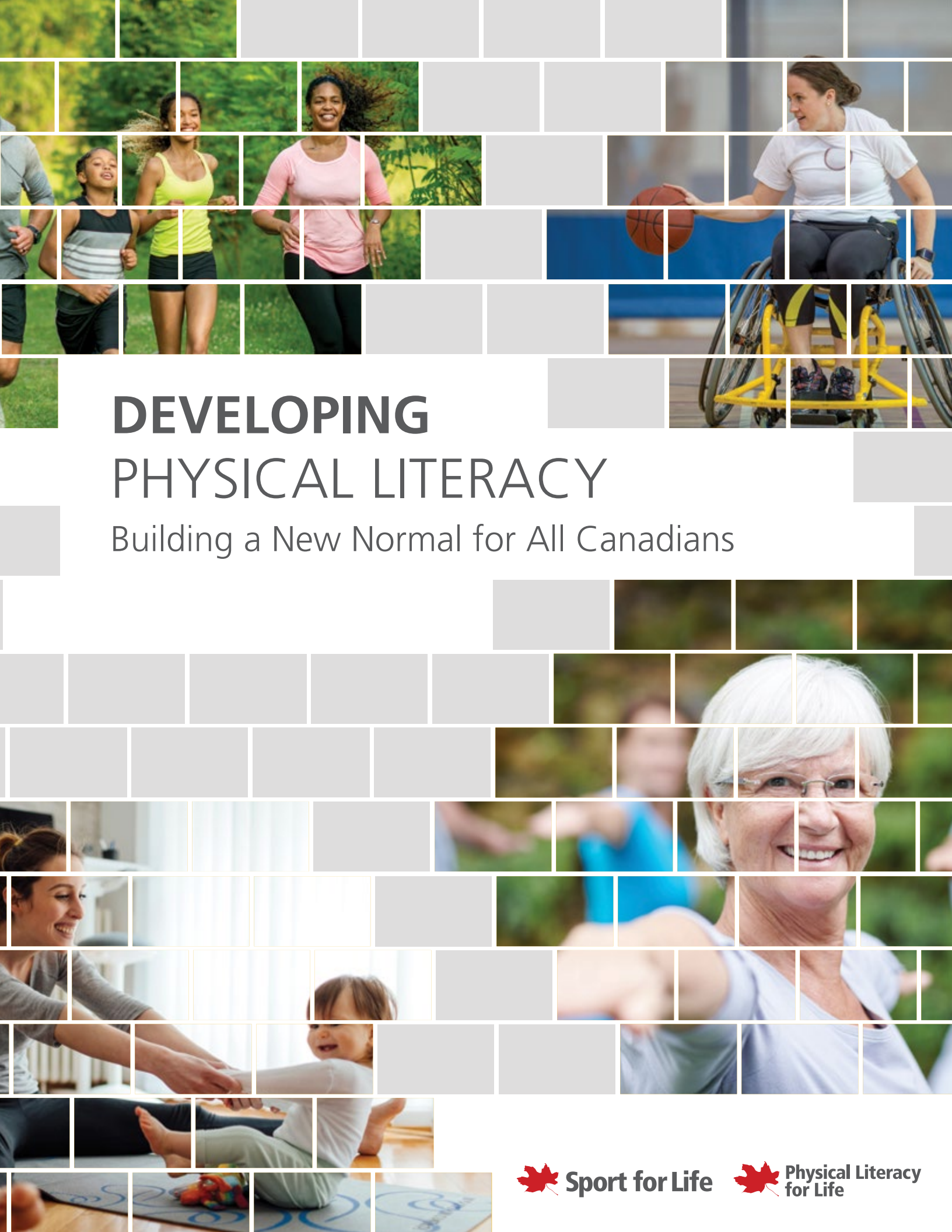

DEVELOPING
PHYSICAL LITERACY

Building a New Normal for All Canadians

Sport for Life

Physical Literacy for Life

DEVELOPING PHYSICAL LITERACY

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SPECIAL THANKS

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Canada

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PREFACE

Physical activity and its associated health benefits are well-known to people involved in public health, education and sport. It is also known that physical inactivity contributes to poor well-being, increased health care costs, reduced quality of life, and shorter life expectancy. This document discusses the important contribution of physical literacy in overcoming the inactivity crisis.

As defined in Canada's Physical Literacy Consensus Statement (International Physical Literacy Association, 2014), "Physical Literacy is the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life." In the past, children developed physical literacy in part through regular unstructured play, and the vast majority of adults maintained their physical literacy through daily vocational activities and other forms of habitual physical activity that were largely physical in nature. However, in today's world children are much less frequently engaged in unstructured play, and adults are increasingly sedentary at work and at home, which has led to an inactivity crisis.

To address the inactivity crisis, Canada has developed a national policy document titled *A Common Vision for Increasing Physical Activity and Reducing Sedentary Living in Canada: Let's Get Moving* that "serves to complement and align with other relevant policies, strategies and frameworks"(Government of Canada, 2018) including the Canadian Sport Policy 2.0 (2012), "A Framework for Recreation in Canada" (Canadian Parks and Recreation Association/Interprovincial Sport and Recreation Council, 2015), *Active Canada 20/20: A physical activity plan for Canada* (Spence et al., 2015), and *Curbing Childhood Obesity: An overview of the federal, provincial and territorial framework for action to promote healthy weights* (Government of Canada, 2011). In the *Common Vision* document, specific emphasis is placed on the importance of physical literacy to increase physical activity. These documents demonstrate how physical literacy is associated with lifelong involvement in physical activity. Therefore, it is critical that physical literacy, like numeracy and literacy, is fostered from an early age and developed throughout the life course.

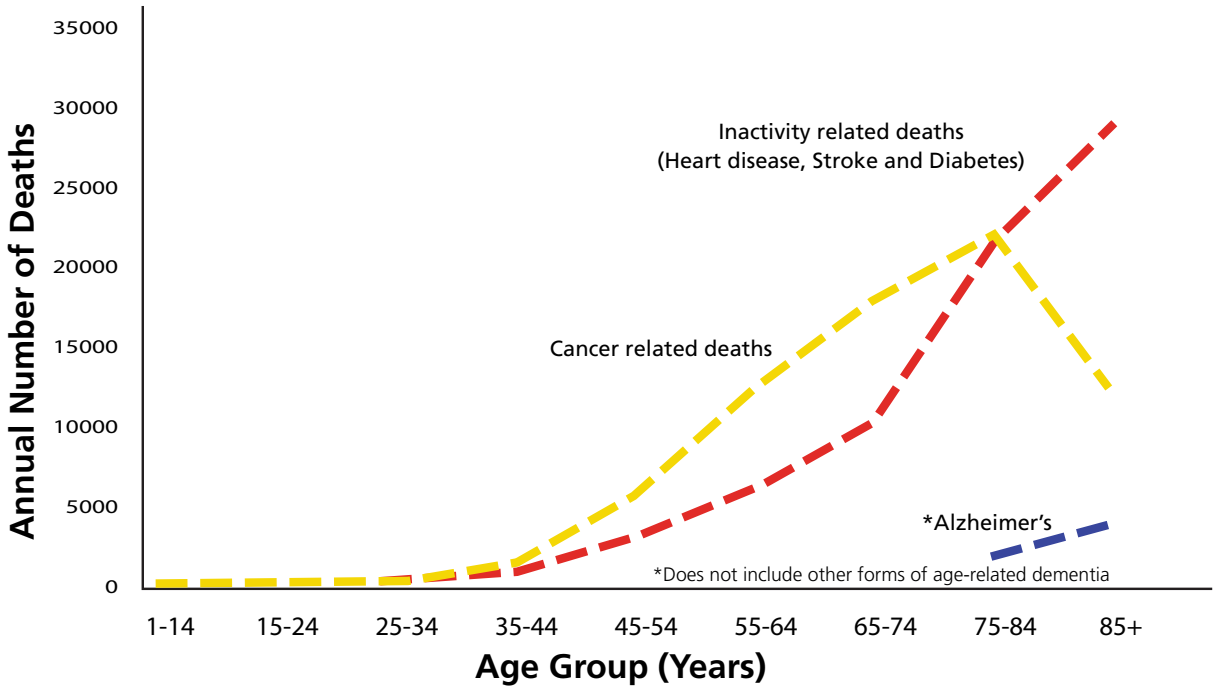

Figure 1: *Canada's Aging Population and the Burden of Disease*

Compiled from: Statistics Canada. Leading Causes of Deaths in Canada, 2009, CANSIM Tables 102–0561 and 102–0562. Date modified: 2013-10-03

This document describes the essential components of physical literacy, outlines how to support the development of physical literacy in all stages of life, and discusses strategies for delivering coordinated physical literacy programs for Canadians of all ages, genders, ethnicities and abilities. This resource is not a programming guide but rather a road map for all citizens to enjoy greater health, well-being and inclusion by choosing an active lifestyle founded on physical literacy.

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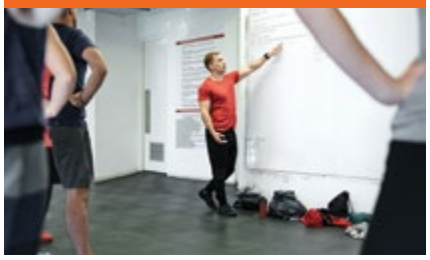
SECTION 1

Physical Literacy

Who Needs to Know?

Leaders and Educators



So when they work with participants, they can encourage them to try different activities and learn new skills.

Program Designers

So they can design programs that include a wide range of skills and activities, and that take place in a variety of environments (on the ground, in water, on ice and snow, and in the air).

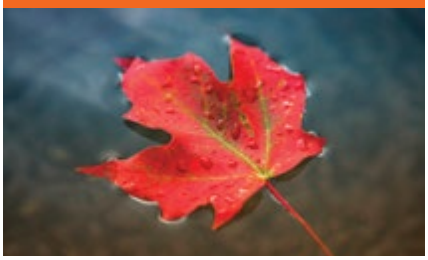
Recreation Professionals

So they can build physical literacy development into their activities to ensure participants develop skills, have fun, and want to maintain an active lifestyle.

Parents/Caregivers and Coaches

So they can discourage early over-specialization in a single sport, since early specialization can lead to overuse injury and participant burnout.

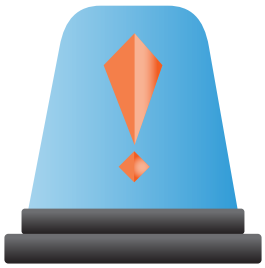
Canadian Sport System Leaders



So that sport, recreation, education and health can work together to create an environment in which every Canadian, regardless of age, has the opportunity to take part in healthy physical activity.

Health Practitioners

So they can consider physical literacy principles while working to improve the population's health, prevent and treat diseases and injury, monitor existing situations and trends, and promote healthy behaviours.



The Need for Physical Literacy

The Physical Inactivity Crisis

Despite the fact that physical inactivity and its associated health consequences are well-known, research shows that not nearly enough Canadians are meeting the physical activity recommendations of the 24-Hour Movement Guidelines. While 62% of pre-school-aged children (three to four years) meet the physical activity recommendations, only 38% of children and youth (ages five to 17), 18% of adults (ages 18-64), and 14% of older adults (65-79) currently meet their recommendations (Government of Canada, 2018). Inactivity contributes to poor well-being, increased health care costs, reduced quality of life, and shorter life expectancy.

"The Canadian 24-Hour Movement Guidelines recommend 150 minutes of moderate-to-vigorous physical activity per week for adults (preferably in segments of no less than 10 minutes spread over several days) and 60 minutes of moderate-to-vigorous physical activity every day for children and youth." (Tremblay, 2016)

A report issued by the Canadian House of Commons' Standing Committee on Health states that treatment of chronic diseases linked to physical inactivity costs the healthcare system up to **$6.8 BILLION** annually, which equates to 4% of total healthcare costs (Government of Canada, 2019).

The global recommendations set by the World Health Organization (2010) state:

- Children and youth aged 5–17 should complete at least 60 minutes of moderate to vigorous intensity physical activity daily.
- Adults aged 18–64 should do at least 150 minutes of moderate intensity aerobic physical activity throughout the week, do at least 75 minutes of vigorous intensity aerobic physical activity throughout the week, or an equivalent combination of moderate and vigorous intensity activity.
- Older adults should do at least 150 minutes of moderate intensity aerobic physical activity throughout the week, do at least 75 minutes of vigorous intensity aerobic physical activity throughout the week, or an equivalent combination of moderate and vigorous intensity activity.

> *Largely due to lack of awareness and investment, global progress to increase physical activity has been slow. Levels of inactivity will actually increase as countries or communities develop economically, particularly due to changes in transportation methods, increases in technology use, and urbanization. In some countries, levels of inactivity can reach as high as 70%. Social factors and cultural values also influence physical activity levels, and in most countries and communities, marginalized populations have fewer opportunities to access safe, affordable, and appropriate physical activity programs and environments.* (World Health Organization, 2018)

Some populations and social groups are more vulnerable to inactivity than others, leading to an inequity in rates of participation.

In short, the consequences of physical inactivity are significant. All the challenges highlighted by the World Health Organization exist in Canadian communities.

Physical Literacy Is Essential

Increased sedentary behaviour caused by an erosion of unstructured play, greater dependency on technology and changes in the nature of work (from physical to mental) are some of the elements which not only reduce physical activity levels among children, youth and adults, but also affect the development of physical literacy.

Physical literacy in simple terms is the competence, confidence, knowledge and motivation to engage in physical activity for life.

A generation ago, unstructured play and risky play were common, which helped develop physical literacy and prepared children for a lifetime of active pursuits. Those pursuits could range from sport and recreation to vocational activities such as firefighting and carpentry. However, we now face a situation where we have engineered movement opportunities and experiences out of our environment, and we need to support the development of physical literacy as a counter-measure.

Physical literacy needs to be actively developed as it cannot be assumed that it will occur naturally as part of normal growth. While part of the solution is to provide greater opportunities for unstructured play and risky activity, it is important to remember that people of all ages do not innately develop motivation, confidence, physical competence, knowledge and understanding to value and take responsibility to be active for life. Accordingly, physical literacy must be nurtured, supported and encouraged. This means we need to look at ways to support every person's unique physical literacy journey throughout the life course.

Physical Literacy and Health

The physical and mental health benefits of regular physical activity are well established in research literature. Since individuals who lack the skills, confidence, competence and knowledge to be physically active are less likely to participate in physical activity, physical literacy is considered to be a gateway to physical activity. Consequently, physical literacy is itself a determinant of health through its positive influence on physical activity. Dr. John Cairney and colleagues (2019a) published an evidence-based model that shows the connections between physical literacy, physical activity and health outcomes across the life course (see Figure 2).

Being healthy enables individuals to continue their physical literacy journey throughout life, further contributing to their participation in physical activity and their sense of well-being. Physical literacy is believed to impact health in other ways as well. One example is injury reduction. A person with a high degree of physical literacy can successfully navigate potential hazards in their environment (e.g., icy surfaces), thereby reducing the risk of physical injury such as fractures or concussions. Through its behavioural, cognitive and affective domains, physical literacy also helps to build durability by promoting a positive self-concept (e.g., self-esteem) and reducing social isolation and inhibition. Additionally, cooperative play and participation builds strong psychological and social foundations.

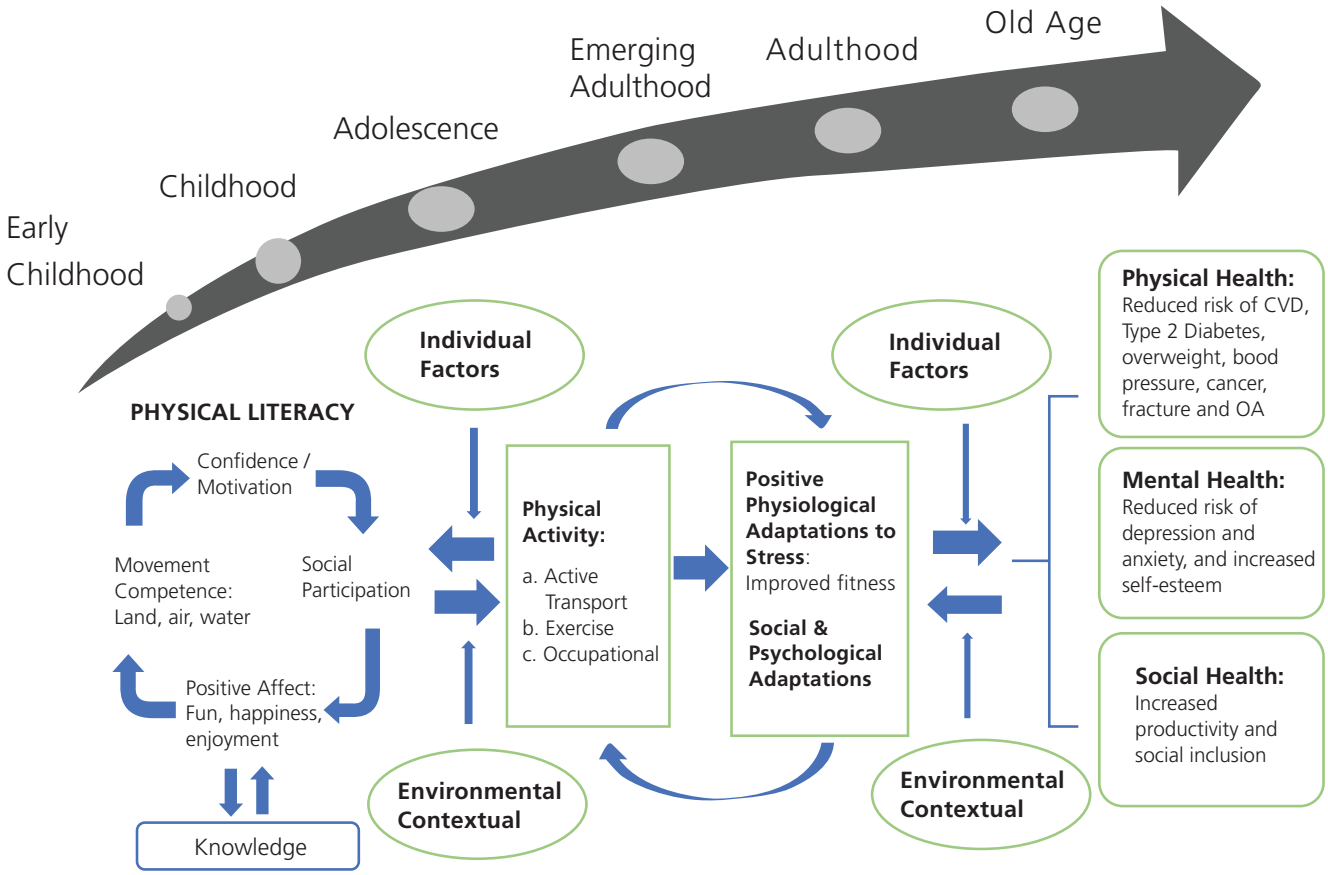
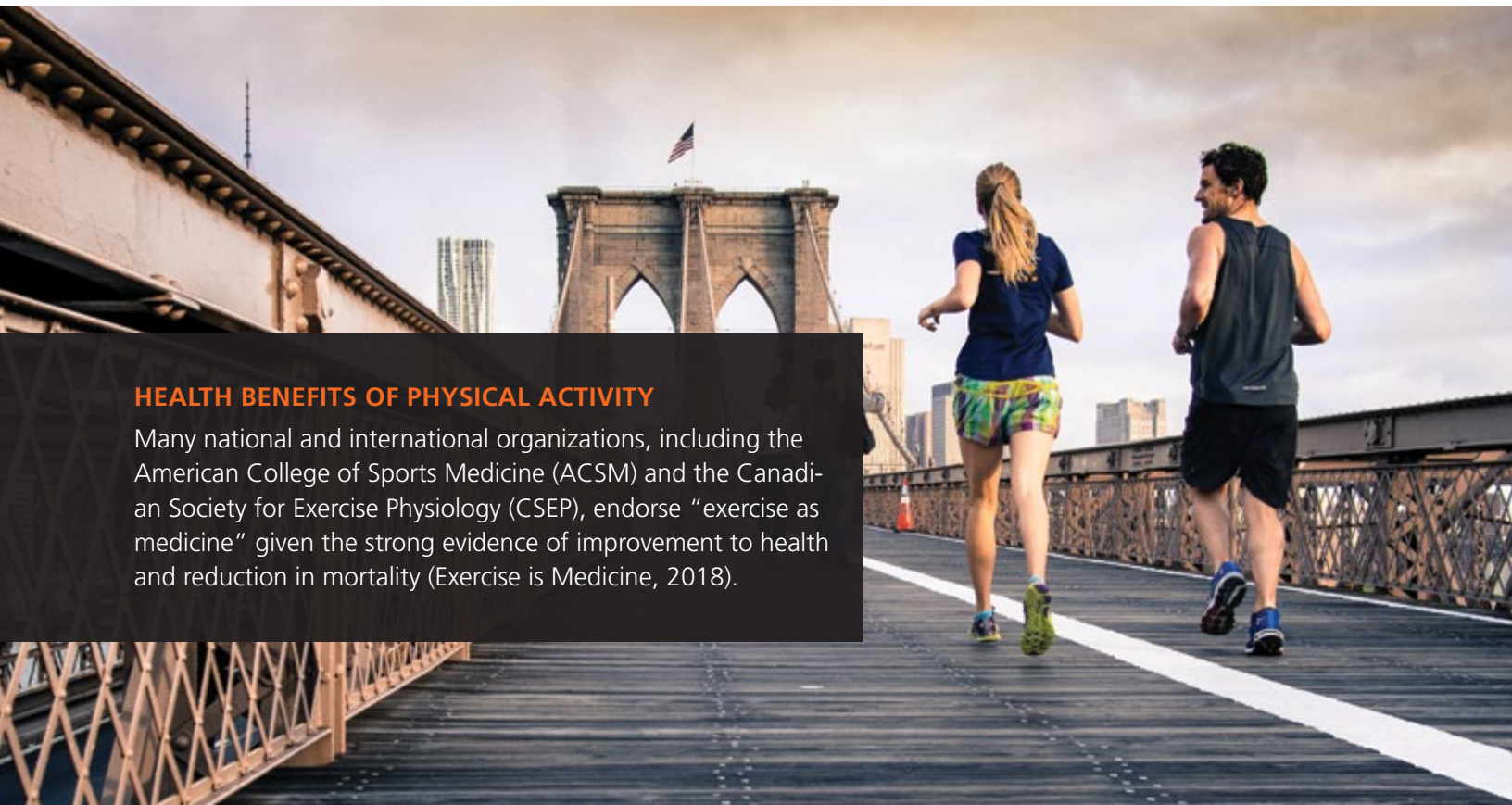
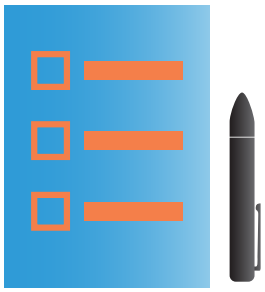


Figure 2: *Physical Literacy, Physical Activity and Health: Toward an Evidence-Informed Conceptual Model*



HEALTH BENEFITS OF PHYSICAL ACTIVITY

Many national and international organizations, including the American College of Sports Medicine (ACSM) and the Canadian Society for Exercise Physiology (CSEP), endorse "exercise as medicine" given the strong evidence of improvement to health and reduction in mortality (Exercise is Medicine, 2018).



Defining Physical Literacy

As support for physical literacy has grown, different definitions have emerged that focus on varying aspects of the concept according to different contexts and priorities (see **Appendix B**).

The definition of physical literacy will likely continue to evolve as more research is conducted. However, it is broadly understood and accepted that physical literacy involves individuals developing the competence, confidence, knowledge and motivation to engage in physical activity. Precisely how these elements interact and influence each other is the subject of ongoing debate within research, policy and practice.

The challenge is to establish a working definition of physical literacy for the Canadian context while also acknowledging the major themes and ideas embedded across different definitions in different countries and different sectors. The hope in doing so is to advance the physical literacy movement in Canada while recognizing the breadth and diversity of physical literacy and identifying points of synergy.

The Canadian Definition

In 2015, a number of organizations collaborated to develop a Canadian Consensus Statement for Physical Literacy (refer to page 10, Figure 5A). The Consensus Statement presented a definition of physical literacy that had been established by the International Physical Literacy Association in 2014 and was formally adopted at the International Physical Literacy Conference in 2015*. It remains one of the most widely accepted definitions to date, and it is the prevailing definition in Canada.

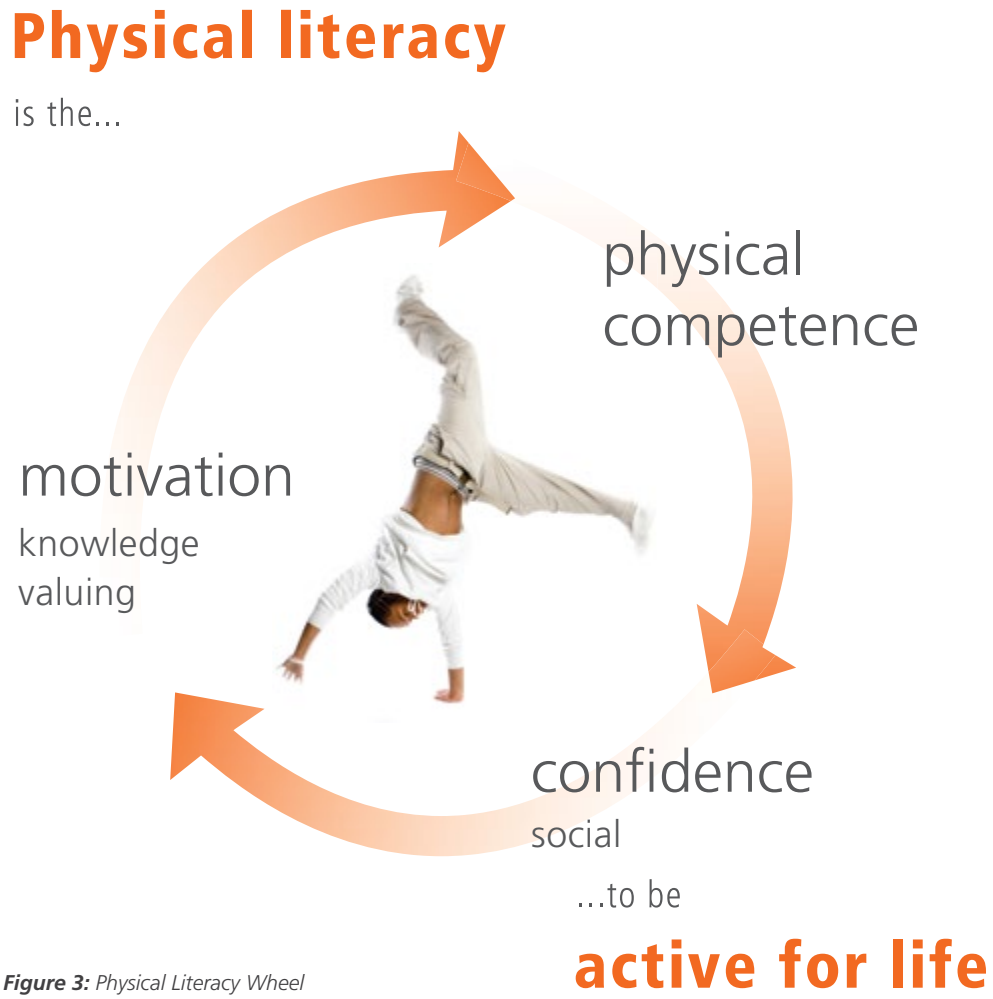


Figure 3: *Physical Literacy Wheel*

> *Physical literacy is the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life.*
>
> (International Physical Literacy Association, 2014;
> Canada's Physical Literacy Consensus Statement, 2015)

*Due to some specific challenges that needed to be resolved in translating the definition in French, a French-language version was only later adopted by a number of Francophone organizations at the Sport for Life Canadian Summit in January 2016.

This definition recognizes several of the most agreed upon components of physical literacy: motivation, confidence, physical competence, knowledge and understanding.

As the understanding of physical literacy evolves, alternate descriptions and definitions emerge. Appendix B features a range of definitions and descriptions. A good example of how the language has evolved can be seen in the following definition from Sport Australia:

"Physical literacy is the skills, knowledge and behaviours that give us the confidence and motivation to move throughout our lives."

SPORT AUSTRALIA GOES ON TO SAY:

Developing your physical literacy can give you the confidence and capability to be active, and stay active for life.

This is because physical literacy gives you:

- the physical skills and fitness,
- the attitudes and emotions that motivate you to be active,
- the knowledge and understanding of how, why and when you move, and
- the social skills to be active with others.

Figure 4: *Sport Australia's Physical Literacy Wheel*

Any person, at any life stage and circumstance, can improve their physical literacy.

(Sport Australia, 2017)

Photo: Courtesy of Sport Australia

Together, these various definitions remind us that, while the definition of physical literacy may change and evolve, ultimately it is a concept made up of affective, physical, cognitive and behavioural elements.

Canada's Physical Literacy Consensus Statement | June 2015

In recent years, various stakeholders have engaged in activities to promote and develop physical literacy. Excitement around the concept has also led to a variety of definitions, and sometimes a misuse of the term by using it interchangeably with "physical activity", "physical education", "fundamental movement skills" or "motor skill development". In a broad consultation, sector leaders in Canada suggested that a common definition with consistent language was needed to provide clarity for the development of policy, practice and research.

The purpose of this Statement is to:

- **promote** the value of physical literacy and preserve the integrity of the concept
- **advocate** for the use of a common definition of physical literacy, as defined by the International Physical Literacy Association
- **facilitate** alignment within and between the multiple sectors in the physical literacy community
- **improve** the consistency and clarity of communications relating to physical literacy
- **inform** the consistent and co-ordinated development of physical literacy tools and resources created by various stakeholders.

Definition of 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.

International Physical Literacy Association, May, 2014

Figure 5A: *Physical Literacy Consensus Statement*

The Elements of Physical Literacy

The definition of physical literacy includes four essential and interconnected elements whose relative importance may change throughout life.

Motivation and confidence (Affective)

Motivation and confidence refers to an individual's enthusiasm for, enjoyment of, and self-assurance in adopting physical activity as an integral part of life.

Physical competence (Physical)

Physical competence refers to an individual's ability to develop movement skills and patterns, and the capacity to experience a variety of movement intensities and durations. Enhanced physical competence enables an individual to participate in a wide range of physical activities and settings.

Knowledge and understanding (Cognitive)

Knowledge and understanding includes the ability to identify and express the essential qualities that influence movement, understand the health benefits of an active lifestyle, and appreciate appropriate safety features associated with physical activity in a variety of settings and physical environments.

Engagement in physical activities for life (Behavioural)

Engagement in physical activities for life refers to an individual taking personal responsibility for physical literacy by freely choosing to be active on a regular basis. This involves prioritizing and sustaining involvement in a range of meaningful and personally challenging activities, as an integral part of one's lifestyle.

Core Principles

Five core principles underlie the definition in this Statement.

Physical literacy:

- is an inclusive concept accessible to all
- represents a unique journey for each individual
- can be cultivated and enjoyed through a range of experiences in different environments and contexts
- needs to be valued and nurtured throughout life
- contributes to the development of the whole person.

Authors of this Statement

Canada's Physical Literacy Consensus Statement is the result of a collaborative process among ParticipACTION, Sport for Life Society, the Healthy Active Living and Obesity Research Group at the Children's Hospital of Eastern Ontario Research Institute, Physical and Health Education Canada, Canadian Parks and Recreation Association, and the Ontario Society of Physical Activity Promoters in Public Health. Representatives from the International Physical Literacy Association also contributed in an advisory capacity.

This consensus process was made possible, in part, by the RBC Learn to Play Project, with funding from RBC and the Public Health Agency of Canada.

Figure 5B: *Physical Literacy Consensus Statement*

Core Elements of Physical Literacy

According to the International Physical Literacy Association's definition and Canada's Physical Literacy Consensus Statement, there are four essential and inter-connected elements.

1

MOTIVATION & CONFIDENCE (AFFECTIVE)

2

PHYSICAL COMPETENCE (PHYSICAL)

3

KNOWLEDGE & UNDERSTANDING (COGNITIVE)

4

ENGAGEMENT IN PHYSICAL ACTIVITIES FOR LIFE (BEHAVIOURAL)

Figure 6: *Physical Literacy Core Elements*

Motivation

Whether an individual is participating in a sport, adopting an exercise program, or just having fun with friends, motivation is essential. There are many dimensions to motivation, but the most commonly identified elements in relation to physical literacy are competence and confidence. Motivation to participate is higher when an individual believes they have the ability to perform the necessary skills.

Confidence

Confidence comes with practice and mastery of skills. It is about believing in your abilities and having the confidence to try new things because you have a history of success. Confidence is frequently viewed as a principal outcome of physical competence. As individuals develop competence, they generally experience an increase in confidence to apply those skills in different sport and activity settings. However, confidence can also be an important precursor to engaging in the very activities that serve to develop these skill competencies. This confidence may relate to existing perceptions of social acceptance and connectedness, or feelings of support from family, friends, teachers and coaches. In this sense, confidence is largely interdependent with other essential elements of physical literacy, including motivation and competence (see Figure 3, pg. 8).

Physical Competence

Physical competence refers to an individual's ability to develop movement skills and patterns, and the capacity to experience a variety of movement intensities and durations in a wide range of physical activities and settings.

Knowledge and Understanding

Knowledge and understanding includes the ability to identify and express the essential qualities that influence movement, understand the health benefits of an active lifestyle, and appreciate appropriate safety features associated with physical activity in a variety of settings and physical environments.

Physical literacy is part of our identity. It represents more than just instrumental knowledge about health risks and benefits. It is coming to see oneself as an active, physical human being. Participation in activity helps to shape our knowledge of ourselves.

Other Important Elements

ENJOYMENT (POSITIVE FEELING STATES)

When the elements of motivation, confidence, physical competence, knowledge and understanding come together, they are powerful determinants of participation. When physical movement is fun and enjoyable, the ties between competence, confidence and movement skills are strengthened. However, humans are inherently pleasure-seeking: we seek out activities we know we will enjoy, and avoid activities that we dislike. Therefore, it is important to create positive feelings towards physical activity.

Fun is more than simply smiles on faces; fun is about challenges, and is unique to each individual. Without an appropriate level of challenge, any activity becomes boring. With the right amount of fun and challenge, enjoyment (positive feeling states) is created, which builds and maintains the motivation to continue an activity.

Common Misunderstandings

A common misunderstanding is that physical competence, which entails learning fundamental movement skills, is sufficient. Movement skills such as kicking, throwing, striking, running and jumping are necessary, but there's more to developing physical literacy.

Another common misunderstanding is that physical activity and physical fitness are components of physical literacy. While they may play important roles in the ongoing development and evolution of an individual's physical literacy, these are better viewed as outcomes rather than components.

A third assumption is that knowledge and understanding of physical literacy means awareness of physical activity guidelines or knowledge about the health benefits of physical activity. This is only partly true, as there are other factors:

SOCIAL

In the context of physical literacy, social benefits can take many forms. There is the basic social connectedness that occurs from participation in sport and physical activities. For many people, fun and friendship are the most important motivations for being physically active.

Another aspect of the social experience is feeling comfortable, competent and confident while participating with others. Individuals who feel inhibited in the presence of other participants due to a lack of sufficient skills and ability will withdraw from physical activity.

CULTURAL

Developing physical literacy is related to an individual's cultural context. Similar to physical literacy allowing for social connectedness, it can also be a connector to cultural practices and can be an opportunity to explore traditional teachings and customs. If someone has not developed physical literacy, then they may not be able to partake in important cultural activities. Inversely, those cultural traditions may provide opportunities to develop physical literacy. Different movement skills, environments, knowledge and understanding will play different roles depending on where someone is and what they are taking part in. Whether it is traditional activities in an Indigenous community, or the opportunity for a newcomer to learn to play a sport that is culturally important in their new home, physical literacy development plays a crucial role in cultural connection and must be planned for and appreciated.

Throughout this resource you will find innovative ideas for your consideration. Their purpose is to be a catalyst for innovative thinking.

FUN

Whenever quality physical literacy or sport experiences are considered, FUN is always seen as a key element. This figure has been developed from the early work of Dr. Amanda Visek, and identifies key determinants of FUN within a quality sport environment.

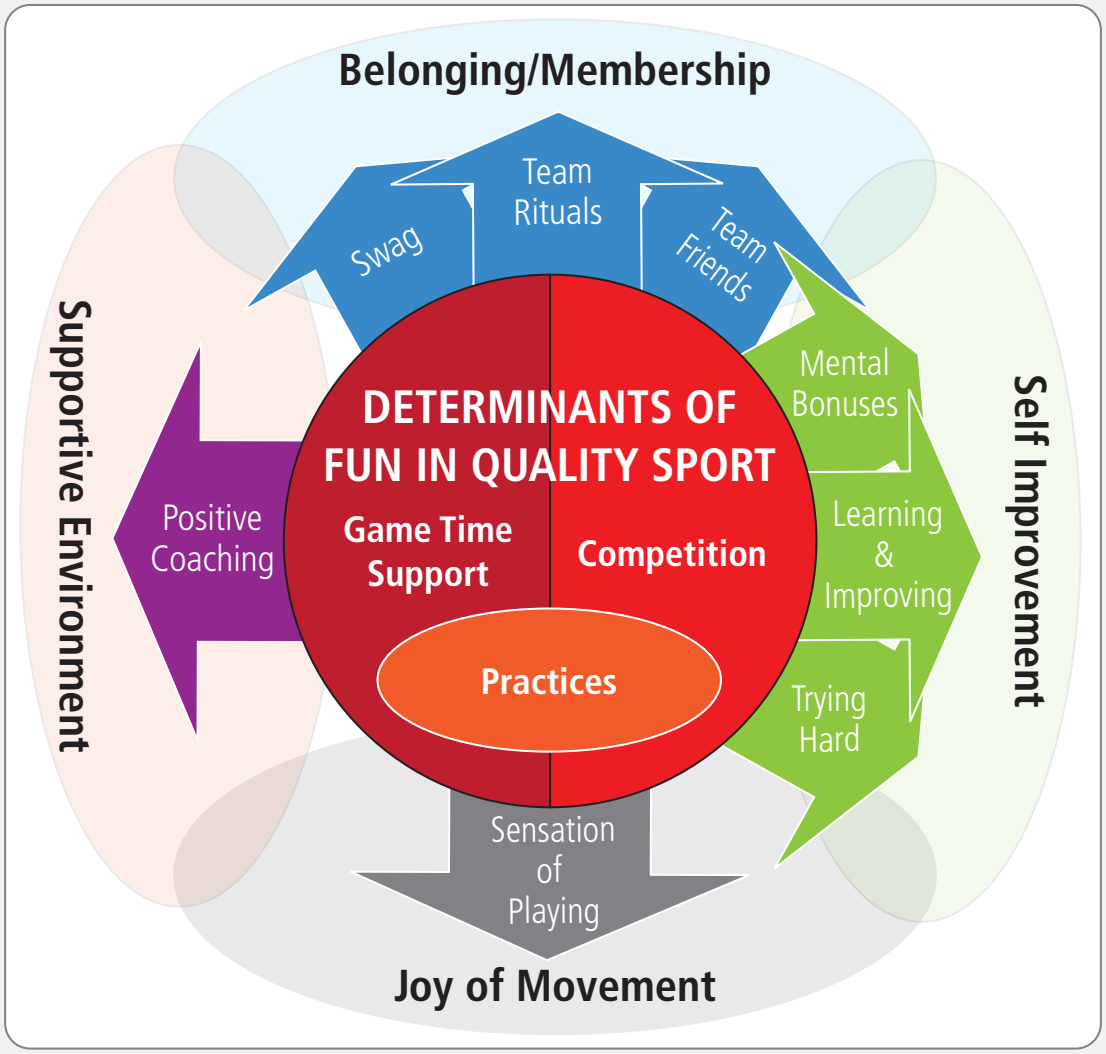
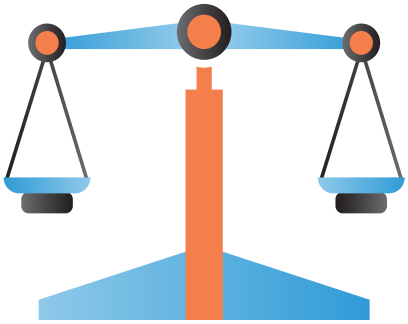


Figure 7: *Determinants of Fun in Quality Sport*

Redrawn based on the work of Dr. Amanda Visek and colleagues (2015). The George Washington University, Milken Institute of Public Health, Department of Exercise & Nutrition Sciences.



Valuing Physical Literacy

There are a number of reasons why we, personally and organizationally, should value and promote physical literacy within our society. For the health and wellness of the nation, people—ranging from government leaders to parents/caregivers—need to consider the following points, which can be achieved through the development of physical literacy.

Active Participation

Throughout life, many people are engaged in physical activity and movement in meaningful ways. This could include participation in different sports, activities such as dance or movement arts, martial arts or active unstructured play (e.g., riding a bike or hiking in the woods with friends).

Physical activity is not the primary outcome; what is important is that people acquire the proficiency of movement needed to maintain active participation in daily living and different vocations.

Safety

Physical literacy promotes safety through acquiring psychological and physical competency, which in turn reduces the risk of physical or psychological injuries from active participation.

Physical literacy includes movement competencies on land, in the air, in water, and on snow and ice. For example, learning to walk (or run) on slippery surfaces like ice reduces the risk of injury from falls.

Durability

Durability is a combination of physical, mental and social resources that allows an individual to persist and endure challenges to achieve personal and social goals.

> **"People of all ages, but adults in particular, should engage in resistance training, aerobic exercise, balance and flexibility training to ensure their bodies remain durable"** (Grove et al., 2016, p. 25).

Physical literacy helps build durability by facilitating active participation, and the physical and psychological benefits arising from it. Durability ensures that an individual's participation at home, at work and in communities can last longer, and that the quality of their participation is more meaningful. As an extreme example, training to run a marathon or a long-distance bike race requires physical and mental toughness, fitness and skill. To complete these events shows durability in the face of challenges and adversity.

Health and Well-being

The physical and mental health benefits of active participation are well documented in the research literature. Greater participation is associated with reduced risk of many chronic diseases and increased life expectancy. Ultimately, if physical literacy is the gateway to active participation, then physical literacy is also the gateway to better health and well-being across the life course. Part of that connection is through physical literacy's impact on safety and durability.

Physical literacy improves the way people move, which reduces the risk of injury during physical activity.

Achieving Individual Potential

The development of physical literacy is a lifelong journey and unique to everyone. Physical literacy facilitates participation, which in turn allows individuals to meet their goals and reach their own level of mastery in a given activity. It is the key to achievement of personal growth and development through movement.

Education

Many Canadian curricula now recognize the value of physical literacy, and identify that the knowledge and skills acquired in health and physical education will enhance the everyday experiences of students and help them to lead healthy, active lives.

Excellence in Sport and Performance Arts

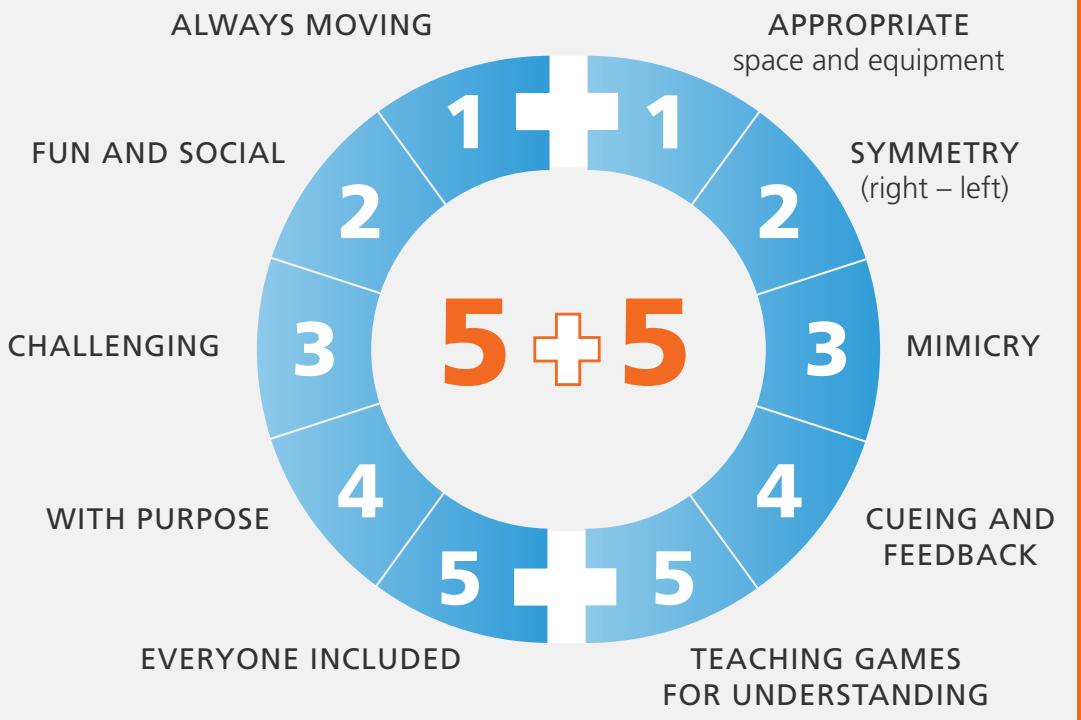
To excel at the top levels of competitive sport and performance arts, most individuals need to develop superlative physical literacy. Competitors and performers at the national and international level, both professional and amateur, require advanced movement proficiency far beyond the average person, as well as motivation, confidence and knowledge. This demands the most thorough expression of physical literacy.

Table 1: *Literacies*

	Literacy	Numeracy	Music	Physical Literacy	All Domains
Highest Pursuit	Write professionally or pursue literature	Be a mathematician, statistician, engineer or scientist	Play professionally, study music, or be a music critic	Compete at the highest level or play professionally	Master the activity
Daily Use	Read newspapers, signs and directions	Make change, fill in tax forms, and calculate day-to-day numbers	Play an instrument for personal enjoyment	Play sports and engage in healthy physical activity	Learn more, and improve and value the activity
Functional Level	Put letters and words together to read and write	Add, subtract, multiply and divide for basic arithmetic	Play simple tunes	Combine fundamental movement skills into games and activities	Develop competence and confidence
Basic Building Blocks	Learn letters	Learn numbers	Learn notes	Learn movement skills	Learn

Based on Corlett & Mandigo, 2013

SESSION CHARACTERISTICS



DESIGN CONSIDERATIONS

Figure 8: *Five and Five for Physical Literacy*

Five session characteristics plus five design considerations for developing physical literacy.

POSITIVE OUTCOMES OF A QUALITY PHYSICAL LITERACY EXPERIENCE

Core Components of Program Design

Participation in quality physical literacy experiences will produce a number of positive outcomes in a participant's experience, understanding, and application of movement. This participation leads to improvements in physical and mental health, increased fitness and enhanced performance through the connection-based and competence-based components of program design identified in Figure 9.

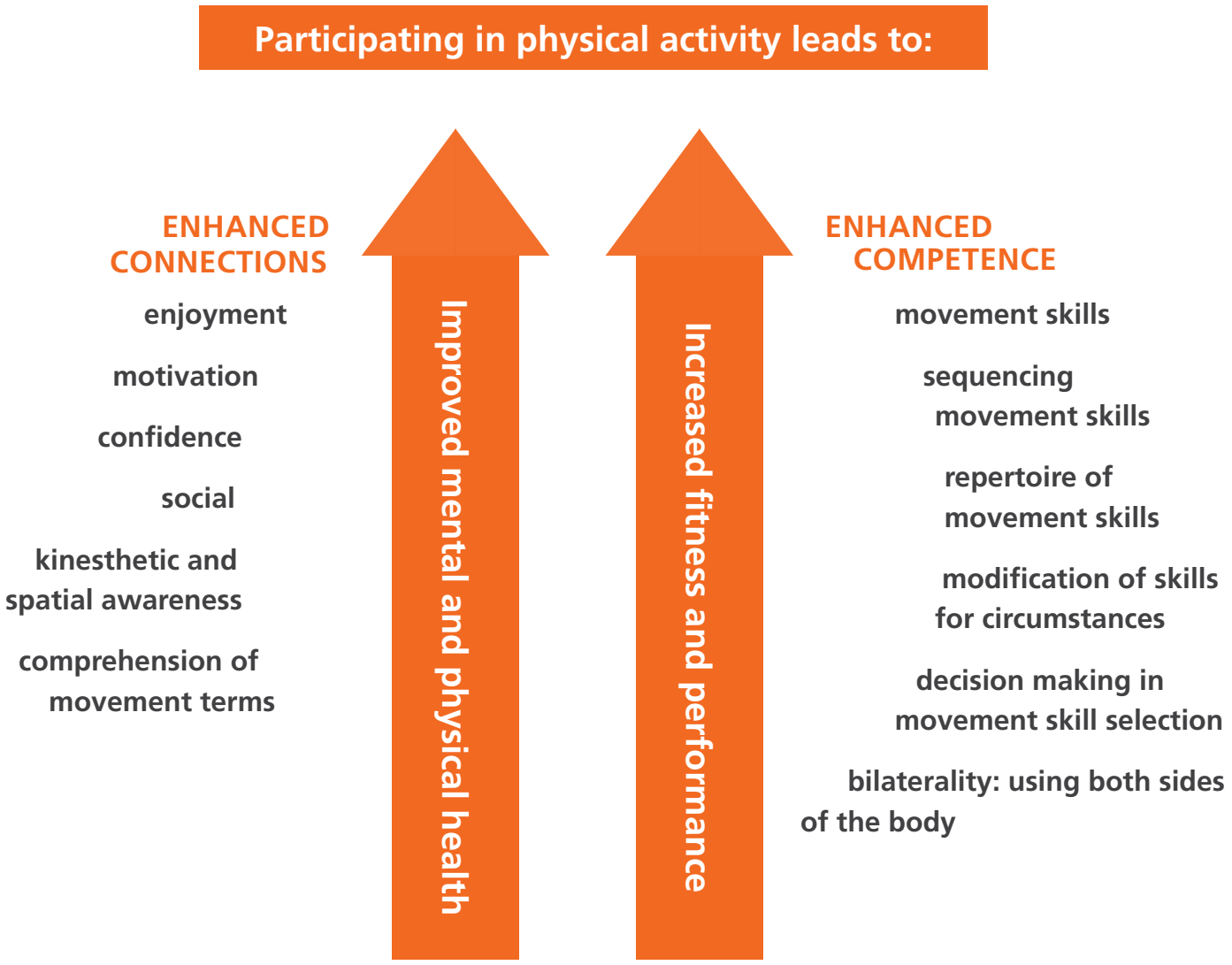


Figure 9: *Core Components and Considerations of Program Design*

SECTION 2

Developing Physical Literacy for Life

Providing a quality physical literacy experience should be the key focus for everyone. That includes parents/caregivers, teachers, coaches, recreation leaders, administrators and policy makers in public health, recreation, sport, education and the arts, as well as urban planners. Various individuals, groups and sectors of society are involved in these experiences at different times, and it is important that they work together for the benefit of children and adults who wish to be and/or remain physically active.

Physical literacy is an interconnected set of affective, physical, cognitive and behavioural abilities that can be developed and must be maintained over time (see Figure 10). By depicting the development of physical literacy as a spiral, we can visualize how development occurs.

This diagram shows an individual's path of development progressing from access to an enriched, stimulating movement environment (#1) and extensive participation and development of movement repertoire and proficiency, to increased self-efficacy and motivation (disposition to try new activities) and through to increased participation in activity, health and improved quality of life.

Presenting the pathway in this way also suggests how the relationships between the steps can be explored. For example, how improved proficiency in a repertoire of movements (#4) leads to improved adaptability to new movements (#5), or how increased success in new activities (#8) can lead to improved retention (#9) and increased overall participation and physical activity (#10).

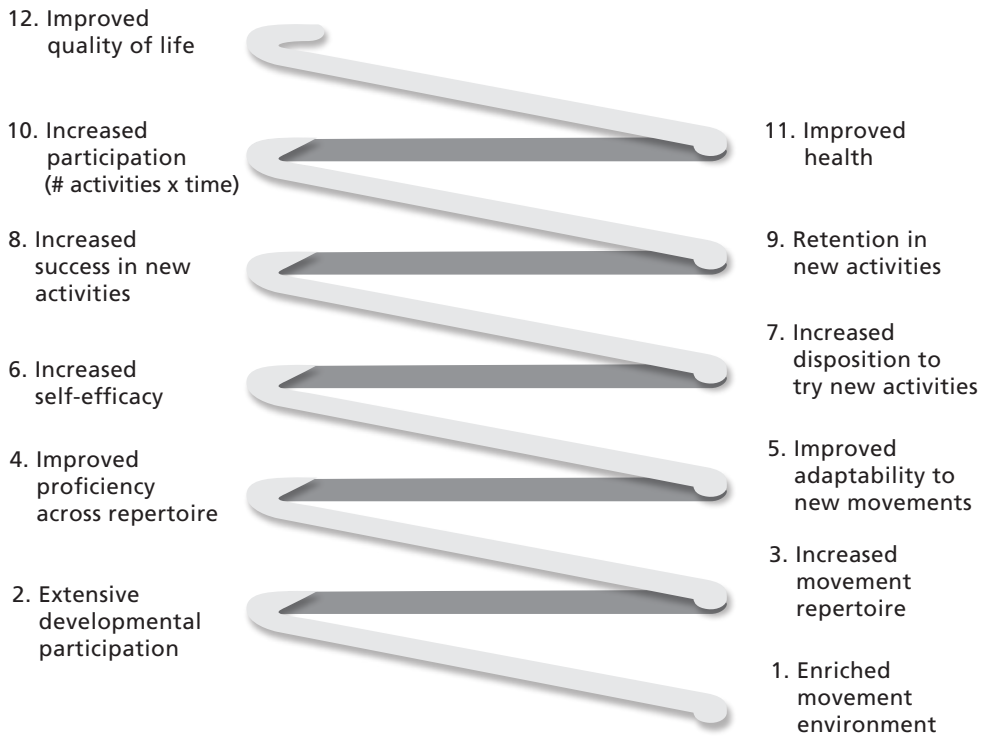


Figure 10: *The Spiral of Physical Literacy Development (Jurbala, 2015)*

The goal is to create a positive spiral of engagement where physical literacy leads to health through engagement in physical activity. Being healthy subsequently allows individuals to continue their physical literacy journey throughout life, further contributing to their participation and well-being. Physical literacy is believed to impact health in other ways as well, such as through injury reduction. Someone with a higher degree of physical literacy will have an easier time navigating potential hazards in their environment, thereby reducing the risk of physical injury. Through its affective, physical, cognitive and behavioural domains/elements, physical literacy also helps to build resiliency by promoting a positive self-concept (e.g., self-esteem) and reducing social isolation and inhibition. Collective play and participation builds strong psychological and social foundations.

Mental Health Benefits

Depression and anxiety are among the most common of mental health conditions in the population, affecting one in every five Canadians. Exercise and physical activity are now recommended as first line therapies in the treatment of mild to moderate depression (Ravindran et al., 2016). There is growing evidence to support the fact that physical activity may also play an important role in the prevention of mental health conditions like depression and anxiety (Mutrie & Faulkner, 2003). Given the large and growing number of mental health conditions in the population, physical activity offers a cost effective and effective alternative to managing mental health in Canada. Physical literacy is essential as a gateway to physical activity, and therefore a gateway to improving mental health.

Physical activity is not just important for preventing and treating mental health conditions. It is also associated with positive mental well-being. Research shows that individuals who are active report more positive perceptions of self (higher self-esteem and self-worth), are more resilient and have higher quality of life than inactive individuals (Fortnum et al., 2018).

Finally, mental health conditions are commonly co-occurring across the major chronic diseases that lead to mortality, disability and reduced quality of life in Canada. For example, depression often accompanies cancer, heart disease and chronic inflammatory conditions like arthritis. Addressing mental health is essential for improving quality of life for everyone (Ratnasingham et al., 2013).

The social benefits of regular physical activity also positively impact mental health. No single type of physical activity has been shown to be better for improving social and mental health, although group activities have significant potential.

Finally, physical activity and physical literacy can have an effect on the efficiency and function of our cognitive capacities: our brain health. The connections between brain cells help to develop and maintain thinking ability. Physical activity stimulates the production of new brain cells, but it does not automatically increase the number of connections—brain activities create those connections. Therefore, brain health, particularly in the senior years, can be promoted through the combination of physical activity and learning, and these are supported by the continued development and maintenance of physical literacy.

Stages in the Development of Physical Literacy

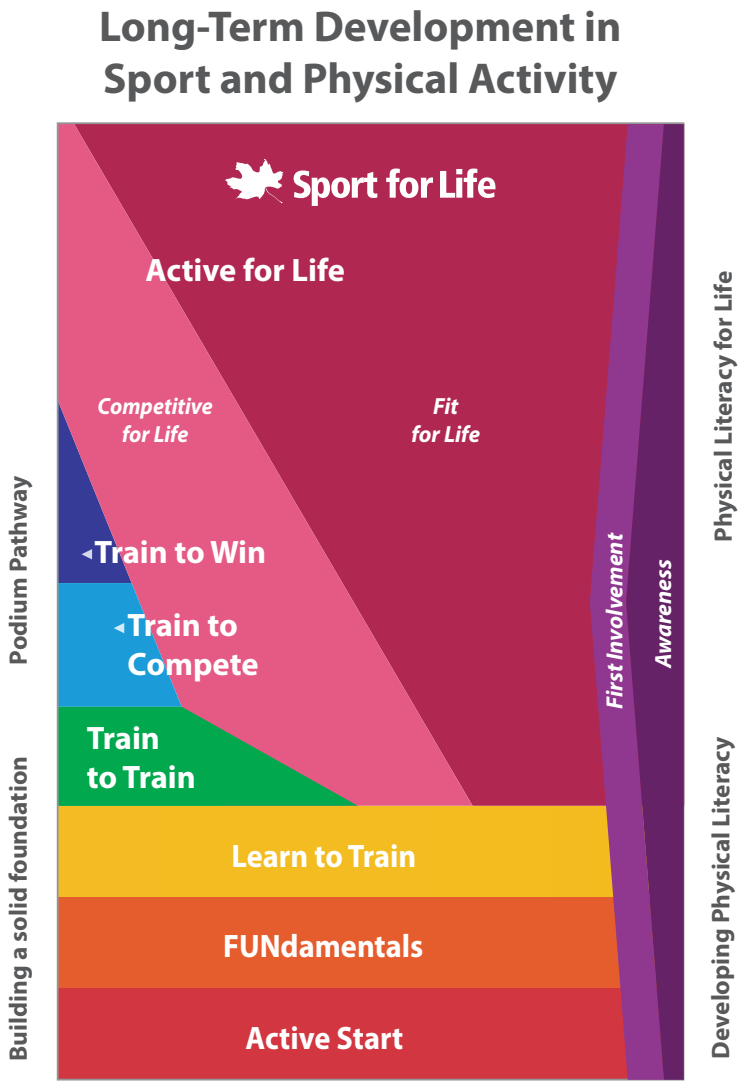
Each individual is on their own unique physical literacy journey, and these journeys are rarely linear. The journey will differ based on exposure and access to various environments and activities. Whether an infant is first learning to stand, or an older adult is attempting to skate for the first time, the key is development of physical literacy through quality experiences.

The characteristics of a quality physical literacy experience vary according to the competencies, contexts and needs of participants. Therefore, physical literacy programming should generally provide:

- opportunities to move in both unstructured and structured environments,
- opportunities for all participants to lead, explore and innovate,
- developmentally-appropriate equipment,
- exposure to fun and challenging activities that produce both successes and failures,
- opportunities to choose between a variety of activities and environments, and
- high rates of participation.

Physical literacy is a lifelong proposition. 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 healthily and actively at all stages of life, and grant the opportunity to age in good health.

At different stages of life, different venues and approaches may be appropriate in developing physical literacy for different populations and individuals. The aim should be to deliver developmentally-appropriate activities to optimize physical literacy for every individual at every stage, from birth to death. However, certain stages of development provide more opportunity than others for developing physical literacy.



The Long-Term Development framework is a multi-stage pathway that guides an individual's sport and physical activity experience from infancy to adulthood. The stages in the Long-Term Development framework are the basis of developmentally appropriate programs that increase participation and optimize performance. The first three stages emphasize the development of physical literacy. After building a strong foundation in physical literacy, the framework demonstrates potential progression towards sport excellence, and ends with individuals being active for life. The basic Sport for Life Long-Term Development in Sport and Physical Activity framework has seven stages. In addition, there are two pre-stages (First Involvement and Awareness), and the Active for Life stage is sub-divided into two phases (Competitive for Life and Fit for Life).

Figure 11: *Sport for Life Framework*

When viewed in relation to the Long-Term Development in Sport and Physical Activity framework (Figure 11), the most important stages for developing physical literacy are the three early stages—Active Start, FUNdamentals, and Learn to Train—and the final stage, Active for Life.

Between the three early stages and Active for Life, those individuals who choose to pursue high performance pathways in their chosen sport or activity are enhancing their physical literacy. However, they represent a small fraction of our society, and their needs are addressed by specialized instruction and training within their respective domains. In practical terms related to national health, we are most concerned with developing physical literacy for the general population.

Physical Literacy in Early Childhood

Long-Term Development Stage: Active Start

The period between birth and six years of age is a critical time in child development, and includes the early development of physical literacy. Under the Long-Term Development framework, this period corresponds to the Active Start stage. Active Start can be broken down into three sub-stages: infants (birth to 18 months), toddlers (18 months to three years of age), and preschoolers (three to five/six years of age).

During the first phase of Active Start, infants are developing basic human movements such as sitting, standing, balancing and walking. In the latter phases of this stage, toddlers and preschoolers begin to develop more sophisticated movement patterns such as running, jumping and throwing. Throughout this stage, they are steadily developing their nervous system and brain function. Simple physical activities and games can greatly help in all of these developmental processes.

Developing the Brain: Executive Function

Executive function is the higher order of operations that helps us organize information and regulate our behaviour. For example, how children work with the information in their brains, focus their attention, filter out distractions, and quickly switch from one task to another. Doing these things well is a critical prerequisite for success in physical activity, as well as for success in school and later life. The main development period for executive function is between 18 months and six years of age, and is developed in stable environments with the support of attentive caregivers.

A combination of facilitated and unstructured play is recommended for developing executive function. Active games—both facilitated play and unstructured free play (activities led and chosen by the child)—are excellent ways for children to develop executive function and, ultimately, self-control and behaviour regulation.

Structured Play

Is organized and led by an adult. They decide when and where the child will play, and what equipment or toys they will play with. The child follows the adult's lead. If more than one child is playing, the adult mediates any disputes. The child makes few, if any, decisions and may come to rely on others telling them what to do. This is not recommended for developing executive function.

Unstructured Play

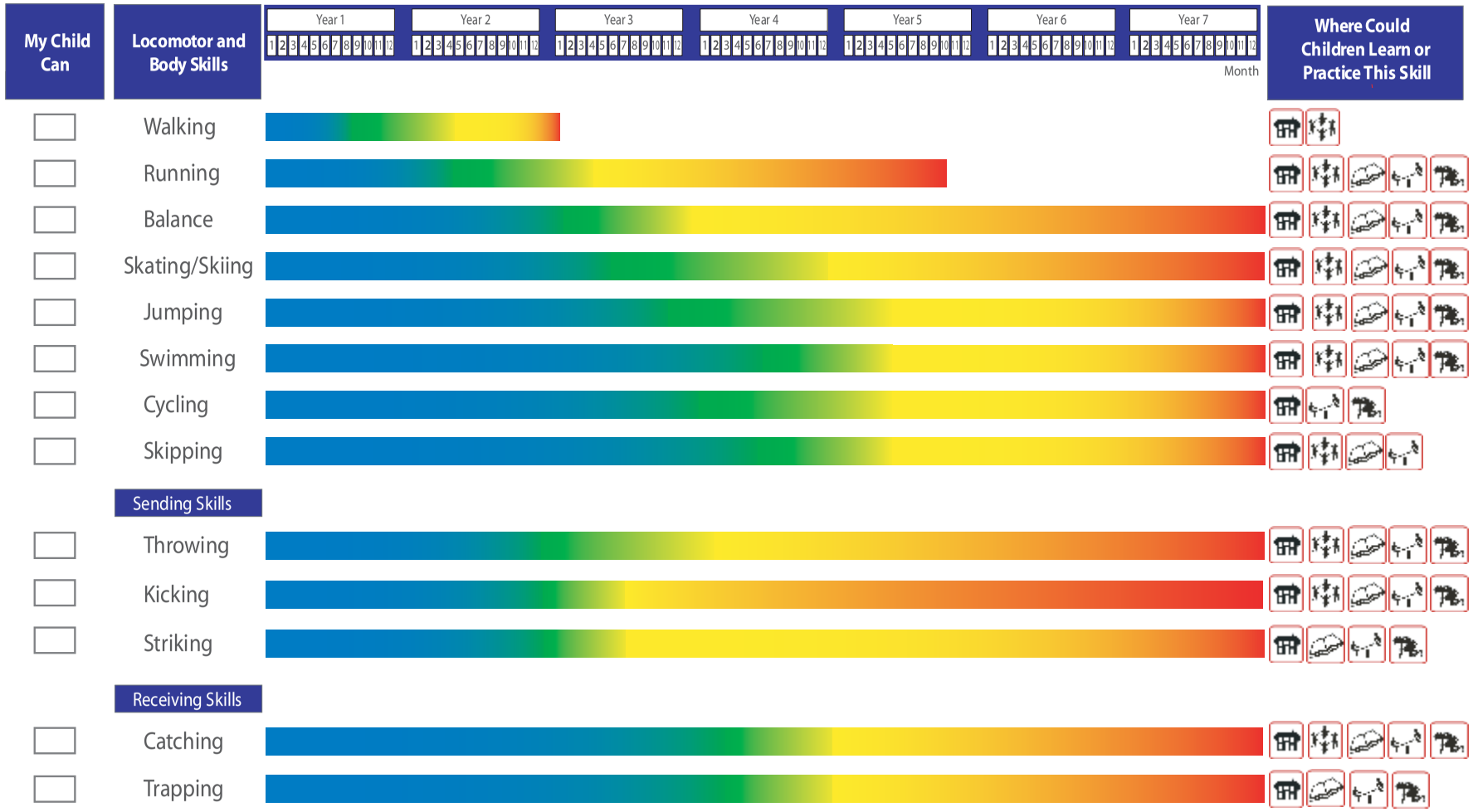
Is led by the child. They decide when and where they will play, and what equipment or toys they will play with. The role of the adult leader is to ensure the safety of the child and provide a stimulating environment. If more than one child is playing, the adult only mediates disputes when it is clear the children involved cannot resolve it themselves. The child makes most of the decisions. This is recommended for developing executive function.

Movement and the Brain

Young children cannot be taught to walk before their brain and muscles are developed, and their nervous systems are strong enough to control their muscles. This is true for most basic human movements. For this reason, a child's development should not be rushed. Instead, focus on keeping the child safe and providing a stimulating environment in which the child can play.

During the early years, from birth to six years of age, a child needs to develop:

- basic human movements (e.g., sitting, standing, balancing, walking),
- a positive attitude towards being physically active, and
- initial self-control and regulation.



* Time -lines based on Bressan E.S., and Rathbone, I. (2007). Fundamental Motor Skill Development. A paper prepared for Long-Term Athlete Development - Canadian Sport Centres - PacificSport.

Note 1: There is tremendous variability in the normal time of onset of skills among children, and this chart should be considered ONLY as a rough guide to the sequence of development that might be expected.

If you have concerns about the development of your child see your pediatrician.

All children should be exposed to a wide range of fundamental movement skills in a wide range of settings including on-land, on ice/snow, in water, and in the air. Since agility, balance and coordination are critical, children should be given the opportunity to learn running, jumping and throwing; gymnastics; swimming; and ice/snow activities. Communities should consider establishing single programs that expose children to the whole range of skills.

Figure 12: *Fundamental Movement Skills (Higgs et al., 2007)*

PLAY HELPS WORKING MEMORY

Games are excellent for developing working memory. For example, children playing Hide and Seek have to remember where they have searched and where they have not looked. Also, games where each child in a group adds an action to a sequence of movements are good for developing working memory; for these types of games, children need to recall and repeat the whole sequence from the beginning as each action is added.

PLAY HELPS COGNITIVE (MENTAL) FLEXIBILITY

A game that has a child paying attention to two different things helps to develop mental flexibility (also called cognitive flexibility). An example would be a game of Follow the Leader, where there is a rapid change in who is leading. A game where a player has to follow a ball and keep track of his or her opponents also works well.

PLAY HELPS SELF-REGULATION (SELF-CONTROL)

The best games to develop self-regulation are those where there is a penalty for making a move too soon. For example, in a game called Can You, the leader calls out "can you," and does an action, and then the children try to do the action. This requires children to listen carefully, concentrate, and control their mental arousal state.

CHANGING NEEDS, EVOLVING ABILITIES

As children grow and develop through the Active Start stage, their physical abilities and their cognitive capacities evolve. This means that games and activities for developing executive function and physical literacy also need to evolve.

Between approximately 18 months and three years of age, children experience rapid language development in terms of vocabulary and fluency. This increase in mastery of language has implications for executive function and self-regulation, as children are able to verbally identify their thoughts and actions, think about them, and make plans. Language also allows for the comprehension of more complex and specific instructions.

This is a great time to introduce think aloud activities where children are encouraged to talk about how they are going to approach the performance of a task, or how they think they will try to solve a challenge.

Working memory can be developed through simple imitation games such as Follow the Leader. Switching from following to leading and back again also develops cognitive flexibility.

Self-regulation games and activities such as Freeze or Simon Says are excellent, and any other games that require children to stop and start, speed up or slow down, and change direction.

This is also a good stage to have children play sorting and matching games (e.g., running to find someone else with the same colour shirt) which help to build executive control and cognitive flexibility.

Simple reflection skills can be developed at this age, and it is good practice to ask children about what they have just done. For example, "What did you try to hit when you threw the ball?" To answer, the child must engage with and hold ideas in working memory, while developing language-based answers. This process encourages and strengthens cognitive flexibility.

This age is a time to develop imaginative play, where the key objective is to have the child develop and maintain a simple thematic plot to their play. For example, pretending to buy food at the store and taking it home to put on the table, or cooking in the kitchen. The main idea is that children are encouraged to the different elements in their play into something bigger.

From approximately three years of age to six years of age, executive function increases rapidly in most children. During this time, adults should facilitate play opportunities by setting up material or activities and then allowing the children to engage in play with only moderate adult intervention. The goal is to have children work through difficulties with encouragement and guidance without adults assuming the responsibility for success.

The final two years of the Active Start stage are often the age of a child's first experience of organized sport and physical activity participation, such as gymnastics, swimming, a running/skating team sport, and if possible, an activity with music.

In these early sport and physical activity contexts, the objective is to help children to learn to be mindful of what they are doing. This means being able to say what they are trying to do, reflect in simple terms on what they are trying to achieve, and think about how to do things better.

At this age, mindful practice and engagement in fun and stimulating activities will increase skill performance and build executive functioning that will pay major dividends as the child advances in sport and physical activity. Avoid drills that are mindless and repetitive as they are boring for the child.

NEED TO KNOW

At this stage of development, the key outcomes are:

- development of basic human movements, such as sitting, balancing, crawling, standing and walking;
- active, daily routines that encourage no more than 60 minutes of sedentary behaviour at a time, except when sleeping;
- some organized physical activity;
- exploration of risk and limits in safe environments;
- participation in an active movement environment combined with well-structured gymnastics and swimming programs, and activities on ice and snow; and
- daily physical activity with an emphasis on fun.

WHAT?

Children need to develop many basic human movements during this early stage in the development of physical literacy.

Basic Human Movements

Basic movement skills to develop during this stage include:

- sitting, crawling, standing, walking;
- reaching and grasping objects;
- striking, sending, basic throwing, simple kicking;
- running, jumping, hopping;
- twisting, turning, rolling; and
- basic catching with a large ball.

Executive Function

Physical activity at this stage benefits the brain by improving the following:

- working memory,
- cognitive flexibility, and
- self-regulation.

Habits of Regular Physical Activity

Set aside special times during the day for children to be physically active both with and without parents/caregivers, and make this a fun time that they look forward to being active.

Object Tracking Skills

Following moving objects with the eyes is an important skill to develop. It is also important that children learn to track objects that pass behind another object and then reappear, to learn to anticipate the objects' movement paths.

WHERE?

It is important that children at this age take part in indoor and outdoor activities. It is valuable for children to take part in activity in nature, community parks and playgrounds. Walking and running/wheeling on uneven surfaces helps them develop better coordination and balance. It is also important that children get to experience being in water, so playing in "splash" pools or swimming pools (under supervision) will go a long way in helping children learn to swim later. For children who live in countries that have snow and ice for part of the year, it is important that they learn to playn safely in snow and on ice as a part of their childhood experience as it prepares them to participate in winter activities (e.g., skiing, skating, snowshoeing).

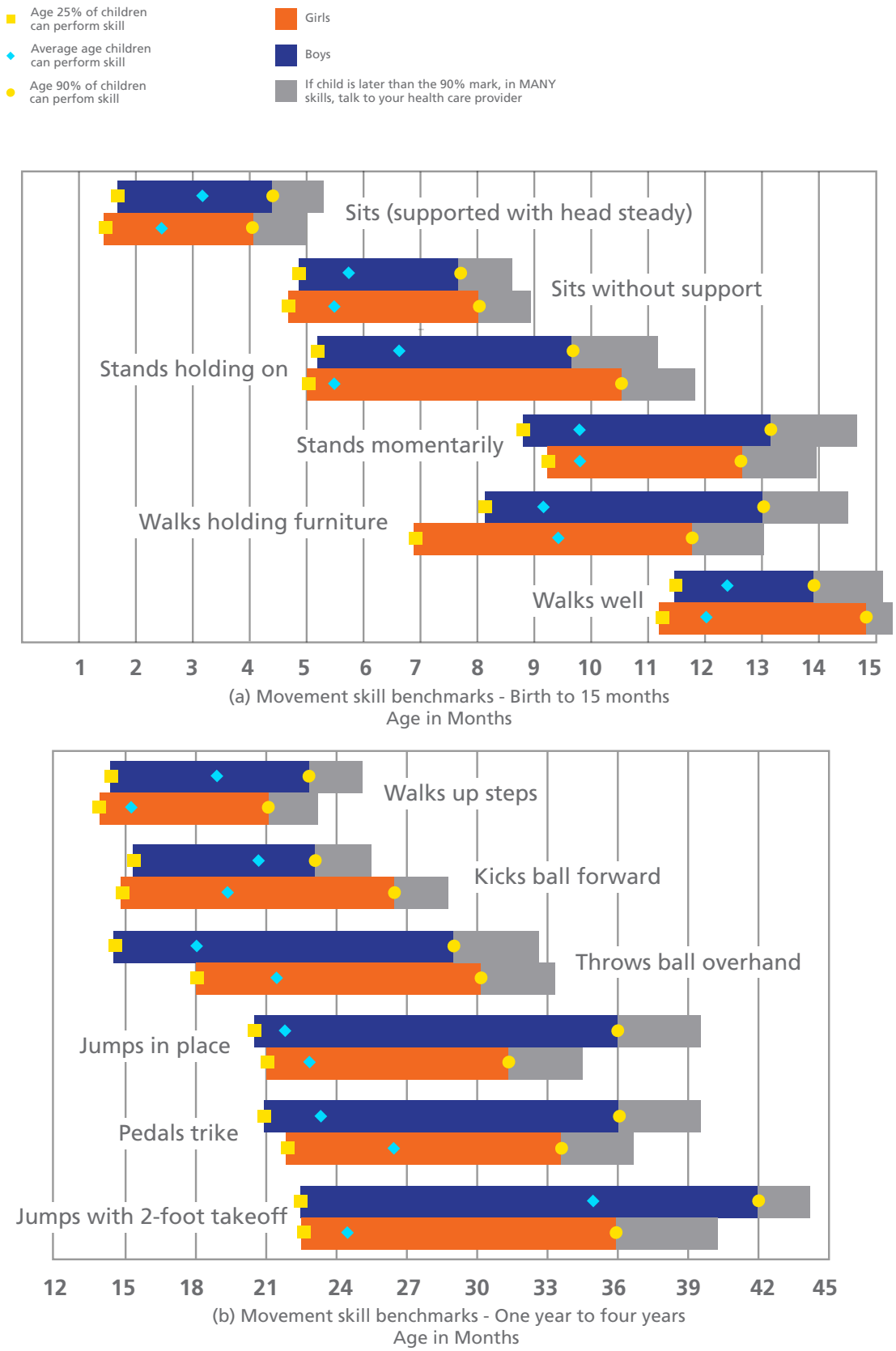


Figure 13: *Movement Skill Benchmarks*

WHO?

Parents and caregivers: Ensure children are physically active for at least 180 minutes (three hours) per day from one to four years of age.

Early years providers and teachers: Build active play intervals into each day. A child should not be still for more than 60 minutes, unless they are asleep.

Sports and recreation: Design and deliver programs that are fully inclusive, encourage the development of a wide range of skills, and allow for play in different environments.

HOW?

Create a safe environment where children can explore.

Provide a bright-coloured selection of toys–but not all at once–that can be used in different ways. Include bats and balls once the child is old enough to hold them.

Set aside time each day for active play, starting with 30 minutes of "tummy-time" for infants.

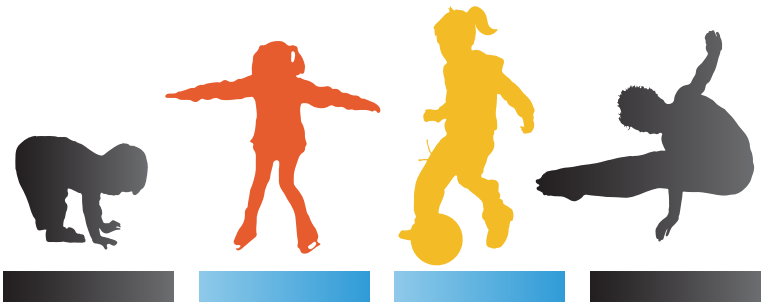
Be a role model and be active with your child. Go for walks in all weather, and encourage children to interact with nature.

Challenge children to try new things. For example, "Can you jump over that puddle?" or "Can you walk along that line?"

To build **self-regulation**, play anticipation games in which the child has to suppress his or her response until a signal is given (e.g., Simon Says, Red Light Green Light).

To build **working memory**, play games in which the child has to remember a sequence of actions (e.g., Head and Shoulders, Follow the Leader, and where the sequence of actions gets progressively longer).

To build **cognitive flexibility**, play games that require quick changes (e.g., Statues) where children have to switch between thinking about moving and thinking about being still.



Physical Literacy in Childhood

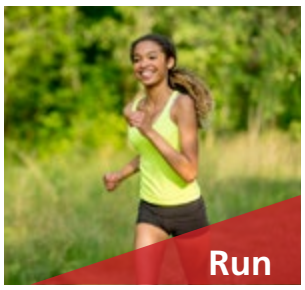
Long-Term Development Stages: FUNdamentals and the Beginning of Learn to Train

As children grow and develop through the elementary school years, the structured and unstructured games of their early childhood become more complex from both a movement and cognitive perspective. When children reach adolescence, this complexity reaches its apex as simple games may be replaced with more sophisticated sports and recreational activities. However, throughout this developmental journey, positive brain functioning and the development of self-regulation and self-control are all supported by playing with others, following instructions, mastering complex movement skills, and learning to resolve conflict and work effectively as part of a team. Under the Long-Term Development framework, the elementary school years correspond to the FUNdamentals and Learn to Train stages, or approximately six to 12 years of age.

Goals: Developing Movement Skills and Positive Feelings

During the early part of the elementary years, children need to develop:

- a wide range of fundamental movement skills in different environments (on land, in/on water, in air and on/across ice and snow), particularly skills that have strong cultural value and allow children to "fit in" with their peers, including movement to music;
- the ABCs of agility, balance, coordination and speed; and
- a positive attitude towards physical activity.



If You **Can** ▶ Catch, Jump, **Run**, Swim, Throw — You Will Take Part In ▶ Soccer, Basketball, Volleyball, Track and Field, Squash, Rugby, Tennis

If You **Can** ▶ Catch, Jump, **Throw**, Swim, Run — You Will Take Part In ▶ Soccer, Softball, Bowling, Baseball, Goalball, Football, Rugby

If You **Can** ▶ Throw, Jump, **Swim**, Catch, Run — You Will Take Part In ▶ Swimming, Diving, Water Polo, Scuba, Kayaking, Sailing, Surfing

Figure 14: *If You Can, You Will…*

Both structured and unstructured play remain important in meeting developmental milestones, but structured opportunities become increasingly important towards the end of childhood. If children have the opportunity to participate in well-structured programs with good instruction, their skills will advance more quickly.

During the latter part of the elementary years, children also need to capitalize on their body's rapidly increasing capacity to learn and refine physical skills. Many children enter formal sports and physical activities at this time, and they may begin to engage in organized learning and playing. For many children, there are benefits to participating in organized sport. However, it is equally important that they are encouraged to take part in unstructured play. This includes informal versions of any sports they are learning as well as a range of other non-sport activities in indoor and outdoor environments.

Children at this stage need to:

- learn fundamental skills in a variety of sports and physical activities,
- develop strength through exercises that use their own body weight and develop endurance through fun games and movement,
- continue to develop flexibility through a variety of activities, and
- have multisport opportunities and experiences.

Brain Development and Movement

Brain development continues throughout the elementary years, and movement continues to be an important factor. For example, an evolving aspect of executive function in the early elementary years is the ability to plan and reflect. Physical challenges that require children to plan ahead and hold those plans in memory are helpful for developing this attribute. A sample activity might involve providing children with a limited set of equipment (e.g., a bench and mats), and then challenging each child or small group to use only that equipment to cross a "river" drawn on the ground without getting "wet".

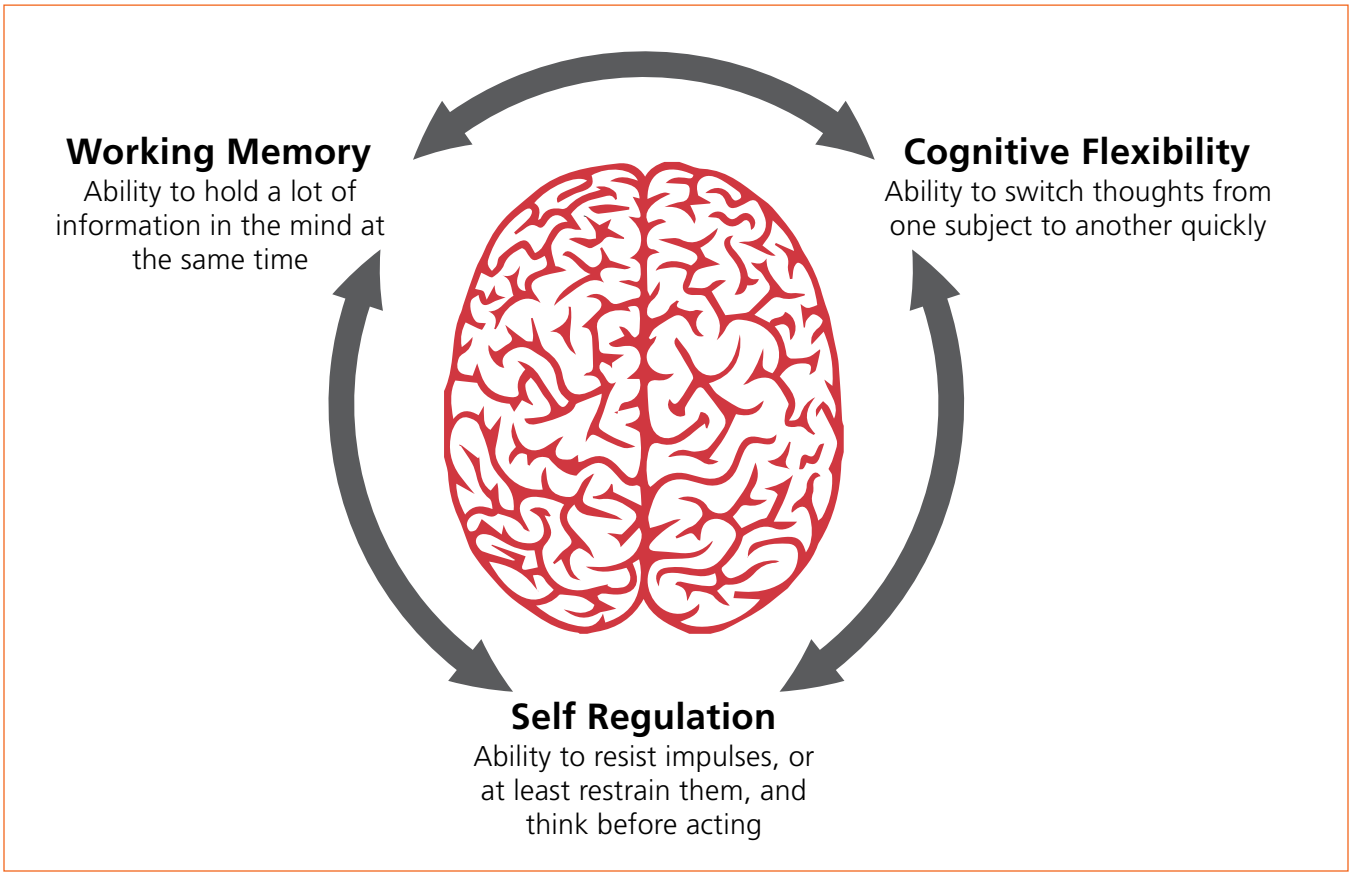


Figure 15: *Executive Function*

Working memory can be developed through active games that require children to keep a rule or rules in mind while simultaneously performing a task. An example might be a target game (e.g., hitting a target with a ball) using a mix of small and large balls, where the small balls must be thrown and the large balls kicked. Any games in which the players have to match items are also useful (e.g., find someone with the same colour shorts as you).

Self-regulation can be developed in games that require quick reactions while penalizing inattention to instructions, such as the game What Time Is It Mr. Wolf. Self-regulation can also be developed in games that use magic words, such as Simon Says, in which actions are allowed after a keyword. This helps children to develop the ability to inhibit action until a key condition is met.

Cognitive flexibility can be developed using games in which the players must rapidly change the focus of their attention from the external environment to body position (internal) focus. An example is the game Statues where the child has to run and watch for a signal, and then on that signal freeze in place and become a statue. Any ball striking games where the child has to focus externally on the ball and then internally on their hitting action are also effective.

NEED TO KNOW

At this stage of development, the key outcomes are:

- development of fundamental movement skills;
- an accumulation of at least 60 minutes per day of moderate to vigorous physical activity involving a variety of aerobic activities. Vigorous physical activities, and muscle and bone strengthening activities should each be incorporated at least three days per week;
- a mixture of structured and unstructured play, with some instruction;
- development of skills in different environment (land, water, ice/snow and in the air); and
- learned skills and use of them in small-sided games.

WHAT?

There are a huge range of fundamental movement skills, but they can usually be grouped into:

Body control skills: Learning to control the position of arms and legs, control of posture, and control of body orientation (e.g., balance, coordination).

Locomotor skills: Learning all the ways of moving on land, on snow and ice, and in water (e.g., run, walk, wheel, swim, slide, skate).

Object manipulation skills: Learning different ways to send and receive an object using hands, feet or with an implement such as a bat, hockey stick or racquet (e.g., throwing, catching, kicking, passing, volleying).

This is also a good time to develop flexibility and the ABCs of agility, balance, coordination and speed.

Agility: Learning to stop, start and change direction quickly.

Balance: Being able to balance on different body parts when stationary, and balance on both stable and unstable platforms (e.g., canoe, balance board, bosu ball, foam blocks).

Coordination: Being in control of all body parts, regardless of body orientation, and learning to use all available body parts in a smooth sequence (e.g., when throwing, using the hips, trunk, shoulder, elbow, wrist and hands in a smooth sequence).

Speed: Learning to move hands and arms, and legs and feet at high speed, and using all available body strength to get the whole body moving.

Building good habits: Continue building habits of daily physical activity and strengthening executive function.

Making time for physical activity: Reducing screen time during this stage of development provides more time for physical activity, and is to be encouraged.

WHERE?

By the FUNdamentals stage, children are spending more time outside of the home attending school. As a result, quality physical education is critical.

In **schools**, trained educators have the ability to identify children whose physical skills fall below those of their peers. Interventions to help these children catch up to the skill level of their peers can improve their self-esteem and participation in physical activity later in life.

Community programs are also a key contributor to developing physical literacy, and should be designed to expose children to a wide range of games and activities that develop fundamental movement skills.

After-school programs should include a play session with a focus on moderate and vigorous physical activity.

WHO?

Parents and caregivers: Set time aside for regular, daily physical activity, and provide time and encouragement to children who are having difficulty in mastering skills.

Teachers: Have trained physical education specialists teach physical activity and health curriculum in every school and to every student, as is the case in Manitoba, Quebec and Newfoundland. Provide teachers with tools (e.g., PLAY Tools, Passport for Life, Canadian Assessment of Physical Literacy) to help them assess children's fundamental movement skills and chart progress.

Recreation leaders: Focus on multisport programs rather than specializing in one activity or sport, and design activities to maximize the use of skills in small-sided games and activities.

Coaches: Avoid early over-specialization. Use warm-ups and cool down periods to develop a wide range of fundamental movement skills.

Figure 16: *Missing a Fundamental Movement Skill*

HOW?

FUNDAMENTAL MOVEMENT SKILLS

Quality physical education is the single best way to ensure that every child in Canada gets to develop fundamental movement skills.

Parents, caregivers, coaches, teachers and recreation leaders support and provide opportunities to develop physical literacy (e.g., throwing during soccer practice, rolling on the ground during hockey practice) that will help children in their current sport as well as in any sport they take up in the future.

Create a safe environment in which the child can explore different ways of moving and playing with different bats, balls and other implements, without fear of being criticized.

Expose children to learn to swim programs if available.

Have children play outside on safe ice and in the snow, and experiment with skis and ice-skates.

Avoid early over-specialization in sports, except for select sports like gymnastics or figure skating.

Provide opportunities for supervised and unsupervised play, as children at this stage of development benefit from both.

Keep the playing area small, have only a few players on each team so that everyone gets to be involved, and use equipment that is age-appropriate in size as often as possible.

Make sure that each child is wearing a properly fitted helmet, and any additional safety equipment recommended for the activity (e.g., skating, skiing, skateboarding or riding a bike).

Developing Physical Literacy in Adolescence

Long-Term Development Stage: Learn to Train

This is often the stage of development when children begin taking part in formal sport and physical activities, and engage in more organized learning, training and competition. The benefits of engaging in organized sport and physical activity are important; however, it is equally important that children are encouraged to take part in unstructured play. This includes informal versions of the sports they are learning as well as a variety of other non-sport activities, in a range of indoor and outdoor environments.

The importance of informal, unstructured play in natural environments cannot be overstressed.

During this stage, each child needs to:

- learn fundamental sport skills in variety of sports and physical activities, including movement to music;
- develop strength through exercises that use their own body weight and medicine balls, and develop endurance through games and fun activities;
- start to take part in hopping and bouncing exercises or routines, or cycling or wheeling up gradients, to aid in strength development;
- continue to develop flexibility through exercises; and
- further develop speed by focusing on agility, quickness and rapid change of direction during sport warm-ups and simple games such as Tag.

What Is Happening to the Child?

The brain has almost reached its adult size and, with sufficient practice, is capable of controlling the body with great precision. Three related processes are going on in the brain at this stage that together provide the foundation for the enjoyment of sporting activities.

1. **Automation:** When a skill is first learned, the child has to think hard about what they are doing, and make a conscious effort to move their limbs in the right way. This takes up a lot of the brain's resources and effort. However, as the skill becomes ingrained in the child's brain, fewer and fewer brain cells (and brain connections) are required to correctly perform the skill until it becomes automated. At this level of performance, the child can use the skill in a play situation, without thinking.
2. **Integration:** When a child is performing a skill, their brain has to take in a lot of information from different sources, including information from both inside and outside of their body.
    - **Inside information:** Comes from the muscles and joints to let the brain know the position of different body parts, and from the eyes and inner ear to tell the brain the body's orientation (whether they are upright or in the air) and whether the body is balanced.
    - **Outside information:** Information about what is going on outside the body comes mostly through the eyes and ears, although some information comes from nerve endings in the skin (e.g., temperature, wind conditions).
3. **Decision making:** During informal play or in a sport situation, decision making is the ability to decide to use the right skill, at the right time, in the right situatio.To make good decisions, the child must know and have an understanding of an activity's rules and characteristics. For this reason, physical literacy has a knowledge component that becomes increasingly important at this stage of development. Gradually, a child will learn and be able to make good, semi-automatic decisions.

NEED TO KNOW

At this stage of development, the key outcomes are:

- development of fundamental sport skills in a variety of activites played in different environments;
- development of strength, endurance and flexibility through games and fun activities;
- development of speed, agility and balance through warm-up and cool-down activities;
- enjoyment of activities; and
- a balance of practice (70% of the time) and competition (30% of the time) when participating in quality sport.

WHAT?

These are the "skill hungry" years when the ability to learn skills is at its best.

During this stage, the fundamental movement skills are extended and refined into fundamental sport skills that are sufficient to allow the young person to enjoyably take part in sport.

Competence in sport skills bolsters confidence to take part in informal and organized activities—and this drives performance improvement.

The keys for physical literacy development are:

- fun and enjoyable physical activity with friends;
- development of fundamental sport skills in a broad range of sport activities in the gym or on the field, in water, on ice and snow, and in the air;
- narrowed focus and concentration on three or four sport that the child enjoys the most, having tried out and learned basic skills in a variety of sports and physical activities;
- improvements in the fundamental movement skill ABCs (agility, balance, coordination, speed) in different environments;
- improved ability to see what is going on around the participant, and improved ability to focus on the important actions around them; and
- significantly improved decision making of skill selection and execution based on the game/activity situation. This is the ability to read the game or activity, anticipate what is going to happen, and respond appropriately.

Example: Passing a ball to a teammate

Decision making: Decide where to plant left foot when to bring right foot back, how far to bring it back, how much force to use to swing it forward to get the force needed.

Knowledge and understanding: Plan the kick based on knowledge of the game's rules, and understanding of tactics and strategy.

Balance: Get information from muscles, joints and inner ear to maintain balance while moving.

Coordination: Move the knee and foot so that the right part of the foot strikes the right part of the ball to get the direction and flight of the ball that is needed.

Agility/speed: Coordinate arms and legs to run efficiently at the right speed to kick the ball, coordinate the plant of the left foot with the backswing of the right leg, and plant left foot accurately beside the ball.

Confidence: Make the pass confidently when under pressure.

Read, anticipate, react: Watch teammate, judge distance away, running speed and direction, and predict where player will be when the pass arrives.

Keep tracking teammate

Pass arrives at the right place, at the right time, with the right pace!

Figure 17: *Physical Literacy at Learn to Train; Passing Ball to Teammate: an Example from Soccer*

WHERE?

Participants are frequently engaged in physical activity and sport in a variety of contexts (e.g., school physical and health education, intramural activities, school sport festivals, or on the playground).

Some may also take part in organized sport activities within the community, and start to compete at the local and regional level.

For most participants, it is important not to specialize in just one sport or activity at this stage, and year-round participation in one sport or activity is not recommended. There will be time for specialization later.

WHO?

Teachers: Provide quality physical and health education, opportunities for intramural games and competitions, and opportunities for friendly competitions (extracurricular activities) between local schools.

Coaches and recreation leaders: Provide seasonal opportunities and "Try It Out" days to expose youth to different sports or activities. Offering multisport programming works well at this stage. In this, participants sign up for groups of sports to learn fundamental sport skills.

Parents and caregivers: Encourage participation, coordinate transportation to sports and activities, and support unstructured play/practice at home (e.g., kids playing street hockey or capture the flag in their neighbourhood).

HOW?

This is the best stage for skill development and is also a time when strength, endurance and flexibility can be developed. It is important that activities are built around fun and challenging experiences.

Create a safe environment where participants have a safe and effective entry point to try activities without the fear of being judged or getting injured.

For boys, developing flexibility through systematic exercises before they start their adolescent growth spurt is important, and to maintain flexibility throughout. For girls, developing upper-body strength at this stage is important.

Strength can be developed through activities in which participants support and move their own body weight.

Learning proper sport-skill techniques for safety and success is important. Incorporating those correct techniques into small games develops smooth and efficient movements and helps participants coordinate their skills with the movements of teammates and opponents.

By automating skill performance through small game activities, participants can focus on the outcomes of the skill rather than on the mechanics of performing it. This frees up the brain to think about tactics and strategies. It also allows them to track the movements of those around them and act accordingly.

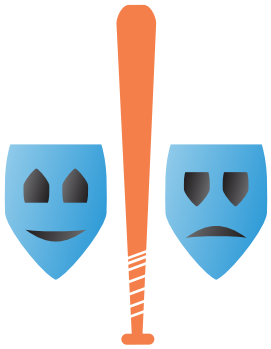
Physical literacy development also requires participants to understand the rules of their sports, understand safety issues, and adhere to the sport's code of conduct.

Table 2: *Evolution of Basic Human Movements through Fundamental Movement Skills to Foundational Sport Skills*

Stage of Long-Term Development in Sport and Physical Activity		
Active Start	**FUNdamentals**	**Learn to Train**
Participants learn:		
Basic Human Movements	**Fundamental Movement Skills**	**Foundational Sport Skills**
Skills developed during the stage (examples only):		
Body Control (Non-locomotor) Skills	**Agility, balance, body orientation, coordination**	Gliding Court movement In the hack Drawing the bow Defense stance
	Rhythm, poise, expression	Cadence Simple rhythmic gymnastics routine Back dive Full swing Overhead serve
Body Movement (Locomotor) Skills	**Walk, run, wheel, hop, skip, jump**	Long jump Running a pass route Base running Volleyball spike
	Slide, skate, ski, swim	Basic ollie Riding the wake Sculling Slide of skis Backwards skating Front crawl
Object Manipulation Skills	**Catch, trap, receive**	Goal keeping Overhead pass Receive a punt Passing Ring handling
	Throw, strike, push, kick	Martial arts throw Pitching Layup Delivering a bowl Putting
Instructional Strategy		
Movement exploration and opportunity to play with different objects (e.g., balls, bats, tricycles, etc.)	Movement exploration, basic instruction and opportunities for active play	Instruction and opportunity to practice

UNDERSTANDING THE EVOLUTION OF SKILLS

As children and youth develop and grow, their skills slowly evolve and improve. Basic human movements evolve into fundamental movement skills, and eventually some of the fundamental movement skills are adapted to become fundamental sport skills used within a sport or activity. But as children grow and develop physiologically, it does not necessarily mean that their skills will develop similarly. Table 2 and the information on the following pages will help to improve understanding of this process. Table 3 and Table 4 are examples, and every skill on the chart below could be expanded to the same level of detail.



Physical Literacy in Sports and the Performance Arts—Moving to Mastery

Long-Term Development Stages: Train to Train, Train to Compete, and Train to Win; Competitive for Life Phase of Active for Life

Physical literacy is a foundation of mastery in sport, performance arts such as dance, and a number of physically-demanding vocations. The development of physical literacy contributes to the effortless, fluid motion of the performer, as well as to resilience and reduced incidence of injury. In sport, development occurs in the Train to Train, Train to Compete, and Train to Win stages of Long-Term Development in Sport and Physical Activity. For Masters athletes, it occurs during the Competitive for Life phase of the Active for Life stage.

PHYSICAL LITERACY'S CONTRIBUTION TO EXCELLENCE

Athleticism: Continued, deliberate and systematic development of a wider range of movement skills, in increasingly more challenging environments, helps build the athleticism needed for success in sport and performing arts. Developing wide-ranging athleticism also keeps the door open to high performance in a different activity if or when the individual decides to switch sports.

Injury prevention: Injury is an occupational hazard for athletes. Focusing on developing physical literacy and better technique during development can help build durability and reduce the likelihood of injury.

Symmetry: Some activities use one side of the body far more than the other (e.g., tennis, golf), and can lead to muscle imbalances between the left and right side of the body. Other sports, like wheelchair racing, place more stress on the "pushing" muscles than on the "pulling" muscles of the arms, and can lead to muscle imbalances between the front and back of the arm.

Long-term performance can be improved by continuing to develop physical literacy, and engaging in training and activities that improve symmetry and prevent one-sidedness. This can lead to a reduction in muscle imbalances and associated injuries.

Training/maintaining the basics: All skills deteriorate if they are not practiced, including fundamental movement skills learned at a younger age. Working on agility, balance and speed at all levels of performance keeps these skills sharp.

Table 3: *Evolution of Skills: Example from Swimming*

	Active Start	FUNdamentals	Learn to Train
In Water	Playing regularly in water at bath time, and in regular splash-pad activities towards the end of this stage, to encourage love of water	Playing regularly, with supervision, at the pool or swimming-hole, coupled with learn to swim instruction	Learning basic techniques of four strokes
	Being carried into water by an adult; later entering water alone under supervision (e.g., walking down a ramp)	Entering water safely with feet first (jump in) and head first (dive in)	Swimming and starting to dive
	Being supported in water on front (face-down) and on back (face-up). Gradual reduction in support	Floating on front and back	Adjusting buoyancy during strokes
	Holding breath, with face and nose under water	Picking up objects from bottom of pool without holding nose. Breathing when face is clear of water	Controlling breath during entry and turns, and breathing during clean swimming
	Getting a feel for the water and how water acts	Developing feel for pushing and pulling through water	Having a better feeling of water during stroke development
On Land	Throwing with basic movement	Throwing overhand with appropriate leg, hip and trunk action	Combining joint forces of trunk, shoulder, and arms and hands in swimming arm action for freestyle and butterfly
	Kicking with basic movement (straight ahead)	Kicking, with appropriate leg, hip and trunk action	Combining joint forces of legs in swimming action, particularly for freestyle, butterfly and backstroke
	Balancing and controlling the body	Balancing in different body orientations and on different body parts	Controlling centre of gravity and centre of buoyancy more effectively, to maintain body posture during strokes
	Rolling and spinning	Rolling on ground, cartwheels, forward and backward rolls, spinning	Demonstrating better body orientation skills, especially during flip turns (with knowledge of body orientation at all times)
On Snow and Ice	Playing in snow or on ice, including rolling and falling, which builds body orientation skills	Sliding on snow or ice on skis or skates, which develops cross-body coordination (left-arm coordinated with right leg)	Coordinating cross-body movement more effectively in freestyle and backstroke
		Gliding on snow or ice on skis or skates, which develops an appreciation of alternate propulsion and recovery to create movement	Learning better timing of pull and recovery in strokes
In Air	Hopping and jumping	Springing and jumping on trampoline	Swimming and starting to dive

Early Over-Specialization: A Threat to Physical Literacy

Early over-specialization can be a threat to ongoing physical literacy development. Particularly for young participants who are still growing and developing, early over-specialization can bring the potential for both immediate and longer-term problems including chronic injury, burnout and dropout.

We know that high performance in any activity cannot be attained without specialization, and this specialization needs to be in techniques, tactics and strategies, as well as the physical preparation needed to meet the unique demands of the activity. However, uninformed coaches and instructors sometimes ban participants from taking part in other activities, in an attempt to accelerate development or out of concern about injury.

Injuries: Early over-specialization risks developing repetitive strain or overuse injuries brought on by the repeated performance of the same actions, skills or drills. Repetitive use injuries are more common in participants whose bodies are not fully developed, and those with poor technique.

Burnout: Burnout can occur when a participant becomes physically and emotionally tired after doing something for a long time. There is a feeling of weariness often accompanied by frustration, and by a reduction in sport performance and participation.

Limitation: When participants have excelled in a single activity for a long time, they develop an "elite" identity. They may then be unwilling to be seen performing other activities at a beginner level – and may protect themselves psychologically by withdrawing from participation in those activities. This may result in a lack of physical activity, or participation in only a very narrow range of activity, later in life.

The Focus of Physical Literacy in Excellence

EXPAND THE RANGE OF ACTIVITIES

High performance athletes are encouraged to engage in a variety of activities even as they pursue excellence in their specialty. Developing and maintaining capacities in an expanded range of activities can contribute to performance in the activity of specialization. This includes "cross-training" and participation in multiple environments: snow or ice, land, water and air.

ENGAGE FOR SOCIAL INCLUSION

Strong social relationships are often built during the hundreds and thousands of hours spent training and performing – but there may also be isolation from peers not involved in high performance activities.

Taking part in fun social recreational activities, expanding a child's range of movement skills, and advancing their physical literacy can help prevent burnout, widen their social circle, and ease the end of career transition from Train to Compete or Train to Win to being Active for Life.

WHO FACILITATES THESE STAGES?

Coaches, instructors and program managers working with high performance athletes, artists/performers and workers need to support physical literacy development and multi-activity participation as a duty of care. Too many elite performers retire worn down both mentally and physically, and with limited preparation for a career transition. The need for short-term performance must be balanced with the future well-being of the performer.

Table 4: *Evolution of Skills: Example from Soccer*

	Active Start	FUNdamentals	Learn to Train
In Water	Playing in water at bath time, and through regular splash-pad activities towards end of this stage, to encourage love of water	Playing regularly, with supervision, at the pool or swimming hole, coupled with learn to swim instruction	Controlling the body in all orientations
	Being carried into water by an adult and later entering water alone under supervision (e.g., walking down a ramp)	Entering the water safely with feet first (jump in) and head first (dive in)	Diving to make a save (goalie)
	Being supported in water on front (face-down) and on back (face-up). Gradual reduction in support	Floating on front and back	Demonstrating better body orientation and control when horizontal
	Holding breath, with face and nose underwater	Picking up objects from bottom of pool without holding nose. Breathing when face is clear of water	Improving breath control
	Getting a feel for the water and how water acts	Developing feel for pushing and pulling through water	Improving arm and leg coordination
On Land	Throwing with basic throwing movement	Throwing overhand, with appropriate leg, hip and trunk action	Throwing the ball in and (for goalies) throwing the ball to start an attack
	Kicking with basic (straight ahead) movement.	Kicking with appropriate leg, hip and trunk action	Kicking in all varieties for soccer
	Balancing and controlling the body	Balancing in different body orientations and on different body parts	Controlling centre of gravity more effectively and maintaining balance during kicking, turning and tackling
	Rolling and spinning	Rolling on ground, cartwheels, forward and backward rolls, spinning	Recovering from a fall when tackled
On Snow and Ice	Playing in snow or on ice, including rolling and falling – building body orientation skills	Sliding on snow or ice on skis or skates, developing cross-body coordination (left-arm coordinated with right leg)	Coordinating more effectively across the body while running and kicking
		Gliding on snow or ice on skis or skates, developing appreciation of alternate propulsion and recovery to create movement	Controlling a slide tackle more effectively.
In Air	Hopping and jumping	Twisting while hopping or jumping	Controlling the body to settle a ball, and twisting power into heading the ball

LONG-TERM DEVELOPMENT IN SPORT AND PHYSICAL ACTIVITY

To learn more about the specifics of performance development and the role of physical literacy in high performance sport, readers are referred to the Sport for Life resource *Long-Term Development in Sport and Physical Activity 3.0*, which can be found at ***sportforlife.ca/resources***.

Physical Literacy in the Adult and Older Years

Long-Term Development Stage: Active for Life (for Older Adults, Particularly the Fit for Life Phase)

One of the main reasons why developing physical literacy is so important is because of its influence on having people adopt and maintain an active and healthy way of life long-term. Through adolescence and into early, middle and older adulthood, the focus of physical literacy should be to support active living, durability, safety and maintaining quality of life. While a small percentage of individuals will pursue a high degree of proficiency to support their goals in high performance sport and the arts such as dance and circus, the vast majority of people will require regular physical activity to maintain basic health and fitness, and ensure their physical safety in different environments and vocations. Taken together, these outcomes will also support overall resiliency from injury, illness and other disruptive changes during life.

Under the Long-Term Development framework, these years correspond to the Active for Life stage. For the minority of individuals who pursue high performance in sport and the arts, the corresponding Long-Term Development stages are Train to Train, Train to Compete and Train to Win.

As people enter their older years, the focus of physical literacy should be to support durability, safety and quality of life, and to maintain independence. Canadians enjoy one of the longest life expectancies in the world; however, only 14% of adults aged between 65 and 79 years are meeting the recommended 150 minutes of moderate to vigorous physical activity per week (Government of Canada, 2018). The quality of life as we age depends largely on staying physically active, and that requires maintaining physical literacy (Grove et al., 2016).

TYPES OF ACTIVITIES

Individuals will choose to pursue regular physical activity in recreational and social settings, such as swimming, running, cycling, hiking and working in the yard, while others might choose to pursue amateur sports competition by playing in adult community leagues, such as those for soccer, softball, tennis, golf and curling. Others will be active on a daily basis as they fulfill the physical requirements of their vocation, such as nurses, firefighters, police officers and trades workers (refer to the *CSEP Canadian 24-hour Movement Guidelines*). Programs targeted at and led by older adults have been successful for older Active for Life participants, and are to be encouraged, as are such activities as "Try It Out" days and "Learn It" days.

We know that older adults value their independence and one of the best ways to stay independent is to be both physically and mentally active. In the senior years, a few simple activities are sufficient to promote essential physical literacy for health and safety:

- moderate cardiovascular exercise such as brisk walking or recreational activities that elevate the heart rate and produce a raised body temperature and sweat;
- strengthening exercises to maintain muscle mass, muscle tone and muscle function;
- stability and balance activities to reduce the risk of falls;
- flexibility activities to maintain a range of motion; and
- activities that are fun and engaging and provide an opportunity for increased social connectedness.

WHO FACILITATES THIS STAGE?

For the most part, individuals at this stage of life need to take responsibility for their own participation in regular physical activity. Many will do so with the help of electronic apps, fitness tracking devices, and online instruction and courses. However, some will seek to join programs/clubs that provide structure and leadership. It is not important where the leadership comes from: from within the group, from recreation or sport organizations, or from public health agencies. Programs and general access should be available through community sport associations/clubs, recreation centres, fitness centres and other activity-based groups. Program leaders and facility operators need to recognize that additional support may be required for participants with disabilities and/or impairments, or who face additional barriers to participation, such as geographic location or cost. Having a variety of easy-to-distinguish entry points to these activities can assist people who are less confident to get started.

HOW SHOULD ACTIVITY BE DELIVERED?

Create an environment where participants have a safe and effective entry point where they can try activities without the fear of being judged or getting injured.

Provide a variety of activities from which participants can choose what they would like to do. For new participants, provide enough instruction to let them start to play. For group activities, use icebreaker activities so participants get to know each other better.

Having a volunteer who is a regular in the group available to welcome and guide new participants when they arrive will help create an increased feeling of belonging.

In sports, ensure that the level of competition matches the desires and abilities of the participants. Some participants get bored quickly when there is not a high enough level of competition for them. Other participants thrive in less organized and less intense competitive environments. Provide opportunities for non-competitors to try out competition.

Give people the chance to try leadership roles and be peer mentors by teaching the basic skills of the activity to new participants.

QUALITY LIVING AND FUNCTIONAL HEALTH

Many older Canadians suffer declines in their functional health that limit day to day activities and reduce general well-being. Health professionals assess functional health according to eight key attributes: vision, hearing, speech, mobility, dexterity, feelings, cognition and pain. Disease, injury and the aging process itself impact each of these. In each instance, regardless of the cause or combination of causes, a decline in functional health results in some degree of moderate to severe individual disability.

After age 65, functional health begins to decline at a faster rate. As a larger proportion of Canadians are living into their 80s and 90s, this means that the average Canadian can presently expect to live approximately 10.5 years with some level of disability (Decady & Greenberg, 2014). At the same time, functional health can also decline at much younger adult ages through the complications associated with sedentary lifestyles, obesity and injury.

Declines in functional health diminish individual quality of life while generating significant costs for our healthcare system. Indirectly, they also impact economic productivity. Taking all of these impacts into account, experts agree a major goal should be to find ways to maintain and prolong the healthy years for Canadian citizens of all ages.

MAINTAINING MOTION

Through the senior years, the primary physical literacy goals should be the maintenance of range of motion, balance and mental health. These goals in turn ensure that individuals can continue to enjoy good quality of life, social connections, safety and independence throughout their advanced years.

As people reach the upper ages of Active for Life, activities may need to be modified to accommodate diminished physical capacity or impairment. However, those who are able to maintain physical literacy will improve their chances of remaining independent and enjoying life to the fullest.

NEED TO KNOW

At this stage of development, the key outcomes are:

- maintenance of cardiovascular health;
- maintenance/improvement of strength, balance, coordination and flexibility;
- social activities with a physical component;
- reduction in falls, and maintenance of independence;
- reduction in sitting time and sedentary activities; and
- engagement in daily physical activity.

WHAT?

People should take part in any activities that contribute to their health and wellness and enable them to be active for life. This can include being Competitive for Life by playing in Masters' sport, or staying Fit for Life by simply continuing to be active and learning new activities. In addition, many individuals at this stage become active in sport and recreation as officials, coaches, administrators or volunteers.

COMPETITIVE FOR LIFE

Includes activities from highly competitive Masters' events at the local, regional, provincial, national or international level, to informal recreational competitions such as curling bonspiels, old-timers' leagues, 35+ ice hockey and similar activities.

Finding competitive opportunities for younger Active for Life participants can be a challenge if sport organizations are too highly focused on elite competition.

FIT FOR LIFE

Includes just about anything and everything that involves expending physical energy, from gardening, to walking, dancing, jogging, camping and any type of fitness activity.

It is far better if activity is regular. The greatest gains in population health occur when inactive people become even minimally active.

Some people love to learn new sports or activities, and they should be encouraged to do so, as it is good for both body and brain.

WHERE?

Opportunities for physical activity must be accessible, so programs should be available in local community centres, fitness centres, retirement homes and local schools.

As participants get older they may become more concerned about safety, so attention needs to be paid to this issue. Good lighting, safe public transport, and walkways free of ice and snow can go a long way to increasing participation.

WHO?

Active for Life participants need to take responsibility for their own participation in regular physical activity. For many there is a desire for program structure and leadership, which could come from within the group, from recreation or sport organizations, or from public health agencies.

Programs targeted at and led by older adults have been successful for older Active for Life participants, and are to be encouraged, as are such activities as "Try It Out" days and "Learn It" days.

Additional support may be required for participants at any age who have disabilities.

HOW?

Create a safe environment where participants have an effective entry point to try activities without the fear of being judged or getting injured. Provide a wide variety of activities for participants to choose from, provide instruction for those activities, and use icebreaker activities so participants can get to know each other.

In sports, ensure that the level of competition matches the desires and abilities of the participants. Some participants get bored quickly when there is not a high enough level of competition for them. Other participants thrive in less organized and less intense competitive environments. Provide opportunities for non-competitors to try out competition.

Give people the chance to try leadership roles and be peer mentors by teaching the basic skills of the activity to new participants.

As people reach the upper ages of Active for Life, activities may need to be modified to accommodate diminished physical capacity or impairment. However, those who are able to maintain physical literacy will improve their chances of remaining independent and enjoying life to the fullest.

SECTION 3

Equitable Opportunities for All

As communities develop policy and programming to promote physical literacy, the principle of equity needs to be observed and reflected in our actions. Individuals facing barriers to participation may need more support to get involved and stay in physical activity. This includes (but is not limited to) girls and women, persons with disabilities, Indigenous Peoples, newcomers to Canada, the LGBTQI2S community, aging adults, and those living in poverty and/or isolated communities. Barriers to participation should be critically examined and the needs of different groups should be thoughtfully considered.

The following areas should be considered:

Barrier-free Participation

Sensitivity to Different Needs

Collaboration

Program Design

Inclusion

Barrier-free Participation

- Make physical space, equipment and signage accessible to all.
- Welcome everyone into programming.
- Use a variety of communication methods to relay messages to all (e.g., translations, icons and visual markers, braille, accessible font sizes and colours, etc.).
- Create marketing materials that are inclusive of diversity.
- Provide training and support to leaders, support staff and program participants, to adopt a welcoming attitude that makes all participants feel at ease.

Sensitivity to Different Needs

Diversity challenges us to consider social statuses and determinants like age, economic status, race, sexual orientation, religion, ability and gender. Intersectionality—the various determinants we use to describe ourselves and how they are interwoven and linked together—makes up each individual's needs to be recognized, appreciated and supported.

- Create a safe space and be conscious that safety looks and feels different for different participants.
- Consider body image, cultural or religious needs, and socio-economic background when choosing apparel options, creating dress codes, or selecting shared spaces.
- Accommodate child care and elder care needs of caregivers.
- Structure program fees to scale to what is affordable for each participant or connect them to grant opportunities.

Collaboration

- Consider how to collaborate and communicate with other organizations and support systems to develop alignment, particularly when supporting diverse populations.
- Ensure the multiple demands of different sports and activities do not overload or overwhelm participants.
- Work with multiple sectors and organizations to create a smooth transition from activity to activity.

Program Design

- Ensure programs are designed to keep more participants engaged in the activity longer—including early developing females and late developing males.
- Address the gender gap (refer to next page).
- Avoid cutting participants in earlier stages; and, when limited participation is imposed, help participants transfer to other tiers or activities.
- Create supportive environments that plan for the holistic needs of the participant.

Inclusion

To give everyone the same opportunities, make sure that:

- girls are encouraged to play and are given the same opportunities as boys;
- there is respect for and support of cultural, religious or economic differences; and
- equipment needs, activity modifications, and support staff are considered to maximize engagement of all abilities, regardless of background, ability, gender or barriers.

Physical Literacy and the Gender Gap

*As physical literacy policy and programming are developed within communities and organizations, attention must be given to gender disparities in programming and participation. Research has demonstrated repeatedly that there is a gender gap in the development of many movement skills, with boys performing better on some skills than girls. This gap hinders girls from participating in sport and pursuing healthy levels of physical activity, and more needs to be done to attract and retain girls and women in quality sport and physical activity (*Tucker Center for Research on Girls & Women in Sport, 2018*).*

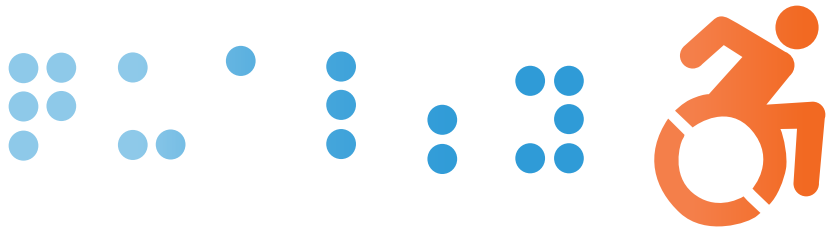
While there has a been a tendency in the past to view this gender gap as a product of biology, most motor development experts see this as a failure to provide support and experiences for girls to develop those skills early in life. In other words, this represents a failure to provide the physical literacy cycle (see Figure 3, pg. 8) to everyone and is a form of non-inclusion or exclusion from participation.

An example of research in this area involved collaboration between Ontario's Ministry of Recreation, Tourism and Sport, the Ontario Trillium Foundation, the Infant and Child Health (INCH) Research Lab at McMaster University and the University of Toronto, and the Ontario Physical and Health Education Association (OPHEA). These organizations examined the disparity in physical literacy between adolescent boys and girls—what has been referred to as the gender gap in physical literacy.

Through this collaboration, researchers tested several hundred children in after-school programs in the province of Ontario using the PLAYfun assessment tool. The results showed that boys tended to outperform girls on many skills, especially those related to object control.

The research team subsequently adapted a program of games to promote skill development using a gender inclusive approach. After-school leaders were trained in the model, and research showed that their knowledge, competence and confidence to deliver gender-inclusive physical literacy experiences were significantly improved following training. However, the results also showed that more intensive and longer interventions were required to improve physical competence in children and narrow the competence gap between genders. The results of this project were subsequently submitted for use in developing and testing new interventions to address the gender gap problem.

This particular collaboration is just one example of how multi-stakeholder participation—research, education, not-for-profit non-governmental organizations and the government—can come together to address a significant social challenge using an evidence-based approach. Further work needs to be done in this area so that more young girls and women benefit from higher levels of physical literacy.



Physical Literacy for Persons with Disabilities

Persons with disabilities, whether congenital or acquired, can develop their physical literacy at any age.

NEED TO KNOW

Physical literacy is important for everyone, including those with disabilities.

- Children who have congenital disabilities need opportunities to develop fundamental movement skills and fundamental sport skills.
- Individuals who acquire disabilities through injury or illness need to re-develop previously learned skills, while using appropriate prostheses or mobility aids.
- Activities for persons with disabilities should be modified as little as possible, but enough to enable the individual to participate and develop physical literacy.
- Regardless of the disability, the objective is to ensure all individuals learn as many skills as possible in order to take part in a variety of sport and recreation activities.

WHAT?

Everyone should have the opportunity to develop physical literacy. Program coordinators, leaders, coaches, educators and facility operators have a responsibility to create universally accessible physical literacy opportunities. Some children are born with disabilities (congenital disabilities) and other individuals acquire disabilities through injury or illness (acquired disabilities). Some disabilities are invisible. Regardless of whether a disability is congenital or acquired, individuals need to be aware of what opportunities for participation exist (Awareness) and then have supportive and positive experiences in trying those activities (First Involvement).

CONGENITAL DISABILITIES

Children who have a disability need to develop physical literacy the same as their peers. Activities should be modified as little as possible to accommodate the child's disability. To the greatest extent possible, children with disabilities should learn, practice and use their emerging skills alongside their peers, rather than in a segregated environment. This facilitates learning and social integration.

ACQUIRED DISABILITIES

Following injury or illness that causes a disability, the individual needs to go through the stages of learning and Long-Term Development in Sport and Physical Activity to be active again. Once an individual with an acquired disability goes through Awareness and First Involvement, the individual then needs to learn, or re-learn, to perform basic movement skills with their changed body (Active Start), progressing to fundamental movement skills (FUNdamentals), and eventually learning a range of fundamental sport and recreation skills (Learn to Train).

Some examples of common disabilities are:

PHYSICAL

Includes individuals with cerebral palsy, dystrophies, amputations, congenital conditions, injuries and many more.

The key to supporting individuals with physical disabilities is to ask questions to learn more about what the participant can do, rather than focusing on what they cannot do. Using trial and error, be creative with equipment and activities to accommodate.

AUDITORY

Includes individuals who are deaf or who are hard of hearing.

Learn about the participant, and whether they use hearing aids, or other devices. Employ clear pronunciation, use visuals, and make sure they can see your mouth when you speak.

VISUAL

Includes individuals who are blind or who have reduced vision.

Learn what the individuals has for functional vision, and find out what works best for them. It might be to use tactile or high contrast boundaries (e.g., white floor tape), and equipment that has high colour contrast, and/or makes noise.

INTELLECTUAL

Includes individuals with Down syndrome, fetal alcohol syndrome, Fragile X syndrome and more.

Get to know the participant to understand how to best support them. Keep rules clear and concise, visually demonstrate, audibly explain, and if necessary, prompt, or, with permission, move their body to physically model the movement. Allow for processing time for participants to become familiar with equipment or activities, and ensure time to repeat skills/attempts.

INVISIBLE DISABILITIES & MENTAL HEALTH

Mental health includes anxiety, bipolar disorder and phobias. Invisible disabilities includes, disabilities that are not immediately apparent, such as mental health conditions; some visual, auditory and intellectual disabilities; several diseases; and chronic illnesses.

Get to know your participants, build trust, ask questions and discuss with parents/caregivers what you are noticing. Focus on solutions rather than disabilities and labels, and establish a "chill out zone" for decompression and down time.

HEALTH (DISEASE)

Includes cancer, HIV/AIDS, heart disease, obesity, injuries, allergies, asthma, diabetes, arthritis, migraines and more.

Use a pre-screen questionnaire or conversation to understand any limitations, and inquire whether there are First Aid protocols to follow, and how their activity levels are affected (e.g., fatigue, injury, vision, etc.). Discuss with participants and parents/caregivers what modifications can be put in place to support (e.g., frequent rest periods, equipment modifications, etc.), and know your scope of practice.

AUTISM SPECTRUM DISORDER

Use clear, concise rules, and behaviour support tools (e.g., visual supports, reward boards, countdown boards, etc.). Be aware that the tactile feedback from some equipment may both hinder and help in some activities, and if possible, find a location that isn't over-stimulating for the participants (e.g., a large gym may not be ideal).

WHERE?

Children who have congenital disabilities should be encouraged and supported in developing physical literacy in the same way as their peers: starting at home and progressing to pre-school, school, community recreation and sport programs. For individuals who are born with a congenital disability and/or individuals who acquire a disability, hospitals and rehabilitation facilities hold an important role in developing physical literacy.

To make all of this possible, it is critical that facilities be accessible to those with disabilities, and that education, sport and recreation front-line staff make persons with disabilities feel welcomed and supported when they join an activity.

WHO?

Individuals with disabilities require support from parents, caregivers, teachers, coaches and community recreation staff. In addition, persons with disabilities often work closely with rehabilitation specialists including occupational therapists and physiotherapists who need to support the learning of a wide range of daily living and recreational skills. Being physically active throughout life needs to be normalized as the expectation for persons with disabilities, and all support staff working with persons with disabilities must adopt an inclusive, welcoming attitude.

Further, family and friends of persons with disabilities need to support their efforts to engage in sport and recreational activities.

HOW?

Physical literacy is developed regardless of whether an individual has a disability. To improve opportunities for developing skills of persons with disabilities, it is useful to think about how to:

USE RESPECTFUL LANGUAGE

Using respectful language makes persons with disabilities feel welcomed and valued, while inappropriate language can drive them away. When working with persons with disabilities, talk directly to the person, not to his or her support person or accompanying person, if present.

ADAPT THE TASK

If a child is in a wheelchair, activities and games should be modified to make them possible while wheeling. For those who have visual impairment, consider changing the skills from catching to trapping where the receiver traps a ball rolling along the ground. Be creative!

ADAPT EQUIPMENT

Work with persons with disabilities to come up with ways to adapt equipment or materials. No one has thought more about adapting equipment than persons with disabilities themselves—so use their knowledge and ingenuity. While adapted equipment for high performance sport can be very specialized, adaptations for developing physical literacy can be both simple and homemade.

ENSURE SAFETY

Talk to persons with disabilities (or their parents/caregivers) about any restrictions in activities they may have, or any supportive techniques that can help them to be safe while participating.

DON'T ASSUME

Do not make assumptions regarding what persons with disabilities can or cannot do. If in doubt, simply ask them (or their parent/caregiver).

SECTION 4

Developing Physical Literacy in Different Environments

It is important that individuals have opportunities to explore movement and develop physical literacy in four different environments: indoor and outdoor land; water; air; and snow and ice. Physical literacy in these environments is important not only for providing opportunities to explore different sport and activity interests in different settings, but also for ensuring personal safety in these environments over each individual's life course. For example, if children do not learn how to swim, water will always present a life-threatening risk for them and may also prevent them from engaging in other water-based activities. Similarly, if they are unfamiliar with walking on snow and ice, they could be at increased risk for serious falls and injuries later in life. The discussion in this document generally addresses physical literacy in all environments, but it is important to recognize that there are additional nuances for aquatic environments, aerial environments, snow and ice environments, and natural outdoor environments.

Nature	Air	Ice and Snow	Aquatic Environments

Physical Literacy in Nature

One of the most important things to consider is that different environments (e.g., the ice rink, outdoor spaces, nature, or the gym) provide opportunities for the development of physical literacy. To illustrate, we know that when young children can access larger spaces or spend more time outdoors, they are more physically active; with more physical activity comes the opportunity to enhance physical competence including skills, strength and fitness. Natural environments are particularly rich in opportunities to explore and develop physical literacy.

Developing physical literacy in nature requires particular focus on several fundamental movement skills including: **balance**, **coordination**, **agility**, **locomotion**, **stability**, **body control**, and when implementing nature survival techniques, **fine motor skills** (e.g., threading a fishing hook or tying knots).

NATURE ACTIVITIES

Daily activities and vocations include nature trail and path construction, forestry work, forest firefighting, search and rescue, hunting, guiding and ecotourism.

Recreation activities include hiking and walking, non-competitive mountain biking, geocaching, adventure games such as capture the flag, birdwatching, climbing and playground games.

Sports include mountain adventure racing, extreme terrain marathons and triathlons, and orienteering.

RANGE OF CONDITIONS

Natural environments offer the opportunity to move on rough, flat, sloped, stable and unstable terrain, and over a variety of surfaces (e.g., vegetation, rock, sand, ice, etc.).

Key variables include the stability and structural integrity of landscape and natural elements.

Activities take place outdoors, where environment can be moderate or volatile, with variable weather conditions. By being outdoors, participants will be exposed to changes in light and visibility with the movement or disappearance of the sun.

SAFETY CONSIDERATIONS

Environmental Considerations

Natural environments are often unpredictable and can pose risks, but that is not necessarily a bad thing. These environments allow children and adults to challenge themselves in risky play, by climbing up to and jumping from heights, running fast down hills, or leaping across streams, logs and gaps. Risky play has many benefits to physical literacy development, but it is important to gauge the level of risk involved and how best to avoid serious injury while engaging with the environment or activity.

Individuals will want to be aware of any potential weather conditions and temperature changes that they may encounter, and prepare accordingly. They may have to navigate slippery conditions while hiking over rocks in the rain or cold, or may require knowledge of hydration because they are being active in hot, dry conditions. Even different light challenges depth perception and balance.

Along with understanding weather, landscape and equipment, it is also important that individuals understand and recognize the various animals and plants they might encounter, and how best to interact or avoid them.

Proper Equipment

Equipment can play a very big role in ensuring individuals get the most out of their activity while avoiding injury. In some cases, appropriate equipment can be the difference between life and death. Depending on the nature of the activity, equipment choices can be as simple as choosing the proper footwear for a walk, or as complex as packing for multiple days in the wilderness.

For an individual to enhance their physical literacy development in nature, their physical, cognitive, affective and social components must be considered.

Physical component: A whole range of fundamental movement skills are required to engage in physical activity in nature, depending on the activity and landscape. Nature activities lend themselves to locomotor and balance skills, and, in terms of survival skills, some fine motor skills (e.g., using a knife to sharpen a stick). Manipulative skills also look quite different in nature, including casting a fishing line, throwing rocks at targets, catching pine cones, using an archery bow or sling shot. Each of these need to be taught and practiced.

Cognitive component: When thinking about nature, the range of knowledge and skills is broad, and incorporates multiple areas beyond just the physical. To engage actively in natural environments, individuals need to: know about and make safe choices; interpret the weather and select the appropriate gear; understand the landscape, the wildlife and the plants; and know how to navigate to and from their location. They also have to be able to interpret when their skills are appropriate to the challenge—should they jump that creek or look for a better way to cross it?

Affective component: Nature activities allow both children and adults to challenge themselves by engaging in risky play. Overcoming these challenges will increase an individual's confidence. Familiarity with a task or a trail through repetition adds to a person's confidence and will further lead to individuals challenging themselves to more advanced jumps, balances and climbs. The opportunity to be alone and/or dependent on one's own skills, such as path-finding, will also increase confidence.

Social component: While exploring the natural environment can be a solitary activity, there is often a social component to nature-based activities. When hiking, camping or climbing, people will have opportunities to make decisions together, and oftentimes will require the support of another to succeed at their task. Being off the grid together allows people to socialize, build bonds, and understand each other in different ways.

For coaches, recreation leaders or parents/caregivers, it is important to be intentional about building physical literacy in different environments, as each may promote motivation, confidence, competence, knowledge, and understanding in different ways. Quality programming will allow for structured and unstructured activity and risky play, which will also enhance decision making. For adults, quality programming in nature offers additional benefits, including improved mobility and durability.

Physical Literacy in Air

At its most extreme, movement in the air involves soaring, balancing at great heights, or performing complicated acrobatics; however, everyday activities also require the ability to competently move through aerial space.

Developing physical literacy in aerial environments requires particular focus on several fundamental movement skills including: **balance**, **agility**, **flexibility**, **coordination** and **spatial orientation**. Physical literacy in the air also requires good instincts and quick decision making, known as air sense.

AERIAL ACTIVITIES

Daily activities and vocations include climbing ladders, reaching something high, washing windows, painting, performing an aerial rescue, working as an aerial technician, piloting a plane or helicopter, working as an astronaut, performing in a circus, working in a military field (e.g., pararescue, special operations, pilot, etc.), roofing, conducting a search and rescue, working as a stunt person, tree cutting/care and working on aerial platforms or boom lifts.

Recreation activities include participation in aerial parks, circus arts, climbing (e.g., rock, ice or indoor), dance (e.g., acro, ballet or tricking), extreme motorsports, flying, freestyle skiing, gliding, kayaking, mountaineering, obstacle courses, outdoor play (e.g., tree climbing, swinging or cliff jumping), parkour, playgrounds (e.g., fire pole, monkey bars or zipline), stunt flying and tree-top trekking.

Sports include athletics (e.g., high jump, pole vault, long jump, triple jump and hurdles), cheerleading, cycling (e.g., stunt riding, BMX and mountain biking), diving, equestrian, figure skating, freestyle skiing, gymnastics, inline skate, paragliding, ski jumping, skydiving, snowboarding, sport climbing, trampoline, wakeboarding and water skiing.

RANGE OF CONDITIONS

Aerial environments may be indoor or outdoor with various weather conditions. Some activities require wind, while others are best without it. Aerial environments exist close to the ground as well as high above it. Aerial environments often intersect with other environments, such as water, ice or snow. Takeoffs and landings may use the ground, snow, water or apparatus such as a nets, trampolines, ramps or foam. Participants may climb or jump using their own power, or may be lifted, launched or dropped into the air.

SAFETY CONSIDERATIONS

Competently moving and navigating space at various levels relative to the ground is beneficial for life-long movement and injury prevention. Falls training for seniors, for example, aims to develop or refresh these skills. The ability to land with less impact or to bail out of a fall requires intuitive understanding combined with the ability to move and react appropriately. The force of gravity is a constant factor influencing movement, and aerial activities tend to be focused on either defying gravity or working with it.

Equipment can mean the difference between life and death when it comes to activity in aerial environments. Action may take place at a great height or in close proximity to the ground, and participants may hang, swing, climb or move between the ground and the air. A wide variety of structures, apparatus and equipment have been developed to facilitate jumping or launching, remaining in the air, and landing successfully.

For an individual to enhance their physical literacy development in aerial environments, physical, cognitive, affective and social components must be considered.

Physical component: Several fundamental movement skills and movement patterns must be developed to achieve physical literacy in aerial environments. The importance of **stationary positions** should not be underestimated for developing body awareness, flexibility and balance, as well as the capacity to understand and follow physical directions, to observe and reproduce a pose, and to visualize and shape the body into an intended position. **Landings** are highly important, and are best introduced on a level surface, with height and complexity added once appropriate physical capacities have been demonstrated. **Springs** involve jumping or springing into the air from any combination of feet, hands or other body parts, developing the ability to apply appropriate forces combined with body alignment to effectively launch into the air in a variety of ways. **Locomotion** may involve moving repetitively outside the body's base of support, can incorporate various apparatus, and provides opportunities to navigate space at various levels and directions relative to the ground. **Rotations** around an internal axis through the centre of the body, such as somersaults and twists, and **swings**, which are a rotation around an axis external to the body such as a bar, both enhance the ability to initiate and manage rotation on the ground and in the air. This is a necessity for acrobatic sports, but also contributes to overall physical literacy.

Cognitive component: The body can travel along various pathways relative to the ground, other bodies and surrounding space. There is a close interaction between cognitive and physical components of physical literacy in the air. **Body awareness** combines an understanding of what the body can do with the ability to move and take on intentional shapes and positions without looking at each body part. **Spatial awareness** involves self-awareness related to interaction with the surrounding environment, including judgement of distance and speed of movement, and **spatial orientation**, also referred to as aerial awareness, adds an ongoing cognizance of how the body is oriented in the air and relative to the ground. **Air sense** combines spatial orientation with the ability to predict and control physical outcomes. While it implies an intuitive sense of orientation and movement relative to gravity, it also includes the sense (intelligence and experience) to take appropriate action based on ongoing judgements and mid-air decision making.

Affective component: There is an element of thrill or exhilaration with the pursuit of aerial activities. The need to focus absolutely on the task at hand can produce a sense of clarity and joy, and when physical abilities perfectly match the demands of the task, it can be experienced as a merging of action and awareness with a sense of total control, known as flow experience (Jackson & Kimiecik, 2008). These types of emotions can lead to increased desire for participation and continued improvement.

Fear can have a significant, justifiable influence on motivation. When confidence and physical abilities are not well-matched with a task, the primary emotion is likely to be fear. Physical fear, or fear of actual danger, can be a crucial stimulus to manage risk, preparation, communication and the safety of the physical environment. It can be difficult to separate physical fear from fear of failure or general anxiety, and examining both emotional and physical factors can help to understand and address these emotions. Ultimately, enjoyment and benefits must be weighed against risk, and the choice should always be a personal one.

Social component: Coaches, instructors, parents/caregivers and peers influence motivation and approaches to effort and risk. Observational learning, imitation and vicarious experience contribute to improved self-efficacy. Peer interaction and observation, as well as verbal and social encouragement, enhances physical literacy development in aerial environments.

Multi-sport air coaches are taught to prioritize control, consistency and confidence before moving to the next step. Gradual progression based on a solid foundation of movement skills is the best way to develop. This begins on the ground with a foundation of balance, agility, flexibility and coordination before progressing to low heights with minimal risk, eventually adding complexity or moving to greater heights as individual competence allows.

Aerial and acrobatic literacy should be introduced early, built progressively, and become more refined over the long term. During the development of physical literacy, it is important to include positions, movements, and skills where orientation is not limited to an upright, standing position. Aerial aspects of physical literacy are more efficiently developed at the earlier stages, before self-judgement and risk-avoidance become significant barriers. Late entry into

acrobatic sports is possible, but it can prove difficult and discouraging if remedial work is required to catch up on basic skills. Transfer from one aerial sport to another is often successful, indicating that early development of foundational skills, rather than early single-sport specialization, is the basis for later success. Although acrobatic sports have typically been considered early specialization, a growing number of sports are challenging this assumption, self-identifying as early entry – late specialization instead.

Physical Literacy on Ice and Snow

For those who experience winter for a significant part of the year, spending time on snow and ice is part of both winter activities and daily living. Navigating and playing in these environments is an important part of a healthy and connected lifestyle.

Developing physical literacy on ice and snow environments requires particular focus on several fundamental movement skills including: **balance**, which includes the ability to come to a controlled stop while still upright, and to fall correctly and get back up; **locomotion** (e.g., gliding, striding, walking, running and sliding); and **object control** (e.g., skis, poles, sticks, pucks, balls, rocks, rings and sleds).

SNOW AND ICE ACTIVITIES

Daily activities and vocations include shovelling snow, ice scraping and clearing the car, ice sculpting, walking and running, outdoor operations in winter, ski and snowboard instructor, ski area, arena, and outdoor recreation operations, mountain guide, judging and officiating.

Recreation activities include winter hiking and walking, snowshoeing, ice climbing, tobogganing and tubing, dog sledding, snowmobiling, ice fishing, broomball, mountaineering, non-competitive skating, skiing and snowboarding.

Sports include the various styles and disciplines of skiing, snowboarding, skating, gliding sports (e.g., bobsleigh, luge or skeleton), hockey and sledge hockey, ringette and curling.

RANGE OF CONDITIONS

Key variables include: Snow and ice density, water content, temperature, visibility, etc.

Indoor with a controlled environment: Ice rinks and skating ovals.

Outdoor with a moderate environment: Outdoor rinks; frozen lakes, ponds, canals; icy driveways, sidewalks, stairs; frozen yards and fields.

Outdoor a with uncontrolled, volatile or variable weather conditions/environments: Ski hills and terrain parks, which include various slopes, features and risk factors; mountains, cliff faces and alpine settings.

SAFETY CONSIDERATIONS

Equipment and outwear can make or break an individual's experience. The kind of head protection (helmet or toque) is dependant on the potential speed and the density of the surface (ice versus soft snow). A helmet should fit snuggly and have a functioning chinstrap. Footwear must be snug so that the feet do not move around in the boots, giving an individual the opportunity to control the skis or skates, or walk with a good feel for the snow and ice. Outerwear should be weather resistant, warm, and allow for active movement.

Speed management is important for safety and skill development. Speed is introduced after an individual is comfortable with self-propelled moving/gliding and has balance and control. This is evidenced by staying upright and being able to gain speed, control speed and stop.

For an individual to enhance their physical literacy development in ice and snow environments, their physical, cognitive, affective and social components must be considered.

Physical component: Balance, gliding and control are the core skills for snow and ice environments. These are progressed, diversified and emphasized depending on the demands of the activity and development stage of the individual. Additional fundamental movement skills include agility, timing and coordination, jumping, team sport skills (e.g., passing, receiving, reading plays, etc.), velocity and force management (e.g., edging and pressure control).

Cognitive component: The decision-making process should keep individuals safe in snow and ice environments. Individuals can manage themselves in varying terrain and conditions by adapting the shape of their turn (or curve), controlling their speed, and applying appropriate pressure according to the snow and ice conditions.

Affective component: As individuals develop the necessary skills to explore speed, balance, decision making and body control with friends, family and role models, they will build self-efficacy—meaning belief in their ability to perform a particular activity or skill. The very nature of being off-balance and moving at speed puts individuals in a position where they learn about their own fear and how to practise their skills to manage it. This learning contributes to a sense of control and a broader self-confidence. Once an individual has developed a competent degree of physical literacy in snow and ice environments, they can choose an activity that is meaningful and motivating to them.

Social component: Many ice and snow activities are done with friends and family for a lifetime. Starting at Active Start through to the Active for Life stage, individuals have the opportunity to join teams to ski, skate, slide and enjoy family days at any number of snow and ice venues. These environments provide for informal socialization in lodges, on hills and trails, in arenas and on ski lifts. More formal socialization occurs through rules, procedures and progressions designed to manage risk and keep individuals safe in ice and snow environments, while developing skills and confidence.

The primary elements of physical literacy development in ice and snow are equipment, stability of movement and speed. Emphasis on balance and control of movements and speed is key when individuals are first introduced to these environments. A terrain park with a variety of snow-based activities and equipment is a great venue to introduce individuals to this environment. Terrain parks provide gentle slopes and a range of zones where people can try a variety of terrain features, and switch activities to skating or tobogganing so they stay engaged throughout the day. An important consideration is to challenge individuals in a safe manner. Therefore, controlled balance and gliding must come before any introduction to environments that increase speed, such as steeper terrain in skiing or faster striding in skating. Once balance and control have been established, these skills can be further developed in the rink, in the ski area and in the backyard, through play and programming. The best way to develop physical literacy is to get out and play as much as possible in these environments.

Physical Literacy in Aquatic Environments

Aquatic environments can offer many opportunities for activity and enjoyment, but they also pose inherent risk. Because of this risk, traditional swimming programs are delivered in highly controlled aquatic environments and focus primarily on water competence. It is imperative for people to develop physical literacy in aquatic environments to ensure they have the competence, as well as the motivation, confidence, knowledge and understanding to engage in meaningful aquatic movement throughout their life course.

Developing physical literacy in aquatic environments requires particular focus on several fundamental movement skills including: **coordination**, **locomotion**, **agility**, **balance**, **coordination**, **speed**, **stability**, **body control** and **object manipulation**, and will benefit from the transfer of other skills such as **kicking** and **throwing**.

AQUATIC ACTIVITIES

Daily activities and vocations include lifeguarding, marine search and rescue, fishing, marine construction and repair, scuba diving, boating and working in the navy.

Recreation activities include leisure swimming, recreational water sports, wading and floating, paddling and rowing, logrolling, tubing and snorkeling.

Sports include swim racing, artistic swimming, diving, water polo, wakeboarding and water skiing, and lifesaving sport.

RANGE OF CONDITIONS

Key variables include: Temperature, visibility, current and tides.

Controlled environments: Indoor and outdoor pools.

Uncontrolled environments: Open (natural) pools and bodies of water, rivers, lakes and oceans.

When outdoors, consider volatile weather or variable surface conditions such as waves or swells.

SAFETY CONSIDERATIONS

Many messages advocating for physical activity say that consistent, healthy physical activity early on in life will reduce chronic health issues and extend your lifespan. When it comes to aquatic environments, developing physical literacy prevents the more immediate risk of drowning.

Open water environments can be unpredictable and feature unexpected dangers, such as variable depths, unseen objects, and currents. It is important that individuals understand both what may lie beneath the

surface and how best to navigate it. For instance, if there is the possibility of getting caught in a riptide off a beach, swimmers should know not to fight the tide by attempting to swim back to shore, but instead swim parallel to the shore until they are free of the tide.

It is important that any equipment being used (or that may be needed in an emergency) properly fits the participant and is in good working order. A life jacket that does not fit properly or a faulty flotation device could easily lead to death.

Getting caught in unexpected weather while in or on open water can lead to consequences that range from inconvenient and unpleasant to deadly. Individuals should be aware of any weather in the forecast before engaging in open water activity.

For an individual to enhance their physical literacy development in aquatic environments, their physical, cognitive, affective, and social components must be considered.

Physical component: There are several elements of psychomotor learning evident in the physical literacy approach to learning in aquatic environments. They focus on the movements, motor skills and health/fitness skills that a person acquires and applies through aquatic movement. It includes the coordination and application of these skills to perform the movements required in different situations and types of aquatic environments. **Locomotor skills** allow the person to move independently from one spot to another through, on, or in the water. **Stability/balance skills** involve balance and weight transfer. **Object manipulation skills** involve the use of hands, feet, or another body part to move or manipulate an object. Object locomotor skills are manipulation skills that apply locomotion, coordination, and stability to move equipment and person from one place to another. **Cardiovascular endurance or cardio-respiratory endurance** is the skill of developing the ability of the heart and lungs to deliver oxygen to working muscles during exercise over sustained periods. **Muscular endurance** is the skill of the muscle(s) to repeatedly exert force over a sustained period. **Coordination** is the skill of being able to move two or more body parts in a controlled, smooth, and efficient manner. **Flexibility** is the skill of a joint or muscle to move through or extend its full range of motion. **Agility** is the skill of being able to quickly change direction or body position. **Strength** is the skill to carry out tasks where resistance is a factor. **Reaction time** is the skill of reducing the length of time taken to respond to a given stimulus. **Speed** is the skill of being able to move the body quickly across, through, or under the water, and/or move limbs quickly.

Cognitive component: The elements of cognitive learning focus on the development of knowledge and understanding required for movement and physical activity in, through and on the water. They involve the development of an individual's knowledge of how, when, and why to move in particular ways, and how to adapt and be innovative when faced with new movement challenges in aquatic environments. This includes critical decision-related knowledge, but also includes knowledge of the benefits of movement and physical activity in water.

Affective component: The elements of affective learning focus on moods, values, and attitudes towards aquatic activity. It involves developing self-esteem, confidence, and motivation, and understanding the emotional responses linked to aquatic movement.

Social component: The elements of social learning focus on the development of social skills including collaboration, fair play, navigating safety and risk, and leadership and communication. The development of these skills can help us to enjoy participating and also to interact more effectively with others, including teachers, coaches, teammates, opponents and officials.

The holistic understanding of what skills, knowledge, attitudes, and relationships are needed to thrive in aquatic environments is in stark contrast to previous approaches to aquatic teaching programs. A "physical literacy perspective" expects and anticipates positive changes to occur in an individual's aquatic behaviours as they develop physical literacy throughout their life course. This is based not only on an individual's physical skills in the water, but also in what environment aquatic activities occur, when aquatic behaviours occur in the individual's stage of development, and how experienced that individual is with these types of activities. From a physical literacy perspective, changes in aquatic behaviour occur as a result of interconnected learning interactions that take place between the individual, task, and environmental/social characteristics. To execute any aquatic behaviour, an individual calls upon their psychomotor, cognitive, affective, and social learning to solve the problem presented. Aquatic agencies should collaborate in the mobilization of knowledge to ensure the development of physical literacy in and on water, and enable the widest possible participation across the life course.

SECTION 5

Assessing Physical Literacy

What is assessed is valued. If we want to ensure that physical literacy is given value, we need to ensure that we can assess it across the life course.

Body Control	Locomotor	Object Manipulation	ABCs

There are many reasons why it is important to assess physical literacy:

1. To gather baseline data on the nation's state of physical literacy (population surveillance) and to track changes in order to see if physical literacy is improving at the national level.
2. To help parents/caregivers and instructors better understand each child/youth's level of physical literacy.
3. To help adults better understand their level of physical literacy and how it changes as they age.
4. To support program evaluation and improve program design to ensure activities contribute to physical literacy development of participants.
5. To help in the formative assessment of children and adults, to provide a baseline of their current physical literacy and identify what needs to be worked on to promote progression.
6. To provide screening tools to determine physical literacy levels so they can be addressed.
7. To quantify a societal issue with a measurable solution.
8. To research and answer questions about the relationships between physical literacy and physical activity, health, educational achievement and sport performance.

ASSESSING PHYSICAL LITERACY: A CAUTIONARY MESSAGE

When trying to evaluate physical literacy programs, or the physical literacy of an individual, it is important to remember the rate of development of children (including motor) is highly variable and partially determined by biological factors, in addition to experience and environment. In early childhood, these factors affect the mastery of basic human movements such as sitting, crawling, standing, walking and running. For children, if you assess physical literacy at the start of a three-month program and then assess again at the end of the program, you may not be able to determine if any improvements are due to the program or due to the children simply being three to four months older (or physically maturing). To really know if a program is making a difference, you should make a comparison of physical literacy assessments between children of the same chronological age who completed the program and children who did not, as both groups of children would have experienced the same degree of natural physical development over the same period, and the only difference is their participation in the program.

Advances have been made in assessing physical literacy, particularly in children and youth. Researchers continue to work on the development of additional tools that can be used with different populations, including persons with disabilities, persons with impairments, very young children, and both adults and senior citizens. Tools are also being developed to assess physical literacy in different environments such as water, ice and snow.

To learn more about physical literacy assessment tools, please refer to Appendix D.

SECTION 6

Sectors and Practices

Physical literacy is essential to all aspects of life. With this in mind, the different sectors of public health, recreation, sport, education and the arts should be involved in the promotion of physical literacy. A piecemeal approach by different agencies and institutions acting in isolation will not ensure that physical literacy becomes a reality for all Canadians. Physical literacy and its benefits on the health of our nation depends on a coordinated effort by all key stakeholders. The following pages identify the five key sectors of public health, recreation, sport, education and the arts, as well as two key practices of vocation and daily living. Each includes examples of people, places and programming.

PUBLIC HEALTH

RECREATION

SPORT

EDUCATION

THE ARTS

VOCATION

DAILY LIVING

Public Health

Public health aims to protect and improve the health and well-being of the population. Work in this sector includes health promotion, education, population health assessment and policy development, among other activities that align with local communities' priorities. Public health action on physical literacy could focus on the development of upstream interventions and supportive environments that influence health.

Public Health Examples

PEOPLE

Public health professionals work in partnership with many entities including education institutions, childcare agencies, municipalities, and health and community organizations. Public health is also building meaningful relationships with Indigenous communities.

Through partnerships, public health strives to create healthier environments that support healthy behaviours in the public realm. Physical literacy programming includes supporting and advocating for physical literacy integration into quality programs and services.

Public health professionals promote equitable opportunities where everyone can develop physical literacy, achieve optimal health, and attain their full potential without disadvantages due to social position or other socially determined circumstances.

PLACES

Public health can advocate for the development of built and natural environments that support physical literacy and active living while addressing the social determinants of health.

Public health works in partnership with the architects of communities, like city planners, to create and connect places such as trails, bike paths, sidewalks, parks and playgrounds, outdoor skating rinks, affordable and accessible recreation, and places where physical literacy can be developed and practiced. This includes places that support the development of fundamental movement skills in different environments such as land, air, water, and ice and snow.

Public health professionals support agencies such as schools, daycares, and recreation facilities in creating spaces to develop physical literacy by consulting and influencing policy development where citizens can experience a healthy physical literacy journey.

PROGRAMS

Public health professionals conduct community situational assessments and tailor programs and services based on local physical literacy needs.

Within health care, physical literacy information should be available to patients and outpatients when appropriate (e.g., new moms raising infants and children, or individuals recovering from a physical injury and/or looking to improve their well-being).

Public health collaborates with community organizations by providing training, tools, resources and evaluation support to enhance programming.

Public health professionals can inform policy development and the creation of supportive environments which, in turn, leads to increased opportunities for physical activity and the enhancement of quality programs where the development of physical literacy is fostered.

Recreation

Parks and recreation provide many short- and long-term benefits to individuals, families and communities. Physical literacy principles can contribute greatly to these benefits, which is why organizations that address recreation, such as municipalities or community centres, should use physical literacy as a foundational planning and programming tool.

In leisure and recreation settings, the delivery of quality physical literacy experiences requires development of programming that can be accessed by all ages across the continuum, as well as development of recreational facilities and programs that are provided by well-trained staff, are inclusive to all levels of ability, and are supportive of the diverse needs of participants. This sector includes municipal recreation departments, community centres, and other not-for-profits who deliver activity-based programs in communities.

As recreation departments own or run many of the activity spaces in a community, it is important that they take a leadership role in the development of physical literacy in a community.

The recreation sector should participate through effective communication with other sectors such as education, public health, sport and the arts in the creation of clear entry points for all participants and understandable pathways throughout the life course.

Recreation Examples

PLACES

Community facilities include fields, parks, trails, gymnasiums, multi-purpose spaces, pools and rinks.

Groups that respect the principles of physical literacy and quality sport should be prioritized for access to facility space. Recreation departments and centres prioritize bookings for sport clubs that offer physical literacy training. Facility space is offered to groups from any sector who wish to offer physical literacy training (not just recreation).

Consideration should be given around the accessibility for all abilities and creating spaces that are safe to support gender and cultural needs.

Recreation centre media displays include information on physical literacy and the Long-Term Development framework.

PEOPLE

Recreation leaders and administrators have been trained in the development of physical literacy for all ages and all abilities. For example, they have completed the Physical Literacy Instructor Program from Sport for Life, or they were graduates of a university that had a physical literacy stream.

PROGRAMS

Recreation departments and centres should focus on developing physical literacy.

Recreation programs often provide the first entry points in early years activity programming. They support children and youth all the way through to older adults. Most programs focus on developing basic movement skills and usually work in parallel to a community sport system.

Everyone should be welcomed into programming. It is important that all programs provide a variety of entry points so that people can find their way, and that recreation departments and centres deliver a wide array of programs servicing the diversity within the community.

Sport

In Canada, we have developed a multi-stage Long-Term Development in Sport and Physical Activity framework that defines an effective pathway to develop and deliver sport. This framework assists in the design and delivery of programs that are appropriate to the physical, cognitive, and emotional stage of development of the participant.

Quality sport experiences require implementation of quality physical literacy environments through appropriate programs, places and people (e.g., coaches or officials).

Physical literacy is seen as foundational to the development of sport excellence as well as the development of mastery and higher retention in sport participation.

In Canada, the Long-Term Development in Sport and Physical Activity framework provided by Sport for Life identifies that physical literacy is the number one factor to Canadians' lifelong activity and to the development of stronger national competitors.

Sports that engage in programming that requires year-long participation in a single sport (over-specialization) are not following principles of physical literacy, except in the development of competition at the national and international level.

Sport Examples

PLACES

A quality sport facility ensures that everyone feels safe and that they belong, regardless of ability, background or age. It can do so by:

- creating promotional and program materials that include a diverse range of images, representative of the community;
- ensuring that the facility is accessible to participants of all abilities, and provides clear navigation both through staff and signage;
- making facility access affordable and barrier-free;
- ensuring the facility and equipment are modified for the ability, size and stage of participants;
- making sure programs and environments are FUN;
- running programs on a regular basis and with appropriate attendance;
- keeping equipment in good condition;
- ensuring the safety of the facility, and that spaces are suitable, clean, well lit and well maintained;
- making SafeSport policies and information readily available (e.g., information around bullying, harassment, emotional/physical/sexual misconduct, etc.); and
- ensuring the facility has personnel trained in First Aid.

PEOPLE

Leaders and instructors within each club/organization are trained and qualified (e.g., National Coaching Certification Program, Aboriginal Coaching Modules, True Sport, Gender Equity, Physical Literacy Instructor Program, HIGH FIVE®). They are provided with, and partake in, ongoing learning opportunities, and mentor and build capacity for future coaches, officials, instructors and teachers.

All leaders and facilitators should be screened and follow policies and procedures on child protection and injury prevention. They demonstrate the organization's stated principles and integrate values-based sport in training and competition, are ethical, respectful and demonstrate good social, communication and leadership skills.

They understand physical literacy development and how to apply it in programs, and are able to assess participants' developmental stage and design programs and practices considering Long-Term Development key factors (e.g., sensitive periods).

Sports leaders use constructive language, communicate equitably and clearly, and involve participants in discussion and feedback. They are knowledgeable about and encourage quality sport.

Each ensures their organization operates with clear lines of responsibility and authority. They are accountable for decisions, policies, risk management and operational practices, as well as utilizing the latest in active and safe tools. They regularly assess, continually improve and modernize governance.

Sports leaders seek opportunities to engage with programs and organizations in the community, province/territory and nation-wide to advance quality sport and increase opportunities for participants. This includes providing education opportunities about quality sport including meaningful competition and proper sport specialization.

Sports leaders use sport for social change and community development.

PROGRAMS

Programs consider ability, age, size and maturity when grouping participants.

All holistic aspects of participation are considered, including mental (intellectual and emotional), physical, cultural and spiritual. Participants are learning and building on their existing skills, and there are options to make an activity more or less challenging based on participant's skills and capabilities. Participants are actively engaged in the game or activity, and fully included by teammates.

Programs should take a multisport approach—in the early stages especially, participants get to play different positions and/or try different events and sports. Programs are well-prepared and are delivered in context of seasonal and annual plans.

The program is aligned with the national sport organization's Long-Term Development framework or, when possible, is a national sport organization-designed quality sport program.

The club connects participants to developmentally appropriate programs and opportunities, which may include different levels (tiers), types of play, competition or activities.

In the early stages, leaders emphasize skill development over winning. Programs develop fundamental movement skills, in addition to sport-specific skills, and should take a multisport approach.

Based on stage of development, the participants play small-sided games with fewer players, compete in shorter distances, or play for modified lengths of time. Rules are modified based on the ability and stage of the participants.

In the early stages, teams, groups, lines or categories are balanced so that participants of similar ability compete against each other, giving everyone a chance to experience challenges and successes. All participants get to play and practice equally. Elimination competition formats are not used.

Competition is timed appropriately for learning, and is affordable and accessible.

Education

Education—whether Early Childhood Education, K-12 Education (including Physical and Health Education) or Higher Education—plays a key role in developing and enhancing the opportunity for students to explore and extend their physical literacy journey.

Every child in Canada will move through education at some point in their life, some starting as early as six months. Educators need to ensure that children have the frequent, continued opportunity to develop and build upon their physical literacy. Age- and stage-appropriate movement skills and risky play need to be valued equally with literacy and numeracy, and they need to be developed in both unstructured and structured environments.

A continuum for access to and development of physical literacy is required from early childhood education to post-secondary, requiring all of these stages to develop, implement and monitor a physical literacy framework that is progressive and inclusive from infancy to adulthood, and continuous across the entire development spectrum. In this regard, physical literacy can be developed continuously in a manner similar to language literacy from early childhood to adulthood.

Photo: Athletics Nova Scotia

The ParticipACTION Expert Statement on Physical Activity and Brain Health in Children and Youth:

For better brain health, all children and youth should be physically active on a regular basis. In addition to physical health benefits, physical activity also improves cognition, brain function and mental health (ParticipACTION, 2018).

EARLY CHILDHOOD EDUCATION

Within early childhood education, quality physical literacy opportunities should exist for children from birth to five years old, and include structured and unstructured movement activities. Opportunities for development of movement competency should be mandated by the government for children ages birth to five years.

PRE-KINDERGARTEN—GRADE 12 EDUCATION

Physical literacy should be valued across the entire school day, not just within physical education and recess. Administrators, teachers and parents/caregivers should all value and prioritize physical literacy to the same degree that they value literacy and numeracy.

Recess

Supervisory staff should be trained in facilitating inclusive play. Spaces should be suitable for all forms of structured and unstructured play, including active and risky play. A wide variety of appropriate equipment should be available for all to access.

Daily Physical Activity

Opportunities should exist for students to explore and repeat movement skills in different environments within and outside of the school setting.

PHYSICAL AND HEALTH EDUCATION

Specialists should be hired to provide a progressive and pedagogically appropriate, year-long plan with physical literacy-enriched lessons. Existing or new educators should continuously professionally develop so that they can deliver a holistic and inclusive curriculum that meets the needs of the students as they achieve grade-specific, physical literacy outcomes.

HIGHER EDUCATION

Physical literacy should be adopted as an attribute or outcome for all graduates.

Teacher training should include movement-based learning strategies to enhance cognition, improve behaviour, and develop diverse learners.

Education Examples

PLACES

Educational facilities ensure everyone feels safe and included regardless of ability, background and age. Facilities are accessible to participants of all abilities and provide clear navigation by both staff and signage.

Staff and students make learning fun. The mental, physical, cultural, social, emotional and spiritual aspects of participants are considered. Social, communication and leadership skills are developed.

Facilities are checked daily before activities and are safe. The space is suitable, clean and well-maintained. Equipment is of appropriate size and in good condition.

PEOPLE

Accountable for teaching the physical and health education curriculum, educators are trained and qualified in physical education, with an understanding of physical literacy. They seek ongoing learning opportunities.

Educators communicate regularly with students, parents/caregivers and community members about progress. They regularly assess and modernize programs to benefit physical literacy development, and provide opportunities for physical literacy to be developed within the community.

PROGRAMS

Programs develop fundamental movement skills and patterns. They are planned, supported and developmentally appropriate for participants.

All participants are engaged in the lesson's activities. Each individual's needs regarding intersectionality of diversity are recognized, appreciated and supported.

Lessons are differentiated and inclusive. Elimination games, or games with physical activity as punishment, are not to played. Equipment and activities are modified for the ability and stage of participants.

Instructional time in physical education is a minimum of 225 minutes per week. Co-curricular physical literacy-enriching opportunities are provided to support application of learning (e.g., intramurals, sport, recreation, active transportation and active recess).

Programs should be progressive and challenging:

- Students are learning new skills and building on existing movement skills and strategies.
- Programs are movement-skills-based.
- Students have options to make an activity more or less challenging based on their skills and competence.
- Instruction places an emphasis on skill development over competition.
- Instruction is inclusive of the ability and stage of the students.

Programs should be well planned:

- Course units and lessons reflect the curricular goals of the physical education curriculum.
- Classes maximize active time within instructional time.
- Course units and lessons consider the physical, cognitive, social and emotional readiness of the students.
- Assessment is meaningful, ongoing and appropriate for learning outcomes, including fitness.
- Course units and lessons are well-prepared, and considerate of seasonal and school environments and schedules.
- Opportunities are provided within activities to explore, create and self-direct students' own learning.
- All participants get to participate to the best of their abilities (i.e., exclusion games should be avoided).

The Arts

The arts sector, including dance, circus, theatre and music, has embraced the concept of physical literacy.

The performing arts world recognizes the need to develop social connection, physical competence and psychological competencies in order to perform for their audiences. Performers in the circus arts, for example, can have long careers while maintaining a high level of physical literacy through their practice and performing.

Arts Examples

PEOPLE

Community dance teachers provide a quality physical literacy experience. Physical and health education teachers provide circus arts and dance programs as part of their curriculum. Instructors at Canada's National Ballet School train dance leaders using a physical literacy lens.

PLACES

Community dance studios promote and deliver physical literacy–based programs. The National Circus School based in Montreal provides recreational programs to develop circus arts.

Schools are innovative and provide circus arts and dance as part of physical education.

PROGRAMS

Community dance programs utilize physical literacy principles. Canada's National Ballet School's "Sharing Dance" program provides in-school and afterschool dance experiences.

Circus arts programs are provided as part of school physical and health education classes.

Vocation

For many vocations, physical and psychological competencies are required in order to safely participate in a productive manner. For instance, in the military there are numerous physical competencies that are required to be effective. In the postal service, letter carriers must develop the ability to have mobility in multiple contexts, such as walking on many different surfaces and judging the environment for hazards. In the construction industry, workers must possess good manual dexterity, spatial awareness, balance and coordination to perform lifting tasks. At present, workplace safety guidelines do not formally recognize physical literacy as a means by which to ensure worker safety and increase productivity.

Vocation Examples

PEOPLE

Employers and employees are trained in fundamental and job-specific movement skills. Further vocations include: workplace health representatives who encourage movement across the workday, ergonomics experts, safety officials, equipment design and construction experts (when equipment is used in employment tasks), and occupational therapists and rehabilitation specialists.

PLACES

Physical literacy happens in the workplace. The workplace may be fixed (e.g., office, building, factory) or may be beyond the control of the worker (e.g., military members, firefighters or police officers).

There is an important role for workplace health and safety in the design of both the physical workspace and occupational processes in which the workers are engaged.

Physical literacy is developed through a combination of on-the-job training of new entrants, self-directed fitness, and lifelong physical literacy development.

PROGRAMS

New entrants to an occupation should be assessed and evaluated on their physical capacity to perform occupational tasks. Where deficiencies are identified, an individualized training plan should be put in place to eliminate or reduce capacity shortfalls.

New entrants should be instructed in biomechanically correct execution of required tasks under optimal conditions, and feedback should be provided until performance reaches an acceptable standard.

Once the new entrant has reached an acceptable standard, the range of conditions under which occupational tasks are practiced should be expanded to include (where appropriate) unstable footing, adverse environments (rain and snow), and a range of thermal conditions from hot to cold.

Employees should be regularly re-assessed in the performance of occupation-related tasks, and as body capacity changes (with age, injury, or change in physical capacity). Task execution should be changed to accommodate, or training and capacity building interventions should be put in place.

Regardless of occupational-specific physical literacy activities, workers need to engage in the process of lifelong physical literacy development.

Daily Living

Physical literacy is critical for our ability to participate in everyday activities. The most important of these activities may be the ability to safely move about our home, yard or community. That means that people need the competency to move on all surfaces, to perform basic yet important movements such as ascending and descending stairs, and to detect and avoid hazards.

Daily Living Examples

PEOPLE

We all take part in activities of daily living to varying degrees given our abilities, vocation, etc. This includes activities such as walking the dog, performing daily chores, gardening, using active transportation, and playing with children or grandchildren.

Rehabilitation specialists (e.g., occupational therapists/physiotherapists, psychologists, athletic therapists, physical medicine physicians, certified strength and conditioning coaches and personal trainers) also work specifically with diverse populations to increase participation in everyday activities of daily living.

PLACES

The development of physical literacy is key for people to be able to actively transport themselves around their community by using bike lanes or walking paths/trails. It allows people to enjoy activities in their homes, gardens or backyards, as well as to navigate stairs and manage obstacles like icy sidewalks.

PROGRAMS

While not all programs focus on daily living, any program that develops physical literacy will benefit daily living. It is important to develop context-specific competencies, such as the ability to walk on ice or to detect hazards, instead of focusing on strength and balance in non-real life circumstances. While the safety component is critical, programs should find ways to craft their messaging in ways that encourage participation in activities from an enjoyment perspective as well as a safety perspective.

SECTION 7

Shaping Physical Literacy Policy and Strategy

To create a society that values physical literacy development, the different sectors of public health, recreation, sport, education and the arts need to work in a coordinated manner with common goals. By observing some agreed-upon principles and practices in policy and program development, their initiatives and programming in support of physical literacy will produce harmonious and impactful results. The following pages identify some key considerations and approaches to developing physical literacy policy and programming.

PHYSICAL LITERACY–ENRICHED COMMUNITIES

How do we support the development of physical literacy over the life course? One place to begin is within local communities, where we can ensure that the environment is suitable for supporting every individual's physical literacy journey.

Figure 18: *Physical Literacy-Enriched Communities*

A physical literacy-enriched community includes all sectors cooperating to create physically literate individuals. It includes programs, places and people, and it is inclusive in embracing everyone in the community regardless of age, ability or culture. It has community leaders who are committed to creating and sustaining healthy, active communities through the development of physical literacy, and who possess the vision and desire to improve physical activity and quality sport by establishing a focused framework that connects and aligns physical activity partners and initiatives.

Developing physical literacy through a community-based approach involves collaboration between public health, recreation, community sport, education and the arts. Connections between these sectors must be forged at the community level, and it is critically important that municipal governments be engaged and provide public recreation facilities and programming, as well as health and education services.

Through collaboration, physical literacy policy and programming can be provided through early childhood education centres, sport club programs, dance and gymnastics programs, K–12 school curriculum, recreation services, and seniors' community programming.

physicalliteracy.ca/communites

EFFECTIVE PHYSICAL LITERACY POLICY

THE FOUR PILLARS APPROACH

The International Charter for Physical Education, Physical Activity, and Sport (United Nations Educational, Scientific and Cultural Organization, 2015) clearly states that vested agencies must participate in creating a strategic vision and identify policy options and priorities that enable the fundamental right for all people to participate in meaningful physical activity across their life course.

The Four Pillars model is a new approach to help key decision-makers in the fields of public health, recreation, sport, education and the arts in identifying physical literacy policy considerations.

In developing the Four Pillars model, various international definitions of physical literacy and the wider construct of literacy were reviewed in order to establish common pillars of physical literacy. The model strives to be consistent with international understandings of what physical literacy is and how it can be used to develop and support public health, recreation, sport and educative goals.

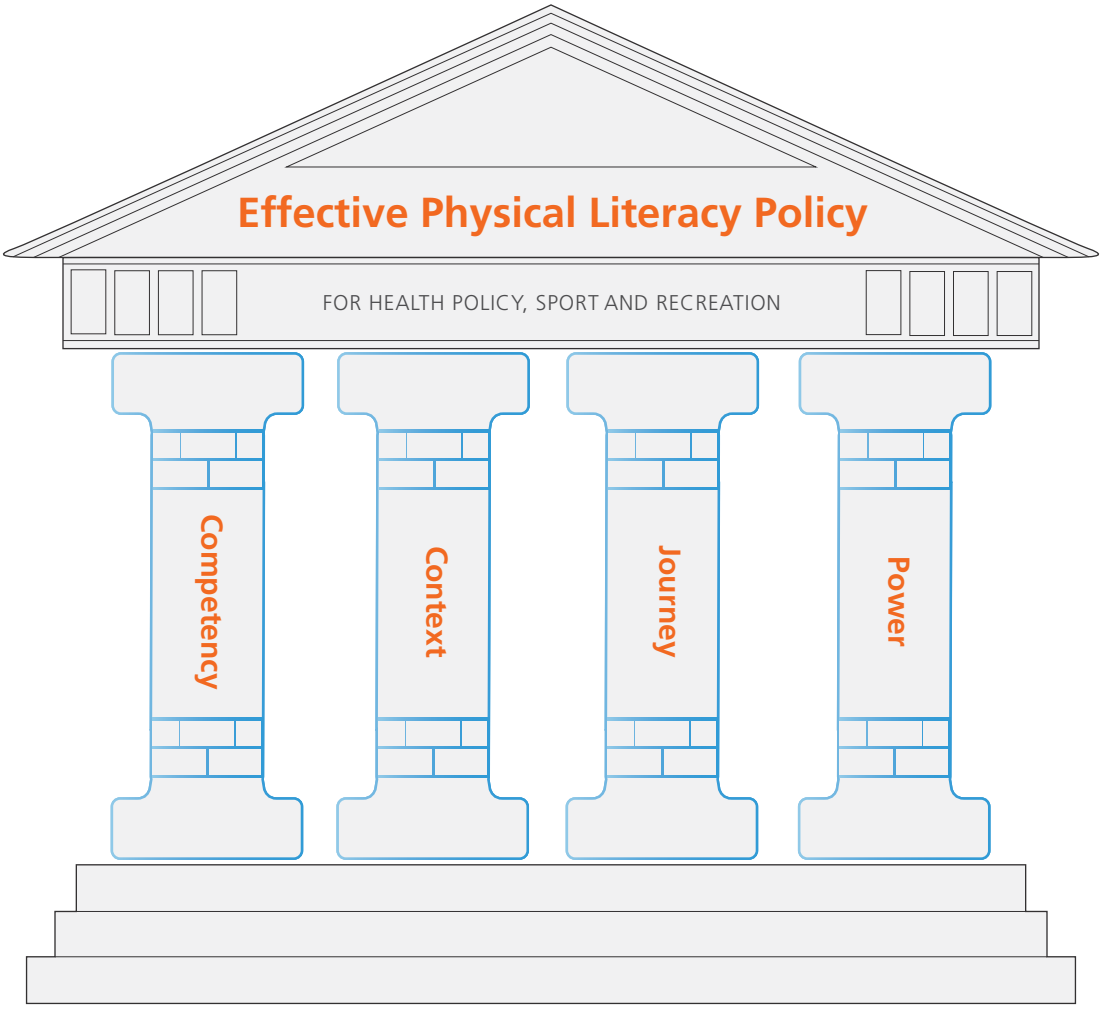


Figure 19: *Pillars of Effective Physical Literacy Policy*

PILLARS 1 & 2: CONTEXT AND COMPETENCY

The first pillar is context. Contexts can be physical or social. In the case of the former, we are talking about the competences, motivation and feeling states required to successfully navigate through one's physical environment which could include land, water, air, and ice and snow.

In a country like Canada, which is diverse in climate, all of these competences are essential for participation.

Avoiding environments perceived as dangerous, or when we lack physical competence and confidence to navigate them, lies in direct opposition to the notion of physical literacy.

With physical competence and confidence and embodied knowledge, we engage physically in the world, in different environments, with different objects and with people.

When an individual lacks physical competence, confidence, knowledge, and feels nervous or even hates movement, they do not participate. Since so much of participation involves other people, social inhibition limits the richness of participation and opportunities to make new friends and connections. It creates isolation. Physical literacy is then critical to meaningful social participation.

PILLAR 3: PHYSICAL LITERACY JOURNEY

We can think of physical literacy as a journey. A physical literacy journey is a decision to embark on a competency progression. For example, suppose you wanted to compete in a triathlon. Since you have only ever competed as a runner, you will now need to learn to swim and cycle in order to be competitive. This requires not only mastering the required movement skills, but also the psychological, social, cognitive and physical learning necessary to make you competent and confident at all of those activities. This is part of the journey.

Every time we commit to learning a new activity, we are enhancing our physical literacy journey. Sadly, participation seems to decline with age, and this means we embark on fewer journeys.

Research shows that participation in sport and physical activity declines from childhood, reaching the lowest levels in midlife and old age (Dudley et al., 2017). This suggests that if our movement experiences in childhood and adolescence are not diverse and enjoyable, we are not likely to begin a journey as we grow older. This is confirmed by the low rates of participation we observe across the life course.

Too often we are concerned when a child or youth decides to quit a sport or activity. From the perspective of physical literacy, this is only of concern if the pathway leads to inactivity. If instead, it leads to a new journey—a new opportunity to acquire new activities—this is not a problem, this is a transition.

Our job as educators, practitioners and advocates is to ensure individuals see physical literacy as opening up movement experiences, many and varied, to diverse participation. Life will not follow a single, straight-line pathway. The richest lives are those where participation paths form dense, interconnected webs. The rich and continued journey is the goal (Dudley et al., 2017).

PILLAR 4: POWER

The power of physical literacy refers to creating an inclusive and equitable society from a social, health and human capital point of view.

There are well-known disparities in health including physical activity participation across a number of social determinants. For example, girls and women are less active than boys and men, and the gap widens with age. Persons with disabilities, visible minority groups, Indigenous populations, asylum seekers and refugees, homeless people and those living in poverty are among the most vulnerable when it comes to health disparities and have been systematically excluded from opportunities to participate in physical activity and sport.

If systemic and structural barriers are removed, physical activity participation can enable marginalized populations to experience social inclusion and all the health benefits that non-excluded segments of our society enjoy. Moreover, physical activity, sport and recreation can play an important role in reducing social tensions and conflicts at the community and national level by addressing the sources of this exclusion and providing an alternative entry point into the social and economic life of communities.

At a basic level, well-designed physical literacy policies should promote the core values of physical activity and sport such as self-discipline, respect, fair play, teamwork and adherence to mutually agreed upon rules. This, in turn, should help individuals build the values and communication skills necessary to prevent and resolve conflict in their own lives.

It is imperative, however, to recognize and address the underlying, societal power structures of physical literacy, to ensure diversity and inclusion are embedded in policy.

SECTION 8

Conclusion: Taking Physical Literacy Forward

As we move into the third decade of the 21st century, society is more sedentary and diseases of inactivity are more prevalent than ever before—the need for improved physical literacy is greater than ever before. It is crucial that we embrace physical literacy as a catalyst for people of all ages and all abilities to be active and healthy. In *Developing Physical Literacy: Building a New Normal for all Canadians,* we have made a case for the value of physical literacy across movement environments and the life course. We know that it takes a village, and the collaboration of multiple sectors is necessary in embedding physical literacy development in plans, programs and policies. It is also critical that parents/caregivers are meaningfully engaged in this effort as they play a key role in facilitating more quality movement for themselves and their children. We know that the consequences of physical inactivity are significant, and we know that the inactivity trend is a national crisis that demands our attention. This is why a movement in support of physical literacy is so important.

We need to remember that people do not develop motor skills naturally. They must be nurtured, supported, encouraged and taught. This means we need to look at ways to support and celebrate every person's physical literacy journey throughout the life course.

For children and youth, we must find creative ways to ensure they have the opportunity—and where necessary, the instruction—to develop the motivation, confidence, physical competence, knowledge and understanding to take part in physical activity for the rest of their lives. For adults and seniors, we need to provide opportunities for them to learn new skills and build confidence in their ability so that taking part in physical activity is accessible and enjoyable, and becomes an ingrained habit.

For all individuals regardless of age, gender, ethnicity and ability, we need to make physical literacy both a reality and a foundation of national efforts to improve the health and quality of life of all Canadians.

SECTION 9

Appendices

Appendix A: A Brief History of Physical Literacy

Many people think that physical literacy is a new concept that dates from the close of the 20th century. The truth is that the idea of physical literacy has been referenced since at least the 19th century. Recently, Cairney, Kiez, Roetert & Kriellaars (2019b) wrote a review on the history of origins of physical literacy.

Here are some of their findings:

One of the earliest uses of the term was in 1884, when Edward McGuire of the U.S. Army Corp of Engineers used the term physical literacy to describe the eloquent movements of a local culture he witnessed during a feast (Kiez, 2015). This use occurred during the rise of worldwide mechanization and coincided with the invention of the first motor vehicle in 1885. As a result of mechanization and the apparent threat it imposed to the population's active lifestyles, the term physical literacy was routinely used in the U.S.A. by educators arguing for equivalency of physical literacy with "mental literacies". Subsequently, the term was also used in Australia and Great Britain.

Jump forward to the invention of the transistor in 1947† and the rise of the electronic era (1947–1985); we see a resurgence of the term physical literacy again in relation to threats of technological innovation to movement. Finally, with the creation of the Internet (1970s) and the World Wide Web (1990), the Internet era posed implicit threats to physicality. This resulted in the most recent rise in the use of the term, championed by English philosopher Margaret Whitehead (Whitehead, 2001).

The term physical literacy not new. Descriptions from the 20th century are similar to our modern uses of the term:

1930: "We must prepare for physical literacy as well as for mental literacy. A physically fit America becomes more necessary with modern mechanical inventions" (Kriellaars, 2015, p.37).

1937: "Games, climbing, walking, dancing and manual occupations such as carpentry, building and so on, all conduce to physical literacy: that is to a disciplined command over the body" (Kriellaars, 2015, p.37).

†*Bell Labs* in NJ, USA

Appendix B: Definitions

International Physical Literacy Association (IPLA)

Physical literacy can be described as the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life (IPLA, 2014).

Physical Health Education (PHE) Canada

Individuals who are physically literate move with competence and confidence in a wide variety of physical activities in multiple environments that benefit the healthy development of the whole person.

Physically literate individuals consistently develop the motivation and ability to understand, communicate, apply and analyze different forms of movement.

They are able to demonstrate a variety of movements confidently, competently, creatively and strategically across a wide range of health-related physical activities.

These skills enable individuals to make healthy, active choices that are both beneficial to and respectful of their whole self, others and their environment (PHE Canada, 2010).

SHAPE America

Physical literacy is the ability to move with competence and confidence in a wide variety of physical activities in multiple environments that benefit the healthy development of the whole person (Mandigo, et al., 2009).

QUEST Journal Article

The ability to move with confidence and competence using all the physical assets one has at their disposal at any given point in time across varying contexts. Physical literacy involves a continuum of learning by enabling individuals to achieve their goals, to develop their knowledge, movement and potential, and to participate fully in their community and wider society (Dudley et al., 2017).

Margaret Whitehead in her book *Physical Literacy; Throughout the Lifecourse* (original and most recent)

As appropriate to each individual's endowment, physical literacy can be described as the motivation, confidence, physical competence, knowledge and understanding to maintain physical activity throughout the life course (Whitehead, 2010).

- Identify the intrinsic value of physical activity.
- Overcome the need to justify physical activity as a means to other ends.
- Provide a clear goal to be worked towards in all forms of physical activity.
- Underwrite the importance and value of physical activity in the school curriculum.
- Refute the notion that physical activity is an optional extra of only recreational value.
- Justify the importance of physical activity for all, not just the most able in this field.
- Spell out a case for lifelong participation in physical activity.
- Identify the range of the significant others who have a part to play in enabling physical activity.

The motivation, confidence, physical competence,- knowledge and understanding to maintain physical activity throughout the life course.

A disposition to capitalize on the human embodied capability, wherein the individual has the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life (Whitehead, 2010).

A disposition acquired by human individuals encompassing the motivation, confidence, physical competence, knowledge and understanding that establishes purposeful physical pursuits as an integral part of their lifestyle (Capel &Whitehead, 2013).

One of the first written definitions was provided by Morrison (Wall & Murray, 1994, p. 5):

"To be physically literate, one should be creative, imaginative, and clear in expressive movement, competent and efficient in utilitarian movement and inventive, versatile and skillful in objective movement. The body is the means by which ideas and aims are carried out and, therefore, it must become both sensitive and deft."

Originally, Whitehead defined a physically literate person:

- moves with poise, economy and confidence in a wide, variety of physically challenging situations, and
- is perceptive in "reading" all aspects of the physical environment, anticipating movement needs or possibilities and responding appropriately to these, with intelligence and imagination (Whitehead, 2001).

Aspen Institute Project Play

Physical literacy is the ability, confidence and desire to be physically active for life (The Aspen Institute Project Play, 2018).

Sport New Zealand

Physical literacy is the motivation, confidence, physical competence, knowledge and understanding required by participants that allows them to value and take responsibility for engaging in physical activity and sport for life (Sport New Zealand, 2015).

Australian Government – Sport Australia

Physical literacy is the skills, knowledge and behaviours that give us the confidence and motivation to move throughout our lives.

Developing your physical literacy can give you the confidence and capability to be active, and stay active for life.

This is because physical literacy gives you:

- the physical skills and fitness,
- the attitudes and emotions that motivate you to be active,
- the knowledge and understanding of how, why and when you move, and
- the social skills to be active with others.

Any person, at any life stage and circumstance, can improve their physical literacy (Sport Australia, 2017).

The Australian Sport Commission presented the following definition in 2017:

"Physical literacy is lifelong holistic learning acquired and applied in movement and physical activity contexts. It reflects ongoing changes integrating physical, psychological, cognitive and social capabilities. It is vital in helping us lead healthy and fulfilling lives through movement and physical activity. A physically literate person is able to draw on their integrated physical, psychological, cognitive and social capacities to support health promoting and fulfilling movement and physical activity—relative to their situation and context—throughout their lifespan" (Australian Sport Commission, 2017).

The 2017 Australian Sport Commission definition is useful as it implicitly embodies the many domains of physical literacy and acknowledges that it is a long-term process or journey. It also acknowledges that physical literacy is about learning.

Dr. Dean Dudley

Physical literacy is the ability to move with confidence and competence using all the physical assets one has at their disposal at any given point in time across varying contexts. Physical literacy involves a continuum of learning by enabling individuals to achieve their goals, to develop their knowledge, movement and potential, and to participate fully in their community and wider society (Dudley et al., 2017).

Wales Institute for Physical Literacy

Physical literacy can be described as the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life" (Wales Institute for Physical Literacy, 2015).

Sport Wales

Physical literacy means that a person has a catalogue of technical skills along with the confidence and motivation to take part in lots of different sports and physical activities at every stage in their life. It gives them the power to choose to be physically active in whatever way they prefer, taking away fears of "having a go" or a lack of motivation that many of us can suffer from. There are four individual elements that lead to a person becoming physically literate: Physical skills + confidence + motivation + lots of opportunities = Physical literacy (Sport Wales, 2014).

Sport for Life: Long-Term Athlete Development 2.1

"Physical literacy is the foundation of both participation and excellence in physical activity and sport. Individuals who are physically literate are more likely to be active for life" (Balyi et al., 2016, p. 23).

Sport for Life: Developing Physical Literacy

"Physical literacy is the development of fundamental movement skills and fundamental sport skills that permit a child to move confidently and with control, in a wide range of physical activity, rhythmic (dance) and sport situations. Physical literacy also includes the ability to "read" what is going on around them in an activity setting and react appropriately to those events"(Balyi et al., 2010, p. 5).

Appendix C: Research in Physical Literacy

Considerable research exists on many of the component parts of physical literacy—movement competence, motivation and positive affect—but research on physical literacy as a comprehensive whole is limited.

While Dr. Margaret Whitehead can be credited for leading a resurgence in interest in the construct, her contributions predominantly focus on the conceptual and philosophical background. In other words, theory in physical literacy has significantly outpaced research. The exception to this has been in the field of assessment. Early on, practitioners and researchers interested in physical literacy acknowledged significant gaps in relation to how best to measure physical literacy for both assessment and tracking purposes. In response to this, three tools have been developed to date (see Appendix D).

PHYSICAL LITERACY RESEARCH GROUP

In 2016, Sport for Life announced the formation of the Physical Literacy Research Group, chaired by Dr. John Cairney from the University of Toronto.

The committee is comprised of leading scholars in the field, including Dr. Dean Kriellaars from the University of Manitoba, and several international scholars: Dr. Dean Dudley from Australia, Dr. Jackie Goodway from the United States, and Dr. Nalda Wainright from the United Kingdom. This group will continue to grow as more researchers become interested in physical literacy across the life course.

The mandate of the group is to advance scientific research in the field of physical literacy, and to act as a connector group to foster greater collaboration between researchers and stakeholders across multiple sectors. A major focus is on translation of knowledge to providers and policy makers in public health, recreation, sport, education and the arts.

Collectively, the group has already published several papers contributing to research in the field, including: validation of both PLAYFun (Cairney et al., 2018b) and Pre-PLAy (Cairney et al., 2018a); critical consideration for physical literacy policy across the public health, recreation, sport, and education sectors (Dudley et al., 2017); and the commentary on using physical literacy as an intervention for brain health in preschool (Cairney et al., 2016). Doctors Dudley, Goodway and Cairney were asked to edit a special edition in the Journal of Teaching in Physical Education. The entire collection is dedicated to using empirical methods to advance the science of physical literacy.

Appendix D: Physical Literacy Assessment Tools

PHYSICAL LITERACY ASSESSMENT FOR YOUTH – PLAY TOOLS

(Sport for Life, 2018)

Dr. Dean Kriellaars from the University of Manitoba created the PLAY tools in response to a lack of standardized assessments of physical literacy. PLAY includes a suite of tools: PLAYFun, PLAYBasic, PLAYSelf, PLAYParent and PLAYCoach. A recent study by Cairney and colleagues (2018b) confirmed that PLAYFun is a valid assessment of motor competence in children ages 9 to 14 years. Moreover, there is a lot of unpublished data showing the reliability and validity of both PLAYFun and PLAYSelf, as well as endorsement of the tools reflected in the widespread use of the assessment tools across different sectors and provinces. One of the appealing features of the suite of tools is that, once trained in their use, PLAYFun, Self and Coach are relatively easy and cost effective to administer.

The PLAY tools were originally designed for research but have proven to be an excellent fit with program evaluation. The tools have very good to excellent reliability, strong validity, are easy to interpret, and are very sensitive to change.

The assessment of physical literacy should include more than just movement skills (movement repertoire and competence to move). It should also include confidence, different environments, participation, comprehension and motivation. Perception of physical literacy by the child, parent or practitioner are also important to assess.

PHYSICAL LITERACY ASSESSMENT FOR YOUTH – NEW PLAY TOOLS

(Pre-PLAy & Adapted PLAY)

Preschool Physical Literacy Assessment – Pre-PLAy: An important development concerns assessment of physical literacy in the early years (birth to six years). Dr. John Cairney and colleagues developed Pre-PLAy (The Preschool Physical Literacy Assessment) modeled from PLAY. The tool is an observational assessment for use by early childhood educators to get a handle on where a child is developmentally on their physical literacy journey, so that appropriate steps can be taken to support the child. Educational resources to accompany Pre-PLAy are currently in development, and will better equip early childhood educators and other professionals working in this space to use the tool effectively. The initial results on Pre-PLAy have been published and are available (Cairney et al., 2018).

Adapted PLAY: A tool specifically designed for persons dependent on assistive devices such as a wheelchair, Adapted PLAY has been developed and tested under the direction of Dr. James Mandigo of Brock University in consultation with Kriellaars and Cairney. It assesses motor competence through a battery of five tests assessing locomotor, object control and balance skills.

More information on PLAY, Pre-PLAy and Adapted PLAY can be accessed at: **play.physicalliteracy.ca.**

CANADIAN ASSESSMENT OF PHYSICAL LITERACY (CAPL)

(Health Active Living and Obesity Research Group, 2018)

The first and most studied assessment tool from a peer-review publications perspective is the Canadian Assessment of Physical Literacy (CAPL). Born from a model that views physical literacy as the intersection of a number of different domains including physical fitness, motivation, understanding and knowledge of the health benefits of physical activity, and physical activity itself, CAPL is a battery of tests that brings together many existing measures and assessments (e.g., Children's Self-Perceptions of Adequacy in and Predilection for Physical Activity (CSAPPA); Pacer test) along with a new assessment: a "coordinated action" circuit that assesses the integration of a number of motor skills (e.g., object control, body control and locomotion) together in the execution of a series of tasks.

The research team lead by Dr. Mark Tremblay at the Children's Hospital of Eastern Ontario have conducted several studies of CAPL's assessment properties (e.g., reliability and validity). As a result of this, the tool has undergone several modifications since its inception.

More information can be found at: **capl-ecsfp.ca**

PASSPORT FOR LIFE

(Physical & Health Education Canada, 2013)

The Passport for Life tools were created to be used by physical educators to evaluate the physical literacy journey of students in the context of a physical education class.

Designed for children and youth from K–12 in the context of physical education, the Passport for Life tool includes a self-reporting section on active participation, a questionnaire about interested and preferred environments, along with eight modules that assess fitness (core strength, aerobic endurance and dynamic stability), movement skills (locomotion, object control and manipulation), and a living skills survey which assesses feeling, thinking and relating to others.

The model for Passport is consistent with the SHAPE America (2015) criteria for physical literacy. Lodewyk and Mandigo (2017) have published data on the validity of the tool as an indicator of physical literacy for students at the elementary level.

More information can be found at: **passportforlife.ca**

PHYSICAL LITERACY ENVIRONMENTAL ASSESSMENT (PLEA)

The Physical Literary Environmental Assessment (PLEA) tool is a program evaluation tool for sport, physical education and physical activity programs to assess how they are implementing the principles of physical literacy. Physical literacy is defined as "the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life." The PLEA tool will be useful for teachers, coaches and physical activity program leaders for program planning, delivery and evaluation.

The PLEA tool was developed through a rigorous, multi-stage process involving consultation with physical literacy experts, testing and validation in Hamilton, ON, and a Canada-wide national consultation process. The PLEA tool received input from over 400 physical activity, sport, recreation and physical education leaders from Hamilton, ON, and across Canada.

The PLEA tool was designed by Hilary Caldwell and Dr. Brian Timmons at the Child Health & Exercise Medicine Program at McMaster University and in collaboration with Sport for Life, Sport Hamilton and City of Hamilton Public Health Services.

More information can be found at: **sportforlife.ca/plea**

SECTION 10

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