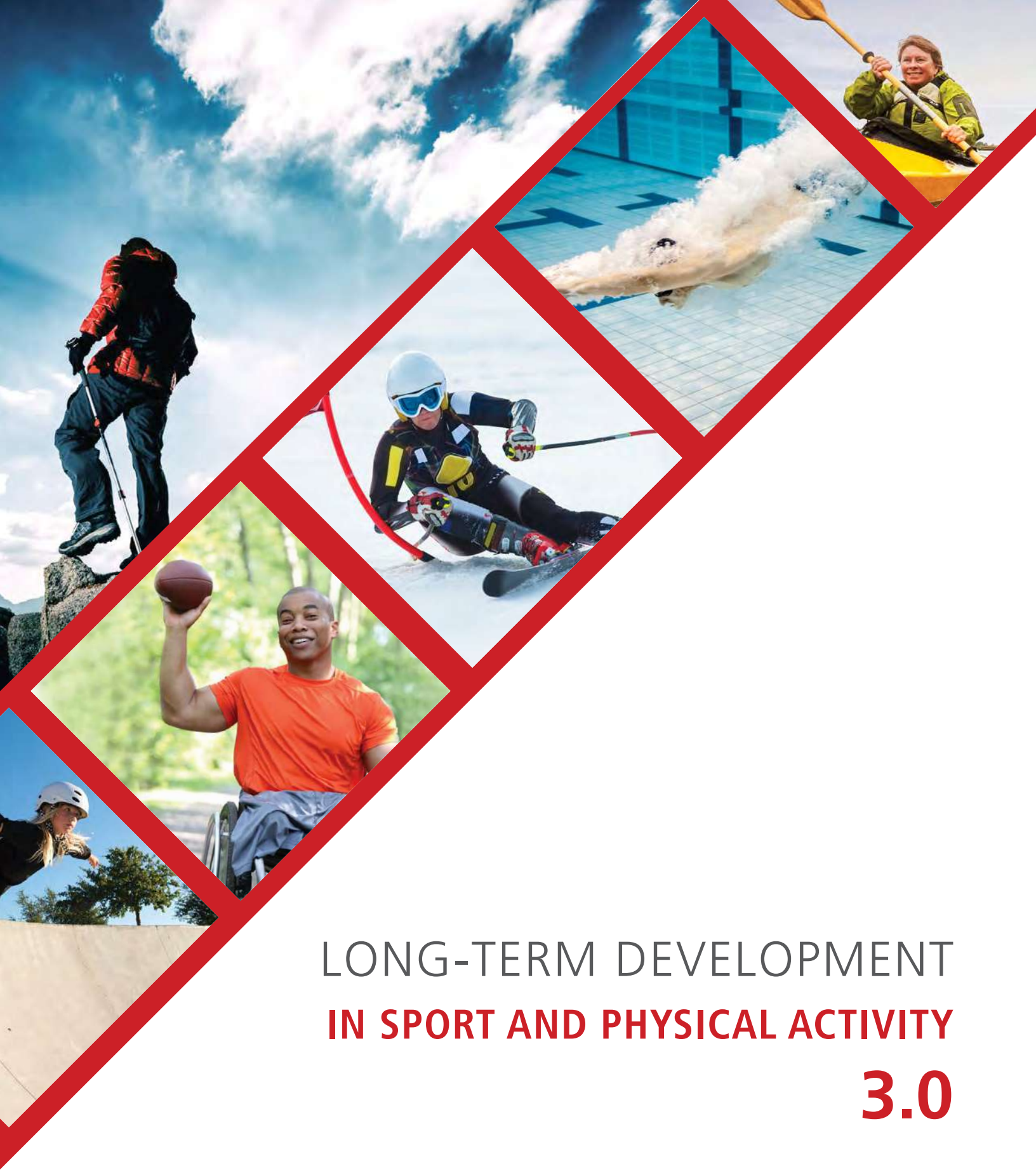




LONG-TERM DEVELOPMENT
IN SPORT AND PHYSICAL ACTIVITY
3.0

 **Sport for Life**



LONG-TERM DEVELOPMENT IN SPORT AND PHYSICAL ACTIVITY

3.0

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Sport and Physical Activity in Canada: Opportunity Awaits

Sport and physical activity remain powerful agents for developing individuals and society as a whole. The benefits of physical activity—expressed in many ways through structured and unstructured sport, recreation, active living, and play—are universally recognized for their vital contributions to health and well-being. At the same time their value toward overall human development and social-economic enhancement is under-appreciated.



To maintain brevity and readability, in-line references to supporting documents are not used. A comprehensive Handbook of References Supplement to Long-Term Development in Sport and Physical Activity is provided as a separate resource for those wishing to learn more about the evidence and thinking behind this document. You can access the Handbook of References at sportforlife.ca/handbook-of-references.

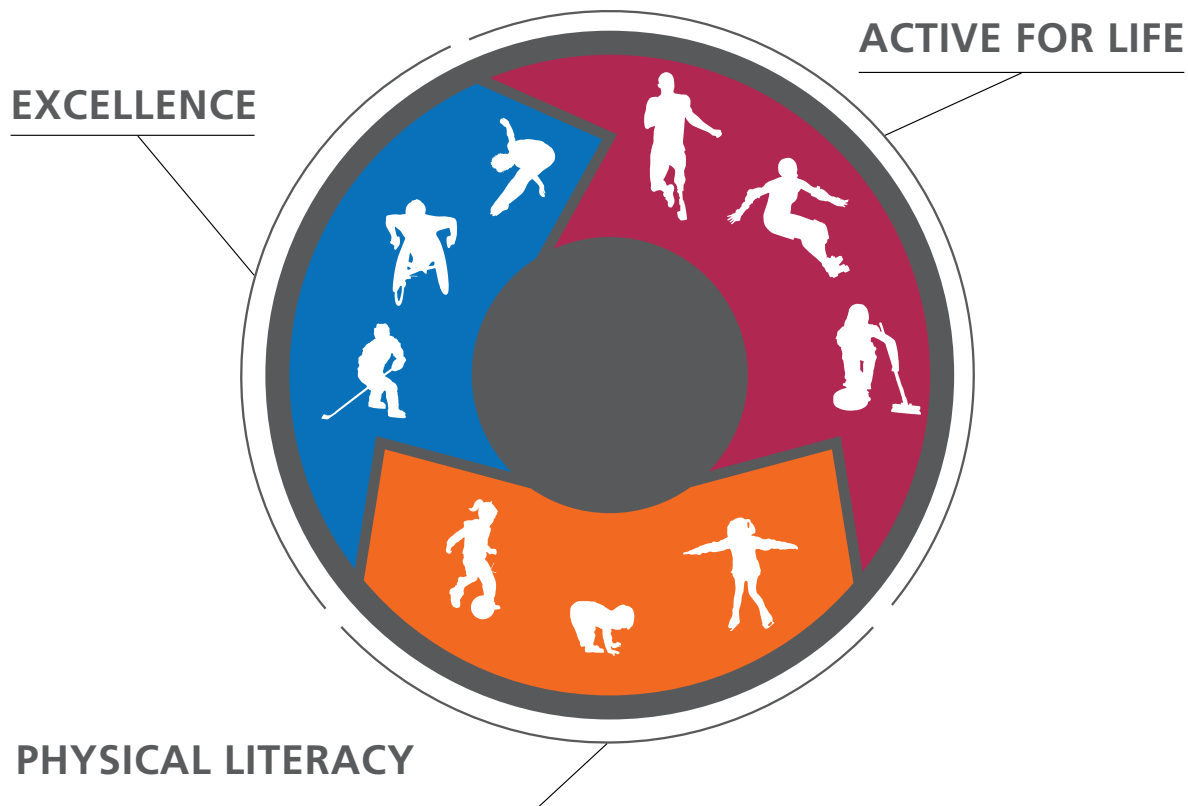


Figure 1: Sport for Life Development Goals

Fortunately, there is a growing awareness of the ways sport and physical activity can shape society for the better. The United Nation's Sustainable Development Goals recognize the unique and positive impact of sport toward their 17 goals and identify key areas where sport can have the biggest impact. Similarly, there is Canada's *Common Vision for increasing physical activity and reducing sedentary living in Canada: Let's Get Moving*, a national policy document that "serves to complement and align with other relevant policies, strategies and frameworks" including the Canadian Sport Policy 2012, Framework for Recreation in Canada, Active Canada 20/20, and Curbing Childhood Obesity. It is within sport and physical activity's reach to improve health and well-being, inclusion, gender equality, and other social challenges. Countries that understand the value of sport and physical activity and implement coherent development strategies reap rewards for their

citizens and communities, including improved social cohesion, reduced spending on healthcare, better mental health, and other economic benefits.

The Sport for Life Society remains committed to its goals of physical literacy development, the opportunity to strive for excellence in sport, and the ability to be active for life by operationalizing its principles of quality experiences, inclusion (diversity) and collaboration. As a catalyst, Sport for Life has raised awareness, ignited conversations and cultivated collaborative efforts across Canada. Over the last decade, Sport for Life concepts have been validated and integrated into numerous national, provincial/territorial and municipal policies. In the spirit of Kaizen, we continue to listen, learn, and improve in order to help all Canadians reach their potential in sport and physical activity.

From **LTAD** to

Long-Term Development in Sport and Physical Activity

Since 2005, the flagship Sport for Life resource document has been called *Canadian Sport for Life—Long-Term Athlete Development*. The name has been controversial ever since. For too many, especially those working with young children or older adults, the term “athlete” seemed inappropriate—“participant” better described the people they worked with. On the other hand, using the term “participant” made no sense to coaches and sport organizations who worked day-in and day-out with individuals who were clearly striving to achieve their athletic potential.

Long-Term Athlete or Participant Development

This document moves away from Long-Term Athlete or Long-Term Participant Development because of the wide range of organizations with which Sport for Life collaborates.

Individual organizations are free, as they have always been, to adapt the language they use to best meet the needs of their end users.

Our language has no single word that adequately describes everyone across the spectrum from “kicking a ball around with your friends” to “winning a medal at the Paralympic Games”. Initially, when the framework served to guide national sport organizations (NSOs) the term “athlete” was a natural fit, but as the development framework was adopted by communities, as well as education, recreation, and health programs, “athlete” no longer included everyone involved.

Throughout this document, the term athlete is used when describing individuals striving to achieve their sporting potential, while both athlete and participant are used when dealing with young children and adults engaged in sport and physical activity.

Despite an unwavering belief that every child is born an athlete, Sport Life has chosen to call this resource *Long-Term Development in Sport and Physical Activity* for these reasons:

- To maintain focus on the key idea that development is a process that takes time, and that sport and physical activity should look very different, based on the individual’s stage of development.
- To reinforce the idea that long-term development is important both in sport performance and for life-long engagement in physical activity for health.
- To broaden the focus. Effective development requires the alignment of ALL parts of the Canadian ecosystem, from community programming through to targeted high-performance sport excellence, and this involves far more than just sport organizations.

A TRULY CANADIAN APPROACH

To be truly world-leading, Canada can't simply copy other systems. In the past Canada has attempted to patch gaps in its sport and physical activity ecosystem by borrowing concepts and systems from countries that were achieving international sporting success. For example, during the 1970s and 1980s, Canada tried to adopt and adapt elements from the Soviet Union and later from the German Democratic Republic. Then, prior to and immediately after the 2000 Olympic and Paralympic Games, many suggested that Canada emulate the Australian sport model.

For Canadian athletes to achieve sustained international sporting success and for all Canadians to be active for life, we need a made-in-Canada system based on Canadian culture, traditions, and geography. A truly Canadian approach must also reflect our social values, multiple levels of political jurisdiction, and our economic realities. Long-Term Development in Sport and Physical Activity is a truly Canadian approach.

The first version of *Canadian Sport for Life—Long-Term Athlete Development* set out to address the gaps and shortcomings in the Canadian sport and physical activity ecosystem. Now, Sport for Life concepts are the foundation of policies, resources, and programs across Canada. Sport for Life has helped to link the sport, recreation, health, and education sectors while aligning programming across the federal, provincial/territorial, and municipal level. More than 60 NSOs have created sport-specific frameworks guided by Long-Term Athlete Development, which has led to implementation at the provincial and territorial level. Sport for Life has worked in hundreds of communities across the country, and some have declared themselves “Sport for Life” communities.

Our partners in the education and recreation sectors have included the concept of physical literacy in policy and programs, and the language is now entrenched in provincial health and physical education curricula. A growing number of researchers are investigating the meaning and practical application of physical literacy and publishing results in peer-reviewed journals. These changes are consistent with being a catalytic agent—spurring discourse and research throughout Canada and abroad.



Despite this success, there is need for a renewed Long-Term Development approach. Community sport and physical activity participation in Canada has declined, physical education programs in schools are marginalized, and the sport and community sport delivery system in Canada remains fragmented. There has been rapid growth of “for profit” sport businesses offering ever more specialized “elite” training at ever-younger ages. There is more to do to create the ecosystem we need, one which inspires every Canadian to pursue both excellence and activity for life.

ABOUT THIS RESOURCE

First and foremost, this resource is intended for everyone within Canada's sport and physical activity ecosystem. One of the most persistent issues within this ecosystem is the way some groups continue to be marginalized and ignored. As a result, groups such as girls and women, individuals with disabilities, Indigenous Peoples, newcomers to Canada, the LGBTQI2S¹ community, aging adults, and those living in poverty and isolated communities remain underserved and under-supported. Most sport and physical activity programs have not adequately engaged and worked with these populations to design and deliver quality experiences to meet their diverse needs. Typically, organizations design programs, distribute resources, and create courses and workshops as an initial strategy, then attempt to make them fit for all groups. This "cookie-cutter" approach is woefully deficient and is a major factor leading to lack of interest in sport, and often, disengagement from physical activity all together. Sport for Life will work with content and context experts to build the detailed components needed for each group, and will distribute them with the goal of building appropriate and meaningful Long-Term Development pathways for all.

Initially drawing upon the positive aspects of empirically tested athlete development models from Eastern Europe, the framework has continued to evolve and incorporate information from multiple sources including early work in British Columbia and the United Kingdom², and more recent work with over 60 sports in Canada and a myriad of other national sport governing bodies globally. The framework also draws on the work of academics, and international sport science publications that provided insight and information regarding the role of growth, development, and maturation in human development. These sciences include pediatric exercise science, exercise physiology, sport psychology, psychomotor learning, sport sociology, neuroscience, and nutrition. An analysis of the literature on organizational development has also contributed significantly in the area of system alignment.

Long-Term Development in Sport and Physical Activity is a framework for the development of every child, youth, and adult to enable optimal participation in sport and physical activity. It takes into account growth, maturation and development, trainability, and sport system alignment.

¹ LGBTQI2S stands for Lesbian, Gay, Bisexual, Transgender, Queer (or Questioning), Intersex, and Two-Spirit. We use this acronym due to its broad scope. However, we recognize that this is a time of change in terms of language around sexual orientation, gender identity, and gender expression, and that "Gender and Sexually Diverse Community" is used more prominently by various groups in certain sectors.

² These B.C. sport organizations include tennis, water-ski, and curling. Three athlete development frameworks that were produced for sport organizations in Ireland and Britain, including British Swimming, English Rugby Football Union, England Cricket Board, England Netball, British Canoe Union, and British Judo, are directly quoted from and utilized in the text.

The art of coaching and program design also plays a significant role in our framework—and for coaches who must make multiple day-to-day coaching decisions the framework extrapolates from currently available scientific literature (when no specific research has been undertaken or is available). In doing so we recognize the risk of being wrong—but also recognize that to be world leading we must “push the envelope”. Evidence-based conclusions can only be drawn from analyzing published research that takes years to accumulate. Athlete development cannot be both fully evidence based and cutting edge³.

The framework recognizes that the cognitive, emotional, moral, and psycho-social development of children are important components of maturation, and significantly contribute to progress in sport from introductory play all the way up to and including world-leading performances.

Ultimately, both sporting excellence and an active, healthy population are outcomes of a sport and physical activity development process that is top quality, well-designed, inclusive of all, and properly implemented. Long-Term Development in Sport and Physical Activity is a uniquely Canadian, world-leading design—NOW is the time to fully implement it.



³ Greater detail on this is found in the Sport for Life publication Athlete Development Matrix, which, because of the advantage that it provides to coaches, is available only to Canadian NSOs. Additional in-depth technical information on many aspects of Long-Term Athlete Development is available in supporting publications available online from sportforlife.ca/resources.

NATIONAL POLICY TO COMMUNITY ACTIVATION

The concepts shared in this resource have been developed and delivered since all Federal, Provincial and Territorial Sport Ministers accepted Long-Term Athlete Development in 2005 as Canada's development framework, and then in 2007 committed to full provincial and territorial implementation. These concepts have been embedded in major national, provincial and territorial agencies for over a decade, which leads to the next steps of being a catalyst for change right into local community and clubs.



Photo: Ian Muir, Rugby Canada

SPORT FOR LIFE'S MISSION, VISION AND VALUES

This resource is produced by the Sport for Life Society (formerly Canadian Sport for Life) and is consistent with the Society's vision and mission.



OUR VISION

Everyone has the opportunity to participate in quality sport and physical literacy experiences.

OUR MISSION

To develop physical literacy and improve the quality of sport, by creating, sharing and mobilizing knowledge, to act as a catalyst for governments, institutions, and organizations, to improve programs and services.



OUR VALUES

- Collaboration,
- innovation,
- inclusion,
- integrity.

GUIDING PRINCIPLES

Long-Term Development in Sport and Physical Activity is built on four guiding principles:

QUALITY

IS KEY

Every child, youth and adult deserve a quality experience every time they participate in physical activity or sport. Quality means good programs, in good places, delivered by good people.

OPTIMAL

PROGRAMMING IS CRITICAL

This means giving every participant in sport and physical activity what they need, when they need it, and in the way they need it to make the most progress. Optimization is participant centred and developmentally appropriate.

INCLUSION

IS NON-NEGOTIABLE

Inclusion is both the removal of physical, cultural, economic, and attitudinal barriers to participation, and the designing of activities so that individuals are not excluded. Being allowed to take part is not enough. **Every** participant must feel safe, welcomed and included. Supports need to be in place to engage and support the diverse needs of participants, across all of the dimensions that make up that individual. Every program and service should be set up to welcome all—inclusion is a topic because our system currently excludes. We must reframe to: everyone has the opportunity, and exclusion is the exception rather than the norm.

COLLABORATION

MAKES THE SYSTEM BETTER

Individuals and organizations will deliver more quality experiences when they work together. Communities, sport organizations, and the health and education sectors all benefit from alignment of programming and collaboration. For example, one participant may be active in different sports or physical activities, including recreation or club programs, physical education, as well as school sport. If the organizations pull that participant in different directions, good development is less likely to happen. Through system alignment, participants are the winners.

WHAT'S NEW AND ENHANCED IN THIS THIRD EDITION?

Sport for Life is focused on improving the quality of sport and physical activity in Canada, which is why we continuously improve this framework. The objective of the framework is to promote both sporting excellence at the highest international level and life-long engagement in health-enhancing physical activity. This third edition brings a number of important updates and enhancements.

From Sport and Physical Activity to Quality

Sport and Physical Activity: Not all sport and physical activity experiences are good. This resource supports leaders to improve the quality of sport and physical activity delivery. We want “good programs, delivered by good people, in good places.” Good programs are developmentally appropriate, based on the physical, cognitive, emotional and moral stages of development of participants. Quality sport and physical activity ensures that safe sport⁴ is an essential element for all people involved.

From Long-Term Athlete Development to Long-Term Development in Sport and Physical Activity:

The new name is more inclusive. Organizations can use Long-Term Athlete Development, or some other iteration (e.g. Long-Term Participant Development, Long-Term Player Development, Long-Term Sailor Development) as it fits their circumstances. The name retains the critical concept of good development as a lengthy process, while becoming more accessible to those in the recreation, education, and health sectors.

Quality sport

Quality sport based on Long-Term Development in Sport and Physical Activity is...



Figure 2: Quality Sport Cycle

⁴Safe sport provides a training and competitive environment for athletes, coaches, officials, and volunteers that is free of abuse, harassment, and discrimination. Organizations have policies and procedures in place that are consistent with national sport standards to ensure sport participants are safe. Additionally, safety includes the physical aspect of the equipment and training practices.

Key Factors have evolved: Originally, we highlighted 10 Key Factors that were essential to athlete development. Now, we feature 22 key factors which are categorized into personal, organizational, and system factors, to better explain the complexity underlying Long-Term Development in Sport and Physical Activity.

Physical literacy has evolved: There has been an increased emphasis on the psychological components of physical literacy, including confidence and motivation as well as social connectedness, which are all critical for physical literacy development through the life course.

More emphasis on the adolescent participant: Adolescence is a time when many youth become less active and involved with sport and physical activity, while others develop into high performance athletes. We provide more insight into the needs of the adolescent athlete in this resource.

Greater emphasis on stage of development versus chronological age: The important thing in development is not age, but how participants develop capabilities to move from stage to stage. In this revised framework, emphasis on chronological ages has been diminished while there is more emphasis on the biological markers.

Different types of sports: For simplicity, earlier editions of Sport for Life described only early and late specialization sports. Several more types of sport specialization are now recognized.

Alignment with system stakeholders: Working together is better than working in isolation, so we have included language used by other stakeholders to show how Long-Term Development in Sport and Physical Activity integrates with their approaches to sport and physical activity development.



Photo: Jason Ransom, Baseball Canada

The “Rectangle” has evolved: First Involvement and Awareness are integral components of everyone’s initial experiences in sport and physical activity. Physical literacy, while vital during the early stages, is not confined to the early stages—it can and should continue to be developed throughout the life course. The Podium Pathway describes the sport-defined excellence stages of Long-Term Development in Sport and Physical Activity and specifically applies to athletes on a trajectory toward podium results at the highest level of their sport. The updated rectangle reflects these changes.

Long-Term Development in Sport and Physical Activity:

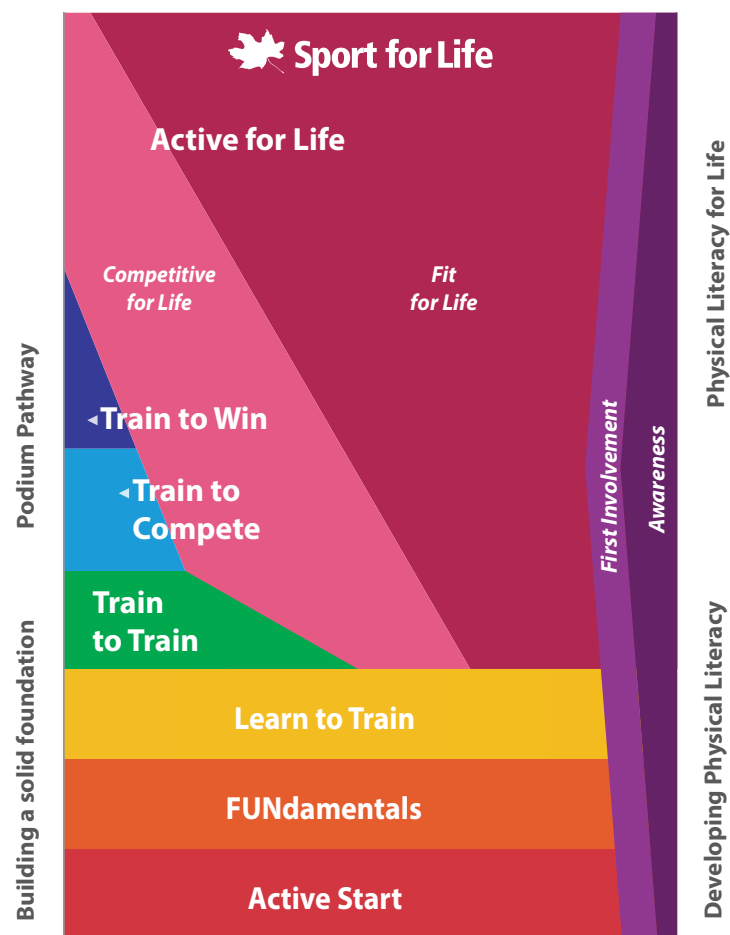


Figure 3: Sport for Life Rectangle

Evolution of Inclusion: Sport for Life strives to advance inclusion by ensuring that underserved populations of girls and women, individuals with disabilities, Indigenous Peoples, newcomers to Canada, the LGBTQI2S community, aging adults, and those living in poverty and isolated communities have access to barrier-free and quality sport and physical activity opportunities.

BUILDING A BETTER SYSTEM

For all Canadians to benefit from Long-Term Development in Sport and Physical Activity, we need to remove barriers to participation and performance, and help make our systems more effective. The following are some current system shortcomings and their consequences

SHORTCOMINGS

- Not all sport facilities and programs are accessible or welcoming to low-income and non-traditional participants.
- Differences in developmental age are ignored when sport is organized using chronological age groups.
- Athlete preparation is geared to the short-term outcome—winning—and not to the development process.
- Adult training and competition programs are imposed on developing athletes and sex difference in training and competition needs are poorly understood.
- Developmental training needs of athletes with a disability are not well understood.
- Coaches largely neglect periods of accelerated adaptation to training.
- Fundamental movement skills and foundation sport skills are not taught properly.
- Coaches working with developmental athletes are usually volunteers frequently without adequate training or certification.
- Parents and caregivers are not educated about Long-Term Development, and do not have the necessary information to make the best sport choices for their children.
- Multisport program options are not readily available.
- Drop out rates for youth are high—particularly for girls.
- In many sports, the competition system interferes with athlete development.
- Talent identification systems are poorly developed in many sports, and early success, often of early developing athletes, is mistaken for long-term potential.
- There is little integration between physical education programs in the schools, recreational community programs, and competitive sport programs.
- Early over-specialization is encouraged by sports and commercial interests in an attempt to attract and retain participants.
- Currently safe sport policies, procedures, and practices are applied inconsistently across the country.
- Positive values, that develop character, are not intentionally integrated into the sport experience.

CONSEQUENCES

What are the results of these shortcomings?

- Potential talent is excluded from sport.
- Poor movement capability, limited skill development, and lack of proper fitness.
- Developmental athletes often over-compete and under-train.
- Undeveloped and unrefined skills due to under-training.
- Bad habits developed from over-competition focused on winning.
- Female athlete potential not reached due to inappropriate programs.
- Children not having fun as they play in adult-based programs.
- Developing athletes pulled in different directions by school, club, and provincial teams because of the structure of competition programs.
- Over-specialization leading to burnout, injury and limited development.
- Reduced participation of youth in sport and physical activity, especially by girls.
- Remedial programs, implemented by provincial and national team coaches, frequently implemented to counteract the shortcomings in athlete preparation.
- Athletes failing to reach their genetic potential and optimal performance level.
- Failure to reach optimal performance levels in international competitions.
- Athletes may be exposed to harmful conditions with damaging consequences to their overall well-being. Individual sport leaders are not held to account for unethical, irresponsible, or illegal actions.
- Negative behaviours emerge and in some cases harm can occur.

To date, implementation in Canada and other nations indicates that following the Long-Term Development framework helps address these shortcomings and enhances sport systems.





Key Factors Underlying Long-Term Development in Sport and Physical Activity

To help all Canadians enjoy and reach their potential in sport and physical activity, we need to apply a rational, progressive Long-Term Development framework. The following Key Factors are the basis of that Long-Term Development framework. They operate at three levels: the individual (Personal Factors), each sport and physical activity-supporting organization (Organizational Factors) and across the Canadian system as a whole (System Factors).



PERSONAL FACTORS

The Personal Factors are particularly important for parents and caregivers, teachers, instructors and coaches to consider as they plan quality programs for young participants and athletes.

- 1. Developing Physical Literacy** in the early stages lays the foundation for later success and life-long engagement in physical activity for health.
- 2. Quality Environments:** By providing enhanced learning and training environments from a very early age, greater physical literacy and improved sport-specific skills are developed. Individuals carry this advantage to subsequent stages of Long-Term Development. A quality training and competition environment is a safe environment: physically, mentally and social-emotionally. Please note, an enhanced learning and daily training environment is not the same thing as early over-specialization!
- 3. Developmental Age:** People grow and develop at different rates. Sport and physical activity need to take each individual's stage of growth and development into account when designing training, competition, and recovery programs. Long Term Development addresses the complete physical, mental, cognitive and emotional development of participants—not just physical characteristics and performance qualities. Training, competition, and recovery programs also need to consider the mental, cognitive, and emotional development of each participant.
- 4. Sensitive Periods:** As children grow and develop, there are times when different types of practice and training will have a greater effect. These “sensitive periods” provide a special opportunity to train and develop important skills and physical capabilities that have a greater return on time invested and that can impact athletic performance throughout the life course..
- 5. Predisposition:** Not all individuals are equally capable in all sports, and both enjoyment and success are related to how proficient an individual is in the sport they play. Sampling many sports during Learn to Train and early Train to Train can help participants find sports and physical activities to which they are well suited.
- 6. Excellence Takes Time:** To reach full potential, athletes need well planned, progressive, high-quality training over many years. Success cannot be rushed, and in many cases, athletes or performers may have pursued sport for eight to 12 years of training and competing before mastering the activity. A “hot house” approach can produce early winners, but it hinders long-term development and ultimate athletic success, and can lead to burnout and overuse injuries.
- 7. For Life:** An over-the-life-course approach acknowledges there are critical periods in early life when social and cognitive skills, habits, coping strategies, attitudes, and values are more easily acquired. These early abilities and skills develop durability in a person's health in later life. It also considers life transitions—from late adolescence to early adulthood, for example—where life trajectories and future health can change positively or negatively. Taking a life-course approach, leaders are encouraged to reflect on the effects of programs on their participants years into the future.

ORGANIZATIONAL FACTORS

Organizational Factors inform the ways sport, recreation, education and other organizations create and deliver programs for their participants and athletes.

- 1.** Sports need to update their Long-Term Development **framework** to ensure they are incorporating the latest sport, societal and science developments.
- 2.** Long-Term Development is most successful when it is **fully embedded** in a sport organization. This includes governance, the competition structure and rules, coaching education, and officials' development.
- 3. Awareness and First Involvement:** Participants need to be made aware of a wide range of sporting and physical activity opportunities, and their first involvement should be a positive (safe, welcoming and inclusive) experience.
- 4. Different Activities:** have different demands and different pathways.
 - i. High acrobatic:** Such as gymnastics, diving, and figure skating are early specialization sports that favour small bodies capable of fast rotation.
 - ii. High kinesthetic:** Activities where developing an early "feel" for the environment or equipment is important. Examples would be swimming, soccer and racquet sports.
 - iii. Common (standard):** typical timing of specialization, with peak performance in late-20s or early-30s.
 - iv. Late specialization:** Sports in which peak performance can occur in the mid-30s or later, such as golf, rowing or triathlon.
 - v. Transfer:** These are sports that individuals do not generally take part in prior to late adolescence, such as bobsleigh.
- 5. Appropriate Specialization:** There are right and wrong times to specialize in a sport or physical activity and this depends on the type of sport. Specialize too early, and athletes may limit their development and success at older ages. Specialize too late, and the athlete may miss key developmental opportunities. Except in early specialization sports—such as gymnastics, figure skating, and diving—athletes should not over-specialize until their early teens. Before that they should participate in a wide range of sports and activities to build a high level of physical literacy and well-rounded sport skills.
- 6. Periodization:** Periodization is time management of training in annual and seasonal training plans in order to bring about optimal improvements in athlete performance at the right times. Periodization plans connect the Long-Term Development stage of the athlete with the training and development requirements of that stage.
- 7. Competition:** Athletes need to train and compete according to training-to-competition ratios that develop skills and fitness while preventing injury and burnout. The quality of competition and the timing of competitive events need to serve the needs of the participant, allowing them to test the stage-appropriate skills they are developing.
- 8. Transitions:** Development in sport has many transitions—the transition into a sport, the transition between Long-Term Development stages, transition between sports, and the transition to be active for life. Transitions that are well planned and well executed maximize sport talent enabling individual potential to be reached.

SYSTEM FACTORS

System Factors are important for policy-makers and organization leaders, informing the ways organizations cooperate and collaborate to build an optimal system.

- 1. Collaboration:** There is an opportunity to improve collaboration between organizations, sectors and systems to support the optimal development of the individual to succeed.
- 2. System Alignment:** Many sports work with Sport for Life, Own the Podium, the Coaching Association of Canada and others to create programs and resources. To avoid confusion it is essential that content (e.g. skills, drills and tactics/strategy), and the language used to describe them, be consistent across all documents. It is equally important that the sport-specific content at Learn to Train and Train to Train merge seamlessly with the demands of a sport's excellence stages of the Podium Pathway including Winning Style of Play and Gold Medal Profile where appropriate.
- 3. Safe and Welcoming:** The system should plan to welcome all participants by providing Safe Sport programming. Diversity is a reality and corresponding participant-centered programs supporting diversity are a necessity.
- 4. Diversification:** To develop a well-rounded individual, it is important that they participate in many activities and multiple sports. Parents must not be pressured to choose a single sport for their child too early. Because sport and physical activity is delivered by sport-specific organizations, local early childhood programs, in recreation programs, by physical education and school sport, and by active living programs offered within the health system, there is a need to ensure that programs are aligned, that individuals are not pulled in different directions by different programs, and that the overall demands placed on the individual are kept reasonable.
- 5. Long-Term Development:** Excellence takes time, so it is essential organizations not build systems that create pressure for immediate success. Systems, business models, processes and metrics (e.g. series points or rankings) must not influence sport leaders and coaches to favour earlier and more intense sport specialization—particularly pressure to play a single sport year-round. Sport organizations and funding agencies must reward long-term impact over short-term outputs.
- 6. Continuous Improvement:** The concept of continuous improvement is integral to Long-Term Development in Sport and Physical Activity. By constantly seeking improvements in our understanding and practice, this framework will continuously evolve to accommodate new breakthroughs in sport science and physical literacy research, new innovations in technology, and evolving best practices in coaching and instruction.
- 7. Evidence Based:** To shift from an old paradigm, evidence supporting the new is critical. This means assessment, monitoring, and research in all aspects of sport and physical activity programming and practice.

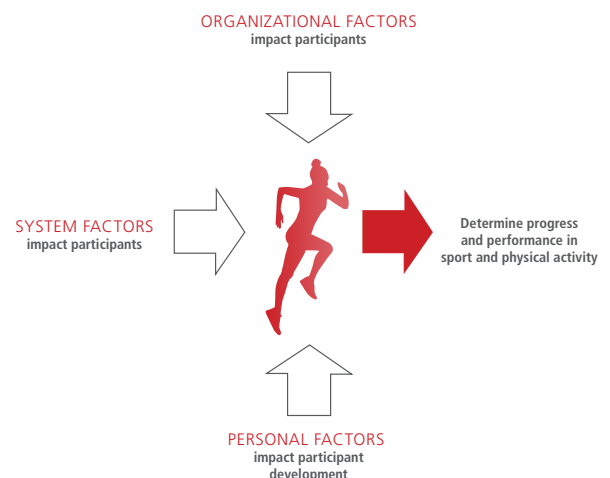
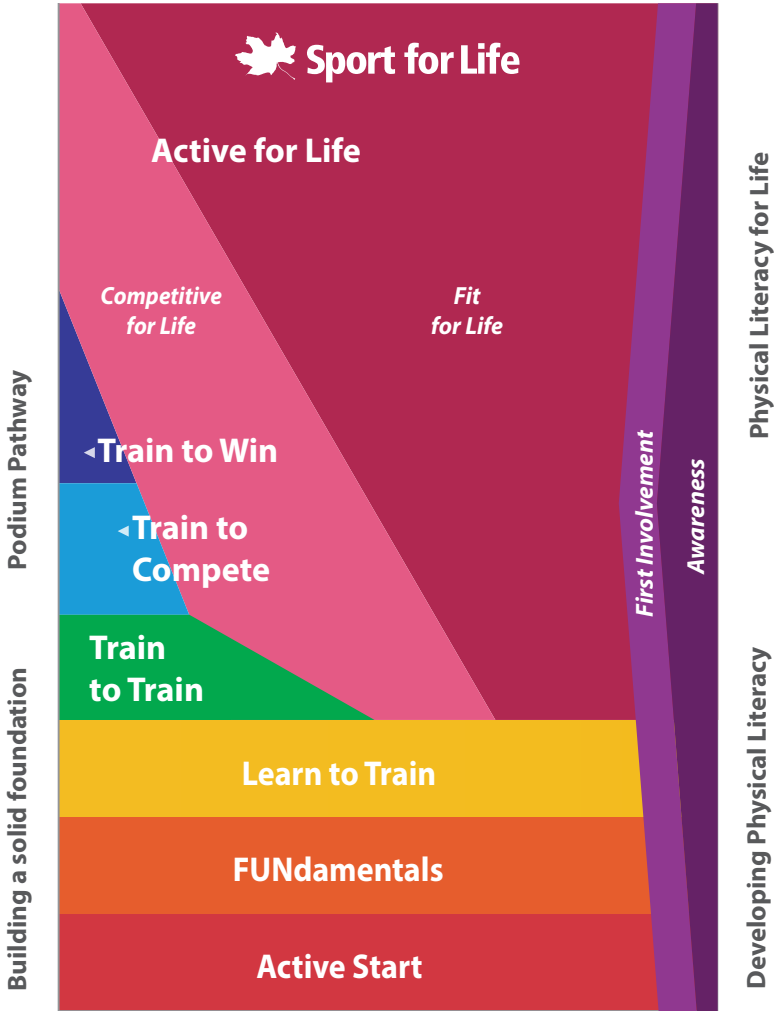


Figure 4: Key Factors underlying Long-Term Development in Sport and Physical Activity



Long-Term Development in Sport and Physical Activity Framework



The three main goals of Long-Term Development in Sport and Physical Activity are to support the development of physical literacy, strive for excellence, and empower people to be active for life. The Sport for Life rectangle diagram depicts developmental paths toward attaining these goals. The rectangle includes all who are active, unlike the old pyramid models that systematically exclude individuals who do not reach the pinnacle of sporting success.

The basic Sport for Life Long-Term Development in Sport and Physical Activity framework has seven stages. In addition, there are two pre-stages, and the Active for Life stage is sub-divided into two phases for greater clarity.

Figure 3: Sport for Life Rectangle

AWARENESS AND FIRST INVOLVEMENT

Getting children, youth and adults into sport and physical activity is critical to creating a more active, healthier population and generating sporting success for Canada. The process of getting people involved—and keeping them involved—has two distinct pre-stages.

Awareness: You need to be aware of an activity in order for you, or someone within your care, to take part in it, so you need to know:

- that it exists, and
- where to find it.

Being made aware of sport and activity options is particularly important for underserved groups:

- girls and women,
- individuals with disabilities,
- Indigenous Peoples,
- newcomers to Canada,
- individuals identifying as LGBTQI2S,
- aging adults, and
- those living in poverty or in isolated communities.

First Involvement: Once someone knows about a sport or activity and decides they want to try it out, their first experience with that activity becomes critically important.

A positive first involvement is likely to bring them back to continue, and a negative experience makes their return far less likely. Organizations should carefully plan the first experience of new participants to ensure:

- there are no barriers to participation—especially for persons with a disability and those from visible and invisible minorities,
- that new participants feel included, knowing they will be welcomed back the next time,
- that new participants have the opportunity to get to know current participants,
- that it is affordable for participants to get and stay involved,
- that there is appropriate facilities and equipment, and
- the leader of the program has the appropriate skills to adapt to the participant's needs.

For example, opportunities for persons with disabilities to participate in sport and physical activity are not always well known to the general public. The purpose of Awareness is to inform the general public and prospective participants, of all abilities and backgrounds, of the range of opportunities available. To this end, sport and recreation organizations need to develop awareness plans to make their offerings and resources known. The purpose of First Involvement is to ensure everyone has a positive first experience of an activity and remains engaged. Accordingly, organizations need to train coaches and develop programs that provide suitable orientation for any and all prospective participants, helping them to feel confident, comfortable, and safe in their surroundings, and welcome among peers and training personnel.

PHYSICAL LITERACY

Physical literacy is the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life.

Physical literacy is a catalyst for change. From the World Health Organization and the Public Health Agency of Canada, to sector-specific policies including the Canadian Sport Policy, the Recreation Framework, and Active 2020, the concept of physical literacy has become a key element in the way we think about physical activity. The importance of physical literacy development is now embedded in provincial/territorial and municipal plans, policies and curriculum.

Physical literacy is a lifelong journey. It begins to develop in early childhood, and grows into a greater array and complexity of skills, capacities, and understandings during adolescence and adulthood. At different stages of life, physical literacy may serve different purposes and answer different needs for different individuals. For some people, physical literacy will provide a foundation for athletic success, while for others it may provide the means to pursue a vocational career. For everyone, it will provide the means to live a healthy active lifestyle at all stages of life and grant the opportunity to age gracefully in good health.

Providing a quality physical literacy experience should be the key focus of everyone involved in delivering physical activity, including everyone from teachers, coaches, and recreation leaders to administrators and policymakers in education, sport, recreation, and health. Different individuals, groups, and sectors

Physical literacy

is the...



Figure 5: Physical Literacy Cycle

of society are involved at different stages, and it is important that they work together for the benefit of children and adults who may be physically active with different groups or organizations.

Given the importance of physical literacy within the Long-Term Development in Sport and Physical Activity framework, a separate document *Developing Physical Literacy 2.0* has been developed and is available from Sport for Life.

BUILDING A SOLID FOUNDATION: THE FIRST THREE STAGES

The first three stages: Active Start, FUNdamentals, and Learn to Train are designed to give Canadians the best possible start in sport and physical activity.



Active Start is about mastering basic human movements and developing habits of physical activity.



FUNdamentals is about developing fundamental movement skills and enjoying being physically active, and



Learn to Train is about learning a wide range of foundation sport skills.

Children pass through these stages in large part simply because they are growing and developing. Adults when learning a new sport or physical activity pass through the FUNdamentals and Learn to Train stages. Transition from stage to stage is therefore **developmentally based**.



Active Start



Males and females: birth to approximately six years of age.

STAGE

Begin the physical literacy journey.

Make activity FUN and part of the child’s daily routine

Activity and movement skills development

Focus on developing locomotor, object manipulation and balance skills on land, water, ice/snow and in the air in a variety of movements.

Meet the 24-hour movement guidelines for young children of being active for 180 minutes/day.

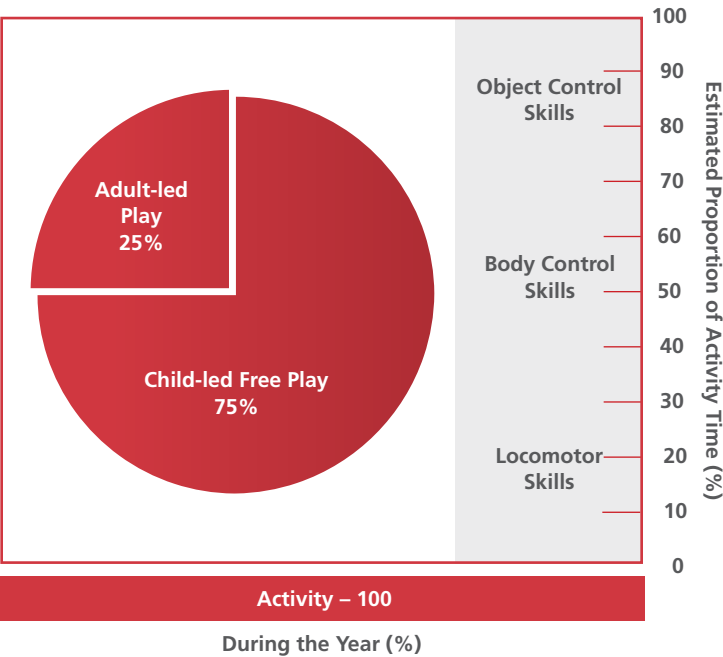


Figure 6: Active Start Activity Summary

Encourage play:

- structured (adult led),
- unstructured (child led), and
- opportunities for play in natural environment.

Include activities that develop executive function:

- working memory,
- cognitive flexibility, and
- building self control.

Provide a series of challenges with both successes and failures to help develop better confidence.

Exploration of risks and limits in a safe environment—including outdoor play in nature.

Active movement environment combined with well-structured gymnastics and swimming programs. Outside play on snow and ice.

Create mini-challenges to extend children’s comfort range.

Ensure activities are fun and allow for social connectedness.

FUNdamentals



Boys approximately six to nine years, and girls approximately six to eight years.

STAGE

Further development of physical literacy.

Develop fundamental movement skills, with emphasis on participation and having FUN on a daily basis.

Emphasize activities that develop agility, balance, coordination and speed – The ABCs. The building blocks for Canadians to move more.

Encourage running, jumping wheeling, throwing and catching, as well as swimming, and activities on ice and snow.

Build up physical capacities through medicine ball, Swiss ball, and own body-weight strength exercises.

Introduce simple rules and etiquette of sport, with a focus on fair play and respect for others.

No periodization, but well-structured programs.

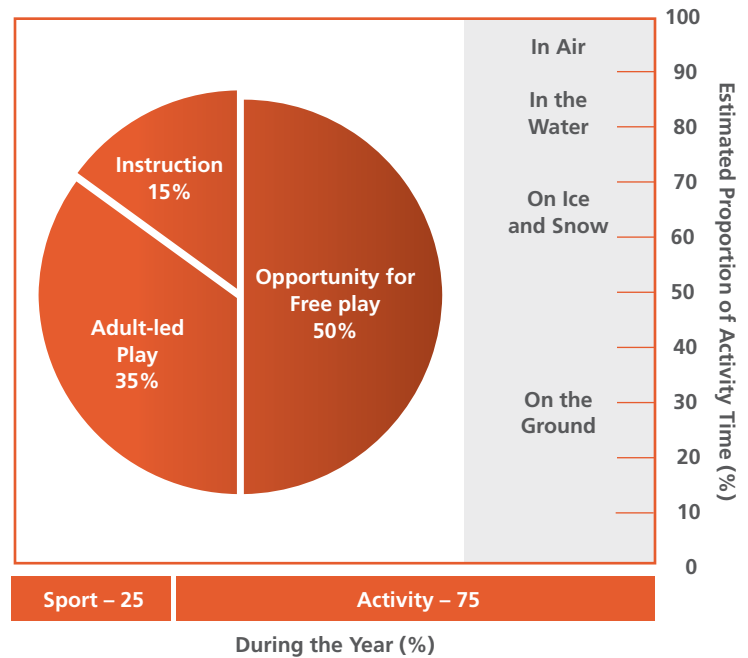


Figure 7: FUNdamentals Activity Summary

Continue to build executive function with focus on:

- building working memory,
- increasing mental flexibility, and
- strengthening inhibition control.

Provide and respect children's activity choices.

Competition should be informal with no record of results.

Learn to Train



Boys from approximately nine and girls from approximately eight: **to onset of adolescent growth spurt**

STAGE

Continue to develop physical literacy

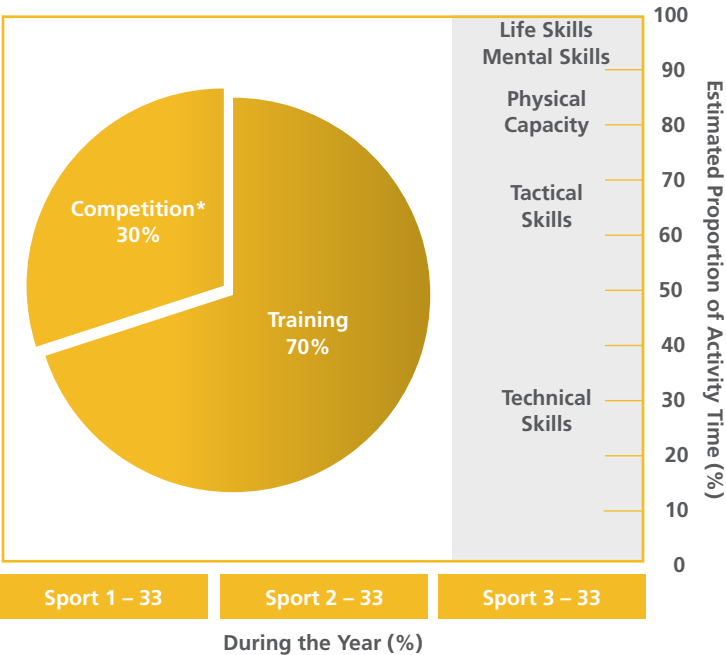
Brain and body primed for skill acquisition. Build fundamental skills in a wide range of sports and activities—on the ground, in water, in air and on ice/ snow—before entering Train to Train stage.

Ensure environment promotes and supports fun and friendship.

Avoid early over-specialization.

Take into account individuals’ variations in physical, psychological, cognitive, emotional, and moral development.

Build up physical capacities through medicine ball, Swiss ball, and own body-weight strength exercises, with additional focus on building flexibility and arm/ leg speed.



*Includes both competition, and competition specific training

Figure 8: Learn to Train Activity Summary

Introduce ancillary capacities: warm up/cool down, nutrition, hydration, and recovery including sleep and mental preparation such as anxiety control.

Informal talent identification with opportunity to move participants to an enriched training environment.

Introduction to formal local competition, with emphasis on fair play, and opportunities to try different events or positions.

Single or double periodization.

Sport-specific training three times per week plus participation in other sports or activities three times a week.

THE ADOLESCENT PARTICIPANT: TRAIN TO TRAIN



It is at the **Train to Train** stage—which often starts in early adolescence—where the future of many athletes is determined. It is the stage at which athletes are made, or broken.

Train to Train coincides with the transition from childhood to adulthood, when many individuals make the decision to strive for excellence and commit to being an athlete—in the full sense of the word; or decide that they will no longer commit the time, energy and resources to achieving excellence in their sport. Sometimes that decision is made for them, through injury, lack of opportunity, or inability to progress.

Train to Train also marks entry into the excellence stages of Long-Term Development. As athletes achieve success, they will transition in the Podium Pathway. Note: in some sports, there is an additional stage called Learn to Compete.

SPECIAL ISSUES IN TRAIN TO TRAIN

Train to Train is critical for the development and retention of athletes. There is so much going on in the lives of youth during adolescence that it is not surprising many drop out of sport or physical activity. A collaborative, coherent approach among coaches, organizations and system stakeholders is needed to support the Train to Train athlete's continued development toward excellence, or transfer into ongoing activity for life. When these stakeholders understand the issues and show patience in development, more youth will be retained in sport and physical activity and progress to Train to Compete.

Table 1: Special Issues to Address at the Train to Train Stage

TRAIN TO TRAIN ATHLETES...

...feel that Sport is	...report that they	...lack balance	Other issues
Too focused on results	Don't feel welcome	Demands by multiple sports	Unqualified coaches
Too expensive, too far away	Have poor leadership	Demands by multiple teams	Training not developmentally appropriate
Not athlete centred	Feel unsafe (physically)	No athlete planning between sports	Prone to injury
No longer fun, is unfair	Feel unsafe (psychologically)	Academic and life demands not considered	Training is not periodized
Too easy or too hard	Lack of support	Meaningless competition	Training load increased too rapidly
Taking up too much time	Can't balance sport, school, friends and part time work	Conflict between club and school – rep and club etc.	Not making sufficient progress

Train to Train



Period of the adolescent growth spurt. Around 11–15 females and 12–16 males.

STAGE

A critical stage in the development of high performance athletes. During this stage participants typically:

- commit to high performance and begin their journey on their sport's Podium Pathway, or
- enter Competitive for Life or Fit for Life in their sport or sports of choice, or
- drop out of sport.

For those on their sport's Podium Pathway, this is the stage for tremendous skill refinement, and for greater position/event specialization.

Major fitness development stage: aerobic and strength. The onset of the adolescent growth spurt and the time of Peak Height Velocity (PHV) are key markers and growth must be tracked. Stage for development of whole body speed.

Cultivate life skills.

Ensure environment promotes and supports fun and friendship.

Introduce free weights with emphasis on correct technique.

Greater attention to mental preparation.

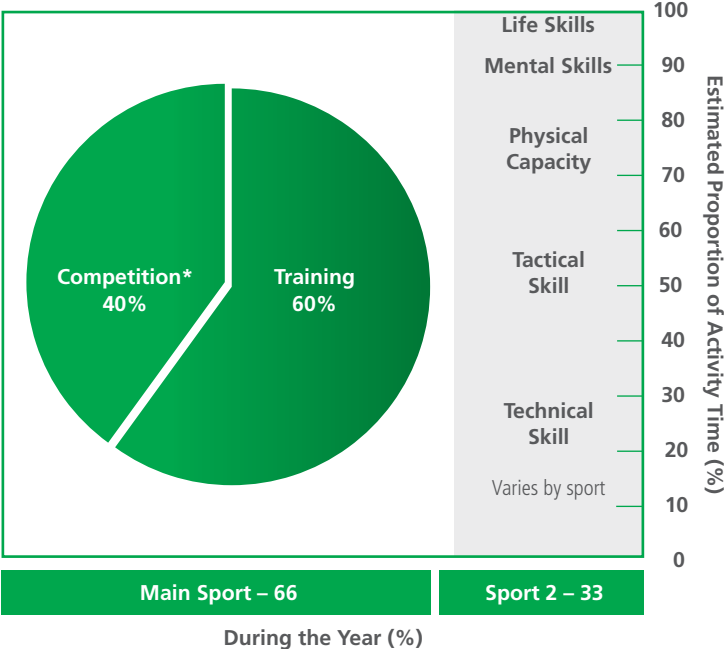
Develop ethical approach to sport including respect for opponents and fair play and commitment to doping-free sport.

Formalized competition and standings/rankings.

Build ancillary capacities and sport-life balance.

Single or double periodization.

Sport-specific training six to nine times per week including complementary sports.



*Includes both competition, and competition specific training

Figure 9: Train to Train Activity Summary

TRAINING, RECOVERY AND MEANINGFUL COMPETITION

Training, recovery and meaningful competition are critical components of Long-Term Development in Sport and Physical Activity.

DEVELOPMENTALLY APPROPRIATE TRAINING:

- increases duration, volume and intensity progressively,
- takes advantage of sensitive periods,
- is based on the stage of physical development of the participant,
- supports the individual needs of participants,
- incorporates equipment and playing spaces that are appropriate for the stage of the participant,
- uses movement preparation as part of warm-up, and
- develops all round athleticism and general fitness before sport-specific fitness.

OPTIMUM RECOVERY:

- recognizes that recovery is as important as training,
- is sufficient to allow participants to recuperate before next training session or competition,
- recognizes that quality sleep can help in skill learning and retention as well as in physical recovery, and
- requires post-training and post-competition nutrition.

MEANINGFUL COMPETITION:

- is designed to support what has been practiced in training,
- is modified in terms of game duration, size of playing area, and rules to match developmental of participants,
- offers equal competition opportunities by keeping participants in events rather than eliminating them (A finals, B finals, C finals, round robins, and cross-overs),
- in early stages, focuses on the process of competing and using recently learned skills in competitive situations—not on results, and
- is in the “challenge zone”—not too difficult or too easy, resulting in close competition without blowouts or humiliating defeats, and cuts down on travel time and cost.

Photo credit: I-SPARC, Team BC, 2017 Toronto NAIG



THE PODIUM PATHWAY

The Podium Pathway is about developing high performance athletes capable of winning at the highest levels of international competition, and bringing home medals from Olympic Games, Paralympic Games or World Championships. The stages in the Podium Pathway are:



Train to Compete: which is generally for athletes in national development teams, la relève, or NextGen squads. These are outstanding athletes who have a serious chance of playing for their national squad, or qualifying to go to World Championships. In some sports, the Podium Pathway may begin at the end of the Train to Train or the Learn to Train stages as athletes are specializing within their primary sport for selection to international age group competitions.



Train to Win: Is reserved for athletes who have a realistic chance of placing in World Championships, or bringing home medals. They are the best of the very best in their sport, and not everyone on a national team will fall into this category.

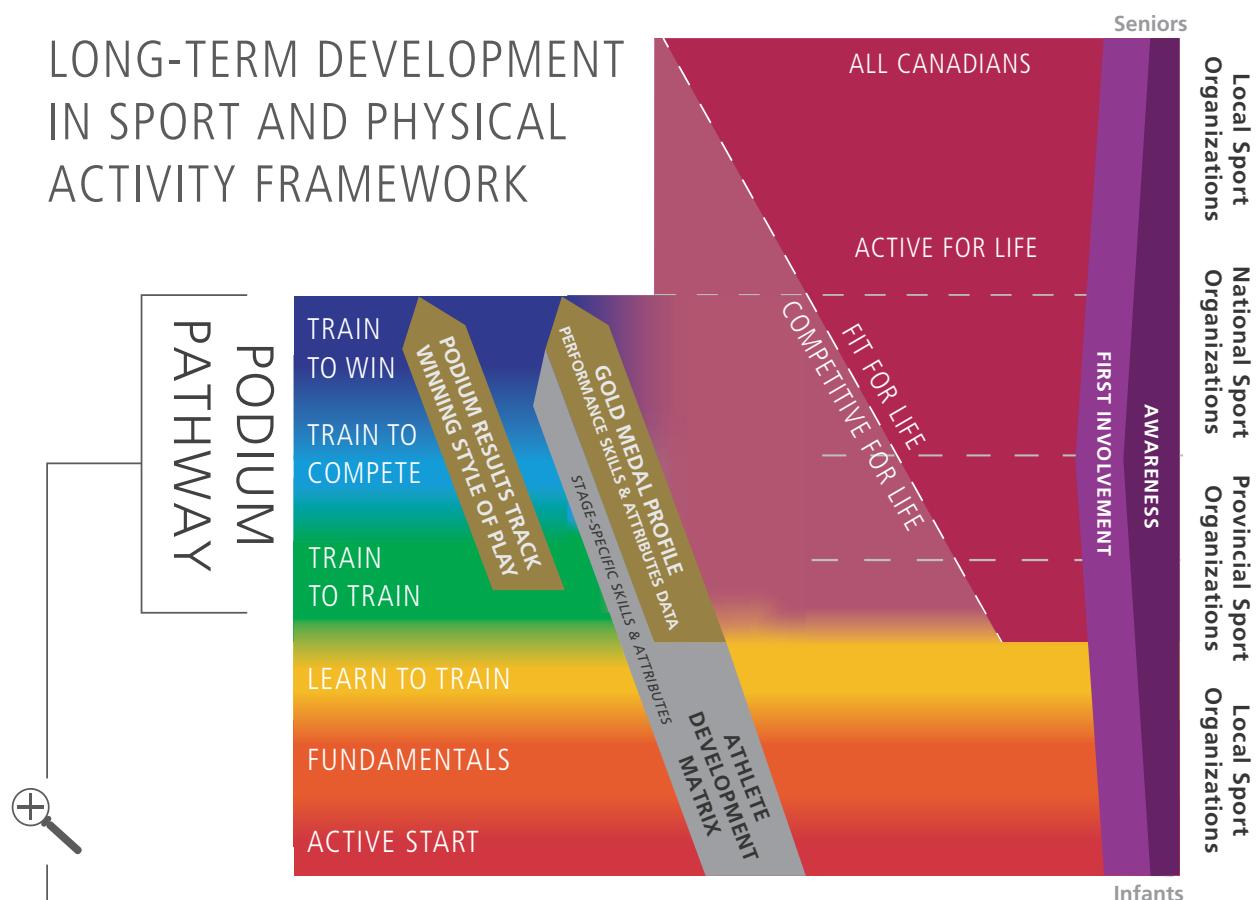
Athletes enter the Podium Pathway based on performance demonstrating their acquisition and development of skills (refer to Gold Medal Profile or Athlete Development Matrix). Note: while the Podium Pathway is often referred to Olympic or Paralympic Sports, Long-Term Development in Sport and Physical Activity refers to Podium Pathway as all sports that host World Championships.

PODIUM PATHWAY PRINCIPLES

Podium Pathway is:

- 1.** A concept that can be used by all Canadian organizations committed to high performance sport.
- 2.** A component of an NSO's Long-Term Athlete Development framework that specifically addresses identification and development of podium potential athletes.
- 3.** Integral to guiding key foundational skills in physical literacy stages.
- 4.** An approach to targeted excellence that identifies an enhanced daily training and competition environment needed to achieve podium performances.
- 5.** An evidence-based approach to determining and defining critical performance components and standards for achieving podium-level results.
- 6.** A development and implementation process shared by NSO high performance and development staff along with provincial/territorial sport organization leaders.

LONG-TERM DEVELOPMENT IN SPORT AND PHYSICAL ACTIVITY FRAMEWORK



PODIUM PATHWAY

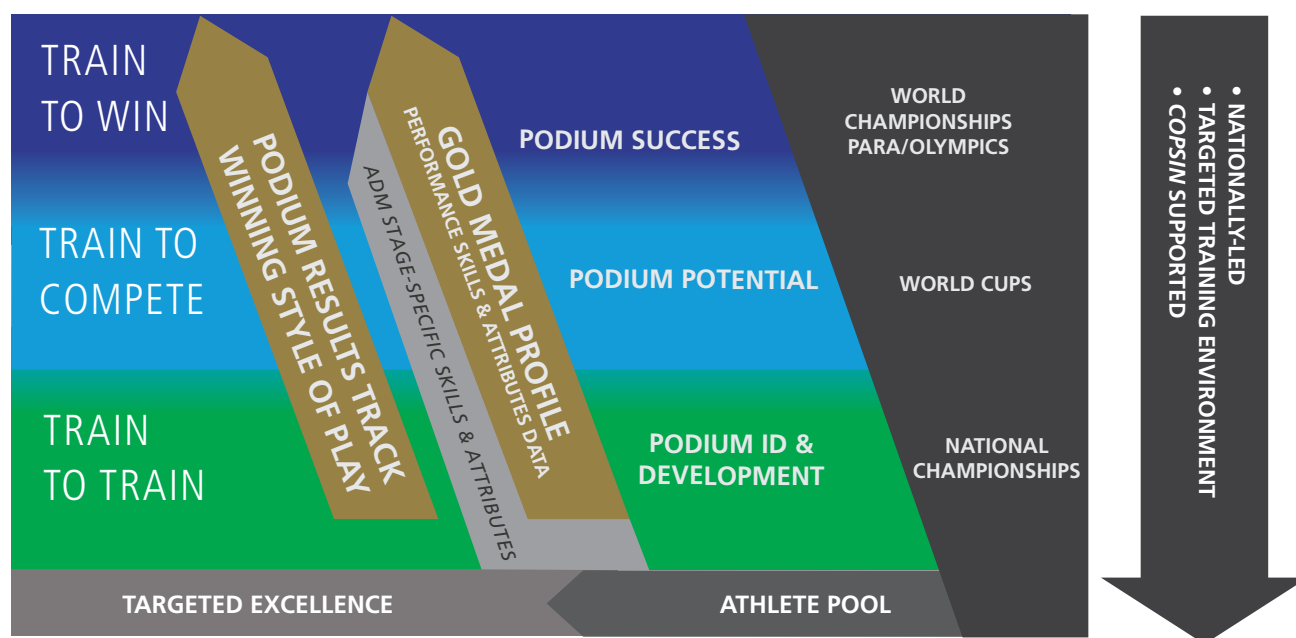


Figure 10: Podium Pathway

Train to Compete



Dependent on sport progress – beyond end of adolescent growth spurt. Athletes generally at provincial, junior national or early national level.

STAGE

Requires specialized coaching in a specialized training environment.

The stage for specialization in sport, position or event then specific training design for physical conditioning and technical/tactical preparation to maximize development.

Test tactics and practice under competitive conditions.

Evidence-based training built on testing to identify strengths and weaknesses.

Optimize ancillary capacities, and balance sport, work/school, and family/friend life obligations.

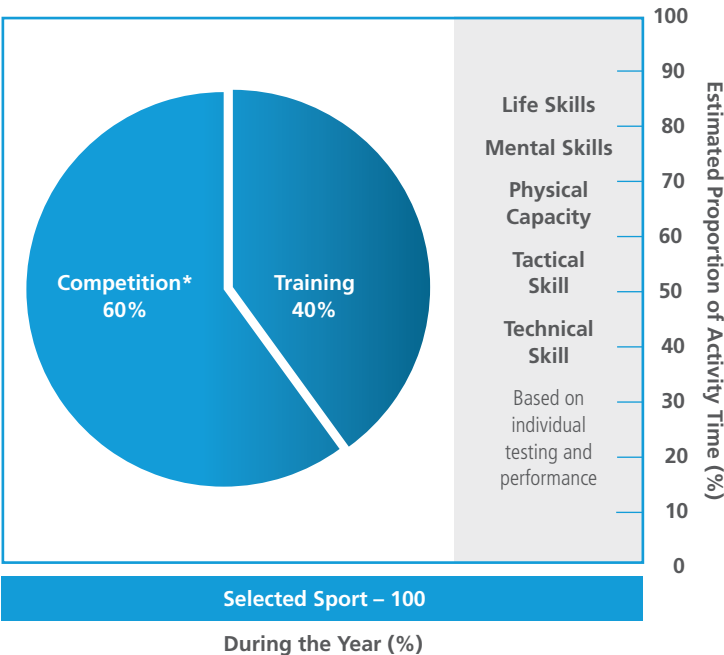
Advanced mental preparation, and practice under highly competitive conditions.

Strengthen ethical approach to sport including respect for opponents, fair play, and commitment to doping-free sport.

Single, double or triple periodization.

Sport-specific technical, tactical and physical capacity training nine to 12 times per week.

For team sports, training geared to sport's Winning Style of Play (refer to glossary on page 42).



*Includes both competition, and competition specific training

Figure 11: Train to Compete Activity Summary

Train to Win



Dependent on sport progress – around the age of optimum performance in the sport
Athletes competitive at the highest level: Olympics, Paralympics and World Championships.

STAGE

Focus is on podium performances at highest-level international events.

Improvement or maintenance of all physical capacities required for optimum performance through evidence-based training prescription; aligned with Winning Style of Play.

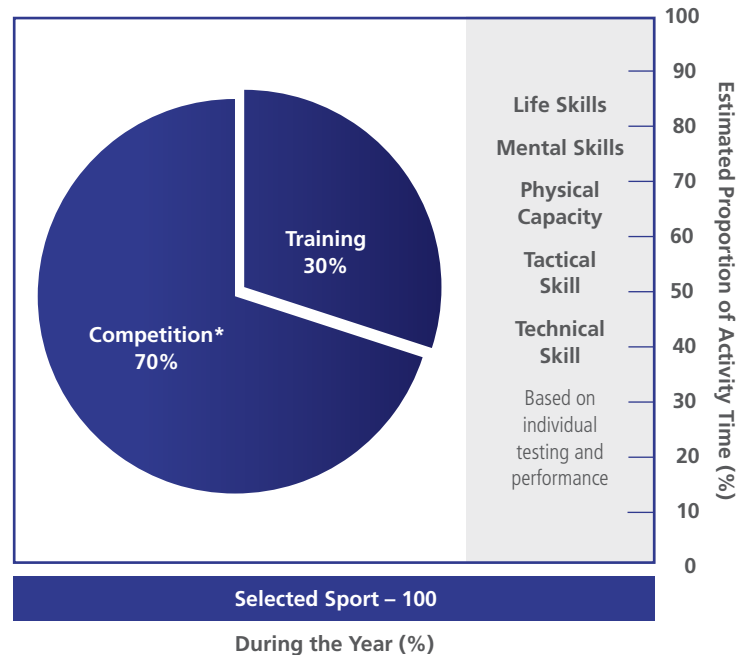
Further development of technical, tactical, and performance skills, with modelling of all aspects of training and competition performance.

Frequent prophylactic breaks for recovery and regeneration.

Maximize ancillary capacities, with support from knowledge specialists.

Single, double, triple, or multiple periodization with focus on the most important events.

Sport-specific technical, tactical, and fitness training nine to 15 times per week.



*Includes both competition, and competition specific training

Figure 12: Train to Win Activity Summary

Active for Life



STAGE



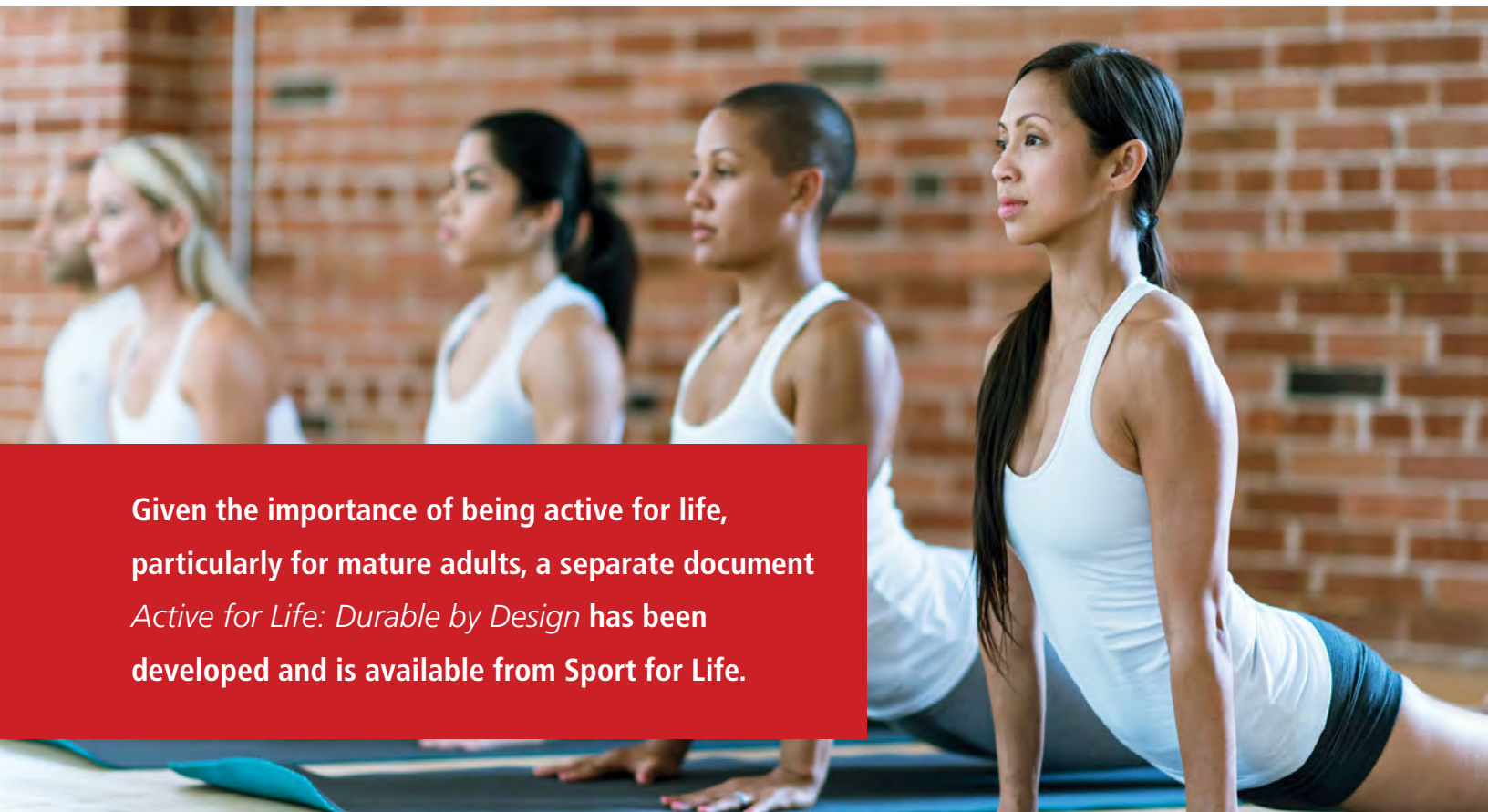
The overwhelming majority of people playing just about any sport fall into the Active for Life stage. Having built a solid foundation in the first three stages of the framework, they progress to playing the sport or sports of their choice for enjoyment, satisfaction or for the health benefits they obtain. Some compete in organized sport, while others do not.

Competitive for Life is the phase of Active for Life for those who compete within the formal structure of their sport. This could be at the U-14 or U-17 level in a house league, all the way to World Masters Competition. It differs from Fit for Life because competitive athletes are striving to improve and to win, and they train accordingly.

Fit for Life is the phase for those who participate simply because they get satisfaction from sport or physical activity. They may, from time to time, compete at a recreational level, but that is not their primary purpose. Fit for Life also describes those who engage in non-sporting physical activity.

Sport and Physical Activity Leaders include those individuals who contribute in ways other than being an athlete or participant in the sport or activity itself, such as coaches and instructors, officials, administrators, and those involved in sport science and medicine.

Given the importance of being active for life, particularly for mature adults, a separate document *Active for Life: Durable by Design* has been developed and is available from Sport for Life.



An individual is not restricted to one of these pathways at any given time. Often, individuals in the Active for Life stage will be actively involved in multiple pathways.

Physical literacy, increased activity and recreational sport—being “fit for life”—can be the gateway to a healthier Canada. The benefits of regular physical activity are well documented: sustained long-term health, increased social connectedness, improved

general mental and physical well-being and better quality of life. Yet in spite of the clear evidence demonstrating numerous benefits associated with regular exercise, particularly for mature adults, only 15% of Canadian adults meet national physical activity recommendations and rates of sport participation have declined in the past several decades among Canada’s growing population of older adults.

There are eight essential factors for healthy adulthood and successful aging: they describe the basic elements of the Active for Life stage and are the key components of being durable by design. The eight factors are interdependent and each is critical to be fit for life.

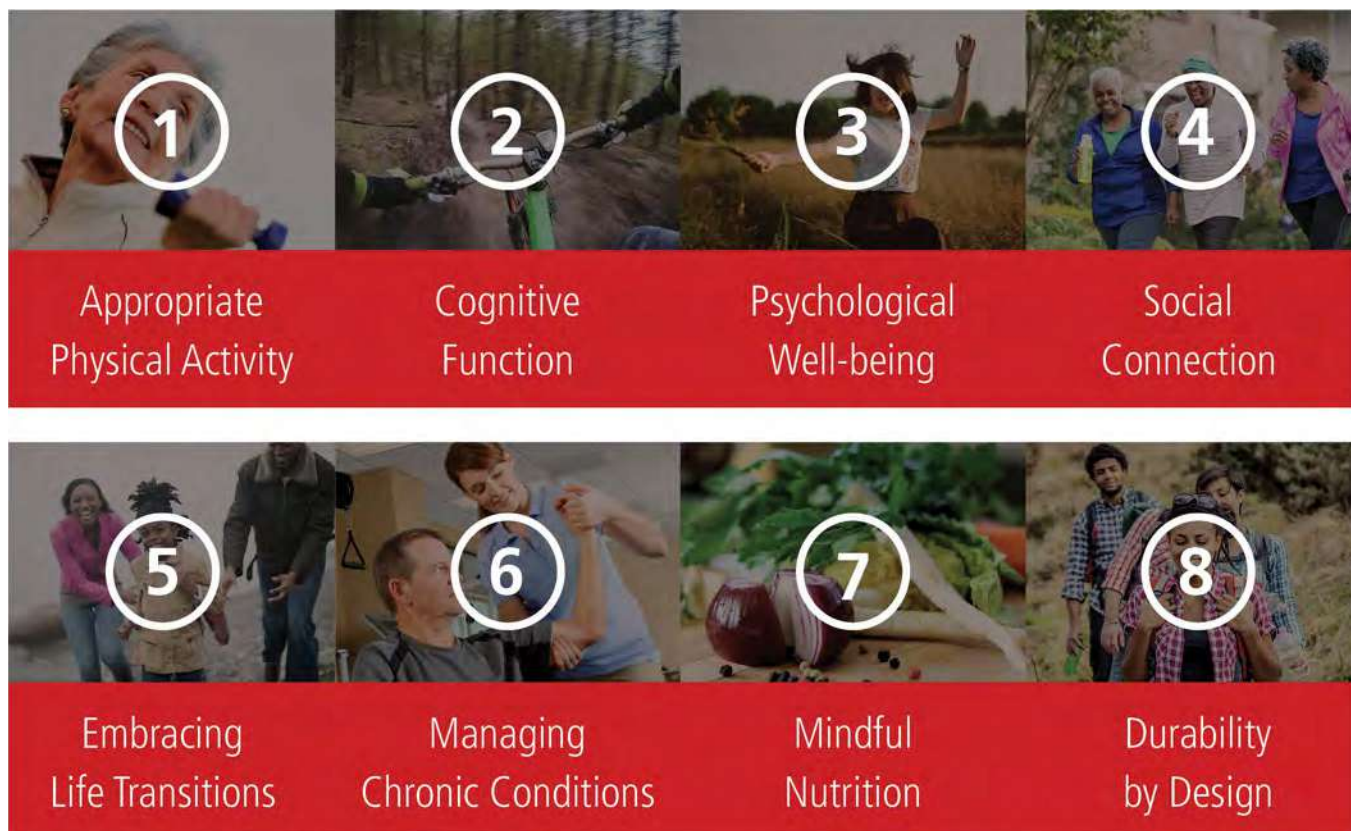


Figure 13: Eight Essential Factors

UNIQUE PATHWAYS

Individuals' journeys in sport and physical activity is unique and often vary greatly. While all begin with an awareness of an activity, which leads to being involved and learning the fundamentals, these individuals could take a variety of pathways depending on their characteristics and capabilities. Ideally, these pathways will lead the individual to achieving their potential, and then being active for life.

The "Top" can be varied from Olympic or World Championship Gold to World Masters Championships.

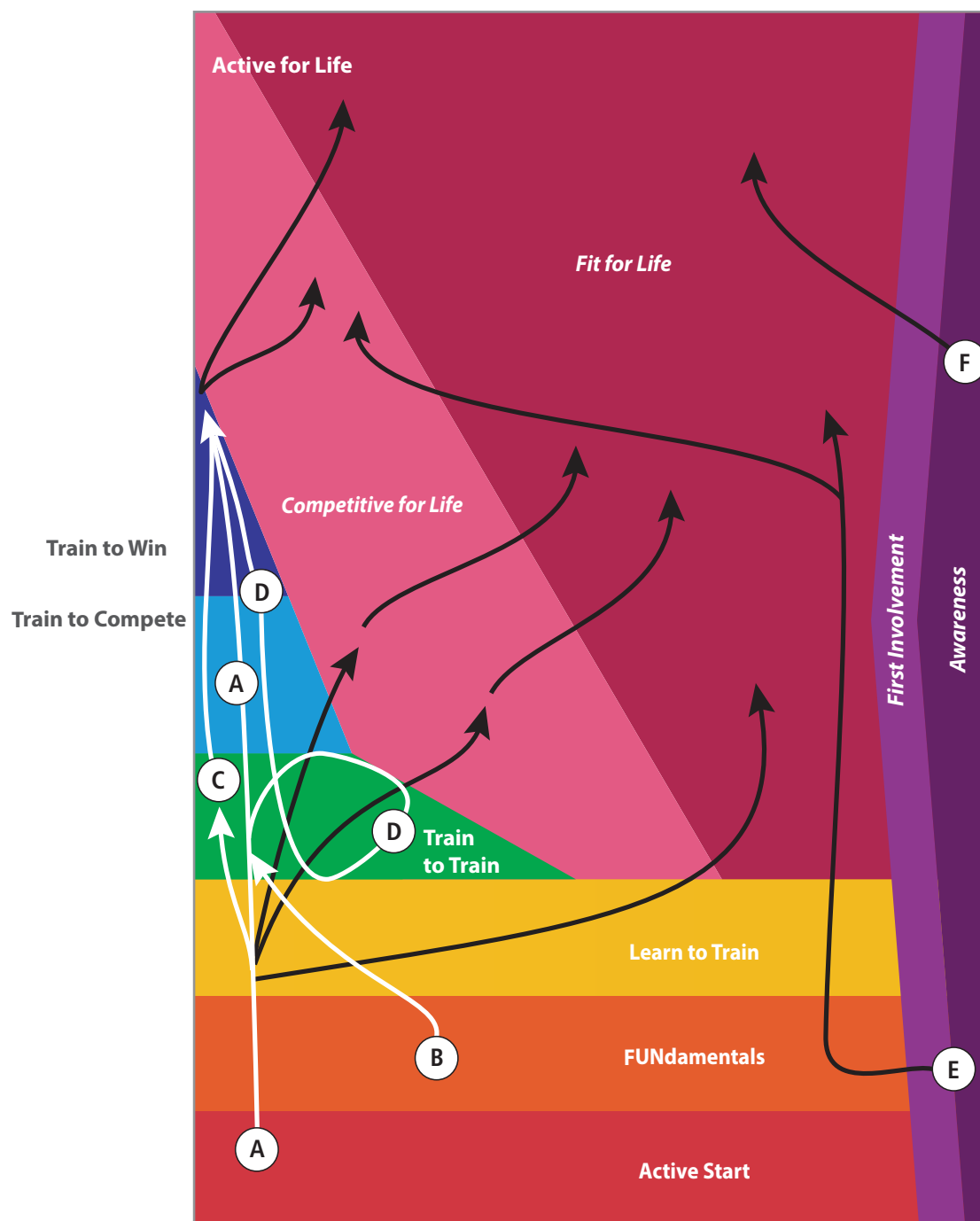


Figure 14: Unique Pathways

MANY PATHWAYS TO ACHIEVE...

There are many pathways for participants to take to achieve their potential; their path is rarely straight.

Participant A might stay in one of their first sports from entry right through to World Championships.

Participant B starts in a different sport or begins their journey later, then during adolescence finds the sport they pursue through to the Paralympics or Olympics.

Participant C starts with A having early success in one sport, then focuses on another sport before returning to focus on their first love.

Participant D achieves a high level of success in one sport but then transfers to another sport, which results in having to go back through stages of development before succeeding in their new sport.

Participant E becomes involved in many sports, never pursuing or advancing into the Train to Train stage, but has quality experiences and is active for life.

Participant F becomes aware of opportunities later in life, then through a positive first involvement becomes active for life.

These are many pathways in sport and physical activity. It is important to recognize that everyone's journey is unique and should always be in quality environments to allow for individuals to achieve their potential and be able to be active for life.

Four things are important:

1. Participants are supported along their journey to find appropriate sport and physical activity in which they have the opportunity to achieve their potential.
2. There are multiple pathways for participants to achieve success including changing focus then returning later to a sport.
3. Sports ensure that Long-Term Development pathways align from the early stages through to the Podium Pathway.
4. Regardless of the pathway, or at what stage they leave the competitive stream, all participants end up in Active for Life, either:
 - by being Competitive for Life, or
 - by taking part, to be Fit for Life, and
 - have a good experience so they want to "give back" as Sport and Physical Activity Leaders.

Balanced development in sport and physical activity means paying attention to more than just skills and physical capacities. Development across a range of domains including physical, technical, tactical, psychological, and life skills must be addressed for individuals' personal advancement throughout all stages of the Long-Term Development framework.



Quality Sport and Physical Activity

At its essence, quality sport and physical activity is achieved when good people do the right thing at the right times. Quality sport and physical activity is developmentally appropriate, well run, safe and inclusive. These components each comprise a number of elements that lead to a quality experience in any sport and physical activity program. The following checklist has key points that are useful when planning programs in your community.

Quality sport

based on Long-Term Development in Sport and Physical Activity is...



Figure 15: Quality Sport Elements

A MULTI-SECTORAL APPROACH

Across their life span individuals come into contact with the school system and physical education; sport at the community, school, provincial/territorial, or national level; community recreation programming; and the health system. It is in everyone's best interest that ALL of these organizations and sectors work together and follow a common approach to developing physical literacy and athletic potential, thereby ensuring that everyone has access to quality sport and physical activity. The common objective must be to increase retention in sport and physical activity and reduce dropout. Confusion, frustration, and burnout that can result from trying to work in an uncoordinated system tend to increase dropout rates.

Long-Term Development is a vehicle for system change because it acknowledges that physical education, school sports, competitive sports, and recreational activities are mutually interdependent. It stands in sharp contrast to the current Canadian sport system. Traditionally, physical education in the schools, community activity, and elite sport have been developed separately; an approach that is ineffective and expensive. It fails to ensure that all children, including those who may choose to become elite athletes, and those who just want to play, are given a solid foundation and knowledge base—physical, technical, tactical, and mental—upon which to build their athletic abilities. When stakeholders work together, everyone wins.

Multi-Sectoral

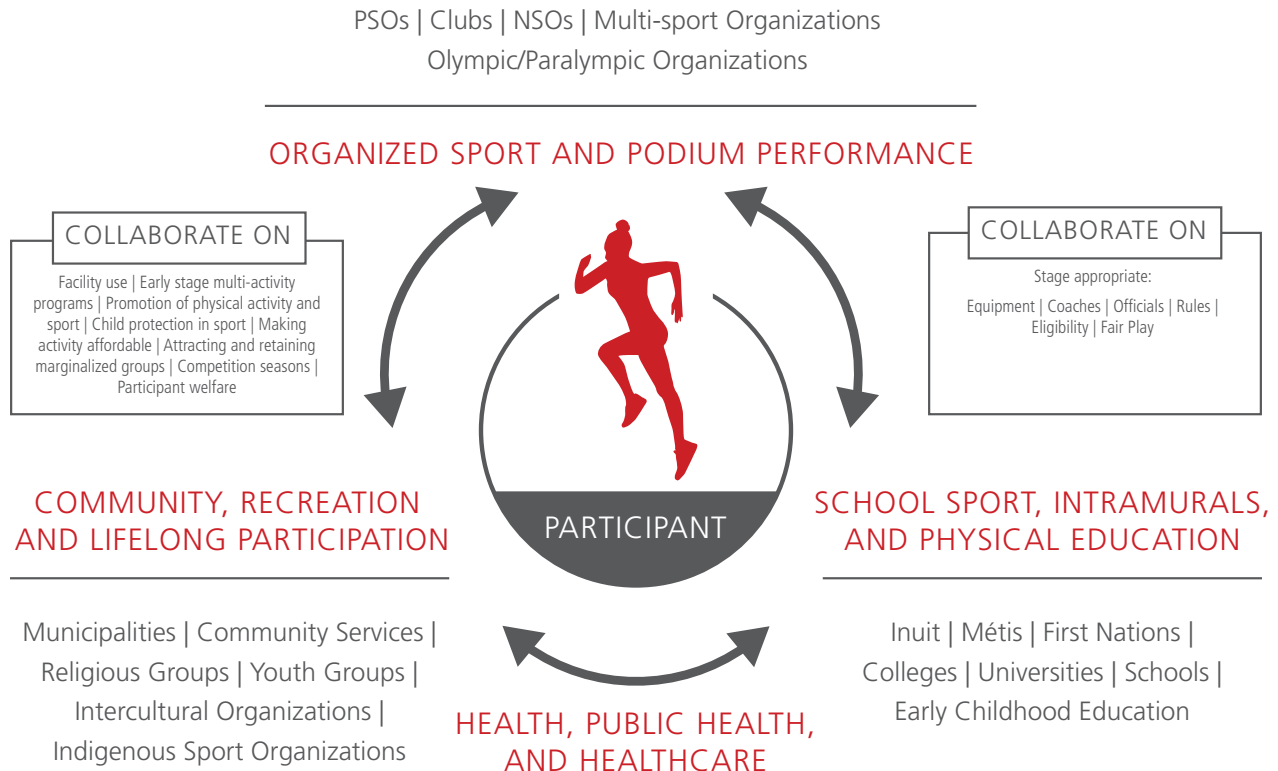


Figure 16: Multi-sectoral

A NEW WAY FORWARD

Although we have come a long way since the Canadian Sport for Life: Long-Term Athlete Development 1.0 resource paper was released in 2005, there remains a long way to go. We still need a system-wide paradigm shift that includes policy makers; national, provincial, territorial and local organizations; as well as program deliverers. Changing a long-established system is never easy, but breaking down the task makes it less daunting. A real paradigm shift will require moving:

- From a system that cuts and excludes participants to a system that includes everyone and helps those who are not having the success they want, transfer to other sports or activities in which they can thrive.
- From age-based programs that are appropriate for the average participant to stage-of-development appropriate participation for all
- From chasing wins and accumulating points for standings in leagues, to athletes taking part in meaningful competition where blow-outs are rare, and learning can take place.
- From training children and youth as though they were miniature adults, to providing them with periodized training appropriate to their stage of development.
- From a focus on physical activity to a focus on developing physical literacy across the life-span from preschoolers to seniors.
- Towards all levels within a sport, from grassroots to World Championship teams working together to maximize benefits and reduce overlaps while providing athletes and participants a clear, unified, path to reaching their sporting goals
- From community sport, recreation, education, health and performance sport working in isolation to all system working together with common goals and common purpose.
- To a Canadian sport system that is both good for sport and good for society.

Table 2: *The Change We Need*

Lead	From	To
System (refer to governments, NOCs, MSOs etc.)	Exclusionary development models (pyramid)	Inclusive development framework (rectangle)
System	Goals for sport	Goals for society
System	Separate systems	System alignment
System	Physical activity	Physical literacy
System	Working alone	Working together
Organizations (refers to NSOs, PTSOs & LSOs)	Chasing wins	Meaningful competition
Organizations	Exclusion/cutting	Inclusion/transfer/tiering
Organizations	Age-based coaching, training and competition	Stage-based coaching, training and competition
Organizations	National team single-sport periodization	Stage-based periodization

ADVANCING LONG-TERM DEVELOPMENT IN SPORT AND PHYSICAL ACTIVITY ACROSS CANADA

The ultimate goal of Sport for Life is to fundamentally change sport and physical activity in Canada for the better, and this requires aligning the actions of:

- governments at the federal and provincial/territorial level,
- sport and physical activity organizations, and
- coaches and leaders who work daily with athletes and participants.

It also requires:

- awareness, education and training of leaders,
- delivery of quality sport and developing physical literacy programs,
- alignment of policies, including funding models, between federal and provincial/territorial ministries responsible for sport and physical activity,
- alignment of sport and physical activity best practices within and across sectors,
- providing evidence through research and assessment, and
- inclusion of all, which requires planning and intentional supports.

This figure takes a “Logic Model” approach and illustrates the primary actors of influence within our sport ecosystem, their contributions and responsibilities to the advancement of Long-Term Development in Canada through identified outcomes and impact.

Table 3: A Catalyst for Cultural Change

Who	Responsibility	To Promote	Leading to	Resulting in	Outcomes	Long-Term Development Impact
Governments (F-P/T)	Long-Term Development pathway and physical literacy policies	Sport for Life Framework at F-P/T levels	Sector and system alignment	Sport for development and physical literacy strategies	Sport for Life contributing to community health and wellness	
Organizations	Long-Term Development frameworks (for all participants)	Good: leadership governance policy staffing	Quality programming	Developmentally appropriate activity and competition	Greater retention of athletes and participants	
Leaders and coaches	Long-Term Leadership and Coaching Development framework and education strategy	Stage-based coach/leader training curriculum	Stage-based periodization and training	Developmentally appropriate training and physical activity	Planned meaningful competition	

More physically literate population, more excellent athletes, and more people active for life



Photo: CPC, Canadian Blind Sports

Glossary of Terms

Adaptation is response to a stimulus or a series of stimuli that induces functional and/or morphological changes in an athlete, and the degree of adaptation is dependent on both the genetic endowment of the individual and their history of training—since it becomes more difficult to make gains as individuals approach their genetic limits. Exercise science has provided well-researched and well-understood guidelines for generating optimal adaptations. Adaptations can be either positive or negative.

Adolescence is the period between childhood and adulthood. During this period, most body systems become adult in both structure and function. Structurally, adolescence begins with an increase in the rate of growth in stature, which marks the onset of the adolescent growth spurt. The rate of increase in height reaches a peak, begins to slow, and ends 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 mental and physical abilities of an athlete other than sport technical skills and physical training. It includes warm-up and cool-down procedures, stretching, nutrition, hydration, rest, recovery, restoration, regeneration, metal 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, sport performance can be improved by using the ancillary capacities to full advantage.

Athlete Development Matrix (ADM): Within the Long-Term Development in Sport and Physical Activity framework, the ADM describes the skills and attributes of athletes progressing through the stages of the framework.

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 cognitive and motor development. It is often divided into early childhood, which includes preschool children aged one to five years, middle childhood from ages six to eight or nine, and late childhood, from age eight or nine to the onset of adolescence.

Chronological age is “the number of years and days elapsed since birth.” Children of the same chronological age can differ by several years in their level of growth and maturation (see Developmental Age).

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 changes in structure and function in the athlete’s progress toward maturity; for example, in the change of cartilage to bone in the skeleton, in changes to teeth (baby to adult teeth) in changes to sex organs, or in changes in body proportions. Maturation takes place at varying rates and at different times in each individual.

Developmental age is the age in years and months of the average youth with the same development as the individual in question. If a 15-year-old has the same development as the average 13-year-old, their developmental age is 13. Developmental age can be based on different body systems, including skeletal maturity or sexual maturity and different systems may give slightly different developmental ages, and therefore should be treated as an approximation unless measured by skilled evaluators with specialized equipment. In sport developmental age should be used as an indicator.

Enhanced training environments refer to NSO-driven identification and development of environments for targeted athletes that include access to state-of-art training facilities, world-leading coaches, and that advance support in technology, research, sport science and sport medicine. Enhanced training environments have the required quality, daily training hours to achieve gold medal profile indicators and required competition results.

Gold Medal Profile (GMP) is the collection of skills and attributes that underpin the performance of an athlete capable of stepping onto the Olympic, Paralympic or World Championship podium. The GMP is based on validated metrics with clear benchmarks for each of the skills and attributes, scaled according to the stage the athlete is at along the Podium Pathway.

Nationally-led refers to deliberate leadership from the national sport organization to drive the concept of a Podium Pathway and to implement the programmatic structures and services to achieve podium success.

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

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

Physical literacy is the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life. In more practical terms is the life-long development of fundamental movement skills and fundamental sport skills in a wide variety of environments.

Podium Identification and Development is the entry point to the Podium Pathway characterized by deliberate athlete identification and development processes using podium results track benchmarks and gold medal profile indicators.

Podium Pathway describes the sport-defined excellence stages of Long-Term Development in Sport and Physical Activity and specifically applies to athletes on a trajectory toward podium results at the highest level of their sport. Podium Pathway encompasses both the Podium Results Track and the Gold Medal Profile (GMP).

Podium Potential describes the targeted athlete tracking to podium success based on predictive competition results and gold medal profile indicators. Athletes with podium potential will be monitored in the enhanced training environment and tracked in competition to predict progression towards podium success.

Podium Success is the desired performance end-state. It describes athletes achieving podium performances at the Olympics, Paralympics or World Championships.

Podium Results Track (PRT), derived from competition results, is the progression of performance benchmarks required to move through the Podium Pathway and successfully reach the Olympic, Paralympic or World Championship podium. Winning Style of Play (WSP) connotes this concept as it applies to team sport and possibly other sports such as Tennis, Badminton, or combat sports.

Puberty refers to the stage of maturation during which an individual becomes sexually mature and able to reproduce.

Quality Sport means good, developmentally appropriate, values-based programs, run in a safe, welcoming and inclusive environment by good people who are adequately qualified and are committed to the True Sport principles.

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 sensitive periods of trainability during growth and development of young athletes signal the correct time for using certain stimuli to achieve optimum adaptation in skills, physical capacities, and competition.

Sensitive periods of development refer to a period in the development of a specific behaviour or body adaptation when experience or training has a greater impact than at other times. All systems are always trainable, and a sensitive period is when a system has optimal trainability.

Skeletal age refers to the maturity of the skeleton and is determined by the degree of ossification of bones compared to the average age of that degree of ossification. It can be used as one way of accurately determining Developmental Age, but requires the use of sophisticated instruments (X-ray, MRI, etc.)

Targeted Excellence refers to a focused strategy to achieve podium success at the Olympics, Paralympics or World Championships.

Trainability Is the responsiveness of individuals to training stimuli. Trainability can refer to the speed of adaptation to a training stimulus or the degree of adaptation for a given level of training stimulus.

Training Age Is a measure of how long an athlete has been training in a specific sport.



References

The **Long-Term Development in Sport and Physical Activity** resource is informed by, and supported by, the coaching and exercise science literature, but it is written in non-technical terms for coaches and sport and physical activity technical and administrative leaders. The comprehensive list of references for this resource is compiled in the Sport for Life document **Handbook of References: Supplement to Long-Term Development in Sport and Physical Activity**. View at: sportforlife.ca/handbook-of-references.

This *Handbook of References* provides relevant literature to support Long-Term Development. For each identified topic, highlights from the literature are summarized followed by select references. Additional references from leading researchers who have helped to shape our understanding of athlete development and high performance sport are packaged at the end of the document.

The *Handbook of References* is available to anyone wishing to know more about the underpinnings of Long-Term Development. We encourage all readers to understand the landscape of athlete development and high performance sport is ever-changing—most data, findings, conclusions and interpretations are not universally accepted—there are many different ways to build a champion. Use this bank of information to inform your thinking, actions and discussions with others. Be open to new ideas and new ways of thinking about this exciting area of Long-Term Development in Sport and Physical Activity.



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