literate, that is, who have developed the basic movement and sport skills that form the basis for all sports, will have many options when it comes to choosing sports in which to participate. Although basic movement and sport skills can always be improved, the best time for participants to learn these skills is when their nervous system is maturing, before the onset of their growth spurt in adolescence.



The FUNdamental movement and sport skills include

- ABCs (agility, balance, coordination, speed)
- KGBs (kinesthetics, gliding, buoyancy)
- CKs (catching, kicking, striking with an implement)

By participating in three activities — athletics, gymnastics, and swimming — participants can develop the skills that are the basis for all other sports. Athletics provides the base for running, jumping, and throwing; gymnastics develops agility, balance, co-ordination, and speed; and swimming develops buoyancy skills and is the foundation for all water-based sports. These skills may be incorporated into Special Olympics youth programs or be acquired through community-based programs. Skating and skiing can also be added to the movement repertoire in areas with cold winters. FUNdamental skills should be introduced using fun activities and games.

Recommendation: At the earliest opportunity, participants should enter a variety of programs that involve structured movement education.

Key Factor #2: Early Specialization and Late Specialization

Sports are classified as either early or late specialization. Early specialization sports require highly complex skills that cannot be fully mastered if they are taught after maturation. Gymnastics, figure skating, and diving are examples of early specialization sports. Most sports, and almost all Special Olympics sports, are late specialization sports.

Individuals with an intellectual disability seem to enter physical activity and sport later than the general population.

- Participants may be involved in generic sport programs until a certain age and register in Special Olympics programs when they can no longer keep up with their peers.
- Many Special Olympics programs do not start until after the age of 8.

Athletes who enter a sport early should follow a program based on the LTAD plan developed by the NSO, but modified to reflect their particular needs, making sure that all basic sport skills are developed to ensure physical literacy.

Recommendation: Participants need to be introduced to sport at an early age to build physical literacy and develop the sport skills they need to participate in early or late specialization sports, allowing the individual to enjoy active for life sport or to pursue competitive sport based on interest and aptitude.

Key Factor #3: Biological Age

Early maturers have a significant biological advantage over their later maturing competitors and teammates. They have traditionally been given more training and playing time over their later maturing peers.

Developmental and/or biological age refers to the degree of physical, mental, cognitive, and emotional maturity. — Canadian Sport for Life

In LTAD, training, competition, and recovery programs should take into account the physical, mental, cognitive, and emotional development of each athlete. Appendix 1 of *Canadian Sport for Life* provides an overview of the key elements to address at each stage of LTAD. This is a useful reference for coaches of athletes with an intellectual disability, but each consideration will need to be evaluated in relation to each individual athlete because in most cases, cognitive and mental development will occur at different rates and to different degrees. Social, emotional, and physical development may also be delayed.

Coaches, in both individual and team sports, should assess the physical, social, emotional, and cognitive demands of the sport and assess her or his athletes in relation to these requirements. In turn, this will provide a guide for determining specific skills and competencies to target within training and competition at various stages of the model. NSO LTAD documents should be consulted to assist in this process.

Recommendation: Program design must factor in mental, cognitive, and social/emotional maturity when developing training groups and determining which competitions an athlete will attend.

Key Factor #4: Trainability and Critical Periods of Development

LTAD is based on two key ideas: trainability and critical periods of development.

Trainability refers to how responsive an individual is to training at different stages of growth and maturation.

Variation in Growth and Maturation

Issue	Down Syndrome	Intellectual Disability (unknown origin)
Puberty	<p>Pre-puberty growth spurt may occur earlier (9-10)</p> <p>Less dramatic than in other children</p> <p>Sexual maturity may occur earlier than the norm in boys and later in girls</p>	<p>Parallel patterns of non-disabled counterparts</p>

Critical periods of development refers to points during development when training has an optimal effect on specific capacities. The specific capacities — the 5 S's of training and performance are **S**tamina (endurance), **S**peed, **S**trength, **S**kill, and **S**uppleness (flexibility). Individuals are more likely to achieve their full athletic potential if their training fits their stage of development.

There has been little research on trainability and the critical windows of development for individuals with an intellectual disability. Further research is essential.

The table on page 14 highlights some of the key factors that need to be considered by coaches in applying trainability to individuals with an intellectual disability. This information is divided into two groups: individuals with Down Syndrome and individuals with other forms of an intellectual disability.



Five S's: Down Syndrome and Other Forms of Intellectual Disability

Issue	Down Syndrome	Intellectual Disability (unknown origin)
SKILL	Later than average.	Highly variable, with some children showing delays and others approximating norms for children without a disability.
Motor Development	High degree of variation in both rate of skill acquisition and skill quality.	
Motor Skills	Wide variations, with some children between the ages of 10 and 16 reaching levels comparable to norms for children without a disability. Considerations regarding atlanto-axial must be factored into certain motor skill training.	Wide variations. Need to consider other factors that influence motor skill development such as environment and systematic instruction. Need to differentiate between open and closed skills—closed skills are usually the most difficult for people with an intellectual disability to acquire.
Stamina	Often have lower levels of cardiac output and lower VO ₂ max potential, which may limit endurance capacity.	With appropriate training, can achieve cardiovascular fitness standards comparable to peers without a disability.
Strength	May be an issue linked to neuromuscular system functioning at both the central nervous system and joint level.	Some research shows lower levels of peak muscular strength, which may not improve significantly with maturation or long-term training.
Speed	No research specific to this issue.	No research specific to this issue.
Suppleness	Hypotonicity or low muscle tone/excessive ligament laxity has implications for suppleness.	No research specific to this issue.

Applying the principles of LTAD may be further complicated if participants have associated or multiple disabilities. Approximately 10 to 15% of individuals with an intellectual disability have associated or multiple disabilities and these must be considered when developing training programs.

Recommendation: Coaches will need to understand the influence of the cognitive impairment as well as associated or multiple disabilities when developing programs to train the five S's for athletes with an intellectual disability.

Key Factor #5: Physical, Technical, Tactical, Psychological, and Lifestyle Developments

Every participant develops at a different rate, depending on the nature and severity of the intellectual disability, associated disabilities, and environmental factors. These different rates of development will have an impact on where and how the participant progresses in different areas. Although participants will rarely fit perfectly into the LTAD stages, coaches need to consider the LTAD guidelines on how to adapt the physical, technical, tactical, psychological, and lifestyle performance factors to suit the goals of the participant.

Training:
 "The systematic and integrated actions aimed at influencing the development of performance in a goal-oriented way. Training consists of the various processes and methods of periodically administering controlled stress on the organism to a series of principles, and organized into a coherent plan, in order to induce general and specific adaptations to various systems, organs and/or tissues, and improve performance capacity."
 (Marion, 2000)

The type of training will depend on each athlete's starting point. The variables in developing a training program relate to the athlete's stage of development, demands of the sport, the athlete's technical proficiency and motivation, and the number of training sessions during a week. Each training session will focus on improving performance capacity and could include a walking program combined with sport-specific training, nutritional education, mental training, specific workouts in a home gym, and fitness classes. Additional training examples will be developed specific to each sport.

Jody, 19, is very fit from years of participating in cross country skiing and middle distance running. She has an intellectual disability and is hearing-impaired. She has never competed, but is interested in representing her Chapter at the National Games and perhaps going to the Special Olympics World Games. How do the LTAD guidelines work for her?

Jody

Stage	Active Start	FUNDamentals	Learning to Train	Training to Train	Learning to Compete	Training to Compete	Training to Win	Active for Life
Psychology/ Social	I'm moving	I'm having fun being active	I'm a player	I'm an athlete	I'm learning to be a competitor	I'm a competitor	I'm a champion	I'm winning at life
Physical Literacy Motor Skill Development		-FMS-ABC's	Physical Literacy	Improve Sport Specific Skills	Refine Sport Specific Skills	Further refinement under a variety of conditions	Sport-specific Skills	Balance strength, flexibility & cardio
Physical Preparation	Active 30-60 min. per day	8-10 hrs per week of physical activity	Optimal Train 2-3 times per week, 10 hrs physical activity	Optimal Train 4-6 times per week, 2-3 sports	Optimal Train 5-7 times per week, 2 complementary sports	Optimal Train 7-9 times per week, one sport	Sport-specific generic and/or Special Olympics	Train 5 times per week, 60 min. per day
Competition	Cooperative Games	Games that include simple rules & decision making	City Wide/ Regional	Regional/ Provincial Competition, including generic	Provincial/ National, including generic	Provincial/ National/ International	National & International	"Social Competition" (Competition for social reasons.)

(This chart provides guidelines for training. Individual coaches will work with athletes to determine the optimal training frequency, volume, and intensity based on the requirements of the sport and the capacity of the athlete.)

A coach evaluates Jody’s physical literacy (motor skill development) and physical fitness based on the standards and benchmarks established by the NSO. The coach then determines in which stage she belongs and develops a training program to build on her technical skills and physical preparation. Given Jody’s years of training, she is likely to fit into the Training to Compete stage. The coach also evaluates Jody in terms of her capacity to manage a variety of sport situations from a social/psychological perspective. It may be determined that Jody is socially and psychologically at an earlier stage since she has had limited exposure to large training groups and stressful competition situations. As a result, Jody may be at the Learning to Train stage in the psychological/social domain. The coach, working with Jody’s caregivers, may develop a program incorporating experiences that will help her to develop systematically in order to deal with her shortcomings in these areas. These may include lack of experience in working with a larger training group or managing certain social situations that she would be exposed to at competitions. In the competition domain, Jody will not start immediately at the Training to Compete stage even if her physical preparation indicates that she is ready. As a result, she will need a number of competitive experiences that will gradually expose her to the appropriate competition protocols.

John, also 19, has never participated in physical activity, apart from walking to work a few times a week. He has Down Syndrome and is interested in becoming active because some of his friends participate in a softball program. How do the LTAD guidelines work for him?

Stage	Active Start	FUNdamentals	Learning to Train	Training to Train	Learning to Compete	Training to Compete	Training to Win	Active for Life
Psychology/Social	I’m moving	I’m having fun being active	I’m a player	I’m an athlete	I’m learning to be a competitor	I’m a competitor	I’m a champion	I’m winning at life
Physical Literacy Motor Skill Development		-FMS-ABC’s	Physical Literacy	Improve Sport Specific Skills	Refine Sport Specific Skills	Further refinement under a variety of conditions	Sport-specific Skills	Balance strength, flexibility & cardio
Physical Preparation	Active 30-60 min. per day	8-10 hrs per week of physical activity	Optimal Train 2-3 times per week, 10 hrs physical activity	Optimal Train 4-6 times per week, 2-3 sports	Optimal Train 5-7 times per week, 2 complementary sports	Optimal Train 7-9 times per week, one sport	Sport-specific generic and/or Special Olympics	Train 5 times per week, 60 min. per day
Competition	Cooperative Games	Games that include simple rules & decision making	City Wide/Regional	Regional/Provincial Competition, including generic	Provincial/National, including generic	Provincial/National/International	National & International	“Social Competition” (Competition for social reasons.)

John has joined a community softball program in his neighborhood. The coach evaluates John’s abilities within each of the areas outlined based on the basic skills required to play and enjoy softball. These skills include catching, throwing, jogging, and walking. Because of John’s limited involvement in sport, he will likely be at the FUNdamental stage in physical preparation and motor skill development. He has strong social/psychological skills and will fit in quite well with the team concept. He may be at a more advanced stage in the psychological/social aspect of his development. Therefore, the coach could gradually introduce John to competition after he has developed his fundamental motor skills and fitness level. The coach will need to be aware of some of the associated conditions that may have an impact on the training prescribed for John.

Recommendation: Help participants to select sports according to aptitude, interest, technical skill, and physical ability. A coach/caregiver may need to do remedial work in the other areas to help participants get the most out of their sport experience.

Key Factor #6: Training and Periodization

Periodization

- is a systematic way of organizing an athlete's training, competition, and recovery schedules.
- sequences the components of training by weeks, days, and sessions into a scientifically-based schedule, to bring about optimal improvements in performance.
- is situation-specific and depends upon the training priorities and the time available to bring about the required improvements in training and performance.
- allows athletes to achieve peak performances one or multiple times in a year.

Very little information is available on periodization for athletes with an intellectual disability. This key factor is important to ensure that the athlete's program is well planned and monitored, allowing appropriate adjustments based on the athlete's adaptation to training. Periodization is a sport-specific function integrating all of the sport requirements into the overall training plan. As with all training programs, the program must be tailored to the athlete based on her or his baseline screening (sport-specific norms), ability, and the frequency for training.

LTAD refers to annual plans, which describe periods of preparation, competition, and the transition into the next calendar plan, and quadrennial plans, which describe the four-year cycle for elite athletes preparing for major Games. Both plans are important for the athlete who may progress from local/regional events to provincial/territorial, national, and ultimately, the World Games.

Periodization may not be as important for the individual who is participating for fitness, fun, and social opportunities.

Recommendation: Coaches should consult the NSO for information on planning and periodization specific to the sport.

Key Factor #7: Competition–Calendar Planning and Structure

Calendar Planning: *"Competition is a good servant, but a poor master."*

Competition is an important part of the sport experience for all athletes. LTAD recognizes this and the importance of a competition schedule that reflects the needs and interests of athletes in different sports and stages. Generally, in the Active Start and FUNdamentals stages, participants are neither training nor competing formally, but are focusing on establishing basic skills and having fun. As athletes move to subsequent stages, training and competition become more formalized and there is a need to balance the ratio of training to competition; that is, number and level of competition.

Competition

The meaning of competition will vary by age, sport, and LTAD stage. It may serve different purposes for some athletes, especially those in FUNdamentals and Learning to Train where fun, fitness, basic sport skills, experience, and participation are the main goals of recreational competition. For others, such as those in Training to Compete and Training to Win, optimizing potential and achieving world-class standards may be the aim.

While every sport and individual is different, the following general guidelines, based on consultations with P/TSOs and NSOs, should be considered in creating an appropriate competition calendar.

- **FUNdamentals:** 1 to 2 informal competitions per year. Introduce/continue learning in different environments.
- **Learning to Train:** 2 to 4 competitions per year. Continue learning in different environments.
- **Training to Train:** 3 to 6 competitions per year. Learn to cope with the mental and physical challenges of competition.
- **Learning to Compete:** 4 to 8 competitions per year. Introduce a year-round competition plan/structure to achieve the athlete's competition goals.
- **Training to Compete:** Individually tailor all training and competitions (periodization) to learn to peak for selected competitions.
- **Training to Win:** Utilize multiple periodization to optimize training and competitions to peak for major events/competitions.
- **Active for Life:** Can follow any stage from Learning to Train to Learning to Compete at, for example, Master's competitions and veteran games, with the focus on staying active.

"Without competition, Special Olympics would lose the essence of what separates "participation" from skill acquisition and success. While involvement in sport may be praiseworthy, competition pushes our athletes towards achieving bigger goals and greater confidence."

—Glenn MacDonell, President & CEO, Special Olympics Ontario

Recalling Mind the Gaps

- Some athletes with national and international aspirations who systematically train pre-competition are left off provincial and national teams despite outstanding performances in competition due to the current quota system.
- Increased training often results in athletes moving up a division(s) to the next level of competition while athletes who do not increase their training may stay at the same level. This creates a perceived disadvantage for athletes who increase their training as part of their overall sport preparation.
- Athletes have limited opportunities to compete on a year-round basis.
- It is important that athletes demonstrate the necessary technical, physical, and psychological skills of the event in which they are competing. In the future, this needs to be addressed through the selection and endorsement processes.

Recommendation: SOC and its Chapters should formalize a long-range, Pan-Canadian competition calendar that provides competitive opportunities spanning local, regional, provincial, and national levels. This competition schedule could include options provided by other bodies such as P/TSOs. The competition schedule also must reflect the stages of LTAD.

Competition Structure

A fundamental cornerstone of Special Olympics is that all participants, regardless of their level of intellectual disability, have the right to quality sport training and competitive opportunities that respect the tenets of equal access and equity. Divisioning is the method used to address equality and fairness within Special Olympics competitions.

In implementing LTAD, SOC has an opportunity to explore and consider other potential options for

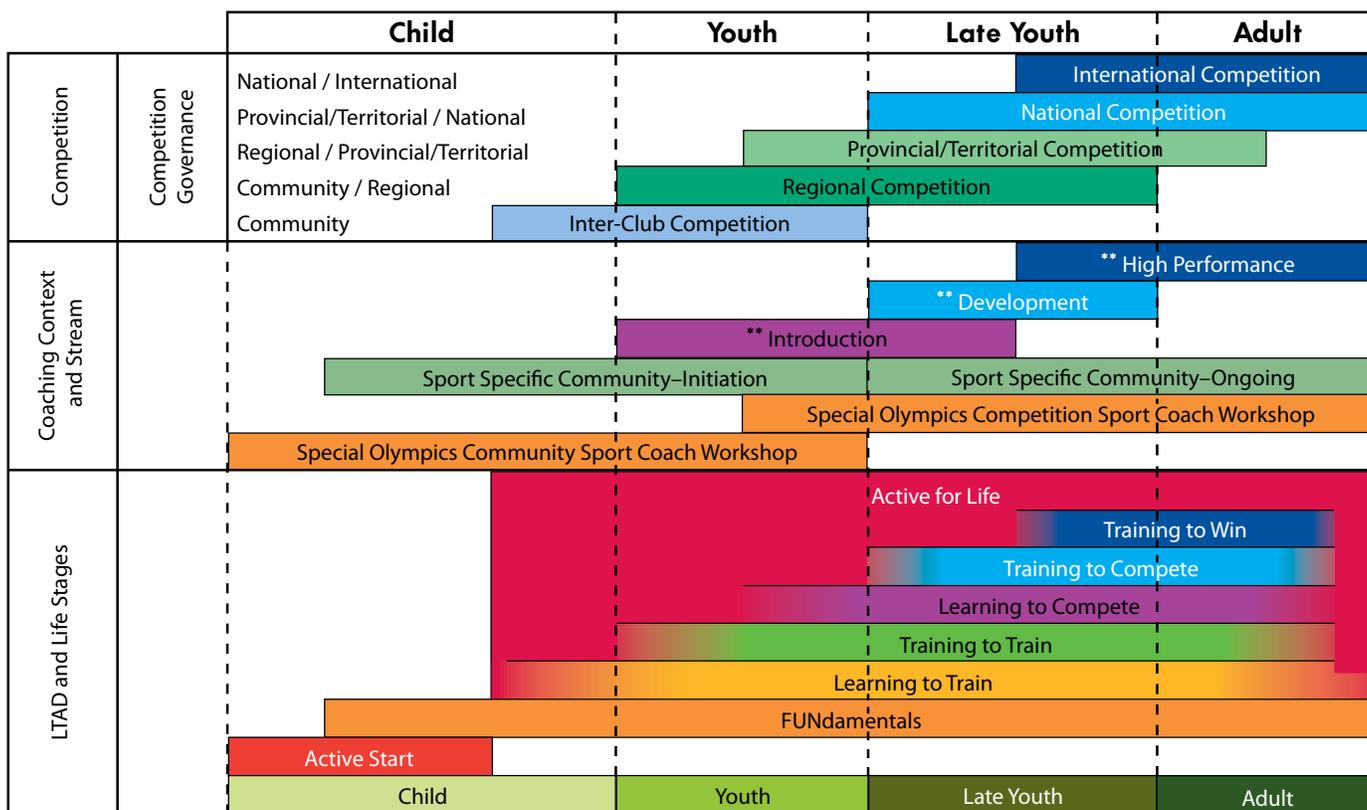
structuring competition. This may be particularly important for athletes pursuing more intensive training and competitive outlets that may be offered by, or in conjunction with, generic sport organizations. Other disability sport classification systems may provide helpful direction in this area.

Recommendation: Review SOC’s present competition structure in light of the different stages and principles of LTAD and the overall objectives of SOC’s LTAD.

Key Factor #8: System Alignment and Integration

A seamless, well-integrated LTAD plan provides the best program and the best chance of success for athletes. Under LTAD, programs are athlete-centred, coach-driven, and administration-, sport science-, and sponsor-supported. LTAD is designed to develop appropriate programs around the needs of participants from birth to old age. This may mean providing opportunities for athletes to train and compete with athletes who do not have an intellectual disability. It will include working with other partners that offer fitness and sport programs, including school physical educators, the fitness and health sectors, and NSOs. Each group plays a key role in aligning and integrating the sport system and institutionalizing LTAD to ensure appropriate sport opportunities are available. LTAD is about developing a well-aligned sport system that meets the needs of participants, acknowledging the contributions of each sector.

Special Olympics LTAD System Alignment



→ **NCCP Sport-Specific Competition Stream

The diagram on page 19 should be read vertically. Within the LTAD and Life Stages section, the athlete and his or her life stage (child, youth, late youth, adult) would fit into the LTAD stages (Active Start, FUNdamentals, and so on). This section further aligns with the Coaching Context and Stream, showing that athletes participating in the Active Start, FUNdamentals, or Active for Life stages would be coached by individuals trained at the Special Olympics Canada Community Sport Coach workshop. These coaches may also be trained in the sport-specific community coach workshops. For example, a coach who is working with bowling athletes would be encouraged to participate in the Community Bowling Workshops. In this case, the athletes in the FUNdamentals or Active for Life stages could participate in inter-club or regional competitions. However, an athlete who has entered the Active for Life stage may participate in competitions that suit her or his abilities and needs. This may mean participating in competitions at a previous stage, such as Learning to Train or Training to Train.

The Competition section shows the types of competitions in which the athletes would participate. Coaches working with athletes in this context would be trained in the Special Olympics Canada Competition Sport workshop as well as in the appropriate NSO coach workshop.

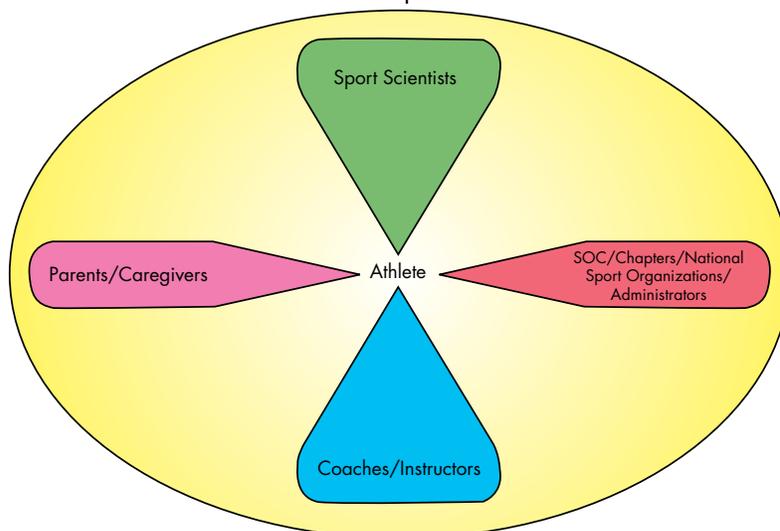
Recommendation: Coaches and administrators need to communicate with sport-specific organizations to see how athletes, coaches, and officials can benefit from various development and competition opportunities to ensure good alignment with the athletes’ developmental needs. It is important for coaches to participate in the right training to meet the needs of their athletes.

Key Factor #9: Continuous Improvement

LTAD acknowledges that many sectors deliver physical activity programs to sport participants, including sport organizations and the health, recreation, and education sectors. LTAD identifies the fact that the sport system must connect with these sectors to ensure a coordinated approach to sport and physical activity. Within the sport community, there is recognition that all aspects of sport must be well structured and aligned to ensure that the best programs and competitions are being provided for participants, based on their development.

Continuous improvement requires all performance partners to co-operate to integrate technical advances and developments in sport science and research about people with an intellectual disability into the Special Olympics sport environment.

The 5 Partners for Continuous Improvement



Recommendation: SOC must continue to coordinate and build relationships with NSOs to share knowledge and expertise regarding sport-specific aspects of LTAD. SOC should continue to improve all programs and increase the number of initiatives that address both sport for life and sport excellence.

Key Factor #10: Assessment, Monitoring, Evaluation, and Guidance

*A common phrase used by coaches working with athletes with an intellectual disability is:
"Know your athletes!"*

LTAD provides a framework that uses quantifiable benchmarks for evaluating and assessing an athlete's progress within the eight LTAD stages. Whether the program focuses on physical fitness or sport, all coaches will be able to provide better training programs and other relevant guidance that will help the athlete make good decisions about their development and participation in sport.

Furthermore, LTAD may assist in the early identification of athletes who have an aptitude for and interest in a specific sport.

At each stage of LTAD, athletes can be evaluated in five areas: technical, physical, tactical, psychological, and lifestyle. The evaluation will help coaches to tailor programs and assess if or when an athlete is ready to move to the next stage.

Coaches are encouraged to take advantage of the sport-specific knowledge provided by NSOs when monitoring and evaluating an athlete's technical ability.

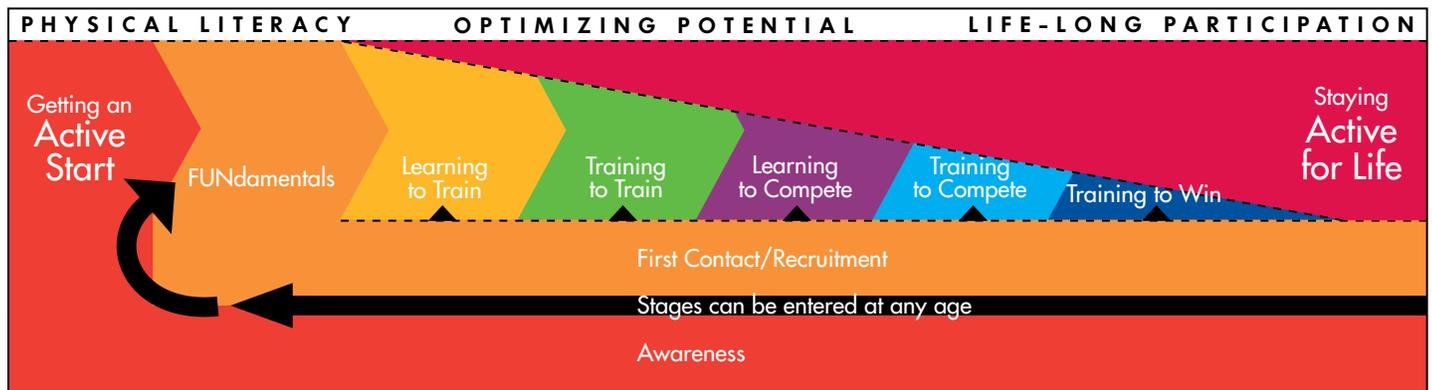
Recommendation: Program leaders and coaches should use a variety of recognized testing protocols to help ensure the best possible fitness and sport preparation, be it to improve physical fitness and health or to improve sport-specific performances in competition. SOC may wish to take a leadership role in integrating appropriate testing protocols into programs based on input from experts within the NSOs and from related fitness and physical activity fields.

Key Factor #11: The 10-Year Rule

It takes many years of sustained, high-quality training for a talented athlete to reach elite levels. Because high performance sport for athletes with an intellectual disability is in its infancy, an equivalent guideline is not available. But the evidence available suggests that a comparable level of commitment, time, and quality of training is required for athletes with an intellectual disability to reach elite standards. (Mactavish, 2002).

Recommendation: Developing sport skills, sport-specific fitness, and psychological attributes to compete effectively is a long-term process and programs should be structured based on the demands of the sport and the level of athlete fitness.

Long-Term Athlete Development Model for Athletes with an Intellectual Disability



How long participants stay in the LTAD stages depends on when they get started and their needs and interests.

This diagram illustrates a long-term approach to developing athletes with an intellectual disability.

1. Awareness and First Contact/Awareness. Individuals may participate in their first Special Olympics program at any age, depending on their previous sport exposure and experience. In many cases, individuals will start at the FUNdamentals stage where physical literacy is the primary area of emphasis. Individuals with an intellectual disability who enter a program before the age of 6 will begin in the Active Start stage.
2. The middle stages — Learning to Train, Training to Train, Learning to Compete, Training to Compete, and Training to Win — reflect the fact that athletes may choose to move along this continuum in order to optimize their potential. Athletes may also choose to stay active and remain at a certain stage or move into the Active for Life stage.
3. It is expected that there will be a very large number of athletes in the FUNdamentals and Active for Life stages. There will always be a place for athletes to have fun in sport, be fit, and compete in appropriate ways based on individual goals.



THE STAGES



Active Start

“Active Start is important to the future of Special Olympics. By involving young children with an intellectual disability in basic motor programs that focus on sport skills, we will ensure that they are successful, which means that they will make sport and physical activity a part of their life.”
—Lois McNary, VP – Sport, Special Olympics British Columbia

Chronological Age: Birth (0-6)

Priority: Active participation for fun

Objective: Develop play skills through movement and daily physical activity

Skills: Walking, swimming, running, jumping, balancing

Programs: Special Olympics Pee Wee programs, Head Start, and Infant Stimulation as well as gymnastics, movement education, athletics, and swimming

General Description of Active Start

Physical activity is essential for healthy development. The key is to encourage basic movement skills because these skills do not just happen as a child grows older. These skills develop based upon the individual’s hereditary, environmental, and activity experiences. Therefore, participation in programs that are active, safe, and fun should be a priority.

The Participant should

- become physically active as soon as possible, when the nervous system is maturing.
- be exposed to a wide variety of activities that develop fundamental motor skills through fun and play.

Program Leaders should

- consider that some people enter programs late for a variety of reasons.
- adapt activities to accommodate individuals who have entered the program in early childhood as opposed to those who entered as infants.

- ensure that the participant is given age-appropriate activities and games to maximize her or his enjoyment while learning motor skills.
- be creative to adapt and modify activities and games to allow the participant to be successful.
- allow the participant to experiment repeatedly to gain comfort and confidence with new movements.

SOC/Chapters/NSOs/Program Administrators should

- introduce early movement education for participants with an intellectual disability.
- team up with other deliverers of good movement education activities and encourage and promote programs that provide experiences in a variety of environments, including water, indoors, and outdoors.

Parents/Caregivers should

- enrol him or her in a variety of age-appropriate programs.
- encourage the participant to take risks in a safe environment.
- enroll him or her in programs that maximize competency in movement skills before they enter school.
- look for a school where the physical education teacher is prepared to adapt activities to meet the needs of the participant.

Sport Science Research Question:

What are the long-term advantages of involvement in early movement programs?

At the end of this stage, the goal is for the participant to have the physical skills and fitness level to allow physical activity for 60 minutes on a daily basis.



FUNdamentals

Starting Age: Males 6-9 to adults and Females 6-8 to adults

Objective: Physical Literacy

Skills: Basic Sport Movement Skills

Programs: Special Olympics youth programs, Special Olympics community club programs, Run Jump Throw (Athletics Canada), Learn to Swim programs

General Description of FUNdamentals

FUNdamentals is a stage where the participant learns physical literacy. The primary emphasis within this stage is to expand the movement skills to ensure the participant can perform a number of the skills identified as “FUNdamentals”. The more fundamental motor skills that the participant is able to do, the more activities and sports he or she will be able to play, with confidence. The program should be structured and fun!

The Participant should

- learn physical literacy skills.
- be able to participate in a variety of activities, games, and sports as he or she continually improves fundamental motor skills.
- begin to make healthy choices by following a balanced diet and avoiding fast foods and empty calories.
- participate in a structured physical activity program at least twice a week.
- be active through play every day!

Instructors/Coaches/Program Administrators should

- emphasize speed, power, and skill development using games and exposure to a variety of sports.

Where to go next? – FUNdamentals

- introduce concepts such as cooperation, respect, and sharing, and work on improving social skills.
- introduce decision-making skills and simple rules of sport.
- provide structured, fun activities in a positive social environment.
- introduce low-level competitive play and games.
- provide ample opportunity to repeat movements and movement patterns as part of the practice structure. Activities should build confidence by having the participant achieve a high rate of success.
- accommodate individuals who enter this stage at a later age and with limited exposure to fundamental motor skills
- ensure that games and activities are modified to suit each age group.
- consider using a simple movement screen field test to assess the participant’s level of physical literacy pertaining to agility, balance, coordination, speed, running, jumping, throwing, kicking, gliding, and buoyancy.
- use the results of screening to help guide streaming to 2 to 3 selected sports for the next stage.
- use the results of screening to determine what remedial work within the fundamental motor skills is needed.
- participate in workshops that focus on the development of physical literacy. including the National Coaching Certification Program (NCCP)

SOC/Chapters/NSOs/Program Administrators should

- encourage coaches and leaders to participate

in the Special Olympics Community Sport Workshop that emphasizes teaching fundamental motor skills.

- offer and promote professional development for coaches and instructors working with athletes with an intellectual disability.
- establish relationships with the technical experts and program developers in sport-specific organizations.

Parents/Caregivers should

- check out Special Olympics Pee Wee programs or Special Olympics Community Club programs for older participants.
- contact other sport organizations or physical activity venues that may offer appropriate activities.
- encourage healthy eating habits.
- be active as a family or in the group home as a way of life.



Learning to Train

Starting Age: Males 9-12 to adult and Females 8-11 to adult

Objective: Develop basic sport skills specific to 2 to 3 sports

Skills: Reinforce all fundamental motor skills and acquisition of basic sport skills

Programs: Community club programs, sport clubs, sport-specific programs. These programs could be Special Olympics programs or generic sport programs.

Competition: Inter-club, City-wide, or Regional

General Description of Learning to Train

Participants should be considering 2 to 3 sports that they enjoy and for which they have a predisposition. The intent is to build a multi-skill foundation that will provide the athlete with options. The selection of 2 to 3 seasonal sports will keep the athlete active throughout the year,

- investigate a variety of programs that will help develop fundamental motor skills.
- consider participation in seasonal activities that provide variety in skill developments and environments to in which to develop.

Where to go next?

If athletes reach this stage and find that this is where they perform to the best of their ability, they can stay for as long as they feel is appropriate, whether six months or six years. Athletes can enjoy competition at the appropriate level for the remainder of their competitive careers. If they feel that they have improved and can move on to the next stage, they could move to **Learning to Train**. If they prefer not to compete at this level any longer, they could move to **Active for Life**.

developing fitness and skills.

Learning to Train is considered to be a transition point in LTAD. Athletes may choose to stay at this stage for an extended period of time or for most of their competitive career before progressing to the next stage, which could be Active for Life or Training to Train. If the choice is Training to Train, an increased commitment will be necessary. Should participants choose to move to Active for Life, they have all the necessary fundamental motor skills to be able enjoy a variety of activities.

The Athletes/Participants should

- explore a variety of sport experiences.
- determine if they have a predisposition for or particular enjoyment of specific sports.
- be introduced to the specific physical fitness training required for the selected sports.

- participate in a structured sport program 2 to 3 times per week.
- be physically active every day.
- maintain a healthy lifestyle that includes good nutritional habits, daily routines, and hygiene.
- enter competitive events that are suitable to their skill level and physical abilities.
- be given ample opportunity to repeat gross and fine motor movements in skill practice, including activities for agility, balance, and coordination.
- continue to work on core strength and posture.

Coaches should

- consider associated disabilities when recommending that the athlete pursue certain sports.
- provide guidance when athletes are selecting their 2 to 3 sports.
- consult the NSOs' LTAD and NCCP material to integrate appropriate technical, tactical, and physical training.
- measure peak height velocity in accordance with the guidelines of each NSO and adapt training programs as necessary.
- consider both the chronological and developmental age of participants to ensure the appropriateness of all aspects of the program.
- include activities that will improve core strength.
- introduce competition for fun – participants enter events that are suitable to their skill and physical abilities.
- provide guidance at this transition point as to options for sport choices.
- include systematic and rigorous approaches to assessment, monitoring, and record-keeping of progress.
- take the Special Olympics Community Sport Coach workshop and/or the Competition Sport Workshop.
- participate in the Community-Initiation Workshops offered by various NSOs.

Coaches/Parents/Caregivers should

- reinforce fair play, appropriate communication in a sport environment, sharing, and cooperative participation.
- introduce the concept of self-responsibility pertaining to being ready for training and

competition such as having the proper training/competitive uniforms and looking after sport equipment.

- provide additional supervision when athletes are in an unfamiliar environment.
- offer support with transportation to sport activities and competition.
- encourage healthy lifestyle habits.
- introduce and support some simple mental preparation techniques.

SOC/Chapters/NSOs/Program Administrators should

- encourage some athletes to participate in NSO or P/TSO competitions.
- contact NSO and /P/TSO counterparts to identify opportunities.
- keep in mind the athlete's best interests with the priority being to ensure positive training and competitive experiences.

Sport Science Research Question

To what extent can self-monitoring strategies be used to involve the athletes in monitoring their own training?

Where to go next?

If athletes have reached this stage and find that this is where they perform to the best of their ability, they can stay for as long as they feel is appropriate. Athletes can enjoy competition at their appropriate level for the remainder of their competitive career. If they feel they have improved and can move on to the next stage, they could move to **Training to Train**. If they feel they would not like to compete any more at this level, they could return to a previous stage or move to **Active for Life** for more casual competition.



Training to Train

Starting Age: Males 12 to 16 to adults and Females 11 to 15 to adults

Priority: Consistent quality training

Objective: Build physical capacities relating to sport-specific protocols for complementary sports

Skills: Sport-specific skills as per NSO LTAD guidelines

Programs: Special Olympics programs, NSO sport-specific programs

General Description of Training to Train

All programs should continue to be fun. However, there is an element of seriousness in the physical preparation and competition. The athlete trains 4 to 6 times per week. The coach has a much larger role in monitoring, assessing, and measuring to ensure appropriate gains are being made based on the athlete's commitment to training.

The Athlete should

- select 2 or 3 complementary sports where the emphasis is on improving the sport-specific skills and sport-specific fitness.
- focus on training not just competing.
- be exposed to training and competition protocols consistent with the NSO.
- train 4 to 6 times per week in an organized, supervised setting.
- compete at regional and/or provincial/territorial Games and possibly at generic sport competitions.
- have the opportunity to compete 4 to 6 times using a single periodization model.
- be introduced to performance standards for individual and team sports.
- be encouraged to take more responsibility in preparation for training and competition.

Coaches should

- develop a seasonal or yearly training plan for each athlete.
- use quantitative assessment, monitoring, and measuring to evaluate physical and technical progress.
- continue to measure peak height velocity and integrate concepts of the Windows of Trainability

- as outlined in each sport-specific LTAD model.
- check for eligibility with Special Olympics and other organizations associated with athletes with an intellectual disability or generic sport opportunities.
- participate in the appropriate sport-specific NCCP.
- introduce the rehearsal of practice routines and competition routines to prepare for competition.
- help athletes to set achievable goals in the areas of self-responsibility pertaining to preparation for training and competition.
- introduce some sport-specific competition protocols.
- continue to reinforce appropriate sport behavior and following of rules.
- be aware of the ancillary issues that will have an an impact on training and competition for athletes who are living on their own.



Parents/Caregivers should

- check for eligibility with Special Olympics and other organizations associated with athletes with an intellectual disability.
- ensure that additional supervision is provided when athletes are in an unfamiliar environment.
- provide transportation or other daily living support as needed, providing opportunities for some independent decision making.

SOC/Chapters/NSOs/Program Administrators should

- check for eligibility with Special Olympics and other organizations associated with athletes with an intellectual disability.
- organize and find competitions that meet the athletes' developmental needs.

- continue to work with NSOs to integrate some athletes into their programs and competitions.

Where to go next?

If athletes have reached this stage and find that this is where they perform to the best of their ability, they can stay for as long as they feel is appropriate. Athletes can enjoy competition at their appropriate level for the remainder of their competitive career. If they feel they have improved and can move on to the next stage, they could move to **Learning to Compete**. If they feel they would not like to compete any more at this level, they could return to a previous stage or move to **Active for Life** for more casual competition.



Learning to Compete

Chronological Age: Late Youth to Adult

Objective: Competent competitor

Skills: Sport-specific skills as defined by the NSO

Competition: Provincial Games, National Games, generic sport competitive opportunities

Programs: Special Olympics competitive programs and/or working with sport-specific competitive programs.

General Description of Learning to Compete

The athlete narrows his or her focus to one sport in which to excel. She or he may participate in the off-season in a complementary sport for cross-training or as part of regeneration.

All competition experiences should be well suited to the physical and technical preparation of the athlete. The athlete will be introduced to competition protocols and become comfortable with all aspects of competition preparation. Athletes need many opportunities to compete.

Athletes should

- train 5 to 7 times per week in a well-structured program that targets sport-specific technical, tactical, physical, and psychological requirements.
- compete at the Special Olympics Provincial/Territorial and National Games.
- participate in competitions with generic sport when opportunities arise.
- compete 4 to 6 times during a season using a double periodization yearly training plan.
- take responsibility for the preparation of their own sport equipment under the supervision of the coach.

Coaches should

- develop yearly training plans based on the selected sport and double periodization.
- use more sophisticated testing and monitoring methods as a way to track progress.
- individualize training programs based on the results of testing and developing individual

strengths and minimizing weaknesses based on the sport-specific technical, tactical, physical, and psychological requirements of the sport.

- integrate and where necessary modify recommendations from the NSO's specific LTAD into training and competition planning based on the athlete's individual characteristics.
- use primarily objective selection processes to rank and select athletes for competition opportunities.
- practice simple mental preparation exercises before training and competition.
- ensure own health by getting rest, exercise, and proper nutrition.
- assist and assess athletes to specialize in one sport.
- track progress using appropriate testing protocols.
- spend time in training and at competition helping athletes to understand the rules of the sport.

Parents/Caregivers should

- help to reduce stress or barriers by assisting with transportation and meal preparation and ensuring adequate recovery time.
- attend competitions to assist with supervision and to provide psychological support.

SOC/Chapters/NSOs/Program Administrators should

- develop relationships with NSOs and P/TSOs to maximize competition opportunities.
- encourage coaches to participate in sport-specific NCCP or professional development workshops.

Where to go next?

If athletes have reached this stage and find that this is where they perform to the best of their ability, they can stay for as long as they feel is appropriate. Athletes can enjoy competition at their appropriate level for the remainder of their competitive career. If they feel they have improved and can move on to the next stage, they could move to **Training to Compete**. If they feel they would not like to compete any more at this level, they could return to a previous stage or move to **Active for Life** for more casual competition.





Training to Compete

Chronological Age: Early Adult

Objective: Sport Specialization – Training and Competition Excellence

Skills: Sport-specific skills as defined by the NSO

Competition: Special Olympics National Games, Canada Games, NSO competitions

Programs: Special Olympics competitive programs and/or sport-specific competitive programs.

General Description of Training to Compete

Optimum preparation is the primary focus of this stage. Training and competition preparation should focus on year-round, high intensity, individual event, and discipline-specific training. Because the athlete needs to be challenged to perform under a variety of conditions, training needs to simulate these. Training is used as an opportunity to model highly competitive situations where the athlete is challenged to use decision making and tactical skills.

Athletes should

- train 7 to 9 times a week to improve performance.
- train and compete following a well-structured and periodized yearly training plan.
- train and compete in a variety of environments that challenge them to adjust and adapt to unpredictable variables.
- be a discipline specialist with all of the relevant skills and abilities according to the benchmarks identified by the NSO.
- be exposed to qualifying times and qualifying trials based on protocols determined by SOC and the NSOs, where appropriate.
- be familiar with sport rules and procedures at national competitions.
- be actively involved in monitoring their own

training and competition preparation.

- balance their sport involvement with other responsibilities in their lives such as part-time jobs, school, and family.
- utilize mental preparation skills during training, competition, and daily life.
- take on more responsibility for their own sport equipment in preparation for training and competition.

Coaches should

- individualize training programs based on testing and monitoring results to minimize sport performance weaknesses given the demands of the sport.
- monitor training and competition loads to avoid burnout or injury.
- develop yearly training plans based on expertise from the NSO.
- investigate the athlete's daily living support needs especially relating to medical needs and self-responsibility.
- continue to expose athletes to a variety of environmental, tactical, and strategic conditions that test mastery of sport-specific skills.
- use objective selection processes for athletes trying out for national or international Games.
- continue professional development with the NSO to keep abreast of new technical, tactical, and physical developments within the sport.

Parents/Caregivers should

- provide daily living support to allow athletes to focus on their sport performance rather than on the challenges associated with daily living.
- continue to offer support with transportation where possible.

SOC/Chapters/NSOs/Program Administrators should

- monitor athletes for signs of being ready to compete at international competitions.
- work with coaches to determine sport readiness as well as the ability to manage daily living, including medication, somewhat independently.
- integrate competitions with NSOs and P/TSOs



Training to Win

Chronological Age: Adult

Objective: Podium Performances and Personal Bests

Skills: As per NSO guidelines

Programs: Integrate into appropriate sport-specific programs and the Special Olympics National Team program

Competitions: Special Olympics National Games, Special Olympic International Games, NSO competitions, International Sports Federation for Persons with an Intellectual Disability

General Description of Training to Win

The athletes are striving to perfect one sport in preparation for highly competitive situations. Athletes participate in 2 to 3 competitions per year with appropriate challenges. One international competition may be included during the year. All performance factors should be fully established to maximize performance at international competitions. By this stage, athletes will have reached their physiological potential through systematic training in the previous stages. Athletes will be refining their physical, technical, competitive, tactical, mental, and ancillary capacities so that they can be as competitive as possible. Significant gains will be made in the areas of psychological preparation, refinement of competition strategies and preparation, and the management of ancillary capacities.

Athletes should

- focus on quality training, recovery, and injury

Where to go next?

If athletes find that this stage is where they perform to the best of their ability, they can stay and participate or as long as they feel is appropriate. Athletes can enjoy competition at their appropriate level for the remainder of their competitive career. If they feel that they have improved and can move on to the next stage, they could move to **Training to Win**. If they feel that they would not like to compete any more at this level, they could return to a previous stage or move to **Active for Life** for more casual competition.

prevention to ensure personal bests during competitions.

- train 9 to 15 times a week following the NSO's technical, physical, and tactical protocols.
- work with a coach to establish solid pre-competition and competition plans.
- compete 2 to 3 times a year in challenging competitions.
- become increasingly responsible and independent during training and competition.

Coaches should

- use competitive training situations to familiarize athletes with international rules, procedures, and protocols.
- manage the yearly training program and include frequent breaks to prevent injuries and physical and mental burnout.
- ensure that the training program allows for peaking at major competitions using the framework outlined in the NSO's LTAD.

- consult with sport scientists to optimize individual athlete training needs.
- continue to monitor progress using field and laboratory test protocols consistent with the NSO's battery of tests.
- continue professional development with the NSO to keep abreast of new developments within the technical, tactical, and physical aspects of the sport.
- consult sport-specific specialists when possible.
- monitor lifestyle choices to ensure appropriate personal hygiene, rest, and nutrition.
- communicate regularly with parents/caregivers regarding daily support issues.

Parents/Caregivers should

- assist with daily living support where possible, including transportation and meal preparation.
- ensure that medical needs are communicated before travel takes place.
- encourage athletes to get proper nutrition and rest in order to fuel good training and competitive performances.

SOC/Chapters/NSOs/Program Administrators should

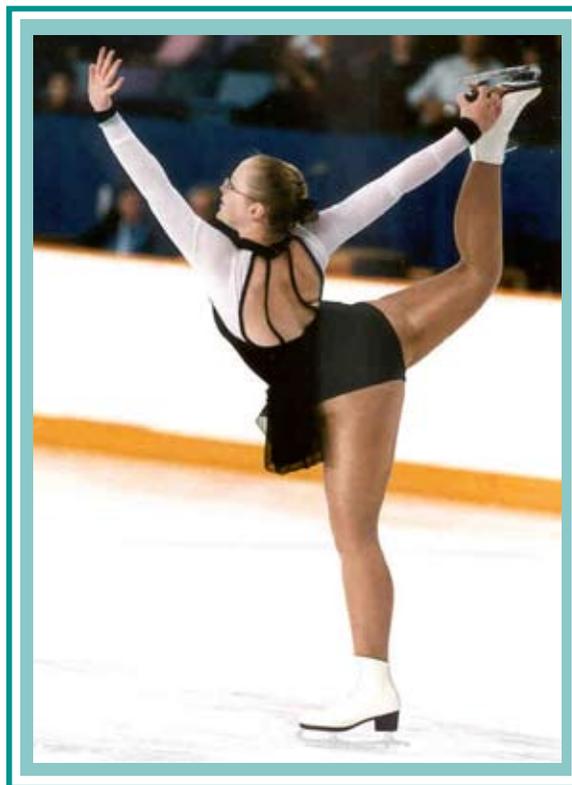
- assist in building relationships with partners

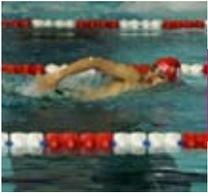
to ensure adequate access to quality training facilities.

- ensure that all travel arrangements can accommodate special needs including hotels, flights, and meals.
- assist in accessing sport scientists to help with designing the yearly training program and testing dates.
- ensure that selection/qualifying standards are consistent with developing top-quality performers at international competitions.

Where to go next?

If athletes find that this stage is where they perform to the best of their ability, they can stay and participate for as long as they feel is appropriate. Athletes can enjoy competition at their appropriate level for the remainder of their competitive career. If they feel that they would not like to compete any more at this level, they could return to a previous stage or move to **Active for Life** for more casual competition.





Active for Life

Chronological Age: All ages

Objective: Lifelong physical activity

Skills: Variety of sport skills and activities, ongoing work on aerobic fitness, strength, agility, balance, coordination, and flexibility

Programs: Special Olympics community programs or generic sport community programs

General Description of Active for Life

Generally, participants in this stage will be older, having moved through at least Active Start and FUNdamentals. However, there will be individuals who have been competitors at all levels including regional, provincial, national, and international. Therefore, programs need to be structured to meet the needs of all participants. Participation is primarily recreational and any competition is low intensity with the focus on fun. Much of the motivation for participation relates to the opportunity to socialize with peers. Activity choices should focus on social opportunities, enjoyment, physical fitness, and maintenance of strength. As people age, regular physical activity reduces risk factors associated with the incidence of chronic diseases such as type 2 diabetes, heart disease, and various types of cancers.

Participants should

- be active at least 5 times per week for 60 minutes.
- maintain good cardiovascular fitness and core strength.
- select sports and fitness activities that they enjoy.

Coaches/Program Leaders should

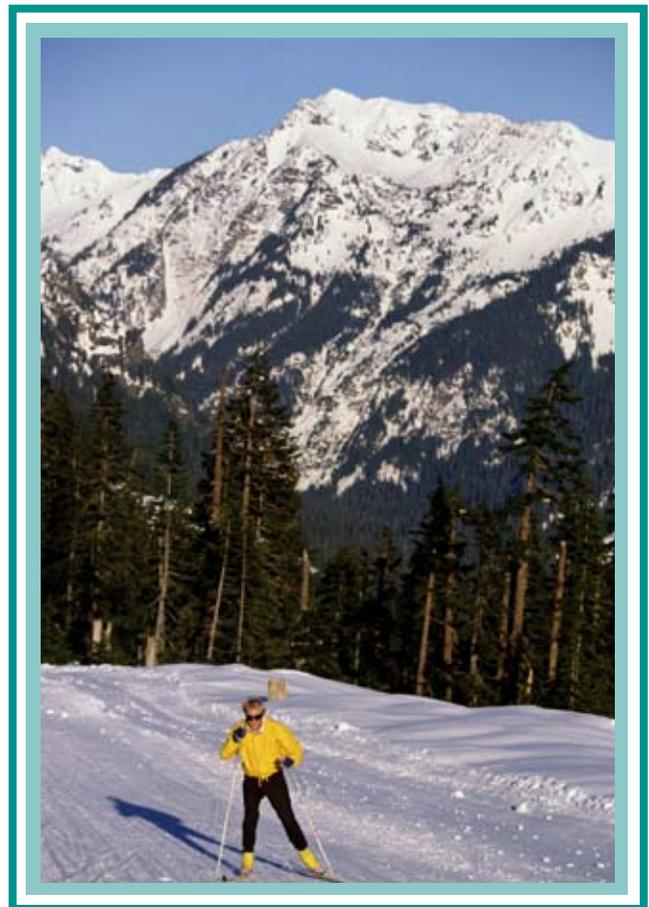
- offer good practices that emphasize physical fitness, strength, and skill training and reinforce agility, balance, and coordination.
- keep it fun and social and focus on fitness.

Parents/Caregivers should

- continue to provide support relating to transportation, good nutritional choices, and healthy lifestyles.

SOC/Chapters/NSOs/Program Administrators should

- give consideration to improving and/or maintaining strength in order to reduce the risk of injury during daily living and during physical activity.
- provide a variety of programs that offer life-long types of activities.



CONCLUSION

On the basis of sport science research and the integration of research, knowledge, and experience with respect to individuals with an intellectual disability, the SOC LTAD Steering Committee has identified an LTAD pathway that incorporates the importance of overall health and physical fitness as well as what is needed to optimally prepare athletes to compete on the world stage. The pathway ranges from a child's first movements up to and including lifelong involvement in sport. SOC's LTAD introduces new concepts and ideas of how programs can be adjusted to address the 11 key factors of LTAD. It establishes a clear progression from playground to podium to lifelong participation, using an eight-stage model that outlines a flexible framework based on capacity, motivation, life situation, and access to sport development services.

This document is also intended to act as an agent of change. The current Special Olympics system is discussed with gaps identified and possible solutions presented. An exhaustive literature search reveals that much more research is needed regarding sport and athletes with an intellectual disability.

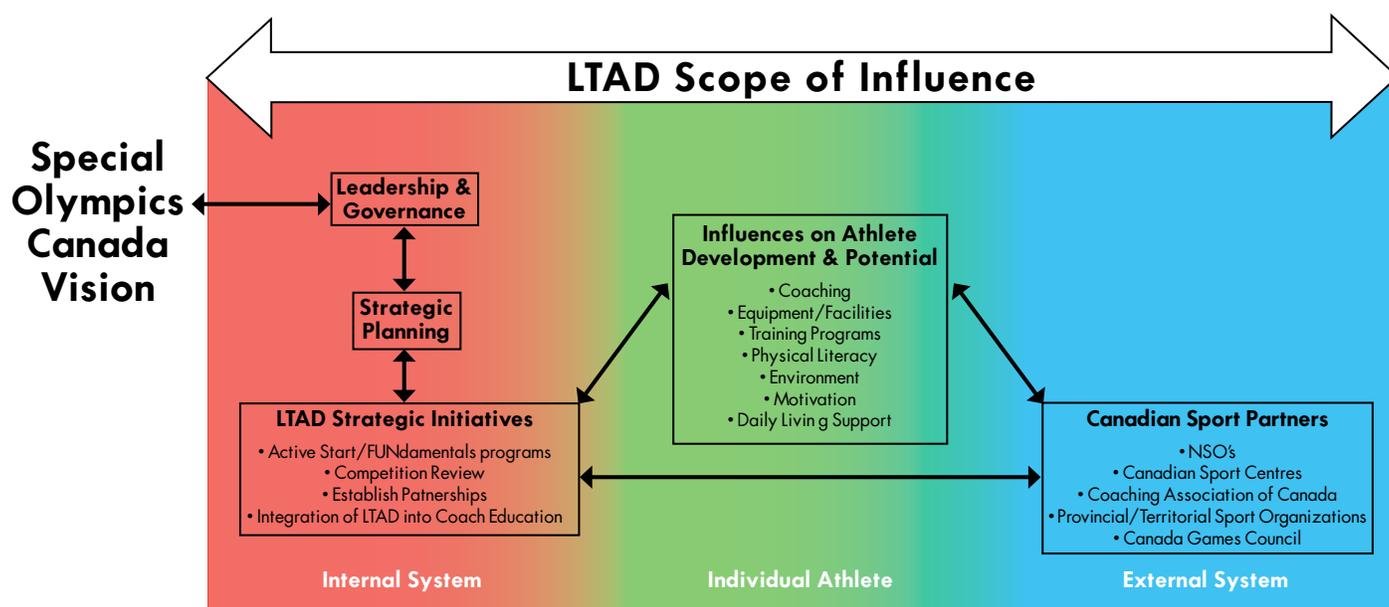
Consistent with the LTAD models that are

being adopted by over 60 NSOs, the SOC model recognizes that strong partnerships with other performance partners are critical to the implementation plan. Implementation does not happen overnight, but is likely to be a 5- to 10-year process and will require changes and the concerted efforts of many stakeholders.

Further discussion regarding implementation is necessary and needs to be integrated into SOC's strategic planning.

The diagram below illustrates the scope of influence that LTAD will have in various areas, all focused on providing the best services to develop athlete potential, be it for personal bests or elite performances. Athletes with an intellectual disability will be influenced by both internal and external systems, involving the expertise of partners and other stakeholders.

This is an exciting time for sport and for Special Olympics. The changes that are recommended present an opportunity to advance the abilities of all athletes so they can truly integrate sport and physical activity into their lives.



Adapted from the Big Picture by Richard Way

Framework for Guiding the Implementation Plan

The recommendations listed throughout this document are summarized here as considerations to guide subsequent development of the LTAD implementation plan.

LTAD initiative	Priority	Cost	Role
Develop programs for Active Start.			
Develop, promote, and deliver appropriate programs for FUNdamentals			
Initiate a competition review to examine competitive opportunities for the LTAD stages.			
Review competition formats that include local, regional, provincial/territorial, and national competitions.			
Examine competition and divisioning to ensure that various processes encourage and motivate athletes to train systematically.			
Identify key relationships with external sport system performance partners.			
Establish coach/administrator opportunities to tap into sport-specific expertise.			
Identify relationships and communications to ensure sport system alignment with all aspects of Special Olympics sport program delivery.			
Establish partnerships to enable coaches to learn about LTAD stages from the 14 official sports of the Special Olympics.			
Identify key LTAD coaching-specific information to integrate into the NCCP.			
Provide opportunities for coaches to understand 5 S's and the influence of cognitive impairment and associated disabilities.			
Establish coach mentorship opportunities with NSOs.			
Train coaches in sport-specific requirements to assist athletes in making sport choices.			
Train coaches to integrate recognized testing protocols into their sport programs.			
Establish sport science, planning, and periodization in SOC competition programs.			

GLOSSARY

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

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

Ancillary capacities refer to the knowledge and experience base of an athlete and includes warm-up and cool-down procedures, stretching, nutrition, hydration, rest, recovery, restoration, regeneration, mental preparation, and taper and peak. The more knowledgeable athletes are about these training and performance factors, the more they can enhance their training and performance levels. When athletes reach their genetic potential and physiologically cannot improve anymore, performance can be improved by using the ancillary capacities to full advantage.

Associated impairments describes situations in which people have impairments in addition to a primary diagnosis of intellectual disability (Batshaw, 2002). For most people with mild intellectual disability, this is a stand-alone form of impairment. Individuals with more severe intellectual disability often have other impairments (that is, associated impairments) that may affect functioning in life and sport. While not an exhaustive list, the most common associated impairments include cerebral palsy, sensory (vision and hearing) impairments, seizure disorders, communication impairments, behaviour/psychiatric disorders, and attention-deficit/hyperactivity disorder (Batshaw, 2002).

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

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

Critical periods of development refers to a point in the development of a specific behaviour when experience or training has an optimal effect on development. The same experience, introduced at an earlier or later time, may delay later skill acquisition.

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

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

Pan-Canadian refers to an approach that addresses the entire country from the east to the west and the north to the south, recognizing that there are differences across the country that need to be considered in all planning.

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

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

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

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

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

P/TSOs – Provincial/Territorial Sport Organizations. These organizations govern sport-specific aspects of a sport’s development within a province or territory.

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

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

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

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

Training refers to systematic and integrated actions aimed at influencing the development of performance in a goal-oriented way. It is the various processes and methods of periodically administering controlled stress on the organism to a series of principles, and organized into a coherent plan, in order to induce general and specific adaptations to various systems, organs and/or tissues, and improve performance capacity.

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APPENDIX 1

Overview and Summary of Sport Related Research in the Area of Intellectual Disability

Sport Canada's LTAD incorporates several core ideas and values, which include

- promoting a healthy, physically literate nation whose citizens participate in lifelong physical activity.
- facilitating achievement of optimal athletic potential by designing and implementing training, competition, and recovery programs based on developmental principles of growth and maturation (that is, physical, mental, emotional, and cognitive development).
- creating an integrated and comprehensive delivery system that heightens collaboration among and between all stakeholders involved in Canadian sport — participants, parents, coaches, schools, clubs, community recreation, P/TSOs, NSOs, sport scientists, and government ministries at the municipal, provincial/territorial, and national levels.

While these core ideas are all important, this appendix expands on the second point — designing and implementing training, competition, and recovery programs based on developmental principles that are at the heart of the athlete development component of LTAD.

LTAD is built on knowledge, derived from research, of growth and maturation. As defined in the Glossary, these two concepts are distinctive, with growth referring to observable changes in body size (height, weight, and percentage of body fat) and maturation being about changes in the structure and function of different body systems; for example, hormonal changes and bone mineral density. Trainability, another key LTAD concept, is basically about targeting training, competition, and recovery programs in ways that capitalize on naturally occurring stages of growth and maturation to optimize skill learning and athlete development.

When it comes to people with an intellectual disability, sport-related research consistent with the empirical basis for LTAD — that is, directly linked to the principles of growth, maturation, and trainability — is extremely limited.

Existing research in the area of intellectual disability does not mesh all that well with the basis used in LTAD because the predominant focus has been on

1. captive populations, people who reside in institutions with limited access to quality sport training and competition programs such as those provided by SOC. These individuals are neither a good nor a comparable reference group for individuals served by sport programs and, as SOC looks to the future, represent a unique cohort with life and activity experiences not likely to be replicated because there is no history of institutionalization or community residing.
2. health-related physical fitness, which is problematic because the relationship between physical activity and health-related fitness is not strong. This may sound counter-intuitive, but not when considering that physical activity sufficient for achieving health benefits is not necessarily of the intensity, frequency, and duration needed to achieve optimal aerobic fitness and other elements, at least for individuals in the Training to Compete stage and beyond. We also know, at least for individuals

without a disability, that growth and maturation affects this relationship. The best examples of growth and maturation effects on general fitness are often seen in strength measures where late maturing boys don't score as well as those who mature within the typical ranges and early maturing girls, with a heavier and higher percentage of body fat compared to typically maturing girls, are often disadvantaged.

3. deficits, or lags in development or fitness versus in-depth analysis or recommendations for intervention/training to promote sport-specific fitness or skill acquisition and development.
4. advocacy, which has promoted the benefits of particular forms of sport and physical activity involvement such as Special Olympics over other aims, such as evidence-based, knowledge/practice promotion.

Beyond these concerns, which apply to most of the available research base, limited consideration of the diverse range of individuals subsumed within the population and categorized as having an intellectual disability — recalling that there are over 500 different known forms of intellectual disability, some with specific genetic or chromosomal bases, others with metabolic origins, and others of a non-specified etiology — is problematic. While this is an issue that will need to be addressed over time as LTAD is implemented, what follows is a summary of the current state of knowledge and findings that might be helpful in thinking about growth, maturation, and trainability as it applies to individuals with an intellectual disability.

These findings come from a comprehensive review of existing research and highlights findings that relate to LTAD. For two reasons, a distinction has been made between individuals with Down Syndrome and those with other forms of intellectual disability.

- Some evidence suggests that development — physical, neurological, movement skills, and the like — may vary depending on the nature (cause) of an intellectual disability.
- Of all the different forms of intellectual disability, Down Syndrome is perhaps the most studied. Therefore, more is known about development of these individuals than other people with an intellectual disability.

Individuals with Down Syndrome

Motor Development

- a. achieve motor milestones generally later (Jobling 2006, Corbo-Lewis 1996) than the average population
- b. display individually variable rates of delayed motor skill acquisition (Melyn, 1973; Jobling & Virji-Babul, 2004); large individual differences in rate of acquisition and skill proficiency among people with Down Syndrome (Dyer, et al., 1990; Henderson, 1985)
- c. display sex-related differences in movement and language development, with females showing earlier development than males (Jobling & Virji-Babul, 2004; Melyn, et al. 1973)
- d. given the limited research beyond deficits in fundamental movement milestones such as sitting, creeping, and crawling, the findings are inconclusive as to whether or not fundamental movement delays extend to other motor skills (gross, fine, sport; Jobling & Virji-Babul, 2004). A study by Jobling (1996) showed that between ages 10 and 16 children with Down Syndrome demonstrated widely divergent skills with some reaching

- levels comparable to children without a disability and others lagging farther behind.
- e. some consistency in balance being denoted as an on-going motor development concern and identification of hypotonicity (excessive ligament elasticity) as a key issue in motor development and skill execution.

Growth and Maturation

- f. Pre-pubertal growth spurt earlier and less marked than normally expected; post-puberty growth rates similar to individuals without Down Syndrome (Toledo, 1999)
- g. PHV may occur earlier — accelerated growth at ages 9 to 10 years with PHV reached by age 11 in both sexes, 1 to 2 years earlier than the norm (Kimura 2003, Toledo 1999.). CAUTION: This contention is based on findings from only two studies and there is some contradictory evidence (i.e., Kuroki, et al) so it is certainly not conclusive.
- h. Research on adults suggests a phenomenon dubbed “precocious aging” (Hawkins) that may lead to early cognitive and physical declines in individuals with Down Syndrome as early as age 30. This has implications for Active for Life; that is, concerns reserved for older adults may come into play sooner.

Physical fitness

- i. While somewhat limited by the fact that most of the research focuses on health-related fitness, evidence suggests that individuals with Down Syndrome may have a reduced cardio-respiratory development capacity, including lower cardiac output and reduced VO₂ max. This is referred to as chronotropic incompetence, which would have implications for intense training and endurance-related activities.

Individuals with an Intellectual Disability (unknown origin)

Individuals with non-Down Syndrome, but who are not segmented by other forms of intellectual disability, can reach performances similar or lower to that of equally trained peers. (Van de Vliet 2006).

Motor Development and Maturation

- a. Highly variable with some reporting delays and others displaying typical development patterns. Factors such as nutrition and the nature of the individual’s environment are more important in predicting development than is the presence of an intellectual disability.

Physical fitness/sport skill proficiency

- b. Extremely limited body of knowledge. Almost all of the work in this area focuses on health-related fitness in relatively sedentary populations. Rimmer and Fernhall have done a number of studies in this area; Van de Vliet, et al, 2006, provide the most comprehensive study with a sport focus. From this work, a few common findings may be applied, especially in the training- and competition-focused stages of LTAD:
 - Deficits in muscular strength appear to endure despite long-term training of appropriate intensity, duration, and frequency
 - Movement skills requiring sequencing and coordination are the most difficult to learn and maintain over time, a key concern for those in Training to Compete and Competing to Win stages (Mactavish, 2002)
 - Self-detection and correction of skill errors is a persistent concern despite years in training (Mactavish, 2002), indicating a need for instruction and ongoing support in

this area

- Motivation is a key issue in coaching athletes with an intellectual disability (Switsky, 1999). This is described as the “hidden criterion of ID”. In particular, external motivation is key to optimal athletic performance; that is, coaches need to work hard on fostering motivation (Frey, 1999)
 - Sport psychology and the use of mental skills packages (Gregg, et al. 2004) show promise as a tool for promoting intrinsic motivation and self-regulation of learning and skill execution among athletes with an intellectual disability. This is an emerging area of research and a key consideration in elite sport development.
- c. Individuals with an intellectual disability, with appropriate training and opportunity, can achieve fitness standards and skill proficiency levels comparable to trained peers without a disability. At elite levels of performance, athletes with an intellectual disability currently attain standards ranging from 10 to 50% lower than elite performers in individual sports of athletics and swimming. The reason for this finding remains an open question .

What might we say from all of this research?

- a. Considerations essential for athlete development generally apply to individuals with an intellectual disability. These include exposure and opportunities to learn the basics from an early age, access to opportunities to explore more specialized sport interests, quality coaching, and training regimens of appropriate frequency, intensity, and duration to achieve maximal performance outcomes.
- b. Keys for success that may be particularly important for individuals with an intellectual disability include
 - focusing on the individual (know your athlete) and targeting programming and training to the needs of the individual.
 - assessment and evaluation, which are essential for goal setting, program design, and monitoring of progress.
 - coaches with an understanding of the unique learning needs of individuals with an intellectual disability and how these relate to sport.
 - focusing on fundamental and basic motor skills/movement early on (Active Start through FUNdamentals), particularly for individuals with Down Syndrome. This may be an ongoing area of instruction and practice throughout the various LTAD stages depending on individual needs and abilities.
 - expectations. With quality coaching and training, athletes with an intellectual disability can achieve high levels of athletic performance. Don't let attitudes about ability limit efforts to achieve maximum potential through training and competition.

Note: **Windows of Trainability** as articulated in the LTAD framework presently lacks a substantive basis in existing research in the area of intellectual disability.

Consistent with what is known about the challenges of isolating specific Windows of Trainability within highly heterogeneous populations, it seems appropriate to follow guidelines for quality program development devised for individuals without a disability, with known issues and concerns specific to those with an intellectual disability woven in where appropriate and necessary.

For example, strength development is one factor that has been identified, fairly consistently, as an issue for many individuals with an intellectual disability. In the LTAD framework, this is an area that is identified and targeted for development throughout the various stages. This focus should also be systematically incorporated into programs that include individuals with an intellectual disability. For some individuals with Down Syndrome, it is known that developmental time may be decreased because of delays in reaching key movement milestones and early PHV. This underscores the need for getting an early start on movement exploration and development and the possible need to continue this emphasis for an extended period of time (Jobling 2006).

APPENDIX 2

Acknowledgments

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Long-Term Athlete Development

for Athletes with an
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