

**A COMMUNITY BASED EXPLORATION OF  
PHYSICAL LITERACY IN MASTERS ATHLETES:  
AN OLDER ADULT PERSPECTIVE**

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF  
THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE  
in  
THE COLLEGE OF GRADUATE STUDIES

(Health and Exercise Sciences)

THE UNIVERSITY OF BRITISH COLUMBIA

(Okanagan)

August 2021

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PHYSICAL LITERACY IN MASTERS ATHLETES:  
AN OLDER ADULT PERSPECTIVE**

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## ABSTRACT

**Background:** Canadians are living longer and spending more years in retirement. This demographic shift has, in-part, prompted significant growth in sport participation by older adults. The purpose of this research was to explore the principles of Physical Literacy (PL) within the Masters Athlete (MA) community in the Okanagan Valley of British Columbia and to determine if this group of older active adults puts these principles into practice in their lives.

**Methods:** Sport clubs in the Kelowna and surrounding area were sent email invitations to participate, with a survey link embedded. Thirty-five MAs, males and females ranging in age from 55 to over 75 years of age, completed the survey. All were invited to participate in follow-up interviews that were conducted online. Thirty-one accepted the invitation, eight were interviewed.

**Results:** Of the 35 MAs who consented and completed an online survey of sport participation in a pre-COVID-19 scenario, more than half declared themselves to be lifelong athletes, while almost a quarter could be considered late bloomers coming to competitive sport later in life. Survey responses also showed that while most MAs were unaware of the term PL, the MAs embodied its principles in their practice of physical activity (PA) and sport to maintain a healthy lifestyle for life. The interviews of the 8 participants revealed that when presented with the PL definition, MAs felt that it had little relevance to them and they failed to see how it could be adapted to address the needs of older adults (OAs). The importance of social connection in sport was prominent in the interviews. Several commented about how sport had replaced the socialization previously found in the workplace.

**Conclusions:** These data suggest that although MAs are unaware of the construct of PL they have intuitively engaged with its principles and seek to share their active lifestyle with other OAs; however, absent from the definition is social connectedness, an essential element for OA participation in PAs.

**Keywords:** Physical activity, Older adults, Guidelines, Aging, Aged

## LAY SUMMARY

This research explored whether Masters Athletes are aware of and practice the principles of Physical Literacy (motivation and confidence, physical competence, knowledge and understanding and engagement in physical activities for life) (Tremblay et al. 2018a). Thirty-five Masters Athletes, males and females ranging in age from 55 to over 75 years of age, participated in the survey and eight in follow-up interviews. When Masters Athletes were presented with the Physical Literacy definition, they felt that it had little relevance for them with respect to their own physical activity and failed to see how it could be adapted to address the needs of other older adults. The importance of social connection in sport was prominent for engagement in physical activity, yet it does not appear in the definition of Physical Literacy. Although Masters Athletes are unaware of Physical Literacy, they are engaged in its principles and embrace social connectedness through sport participation.

## PREFACE

The University of British Columbia's Behavioral Research Ethics Board granted ethical approval for this research on December 3, 2020 prior to any data collection. The certificate approval number is H20-09234. The research conducted in the following study, to date, has not been submitted for publication. The author declares that no conflicts of interest are present. The composition and findings of this study are original and without dishonest data fabrication, manipulation, or falsification while presented honestly and without bias. This thesis work is the result of research conducted by Garry McCracken who collected and analyzed the survey and interview research while working under the supervision of Jennifer M. Jakobi, Ph.D.

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## GLOSSARY

**Canadian Physical Activity Guidelines**– These guidelines describe the amount and types of physical activity that offer substantial health benefits for Canadians. This has been specified as 150 minutes of moderate to vigorous activity weekly.

**Late Bloomers** – A term used in this study to describe those Masters Athletes who did not participate in athletic endeavours, outside of compulsory Physical Education in schools. They became involved in physical activity and competitive sports later in life.

**Long Haulers** – A term used in this study to describe those Masters Athletes who had played and competed in various sports throughout their lives.

**Masters Athlete (MA)** – For the purposes of this study, MA refers to an adult having reached the age of 55 years, is fluent in English and regularly and systematically trains and competes in organized sports.

**Metabolic Equivalent (MET)** – One metabolic equivalent (MET) is defined as the amount of oxygen consumed while sitting at rest and is equal to 3.5 ml O<sub>2</sub> per kg of body weight x min.

**Older Adult (OA)** – Also known as a Senior Citizen. A term that traditionally refers to adults who are over the age of 65 years.

**Physical Activity (PA)** – Any bodily movement produced by skeletal muscle that requires energy expenditure.

**Physical Inactivity** – Insufficient physical activity level to meet present physical activity recommendations; in this case, the standards established in the Canadian Physical Activity Guidelines.

**Physical Literacy (PL)** – The motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life.

**Primary Aging** – The inevitable deterioration of cellular structure and function, independent of disease and environment.

**Re-Kindlers** – A term used in this study to describe those Masters Athletes who were active in youth sport, but work and/or family obligations created environments in which they were not able to continue competition. Later in life, they returned to active competition, but not necessarily in the same sport.

**Secondary Aging** – The aging that results from physiological changes that are not inevitable and are caused by diseases and environmental factors, such as smoking and exposure to ultraviolet radiation.

**Sedentary Behaviour** – Any waking behaviour characterized by an energy expenditure  $\leq 1.5$  metabolic equivalents (METs), while in a sitting, reclining or lying posture.

**Sedentary Lifestyle** – A step-based measure of habitual activity level  $< 5000$  steps/day.

## ACKNOWLEDGEMENTS

I would like to begin by acknowledging the privilege provided to me by the Province of British Columbia to pursue this degree without payment. While free education is a senior citizen's right and privilege in this Province, it should never be abused or treated lightly. However, it is a privilege that is not exercised nearly enough.

The challenges associated with returning to academia after a full life of other pursuits can be significant. I would like to express my appreciation for the efforts made by so many members of the faculty and staff of the University of British Columbia Okanagan to assist this senior citizen (and bend a few rules here and there) to pursue this research project. Everyone that I have encountered has been friendly, helpful, professional and, above all else, supportive. One person in particular comes to mind, Sara McDonald in the College of Graduate Studies, who was always willing to offer assistance, explain (several times if necessary) the intricacies of various rules and find workarounds as appropriate.

Next, I would like to acknowledge the assistance provided by the participants in my study. Whether as a participant in the survey alone or a participant in both the survey and the interview, their input was honest, sincere and thoughtful. The conversations were fun! Without them this project would never have materialized.

To my supervisor, Jennifer Jakobi, Ph.D., I am sure that I presented more of a challenge than anticipated. Nonetheless, you gave me the guidance, support and kicks-in-the-butt (virtually, of course) necessary to keep this reformed engineer on a straight(ish) academic path. Thank you to my committee members Mike Chiasson, Ph.D. and Bradley Young, Ph.D. and my examiner, Dixon Sookraj, Ph.D. I would also like to acknowledge and thank Gareth Jones, Ph.D. Gareth helped me get started along this journey and as a professor and teacher he was the best that I have ever had the privilege of learning from.

To my lab mates, past: Anis, Sidney, Cori; and present: Rowan, Eli, Maxine, Owen, Chang, Parisa, Dana, Kate; thank you for your assistance, support and, frankly, tolerating some of my brusque mannerisms. And thanks to the many friends and fellow students who I have met during this journey: Kaja, Alex, Aida, Nikki, Jan, Ehsan and so many more.

One of the limitations identified in this study was the lack of ethnic diversity within the study population. It was a reflection of the socio-ethnic microcosm that is the Okanagan Valley. At UBCO, I have had the honour to meet students from all corners of the world, to learn of their cultures, to help them to learn about this wonderful place I call home and to be able to call them friends.

Penultimately (that's for Jenn), as a senior citizen, finding academic references from almost half a century ago is challenging (if at all possible). I would like to extend my appreciation to three people who believed in me enough to act as references. Thank you to Dr. Greg Kosar, Dr. Brett Wade and Andrea Mackintosh.

And finally (yes it does happen), I would like to express my love and appreciation to the person who was most affected by the long hours, the disrupted schedules and all of my whining and complaining for the past few years: Karen, it's time for a holiday!

Kukwstsétsemc

Merci à tous!

Danke an alle!

شكرا للجميع

Thank you to everyone who so kindly helped me along this journey!

## DEDICATION

This project is dedicated to the Masters Athletes who continue to defy social norms and the onslaught of the aging process to pursue excellence in their sport and to those who embrace George Bernard Shaw's comment that "We don't stop playing because we get old, we get old because we stop playing!"

# CHAPTER 1 - INTRODUCTION

## 1.1. WE ARE ALL GETTING OLDER

Life expectancy in Canada has greatly improved since the early 20th century. This has resulted in more people living to old age and living longer in old age. Male life expectancy at birth has increased by 20.5 years, from 58.8 years in 1920–1922 to 79.3 years in 2009–2011. During the same period, female life expectancy increased by 23.0 years, from 60.6 years to 83.6 years. In the Okanagan, a male child born in 2015 would have a life expectancy of 80.1 years (Government of Canada 2019). Similar increases have been recorded globally and highlights the importance of understanding and capitalizing on environmental and behavioural factors to better health towards increased life expectancy.

There are three major factors that influence health and life expectancy: genetics; environment; and behaviour (Sallis 2009). We have little to no control over our genetic makeup, leaving only environmental and behavioural factors available for influence. Food security, hygiene, access to safe drinking water and improvements in medical interventions are a few of the environmental factors that have contributed to increased life expectancy. While these factors have proven significant in positively influencing life expectancy, they are generally under external influences. Societal and governmental changes over time are generally contributory influences to these improvements (Clarke 2016). Behavioural factors, however, have not yielded similar advances in longevity, yet these are the factors over which individuals have the most control independent of genetics and environment (Geard et al. 2017). Data suggest that it is not only the global population that is aging, but there is also evidence that older adults (OAs) are experiencing less disability than previous generations, yet chronic disease and functional impairment remain and are potentially a growing concern (Christensen et al. 2009a).

We cannot escape the progression of aging; the causes of which can be delineated as primary and secondary. Primary aging has been described as “an inevitable deterioration of cellular structure and function, independent of disease and environment”. Conversely, secondary aging is the result of physiological changes that are not inevitable and are “caused by diseases and environmental factors, such as smoking and exposure to ultraviolet radiation” (Booth, Laye, and Roberts 2011, p 1497). Many of the negative effects associated with secondary aging, including

decreases in average life expectancy, are associated with lack of PA (Booth, Laye, and Roberts 2011; Christensen et al. 2009; Depp and Jeste 2006; Kolovou, Kolovou, and Mavrogeni 2011).

As environmental factors have improved living and working conditions for the majority of residents in developed nations, the outcomes associated with these have also had a negative influence on many behavioural factors, such as PA. The optimal development and function of the human body requires frequent PA (Booth, Laye, and Roberts 2011; Hallal et al. 2012).

Unlike the genetic and environmental factors which have either been predetermined or controlled by extraneous aspects, individuals have direct and independent influence over behavioural factors.

## 1.2. PHYSICAL ACTIVITY

The World Health Organization (WHO) has defined PA as “any bodily movement produced by skeletal muscle that requires energy expenditure” (WHO 2018, p.14). The Canadian Physical Activity Guidelines recommend a minimum of 150 minutes per week of moderate to vigorous intensity PA for all Canadians (Tremblay et al. 2011). The Canadian Physical Activity Guidelines do not limit PA to sports, training or recreational pursuits such as running, cycling, dancing or yoga. PA can also be incorporated into normal daily activities like gardening, housework and active jobs. There is a growing and established body of research that has drawn a clear relationship between PA and increased health benefits. These health benefits have shown to increase directly as the level and intensity of PA increases (O’Brien et al. 2018; Tremblay et al. 2011).

Contrary to the benefit of PA, physical inactivity is considered by many as the greatest threat to public health facing society in the 21<sup>st</sup> century (Sallis 2009; Tremblay et al. 2017). As we move further into the century, modern conveniences that make our lives easier also reduce the amount of activity that we engage in daily. The work environment is becoming more sedentary. Ironically, this has given rise to the use of electronic devices to encourage many people to periodically get up and move about. We are becoming less active and this is having a negative impact on both life expectancy and our Quality of Life (QoL).

Physical inactivity is the fourth leading cause of death worldwide (Kohl et al. 2012). In 2008, the WHO estimated that physical inactivity caused 6–10% of major non-communicable diseases

such as coronary heart disease, type 2 diabetes and breast and colon cancers. In their analysis of the effect of physical inactivity on major non-communicable diseases worldwide, Lee et al. (2012) found that physical inactivity has an effect similar to that of smoking or obesity on life expectancy. Furthermore, according to WHO, physical inactivity is a significant contributing factor in premature mortality. There is overwhelming evidence of the effectiveness of regular PA in the primary and secondary prevention of several diseases and premature mortality (Warburton et al. 2006; Warburton et al. 2010). Men and women as they age become more prone to health complications. The potential for developing heart disease, dementia, osteoporosis, diabetes and other diseases increases significantly beyond the age of 65 years. The health benefits of PA for OAs in disease prevention and life expectancy are well researched and understood (Tremblay 2018). Alongside decreased physical activity, sedentary behaviours and excessive sedentary time has also increased in recent years and epidemiological evidence is accumulating that indicates greater time spent in sedentary behavior is associated with all-cause and cardiovascular morbidity and mortality in adults (Tremblay 2018). Canada, among other countries, have publicized general guidelines recommending reducing sedentary behaviour (Young et al. 2016).

The Sedentary Behavior Research Network has defined physical inactivity as an insufficient PA level to meet present PA recommendations; in this case, the standards established in the Canadian Physical Activity Guidelines. It has also defined sedentary behaviour as any waking behaviour characterized by an energy expenditure  $\leq 1.5$  metabolic equivalents (METs), while in a sitting, reclining or lying posture (Tremblay et al. 2017). Light PA, which often is grouped with sedentary behaviour but is in fact a distinct activity construct, involves energy expenditure at the level of 1.6-2.9 METs. It includes activities such as slow walking, sitting and writing, cooking food, and washing dishes (Pate, O'Neill, and Lobelo 2008). However, this looks at individual activities rather than habitual daily behaviour or lifestyle. To provide a clearer understanding of a sedentary lifestyle, a step-based sedentary lifestyle index was developed that suggests that <5000 steps/day constitutes a sedentary lifestyle (Tudor-Locke et al. 2013).

Absent from the WHO's definition of PA are the behavioural and cognitive aspects of maintaining PA to ensure good physical and mental health for life. Addressing this gap is the concept of Physical Literacy (PL). First introduced in the United States and the United Kingdom in the early 1930s, PL was promoted as a comparative metaphor to language literacy (Jurbala



2015b). It has been developed over the last few decades with the first serious proposition of PL in 1993 by British researcher Margaret Whitehead, in an unpublished paper given at the International Association of Physical Education and Sport for Girls and Women. She suggested that PL was a critical element in experiencing human life to its fullest and that one could not survive well enough without developing their physical capacities. Without this capacity there would be a limitation in one's ability to fully experience and enjoy a high QoL (Whitehead 2001).

There is a growing PA crisis among OAs in this country. Recent national census data suggest that less than 12% of older Canadians (60-79 years) achieve even the minimum levels of PA required to maintain health (Jones et al. 2018; O'Brien et al. 2018). Increases to PA could translate to a greater than 30% decrease in the relative risk of morbidity and mortality and loss of independence. Regular aerobic activity and short-session exercise programs have been shown to present a reduced risk of functional limitations and disability in older age (Paterson and Warburton 2010). This is of great importance as for the first time in history, the 65+ years of age cohort is larger than the 14 and under cohort in Canada. According to Statistics Canada in 2016, seniors 65 years and over accounted for 17% of the Canadian population and this number is expected to increase to around 24% by 2036 (Uppal and Barayandema 2018). With inactivity being the fourth leading cause of death worldwide, coupled with the failure of a high percentage of Canadian OAs and the expanding OA population in Canada, the promotion of PA for OAs cannot be underscored enough.

Booth et al. (2011) postulate that there is no difference in the rate of decline for physiological functions related to primary aging between the lifelong physically inactive and the lifelong physically active. That is not, however, the case for secondary aging. Sedentary lifestyles accelerate secondary aging by increasing risks of chronic diseases, decreasing quality-adjusted years of life and reducing the average life.

As alluded to by Whitehead, life expectancy is not a good indication of a person's ability to enjoy a healthy life, especially as they age. QoL is a description of the general well-being of individuals and societies, outlining negative and positive features of life. There is a connection between QoL, PL and PA because the latter contributes to increased likelihood for independent living through enhanced health and reduced comorbidities associated with inactivity, e.g.,

obesity and diabetes. This improvement of overall health in turn contributes to enhanced QoL. As such, it is important for OAs to engage in PA and understand its benefits in order to enhance quantity as well as QoL as persons grow old, and this type of engagement is likely to increase an appreciation for PL (Whitehead 2001). The expanding population of OAs, the trend towards greater life expectancy and the failure of OAs to meet minimum PA guidelines points towards an imminent health care crisis in Canada and continued lack of understanding of PL. Maintaining QoL and independence comes at a significant cost as per capita health expenditures increase very rapidly after age 65 (Hogan and Hogan 2002), and enhanced understanding of PA and PL might be a viable means to cost-reduction associated with declining health.

### 1.3. PHYSICAL LITERACY

Since its introduction, PL has evolved as a construct representing many domains upon which physically active lifestyles are based, such as sport and physical education. Many sectors and organizations in Canada are embracing PL in their programs, practices, policies and research (Tremblay et al. 2018; Whitehead 2010). However, the use of inconsistent definitions has hindered promotion and advancement efforts. Early definitions described PL as a means of enhancing engagement in PA through a better understanding of fundamental movement skills and interaction with the physical environment (Balyi, Way, and Higgs 2013a). Recently, a common definition of PL was formalized through *The International Physical Literacy Association* as the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life (Tremblay et al. 2018).

PL is becoming a promising backbone for research and policy development to enhance lifelong PA and improve health outcomes. It is a unique construct from PA and physical fitness. Within Canada, PL is increasingly recognized as the foundation for a healthy active lifestyle. It has been adopted by organizations such as Sport for Life Society (S4L; [sportforlife.ca](http://sportforlife.ca) & [physicalliteracy.ca](http://physicalliteracy.ca)), Physical Literacy for Life ([physicalliteracyforlife.org](http://physicalliteracyforlife.org)), Physical & Health Education Canada (PHE Canada; [phecanada.ca/activate/physical-literacy](http://phecanada.ca/activate/physical-literacy)) and the Ontario Society of Physical Activity Promoters in Public Health (OSPAPPH; [papromoters.blogspot.com](http://papromoters.blogspot.com)) to promote PA and healthy lifestyles.

In recent years, similarly focused stakeholders, such as Physical Literacy Canada and Sport for Life, have worked collaboratively to develop a common framework for teaching and promoting PL. Canada's Physical Literacy Consensus Statement (June 2014) identifies four elements of PL:

- **Motivation and confidence (Affective).** Motivation and confidence refer 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 PA for life refers to an individual taking personal responsibility for PL 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.

PL is seen as a lifelong objective to promote the engagement and motivation to adopt a healthy and active lifestyle. PL is not a destination; it has been positioned as a journey that begins in childhood when youth are first introduced to activities and sport. It is anticipated that as children grow into adulthood and eventually to older age, they will carry the lessons learned from youth and continue to engage in PA and sports ( Longmuir and Tremblay 2016; Tremblay et al. 2018; Whitehead 2010).

PL has been well received in Canada. In fact, Canada may have made the most significant advances in the promotion and implementation of PL. Led by organizations like Physical Health and Education Canada, the Sport For Life Society and the Coaching Association of Canada (CAC), PL has been implemented in schools and the CAC athlete development programs (Roetert and MacDonald 2015). In light of the ever increasing health problems associated with

physical inactivity and obesity in Canadian youth, PL has become a key component of the development of sport, recreation, health and physical education programs (Higgs 2010).

Physical Health and Education Canada promotes PL through the Passport for Life assessment program. The basic premise of the program is that assessment goes beyond just PA and fitness to include confidence, environmental considerations, participation, understanding and motivation. The four components of PL that the Passport assesses are Active Participation, Living Skills, Fitness Skills and Movement Skills. The application of PL requires the foundational knowledge and understanding in ethical and productive ways across a wide range of environments, tasks and situations that allow for an individual to be truly physically literate (Mandigo et al. 2009).

A positive indicator of the advancement of PL in Canada and notably in British Columbia is the number of municipalities that have adopted the principles of PL. Although the application of PL has been embraced across BC, the effort is being placed on youth. Of 25 organizations questioned with regards to age groups that they target for their PL initiatives, all state that they focus on children (6–12 years) and 92% also focus on early years (0-5 years). This focus on children is understandable as it encourages the development of a strong foundation for fundamental movement skills and lifelong engagement in active lifestyles as they move through their teenage years and into adulthood. Only 7 organizations (28% of the 25) said that PL opportunities for OAs (60 years and older) were being acted upon, but no details of those actions were given ('Physical Literacy in BC' 2015).

In sport, PL has become a foundation of athletic development and training (Balyi, Way, and Higgs 2013a; Higgs 2010; Jurbala 2015a). Central to the platform put forward by Sport for Life and CAC is the Long-Term Athlete Development program, a multi-stage training, competition and recovery pathway to guide individuals and coaches in their experiences in sport and PA throughout the lifecycle. This development program was created to improve the quality of sport and PA so participants could realize their potential, whatever it may be. PL is, in fact, alleged to be an underpinning for sport excellence during the early stages of development (Balyi, Way, and Higgs 2013a; Jurbala 2015a).

PL is more than just being skillful or competent in a limited number of physical activities. PL brings together principles for lifelong learning and PA. Most importantly, it captures the

complex linkage between physical competence, motivation and confidence (Whitehead 2001). The definition of PL also presents the concept of taking responsibility for engagement in physical activities for life (Roetert and Ortega 2019). “A physically literate child is one who has the motivation, confidence, knowledge, skills and fitness necessary to enjoy a physically active lifestyle and who is committed to healthy habitual movement behaviors, including recommended regular PA and limited sedentary behavior” (Longmuir and Tremblay 2016b). This description could just as easily apply to any person at any stage of life. To-date literature searches using keywords “physical literacy”, “elderly”, “older adult” and eliminating “youth” and “adolescent” have returned few studies. Refined searches directed at “masters athletes”, “veteran athlete” or “competitive” returned no results.

Research into PL and its implementation to-date has focused on the young. There is a scarcity of research into PL as it relates to OAs. Yet, the inclusion of adults and OAs in PL research and education could have significant and immediate benefits to individuals, society and to the health care system. This approach is best applied through PA and exercise. As Sallis describes it, exercise is medicine. He goes on to describe how the healthcare system relies heavily on pharmaceuticals and procedures to react to disease management. This gives an opening to an alternative proactive approach wherein PA assessment and prescription forms a standard part of disease prevention and treatment paradigm (Sallis 2009; Lee et al. 2012).

Allender et al. (2006) describe how adults, and to a greater extent, OAs, face barriers to PA. These barriers, including motivation, anxiety and lack of confidence, increase with age. These and other authors also identify that PA opportunities should match the physiological capacity of these OAs (Allender, Cowburn, and Foster 2006; Jones et al. 2018a). This research indicates a demand for the definition of PL to evolve and address the needs and barriers to PA throughout the adult life course. Similarly, Nutbeam suggested that at different stages in life, the tools necessary for measuring health literacy will need to be adapted and that even the structural concept may not remain constant (Nutbeam 2008). This applies to PL and the need to create knowledge and concepts that are inclusive of all populations. PL definitions and approaches need to evolve beyond children and youth as it is not inclusive of the needs of OAs, nor does it reflect the barriers that they face.

The concept of PL to support PA in OAs is new. Whitehead, in an original use of PL suggested that human beings should be seen from a wholistic perspective rather than of two separate or dualist perspectives of “body and mind”(Whitehead 2001). This holistic application of PL to promote increased engagement with PA is particularly significant for OAs. In their Draft Development of a Physical Literacy Model proposal for Older Adults, Jones et al. (2018) suggested that the promotion of PL is emerging as a promising strategy to increase lifelong PA participation in younger age-groups; however, there is relatively little evidence of PL being used to support OAs in achieving the PA guidelines.

#### 1.4. THE MASTERS ATHLETE

For many adults, the transition beyond “middle age” to “older adult” sees several physical, emotional and societal changes that may offer opportunities and challenges that were previously unavailable. Normally, “Older Adults” refers to males and females who are over the age of 65 years. That is when the term “Senior Citizen” generally takes effect and government subsidies, such as the Canadian Pension Plan and Old Age Security pensions begin. It is also the traditional age for retirement. However, with the aging of society and elimination of mandatory retirement in many countries, these historical lines are blurring.

Several definitions for successful aging have been put forward by researchers and policy makers, as well as private citizens. However, due to the diversity of criteria used to define the term and the range of interest of those looking to define it, there is no consensus definition of successful aging, nor is it likely that one can be established. Notwithstanding an agreed upon definition, research shows successful aging can be regarded as a process of change involving high physical, psychological, cognitive and social functioning (Geard et al. 2017).

Within the cohort of OAs that appear to have achieved successful aging is a small group that choose to train for and to participate in competitive sports. This group of OAs is referred to as Masters Athletes (MAs). Many MAs are experienced athletes who have practiced their sports continuously for many years, while others have returned to sport after extended periods of inactivity and others simply have taken up sport later in life ( Geard et al. 2017; Reaburn 2009; Trappe 2001; Young and Medic 2012;).

Frequently, MAs are seen as models for successful aging. Research has shown they experience rates of physiological decline significantly less than what would be expected from the general, more sedentary population (Geard et al. 2017; Reaburn 2009). However, not all physiological outcomes for MAs are positive. While the systematic training and competition that MAs practice strengthens them against most metabolic syndrome related diseases, they are not immune to the onslaught of aging, notably, joint problems and atrial fibrillation (AF). Research estimates that older male athletes training at intense levels (greater than 2000 hours per year) are 5.6 times at greater risk of acquiring AF than those who train at moderate or light intensity levels (Stergiou and Duncan 2018). Although this cardiac incidence is higher than the general population, an active training and competitive schedule does contribute to MA having a lower incidence of physical disability compared to the sedentary population who are more prone to injuries and typically recovery from those injuries slower (Tayrose et al. 2015).

Although MA is an all-encompassing term for a very small and active group of OAs participating in high levels of sport activities, sport associations have identified specific age frameworks that best fit their communities. For example, Masters Swimming Canada defines a MA as anyone 18 years of age and over, but generally excludes those competing at elite or collegiate levels. Cycling Canada defines a MA in 3 categories (Masters 1, 2 and 3 ranked by historical performance) starting at 30 years of age. Athletics Canada defines MAs as “women and men 35 and over” (<https://athletics.ca/programs/masters/>) with competitions delineated by age groups, usually of 5-year groupings. Triathlon Canada does not use the term MA, also choosing to use age groups for all athletes, excluding those at the elite or professional levels.

## CHAPTER 2 - STATEMENT OF PURPOSE AND HYPOTHESIS

### 2.1. QUESTION

The initial question to be considered is: “Do MAs understand and practice PL?” I hypothesize that MAs do, in fact, understand and practice PL. However, within this initial question and the underpinnings of the hypothesis are several assumptions that need to be examined.

### 2.2. ASSUMPTIONS

It can be assumed that an older adult who trains regularly with the intent to compete in organized events is PA and operates within an environment of PL. However, it is essential to validate this assumption through an understanding of what informs PL in MAs. Evaluation of this assumption of PL will consider the following notions:

- MAs were athletes continuously from youth. In their pursuit of athletic performance, MAs followed a continuous path of athletic behaviour and activities that informed their PL;
- MAs are aware of and follow the Canadian Physical Activity Guidelines and this helps to inform their PL;
- MAs, who are PL, have formulated this knowledge from their involvement with younger athletes, either as a coach/mentor or in a familial role as parent or grandparent;
- MAs who are PL understand the potential impact that a useable and understandable PL model would have on other older adults; and
- OAs, and especially MAs, who meet these criteria are capable to articulate how they understand PL in their lives and how they practice it.



## CHAPTER 3 - METHOD

### 3.1. METHOD

This research study was conducted in two phases. The initial phase was an online survey and the second phase was a follow-up interview to a sub-group of participants who previously consented to being contacted to participate in follow-up interviews. The inclusion criteria for participation as a MA was an adult having reached the age of 55 years, fluent in English and regularly and systematically training and competing in organized sport. Organized sports are those sports governed by a provincial, national or international association that is responsible for the establishment and maintenance of rules for fair and regulated competition within the sport. No additional exclusion criteria were applicable. This research was approved by the local institutional Behavioural Research Ethics Board (BREB) H20-02934.

#### 3.1.1 SURVEY METHOD

Fifteen sports clubs (Appendix A) were approached by email with a Letter of Initial Contact (Appendix B). All clubs were within the Okanagan Valley of British Columbia between Penticton and Vernon. All club contacts were gained through personal connections or email addresses identified on club websites. Those contacted maintained a roster of memberships of MAs in their club. The Letter of Initial Contact requested that a director of the club send out a Recruitment Invitation Email (Appendix C) to all club members over the age of 55 years. Following this initial Recruitment Invitation through Email, a snowball effect occurred and that email was forwarded by club members to other athletes and also appeared on social media. No attempt was made to determine the number of MAs approached by the clubs via the Recruitment Invitation Email. Therefore, it was not possible to determine the response statistics. Moreover, the snowball effect of OAs forwarding the email also resulted in MAs contacting the researcher directly and indirectly, requesting the link to the survey.

The Recruitment Invitation Email asked for participation in a short survey relating to their physical activities and athletic competition, as well as motivation and engagement within the MA community in the Okanagan. At the end of the recruitment email there was a link to the survey. The survey began with the Informed Consent Form (Appendix D). The potential participant was required to electronically accept the Informed Consent to participate in research prior to data

collection beginning. Potential participants who declined consent to participate were thanked for their time and the survey closed. For participants who accepted, they were reminded that the study was an exploration of how MAs train and compete in non-pandemic times. Therefore, they were asked to answer the questions as if participation was ‘typical’. The WHO declared the COVID-19 outbreak as a pandemic on 11 March 2020. The survey was conducted from 9 December 2020 until 6 February 2021.

An initial set of themes that would guide the development of questions for the survey questionnaire were established. The first theme was socio-economic. Questions under this theme related to age group, sex, marital and work status. The second theme of questions explored the participants’ PA. These questions dealt with the participants’ preferred sports, PA and competition levels, motivation and their involvement with sports throughout their lives. The third theme was community. Here, questions related to how they maintain and promote an active lifestyle within their communities. The culmination of the survey was the PL theme.

Participants were asked simply if they had ever heard of Physical Literacy? For those who answered with a “Yes”, a follow-up question asked them what it meant to them. A final theme related to the current pandemic. Participants were asked how they had adapted their PA to accommodate the restrictions imposed by the COVID-19 pandemic.

At the completion of the survey, participants were thanked for their time and interest. An invitation to participate in the follow up Zoom interviews was extended to all participants who completed the survey. For those participants who accepted the invitation, they were asked to provide their name, telephone number and email address to permit the investigators to contact them. They were assured that their contact information would be protected. The questions for the semi-structured interview were established from initial analysis of the survey data.

### 3.1.2 INTERVIEW METHOD

Questions for this semi-structured interview were developed to delve deeper into the themes that had been established for the survey questionnaire and were guided by the pre-structured script (Appendix F). The themes also aided in the development of the selection criteria for the interviews. The selection criteria of participants for the interviews were based upon the sample of survey respondents and consisted of:

- A proportional representation of sex;

- A similar distribution over the age groups;
- A reflection of primary sport reported in the survey;
- A balanced account of positive and negative responses to the question: “Have you ever heard the term ‘Physical Literacy’?”. Of the positive responding participants, emphasis was placed on the answers most closely resembling the official PL definition;
- Similar depiction of long haulers, re-kindlers and late bloomers; and
- Any potential participant that the author had a relationship with, identified by contact name and information, was excluded from the interview.

All potential interview participants were contacted by telephone to establish a suitable time and date for the interview. At that time, they were asked to choose an alias that could be used in the final report to protect their anonymity. They were also reminded that the study related to a pre-pandemic environment.

Interviews were conducted using the UBC Zoom platform. Prior to each interview, an email was sent to the participant with the link for the Zoom meeting. In the preliminary dialogue, participants were asked for permission to record the conversation and were reminded that the Informed Consent that they had agreed to in the survey remained in effect. The key elements of the Informed Consent were restated to ensure awareness.

Interview questions were prepared in advance as part of the Semi-Structured Interview Script (Appendix F). Being “Semi-structured”, the direction of the interview was not always controlled by the interviewer. As a result, answers to many of the questions arose in conversation through the conduct of the interview.

During the interviews, for those participants who were unaware of PL, the concept was introduced using normal literacy and fiscal or financial literacy as comparative models. They were then asked how they thought that these models may apply to being active. All participants were shown a slide with the International Physical Literacy Association’s definition and Sport for Life’s Active for Life graphic (Figure 1) and asked if they could relate to the image and how.

Figure 1 – IPLC Definition of Physical Literacy

### **The 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.*

- The International Physical Literacy Association, June 2014



Participants were reminded that the purpose of the study was to look at activities pre-pandemic and thus questions and conversation would surround activities before the COVID-19 pandemic. However, given that these MAs were experiencing challenges, obstacles, disappointments and frustrations as a result of the pandemic's negative influence on their daily lives, conversations frequently wandered to current situations and affectations. After an appropriate time, the conversations were re-directed to the pre-pandemic situation. They were also reminded that because the discussions were about their activities and understanding of PA, they were asked to be as candid as possible. Interviews ended with an opportunity for the participant to relay any comments or questions.

## **3.2. DATA ANALYSIS**

### **3.2.1 SURVEY DATA ANALYSIS**

In accordance with UBC regulations survey data was initially maintained in the Qualtrics storage until the completion of the survey required for analysis. It was then downloaded to a Microsoft Excel file and saved to an encrypted USB drive. A second copy of the file was created for regular use and stripped of all personal identification information.

Initial analysis of the data was conducted to determine if the themes established for the survey remained evident and for identification of any new themes. Three themes emerged as being of common and greatest significance. These were:

- PA – life-long participation, understanding of the Canadian Physical Activity Guidelines;
- Community – involvement, motivation, role models; and
- PL – personal connection to definition, application to OAs, role models.

Following the initial analysis, answers to each survey question were compiled and, where appropriate, means and standard deviations determined. The data were summarized in tabular form and as graphics for further examination.

### 3.2.2 INTERVIEW DATA ANALYSIS

Prior to the interviews, the survey data was reviewed to confirm the appropriateness of the pre-determined themes. Once the participant agreed to having the interview recorded, recording began. When the interview was completed, the recording was downloaded to the same encrypted USB drive that the survey data was stored on. The interviews were reviewed and analyzed for categories, patterns, trends and themes (McMillan, 2002). Significant points raised by the participants were collated to refine themes for further analysis. Within analysis, the student as a MA in the upper end of the age range of participants worked to ensure their bias was not presented by ensuring open ended and general questions and maintaining neutrality in the question and minimizing personal story-telling. These were:

- PA – looking at training and competition regimes and at their understanding of the Canadian Physical Activity Guidelines standard and how it was being met by OAs;
- Activity for life – looking at how the MA has been involved in PA throughout their life;
- Motivation – looking at what motivates the MA and what barriers exist for them, how their community impacts their PA and a look at the MAs as a role model;
- PL – the MA's understanding of PL and the relevance of the current model and its constituent elements with respect to OAs; and
- COVID considerations – it is inconceivable that a discussion of the MA's application of PL can be conducted without some drift into the reality of the pandemic.

## CHAPTER 4 - RESULTS

Forty-two MAs responded to the invitation and began the Qualtrics survey. Thirty-seven MAs consented to participate (Appendix D) at the start of the survey. Thirty-five MAs completed the survey (Appendix E), two having chosen to exit the survey prior to completion. The partial survey responses for these two MAs were removed from the survey data, as it was determined that the partial answers could skew and adversely affect the veracity of the survey. Therefore, all results are based on the answers provided by 35 participants.

### 4.1. SURVEY RESULTS

#### 4.1.1 PARTICIPANT DEMOGRAPHICS

Thirty-five MAs, fifteen males and twenty females, completed the survey and are recorded (Table 1). The ages of the participants were collected in 5-year increments, similar to age group ranges used at many sports events. Evaluating the overall cohort of MAs, the participants younger than 65 years of age were mostly female (65%) compared to males (35%). Specifically, 15 of the 20 female participants (75%) were 65 years old or younger, whereas 8 of 15 male participants (53%) were in that age group. Only two of the 35 participants were 70 years of age or older, both were male.

Thirty-two participants reported being married or in a common law arrangement. The other three were widowed, divorced or separated. Sixteen participants were either employed or business owners and 19 were retired or semi-retired.

Table 1 – Age and Sex Distribution of Survey Participants

| Age Groups            | Count | Percentage | Male/Female |
|-----------------------|-------|------------|-------------|
| 55 - 59 years of age. | 10    | 28.6%      | 3/7         |
| 60 - 64 years of age. | 13    | 37.1%      | 5/8         |
| 65 - 69 years of age. | 10    | 28.6%      | 5/5         |
| 70 - 74 years of age. | 1     | 2.9%       | 1/0         |
| 75 - 79 years of age. | 1     | 2.9%       | 1/0         |
| Totals                | 35    | 100.0%     | 15/20       |

#### 4.1.2 PHYSICAL ACTIVITY

When asked how important it is to be more active than they are on a day-to-day basis, 16 participants responded that it would be “extremely” or “very” important” while 21 responded that they felt it “moderately” to “not at all” important to increase their activity levels. When asked how physically active they were as compared to other adults in their age groups, 27 (77%) responded “I’m already active enough”. Similarly, when asked about their skills in sports, 74% claimed that they were either “moderately” or “a lot better” relative to other adults in their age cohort.

Two questions explored the participants understanding of a very basic aspect of the physiology of exercise: their heart rate. Thirty-one of the participants (88.6%) reported that they knew their resting heart rate and 29 participants (82.9%) knew their maximum heart rate.

The most heavily represented sport in the study was multisport, such as triathlon, duathlon, aquathlon and aquabike, with 12 participants, or 34% of the sample, claiming it as their primary sport (Table 2). Swimming, both pool and open water, and Nordic skiing were second in participation within the sample, each with 7 participants, or 20% of the sample naming these as their primary sport. Running, inclusive of road and cross-country participants, garnered five athletes; cycling had three athletes and there was a single paddler. Of note in these sports is the sex split. Four males and three females stated that Nordic skiing was their primary sport, whereas only one male and six females identified with swimming as their primary sport.

When asked about time spent training in their primary sport, over 86% of the sample trained more than 5 hours per week. In this total sample of MAs, 50% (18 of 35) of participants trained 10 to 20 hours per week, while 5 trained less than 5 hours per week (Table 3). On average, these

MAs competed in 4 events per year (Table 4). Twelve of the 35 participants (34%) reported competing in more than five events per year in their primary sport.

Table 2 – Primary Sport Distribution of Survey Participants

| <b>Sport</b>          | <b>Responses</b> | <b>Percentage</b> | <b>Male/Female</b> |
|-----------------------|------------------|-------------------|--------------------|
| Cycling               | 3                | 9%                | 1/2                |
| Nordic Skiing         | 7                | 20%               | 4/3                |
| Running               | 5                | 14%               | 4/1                |
| Swimming              | 7                | 20%               | 1/6                |
| Triathlon or Duathlon | 12               | 34%               | 5/7                |
| Other Sports          | 1                | 3%                | 0/1                |

Table 3 – Hours per Week Spent Training for Primary Sport

| <b>Weekly Hours Training</b> | <b>Responses</b> |
|------------------------------|------------------|
| Less than 5 hours            | 5                |
| 5 - 10 hours                 | 12               |
| 10 - 20 hours                | 18               |



Table 4 – Annual Competition by Primary Sport

| Sport                 | Annual Competitions |   |   |   |   |    |
|-----------------------|---------------------|---|---|---|---|----|
|                       | 1                   | 2 | 3 | 4 | 5 | >5 |
| Cycling               | 1                   | 0 | 1 | 0 | 1 | 0  |
| Nordic Skiing         | 0                   | 1 | 0 | 1 | 1 | 4  |
| Running               | 0                   | 1 | 1 | 1 | 0 | 2  |
| Swimming              | 1                   | 0 | 1 | 0 | 3 | 2  |
| Triathlon or Duathlon | 1                   | 1 | 2 | 3 | 2 | 3  |
| Other Sports          | 0                   | 0 | 0 | 0 | 0 | 1  |
| TOTALS                | 3                   | 3 | 5 | 5 | 7 | 12 |

Seventeen of the 35 participants indicated that they also have a secondary sport in which they train and compete. The triathlon/duathlon group is the largest of these with eight of the twelve claiming to have secondary sports; seven were runners and 1 was a swimmer (Table 5).

Table 5 – Distribution of Secondary Sports Among Primary Sports

| Primary Sport         | Secondary Sports |         |         |         |           |
|-----------------------|------------------|---------|---------|---------|-----------|
|                       | Cycling          | Running | Sailing | Swimmin | Triathlon |
| Cycling               | 0                | 1       | 0       | 1       | 1         |
| Nordic Skiing         | 1                | 1       | 0       | 0       | 0         |
| Running               | 0                | 0       | 0       | 0       | 1         |
| Swimming              | 0                | 1       | 1       | 0       | 0         |
| Triathlon or Duathlon | 0                | 7       | 0       | 1       | 0         |
| Other Sports          | 0                | 0       | 0       | 1       | 0         |

#### 4.1.3 PARTICIPATION THROUGHOUT LIFE

When asked about participation in PA and sports throughout the life course, three main categories emerged (Table 6). Eighteen participants (over 50%) claimed that they had played

and competed in various sports throughout their lives. These participants, forming the first category, are referred to as the “*long haulers*”. The second category of MAs evident in this sample were the “*re-kindlers*”. This cohort of MAs is comprised of two sub-categories. In both sub-categories, the participants were active in youth sport, but work and/or family obligations created environments in which they were not able to continue competition. Later in life they returned to active competition, but not necessarily in the same sport. The first sub-category ceased exercising and competition until returning to sport later in life, whereas the second sub-category maintained an interim exercise program, but did not compete in sport, before eventually returning to competition. The two sub-categories were combined after the results of the survey were reviewed. The significant difference between these sub-categories was that the MAs in one stated that they maintained an exercise program, but the MAs in the other stated that they did not. However, the survey did not adequately explore the definition of that exercise program. As a result, it was determined that there was not enough difference to maintain separate categories. The nine MAs in the combined re-kindlers category represented 26% of the participants. The final category of participants were those MAs who abstained from athletic endeavours, outside of compulsory Physical Education in schools. This group of 8 participants (23% of total), the “*late bloomers*”, became involved in PA and competitive sports later in life. Within the late bloomers category are 7 females representing 35% of the total female population of this study.

Table 6 – Participation in Sport Throughout Their Lifespan

| Participation through the Lifespan   | Total | Percentage | M/F | M/F<br>% by sex                               |
|--|-------|------------|-----|---|
| I have played and competed in various sports all my life   | 18    | 51%        | 9/9 | 60% / 45%<br>Long Haulers                     |
| I began while in school, but work and/or family obligations caused me to stop exercising and competing                                       | 2     | 6%         | 2/0 | 33% / 20%<br>(combined cohort)<br>Re-kindlers |
| I began while in school and although work and/or family obligations caused me to stop competing, I continued to maintain an exercise program | 7     | 20%        | 3/4 |   |
| Growing up, I never felt motivated to exercise or be involved in sports. I began to get involved in sports and competition later in life     | 8     | 23%        | 1/7 | 7%/35%<br>Late Bloomers                       |

#### 4.1.4 COMMUNITY INVOLVEMENT

Participants were asked how they use their athletic abilities to promote an active lifestyle within their community? They were asked to select all answers that applied and thus total responses would exceed the total number of 35 participants.

Community involvement provides MAs with the opportunity to share knowledge and competence in their sport, while helping to provide motivation to others who may just be entering their MA journey. Table 7 indicates that encouragement of friends and family wherever possible was undertaken by 74% of the MA sample (26 of 35 responses). Within this group, 16 participants identified that along with encouragement they help with training tips and equipment selection. The other ten MAs offered encouragement, but chose to allow their friends and family to make their own decisions relative to participation.

Table 7 – How do you promote an active lifestyle in your community?

| Promotion of PA Within the Community   |    |
|--|----|
| I encourage friends and family members, but leave decision making and participation to them. | 10 |
| I encourage friends and family and help them wherever I can.                                 | 16 |
| I am actively involved in youth sports   | 1  |
| I am actively involved in adult sports.  | 11 |
| I prefer to keep to myself in my training and competition.                                   | 7  |
| I also promote an active lifestyle in my community in other ways.                            | 7  |

Of the total responses, eleven indicated that they are actively involved in supporting adult sports, while only one person was actively involved in youth sport. Of the total responses, there were 7 that prefer to not promote active lifestyles in their community.

Table 7 shows that 16 (46%) of the participants suggested that they encourage friends and family and help them wherever possible to engage in PA. Another 10 participants also indicate that they encouraged friends and family to be active but are not involved in decision making. Ten participants responded that they were actively involved in adult sports as organizers, volunteers, or coaches. However, only one participant was similarly involved with youth sports. Seven

participants commented that they find other ways to support an active lifestyle in their communities. These activities included participating in workshops and presentations and sharing ideas on social media accounts. Seven participants indicated that they preferred to keep to themselves for training and competition. Five of these were female and, for all five, this was their only response to the question.

#### 4.1.5 THE NEED FOR PHYSICAL ACTIVITY

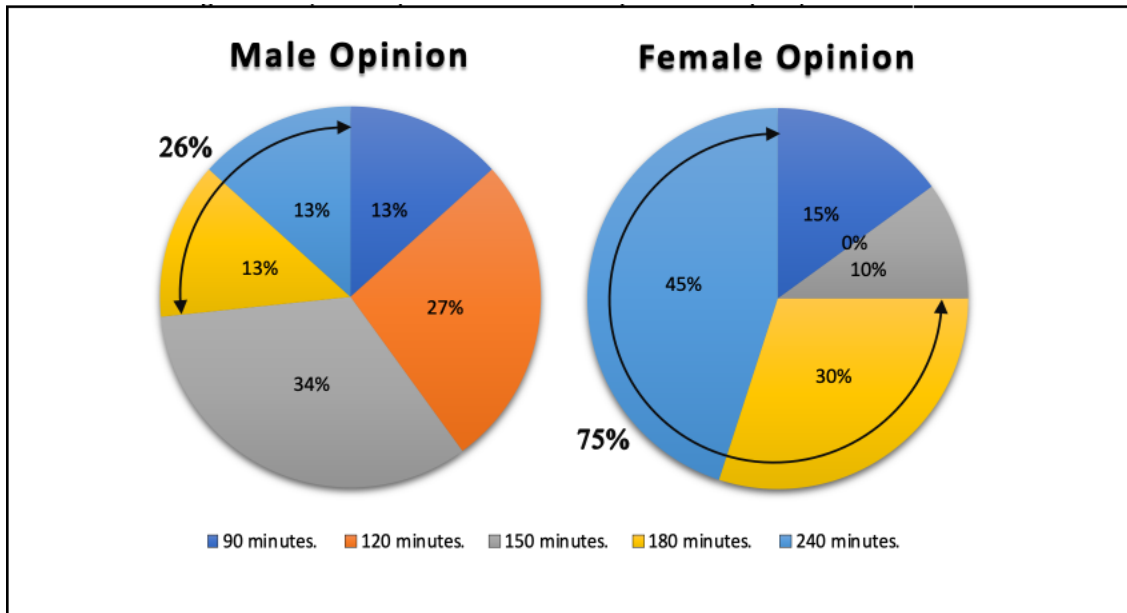
Participants were asked to give their opinion on how many minutes per week of moderate or vigorous activity, at minimum, a Canadian adult should complete per week to maintain good health. The Canadian Physical Activity Guidelines recommendation is a minimum of 150 minutes per week of moderate to vigorous intensity PA for all Canadians however, answers ranged from 90 minutes to 240 minutes. As would be expected from a group of very active adults, responses were heavily skewed towards the high end (Table 8), with 55% of participants suggesting that a number greater than the Canadian Physical Activity Guidelines of 150 minutes was appropriate, while only 25% selected an amount less than the recommended standard.

Table 8 – How many minutes per week of moderate or vigorous activity per week?

| <b>Minutes/Week</b> | <b>Total</b> | <b>Percentage</b> | <b>M/F</b> |
|---------------------|--------------|-------------------|------------|
| 90 minutes.         | 5            | 14%               | 2/3        |
| 120 minutes.        | 4            | 11%               | 4/0        |
| 150 minutes.        | 7            | 20%               | 5/2        |
| 180 minutes.        | 8            | 23%               | 2/6        |
| 240 minutes.        | 11           | 32%               | 2/9        |

There was also a significant sex difference in the perception of the need for PA (Figure 2). Without reference to the Canadian Physical Activity Guidelines, the participants were asked to provide their opinion of “how many minutes per week”. Seventy-five percent of females stated that minimum PA levels should be at 180 minutes per week or greater, while only 26% of males expressed the same opinion. Interestingly, all 7 female late bloomers chose 240 minutes, whereas the one male late bloomer selected 150 minutes.

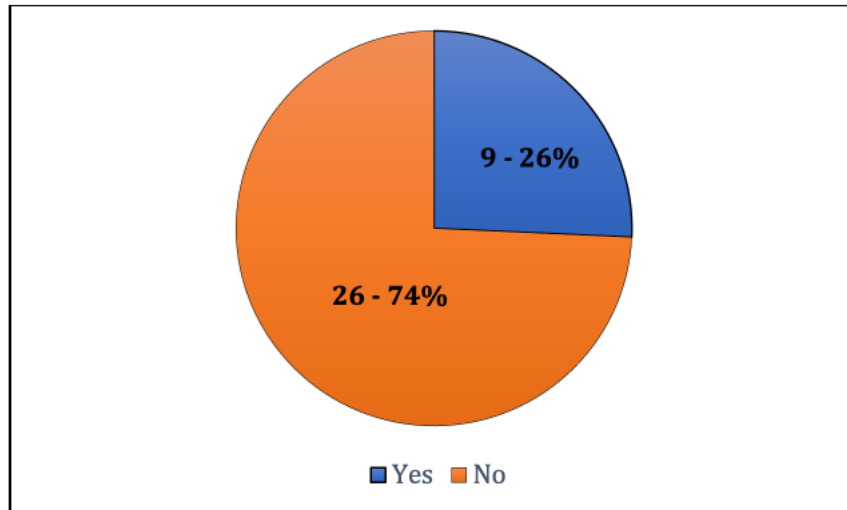
Figure 2 – Opinion by Sex of Minimum Physical Activity Requirements



#### 4.1.6 PHYSICAL LITERACY

The survey culminated with a simple question, “Have you ever heard the term ‘Physical Literacy’?” with only a “Yes” or “No” answer option. As shown in Figure 3, only nine (26%) of the 35 participants indicated that they had heard of PL. For only those participants who had answered that they had heard of the term, an additional question asked them to define what PL means to them. Two responses touched upon all the key points of the International Physical Literacy Association definition. The other seven responses alluded to elements of being “aware of” and “in tune” with their body, “the importance of a physically active lifestyle” and how to maintain “fitness and good health through activities and lifestyle”.

Figure 3 – Have you ever heard of the term Physical Literacy?



#### 4.1.7 COVID-19 CONSIDERATIONS

In a final question, participants were asked about how they have adapted to maintain PA during the pandemic. Written sentiments shared by a number of MAs regarding the difficulty in normal training was well presented in one response: “without regular exercise my mood is affected and it is difficult for those who live with me.” Another common comment was that there was a “lot of training alone”.

Common issues identified included the cessation of racing, closed and reduced access to facilities and concerns about group activities, indoors and outdoors. To overcome these restrictions, participants mentioned several options. Some discussed group bike rides using various online apps and social media platforms or setting up gyms in their homes. Facility closures, bookings and lack of contact with professionals (e.g., coaches, or other athletes) were also identified as barriers to maintaining activity and motivation to activity during the pandemic. Masters programs for many sports also ceased operations. As a result, most MAs had to train without coaches and on their own. Some identified accessing their coach’s training programs, while others learned to develop their own.

Swimming pools and gyms eventually re-opened under significant restrictions. This required booking appointments for limited capacity facilities. One participant mentioned having to go online at midnight to book a swimming pool lane two weeks ahead.

The lack of group activities and especially racing adversely affected motivation for many MAs. One participant commented “Motivation is difficult if no competition until 2022.” Virtual racing for running and cycling was referred to as a means of replacing *in person* racing.

There were a few participants who said that because they generally train on their own, they were not too badly affected. One participant said, “No adaptations were needed since I can run anywhere without restriction.”

## 4.2. INTERVIEW RESULTS

Of the 35 participants who completed the surveys, 31 accepted the invitation to the interviews. Nine participants were selected and invited to participate in accordance with the selection criteria specified in Section 3.1.2. However, only 8 confirmed their willingness to participate in the interviews. Interview participants included:

- Five females and three males;
- Four in the 60 – 64 age group, three in the 65 – 69 age group and one over the age of 70 years;
- Three triathletes, two Nordic skiers, two swimmers and one runner;
- Three participants had heard of PL while five had not; and
- Four long haulers, three re-kindlers and one late bloomer.

### 4.2.1 PHYSICAL ACTIVITY AND TRAINING

The purpose is not always associated with podium performances, but these MAs have developed the movement skills and patterns necessary to successfully compete in their chosen sports and many of them do excel on the national and international stages. This physical competence might also be applicable in more than a single sport, and activities vary between seasons which keeps MAs active throughout the year for those who do have seasonal passions. Mike expressed the sentiment of these MAs stating that “I enjoy getting out and moving, I enjoy feeling my body perform.” Margaret reinforced that when she commented about the “endorphin rush” that she receives from exercise. However, sometimes, as Sarah put it “If I don’t continue to be active ... well, you don’t want to live with me”.

Most of the MAs interviewed either paid for personal, professional coaches or attended group sessions led by professional coaches. Both Sarah, an elite level age group triathlete, and

Heather, a similar level Nordic skier, commented that their sports were year-round and both rely heavily on very proficient and professional coaches to develop their programs and both follow the programs precisely. For Sarah, her training week consists of about 10 hours in winter and increases to 20 hours in summer. Heather's training is similar, but reversed by season, with about 15 hours per week in the summer and higher in the winter. Both compete regularly and both, with the help of their coaches, prioritize their races. Heather tries to race weekly using some of the race weekends as part of her training protocol. Both use the lower priority races to prepare, mentally, physically and tactically for the higher priority races. The competitive moments are saved for the "A" events where winning is important. Both rely heavily on heart rate monitors for training and racing. David, the oldest survey participant, reported that he trains by perceived exertion, never using a heart rate monitor. As a runner he was very competitive in high school, winning several awards. Now he runs 6 days per week, logging about 50 km in the summer and a "bit less" in the winter. He competes about 10 times per year in distances from 5 km to half marathons, maintaining his competitive approach to events. These three high achieving MAs made similar comments that they view their PA and training "just like a job".

Not all the MAs reported highly competitive spirit for performance at registered events.

Margaret, a mid-pack triathlete, is only slightly confident that if she were to increase her training that she would see any corresponding success. In her own terms, she is too "undisciplined". She enjoys participating, especially in local triathlons and being active, but is not competitive in competition.

#### 4.2.2 PARTICIPATION THROUGHOUT LIFE

Not all MAs interviewed have been involved in sport for their entire life. For example, Sarah was introduced to running by a teacher in secondary school, but never got past the recreational runner level. She became increasingly involved in sports through fundraising events for both running and cycling and found both to be very challenging and rewarding. When she and her husband retired to the Okanagan, she found a very active community of triathletes. Within three years she transitioned from novice to world championship level. Heather also identified as not being involved in youth sport; however, she conveyed she was held back from sports because she faced the "sports are for boys" principle at home. Thus, she never pursued exercise until she went to university and found her love for sports and competition. Later she met her future



husband who was a very avid outdoorsman and athlete. This cemented her love for outdoor sports. While she established her career and family, she maintained her fitness, but refrained from competition. When she retired, she took on Nordic skiing in earnest, becoming a world class skier. She indicated she has passed her passion for sports and competition to her children.

Ruby also identified as a late bloomer. She referred to herself as a “lake swimmer”, just playing in the water growing up and, said “I always promised myself that one day I would learn how to swim properly.” Then, a friend called her on it and asked when she was going to start. That was the impetus she needed. Now she swims 3 to 4 times per week, but she insists that she only competes with herself. “It’s internal!” Opposite to this growth in sport participation David, was very active and competitive as a youth, but left competition in his early 20s as he travelled frequently. He did, however, maintain his running on a casual basis. Later, as his life became more settled, he returned to racing.

#### 4.2.3 MOTIVATION

Most of the MAs interviewed said that their greatest motivation was internal. Reflections on what motivates them range from Margaret’s comment that she longs for the endorphin rush she gets from exercising to conveying she is self-motivated, striving to be healthy and conscious of weight. David’s position is that he is motivated by his own determination and that he refuses to give up. Mike said “I like doing it” and “I enjoy feeling my body perform.” Heather commented that “when I retired I needed to have a structure that would give me ... goals”.

These MAs also referred to their community as a major motivator for them. Janet applauds her husband as her greatest external motivator and training partner, but also claimed that the interaction with her training group is one of the reasons that she loves to do it. For Rex, a swimmer, it’s about spending time with like-minded people who enjoy encouraging others. Accountability to the group was also significant. Margaret said that her commitment to the other members of her group was important. “I can’t let them down!”

Most athletes also face barriers in maintaining their training and competitive spirit. All of them referred to the current pandemic as a barrier or disincentive. For many of them, coaching has been so heavily reduced that it is almost non-existent. These MAs also suggested that nothing gets in their way. Janet reflected on the need to persevere by saying “you know when you first start something you have to force yourself to do it – now it’s what I want to do. It provides

balance in my life”. She went on to say that once habits are formed, there are no barriers. Ruby commented that “there was a time when things were more difficult for me, but even then, I needed that time for me”.

When further questioned on factors that limited PA, several commented about the aging body, chronic injuries and that sometimes life just gets in the way. For Mike, two knee replacements keep him away from running and other sports where impact may cause problems. And Heather said that chronic back injuries cause her to use more caution in training than she would like.

#### 4.2.4 PHYSICAL LITERACY

Three of the eight participants had heard of PL. For two of them, their definition in the survey touched all the key points of the International Physical Literacy Association’s definition. During the discussions, it was found that both of these MAs had professional connection to the application of PL in schools. The third commented that he thought that he may have read it in a coaching manual, but really did not know what it meant.

When participants were shown the Active for Life graphic (Figure 1), discussion generally centered on the fact that the points made in the definition reflected the actions that they had taken as they had developed their lifestyles. They also commented that PL, as it exists, is focused on the young and that it had little relevance for the more sedentary OAs. Heather remarked that her coach is supposed to train all ages. However, she said that “you can’t find people who want to coach adults. Coaches are focused on the development and the possibilities and they see that in a youthful experience”. She went on to say that she and a friend started a community group within her club to allow other OAs to join them for training and a cup of coffee and some discussion afterwards. The group ballooned rapidly. This demonstrated to her that there was a desire to get involved with something analogous to PL within the club. These, however, were motivated people who were already active. “But, for the general population it’s a hard sell.”

Margaret, a mid-pack triathlete participant who had not heard of PL, stated that “I would say that those conditions definitely fit my *modus operandi*!” She went on to say that it could have some application for OAs, but that they would need to be “incentivized” to get moving. She said that there is a need to return to ParticipACTION and the *Body Break*® television program, but aimed at OAs. Mike agreed with Margaret that an incentive was needed, or as he put it, the trick is to find the “right hook”. “People don’t always do what’s good for them because they know what’s

good for them; people will do what's good for them because it's fun". He commented that he had just moved to the Okanagan and that where he had been living, Pickleball had recently been introduced and was rapidly enrolling large numbers of local OAs. It was a great mix of PA, socialization and fun.

Sarah said that when she was young, her mother would do some strange sorts of exercises. It wasn't until later in life that she realized that her mother knew what she needed for daily activities and chores; they were her own functional exercises. Preventative or intervention programs for seniors, she said, must provide "competence, confidence and motivation and be functional". David made the stark observation that "many people as they get older, tend to give up on themselves ... now that I am 60 or 70, I can't do that anymore. I believe that many older people are capable of much more than they give themselves credit for."

The MAs said that the hardest thing about exercise is doing it regularly. There are thousands of excuses for not exercising. One of the reasons often given is time. However, as David said, people must "purposely set aside time". Much like making an appointment with your training partners or your running shoes. Exercise must be deliberate, then it becomes habit. For these MAs, the habit has been formed. For example, Heather identified "When I retired, I needed to have a structure that would give me annual, monthly, weekly, daily goals – something that would allow me to stay on track and allow me to feel like I have some purpose." Further, appointments with training partners have been made and for many MAs, not wanting to disappoint training partners keeps them active and motivated.

#### 4.2.5 COMMUNITY INVOLVEMENT

A common thread throughout the interviews was that without the support of their community, training would be difficult and many would eventually fail and become inactive. When Sarah and her husband moved to the Okanagan Valley after retirement, she said that they didn't know anyone. We "got swept up by triathlon". She said that "it gave us a community!". Rex, a swimmer and involved with the provincial organization, Masters Swimming Association of British Columbia (MSABC), said "every survey done at the provincial or national level indicates that social interaction is just as important as the competition in Masters Swimming". He said that in this organization's surveys, two out of three respondents classify as competitors, yet only

about 25% compete regularly. The remainder are looking for social interaction as well as an opportunity to be physically active.

In conjunction with their involvement within community, the participants were very clear about their view that socialization was an important component of keeping themselves and other OAs active and in the importance of social interaction related to PA. John stated this very clearly by saying “My running friends and I often go for coffee or tea after a run and chat about whatever. I think this is important because it provides mutual motivation as well as the enjoyment of spending time with friends. It’s an added dimension to the activity time which might encourage people to participate.” Margaret also commented that she and her training partners would get together to “chit-chat” following training, to see how others are doing and what help may be needed for support. Mike, a Nordic ski instructor, said that older students can sometimes seem to be more interested in interacting with their fellow students than improving their technique. These interactions, he says, are part of what makes it fun for them to go skiing. He also pointed to the Canadian Association of Nordic Ski Instructors (CANSI) manual that states that OAs “tend to focus more on social interaction than tasks”.

All interviewees, once they were made shown the International Physical Literacy Association’s definition of PL by the interviewer and had it explained to them, agreed that a concept such as PL may be good to help motivate inactive OAs and encourage them to become more active. For MAs, the idea of “engagement in PA for life” is somewhat redundant. They also agreed that the definition was inadequate in its current form, suggesting that social interaction should be reflected in a new definition.

#### 4.2.6 MASTERS ATHLETES AS ROLE MODELS

There was a generally mixed opinion of role modelling across this group of MAs. They were asked about their opinion of how MAs are often seen as role models for healthy and successful aging. This sparked interesting discussion from both the positive and the negative side. Several participants commented about the positive benefits of role modelling. For example, Janet felt that it was a good idea to celebrate the achievements of MAs. It can motivate and provide confidence. MAs can help to lead and encourage others. Similarly, Rex commented that “it’s not that MAs don’t have most of the same problems that most of the other aging members of society do, it’s just that they approach aging more positively.” Mike, who formerly coached a

mixed age group team said that it was always good to see the younger athletes look up to the older ones and say that they want to be like that when they get older.

Contrary to the positive aspects of role modelling, David referred to media coverage of MAs who are exceptional. He went on to say that “normal people may look at that and say that there’s no way I could do that. Doesn’t that really become a disincentive?” Similarly, Margaret suggested that reports like this can empower many inactive OAs who are “only really looking for an escape clause”.

Ironically, MAs are equally celebrated and ignored. MAs are celebrated because they choose to defy social norms and the onslaught of the aging process to pursue excellence in their sport. Yet, they are often marginally recognized within their sport organizations and at events which are not specifically centred on the MA (Young, Rathwell, and Callary 2021).

#### 4.2.7 COVID-19 CONSIDERATIONS

While not the intended focus of the interviews, it was difficult for the participants to remain focused on the pre-pandemic environment. Discussion points frequently drifted towards the current restrictions and the impact that they had on training, competition and connection to community.

All interview participants commented about the lack of racing this past year. Many took up virtual racing, and while those who did praised the benefit of being able to test themselves, virtual competitors did not provide the same sense of competition. Most of the MAs interviewed either paid for personal, professional coaches or attended group sessions led by professional coaches. All MAs who engaged with coaches indicated that the pandemic had adversely affected their direct contact with either form of coaching and that they missed the direct interaction.

They also commented about losing touch with their communities. However, several found work-arounds. Janet and her husband, for example, set up online social media training rides with several of their training partners. Swimmers and triathletes commented about restricted access to pools. Rather than four or five swimmers per lane, they were restricted to one per lane and that they had to reserve that lane. Ruby mentioned that planning was very important. She said that she would have to be on the computer at 12:01 AM to book a lane for the next week. Access to

facilities was less of an issue for runners, cyclists and skiers than swimmers. For everyone, coaching has been so heavily reduced that it is, as one MA commented, “almost non-existent”.

With the restrictions on flights and border closures, the pandemic has had a dramatic effect on travel. Many MAs who participate in summer-based sports, like triathlon, and other OAs spend their winters in the southern United States and Mexico. Sarah and her husband, for example, own a second residence in the southern USA. Normally, they would continue specific triathlon training throughout the winter and continue to compete. Thus, the pandemic induced considerable change in typical competition and training.

There have been some positive aspects to the pandemic. Heather noted that every Nordic ski club in the province has seen club membership increase significantly, some even “tripled their membership since COVID”. She also observed that in the neighbourhood where she lives, an older aged community, all the streets have sidewalks. When COVID hit, the sidewalks became crowded with people coming out of their homes, people she had never seen before, to walk and it is continuing. Walking in the neighbourhood has become the alternative to driving to shopping or going to the pub. She said that initially she was “horrified” to see the physical condition of so many of her neighbours. She also commented that over the period of the pandemic she has seen changes for the better.

## CHAPTER 5 - DISCUSSION

Results from this study indicate MAs in the Okanagan Valley are physically active and they generally apply principles of PL, albeit they are largely unaware of the term. However, what emerged from these MAs that is not encompassed within the current PL framework is social engagement. Social engagement, according to these MAs, is a significant motivator and impetus for participation in PA. Fitness and sport may entice some OAs to participate and join the ranks of the MAs, but social engagement keeps them connected and attracted to PA and may increase activity for more OAs. Social engagement, therefore, requires consideration in the development of a PL definition for OAs. The results of this study also uncovered an additional paradigm in the evolution of women in sport. The women who became MAs as “late bloomers” are extreme believers that greater amounts of PA for OAs is beneficial. The MAs in this study are high achievers in PA and although their active lifestyle is an expression of PL, the concept is unfamiliar to them, and potentially narrow, as their key element of social engagement is lacking in the current definition.

### 5.1. PHYSICAL LITERACY

A strength of this study was the maximum variability of the participant sample. As shown in Table 6, half of the participants in the survey were “long haulers”, MAs who had maintained a continuous competitive athletic profile from youth. The balance of participants had adopted their athletic profile later in life with an even distribution between those who were competitively active as youth and departed from competitive sport after leaving school, the “re-kindlers”, and those who showed no inclination for competitive sports until later in life, the “late bloomers”. This was also demonstrated in the surveys with solid distribution of participants across variables of sex, ages, sports, life-long participation in sport and knowledge of PL. This demonstrates the balance of the opinion by the participants in all aspects of the study.

As evidenced in both the survey and the follow-up interviews, MAs are widely unaware of the construct that is PL, but have intuitively adopted the elements of PL in order to unconsciously and innately develop the practice of their sports. Twenty-six of the thirty-five participants in the surveys indicated that they had not heard of PL. Of the nine who said that they had heard of the term, for at least three of them it was due to professional affiliations. Three others had heard the

term through prior interactions with the researchers in the local community. It is apparent from these numbers that even among athletes who may embody the principles of PL, the term does not resonate.

All of the MAs interviewed, whether they understood the definition of PL or not, stated that, without specifically focusing on it, they had fashioned their lifestyles around its criteria; therefore, it applied to them. This was what they did without an understanding that they were working within the context of PL.

Whitehead described PL as a journey that begins in childhood rather than a destination. She goes on to say that that journey is not always straight forward (Whitehead 2010). The journey needs not start at a specific point in life and move along a constant forward straight line. For most people, there will be setbacks and barriers that need to be broken down (Almond 2010). Whitehead commented about PL and the OA years by saying that with “a life-time of positive experiences in exercise, the older person can embrace PL in a modified form” (Whitehead 2013). Clearly, the late bloomers in this study may choose to argue this point. For those who have not enjoyed the privilege of those positive experiences at a young age and those who have not been aware of PL, the value of the journey, as positioned by Whitehead, may be lost. They might also argue and have successfully demonstrated that the journey doesn’t need to start in childhood. They have proven that it is possible that every individual can travel their PL journey, should they choose to call it that, regardless of where in their own personal life course they begin. Everyone is on a unique PL journey through life. At any point, an individual can lose the motivation, the confidence or the physical competence to value PA. Then they risk becoming physically illiterate. Similarly, they can, at any point in life, regain their motivation, confidence or competence and reapply PL approaches (Whitehead 2013), especially with the aid of social engagement.

When consideration was given to the four elements established in the International Physical Literacy Association (2014) definition of PL: Confidence (Affective), Physical Competence (Physical), Knowledge and Understanding (Cognitive) and Engagement in Physical Activities for Life (Behavioural), there was general acceptance and application of these across the first three elements. The final behavioural element was not completely supported by this group of MAs. For almost half of the MAs in this study, their active participation was not continuous



from youth. For some, there was a hiatus from sport due to business and family commitments. For others, there was no self-actuated participation in an active lifestyle until later in life. Regardless of the path taken, between individuals in earlier life, the endpoint can range from training to compete as a youth to being fit for life as presented in the Athlete Development model (Balyi, Way, and Higgs 2013b). For the MAs who participated in this study, irrespective of the starting time point, they are engaged in PA with the intent to remain active for their adult life.

These MAs have taken personal responsibility, choosing to be active on a regular basis. They have prioritized and sustained their involvement in various sports and activities to adopt those sports as an integral part of their lifestyle. Regardless of how they arrived at this point, whether they had been active all of their lives or had adopted an active life after years of inactivity, they have chosen, on their own, to be engaged for the rest of their life. This aligns with Makepeace and Young's (2021) findings that MAs must create both personal and social structures within which they maintain their training and competition regimes.

In the International Physical Literacy Association definition of PL, engagement in PA for life refers to an individual taking personal responsibility for PL by freely choosing to be active on a regular basis. The hardest aspect of exercise is establishing consistency, building a regular pattern. There are many excuses for not exercising. For example, one excuse frequently offered is a lack of time. However, as David said, one "must purposely set aside time for physical activity and it will become habit forming", much like "making an unbreakable appointment with training partners" or with yourself. Developed through repetition, habits are automatic behavioural responses to certain environmental prompts (Lally and Gardner 2013). In these situations, the prompts could be the training program set up by coaches, the regular scheduled training session at a facility or a solitary scheduled session. Many MAs find that anxieties related to missing planned sessions and disappointing training partners keeps them active and motivated. For these MAs, the habit has been formed. For them, prioritizing and sustaining involvement in their chosen sport and activities has become an integral part of their lifestyle. Regardless of the mechanism, many of the MAs cited the support of spouses and training partners to motivate them to continue their training. Several commented that, similar to the findings of Dionigi, Fraser-Thomas and Logan (2012), the support of a spouse who wasn't also a training partner was the result of frequent negotiation.

The MAs in this study are decidedly active OAs who are engaged in PA specifically related to the execution of their chosen sport. They have developed the movement skills and patterns necessary to successfully compete in their sports; many of them to excel on the national and international stages. They have chosen to participate in individual sports and have developed the movement skills and patterns of those sports in order to succeed in competition. Ruby, and many more of her counterparts, are motivated to self-compete. They represent one facet of the notion of Meaningful Competition. MAs have multifaceted perspectives on competition that allow for them to explore the synergy between training and competition (Young, Rathwell, and Callary 2021). Yet, as Rex stated, that in MSABC surveys, two out of three respondents classify as competitors, yet only about 25% compete regularly. For them, that synergy is lost.

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 PA in a variety of settings and physical environments.

PL can be described as a disposition characterized by the motivation to capitalize on inherent movement potential to make a significant contribution to QoL. All human beings exhibit this potential, however, its specific appearance will vary with individuals' talent and potential in respect of all capabilities, significantly their movement potential and will be specific to their culture (Whitehead 2010).

## 5.2. COMMUNITY ENGAGEMENT

Community engagement provides MAs with the opportunity to share knowledge and competence in their sport. Community engagement also helps to provide motivation to others who may just be entering their MA journey and, in turn, be motivated by them. Many of the MAs who were new to sports at an older age were drawn in by the support of a friend, and this aspect of *social connectivity*, is returned by supporting and helping others new to their sport.

Community engagement can be seen through two lenses. First, is the more macro sense of participation in the organization and execution of sports. This aspect of community engagement is often used interchangeably with *volunteerism* (Martinson and Minkler 2006). For example, being a board member of a club or provincial or national association, coaching other athletes or volunteering at events. One third of the survey participants indicated that they were involved as

volunteers in some manner in youth or adult sport. This builds on the activity theory of aging, which according to the seminal work of Havighurst (1961) suggests that successful aging occurs when OAs stay active and maintain social interactions (Lemon, Bengtson, and Peterson 1972; Williams, Tibbitts, and Donohue 2008).

The micro perspective of community engagement provides a more personal aspect; *social engagement*. Social engagement has been defined as the degree to which people are engaged with their social network in terms of frequency of contact with friends and family that they feel close to and can count on for help and support (Lubben et al. 2006). Increased levels of social engagement corresponded to lower psychological discomfort and improved health outcomes. This emphasizes the importance of maintaining and enhancing social engagement among OAs. Similarly, social engagement in later life is associated with improved health outcomes (Bath and Deeg 2005). Social engagement is an effective strategy for encouraging behaviour change and has been shown to be successful for changing PA behaviour patterns (Liu and Lachman 2020). Recent research has found that OAs generally experience more satisfying and positive social relationships than younger adults. These improved relationships are a product of both actions on the part of OAs, as well as their social partners. OAs perceive their time horizons shortening and become more motivated to regulate their social experiences to become more meaningful. Social engagement can be seen as being influenced by three constituent elements: *Social connectivity*, *social accountability* and *social prompts and mentoring*.

Older age is a period of transition for OAs, both from a perspective of physical health, but also relationships. Changing social roles affect and influence opportunities for social connection (Gilmour 2015). Heather expressed the importance of sports and sporting clubs very clearly when she observed that as a child, communities are formed from school, sports and neighbourhood. As a working person with a growing family, social connections are developed through the work environment and through the parents of children's school friends and teammates. At retirement, most of those connections disappear and isolation can occur very easily. Sport and social connection can be promoted for OAs to keep them active and to reduce social isolation and loneliness (Luong, Charles, and Fingerhman 2011; Trujillo, Brougham, and Walsh 2004). Social connections, categorized as the presence of relationships and social activities that support or facilitate high levels of PA, along with personal resourcefulness and the

role of the built and natural environments, has been identified as a factor that facilitates PA in OAs (Franke et al. 2013).

The social connections between members of the group become stronger and more interdependent over time. This contributes to a sense of social accountability. For example, Janet commented that whenever a member of her group has been absent for a couple of sessions, another member would contact them to ensure that “everything was okay”. Similarly, Margaret commented that she feels a commitment to her training group, saying that she “can’t let them down”. MAs who have become familiar with their training partners can also identify where they may be facing motivational barriers and offer assistance. David commented that “I think this is important because it provides mutual motivation as well as the enjoyment of spending time with friends. It’s an added dimension to the activity time which might encourage more people to participate.”

Table 7 shows that 26 of the 35 (74%) survey participants encourage friends and family to become more physically active. Sixteen of them (45%) go further and help them to engage in PA wherever possible. The other 10 participants encourage others, but leave decision making and participation to them. This assistance provides the social prompts and mentoring that helps integrate new members. It can take the form of training and competition tips, inclusion in training sessions and introductions to other MAs who train at similar intensity levels or even reside in close proximity to one another. Further, Rex, who also volunteers as a member of a provincial masters sport association, is very active in supporting and encouraging people who are preparing for competition.

Also noted in Table 7 is that 6 participants declared that they prefer to keep to themselves in training and competition. Five of these were female and late bloomers. Reasons for this may relate to issues associated with female participation in sport as discussed in the following section. Another factor may be related to this is a “lone wolf” phenomenon as reported by Young and Medic (2011) in which almost 30% of athletes at the 2009 World Masters Athletics Championships declared that they choose to train alone. Solitary training affords the MA greater flexibility in timing, location and session focus.

This study highlights the benefits of community engagement as a missing element of the current PL construct and highlights volunteerism, social connectivity, social accountability and social prompts or mentoring as key factors in this new, fifth dimension of PL for OAs. This approach

to finding a community engagement in Masters Sport is strongly evident through increased participation in sports such as Pickleball. According to PickleballBC, this is the fastest growing sport in North America. PickleballBC has experienced ~200% increase in membership in the last 3 years. Pickleball is ideally positioned for OAs as a highly social game that is easy to learn, has minimal impact on joints for a court sport, and is relatively inexpensive and so is attractive as a PA.

There are other examples of social connections through PA. For example, parkrun, a free, weekly, timed 5K run. Members can walk, run, volunteer or spectate and in the process can learn new skills to enhance health and gain from the social engagement in an outdoor environment. Since its inception in 2004 in the UK, parkrun has seen rapid and sustained international growth; pre-pandemic, parkrun events were held in over 2,000 locations in 22 countries worldwide. Membership entitles one to participate in parkrun events anywhere in the world. In Canada, there were 44 weekly events and almost 20,000 finishers pre-pandemic. The original parkrun Canada event was held in Kelowna on 18 August 2016.

The growth of community based activities, such as Pickleball and parkrun, is seen as a more accessible and affordable opportunity for promotion of sport for OAs than the more traditional event-based programs, such as the World Masters Games (Dionigi 2016; Callary, Young, and Rathwell 2021). It also has the potential to be used for health promotion as is the case in the United Kingdom where the Royal College of General Practitioners and parkrun UK have established an initiative in which patients are being 'prescribed' parkrun and outdoor physical activity rather than medication ('The Parkrun Practice Initiative' 2020).

### 5.3. FEMALE PARTICIPATION

During the early and middle portion of the 20<sup>th</sup> century, women were discouraged from participating in sports. Many of the female MAs in this study grew up and went to school during this period of change. For them, and for other females who grew up in highly conservative families, the opportunity to participate in any form of athletic activity was discouraged by parental or organizational pressures and even peer pressures. There were concerns regarding being involved in activities, such as sport, that were associated with masculinity. This frequently resulted in suggestive name calling such as “tomboys” or “lesbians” (Craig and LaCroix 2011;

Paechter and Clark 2007), terms which created societal challenges when the women in this study were younger.

Societal changes began to erode those barriers with much of the change originating in the USA. Events such as Katherine Switzer's legitimate participation in the 1967 Boston Marathon, the passage of Title IX of the US Education Amendments of 1972 and eventually the introduction of the Women's Marathon as an official event in the 1984 Los Angeles Olympics provided a framework for new opportunities and acceptance for females in sports. In Canada, the 1970s and 1980s saw marked increases in opportunities, participation and public recognition of women's sport as a result of concerted efforts to challenge discriminatory attitudes and practices (Lenskyj 1992).

Twenty of the 35 participants in this study were female with seven (35% of them) in the late bloomer category. While becoming involved in sport participation later in life, these female MAs are among the more ardent supporters of PA and fitness. The female population in this study showed a propensity to share their commitment for PA and fitness. This penchant to promote PA and to help other OAs is greatest among the late bloomers that the Canadian Physical Activities Guidelines minimum standard of 150 minutes of moderate to vigorous PA per week is inadequate. They are also the most likely to encourage their friends and family members to join in and even to help them to get involved and to offer assistance. The reason for this zealous approach to sharing was not fully explored as part of this study. It may have originated as a result of the natural caring that comes about as a response to one-another's needs and feelings, better known as maternal instinct (Noddings 2010). It could also be similar to the zealous drive of reformed smokers to convert their friends and neighbours to a cleaner and healthier lifestyle.

#### 5.4. COVID-19 CONSIDERATIONS

The purpose of this study was to focus on MA activity in a pre-pandemic world. However, in a discussion relating to PA it is not possible to maintain clear boundaries when the current and daily reality was the pandemic. The effects of the COVID-19 pandemic have been far-reaching for MAs. Those athletes who rely on physical facilities for training, such as swimming pools and gyms, have, for the most part, found ways to adjust and to continue training. Ruby commented that she would be at her computer at "12:01AM to book a lane for the next week". Without

competitions during the past year, many MAs have connected with virtual races to maintain their competitive edge. The loss of social connection with coaches, training partners and competitors was profound. However, many of them found ways to compensate for that loss by connecting with their training partners through social media.

Overall, the sentiment that came through the survey comments and discussions was that these MAs would adapt and carry on.

## CHAPTER 6 - CONCLUSIONS AND RECOMMENDATIONS

### 6.1. CONCLUSIONS

This research project explored PL within the MA community in the Okanagan Valley of British Columbia in a pre-pandemic environment. Using a two phased approach combining an online survey and a follow up semi-structured interview, themes related to MAs, their active lifestyle and the sports that they train for and compete in were evaluated to determine whether MAs understand and practice PL.

The findings of this research shows that MAs have demonstrated their proficiency with respect to all elements laid out in the International Physical Literacy Association definition of PL.

Although they have embraced the essence and intention of the concept of PL, most were unaware of it. The research also found that while the MAs in this study are committed to maintaining their active lifestyle, they established their own path, however, a major component of their approach to PA centres around socialization with others. Overall, these MAs developed and applied the principles of PL intuitively.

A common thread throughout this research was that these MAs relied on their community of other MAs. Within that community, social engagement was recognized as an important motivational factor for participation in PA. These MAs were self-motivated, but thrived on helping motivate others while, in turn, being motivated by them.

Within this study a sub-category of MAs became evident, the late bloomers, who had not engaged in PA until later in life. They demonstrate that the journey to PL does not necessarily begin at childhood. The majority of these MAs are female and are among the most ardent promoters of PA and supporters of other OAs at the start of their journey to a more active lifestyle. The difference between males and females in the timeline of undertaking the value of PA may be attributed to changes that occurred in Canada and around the world, generally in the 1960s and 1970s, with respect to women's rights. This requires further study; however, the difference in approach to PA between males and females and the importance of social connectedness that is not currently evident in the PL definition suggests that for OAs the standard definition requires further consideration.



This study asked the question “Do MAs understand and practice PL?” Given the nature of the participants in the study, the immediate finding is obvious that MAs have embraced and practice the principles of PL. However, what became evident is that understanding the nature of PL within the context of MAs offers initial insight into how PL is achievable for all OAs, regardless of the point in life that one chooses to start the PA journey. For OAs the journey in adult life involves social engagement with a community of their choosing. Unlike children who can be placed into organized sport at their parents’ discretion, OAs must be free to choose their own path.

## 6.2. RECOMMENDATIONS AND FURTHER RESEARCH

PL has been positioned to engage youth in their journey towards a healthy and active lifestyle. However, once a youth passes on to adulthood and leaves school and coached youth sports PL becomes a self-guided journey. That is assuming that the elements of PL are well ingrained in their lifestyle. For adults and especially OAs who have not had the introduction to PL there are no formal guidance on the means to become and remain physically active. Yet, as Sarah described the exercises that her mother did, she commented that any development for OAs must emphasize “competence, confidence and motivation and be functional”. A first step would be to develop and adopt a model of PL that more closely represents the needs of OAs. This could be achieved using an approach which would reflect the social and physical environment to improve the PA engagement of OAs (Jones et al. 2018b).

The basic premise under which this study was conducted was to review PL and PA in a pre-pandemic environment while living through the pandemic. It is difficult to say how much the pandemic may have affected the participants’ perception of the value of community. Can we truly appreciate the value of something until we are deprived of it? Would the participants have made the same observations regarding social interaction had they not been deprived of it? Further study following the same criteria as this study, but several years post-pandemic, would lend additional insight into social connectivity for MAs.

In the literature, much is said about the health benefits of PL for individuals and populations (Whitehead 2010; Roetert and Ortega 2019). In concept, this is a clear and logical outcome of a PL population. However, the connection between PL and health outcomes remains speculative. Future research into the relationship between PA and PL and health promotion may provide

opportunities to improve the engagement of healthcare professionals in the dissemination and prescription of PL among adults and OAs (Cornish et al. 2020; RCGP 2018).

The literature also abounds with reports of substantial government investments made in PL education in Canadian schools. The Canadian Assessment of Physical Literacy (CAPL) is an assessment tool comprising the four PL domains that evaluates the capability of children to lead a physically active lifestyle (Giblin, Collins, and Button 2014; Gunnell et al. 2018; Tremblay and Lloyd 2010). However, a corresponding tool and investment for measuring the PL of adults and OAs has not been developed. In conjunction with the development of a PL model for OAs, a corresponding measurement protocol for OAs is required.

## CHAPTER 7 - LIMITATIONS

This study found that although MAs are typically unaware of the formal definition and framework of PL, their lifestyle approach embraces three of the four elements of this definition. While a history of lifelong participation was not a common theme for MAs, all are committed to an active future. Social connectedness was discovered as an additional element of PL.

These findings, established through survey and interviews cannot be further probed to establish a better understanding of ethnicity. Questions related to ethnic diversity or visible minority status were not asked. The interviews and manner in which recruitment occurred suggests that the study population reflects the lack of ethnic diversity that is prevalent in the Okanagan Valley. The 2016 census reported that the population of the Thompson-Okanagan region of British Columbia was 546,287 or 11.7% of the province. Within the region, 6.4% reported being of a visible minority as opposed to 30.3% from the province. Similarly, 81.4% of the population of the region declared to have European origins whereas for the province that was 62.7% (Statistics Canada 2017).

Second, the timing of the study. Many of the sports, such as Nordic skiing and pool swimming, that are winter based were highly represented within the study population. However, other sports that are more summer oriented, such as road cycling and running, were disproportionately low in representation.

Third, recruitment focussed on individual sports. In doing so, the study excluded MAs who participate in team sports such as soccer, hockey, etc. While team sports were not an intended exclusion, the Recruitment Invitation Email was only sent out to sport clubs and associations representing individual sport.

Finally, the COVID-19 pandemic might have influenced the outcome. The basic premise under which this study was conducted was to review PL and PA in a pre-pandemic environment while immersed in the pandemic. How much the absence of normality for over a year subconsciously affect the responses to both the survey and the interviews is unknown. Many clubs and programs stated that due to the COVID-19 pandemic they were not maintaining programs for OAs and therefore would not be able to forward the Recruitment Invitation Email. Thus, recruitment numbers are low and aligned with programs that remained active with members during the

pandemic, however, the snowball effect of recruitment through social media of interested volunteers contributed to participants outside of those from the initial email contact.

Considering these points, more research is required across a more diverse sample of MAs.

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## APPENDICES

### APPENDIX A – ATHLETIC CLUBS IN THE OKANAGAN APPROACHED FOR THE STUDY

#### NORDIC SKI CLUBS

- Sovereign Lakes Nordic Club
- Telemark Nordic
- Nickle Plate Nordic

#### TRIATHLON CLUBS

- Kelowna Triathlon Club
- Penticton Triathlon Club
- Kal Rats Triathlon Club

#### RUNNING CLUBS

- Kelowna Running Club
- Okanagan Parkrun
- Penticton Pounders Running Club

#### CYCLING CLUBS

- Okanagan Bike Race Club
- Kelowna Killer Beez Cycling Club

#### MASTERS SWIM CLUBS

- Okanagan Masters Swim Club
- Penticton Swim Club
- Vernon Masters Swim Club
- Westside Thunder Swim Club

## APPENDIX B – LETTER OF INITIAL CONTACT



THE UNIVERSITY OF BRITISH COLUMBIA

We are writing to let you know about a study that we are conducting to understand physical activity levels of older adults, and to ask your assistance in reaching out to your membership.

In this project, we are exploring physical activity, motivation and engagement within the Masters Athletes community in the Okanagan. For the purpose of this study, a Masters Athlete is considered to be a male or female who has reached the age of 55 years.

The principal investigator for the study, Jennifer Jakobi, Ph.D., is a Professor in the Faculty of Health and Social Development at UBCO. The co-investigator is Garry M<sup>c</sup>Cracken, a graduate student and, himself a Masters Athlete. This project will form the basis for Garry's thesis for a Master of Science in Health and Exercise Science.

The study will be conducted as a short on-line survey that will take only 5 to 15 minutes. As part of the survey questionnaire, all respondents will be given the opportunity to take part in a possible follow up one-on-one online conversational interview.

We are asking for your assistance in reaching out to the members of your club, or other interested adults, with an invitation to take part in the project.

If you would like more information about the study, please contact Garry M<sup>c</sup>Cracken at [garrymc@student.ubc.ca](mailto:garrymc@student.ubc.ca) or call: 250-979-8489.

Thank you for considering our request to assist in recruiting Masters athletes.

Sincerely,

Garry M<sup>c</sup>Cracken, M.Pl., B.Eng., CD

*Student, M.Sc-HES*

*Faculty of Health and Social Development*

*University of British Columbia Okanagan*

## APPENDIX C – RECRUITMENT INVITATION EMAIL



**THE UNIVERSITY OF BRITISH COLUMBIA**

Dear Club Members:

We have been approached by the University of British Columbia Okanagan to participate in a research project related to Masters Athletes.

This research project is an exploration of physical activity, motivation and engagement within the Masters Athletes community in the Okanagan. It consists of a short on-line survey that will take 5-15min. At the end of the on-line survey, you will be offered an invitation to participate in an interview. After the surveys are analysed, if further information is required, follow up one-on-one conversational interviews will be conducted through video and/or audio technology.

The researchers believe that the information learned from this study will provide insight into the physical activity of Masters Athletes that will be helpful in the development of future research and in inform local organizations regarding factors that will increase participation.

The principal investigator for the study, Dr. Jennifer Jakobi, is a Professor in the Faculty of Health and Social Development at UBCO. The co-investigator is Garry M<sup>c</sup>Cracken, a graduate student who is also a Masters Athlete competing in triathlon and road running events. This project will form the basis for Garry's thesis for a Master of Science in Health and Exercise Science.

Participation in this project is completely voluntary and you are able to withdraw at any time. All personal information collected will be protected with unique identifiers.

If you have any questions, please contact Garry directly at 250-979-8489 or by email at [garrymc@student.ubc.ca](mailto:garrymc@student.ubc.ca)

If you are interested in participating in this short survey, please click on the link below.

Once you click on the button, you will first be taken to a consent form that will lay out you're the details relating to your rights.

Click Here

## APPENDIX D – INFORMED CONSENT FORM



THE UNIVERSITY  
OF BRITISH COLUMBIA

Q2

### A Community Based Exploration of Physical Activity in Masters Athletes

Thank you for considering our invitation to participate in this research project.

**Principal Investigator:** Jennifer Jakobi, Ph.D., Professor

School of Health and Exercise Science  
Faculty of Health and Social Development  
University of British Columbia Okanagan phone:  
250-807-9884 | jennifer.jakobi@ubc.ca

**Co-Investigator:** Garry M<sup>c</sup>Cracken, M.Pl., B.Eng., CD, Graduate Student

School of Health and Exercise Science  
Faculty of Health and Social Development University  
of British Columbia Okanagan phone: 250-979-8489  
| garrymc@student.ubc.ca

**Invitation:** We would like to invite you to take part in a research study on Masters Athletes and physical activity. Please read the information provided carefully before deciding whether or not you would like to participate.

**Voluntary Participation:** Your participation in this study is entirely voluntary. This consent form describes the study and the procedures that will be carried out for research purposes. Please take time to read the following information carefully and to discuss it with others, as you feel necessary. If you do not wish to take part, there will be no disadvantage to you of any kind and we thank you for considering our request. If you decide to participate, you may still choose to withdraw from the study at any time without any negative consequences. If you do wish to participate in this study, you will be asked to acknowledge participation on-line prior to beginning the survey.

**Who is Conducting the Study:** This study forms partial fulfillment for Garry M<sup>c</sup>Cracken's post graduate thesis as part of a Masters of Health and Exercise Science program at the University of British Columbia Okanagan. The thesis, once published, will be available to view on the internet via cIRcle at <https://circle.ubc.ca>. Garry M<sup>c</sup>Cracken is a Masters Athlete competing in triathlon and road running.

**Purpose of the Study:** This research project is an exploration of physical activity, motivation and engagement within the Masters Athletes community in the Okanagan.

**Eligibility:** To be eligible to participate you must be a Masters Athlete. For the purpose of this study, a Masters Athlete is considered to be a male or female having reached the age of 55 years, who regularly and systematically trains and competes in organized sports. Those sports must be governed by a provincial, national or international association that is responsible for the establishment and maintenance of rules for fair and regulated competition within the sport. If you received this email from a sport club where you are a member, then the regulated sport criteria would be met. If you are uncertain about the eligibility criteria, please contact Garry McCracken at [garrymc@student.ubc.ca](mailto:garrymc@student.ubc.ca) or 250-979-8489.

**Procedures:** If you accept this invitation, you will be directed to the online questionnaire. You will be asked to answer questions regarding your physical activity, motivation and engagement within the Masters Athletes community. This questionnaire should take about 15 minutes to complete. Should further investigation or clarification of information gained from the questionnaire be required, follow up one-on-one audio and/or video interviews may be conducted. At the end of the questionnaire you will be given the opportunity to agree to participate in follow up interviews. If you accept the invitation, your contact information will be gathered. If you are selected for an interview, you will be contacted by one of the investigators to arrange a mutually acceptable time for the interview. The interview will take about an hour. At the beginning of the interview the consent form will be reviewed.

The survey will be conducted using the UBC Survey Tool, Qualtrics. Verbal and video conversations and interviews will be conducted and recorded using UBC Zoom. Both comply with the BC Freedom of Information and Protection of Privacy Act (FIPPA). Computer servers for both the survey and interviews are located in Canada and data is kept secure, stored and backed up in Canada. Q42

**COVID-19 Considerations:** We are living in strange times. The COVID-19 pandemic has adversely affected training and competing for our sports. This study explores how Masters Athletes train and compete in non-pandemic times. Please answer questions as if it were “normal” times!

**Discomforts and Risks:** There are no physical risks to participating in this research. You will not be asked to change your current routine or adopt new training or competition protocols. Some of the questions are personal and might cause minor discomfort.

**Benefits:** There is no tangible benefit to participation.

**Statement of Confidentiality:** Your confidentiality will be respected.

No personal information will be collected for the survey. Should you choose to accept the invitation for a follow up interview you will be asked to provide your name, telephone number and email address. Your contact information will be made visible so that the investigators may contact you and arrange and conduct the interview. Information that contains your identity will remain only with the investigators. The list that matches your name to research-related information will not be removed or released without your consent unless required by law.

**Right to Ask Questions:** If you have any questions and concerns regarding participation in this research study, please contact and reference Study Number H2002934: Jennifer Jakobi, Ph.D. at

250-807-9884 or jennifer.jakobi@ubc.ca; or Garry McCracken at 250-979-8489 or garrymc@student.ubc.ca.

If you have any concerns or complaints about your rights as a research participant and/or your experiences while participating in this study, contact the Research Participant Complaint Line in the University of British Columbia Office of Research Ethics by e-mail at RSIL@ors.ubc.ca or by phone at 604-822-8598 (Toll Free: 1-877822-8598) and reference Study Number H20-02934. The data on which the results of the project depend upon will be retained in secure and encrypted storage for 5 years following publication, after which they will be destroyed. If you withdraw from the study before completion, this information will be destroyed immediately.

Click [HERE](#) to download a copy of this Consent Document.

- ☐ CONTINUE. I agree, let's go. (1)
- ☐ I do not wish to participate. If you click here, you will exit the study. You should close your browser to clear it.



## APPENDIX E – MASTERS ATHLETES AND PHYSICAL ACTIVITY SURVEY

### A COMMUNITY BASED EXPLORATION OF PHYSICAL ACTIVITY IN MASTERS ATHLETES

Thank you for taking the time to participate in this study. In this project, we are exploring physical activity and engagement of Masters Athletes in the Okanagan.

When we talk about physical activity, we mean when you are moving around, exercising or just doing chores around the house. Physical activity is any activity that makes your heart beat faster and increases your breathing rate and intensity. Engagement refers to your motivation and commitment to training and competing in your chosen sport(s).

Why are we asking you these questions? We want to know what Masters Athletes, like you, know about physical activity.

**We are living in strange times. The COVID-19 pandemic has affected participating and competing in sport. This study explores how Masters Athletes train and compete in non-pandemic times. So, please answer the questions as if participation were ‘typical’! Thank you.**

First, we would like to get to know you a bit better. Please answer the following questions. Remember, the information that you provide will be maintained securely and will **not** be shared.

What age group are you in?

- |   |   |
|---|---|
| <input type="checkbox"/> 55 – 59 years of age | <input type="checkbox"/> 70 – 74 years of age |
| <input type="checkbox"/> 60 – 64 years of age | <input type="checkbox"/> 75 – 79 years of age |
| <input type="checkbox"/> 65 – 69 years of age | <input type="checkbox"/> 80+ years of age     |

What gender do you register for sport participation?

- |                               |                                 |
|-------------------------------|---------------------------------|
| <input type="checkbox"/> Male | <input type="checkbox"/> Female |
|-------------------------------|---------------------------------|

What is your marital status?

- |  |   |
|--|---|
| <input type="checkbox"/> Married           | <input type="checkbox"/> Common-Law               |
| <input type="checkbox"/> Widowed           | <input type="checkbox"/> Divorced/Separated       |
| <input type="checkbox"/> Single/Unattached | <input type="checkbox"/> I choose not to indicate |

What is your employment status?

- |   |   |
|---|---|
| <input type="checkbox"/> Employed               | <input type="checkbox"/> Business owner           |
| <input type="checkbox"/> Retired                | <input type="checkbox"/> Semi-retired             |
| <input type="checkbox"/> Unemployed and looking | <input type="checkbox"/> I choose not to indicate |

Now for the questions:

Please remember:

- ➔ There are no right or wrong answers. We only want to know about your participation and what you think.
- ➔ If you do not know an answer, please provide your best response.
- ➔ There is no time limit, do not feel rushed. The survey on average takes about 15 minutes.
- ➔ We are looking for responses of ‘normal’ participation (not during the pandemic).

In this group of questions, we would like to know how you consider your activity level in the pre-pandemic situation. Please do not compare yourself to other adults, or other Masters Athletes.

Being physically active, means you are moving around and not sitting still. How important do you think it is that you are physically active every day?

- ☐ Extremely important
- ☐ Very important
- ☐ Moderately important
- ☐ Slightly important
- ☐ Not at all important

How important is it for you to be more active than you are typically?

- ☐ Extremely important
- ☐ Very important
- ☐ Moderately important
- ☐ Slightly important
- ☐ Not at all important

In this group of questions, we would like to know how you compare yourself to other adults, not just other Masters Athletes, in your age group.

Compared to other adults in your age group, how active do you think you are?

- ☐ I am already active enough
- ☐ I am fairly active
- ☐ I need to be a little more active
- ☐ I need to be somewhat more active
- ☐ I need to be a lot more active

Compared to other adults in your age group, how good are you at sports or skills?

- ☐ Others are much better
- ☐ Others are moderately better
- ☐ About the same as others
- ☐ I'm moderately better
- ☐ I'm a lot better

Compared to other adults in your age group, how much do you participate in physical activities?

- ☐ A great deal more than others
- ☐ A moderate amount more than others
- ☐ About the same as others
- ☐ A little less than others
- ☐ Others participate much more

Now, let's look at your sports.

In agreeing to participate in this survey, you indicated that you normally train for and compete in sanctioned, rules-based sports.

What do you consider to be your primary sport?

- ☐ Alpine Skiing
- ☐ Biathlon
- ☐ Cross Country Running
- ☐ Mountain Biking
- ☐ Nordic Skiing (Classic or Skate)
- ☐ Open Water Swimming
- ☐ Pool Swimming
- ☐ Road Cycling
- ☐ Road Running
- ☐ Snowboarding
- ☐ Triathlon or Duathlon
- ☐ Other – blank enterable line

In your primary sport, in a normal year, how many times would you compete?

- ☐ 1 event
- ☐ 2 events
- ☐ 3 events
- ☐ 4 events
- ☐ 5 events
- ☐ More than 5 events

On average, how many hours per week do you spend training for your primary sport?

- ☐ Less than 5 hours
- ☐ 5 – 10 hours
- ☐ 10 – 20 hours
- ☐ More than 20 hours

Do you have a secondary sport that you also train for and compete in?

- ☐ Yes If answer is “Yes”, next question.
- ☐ No If “No”, skip next 3 questions.

What is your secondary sport?

- ☐ Alpine Skiing
- ☐ Biathlon
- ☐ Cross Country Running
- ☐ Mountain Biking
- ☐ Nordic Skiing (Classic or Skate)
- ☐ Swimming
- ☐ Road Cycling
- ☐ Road Running
- ☐ Snowboarding
- ☐ Triathlon or Duathlon
- ☐ Other – [blank enterable line](#)

In your secondary sport, in a normal year, how many sanctioned events would you compete in?

- ☐ 1 event
- ☐ 2 events
- ☐ 3 events
- ☐ 4 events
- ☐ 5 events
- ☐ More than 5 events

Does your secondary sport occur at a time of year when your primary sport is not normally active?

- ☐ They are completely different seasons
- ☐ The seasons overlap a bit
- ☐ The seasons overlap significantly
- ☐ The seasons overlap completely

[If no secondary sport, continue the questions here.](#)

If you were to decide to increase your physical activity in order to be more competitive in your sport or you decide to take up a new sport, how confident are you that you would succeed?

- ☐ Extremely confident
- ☐ Very confident
- ☐ Moderately confident
- ☐ Slightly confident
- ☐ Not at all confident

Do any of these issues limit or prevent you from using a health club, wellness program, or fitness facility that meets your needs?

Select all that apply

- ☐ Not enough time.
- ☐ I can't afford it.
- ☐ Too difficult to get to the facility.
- ☐ I just don't feel comfortable or welcome there.
- ☐ Just not interested in that type of exercise.
- ☐ I don't think that it would make a difference for me.
- ☐ Other reason – [enterable blank line](#)

Beyond your competitive sports, do you participate in the following as cross training?

Select all that apply

- ☐ Yoga or Pilates.
- ☐ Aquacise or swim class.
- ☐ Boot camp or CrossFit.
- ☐ Organized, non-competitive group runs or bike rides.
- ☐ Any other form of group fitness class.
- ☐ Other training – [enterable blank line](#)

If you wanted to get in better shape, what would be the best thing to do?

Select all that apply

- ☐ Read a book about getting in shape.
- ☐ Try exercising or being a lot more active.
- ☐ Wait until feel like you really need it.
- ☐ Organized group runs or bike rides.
- ☐ Join a club and have a trainer help you how to get in shape.
- ☐ Ask for help from a friend.
- ☐ Other actions – [enterable blank line](#)

In order to maintain good health, at minimum, how many minutes per week of moderate or vigorous activity should you and other Canadian adults complete per week?

- ☐ 90 minutes
- ☐ 120 minutes
- ☐ 150 minutes
- ☐ 180 minutes
- ☐ 240 minutes

Please judge the following statement based on your involvement in your primary sport.  
I engage in a regular pattern of preparatory activity, practice or training to prepare for my sport competitions.

- ☐ Not at all true for me
- ☐ A little true for me
- ☐ Somewhat true for me
- ☐ True for me
- ☐ Very true for me

Do you know your resting heart rate?

- ☐ Yes
- ☐ No

Do you know your maximum heart rate?

- ☐ Yes
- ☐ No

Which statement **best** represents your participation in sport?

- ☐ I have played and competed in various sports all of my life.
- ☐ I began while in school but work and/or family obligations caused me to stop exercising.
- ☐ I began while in school and although work and/or family obligations caused me to stop competing, I continued to maintain an exercise program.
- ☐ As my family and work obligations began to decline, I began to get involved in sports and competition.

Do you use your athletic abilities to promote an active lifestyle within your community?

Select all that apply.

- ☐ I encourage my friends and family members to get involved, but don't offer assistance – I leave decision making and participation to them.
- ☐ I actively encourage my friends and family members to get involved and help them with training tips and the selection of equipment
- ☐ I am actively involved in youth sports as a volunteer, coach or organizer.
- ☐ I am actively involved in adult sports as a volunteer, coach or organizer.
- ☐ I prefer to keep to myself in my training and competition.
- ☐ I also promote an active lifestyle in my community by ... - **enterable blank space**

Have you ever heard the term “Physical Literacy”?

- ☐ Yes **If answer is “Yes”, next question.**
- ☐ No **If “No”, skip next question.**

Please explain what “Physical Literacy” means to you. **-large enterable blank space**

Is there anything that you would like to share regarding your physical activity that you have adapted to meet your own requirements as it may relate to the current pandemic. **-large enterable blank space**

Thank you for taking the time to participate in this survey. As a follow up, we may conduct one-on-one conversational interviews online lasting no more than 1 hour to further explore and clarify responses to questions asked in this survey. If the opportunity arose, would you be interested in participating in an interview? If so, please indicate below:

- Yes, I would be interested in participating in a conversational interview, online.  
If “Yes”, collect name, telephone number and email address.
- No, I am not interested in participating in further conversations.  
If “No”, end survey.

Thank you for accepting the invitation to the participate in the follow up Zoom interview. Participants for the interviews will be selected based upon survey responses. If you are selected, you will be contacted by one of the investigators to arrange a mutually acceptable time for the interview. The interview will take about an hour. At the beginning of the interview the consent form will be reviewed.

To permit the investigators to contact you, please enter your information below. Your name and contact information will be protected as required by law.

Your first name .....  
Your family name .....  
Your email address .....  
Your phone number .....

Again, thank you for your time and responses.

## APPENDIX F – SEMI-STRUCTURED INTERVIEW SCRIPT

Date: ..... Time: .....  
Interviewer: Garry McCracken Interviewee Alias: .....

### INTRODUCTION

Thank you for taking the time to participate in this study. My name is Garry McCracken, I am a graduate student at UBCO working towards a Master of Science in Health and Exercise Science and I am also a Masters Athlete. And, like you, I have had my training and competition significantly affected by the COVID-19 pandemic.

Before we go too far, there is a bit of housekeeping that we need to take care of.

First of all, I would like to remind you that at the start of survey, you agreed to an Informed Consent document. The contents of that document remain in effect, but as a reminder:

- This study is being conducted as an exploration of physical activity, motivation and engagement within the Masters Athletes community in the Okanagan and will inform my post-graduate thesis at UBCO;
- Your participation in this study is completely voluntary and you may withdraw at any time without jeopardy;
- Your personal information and the content of this interview is protected and stored in compliance with federal and provincial laws; and
- If you have any concerns regarding the conduct of this interview or the questions that are being asked of you, you may terminate the interview and contact the Office of Research Ethics at UBCO at RSIL@ors.ubc.ca or by phone at 604-822-8598 (Toll Free: 1-877-822-8598).

Do you understand the content of these points and give your consent to continue with the interview? Yes ..... No .....

This discussion will be recorded so that the content can be reviewed at a later time. Do you consent to being recorded? Yes ..... No .....

So, before we get started, do you have any questions?



If at any time you have a question related to anything we are discussing or need clarification, please ask. It may very well help me better understand as well.

When we talk about physical activity, we mean when you are moving around, exercising or just doing chores around the house. Physical activity is any activity that makes your heartbeat faster and increases your breathing rate and intensity. Engagement refers to your motivation and commitment to training and competing in your chosen sport(s).

Why are we asking you these questions? We want to know what Masters Athletes, like you, know about physical activity.

## QUESTIONS

During the survey, you were asked about your participation in sports. What is your primary sport? Could you give me an idea of what your training and competition looks like in a normal year?

Has this been your primary sport for a long time? Growing up, were you always active in sports?

What other sports do you train and compete in?

### In-depth questions

Would you consider your primary sport to be very seasonal? How do you deal with the off season?

In the survey, you were asked about  $HR_{max}$  and  $HR_{rest}$ . Do you know what these are and how would you determine yours or a fellow athlete's?

Motivation is a major factor for all athletes. What would you consider to be your greatest positive motivator? What gets in the way?

### Clarifications and link to theory

Introduce the concept of PL by way of normal literacy and fiscal or financial literacy. How would you think that it may apply to physical activity?

MAAs are often seen as role models for healthy and successful aging. What's your opinion on that point? If so, do you try to share with friends, family? Are you involved with youth sport?

## **CLOSING**

Thank you for your time and input into this study. I found it to be very informative and helpful.

I will be compiling the information that you and the other Masters Athletes that I have spoken with have provided. I can see how this will help to inform my research into Physical Activity and Physical Literacy in Masters Athletes in the Okanagan. Going forward, I believe that this information will be helpful in developing future research related to Physical Literacy and Masters Athletes. It may also prove helpful for local organizations in the development of policies and practices to increase Physical Activity in other older adults.

Again, thank you for your help!