

**EXPLORING LIVED EXPERIENCES OF COMMUNITY AQUAFIT PARTICIPATION
AMONG OLDER ADULTS WITH CHRONIC PAIN**

by © Ann Marie Kieley

A thesis submitted to the School of Graduate Studies in partial fulfillment of the requirements for
the degree of

Master of Human Kinetics and Recreation

Memorial University of Newfoundland

October 2025

St. John's, Newfoundland and Labrador

Abstract

Aquatic exercise has consistently been shown to be beneficial to older adults with chronic pain. The most accessible and affordable form of aquatic exercise is Aquafit, which is a group fitness class commonly offered at community recreation facilities. Despite their widespread availability, studies on community Aquafit programs have been limited. This study sought to address this gap by exploring the lived experiences of older adults with chronic pain who routinely participate in community Aquafit programs. This phenomenological study analyzed interview data from six participants from 65 to 88 years of age who attended Aquafit classes two to five times per week. Performing a thematic analysis of interview content yielded four major themes (1) “It’s a part of my chronic pain arsenal,” (2) “It’s a type of exercise I can actually do and enjoy,” (3) Impacts of organizations and facilities, and (4) “These relationships are precious... we are an Aquafit family, a support group.” Aquafit participation contributed to participants’ overall lifestyle by aiding in their pain management, facilitating active leisure involvement despite constraints, and expanding their social circle and support networks. Further, applying the model of selective optimization with compensation (SOC) to participants’ stories demonstrated the use of Aquafit as a way to continue active leisure involvement despite physical constraints. Overall, participants improved their quality of life through more than pain management, as demonstrated by the stories of perceived competence, enjoyment, friendship, and a sense of community support. Future qualitative research on community Aquafit classes is needed to better understand participant experiences with these popular programs. Further, this study was the first to explore community Aquafit participation as an SOC strategy. Therefore, additional inquiries into this relationship may facilitate a stronger understanding of aging and living with chronic pain.

Keywords: aquatic exercise; group fitness classes; selective optimization with compensation; community recreation; social participation;

Dedication

I dedicate this thesis to all the people who love and support me. To my dearest love and wife, Joanne, I thank you for being my rock, cheerleader, proofreader, and best friend. I will forever appreciate your tight hugs and the way you give me the gentle push I need when I feel lost. To my loving family-- my adoptive mother, Bernice; my birth mother, Tammie; my stepmother, Teena; my half-siblings Nicholas and Sabrina; my beloved cousins Cali, Nakkita, and Claire; and my grandparents on both sides. You have all inspired me to be the best person I can be. To the family who I have lost since beginning this project: my birth father Cory and grandmother Velma. I carry you both with me in each step forward I take through life. Lastly, I wish to dedicate this work to Lisa Stagg and Darla Mitchell. Your support and encouragement have meant the world to me. I am equally proud of your growth as you are of mine.

Acknowledgements

I would like to thank my wife, Joanne, for being a constant support in my academic journey and believing in me, even when I did not believe in myself. Your love and encouragement kept me going.

I would like to thank my colleagues throughout the last three years: my fellow Human Kinetics and Recreation graduate students, especially my qualitative friends and my fellow board members on the Human Kinetics and Recreation Graduate Student Association (HKR-GSA) committee. I wish you all the best on your unique and exciting career paths. I also would like to thank my Emmanuel House colleagues for helping me distribute posters and listening to me enthuse about this project for the last year and a half.

This thesis would not have been possible without the six participants of this study and the cooperation and support from the City of St. John's, The Works, and the YMCA of Newfoundland and Labrador. I wish you all the best and many more years of good health, movement and laughter.

Finally, I am tremendously grateful for the guidance I received from my two co-supervisors, Dr. Angela Loucks-Atkinson and Dr. Stephanie Field. Thank you both for your mentorship and thorough feedback, which continuously steered me in the right direction and kept me on track. You have both taught me more than you will ever know. I hope to follow in your footsteps using the many skills you have handed down to me.

TABLE OF CONTENTS

ABSTRACT	II
DEDICATION	III
ACKNOWLEDGEMENTS	IV
TABLE OF CONTENTS	V
LIST OF TABLES	X
OPERATIONAL DEFINITIONS	XI
CHRONIC PAIN	XI
OLDER ADULTS AND LATE ADULTHOOD	XI
PHYSICAL ACTIVITY	XI
AQUAFIT CLASSES	XII
CHAPTER 1: INTRODUCTION	1
BENEFITS AND RISKS OF PHYSICAL ACTIVITY FOR OLDER ADULTS WITH CHRONIC PAIN	2
BARRIERS AND FACILITATORS TO ACTIVITY PARTICIPATION	3
SELECTIVE OPTIMIZATION WITH COMPENSATION	5
COMMUNITY RECREATION	6
AQUAFIT PROGRAMMING	6
RESEARCH AIM	8
CHAPTER 2: LITERATURE REVIEW	9
OLDER ADULTS, PHYSICAL ACTIVITY AND CHRONIC PAIN	9
<i>Relationship Between Pain and Physical Activity Participation</i>	<i>10</i>
<i>Benefits of Physical Activity for Older Adults with Chronic Pain</i>	<i>12</i>
<i>Risks Associated with Physical Activity</i>	<i>15</i>
BARRIERS AND FACILITATORS OF PHYSICAL ACTIVITY	15
<i>Environmental Factors</i>	<i>16</i>

<i>Personal Factors</i>	18
SELECTIVE OPTIMIZATION WITH COMPENSATION	23
COMMUNITY RECREATION	27
AQUAFIT PROGRAMMING	30
<i>Aquatic Exercise and Older Adults</i>	30
<i>Aquatic Exercise and Chronic Pain</i>	32
<i>Aquafit Classes</i>	35
KNOWLEDGE GAPS IN AQUATIC EXERCISE PROGRAMMING	36
<i>Community Recreation Context</i>	36
<i>Qualitative Perspectives on Pain and Aquafit Participation</i>	36
PURPOSE STATEMENT	38
CHAPTER 3: METHODS	39
RESEARCH PARADIGM	39
PARTICIPANTS	40
<i>Study Sites</i>	41
<i>Sampling and Recruitment</i>	43
PROCEDURES	44
<i>Ethics and Participant Consent</i>	44
<i>Interview Format</i>	46
<i>Data Treatment</i>	49
DATA ANALYSIS	50
<i>The Six Steps of Thematic Analysis</i>	51
<i>Reflexive Journaling</i>	52
RESEARCHER POSITIONALITY	52

CHAPTER 4: RESULTS	54
PARTICIPANT PROFILE	54
PROGRAM ATTENDANCE	54
THEME 1: “IT’S A PART OF MY CHRONIC PAIN ARSENAL”	56
<i>Pain Management.....</i>	<i>57</i>
<i>Positive Mood.....</i>	<i>60</i>
<i>Keeping Moving Despite Pain.....</i>	<i>61</i>
<i>Lifestyle and Routine.....</i>	<i>64</i>
<i>Summary of Theme 1</i>	<i>67</i>
THEME 2: “IT’S A TYPE OF EXERCISE I CAN ACTUALLY DO AND ENJOY”	67
<i>In The Water, I Can Do It.....</i>	<i>67</i>
<i>Adaptations and Modifications.....</i>	<i>70</i>
<i>Connection To the Water.....</i>	<i>73</i>
<i>Fun and Enjoyment.....</i>	<i>74</i>
<i>Theme 2 Summary</i>	<i>76</i>
THEME 3: IMPACTS OF ORGANIZATIONS & FACILITIES ON PARTICIPANT EXPERIENCES	76
<i>Built Environment.....</i>	<i>77</i>
<i>Organizational Structure.....</i>	<i>77</i>
<i>Theme 3 Summary</i>	<i>79</i>
THEME 4: “THESE RELATIONSHIPS ARE PRECIOUS... WE ARE AN AQUAFIT FAMILY, A SUPPORT GROUP”	80
<i>Regular Socialization</i>	<i>80</i>
<i>Community & Social Support.....</i>	<i>81</i>
<i>Theme 4 Summary</i>	<i>84</i>

NEGATIVE CASE ANALYSIS	84
SUMMARY OF RESULTS	85
CHAPTER 5: DISCUSSION	88
IMPACT ON INDIVIDUALS LIVING WITH CHRONIC PAIN	88
<i>Back Pain.....</i>	<i>90</i>
<i>Osteoarthritis.....</i>	<i>91</i>
<i>Fibromyalgia</i>	<i>92</i>
<i>Obesity.....</i>	<i>93</i>
<i>Additional Impacts on Chronic Pain.....</i>	<i>94</i>
CONTINUATION OF PHYSICAL ACTIVITY DESPITE CONSTRAINTS.....	94
<i>Selection.....</i>	<i>95</i>
<i>Optimization</i>	<i>96</i>
<i>Compensation</i>	<i>96</i>
COMMENTS ABOUT EXPERIENCES WITH COMMUNITY RECREATION PROGRAMMING.....	97
SOCIAL ASPECTS OF AQUAFIT	99
<i>Regular Social Interaction.....</i>	<i>100</i>
<i>Community and Social Support</i>	<i>101</i>
STRENGTHS AND LIMITATIONS	102
RECOMMENDATIONS	103
<i>Recommendations for Community Recreation Practice.....</i>	<i>104</i>
<i>Recommendations for Future Research</i>	<i>104</i>
CONCLUSION.....	106
REFERENCES.....	108
APPENDIX A – ICEHR APPROVAL LETTER	146

APPENDIX B – POSTER 147
APPENDIX C – RECRUITMENT LETTER FOR POTENTIAL PARTICIPANTS 148
APPENDIX D – SCRIPT FOR ORAL RECRUITMENT 149
**APPENDIX E – ORGANIZATIONAL CONSENT TO RECRUIT FROM FACILITIES
..... 150**
APPENDIX F – PARTICIPANT CONSENT FORM..... 152
APPENDIX G – SEMI-STRUCTURED INTERVIEW GUIDE..... 158
BACKGROUND QUESTIONS 158
MAIN INTERVIEW 158

LIST OF TABLES

Table 1: AQUAFIT OFFERINGS AT STUDY SITES DURING DATA COLLECTION 43

Table 2: PARTICIPANT BACKGROUND INFORMATION 55

Operational Definitions

Chronic Pain

The Public Health Agency of Canada (2023) defines chronic pain as “an unpleasant experience typically associated with physical damage to the body” (para. 2) exceeding three months in duration. As this study will explore chronic pain that is not caused by cancer, the types of chronic pain that will be discussed are non-malignant. Some literature refers to chronic pain as persistent pain (American Geriatrics Society, 2002; Molton & Terrill, 2014), but this term will not be used in this study.

Older Adults and Late Adulthood

Older adults are those aged 65 and older (Turcotte & Schellenberg, 2007). Literature often refers to this age demographic using terms such as senior and elderly (Schwan et al., 2019; Yamada & Heo, 2016). For the purposes of this work, the term ‘older adult’ will be used. This study will focus on the life stage known as ‘late adulthood,’ covered in lifespan psychology research. This stage also refers to adults 65 and over (Medley, 1980) and will be used interchangeably with ‘older adult.’

Physical Activity

The World Health Organization (2022) defines physical activity as “any bodily movement produced by skeletal muscles that results in energy expenditure” (para. 1). Two other terms frequently used are ‘exercise’ and ‘active leisure’. The term ‘exercise’ refers to physical activity performed with the intention of improving or maintaining physical health and is frequently used in exercise physiology research (Caspersen et al., 1985). The term ‘active leisure’ refers to recreational physical activity and is used in social psychology research (Tu, 2020).

There are four different classifications of activity based on the level of intensity:

1. Sedentary behaviour is a lack of activity (Ainsworth et al., 2011);
2. Light physical activity refers to low-intensity movement such as strolling or non-strenuous daily tasks;
3. Moderate physical activity includes activities such as brisk walking, cycling in a flat setting, and yoga;
4. Vigorous physical activity includes running, aerobic exercise, and intense chores such as carrying heavy items and shovelling snow (U.S. Department of Health and Human Services, 2018).

Aquafit Classes

Aquafit classes are structured group physical activity programs delivered in the water by an instructor to a group of participants. Such classes are hosted in recreation facilities run by public, not-for-profit, and private organizations. Many studies use the general term ‘aquatic exercise;’ when referring to Aquafit and similar programs (e.g., Bidonde et al., 2014; da Silva et al., 2019; Wang et al., 2007; Zamunér et al., 2019). Aquafit classes can involve light, moderate, or vigorous physical activity depending on the level of effort made by the participant.

Chapter 1: Introduction

Physical activity (PA) benefits older adults living with chronic pain (Carta et al., 2022; de Vries et al., 2012; Otones et al., 2020). However, many older adults with chronic pain are hesitant to engage in PA (Molton & Terrill, 2014) as a result of commonly faced obstacles such as fears surrounding injury and insufficient social support (Lim & Taylor, 2005; Lindsay Smith et al., 2017; Macera et al., 2017). To maximize health outcomes among older adults, the Canadian Society for Exercise Physiology (2021) suggests that those aged 65 and older partake in at least 150 minutes of moderate to vigorous PA each week. In 2021, however, only 40% of Canadian older adults met this recommendation (Statistics Canada, 2022). While chronic pain can occur in any age group, it affects one-third of Canadian adults 65 and older (Health Canada, 2021), significantly impacting the physical functioning of many within this age cohort (Gagliese & Melzack, 1997; Schwan et al., 2019).

Chronic pain in late adulthood can be caused by injury or health conditions like diabetes, arthritis, and fibromyalgia (Schwan et al., 2019). Living with chronic pain can also increase the likelihood of future health events like heart attacks and strokes (Chung et al., 2020). There are many approaches to managing chronic pain; older adults are recommended to avail of more than one type of treatment to ensure the best possible quality of life (Schwan et al., 2019). Medications such as antidepressants, opioids, and nonsteroidal anti-inflammatory drugs are often used in the management of chronic pain in conjunction with physical therapies, mental health services, and vigorous PA (de Vries et al., 2012; Schwan et al., 2019). Richardson et al. (2015) suggested that socialization and maintaining an active lifestyle are responsible for minimizing the impact of chronic pain among older adults. One's overall lifestyle was proposed to be a more significant indicator of quality of life than pain severity.

The high rate of nonparticipation among older adults is concerning, primarily because of the negative consequences associated with a sedentary lifestyle in late adulthood. For example, chronic pain may worsen due to prolonged physical inactivity (Bishwajit et al., 2017; Molton & Terrill, 2014). Sedentary behaviour is closely linked to obesity, a condition positively associated with all-cause mortality in older adults (Cunningham et al., 2020). Despite the many risks of inactivity and benefits of PA, many older adults struggle to get active. Regardless of age, some individuals with chronic pain do not believe PA will effectively treat their pain, while others experience anxiety around the possibility that PA will exacerbate their pain (Boutevillain et al., 2017). While such feelings are prevalent among chronic pain sufferers, experts agree that for older adults, getting a small amount of PA is better than getting none at all (Chodzko-Zajko et al., 2009; Tian & Meng, 2019).

Benefits and Risks of Physical Activity for Older Adults with Chronic Pain

Despite the high rate of chronic pain among the older adult population, most wish to continue participating in enjoyed activities to the greatest extent possible (Sofaer-Bennett et al., 2007). Older adults who can overcome barriers to PA may positively impact physical and mental health outcomes (Bean et al., 2004; Benedetti et al., 2008; Galloza et al., 2017). General feelings of well-being are commonly reported among older adults who engage in PA regularly (Resnick & Spellbring, 2000). Chronic conditions such as heart conditions and diabetes are common comorbidities among older adults with chronic pain (Foley et al., 2021). Considering this, older adults require regular PA to reduce weight gain, muscle loss, and the risk of the previously mentioned comorbid conditions (Borhade & Singh, 2022; Langhammer et al., 2018; Tian & Meng, 2019). Older adults with chronic pain can manage pain, facilitate social connections, and foster an overall sense of well-being through participation in PA (Landmark et al., 2011;

Niederstrasser & Attridge, 2022). From a psychiatric standpoint, PA can reduce the prevalence and impact of mental illnesses such as depression and anxiety (Cunningham et al., 2020).

While PA can pose some risks to older adults who experience pain-related barriers, such risks can be mitigated by adapting activities to an individual's needs (Zaleski et al., 2016). Adaptation refers to the act of identifying and modifying movements that are challenging to individuals with physical limitations (Hutzler & Sherrill, 2007). Some adaptations can occur subconsciously; a person may make changes in their approach to PA to overcome age-related limitations without realizing (Janke et al., 2006). In the case of aquatic exercise, an exercise can be modified to accommodate pain or other types of impairment (Rosenstein, 2007). Other adaptations are designed by a professional to accommodate a person who may otherwise struggle to participate. These types of adaptations need to be designed case-by-case in a way that makes sense to participants Ray (n.d.).

Barriers and Facilitators to Activity Participation

An inaccessible built environment can act as a barrier for older adults struggling to create a habit of regular PA (Carlson et al., 2012). For example, built environments not designed with the senior population in mind can cause frustration and reduce the likelihood they will utilize such spaces for PA (Carlson et al., 2012; Moran et al., 2014). A poorly designed environment can significantly reduce access to recreation services for individuals for whom chronic pain causes impairment in physical functioning (Nikolajsen et al., 2021).

Social support is especially important among older adults and individuals with chronic pain (Justine et al., 2013; Stathi et al., 2012; Stevens et al., 2020), and inadequate support from family and friends can create a barrier to PA participation (Justine et al., 2013). The Canadian Mental Health Association (2018) defines social support as the feeling that “we belong and others care

about our well-being... including partners, friends, [and] family members” (para. 1). Older adults who report high levels of social support tend to engage in more active leisure than those who report loneliness (Lindsay Smith et al., 2017).

Psychosocial barriers to participation include negative experiences and beliefs about exercise (Bethancourt et al., 2014; Costello et al., 2011; Janssen & Stube, 2014; Resnick & Spellbring, 2000). Experiencing pain symptoms creates additional PA barriers for older adults. A study by Larsson et al. (2016) states that older adults with chronic pain are less likely to be physically active than those without pain. Both pain symptoms and a fear of movement or injury can further decrease the likelihood of participating in PA (Larsson et al., 2016). In fact, Larsson et al. (2016) posit that kinesiophobia, the fear of movement, can be more of a PA barrier than the pain sensation itself.

Alongside known barriers, it is equally important to understand the facilitators of PA among this age cohort. Access to adaptive, affordable, high-quality programming motivates PA among older adults (Bethancourt et al., 2014; Costello et al., 2011). Psychosocial facilitators of PA include intrinsic motivation, self-efficacy, belief in the benefits of PA, and social relationships (Schutzer & Graves, 2004; Simmonds et al., 2016; Spiteri et al., 2019). Understanding these facilitators can help recreation professionals design effective PA programs and inspire researchers to make recommendations (Costello et al., 2011). Among older adults, self-efficacy, a belief in one’s ability to meet a desired goal, is essential for encouraging ongoing PA engagement (Bandura, 1997; Carlson et al., 2012). Such factors are also important in managing chronic pain in late adulthood through self-regulation strategies like PA (Krein et al., 2007).

Selective Optimization with Compensation

Older adults must be equipped to overcome barriers to physical activity to benefit from their participation. When viewing aging, chronic pain, and PA through the lens of developmental lifespan psychology, age-related health issues often act as a significant barrier to engaging in meaningful physical activities that bring enjoyment (Janke et al., 2006). Baltes and Baltes (1990) suggest that older adults facing age-related constraints to PA can benefit from strategies to facilitate ongoing participation. Their theory, selective optimization with compensation (SOC), offers clear suggestions on how older adults can maximize their chances of experiencing enjoyable active leisure.

The first of three components of the SOC model, selection, refers to the age-graded reduction in activities that can realistically be performed. A person who enjoyed many intense physical activities in adulthood may feel less competent doing those activities in late adulthood. Rather than struggling to engage in several activities, an older adult may choose to invest their time in one activity they enjoy and feel competent doing. Optimization means that the selected activity has been chosen strategically, considering the person's strengths and limitations. Compensation refers to adaptations made to increase the accessibility of an activity.

An example of the SOC model in practice is as follows: Sharon, a 67-year-old woman who participates in multiple exercise programs, begins experiencing chronic knee pain. She decides that to stay active regularly, she will solely focus on an aerobic fitness class, an activity she greatly enjoys. However, Sharon still experiences occasional knee pain during specific movements. Sharon decides to attend an Aquafit class and finds it to be a low-impact alternative to land-based group fitness. In this example of the SOC model, the Aquafit program was selected because it holds many of the same benefits as the land-based classes she used to enjoy (Bocalini

et al., 2008). Because it is a group fitness class, she experiences fun and friendship with her fellow attendees (Graupensperger et al., 2019).

Community Recreation

The availability of publicly accessible recreation programming can increase the likelihood that an older adult will engage in PA (Choitz et al., 2010). Community recreation can provide an avenue to accessible and enjoyable activities for older adults (Hickerson et al., 2008) while encouraging socialization among individuals who differ from one another (Abery, 2003; Khasnabis et al., 2010). Utilizing such programming can allow individuals to feel they are part of a larger community due to prolonged participation (Abery, 2003). The group fitness class is one type of community recreation programming that fosters social connection (Komatsu et al., 2017). Attending group fitness classes can improve physical fitness (Cruz-Ferreira et al., 2011) and promote continued adherence (Graupensperger et al., 2019). In this context, participants interact with the research phenomenon, Aquafit classes.

Aquatfit Programming

Aquafit programs are community-delivered group fitness classes delivered in the water. Aquafit programs are a safe and effective form of PA for older adults, individuals with chronic pain, and the obese (Bergamin et al., 2013; Dundar et al., 2009; Md Yusof et al., 2018). One key property of the aquatic environment is buoyancy, an upward force that reduces the effect of gravity to make a person feel lighter than they would on land (Torres-Ronda & Del Alcázar, 2014). Despite the reduced impact of PA in water, the increased resistance, known as drag, makes movement more difficult, thus using more energy. These traits make Aquafit programs suitable for older adults with chronic pain as participants can get a vigorous workout while experiencing less discomfort than during land-based PA (Takeshima et al., 2002). Older adults

with chronic pain may experience a reduction in pain symptoms after a period of sustained participation (Broach & Dattilo, 1996; Irandoust & Taheri, 2015). Research in the fields of therapeutic recreation and geriatric health demonstrates that aquatic exercise shows great promise as a means for improving physical and mental health outcomes while positively impacting activities of daily living (Aquatic Exercise Association, 2018; da Silva et al., 2019; Sanders et al., 2013).

The community aspect of aquatic exercise programming plays a significant role in promoting ongoing participation. Qualitative research by Weinstein (1986) portrayed aquatic exercise participants' close social bonds and clearly expressed enjoyment in vivid detail. When the instructor was interviewed, they believed that participants continued their involvement because of the fun they had during each class. While information on the community recreation context of Aquafit programming is limited, we know the social benefits of group fitness classes and the functional benefits of aquatic exercise. Group fitness can facilitate the formation of tight social bonds with other participants (Graupensperger et al., 2019; Hwang et al., 2019; Komatsu et al., 2017). Meanwhile, the water provides an adaptive environment for PA where the buoyancy of the water limits the impact of the activities and helps individuals with balance (Sanders et al., 2016). Aquatic exercise programming can be further adapted by chair lifts into the pool and other adaptive aquatic equipment (Frye et al., 2017; Weinstein, 1986).

In the context of community recreation, aquatic exercise programming (typically referred to as 'Aquafit') is typically delivered in a group format, where an instructor demonstrates movements to a class of participants in the water (Weinstein, 1986). The group atmosphere of such programming can lead to added social and emotional benefits. Exercising with a group can also increase exercise adherence by encouraging continued participation alongside peers who

hold one another accountable and provide encouragement (Graupensperger et al., 2019; Maher et al., 2015). When community Aquafit fitness classes are delivered to seniors with chronic pain, the accessibility and health benefits of water exercise are combined with the social impacts of group fitness, offering a powerful intervention to those who struggle to meet activity guidelines.

Research Aim

The purpose of this research is to explore the lived experience of older adults with chronic pain who participate in community Aquafit classes.

Chapter 2: Literature Review

Many factors contribute to PA behaviours in late adulthood. Understanding these factors is necessary to eliminate barriers and maximize PA participation among older adults with chronic pain. One framework that conceptualizes ways to adapt to limitations so that barriers can be overcome is the SOC model, which will act as a lens through which participation among older adults with chronic pain can be understood. Community recreation programs can make PA accessible to older adults with pain-related barriers. One specific type of program delivered in this context is the Aquafit class. While much is known about PA performed in the water, little is known about aquatic exercise programs delivered in a community setting or how participation in these classes is perceived by older adult attendees living with chronic pain.

Older Adults, Physical Activity and Chronic Pain

Being active can be challenging for older adults with chronic pain. Unfortunately, chronic pain is highly prevalent during late adulthood. A report by Health Canada (2021) indicates that one-third of Canadians aged 65 and older live with chronic pain. In the older adult population, chronic pain is among the most frequently occurring health conditions and is more prevalent with age (Elliott et al., 1999; Jakobsson et al., 2003; Schwan et al., 2019).

Unfortunately, many older adults believe that pain is inherently a part of the aging process and, as a result, may not seek treatment (Makris et al., 2015). Pain can have negative impacts across three domains: sensory, psychosocial, and quality of life (Huguet et al., 2010). While injuries such as falls causing bone fractures begin as acute pain, chronic pain may occur long after the bone and surrounding tissues have healed (Osteoporosis Canada, 2020). Chronic pain can also occur without apparent injury in conditions such as fibromyalgia and neuropathic pain (Häuser & Fitzcharles, 2018). Pain is the primary symptom in conditions like osteoarthritis,

while others, such as diabetes and heart failure, may cause secondary pain (Alemzadeh-Ansari et al., 2017; Dagnino & Campos, 2022). Regardless of the origin of chronic pain, it is a highly subjective experience (Public Health Agency of Canada, 2023).

Sedentary behaviour is one common response to pain in older adults, a concerning reality given the prevalence of comorbid obesity among older adults with chronic pain (Niederstrasser & Attridge, 2022). Many chronic conditions co-occur with chronic pain (Desai et al., 2020). A study conducted by Foley et al. (2021) used administrative data from Newfoundland and Labrador to determine common comorbidities of chronic pain. Such conditions included mental and cognitive disorders, diabetes, heart conditions, and respiratory conditions. In addition, acute health events like strokes and heart attacks are more likely to occur in those with chronic pain (Chung et al., 2020). Beyond physical health conditions, experiencing chronic pain in late adulthood can increase the incidence of mental illnesses such as depressive disorders (Gagliese & Melzack, 1997).

Relationship Between Pain and Physical Activity Participation

For adults aged 65 and older, experiencing pain reduces the likelihood of meeting PA guidelines (Ashe et al., 2009). It is vital to consider the bidirectional relationship between pain and PA. While pain decreases the ability of older adults to engage in movement-related activities, regular PA is associated with lower pain levels (Landmark et al., 2011; Niederstrasser & Attridge, 2022). In other words, the impact of pain can, to a degree, be mitigated by activity engagement, which can encourage greater levels of PA. Recent literature has examined this bidirectional relationship in detail. Balogun et al. (2020) conducted a longitudinal study exploring this relationship. They determined that older adults with knee pain who reported higher pain levels engaged in less PA, while those who engaged in more PA tended to experience less

pain. The authors posit that fear of causing additional damage to the site of pain was one potential barrier to participation (Balogun et al., 2020).

Conversely, recent findings from Davis and colleagues (2023) failed to validate this relationship. While Davis et al. (2023) determined that older adult participants who consistently participated in PA reported lower pain levels, they could not conclude that the experience of pain impacted the likelihood of PA involvement. It is worth noting that this study was limited in two notable ways. First, the study measured participation in PA exclusively by step count, potentially missing connections with other forms of intentional movement besides walking, such as resistance exercise, group fitness classes, and aquatic activities. Second, many study participants did not report experiencing pain to the extent that functional abilities were impacted. Therefore, the results of this study should be appreciated within the specific study parameters and not necessarily applied to the larger population of older adults or those with chronic pain (Davis et al., 2023).

Nonetheless, exploring the bidirectional relationship between pain and PA in older adults must include opposing evidence as well as validation. It is also worth noting that the reviewed studies (Balogun et al., 2020; Davis et al., 2023; Landmark et al., 2011; Niederstrasser & Attridge, 2022) regarding this relationship have exclusively been quantitative. Given the subjective nature of chronic pain, participant stories may provide a more nuanced understanding of how pain and PA participation relate to one another. Considering how this experience can differ from person to person, there is a need for qualitative studies exploring lived experiences of physical activity participation among older adults with chronic pain, a need this study will address.

Elements of one's health status beyond pain symptoms, such as breathing problems and emotional distress, can influence older adults' participation in PA (Chad et al., 2005). Older adults who do not have a history of active participation are the most likely to stop activities after a health event and not return subsequent to their recovery (Phillips et al., 2010). In addition, those with difficulty balancing and limited cardiorespiratory endurance will find it more challenging to participate in PA (Bethancourt et al., 2014).

Another health-related challenge can be found in how older adults perceive the possibility of health consequences resulting from exercise, like falls or other painful injuries (Balogun et al., 2020; Costello et al., 2011; Simmonds et al., 2016; Spiteri et al., 2019). In a qualitative study by O'Brien Cousins (2000), older women described perceived consequences of PA, including pain and injury, overexerting, inability to perform the activity, and falling due to poor balance. Some women even reported fearing a heart attack during activity. A key aspect of how PA is perceived is fear of movement and associated injury, a concept which will be discussed under *Barriers & Facilitators*.

Benefits of Physical Activity for Older Adults with Chronic Pain

Physical Health. Older adults who consistently participate in PA have better cardiac health, lower blood pressure, a reduced likelihood of falling, and can even improve their ability to perform daily tasks (Langhammer et al., 2018). Routine PA is also associated with decreased all-cause mortality and better management of respiratory conditions and chronic pain (Bean et al., 2004; Galloza et al., 2017). Engaging in PA can reduce pain sensation (Naugle et al., 2017) and positively impact the quality of life among older adults with chronic pain (Otones et al., 2020).

A study by Carta et al. (2022) found that three months of moderate PA delivered three times per week reduced pain among community-dwelling older adults. However, these effects were not sustained without continued participation. Niederstrasser and Attridge (2022) found that vigorous PA can aid in managing musculoskeletal pain in older adults. They also reported positive effects on managing obesity, a condition which can significantly impact pain in older adults with chronic pain. A systematic review by Geneen et al. (2017) reported that while PA shows promise as an intervention for older adults with chronic pain, there is a considerable amount of inconsistency in pain reduction outcomes across various studies. This may, in part, be due to heterogeneous measures of pain reduction and a frequent lack of baseline values. The authors also stated that much of the evidence supporting PA interventions among older adults is of low quality and thus expressed a need for additional research. The review did, however, report benefits to physical functioning and reduced impact of pain-related disability (Geneen et al., 2017).

In addition to reducing obesity as a comorbid issue, PA can also reduce other chronic health risk factors. A systematic review by Tian and Meng (2019) concluded that PA improves many symptoms associated with cardiovascular disease, with the most significant effects seen among individuals who adhere to a customized program created for their specific needs. Diabetes, another chronic condition common among older adults, can also be treated through adherence to a PA program, especially when combining strength and aerobic activities (Bean et al., 2004; Borhade & Singh, 2022). Little work, however, has been done on how such comorbid chronic conditions impact and are impacted by participation in structured, community-based PA.

Research has been conducted on the efficacy of some specific forms of PA for pain management. A quantitative study by Peeler et al. (2015) studied individuals with osteoarthritis

in the knee (many of whom were older), focusing on treadmill walking where the user's weight is partially supported to reduce pressure. The study found significant improvements in chronic knee pain as well as increased functioning of the joints. A follow-up study found that these benefits continued long after the program ended (Peeler et al., 2020). A qualitative study by Lee et al. (2020) explored the benefits of Tai Chi in older adults with chronic pain over 36 weeks. Physical benefits reported by participants included "leg strength, balance, flexibility, and posture" (p. 3) and a reduction in pain symptoms. In addition, three other themes were identified: psychospiritual benefits, social support from the group aspect of the activity, and the integration of acquired skills into the daily lives of participants (Lee et al., 2020).

Mental Wellness. Among the general population of older adults, engagement in PA predicts mental wellness (Lampinen et al., 2006). Aside from physical comorbidities, many mental health disorders tend to present alongside chronic pain conditions and among the general population of older adults (Castro et al., 2009; Pan American Health Organization & World Health Organization, 2014). Evidence shows that PA, when combined with other treatment modalities, can be effective in managing and reducing the impact of depressive disorders (Schuch et al., 2016). One component that makes PA an effective lifestyle component of managing depression is the social relationships older adults often form when participating in activity programs (Strawbridge et al., 2002). In addition, the impact of anxiety disorders can be reduced by engaging in PA on a regular basis (Benedetti et al., 2008; Galloza et al., 2017).

Another notable component of mental wellness is socialization. While socialization is a crucial aspect of mental wellness in all age groups, McHugh and Lawlor (2012) suggest that combining PA with socialization can be effective in managing depression among older adults. The authors also found that social support was most associated with mental wellness among

those who engage in low amounts of PA, and having low levels of social support had a lesser impact on highly active older adults. Older adults with chronic pain are more likely to experience feelings of loneliness when compared to their pain-free counterparts (Smith et al., 2019). An integrative review by Suragarn et al. (2021) included community-based PA among their recommendations for fostering social connection in older adults, a finding also reported by Ruiz-Comellas et al. (2021).

Risks Associated with Physical Activity

Older adults may fear the possibility of physical injury or worsening pain as a result of PA, especially among those who are less active (Costello et al., 2011). While there are risks associated with PA in older adults with chronic pain, most of these do not involve significant physical damage and are limited to “soreness or muscle pain, which reportedly subside[s] after several weeks” (Geneen et al., 2017, p. 16). Still, an increased risk of injury is present in older adults who lack joint flexibility (Chodzko-Zajko et al., 2009). In individuals with fibromyalgia, overexertion can cause an increase in symptoms such as numbness, headache, stomach problems, or fevers (Gomez-Arguelles et al., 2022; Vincent et al., 2016). Regardless of pain status or comorbid chronic conditions, PA typically offers more benefits than risks (Warburton et al., 2006).

Barriers and Facilitators of Physical Activity

Barriers and facilitators are factors that negatively or positively affect PA participation. Due to the reality that chronic pain in late adulthood can lead to physical impairment (American Geriatrics Society, 2002), The Internal Classification of Functioning, Disability, and Health (World Health Organization, 2002) is a useful tool to conceptualize the barriers and facilitators impacting older adults’ participation in PA. This section will explore the personal and

environmental factors that increase or decrease the likelihood of engaging in routine active leisure. The World Health Organization (2002) states that personal factors describe internal characteristics that can influence active leisure engagement. Examples of personal factors include age, coping strategies, life experiences and perceptions of PA. Environmental factors, on the other hand, refer to external characteristics that cannot be controlled by the individual (World Health Organization, 2002). Examples of environmental factors include the built environment, available recreation programming, and societal attitudes. Through exploring these factors, a better understanding of why older adults may or may not participate in PA regularly can be obtained.

Environmental Factors

Built environment. The term ‘built environment’ describes physical structures in which people live, work, and engage in recreation activities (Renalds et al., 2010). For a facility to truly be accessible, it must be both physically equipped for varying abilities and foster a welcoming culture. The lack of an aquatic wheelchair for participants who require wheelchairs in everyday life is one example of an inaccessible built environment in the context of a recreation facility. When older adults feel a built environment has not been designed for them, for example, insufficient rest areas like seating, they may become frustrated and less likely to use the facility (Moran et al., 2014). Older adults tend to be uncomfortable exercising in facilities they perceive as unsafe, unattractive, or lacking sufficient rest areas such as chairs and benches. Inconveniently located, noisy, and overly crowded facilities can discourage PA among those whose pain results in impairments (Nikolajsen et al., 2021).

Organizational structure. Beyond the physical characteristics and location of recreation facilities, organizational issues are also at play. Ranson et al. (1980) conceptualize

‘organizational structure’ as the “configuration of roles and procedures” (p. 2) and how such components interact. Bethancourt et al. (2014) claim that having access to programming that accommodates varying ability levels is highly beneficial for older adults. Many recreation facilities offer programming for older adults, but organizational aspects of facilities and administration, such as staff training practices, may help or hinder active participation based on the user's ability level (Nikolajsen et al., 2021). Recreation staff can create less accessible environments through how programming is delivered to participants. Uninformed or unskilled staff may not be equipped to help an older adult participant who is inexperienced with the activity or lives with chronic pain causing impairment (Nikolajsen et al., 2021).

One example of an organizational issue involving staff is delivering programming of an inappropriate difficulty level; too easy can mean less activity and more boredom, while too difficult can overwhelm participants and discourage further engagement in group exercise (Bethancourt et al., 2014). For individuals whose chronic pain causes physical limitations, it is easy to be discouraged by staff and instructors who judge and intimidate participants, are disrespectful, or make negative comments when exercises are not performed as expected (Nikolajsen et al., 2021).

Access to recreation programming. When recreation programming is easy for older adults with chronic pain to access, they are more likely to utilize it to maintain an active lifestyle. The cost of membership or program participation can make recreation opportunities inaccessible to low-income seniors (Justine et al., 2013). Access to adaptive, affordable, and high-quality programming motivates PA among older adults (Bethancourt et al., 2014; Costello et al., 2011). One example of financially accessible public recreation is The City of St. John’s in Newfoundland and Labrador. Their recreation division can subsidize one program per season for

low-income adults (City of St. John's, 2022). One aspect of access to programming involves one's proximity to recreation opportunities; living close to a facility increases the likelihood that a person will use its services (Todd et al., 2016). The opposite condition, living far from a facility where programming is offered, can negatively impact participation (Kennedy, 2022).

Personal Factors

Some personal factors are demographic, such as chronological age and gender (Porter & VanPuymbroek, 2007; Rimmer, 2006). Other personal factors impacting PA among older adults are related to health status (Cohen-Mansfield et al., 2003). However, this study will focus on pain specifically. This section will explore psychosocial barriers and facilitators. Psychosocial factors include coping styles, behaviour patterns, and lived experiences. While external factors such as built environments, organizational structure, and high-quality programming can facilitate PA, if an older adult faces personal psychosocial barriers, they may not be motivated to pursue PA (Carlson et al., 2012).

Motivation. Motivation to engage in PA predicts regular participation (Bethancourt et al., 2014; Costello et al., 2011). Low motivation to engage in PA is a barrier for many older adults, as is disinterest in a continued commitment to prolonged participation (Costello et al., 2011). Bethancourt et al. (2014) explored the role of fitness instructors in motivating older adults to engage in group PA. The authors explained that some instructors can aid in motivating older adults and can make fitness classes so enjoyable that the participant does not even feel they are exercising. Conversely, an instructor that does not motivate the participant can present a barrier to attending PA programs. Two examples of this are instructors who repeat the same exercises every session, and those whose instruction exceeds a reasonable intensity for this age group (Bethancourt et al., 2014). An unfortunate side-effect of the second example is making PA seem

intimidating. Someone who is intimidated or bored by PA will be less motivated to participate in recreation programming involving exercise (Bethancourt et al., 2014; Costello et al., 2011).

Self-efficacy. Self-efficacy is a belief in one's ability to meet a desired goal (Bandura, 1997). If a person believes they are incompetent and unfit, they will be less likely to seek out and engage in PA (Spiteri et al., 2019). Holding this belief is associated with ongoing PA engagement among older adults (Carlson et al., 2012; Schutzer & Graves, 2004). Bandura (1997) suggested that sedentary lifestyles, which are increasingly common with advancing age, can only be overcome with determination to continue engaging in PA despite constraints. He continued that gradually transitioning into routine participation is a healthy way to foster increased PA among older adults.

Bandura (1997) states that in late adulthood, the greatest benefits of PA will be experienced by those who perceive themselves to be physically and mentally capable of achieving their goals. Varkey et al. (2022) state self-efficacy can determine whether or not a person engages in moderate to vigorous PA for individuals with chronic pain. The authors also state the possibility that self-efficacy surrounding overall physical capabilities could be more impactful than self-efficacy around PA. In older adults with chronic pain, a lack of fear around PA and high self-efficacy are associated with PA participation (Larsson et al., 2016).

Social support. While recreation programs offer an avenue to new social connections, a lack of existing social connections, specifically having no one to join them in exercise, is a commonly reported barrier to participation (Justine et al., 2013). In late adulthood, social relationships tend to be a major focus of PA engagement (King et al., 1998). In addition, those who attend group PA programs that are structured may feel obligated to regularly attend as they feel committed to the group itself (Beck et al., 2016). For some individuals who have not yet

begun a routine of PA participation, finding an activity partner can motivate them to participate (Cohen-Mansfield et al., 2003), reflecting a barrier stated by Justine et al. (2013). For individuals for whom chronic pain limits activity involvement, social support can reduce the impact of pain to the extent that PA is feasible (Stevens et al., 2020).

Mental and Cognitive Health. The Pan American Health Organization and World Health Organization (2014) report that a quarter of older adults experience mental illness. In addition, mental health diagnoses like depression and anxiety commonly co-occur with chronic pain (Castro et al., 2009; Roughan et al., 2021). These diagnoses often reduce the likelihood of regular PA involvement (Codella & Chirico, 2023; Strine et al., 2008). Depressive disorders act as barriers to activity by means of decreased functionality in performing daily tasks and a belief that being active will not be enjoyable (Watts et al., 2018). For example, a person who experiences chronic pain and depression may feel that there is no point in engaging in PA because their situation is hopeless. Hopelessness and a lack of belief in the enjoyability of PA are common in those with depression (Kanter et al., 2008).

Cohen-Mansfield et al. (2003) reported that effectively treating depression, along with pain management, is a significant facilitator of PA for community-dwelling older adults. Anxiety disorders involve uneasiness and excessive worry about the possibility of a negative outcome (Griffin, 1990; Perna, 2013). Avoidance is a coping strategy anxious individuals often use to mitigate negative emotions surrounding distressing thoughts or experiences (Marcotte-Beaumier et al., 2022). For example, for a person who has co-occurring anxiety with chronic pain, the act of going to a facility where recreational PA programming takes place may increase anxiety, and therefore, they may avoid attending programs.

Perceptions of Physical Activity. Self-perceptions are beliefs we hold about ourselves that influence how we choose what activities to engage in (Shapka & Khan, 2018). These beliefs can be positive or negative. How we perceive our past behaviours often guides our future behaviours (Albarracín & Wyer, 2000). Bethancourt et al. (2014) suggest that one's beliefs about PA can influence their perception of participation. Self-perception related to physical activity can act as a barrier or a facilitator. As discussed earlier, an older adult with high self-efficacy will be more likely to engage in PA (Larsson et al., 2016). A qualitative study by Janssen and Stube (2014) documented how older adults perceive PA participation. Perceptions that created barriers to PA were low self-efficacy and fear of social rejection. Some older adults can overcome such barriers, while others experience intense anger and frustration regarding the barriers they feel they cannot overcome.

In a qualitative study using focus groups, Costello et al. (2011) explored the beliefs of older adults who engage in PA and those who do not. They found that those who participate in PA perceive physically active people to be regular exercisers who keep busy and perceive inactive people as depressed, socially isolated, and experiencing physical disability. Further, their previous life experience is an important factor influencing these perceptions; a person who has had limited experience with PA before late adulthood will be less likely to become active in their later years (Bethancourt et al., 2014). A general dislike of structured exercise environments, such as gyms and recreation facilities, also limits their willingness to engage in activities (Bethancourt et al., 2014). Challenging negative perceptions of PA, such as the belief that one is too old to participate (Booth et al., 1997) or that PA is too time-consuming (Costello et al., 2011; Justine et al., 2013) is essential in increasing self-efficacy and ultimately, facilitating PA. A

common perception-related barrier of PA among older adults with chronic pain is a fear of participation.

Kinesiophobia. The concept of kinesiophobia, or the fear of movement, was introduced in 1990 by Kori (as cited in Kvist, 2005) to describe the fear of worsening pain or injury to the extent that the idea of PA is terrifying. This fear can be real or perceived. At any age, kinesiophobia can be more detrimental to participation than actual pain symptoms (Larsson et al., 2016). A study by Loucks-Atkinson and Mannell (2007) determined that fear of aggravating pain was a strong constraint to PA among individuals with fibromyalgia. Therefore, addressing these fears is critical when encouraging increased PA participation.

Among older adults whose chronic pain results from a bone fracture or replacement, anxiety around causing further damage to bones and joints presents the most prevalent barrier to PA (Simmonds et al., 2016). Such problems require professional intervention, like physiotherapy, to ensure that risks are minimized and ongoing participation is encouraged. PA participation is more prevalent towards the beginning of late adulthood, as younger seniors often have fewer fears of movement and a history of regular engagement in recreation activities (Larsson et al., 2016). Kinesiophobia among seniors impacts more than recreational PA but daily activities such as standing and walking as well (Naugle et al., 2022). Kinesiophobia can be more detrimental to participation than pain sensations (Larsson et al., 2016). Professionals working with older adults should note that seniors who engage in high levels of PA in childhood and adolescence may be less impacted by kinesiophobia (Saulicz et al., 2016). In addition, the fear of movement becomes increasingly prevalent with age and the severity of pain (Larsson et al., 2016).

If older adults with pain can navigate barriers to the extent that some routine activity is possible, their pain may become more manageable, and PA guidelines may be easier to consistently achieve (Geneen et al., 2017; Stubbs et al., 2013). To properly encourage increased PA participation, it is necessary to highlight strengths and plan for ways to work around limitations. This balanced approach can be facilitated through the use of selection, compensation, and optimization strategies, where activities are selected based on preferences and skills while adapting activities to minimize pain-related barriers (Baltes & Baltes, 1990; Son et al., 2009).

Selective Optimization with Compensation

Throughout the 1980s, gerontology researchers Paul and Margret Baltes began conceptualizing a strategic approach for successful aging, which became known as the principle of Selective Optimization with Compensation (SOC) (Baltes & Baltes, 1990). The Baltes' posit that the concept of SOC "describes a general process of adaptation" (Baltes & Baltes, 1990, p. 21) to changing functional abilities across the lifespan. Certain functions and perceptions begin operating at a decreased capacity in the advanced stages of an individual's natural life course.

Adapting activities to compensate for these decreases in function highlights the benefits of SOC in older adults: it dispels the idea that the time for enjoyable and purposeful activities has ended. Such feelings are especially prevalent in the context of chronic pain and PA, as the extent of an individual's pain may become greater than their ability to cope with it (Hutchinson & Warner, 2014). The SOC theory, a product of lifespan developmental psychology, is accompanied by the positionality that aging is a complex and ongoing interaction between gains and losses across psychomotor, cognitive, and sensory domains (Johnson et al., 2005; Marsiske et al., 1995). Through exploring this framework, researchers can seek a greater understanding of

age-related changes to leisure patterns, determining ways to maintain activity involvement in advanced age.

Kleiber et al. (2008) suggest that while barriers to involvement in PA can limit recreation opportunities, accepting certain barriers can facilitate a reduction in the number of activities so that enjoyable participation is possible. The authors also suggest that activities may be enjoyed more if one chooses to specialize rather than engage in many activities which may be enjoyed less. This concept illustrates the first component of SOC, selection. When applying the work of Baltes et al. (1999) to the context of PA, selection involves making a small number of specific goals around active leisure in late adulthood relative to broader activity goals and preferences in earlier stages of development. For example, an individual may attend an aqua strength class with smaller goals of improving their skill at certain movements as a part of a larger goal of increasing muscular strength.

Optimization means making the most of remaining physical and cognitive resources by choosing activities in which one can realistically participate (Baltes et al., 1999). One aspect of choosing an optimized activity is making a choice that facilitates the achievement of a desired goal (Freund & Baltes, 2002). For example, if a person wishes to improve their balance, the activity they select will be one that takes this into consideration in addition to their strengths and limitations. Older adults with greater resources, such as independent walking and high cognitive function, will not experience as severe limitations to activities and daily life (Baltes & Lang, 1997). Those with fewer resources may choose to put additional effort into acquiring new skills, improving existing skills, and taking inspiration from those who have overcome similar obstacles (Freund & Baltes, 2002).

Compensation can take the form of external aids and interventions or changing the activity to something more feasible for the participant (Freund & Baltes, 1998). Examples of compensation put into practice include adaptive equipment or modification of existing recreation program delivery. Much like optimization, compensation strategies relate to an individual's existing resources (Freund & Baltes, 2002). For example, a person will only choose to use a walking cane if their physical limitations warrant using such a device.

When a person purposefully selects an activity they have the functional capabilities of engaging in, they put the second component, optimization, into practice (Freund & Baltes, 1998). If one chooses to participate in their selected activity in a way that increases their ability to perform the required tasks, such as using a rail to facilitate walking, this constitutes a compensation strategy (Freund & Baltes, 2002). Suppose older individuals routinely put SOC strategies into practice. In that case, they are more likely to enjoy a stimulating and meaningful life, even if operating at a reduced capacity has created unavoidable life changes. In accomplishing these outcomes, selection, optimization, and compensation work together as an adaptive mechanism, bridging the gap between previously enjoyed activities and those for which participation is currently possible.

Through the regular use of SOC, even individuals living with multiple chronic conditions feel happier and more satisfied with the overall quality of their lives (Teshale & Lachman, 2016; Zhang & Radhakrishnan, 2018). Two examples will be introduced to further illustrate the concepts of selection, optimization, and compensation. The first example involves Teresa, a lifelong hiker and jogger who was diagnosed with osteoarthritis at age 68. Despite her past ability to hike for several hours and run 10 kilometres, chronic pain is now restricting her from walking longer than 20 minutes. Even though Teresa lives in a neighbourhood next to a 30-

minute-long walking trail, she fears she will over-exert herself and worsen her pain. Teresa develops a sedentary lifestyle and is more likely to develop cardiovascular disease, diabetes, and obesity. Teresa's previously managed major depressive disorder begins to impact her life negatively, and she loses touch with her friends from the hiking and jogging communities she once was part of. Teresa did not employ SOC strategies in response to her pain-related PA constraints.

The second example involves a man named John. John grew up playing multiple sports and continued to live an active lifestyle throughout his adulthood. While he continued to engage in several sports in late adulthood, John had a knee replacement at age 72. After finishing a rehabilitation program, he is considering how he will return to his previous activities, especially since he often experiences pain when he runs. While most of John's favourite activities involve running, he knows he will need to change his active leisure lifestyle to remain active despite his pain. His specific goal is to find one new activity involving running and specialize in that activity ('selection'). He chooses to join an aquatic jogging class to minimize the impact of running on his knees while still getting an intense workout ('optimization'). After attending a few Aquafit classes in shallow water, John decides to participate in the deep water using a water jogging belt to reduce further the impact on his replaced knee ('compensation'). He enjoys his new activity and quickly makes friends with other participants, having coffee with them after each class. Because John employs SOC strategies, he can continue participating in PA regularly and enjoying the benefits that accompany an active lifestyle.

Individuals who employ SOC strategies like positive self-talk, problem-solving, or using assistive devices to resume engaging in purposeful and satisfying activities experience greater well-being and achieve their personal goals (Hutchinson & Warner, 2014; Jopp & Smith, 2006).

Such outcomes cement the need for future initiatives involving SOC in supporting older adults to maintain activity over their lifespan. It is important to mention that some older adults will apply SOC strategies unintentionally (Baltes et al., 1999). Some individuals will cease participation in activities they no longer feel capable of engaging in and may seek activities they deem more appropriate.

In the context of the current research study, older adults have selected Aquafit programming as a form of active leisure that can be performed regularly. This involvement will be explored through the lens of the SOC model. The SOC model may help understand Aquafit participation among older adults living with chronic pain because they have chosen ('selected') an activity that helps them make the most out of movement ('optimize') and is adaptable ('compensation') to their limitations.

Community Recreation

Among older adults, one facilitator of PA is access to community recreation facilities and high-quality programming (Bethancourt et al., 2014; Choitz et al., 2010). For the purposes of this study, community recreation will be defined as publicly accessible leisure activities that leave a participant feeling physically, emotionally, and socially refreshed (Khasnabis et al., 2010). Community-based exercise initiatives can increase participants' physical and psychological wellbeing (Holland et al., 2005). A public, not-for-profit, or private organization may provide community recreation services in the form of parks, recreation facilities, swimming pools, and activity programming (DeGraaf et al., 2010).

Tribe (2011) explains that public organizations are operated by the government (such as municipalities and provincial governments) and are funded by taxpayers, while private organizations are not government-funded. Further, some private organizations offer for-profit

services, while others are nonprofit. The Government of Canada (2016) clarifies that nonprofit organizations place their focus on the welfare of the community and do not earn a profit. In addition, some of these organizations are called charities and receive funding from community donations. Public and nonprofit organizations may provide financial assistance to make programming more accessible.

The benefits of community recreation include fostering wellness in the community, encouraging skill acquisition and development, and, in the case of public and nonprofit organizations, the inclusion of groups such as low-income families and people with disabilities (Khasnabis et al., 2010). At the personal level, community recreation can offer physiological, psychological, and social benefits, while the broader community can become more connected, cohesive, tolerant, and less prone to social problems (City of North Vancouver, 2020; DeGraaf et al., 2010). In the example of connecting people living with and without disabilities, community recreation can be a venue to find similarities, disprove misconceptions, and foster inclusion and self-efficacy (Abery, 2003). Encouraging participation between different groups, such as individuals with or without chronic pain, can be a powerful agent for social change as participants with varying degrees of ability and types of pain can better understand each other's strengths and limitations (DeGraaf et al., 2010; Khasnabis et al., 2010). While community recreation can hold various meanings and functions, this study will look at recreation programming centred around active leisure.

Group fitness classes are commonly offered in public and not-for-profit recreation facilities and are typically delivered by qualified instructors. Group PA provides a social dynamic that accompanies unique benefits. Creating social ties within the group can foster a sense of community and yield deeply supportive friendships (Komatsu et al., 2017). Attendees of group

fitness programs are also more likely to adhere to a PA program long-term when they feel connected to other participants (Graupensperger et al., 2019). Group fitness classes offered by community organizations allow older adults to join a larger group of participants following an instructor's movements. For example, Pilates classes are a common example of an instructor-led group fitness class that can improve muscular endurance, flexibility, and balance (Cruz-Ferreira et al., 2011) while taking place in a socially supportive environment.

Literature on older adults' use of community recreation services is limited; a search of SPORTDiscus and Web of Science was performed using the search terms "older adult OR seniors OR elderly AND community recreation OR public recreation OR public leisure OR community leisure." This search yielded only seven relevant and accessible results, two from within the past ten years and three within the past 20 years. The retrieved articles highlight examples, recommendations, and the preferences of the older adult population. When older adults participate in community recreation programming, they engage in activities that fit their routine schedule and are considered beneficial (Gravelle et al., 1997). Sperazza and Banerjee (2010) explored the leisure preferences of 'Baby Boomers' (i.e., those born between 1946 and 1964), the emerging generation of older adults, reporting a preference for sport-related, aquatic, and outdoor activities. The study also reports that many baby boomers value self-betterment, physical fitness, and socialization when selecting recreation programming.

Community recreation facilities can play a substantial role in maintaining physical, emotional, and social well-being in late adulthood. A study by Hickerson et al. (2008) detailed the use of older adult-specific community recreation facilities. The study reported that older adults seek out programming that will accommodate the physical limitations that occur as they age, with retirement being one key motivator to seek out new activities. Individuals also seek out

community programming based on what they perceive to benefit their health while having fun (Hickerson et al., 2008). Another important factor identified in their study was the role of the facility itself; older adults greatly benefit from having a place to visit on a routine basis for enjoyment, socialization, and PA. However, there is a need for literature that explicitly explores how older adults living with chronic pain use community recreation programming to overcome barriers to PA and enhance social connection in their daily lives.

Aquafit Programming

Aquatic exercise programs like Aquafit offer participants of many ability levels an opportunity to improve their cardiorespiratory endurance, strength, and flexibility. One key reason that water makes PA more accessible to seniors is the characteristic of buoyancy, which aids balance and reduces the impact of activities that could be high-impact if performed on land (Sanders et al., 2016). This characteristic creates the feeling of weightlessness experienced in the water (Konlian, 1999). The reduced impact found in aquatic PA benefits older adults by placing less pressure on bones and joints (Rica et al., 2013). The characteristic of drag resistance also makes this type of PA highly effective by increasing the energy required to complete exercises (Sanders et al., 2013). For example, to move a limb below the water, a person must overcome added resistance with each repetition, thus constituting a strength exercise. Regular participation in aquatic exercise can improve a participant's strength, cardiorespiratory endurance, and ability to perform daily living activities (Rica et al., 2013; Sanders et al., 2016; Taunton et al., 1996).

Aquatic Exercise and Older Adults

Aquatic exercise has many benefits for older adults. Evidence suggests aquatic exercise interventions can benefit bone health (Schinzel et al., 2023). A study by Bocalini et al. (2008) found that aquatic exercise mitigated the impact of age-related decreases in physical functioning

and increased physical fitness to a greater degree than land-based exercise. The authors suggested that this may be related to increased lower body strength, potentially caused by the extra energy utilized during the activities. Similar research conducted by Bergamin et al. (2013) suggested that lower body movement performed in water can contribute to a challenging and engaging workout. Their study also found that the aquatic group saw more significant increases in upper- and lower-body flexibility when compared to the land-based exercise group.

Fisken, Waters, et al. (2015) found that 12 weeks of aquatic exercise programming resulted in functional improvements and reduced fears of falling among older adults with osteoarthritis. The intervention delivered in their study involved aerobic and strength exercises performed in the water. A similar conclusion was reached by Kim and O'Sullivan (2013) and Katsura et al. (2010). The latter study also found that walking ability and speed improved at the end of an eight-week program delivered three times per week in 90-minute sessions.

Many of the reviewed studies concerning the older adult population (e.g., Bergamin et al., 2013; Fisken, Waters, et al., 2015; Kim & O'Sullivan, 2013) found improvements in balance, a phenomenon Simmons and Hansen (1996) suggested to be a potential result of being able to perform movements in the water that would be more likely to result in a fall if performed on land. Water temperature is another attribute of the aquatic exercise environment relating to both older adults and individuals with chronic pain. Some literature suggests that older adults may require higher than average pool temperatures to get the most out of PA in the water (Abadi et al., 2020; Bergamin et al., 2013; Fisken et al., 2014). The Aquatic Exercise Association (2018) recommends longer warm-ups in programs geared toward the older adult population.

Aquatic Exercise and Chronic Pain

Aquatic exercise can help manage chronic pain conditions such as osteoarthritis, low back pain, and fibromyalgia (Fransen et al., 2007; Waller et al., 2009; Zamuner et al., 2019).

Adjusting the depth of the water based on pain sensation can allow a tailored experience that can ease an untrained participant into PA (Becker, 2009). For example, someone with joint pain who requires a low-impact environment may benefit from participating in the pool's deep end instead of the shallow end. The following sections will highlight chronic conditions associated with chronic pain that have been managed through aquatic exercise.

Osteoarthritis. Chen et al. (2017) define osteoarthritis as a degenerative joint that often causes chronic pain and related impairment. This description also states that “one of the most common risk factors for [osteoarthritis] is age” (p. 2). Individuals with osteoarthritis are often recommended to participate in low-impact aerobic PA programs delivered in the water (Nelson et al., 2014). When delivered as a therapeutic intervention, aquatic exercise has demonstrated usefulness in physical functioning and reducing arthritic pain in the joints (Fransen et al., 2007). Engaging in aquatic activity can reduce the impact of osteoarthritis by increasing hip strength while reducing joint stiffness (Hinman et al., 2007).

Improved quality of life and reduced impact of pain-related disability are two key benefits of aquatic exercise for osteoarthritis, especially in the knees and hips (Bartels et al., 2016; Franco et al., 2015). A quantitative study by Cadmus et al. (2010) reported an increase in perceived quality of life among participants of a community-based exercise program. However, the most significant effect was found to be among obese individuals. A six-week aquatic exercise therapy intervention designed for a randomized controlled trial by Hinman et al. (2007) found that most

participants continued participating independently, and the associated benefits persisted six weeks after the program concluded.

Low back pain. Aquatic exercise has been examined for almost three decades as an intervention for low back pain (LeFort & Hannah, 1994). Research by Ariyoshi et al. (1999) on chronic low back pain suggests that aquatic activities improving muscular strength and flexibility can improve physical functioning, especially when performed at least three times per week. Owen et al. (2020) also reported increased physical functioning from aquatic exercise after conducting a meta-analysis exploring effective types of PA for treating low back pain. The authors express that one advantageous trait of water-based PA is the ability to control the level of impact on the spine by changing the depth at which the movements are performed.

A systematic review by Waller et al. (2009) reported that aquatic exercise is “a safe and effective treatment modality for patients... suffering from chronic low back pain...” (p. 10) and may be more beneficial than land-based exercises. Performing exercises in water can limit the experience of pain-related disability while enhancing quality of life and has been suggested as an effective way to introduce PA to low back pain sufferers (Dundar et al., 2009).

Fibromyalgia. Jahan et al. (2012) define fibromyalgia as a “common rheumatologic syndrome characterized by heightened pain sensitivity [and] fatigue...” (p. 194). Two commonly reported consequences of fibromyalgia are sleep disturbance and a phenomenon known as ‘fibrofog,’ the occurrence of cognitive impairment that can impact daily tasks (Bigatti et al., 2008; Walitt et al., 2016). Some research suggests that aquatic exercise interventions may be useful in the treatment of fibromyalgia, with the most substantial effects on stiffness, pain, sleep, and anxiety (Bidonde et al., 2014; Ma et al., 2022; Munguía-Izquierdo & Legaz-Arrese, 2008).

In a randomized controlled trial, Rivas Neira et al. (2017) suggested that aquatic interventions are equally beneficial to land-based interventions, reaching a similar conclusion to previous work by Assis et al. (2006). Other potential benefits include improvements in strength, balance, and mental wellness (Assis et al., 2006; Tomas-Carus et al., 2009). A quantitative systematic review by Zamunér et al. (2019) reported that aquatic exercise therapies can improve pain, fatigue, and overall quality of life for people living with fibromyalgia. Munguía-Izquierdo and Legaz-Arrese (2008) found that 16 weeks of chest-high aquatic exercise delivered three times per week yielded the previously mentioned improvements and positive changes in cognitive function, potentially reducing the impact of ‘fibrofog.’

Obesity. The World Health Organization (n.d.) defines obesity as a condition of overweight where a person’s body mass index equals 30 or greater, resulting in increased predisposition for disease, and is a common comorbidity among those with chronic pain. Unfortunately, obesity can worsen pain sensation and, in the case of morbid obesity, presents formidable challenges to getting active. For individuals struggling with obesity, aquatic exercise programs can help with weight loss (Bielec et al., 2017; Rica et al., 2013). For example, aqua aerobics classes have been shown to aid in weight loss (Kantyka et al., 2015).

A quantitative study by Palekar et al. (2018) demonstrated the benefits of aquatic treadmill jogging without dietary changes. These benefits included changes in body composition, improved balance, and better cardiorespiratory endurance. Aqua Zumba programs have demonstrated effectiveness among the obese population and may be more effective than aquatic jogging (Md Yusof et al., 2018; Shari et al., 2022). Obese individuals living with chronic pain may experience a reduction in physical impairment caused by pain as a result of aquatic exercise programming (Abadi et al., 2019).

Aquafit Classes

Defining group aquatic exercise programming can be challenging due to the lack of consistent terminology and scholarly definitions. For this research study, an Aquafit class is any instructor-led group fitness class in the water. Such classes typically contain a mix of aerobic activity, strength training, and flexibility, often performed to music selected by the instructor (Weinstein, 1986). Participants are instructed to follow along at their own pace. When delivered as a community-based fitness class that can be adapted to cater to physical impairment resulting from chronic pain, the aquatic environment offers an accessible environment for older adults who wish to get active (Weinstein, 1986). Aside from the many physical health benefits of participating in aquatic exercise classes, social and emotional benefits are significant in encouraging regular attendance.

Symptoms of mental illnesses such as depression and anxiety may decrease due to participation in aquatic exercise programming (da Silva et al., 2019). Social interaction between participants is often encouraged during such classes (Aquatic Exercise Association, 2018). While most of the research on aquatic exercise programming occurs in a clinical setting, combining the known benefits of this type of PA with what is known about group fitness classes can improve our understanding about Aquafit. Group fitness classes often yield social connections that aid motivation and adherence to PA programming (Graupensperger et al., 2019; Komatsu et al., 2017). Such benefits were also reported in a journalistic piece on Aquafit classes at a YMCA facility in St. John's, Newfoundland by Elgayar (2022). When community-based Aquafit programming is delivered to older adults using a peer instructor format, attendees may build equally deep relationships with instructors and other participants alike (Jin et al., 2019).

Knowledge Gaps in Aquatic Exercise Programming

Two significant limitations were found when exploring aquatic exercise programming in the existing literature. The first gap involves the context in which aquatic exercise programming is delivered, while the second refers to the types of research questions being asked. Existing literature on aquatic exercise programs primarily focuses on interventions offered in a clinical or research context (e.g., Abadi et al., 2019; Tomas-Carus et al., 2009; Waller et al., 2016). This focus can neglect recreational program delivery, an avenue for many older adults to access such programming. In addition, most research on aquatic exercise is quantitative.

Community Recreation Context

This literature review identified a need for more literature on older adults' use of community recreation programming. Further, little scholarly attention has been given to Aquafit programming in the context of community recreation. Such a gap is concerning since we know that community-based PA programs delivered in a group setting are important for encouraging prolonged participation among older adults (Komatsu et al., 2017). This study can contribute to what is known about Aquafit classes offered by CR organizations. Improving our knowledge in this area can assist in creating more quality programming and deciding how best to deliver the classes to participants experiencing chronic pain.

Qualitative Perspectives on Pain and Aquafit Participation

This review of literature explored the relationship between chronic pain and PA participation among older adults with chronic pain. While much valuable information was gleaned from existing quantitative studies, this section identified a need for qualitative studies that can dig deeper into individual experiences of pain and participation that vary among this population. Such a gap in the literature also applies to aquatic exercise. Two qualitative studies

on community-based programs were found in this literature review. One study (Jin et al., 2019) focused on the peer-instructor method of program delivery. The second study (Weinstein, 1986) was an in-depth portrait of one aquatic exercise class run out of a community recreation facility but was written almost 40 years ago.

Weinstein (1986) introduced readers to the participants of the “Senior Splash Aerobic Swim Class.” Many of the exercises in this program aligned with the phenomenon of interest in the current research study. Weinstein (1986) translated many benefits of the classes, but the words of participants truly communicated the impact class attendance had in their daily lives. In that study, the seniors in attendance described physical and accessibility benefits, joy, laughter, and feeling younger than their chronological age. Published almost 40 years ago, the stories told in the article are impactful, but additional research with newer perspectives is needed to contribute to current knowledge on community aquatic exercise programming. More recently, participants’ experiences have been primarily outlined in non-academic literature, such as journalistic pieces.

When relying exclusively on quantitative aquatic exercise literature, primarily conducted using a clinical or rehabilitative lens, we miss valuable stories that focus on the psychosocial benefits of regular attendance, such as a recent journalistic piece by Elgayar (2022). This news piece covered a program delivered in one of the four study sites in St. John’s, Newfoundland and Labrador. Another journalistic work by Gonzalez (2017) shared the perspectives of the participants and instructors of a community Aquafit class. Those who were interviewed explained how the health barriers experienced by the group could, to an extent, be overcome through participation in the classes. Considering the information presented in these non-academic works, is it clear that a substantial knowledge gap exists surrounding participants’

experiences and their perceptions of the functional and psychosocial benefits of community-based Aquafit programming.

Purpose Statement

The purpose of this research is to explore the lived experience of older adults with chronic pain who participate in community Aquafit classes.

Chapter 3: Methods

This qualitative study aimed to understand the lived experiences of older adult Aquafit participants who experience chronic, non-malignant pain. This chapter begins with exploring the research paradigm that guided this research study. The remainder of the chapter describes the participants and study design, while detailing the procedures used to conduct this research. Finally, the process of thematic analysis is introduced and explained step-by-step.

Research Paradigm

The goal of this study was to describe the lived experience of Aquafit participants over the age of 65 who live with chronic pain; therefore, phenomenology was chosen as the best methodological approach to achieve the study aim. Patton (2015) described phenomenology as the process of “exploring how human beings make sense of experience and transform experience into consciousness, both individually and as shared meaning” (p. 115). In the context of the current study, phenomenology was used to explore how older adults with chronic pain experience community Aquafit classes. Further, I sought to generate a better understanding of what it meant to participate in such a program as a member of this population.

The chosen methodological direction facilitated the discovery of information about human experiences (Mayan, 2009). This approach holds considerable merit in gerontology and chronic pain research, as no two individuals experience aging or pain the same way (Geniusas, 2020; Hamedanchi et al., 2021; Svenaeus, 2015). Further, phenomenology can facilitate understanding a participant’s self-perceptions, interpersonal relationships, physical spaces, and life events (Merleau-Ponty, 1962). This study explored how participants interpreted their involvement in Aquafit classes, the experience of routinely attending community recreation facilities, the social

dynamics formed with other program participants, and shared experiences among individuals of similar ages with many common lived experiences.

Participants

Phenomenological studies require a participant's experience to be explored in significant depth (Bartholomew et al., 2021). Among experts, there is variation in opinions on appropriate sample sizes for a phenomenology; researchers recommend samples as small as three participants or as large as 15 (Creswell & Poth, 2018; Smith et al., 2009). Reasons for such differences include the number of people experiencing the phenomenon of interest (Creswell & Poth, 2018), variation in the career stage of the researcher, interpretations of data quality, and the opinion that too much data risks "blurring the voices of the participants" (Bartholomew et al., 2021, p. 3). While Morse (2000) recommends interviewing six to ten participants to reach saturation in responses, Smith et al. (2009) suggest that three participants is an appropriate number for graduate-level research due to the time-consuming nature of phenomenological studies relative to the duration of a master's-level project. Considering the available information about sample size in phenomenology, six participants were recruited from the three organizations offering Aquafit classes in St. John's, Newfoundland and Labrador.

Inclusion criteria were that participants be aged 65 and older and report chronic pain. Specifically, they must have experienced recurring pain symptoms for at least three months. A current cancer diagnosis, regardless of the type or stage, was the primary exclusion criterion, as the focus of this study is not on malignant pain. To contextualize the difference between both types of pain, malignant pain is a symptom of disease, while chronic, non-malignant pain is the condition itself (van der Linden et al., 2022). Participants must also have a history of attending Aquafit classes at least twice per week for three months or longer. A period of three months is

considered sufficient time for individuals to maintain healthy habits, according to behaviour change research (Prochaska & Velicer, 1997). The Canadian Society of Exercise Physiology (2021) recommends that older adults engage in multiple forms of moderate to vigorous PA, totalling 150 weekly minutes. Participating in two Aquafit classes per week achieves two-thirds of the weekly goal, leaving room for additional forms of PA.

Study Sites

Invitations to participate were posted, with permission, on-site at facilities run by the three organizations delivering group Aquafit classes in St. John's, Newfoundland and Labrador: The City of St. John's, the YMCA of Newfoundland and Labrador, and The Works (see Table 1). The City of St. John's is a public organization, the YMCA is a charitable not-for-profit organization, and The Works is a not-for-profit organization. All facilities delivering Aquafit classes are located in urban or suburban areas and are accessible by foot, car, and public transportation. The facilities operated by the City of St. John's are the (1) Paul Reynolds Community Centre (PRCC) and (2) H.G.R. Mews (Mews) Community Centre.

Both facilities are equipped with a 25-metre lane swimming pool. PRCC offers aquatic wheelchairs and is equipped with hydraulic lifts for individuals who cannot enter the pool using steps and ladders due to physical impairments. Both facilities are outfitted with accessibility features. It should be noted that while all participants from this organization primarily attended PRCC, all three of these participants had attended classes at the Mews previously and still frequented this facility during closures at PRCC. The City of St. John's offers one program where attendees can participate from the shallow or deep end. The second organization,

The Works, is a nonprofit fitness complex on the St. John's Campus of Memorial University of Newfoundland (MUN). The Works has two swimming pools, the 50-metre

Aquarena and the 25-metre MUN Pool, located in the Physical Education building at MUN. Due to major renovations to the Aquarena taking place during the study timeframe, classes were solely held in the MUN pool, where only deep water fitness is offered. This older pool has been known to have some issues with accessibility. The pool is only accessible through the ladder and both introduction from the changing rooms to the shower and pool entrance requires a participant to take a small step up on some raised flooring that is difficult to access by wheelchair.

The third organization offering aquatics programming, the YMCA of Newfoundland and Labrador, a nonprofit organization, has one facility in St. John's: the Ches Penney YMCA (CPY). The CPY aquatic facility hosts a 20-metre swimming pool and offers six programs. This facility hosts a combination of shallow and deep water programs such as aqua strength and aqua jog. In terms of accessibility, the CPY has an aquatic wheelchair, and the main pool can be accessed by a ramp. See *Table 1* for a list of Aquafit offerings from the three organizations participants were recruited from.

Table 1*Aquafit Offerings at Study Sites, During Data Collection*

Organization	Facility	Class Type(s)	Days Offered	Class time(s)
City of St. John's	PRCC	Aquatic fitness (shallow or deep)	Tuesday - Friday	Morning, evening
City of St. John's	Mews	Aquatic fitness (shallow or deep)	Tuesday - Friday	Morning, evening
The Works	MUN Pool	Deep water fitness	Tuesday, Thursday	Morning
YMCA of Newfoundland and Labrador	CPY	Aquafit, deep water aquafit, aqua jog, aqua strength, aqua Zumba, aqua osteo	Monday - Friday	Morning, evening

Sampling and Recruitment

Purposeful sampling was used to recruit participants from the three organizations. This meant that I sought out a small number of individuals who had considerable experience with the research phenomenon (Patton, 2015). In this context, purposeful sampling operated on the assumption that the participants of this study are the experts when it comes to extracting meanings and experiences regarding Aquafit participation among older adults with chronic pain. In other words, because my goal was to understand the experiences and assigned meanings of Aquafit programs, my sample needed to consist of individuals who have consistently participated in these classes. It was also important for me to contemplate what goals I was looking to achieve through the use of purposeful sampling (Patton, 2015). As the purpose of this study was to

explore the lived experiences of older adults who participate in Aquafit classes while living with chronic pain, it was important to go to these classes to look for persons meeting these criteria. In such a case, Morse (2006) would argue that purposeful sampling is essential to ensure the “best examples of the phenomenon” (p. 53).

Within the context of this study, finding these ‘best examples’ took the form of attending classes and recruiting individuals who are engaging in consistent, ongoing Aquafit participation. Snowball sampling was used to recruit one of the six participants; in other words, a purposefully sampled participant recommended an individual who fit the recruitment criteria (Henry, 1990; Jones et al., 2013). In this case, the original participant gave my contact information to the interested person; I did not seek the prospective recruit’s contact information from the original participant.

Procedures

The following section will outline all procedures involved in this study prior to analysis: ethical approval, participant recruitment, data collection, and finally, data treatment. Various recruitment materials, ethics, and participant consent will be discussed. Finally, this section focuses on how data was collected using a semi-structured interview guide and the subsequent treatment of this data in preparation for analysis. The interviewing process, interview questions, and transcription will be described in detail.

Ethics and Participant Consent

Ethical approval (see Appendix A) for this study was granted by the Interdisciplinary Committee on Ethics in Human Research at Memorial University of Newfoundland (ICEHR #20241911-HK). Participants were recruited through posters and visits to community recreation facilities. I created recruitment materials that were submitted and approved with my ethics

application to ICEHR. These materials included a poster (see Appendix B), a flyer containing the poster on one side of the sheet and a recruitment letter (see Appendix C) on the other, a script for verbal recruitment (see Appendix D), organizational letters seeking consent to recruit from facilities (see Appendix E) and a participant consent form (see Appendix F). With the permission of the facilities, I attended Aquafit classes and spoke to the participants after class, offering flyers to any person interested in participating. I also placed posters in all four facilities. These posters contained the same information as the flyers. The flyers briefly (1) stated that I was looking to interview older adults with chronic pain who participate in Aquafit two times per week, (2) disclosed the inclusion and exclusion criteria, and (3) provided my contact information.

All participants read and signed a consent form, keeping a copy for their records (Appendix F). Participants were emailed a copy of the consent form several days before their interview and were told that a physical copy would be provided on the day of the interview. The consent form contained two optional queries: one sought consent to use direct quotations, and the other allowed participants to opt out of being referenced by a pseudonym. Of the six study participants, two requested that their real names be used. Participants signed two copies of the consent form: one for their personal records and one that was returned to me after being signed. These consent forms currently sit in a locked filing cabinet in my home office and will be retained for no less than five years in accordance with ICEHR guidelines. I am the only person who has access to the contents of this filing cabinet.

Before starting the interview, participants were reminded that their participation was voluntary and that they could end the interview at any time without consequence. Participants were told they could refrain from answering questions without consequence if they felt

uncomfortable doing so, although all six participants completed the full interview. From the time participants entered the building, I built rapport with them while maintaining neutrality; nothing that participants said changed how they were treated (Patton, 2015).

Interview Format

Semi-structured interviews were used to collect the data in this phenomenological study. An interview guide was created prior to data collection (see Appendix G). Semi-structured interviews are a flexible tool for data collection that blend the consistency of structured questioning with the flexibility of less structured interview methods (Patton, 2015). In this study, the interview questions guided the flow of the interview toward certain topics while using open-ended questioning to give participants freedom to answer questions in their own unique way.

This interview format allowed participants to share knowledge with researchers by focusing the conversation on predetermined questions while also giving room to discuss any additional topics that emerge from the conversation (Brinkmann, 2020). Interviews typically ranged from 40 to 70 minutes, depending on how much the participant chose to elaborate. Magaldi and Berler (2020) refer to this form of data collection as “an exploratory interview” (p. 4825), which facilitates the generation of nuanced knowledge, leaving room for individual differences. The semi-structured interview is a flexible data collection method, and probing questions were often posed based on the participant’s responses (Ruslin et al., 2022).

The interview began with background questions to collect demographic information such as age, gender, marital status, and municipality of residence (see Appendix X for interview questions). Other background questions concerned their participation in Aquafit classes, such as the duration of their participation, where they have attended classes, and the method of transportation used to get to the facility. The final background questions involved the

participant's experience with chronic pain, specifically, a description of their chronic pain condition and the duration of the symptoms. Once the background questions were answered, the main interview began. See Appendix F for the complete interview guide.

Three sections of similarly-themed questions guided the main part of the interview. Each section begins with a broad question related to an aspect of the participant's Aquafit experience. The first section of the interview asked the participants to share their general experiences participating in Aquafit classes. This broad prompt was followed by four related questions about the reasoning for their initial participation, past PA engagement, how Aquafit compares to past PA, and about the role of the classes in the participant's lifestyle.

The second section began by asking participants what they liked and disliked about the classes. This section explored participants' moods after a class, social relationships, and potential barriers and facilitators to attending Aquafit classes. The third section asked the participants about their experience participating in Aquafit classes as a person with chronic pain. This final section asked participants how they respond to painful exercises during Aquafit, how they feel physically after a class, what equipment (if any) has been beneficial, and compares motivation to attend Aquafit with motivation to engage in other forms of PA.

During the interview, there were moments when a participant provided an answer that was judged to be incomplete; such occasions warranted the use of probes. There was a list of exploratory questions in each section, although additional probing techniques were also employed. Bernard (2006) recommended using seven types of probes. Some of these do not involve adding to the conversation, such as silence, echoing the participant's response, or expressing agreement by nodding or saying "yes," "uh-huh," or a simple "tell me more" (p. 226). Other recommended probes involve more verbal involvement, such as asking follow-up

questions to encourage detail or the rationale of the initial answer. Patton (2015) suggests using elaboration probes and offers a type of probe referred to as “detail-oriented questions,” which include ‘who,’ ‘what,’ ‘when,’ ‘where,’ and ‘how’ questions (p. 465).

Interview Site

All six participants were interviewed in the Social Sciences lab in the School of Human Kinetics and Recreation at Memorial University of Newfoundland. While participants were given the option to be interviewed at the recreation facility where they attended Aquafit, all six participants opted to come to the Social Sciences Lab. Appreciating the need for researchers to design interview spaces to consider participants’ comfort (Keenan, 2017), a room with comfortable couches and a window was chosen. A fan was present to control the high temperatures, and additional cushions were offered to participants to maximize their comfort. The armchair, the more comfortable chair in the room, was designated to the participant. Further, participants were provided parking spaces close to the door to minimize walking. Before beginning the interview process, participants were asked if they felt content with their surroundings. Since the participants were individuals with chronic pain, participants experiencing pain or stiffness were given the option to break between questions to walk and stretch, although participants declined this offer.

An Olympus DM-901 digital voice recorder and a Samsung Galaxy S8 were used during data collection; the Olympus device acted as a primary recorder, while the smartphone acted as a backup recorder. Adding a layer of redundancy in the recording process significantly reduced the likelihood of lost data in the case of a device malfunction during the interview. Devices used to record the interview were not turned off until it was certain that the interview had ended, in case additional details came up in the final moments of the conversation (Edwards & Holland, 2013).

When each interview finished, the participants were mindfully thanked, leaving room for them to disclose how they felt about the interview and even a moment of light-hearted humour, when appropriate (Whiting, 2008).

Interviewer Preparation

Interviews included asking participants about aspects of their lifestyle that contributed to their wellness, often related to PA. A virtual pilot interview was conducted over WebEx to apply my professional interviewing skills to qualitative data collection. Co-supervisor Dr. Angela Loucks-Atkinson took on the role of a participant while my second co-supervisor, Dr. Stephanie Field, provided feedback on my questioning. McGrath et al. (2019) explain that pilot interviews can be conducted with peers or volunteers to learn how to ask questions clearly and be an active listener. By conducting pilot interviews, I practiced my interviewing skills before speaking to study participants. I also became familiar with the recording equipment prior to the first interview (Keenan, 2017). Test recordings were made before each interview to ensure the recorder was functioning correctly.

Data Treatment

Initial transcription of the interviews was performed using Notta, an Artificial Intelligence-powered transcription software that reviews have suggested has a high accuracy rate (Olujinmi, 2023). This software was selected due to features such as differentiating between speakers and an AES-256 encryption system, an industry standard for computer security used by many large organizations. Audio files were uploaded to the secure online platform, and a transcript was generated. I then searched through each interview to correct errors in the software-generated transcript, such as missed punctuation and incorrectly identified words.

Proper transcription, however, went beyond writing out the words spoken by participants. Bailey (2008) recommended that researchers consider “features of talk such as emphasis, speed, tone..., timing, and pauses” (p. 128). I ensured that such features of speech were included in the final transcript. Finally, member checking was used in this process; participants were sent an emailed or hard copy of the transcript for their interview and asked to either confirm what has been transcribed is accurate or revise any errors (Hewitt, 2007; Whiting, 2008). Two participants responded with minor corrections and aided in identifying words that were unclear in the recording. The remaining four participants did not respond.

Data Analysis

When analyzing qualitative data concerning PA, thematic analysis is often employed (Braun & Clarke, 2019). Braun and Clarke (2006) explain that thematic analysis involves coding recurring pieces of information in the data and creating distinct categories. These categories are then used to generate themes. This process helps researchers to analyze data in rich detail. Researchers generate the categories used in creating themes through creating and organizing codes, which are simple labels in the margin of the text (Braun & Clarke, 2006). It often takes several rounds of coding to create distinct code categories and refine them into themes.

In this study, the thematic analysis mapped participants’ lived experiences with community Aquafit classes. While Braun and Clarke (2006) provide valuable advice to researchers doing qualitative analysis, they have highly encouraged researchers to read beyond this initial work to consider more reflexive practices (Braun & Clarke, 2019). Considering this advice, this study implemented Braun & Clarke’s (2019) updated reflexive thematic analysis approach. As Braun and Clarke (2006, 2019) recommend, this section presents the technique used in the research. In this study, coding was done inductively, with the data being the starting point of the analysis.

The Six Steps of Thematic Analysis

Reflexive thematic analysis was performed using the six-step process recommended by Braun and Clarke (2006).

1. Become familiar with the data through multiple readings and early annotations.
2. Create codes by briefly annotating notable pieces of the data that can be compiled.
3. Use key takeaways from codes to create themes, organizing related codes with each theme.
4. Test the themes using both pieces of the text and the entirety of the data while mapping the story the data and analysis are telling.
5. Assign names and meanings to each theme so they can be clearly understood.
6. Write the final report and tell a compelling story from the analysis using themes and extracts from the data.

Note that following these steps is not intended to be a linear procedure. A proper thematic analysis should consistently return to previous steps whenever necessary, a process which took place during the current study. As a part of reflexive thematic analysis, each step required great reflection and use of the reflexivity journal mentioned previously. In the context of this master's thesis, co-supervisor Dr. Angela Loucks-Atkinson provided advice on theme titles and how results were reported. In reflexive thematic analysis, consulting with other researchers is advised to improve the quality of the results (Braun & Clarke, 2019).

Discussing data analysis with others can also reduce the likelihood of participant misrepresentation (Richards & Schwartz, 2002). A 'critical friend' is a common tool to promote reflexivity in qualitative research by challenging the researchers (Dowling, 2006). A critical friend is a person with previous experience in conducting research on the topic of study. In this

case, Beth Howse, a fellow master's student, acted as a critical friend in this study. She signed a confidentiality form prior to reading the codes and analysis (Appendix #). Another technique that was critical to enhancing trustworthiness is negative case analysis. Negative case analysis means that data conflicting with the rest of the findings was not discarded but given proper consideration so that multiple perspectives could be brought to light (Hanson, 2017).

Reflexive Journaling

Considering recommendations from Lincoln and Guba (1985), this study used techniques such as reflexivity. One method of encouraging reflexivity is to keep a journal throughout the investigation (Olmos-Vega et al., 2023). Keeping a reflexive journal had many uses. One use is to document emotional responses after an interview, noting any strong feelings that could alter future responses to reading, and subsequently analyzing the transcript (Nadin & Cassell, 2006). Therefore, the journal could have conveyed intense emotional responses to my supervisors, although this did not occur during this research project. Reflexive journaling helped me to monitor my feelings on the quality of my analysis (Vicary et al., 2017), for example, identifying memorable participant stories that required elaboration within a particular subtheme. This journal helped me explore my perceptions and reflect on potential biases during data collection, analysis, and contributed to more thorough and rigorous results.

Researcher Positionality

It was essential to reflect on how my own lived experience, privilege, and power as a researcher can impact this work (Holmes, 2020). Firstly, I live with chronic back pain. This experience inherently alters my perception of what it means to live with pain. Second, I have participated in community Aquafit classes from multiple organizations. My experience with these classes has been overwhelmingly positive; I have experienced a reduction in pain during

and in the hours following my participation. The connection between chronic pain and obesity made in the literature review is also relevant in detailing my lived experience, as I have struggled with obesity at certain times in my life. I have personally found Aquafit classes to be a facilitator for intentional weight loss.

One aspect of my participation that must be discussed is any prior interaction with study participants. This study was conducted in St. John's, Newfoundland and Labrador, a city of 126,154 (Statistics Canada, 2025) where it would have been unlikely for me, as a past Aquafit participant, not to have previously participated in an Aquafit class with any of the three study participants. While I did not have any previous relationships with study participants, any such issue would be handled by reminding prospective participants that they were not obligated to participate in the study. In addition, I would have discussed the issue with my supervisors to gauge whether the person's participation would be appropriate. If the person had still been recruited, in keeping with my reflexive approach in conducting this research project, I would have documented any biases, assumptions, or emotional responses in the reflexivity journal.

I acknowledge my privilege as a white, educated, English-speaking person, and I especially wish to address two privileges I possess. First, despite my chronic pain condition, which can be debilitating at times, I am otherwise able-bodied. I can stand and walk without assistance or equipment. I also acknowledge the power I possess as a researcher to collect and analyze data. The words I print in this master's thesis are my interpretation of statements given by the participants. For this reason, I must remain critical and reflexive in how I interpret the data.

Chapter 4: Results

This chapter presents the results of the thematic analysis performed on data collected from interviews with older adults living with chronic pain who participate in community Aquafit programs. Performing a thematic analysis on all six interview transcripts revealed common elements of participants' lived experiences with attending Aquafit as an older adult with chronic pain. This analysis yielded four themes related to the following topics: (1) managing chronic pain; (2) increased ability and enjoyment; (3) the impact of facilities, and (4) the power of social relationships.

Participant Profile

Six older adults living with chronic pain were interviewed. All six interviewees were regular participants in Aquafit programs offered in St. John's, Newfoundland and Labrador. There were five women and one man in the study. Four participants were in their mid-to-late sixties, one participant was in their early seventies, and one was in their late eighties. Three participants were married, two were widowed, and one was in a common-law relationship. Four participants reported living in St. John's, with the remaining two residing in neighbouring towns.

Program Attendance

Three participants attend classes through the City of St. John's facilities. All three of these participants primarily attend classes at the Paul Reynolds Community Centre but went to the older H.G.R. Mews Community Centre during shutdowns. Two participants attend classes at the Ches Penney Family YMCA. One participant went to Aquafit classes at The Works. Years of Aquafit participation ranged from two to 31 years. The median number of years regularly participating in Aquafit was 10.5 years ($n = 6$). Participants attended classes two to five times per week. Paula, one of the two participants who attend classes all five days, typically comes on

weekends as well to swim, as she feels the need to be in the water as often as possible. See *Table 2* for a breakdown of participant information.

Table 2

Participant Background Information

Participant ID	Age	Gender (F/M)	Marital Status	City/Town	Organization	Total Years Participated	Program(s) Attended
1	68	F	Married	St. John's	The Works	16	Deep water
2	65	F	Widowed	Portugal Cove-St. Phillips	YMCA	30	Shallow water, Aqua strength
3	69	F	Married	St. John's	City of St. John's	31	Deep water
4	88	M	Married	St. John's	City of St. John's	10	Shallow water
5	66	F	Widowed	Torbay	YMCA	2	All YMCA programs
6	72	F	Common-law	St. John's	City of St. John's	14	Deep water

Four of the six participants attended deep water fitness and three attended it exclusively. These participants avoided shallow water fitness due to the increased impact on their joints. Only one participant exclusively attended shallow water fitness. The City of St. John's has a combined shallow water and deep water fitness program, where attendees choose which side of the pool to exercise from. All participants from this facility participated in the same program each time. For example, a participant who goes to the deep end of the pool will consistently choose the deep

water program. Participants of the YMCA have additional programs to choose from. One participant attended all six of their aquafit programs (i.e., shallow water fitness, deep water fitness, aqua strength, aqua jog, aqua Zumba, and osteo aqua).these programs.

Chronic Pain Conditions

Pain conditions and locations varied amongst the six participants. Participants reported experiencing back, shoulder, hip, knee, elbow, and neck pain. Chronic headaches were also reported. Four of the six participants had experienced at least one joint replacement, many experiencing complications and enduring pain long after the post-surgical healing period. Diagnoses reported by participants included osteoarthritis, spinal stenosis, ruptured disks, and fibromyalgia. Many had experienced pain for decades. Years living with chronic pain ranged from 10 to 37, while the median period reported was 33.5 years ($n = 6$).

Theme 1: “It’s a Part of my Chronic Pain Arsenal”

The first theme related to the lifestyle of a person with chronic pain and how they navigated self-management. All six participants reported that regularly attending Aquafit helped them to manage their chronic pain. Aquafit participation, alongside medications, topicals, surgical intervention, and health services such as massage, physiotherapy, and acupuncture, created their personalized strategy for living life to the fullest despite chronic pain. Susan emphasized that these methods of pain management were all linked, “*like a big puzzle... you gotta put all these pieces together.*” Outside of the pain management itself, many other pain-related experiences were impacted: engaging in regular physical activity, improved mood, and a structured lifestyle. Four subthemes were contained within this first theme: (1) pain management, (2) positive mood, (3) keeping moving despite pain, and (4) lifestyle and routine.

Pain Management

All six participants reported that Aquafit was beneficial in managing their chronic pain, although participants expressed these improvements in varying ways and extents. This subtheme explores how participants' pain symptoms were impacted by their Aquafit attendance. Further, the various ways participants believed their chronic pain conditions were improved through Aquafit was compiled to provide different perspectives and, where relevant, participants' stories on the topic of pain management. Four participants were confident that Aquafit was responsible for a reduction in chronic pain symptoms. The remaining two participants were uncertain if Aquafit exercises directly reduced their pain, although Robert stated that Aquafit "*probably helps.*" Regardless of whether participants believed the exercises were directly responsible for a reduction in pain symptoms, they all believed the classes were beneficial due to factors such as distraction from pain or improvements in activities of daily living.

Thirty-two years ago, Dianne was struggling immensely with the impact of chronic pain on her life. She had sustained a back injury at work several years prior and had since undergone three subsequent surgeries. She had to leave her job and found herself on bed rest, which only intensified her pain and led her to gain a considerable amount of weight. A family member encouraged Dianne to attend an Aquafit class, which she enjoyed enough to continue attending periodically. It was a little over a decade ago, however, that Dianne started routinely attending the classes. Attending Aquafit classes regularly started to make a noticeable difference in her pain. Even though Aquafit is not a cure, she knows that moving helps.

After attending Aquafit classes for some time, she noticed improvements in more than just her pain—her posture and stability also improved. She became passionate about the effects of Aquafit programming and put that passion into learning how she could become an instructor. She

knew resistance training was important for herself and other older adults with chronic pain, so she began delivering an Aquafit class focused on strength exercises. Looking back on her past, Dianne said that Aquafit has *“helped me have less really painful days.”* She often wonders if she could have continued working after her injury all those years ago if she had attended Aquafit in the way she is today. She states that since she wants to minimize the severity of her pain and its impact on her life, she makes sure to participate in Aquafit regularly.

She is adamant in stating that Aquafit alleviates her pain and that she gets more relief for longer periods with consistent participation. Dianne’s body feels noticeably better after an Aquafit class, sharing that *“It’s such a relief on your back... sometimes I’ll get in, and I’ll just lie there and I’m like, ‘oh, this feels so good!’”* Dianne’s belief in the power of Aquafit is so strong that she has invested a lot of time and energy in volunteering to deliver classes where she works directly with older adults living with pain. She continues to read articles about aquatic exercise to share how beneficial Aquafit is with her participants. Although pain did cost Dianne her job in health care, she has found a new purpose in educating others on how they can use this form of exercise to manage their pain and how she discovered how to manage her own.

Elizabeth has also reported significant improvements in her quality of life since beginning to attend Aquafit programs. Elizabeth says Aquafit is a major part of her pain management and is in *“a league of its own.”* Much like Dianne, she, too, has lived with pain for decades. She has had back pain for as long as she remembered. When a friend convinced her to come with her to an Aquafit class, it forever changed her pain management. She stated that she will always be in pain, but the moment she gets into the water, all that pain is forgotten. Elizabeth expressed that she feels better after Aquafit, an effect that lasts all day and continues to benefit her the next day. She believes that her participation in Aquafit has had a positive cumulative effect over time. She

attributes much of her relief from chronic back pain to the feeling of traction that begins the moment she enters the water.

Paula, who always experiences pain but has managed to be regularly active thanks to Aquafit, emphasized that she would “*recommend it for anyone with any kind of pain.*” She also stated that performing Aquafit exercises distracts her from the pain and is her favourite form of physical activity. Her new lifestyle, which revolves around Aquafit, is opposite to her lifestyle before starting the program. She lost 160 pounds without making major dietary changes since she no longer solely engaged in sedentary behaviour. Paula said that two years into daily Aquafit participation, she has continued to experience pain but has found it to be more bearable. Paula stated that she believes the relief she gets from Aquafit is largely from the distraction from pain during the class and the social support from others, which will be explored in further detail in the final theme.

One of Eleanor’s most impactful statements ultimately inspired the title of this theme. Eleanor expressed, “*I’m pretty well sure it does [alleviate pain], like I’m, I don’t know for sure because I do other things that help me manage this pain, but it’s in the arsenal of- my arsenal of pain management.*” She also described how her nerve pain was impacted by her regular Aquafit participant, “*Once you hit the water, it just disappears... that is completely, completely gone.*” Susan expressed a similar sentiment to Eleanor’s regarding the multitude of pain management techniques Aquafit was tied into. Susan talked about using physiotherapy, acupuncture, and cannabis oil, further stating, “*They’re all linked. It’s like a big puzzle- trying to put it together... to keep in motion. You gotta put all these pieces together...*”

While the six participants sometimes had different beliefs about the reasons Aquafit benefitted their chronic pain management, they all shared the belief that the classes were

essential to maintaining their current level of physical functioning. Relief from being in the water, building muscular strength, and distraction were provided as reasons study participants believed the classes helped them manage their symptoms. The four participants highlighted in this subtheme provided clear, elaborate statements on the critical role Aquafit participation played in managing their chronic pain conditions.

Positive Mood

All six participants reported an improvement in their mood following Aquafit attendance. For older adults with chronic pain, negative moods and poor mental health are often struggles that intensify with pain symptoms. Therefore, an improved mood from engaging in Aquafit classes is a powerful benefit to this population. While this experience was universal among participants, none elaborated in depth about their mood to the extent they did with other subthemes. Study participants consistently referred to good mood in the context of the social relationships (explored in *Theme 4*) accompanying Aquafit involvement.

Eleanor enthused about how Aquafit has improved her lifestyle and psychological well-being, at one point saying, *“I would not be a happy person... without Aquafit. You can quote me there.”* When specifically asked about mood, however, she was less overt in her explanations. When asked if Aquafit impacted her mood, she replied, *“I would assume it does, right? I don’t focus on that to say, ‘Oh, I feel much happier or much more content.’ But I’m assuming it does...”* Paula spoke of the difference Aquafit made in her life during a difficult period. Of her lifestyle before Aquafit, she said, *“...I’m sure I must have been depressed... my husband passed away... that’s when I started to eat more... I stayed in the house all day.”* In contrast to that difficult time in her life, Aquafit now gives Paula something to look forward to. She stated that

the socialization she receives from interacting with fellow Aquafit attendees improves her mood and has turned her life around.

When Elizabeth was asked about her mood after Aquafit, she said, *“Oh, you feel good... there’s no question about it. However you felt when you get in, you feel better when you get out.”* She further elaborated, *“All you need is, you know... the [YMCA song and dance] [Laughs] to get your smile back.”* Susan made a similar statement, commenting that when she wakes up with a migraine, *“I [know] that afterwards, [I’ll] feel better... I come into myself sometimes... I would feel better despite the... nuisance and hassle of getting there.”* Robert, when asked if the classes impacted his mood, responded, *“Oh yeah!... I look forward to it... I’m always glad to finish because I know I’ve done my work for that day, and I’m good to go.”*

Dianne, who tries to keep up to date on the latest research around PA to be a better instructor, attributed the impact in her mood to known psychological benefits of exercise. She attributes the improvements in mood to increases in specific neurochemicals. She said, *“...that’s where the serotonin comes in. You know, the endorphins are from the... exercise and the cardio, but the serotonin is from being with people and you need both.”* Aside from the benefits Dianne feels in mood after a class, she believed these improvements in mood could be easily seen in her participants as well. When asked about her mood after Aquafit, she responded, *“Oh, great... and so are my participants.... They’re smiling, they’re happy...”* Despite a lack of interest in elaborating much on their moods, all six participants answered positively to the questions on mood, which was connected to distraction from pain symptoms.

Keeping Moving Despite Pain

While three participants identified as having been active for life, in late adulthood, they have seen some degree of decline in their ability to engage in various types of physically active

leisure such as running, golf, or team sports. For the remaining three participants who made repeated attempts to be active throughout their adult life but struggled to find a preferred form of exercise, Aquafit was the beginning of their commitment to consistent PA. All six participants expressed frustration that activities they once enjoyed regularly are now accompanied by the onset of pain or the exasperation of existing pain symptoms. This frustration led them to try Aquafit classes as a way to either replace old activities or attempt previously enjoyed exercises in an aquatic environment.

Robert, who faced chronic pain at various points of his adult life, proudly described being active for life; he engaged in team sports in his adolescence and young adulthood, played tennis with his wife, and in his later years, played golf and regularly went on walks. Robert also went to the gym on a regular basis to perform strength training exercises until knee problems began to impact his ability to engage in PA. When Robert found out he was going to require knee replacement surgery, he decided to start doing Aquafit to build strength before the operation. Robert still occasionally plays golf but cannot walk between holes anymore. After reminiscing about the many activities that have brought Robert joy at different phases of his life, he turned his attention to the present, *“I still love golf. But Aquafit, you see, that’s the only exercise that fits into my life now.”*

Eleanor and Susan also had some activities they were able to continue in small amounts to compliment their Aquafit participation, although both indicated that Aquafit was their primary activity and was more suited to their chronic pain conditions. Regardless of participants' past relationship to PA, Aquafit allowed all six study participants to continue their pursuit of active living for health and self-efficacy. Dianne, who teaches an aqua strength class, stated that many of the older adults who attend her classes have improved their stability and strength to the extent

that some land-based activities could be added back into their lives. Dianne firmly believed that for her and those who attend her classes, their improved abilities in the water and on land could be transferred to activities of daily living. For this reason, Dianne began developing a land-based program called “Functional Fitness,” which is catered to older adults with chronic pain. Once an Aquafit participant has attended classes for long enough to see noticeable changes, Dianne recommends they try the land-based class.

Dianne expressed a strong belief that long-term Aquafit participants are likely to be capable of land-based physical activity to a much greater extent than when they began attending Aquafit classes. Further, she stated that multiple participants of her classes noticed improvements in their activities of daily living, changes Dianne noticed herself. Paula was one such participant. When Paula began Aquafit, she had not been physically active for some time and felt her pain was a barrier to any type of PA. However, participating in Aquafit classes over time challenged this belief. She began going to the gym before heading to the pool, using the recumbent bike while chatting with other gymgoers.

Not all participants were interested in adding or continuing land-based PA. For Elizabeth, PA has been a lifelong struggle. She lightheartedly described the various misadventures she endured when sampling different forms of PA over the years. One activity Elizabeth has had to continue to some extent is walking. Walking is not an activity that she is intrinsically motivated to participate in but has extrinsic motivators like ensuring her dog is walked and being able to get around on foot. Still, Elizabeth indicated that if she did not participate in Aquafit regularly, she would not be walking at all. Aquafit, however, was the one form of PA where she was not held back by the onset of pain symptoms. She stated, “*Aquafit, it’s the one hour, three times a week, that I am not experiencing pain, that I’m moving...*”

Lifestyle and Routine

For older adults with chronic pain, it may be difficult to achieve an active lifestyle. In the context of this study's results, the combination of lifestyle and routine relates to the way participants used Aquafit to lead a full and busy life where pain is not the constant focus. Aside from living a more active lifestyle, Aquafit helped five of the six study participants to have more socialization in their daily life (further explored in *Theme 4*). All participants in this study were retired. For older adults who have left the workforce, they are now responsible for creating structure in their lives. All six participants expressed that Aquafit was a central component of their routine and positively impacted their overall lifestyle. For individuals with chronic pain conditions, pain symptoms are, at best, a nuisance. At worst, they can disrupt daily living to the extent that a healthy lifestyle is almost impossible. Each participant had certain days of the week centered around Aquafit, especially Paula and Robert, who attend the programs from Monday to Friday.

Of the six participants, Paula spoke most explicitly about the impact of their chronic pain on their lifestyle and the ways Aquafit has benefitted their ability to have a consistent routine despite physical constraints. Paula wakes up every morning at 3:30 AM with pain from her fibromyalgia. Two years ago, her routine would be to move from her bed to turn on the television and eat, an activity she would do throughout the entire day. Depressed after retirement and the death of her husband, Paula felt that her life was empty, and her pain prevented her from doing any meaningful activity, let alone exercise. Today, instead of heading for the couch, she gets dressed and begins her usual routine by heading to her local recreation facility. She spends an hour or so in the gym using the recumbent bike, heads to the aquatic centre for an hour of swimming, then participates in whichever Aquafit class is offered on that particular morning.

Paula's discovery of Aquafit occurred when an old work friend invited Paula to lunch. With a voice full of concern, her friend asked, "*Jeez! What's after happening to you, girl?*" Paula explains that she is in constant agony, depressed, and at her highest weight. Her friend urged Paula to come with her to a local recreation facility. Paula shrugged her off because she believed she could not go there in her condition. Her friend persisted, "*Sure I got all the same problems you got and I still goes to the [facility]!*" the friend exclaims excitedly. Paula later went to the facility and purchased a membership. When her children asked why she finally decided to give the facility a chance, Paula answered, "*Because now I know that it can be done.*" After sharing this in the interview, Paula describes an average day in her life since coming to Aquafit: her time in the gym, time in the pool warming up for Aquafit, and the class itself. She describes the change in her lifestyle as "*a total 180*" from how things were a mere two years prior.

While the impact of Aquafit on Paula's lifestyle and routine was the most dramatic, all six study participants reported such benefits. Eleanor moved to St. John's several years ago to be closer to her grandchildren, which changed her daily habits considerably. After years of running and aerobic exercise classes, she struggled to keep consistent with physical activity, something she knew was important to her. As a result of her chronic pain, she found herself less able to do things she once took for granted, such as gardening and other forms of physical activity she used to participate in. These new constraints were starting to cause her considerable stress.

One day, Eleanor read that Aquafit classes offer a lower-impact option compared to the other forms of exercise she was familiar with. Her mornings now revolve around her 10-minute walk from home to the pool, rain or shine, winter or summer. She likes the time and location of the classes, as well as the program's affordability. "*Aquafit classes fit my personality,*" Eleanor happily shares during her interview. She states that the program fits her lifestyle as well as her

physical condition, the timing of the classes allows her to enjoy the freedom of retirement, and the routine is one that she misses whenever she vacations. Susan expressed similar sentiments to Eleanor,

Another participant who revolves his life around the program is Robert, who found himself needing a form of exercise he could do regularly. It is important to Robert that he does everything in his power to live a healthy lifestyle, and he believes that Aquafit is an integral part of how he maintains this lifestyle well into his eighties. He consistently attends Aquafit every weekday morning and states that his morning routine is sacred. He likes the time, the location, the facility, and the instructors. Being in the water in the morning is so crucial for Robert that he comes to the pool even if Aquafit has been cancelled; he gets into the pool and does the moves on his own. After all, he has memorized the exercises after ten years of participation. After an hour of Aquafit, he swims across the pool before getting out. This routine begins his day so that he can go home, eat breakfast, and spend the afternoon gardening with his wife and doing other household chores.

While each individual interviewed in this study had a unique lifestyle surrounding their participation in Aquafit, their plans seldom interfered with their time in the pool. Participants stated that the only reasons they would miss Aquafit would be inclement weather, illness, post-operative orders from their physician, or a medical appointment that cannot be rescheduled. Robert expressed this clearly when he stated that his mornings were “*sacrosanct*” and not to be interfered with. Susan stated that Aquafit classes make her feel that “*my day has started now*” and that regularly attending the program gives her life some well-needed structure.

Summary of Theme 1

The first of the four themes focused on the various ways Aquafit involvement related to study participants' chronic pain management. Participants consistently explained the role Aquafit involvement played in their pain management strategies. Further, study participants discussed other elements of their lives which impacted their chronic pain, like lifestyle and their ability to engage in physical activity.

Theme 2: "It's A Type of Exercise I Can Actually Do and Enjoy"

The second theme related to Aquafit being a form of exercise participants can realistically engage in and enjoy. All six participants reported engaging in Aquafit programs as a way of continuing to be physically active despite physical constraints. However, individuals are unlikely to participate in a form of PA long-term if they do not enjoy it. Therefore, the enjoyment reported by participants was often discussed alongside the accessibility of the PA itself. This second theme contained four subthemes: (1) In the water, I can do it, (2) adaptations and modifications, (3) connection to the water, and (4) fun and enjoyment. These subthemes help to understand how participants have been able to sustain their regular participation and remain motivated to continue over multiple years.

In The Water, I Can Do It

Many Aquafit participants began attending the classes because they heard or read that the exercise would have less impact than other forms of physical activity. Most of the participants of this study stated that they exclusively participate in deep water fitness classes. The consistent explanation for this preference was related to the impact of the exercises on joints. Often, the deep water participants began with shallow water fitness classes but found that they were capable of more intense exercise in the lower-impact deep water fitness classes. Elizabeth confidently

shared that she feels she can do anything in the water. Such a statement is incredibly meaningful coming from someone identified as having negative experiences with physical activity throughout her life but feels weightless and free when exercising in deep water.

For participants who consistently engaged in PA across their lifespan, the onset of chronic pain in mid to late adulthood has come with fewer options for physical activity, difficulties with activities of daily living, and a consequential loss of self-efficacy. For these reasons, participants expressed gratitude for finding a form of physical activity they can continue despite their chronic pain conditions. When speaking of her perceptions related to attending Aquafit as an older adult with chronic pain, Eleanor said, “*This is something I can do for a long time*” and due to her appreciation of her ability to stay active, she referred to such exercise programs as “*the future of aging*.” Robert commented similarly, further expressing a belief that Aquafit may slow the aging process.

Eleanor previously attended land-based aerobics classes and ran to stay physically active, but eventually needed to find a new form of movement that reduced the impact on her joints. “*I enjoyed it from the beginning... I’ve liked [it] enough that I’ve been pretty consistent in participating in Aquafit.*” Robert, one of the three participants who identified as being active for life, reported a similar experience with Aquafit. He had several forms of exercise that kept him moving well into his late adulthood, including strength exercises in the gym. However, Robert began to develop knee pain and soon thereafter was told that he would need to have a knee replacement surgery. Initially, Aquafit was a way for Robert to prepare for his surgery. However, he was not able to comfortably return to the land-based exercises in the gym to which he was previously accustomed. Aquafit became a way for Robert to continue to do exercises similar to his preferred gym movements in an environment where he was less restricted by his knee pain.

Dianne proudly described her class's movements, such as doing over 60 jumping jacks and holding a squat position for four minutes. There was an apparent sense of pride in how many types of movements participants could complete in the water. Dianne expressed her strong belief in the usefulness of strength exercise for older adults with chronic pain. Still, she admitted that the older adult population often do not engage in this type of physical activity. For this reason, she sought to translate such exercises to the water, an environment where her class participants were already familiar with. Upon creating a class that satisfied this need, she found that the class was so popular that the pool was often filled quickly by older adults seeking not only pain management and increased stability but also to feel competent and increase their self-efficacy.

One important part of Dianne's story that was repeated throughout her interview was her slow transition into Aquafit. The weightlessness she felt in the water allowed her to perform exercises she would not engage in on land. Careful to avoid overexertion, she began her Aquafit participation with low-intensity exercise and increased this effort slowly over time. She used trial and error to determine what worked best for her body and pain condition; if she felt pain after a class, she knew she needed to approach the movements with less intensity next time.

Now that she has become an instructor, Dianne frequently recommends that her Aquafit participants start slow and increase the intensity over time, much like she did. She reminds her participants that they must go at their own pace and be mindful of any pain they may be feeling so they can adjust the intensity accordingly. She tells her participants, "*This is your workout. You're working for your body, but you're working for how your body feels today.*" For Paula, there is no other form of exercise compared to Aquafit. She stated that Aquafit was her favourite type of exercise because "*it's giving your body room to breathe... [you] hurt, but not extreme hurt... Aquafit's definitely the only way to go.*" She feels that Aquafit is not hard on her body and

that any pain she experienced was tolerable, facilitating her intrinsic motivation to attend classes regularly.

Some of the study participants had struggled with obesity to varying extents. Elizabeth, Paula, and Dianne all shared their experiences with weight loss due to their involvement in Aquafit. These participants struggled with sedentary habits at various points in their lives, which they attributed to weight gain. This weight gain made land-based PA more difficult to engage in, further contributing to a sedentary lifestyle. Elizabeth, elaborated extensively about her lifelong struggle with obesity and cited the powerful impact of buoyancy as the reason she can perform various types of vigorous exercise. Throughout her life, she has had negative experiences with different forms of physical activity and never felt that she was built for most forms of land-based exercise. The aquatic environment has allowed her to do activities she otherwise would not attempt, such as running and ski-type exercises. Elizabeth stated, *“There’s nothing else that gives me the feeling of weightlessness... It’s very hard to feel weightless when you’re physically huge.”* All three of these participants reported significant weight loss achieved purely due to their Aquafit participation (i.e., no dietary changes were made).

Adaptations and Modifications

For all six participants, physical activity was something they valued or enjoyed enough to prioritize or, at the very least, attempt consistently across their lifespan. Feeling the impacts of age-related physical changes, including chronic pain, have caused stress, frustration, and even feelings of helplessness among the three participants who considered themselves to be active for life. While two participants were lightly active in their earlier years through consistent walking, Elizabeth often struggled to find PA that worked for her. Now that all six participants have found a type of exercise they can realistically and enjoyably participate in, they can optimize their

exercise regimen to meet their needs. Participants adapted their PA experiences using the aquatic environment as a way of reducing constraints like the impact of the exercises and issues with balance. Four participants made further modifications to their Aquafit experience by selecting the depth of the water (i.e., selecting specific areas of the shallow end or moving to the deep end), modifying exercises to avoid pain, and using equipment.

Three participants chose to participate exclusively in deep water fitness programming. While many participants stated that lower impact on joints was their reasoning for doing Aquafit in general, exercising in the pool's deep end allowed participants to reduce further the pressure placed on their knees, hips, and spine. When explaining her reasoning for exclusively participating in the deep water fitness program, Eleanor said, "*I did find that shallow water would hurt... but the deep water allows me to push myself without hurting myself...*" Elizabeth expressed that she felt capable of a wider variety of movements in the deep water, stating, "*I can dance... run... walk... ski, I can do it all in the water, in deep water, that I cannot do on dry land or even in shallow water...*" Susan shared that aside from personal preference, she liked that the pool's deep end tended to be less populated during her Aquafit classes.

Two of the six study participants exercise exclusively in the pool's shallow end. Robert, who struggles with knee pain, continues to exercise in the pool's shallow end but uses the floatation belt, which is typically only used by deep water participants. He feels that using the belt allows him to follow along with the shallow water exercises, which he considers more challenging than the deep water exercises, without worrying about the impact on his knees. Without the worry of aggravating his knee pain, he feels he can focus more on engaging his core. Dianne, who previously engaged in deep water classes before she felt capable of handling more impact, found a spot in the pool's deep end that was just the right height for her and felt more

buoyant due to the flow of the water. Dianne continued building her strength until she felt capable of exercising in the higher-impact environment of the shallow end.

One commonality among participants was the response to a painful exercise: modification of painful movements, a practice that all six participants reported to varying extents. Five of the six study participants routinely adapt Aquafit exercises so they can move around the pain. When pain strikes, Paula occasionally stops the current movement to massage the pain site, stretch the area, and attempt the exercise again. Dianne's modifications involve avoiding equipment. Specifically, she avoids using paddles when her shoulder flares up due to the increased resistance. Susan modifies or avoids exercises that hurt, stating, "*There's certain exercises [that] if I raise my hand up too high, it's going to set off the whole chain up my neck and into my hand... so I just don't raise that hand, I just need a different motion.*" She further elaborated, "*If I'm having a flare-up with my elbow, there's certain exercises that I don't do... I'll always keep going, just not necessarily doing what [the instructor is] doing. I just modify.*"

One participant, Robert, stated that he rarely modifies the aquafit exercises, playfully admitting, "*I guess I'm stubborn that way.*" Still, he clarified that he had never done any truly painful exercise and would simply avoid doing it altogether if necessary. When Robert was prompted further about modifications, it became apparent that he did, in fact, make modifications to fine-tune the program for his needs. Aside from the floatation belt, he admitted not using any of the equipment (e.g., weights and the flutterboard) typically used in Aquafit classes. His choice to avoid this equipment was partly due to a desire to avoid overuse of his shoulder, although he was also confident that he did not need weights to engage the muscles targeted in the exercises.

Connection To the Water

One component of what made Aquafit enjoyable and attractive to participants is the aquatic environment and a strong affinity for being in the water for some individuals. While all six participants expressed some degree of connection to the water, three participants took time to enthuse about their appreciation for being in the water. Further, Dianne and Elizabeth expressed a lifeline appreciation of the water. Elizabeth's love of the water began in childhood when a sudden desire to master swimming overtook her, despite otherwise disliking physical activity. Dianne also grew up loving the water and still finds herself drawn towards it, stating that being in the water makes her "*feel new.*" Her love of water is not limited to the pool; during her travels, Dianne makes sure to get into the ocean and enjoy the salt water and waves.

When asked what she liked about participating in Aquafit, Eleanor promptly answered, "*The water! [Laughs] Doing something I love... I always love to swim and... getting in the water, even though it's cold. I like the sound of the water...*" Elizabeth could not go into the pool for over two months after an operation and found herself regularly longing to be back in the water. During the hardest physiotherapy exercises, she would get through them by visualizing her happy place: the pool. She would imagine doing the exercise in the water, a practice which helped her get through a difficult rehabilitation period. The day she returned to Aquafit, she sighed with relief at the smell of chlorine as she walked out onto the pool deck. The scent alone filled her with excitement about reconnecting with the water.

The remaining three participants were less overt about their feelings about being in the water. Susan stated, "I like the fact that we are using water... using water works for me." Robert did not specify a particular affinity for water, but his PA preferences indicated a desire to engage in aquatic activities regardless of whether he had access to Aquafit classes. When travelling

outside the province, he always tried to access a swimming pool, although he did not engage in Aquafit due to programs being unavailable or less intense than what he was accustomed to. During his visits to Florida, Robert shared that he typically swims every day, occasionally stopping to do water exercises he learned in Aquafit. Much like Robert, Paula did not state directly that she likes the water but habitually spends the hour before an Aquafit class in the pool swimming or simply floating on her back.

Fun and Enjoyment

Participants expressed that a part of their motivation to participate regularly, despite the struggles of daily life, is the opportunity to get out of the house and have fun and enjoyment. Fun was discussed in the context of the easygoing and sometimes playful atmosphere of Aquafit classes, where participants are not afraid to laugh at a movement that makes them feel “*silly*,” while dancing and singing along to popular music from past decades. Enjoyment was a more personal description of finding the exercises and group dynamic pleasurable or experiencing positive feelings as a result of their participation. All six participants mentioned fun and enjoyment to varying extents.

Some participants reported primarily enjoying the exercises. Others said that they enjoyed silliness, a feeling that was often shared among their friend group (e.g., laughing together at an amusing-looking exercise). It was a time during the day when participants not only took care of their health and social relationships but also got the opportunity to put life’s stressors aside for one hour and take life less seriously. Elizabeth expressed this when she said of her fellow participants, “*We were all there for the same reason... for a bit of exercise and a bit of fun.*” Dianne made a similar statement, saying that her Aquafit participants feel silly, have fun, and share a lot of laughter during the class. Eleanor experienced enjoyment the entire morning of

each Aquafit class, stating, *“I enjoyed it from the beginning... enough that I’ve been pretty consistent... I love to swim and I love getting in the water... I like to get dressed up. I like to walk in here.”*

Like many group fitness classes, Aquafit programs play music throughout the duration of the session. Multiple participants stated that the music was a part of what they loved about the classes. Playlists often consist of popular songs from various decades, usually spanning 60 years of hits. As a result, it is common to find people singing, mouthing along to the music, or dancing. Elizabeth enjoys that she can actually dance in the water, likening the exercises to disco dancing in her youth. Elizabeth shared that when she is in the water with her Aquafit buddies, the group would laugh and dance like teenagers. She said, *“You got a bunch of old women like myself who for... 50 minutes, three times a week, we’re like a bunch of 17, 16-year-olds... we carry on and we laugh... we do all that in the water.”* Susan also cited her enjoyment of music, including the music played at Aquafit classes, as one element of her enjoyment. However, Dianne stressed that it is important to ensure music is played at an appropriate volume to ensure participants can hear instruction and instructors can focus on teaching the class.

Participants also spoke of enjoyment because of the instructor delivering the class. Most participants expressed a deep appreciation for the variety of friendly, competent instructors they have encountered who provided a high-energy session with a side of humour and good music. Often, beloved instructors became a part of the appeal of attending a particular class on a specific day. Participants appreciated instructors who allowed them to chat and joke around during the class. Certain instructors use different movements and types of equipment. They may also use the same equipment in different, inventive ways that create effective exercises that allow participants to feel silly for a while and get participants laughing. For example, Dianne ended her

interview by discussing how her class utilized the board, referring to one exercise as “*horsey races*.” She also described how insecurities around physical ability quickly fade when having fun, “*They’re all like, ‘I can’t do it,’ then, of course, everybody’s burst out laughing and carrying on... you’re laughing your head off while you’re doing it and you’re enjoying it.*”

Theme 2 Summary

In the second theme, participants described the attributes of Aquafit that make it a preferable form of physical activity. The aquatic environment provided participants with a way to do activities that would otherwise be difficult, if not impossible, to navigate with a chronic pain condition. Participants also discussed what they felt were the most enjoyable aspects of attending Aquafit classes. For some, the water alone brought on feelings of peace. Others cited certain exercises, the music, and the laughter which often occurs at some point during an Aquafit class.

Theme 3: Impacts of Organizations & Facilities on Participant Experiences

The third theme refers to aspects of participants’ lived experiences pertaining to the organizations and facilities delivering Aquafit classes. Participants eagerly expressed the positive elements of their participation when asked what they liked and disliked about their Aquafit experience. Study participants initially hesitated to express issues with their programs and facilities but were able to share some comments that led to the generation of this theme. While participants were generally pleased with their Aquafit experiences, they believed a few areas could be improved. These comments related to (1) the built environment where Aquafit classes took place and (2) organizational issues specific to those running the facilities. To avoid identifying study participants, no specific facilities or participant pseudonyms will be referenced in this section.

Built Environment

Participants generally enjoyed the environment of the Aquafit classes. One participant raised a concern about the cleanliness of the facility they attended, particularly in changerooms and the edge of the pool. This participant stated her belief that “*the cleaning staff don’t do a very good job*” and mentioned seeing mould on the side of the pool while using the steps to enter the shallow end. Regarding pool steps, two of the indoor pools in St. John’s do not have steps, requiring participants to use the ladder. One participant cited the ladder as a significant reason for not being able to attend classes after a joint replacement surgery.

Another built environment issue raised by a participant was an insufficient number of showers relative to the number of participants and the pool size. This participant spoke for others who have become frustrated with the lack of showers, stating that her fellow Aquafit participants often try to address this shortage by getting out of the water earlier, during the strength exercises or just before the cooldown. When speaking of the shortage of showers, one participant shared, “There’s a bunch of us... that duck out at different times. We kind of self-manage the flow, if you would.” While participants try to mitigate the issue with the lack of showers, leaving the pool early means missing certain strength and flexibility movements. Further, exiting the pool early to access showers means that participants are not getting the whole class they have paid for. While it is up to individual participants to decide how long they wish to stay in the water, the trend of people leaving early because of the shower shortage reduces the overall quality of their experience attending Aquafit programming.

Organizational Structure

Overall, participants liked the staff responsible for designing and delivering programming. Much like with the built environment, however, there were several areas for improvement. While

most organizations separate shallow and deep water fitness programs, one of the three organizations merges the two programs. Participants explained that this merging of programs is relatively new, beginning when programming resumed in the wake of the COVID-19 pandemic. After the merging of shallow and deep water fitness programs, a single instructor demonstrates the exercises to the shallow end before showing the deep end how they will perform a modified version of the exercise. One participant said that this merge has led to a less effective deep water fitness experience and that some of the exercises in the merged class do not translate well to the deep end.

Instructors were mostly spoken of positively, especially beloved long-time instructors that participants felt they had gotten to know. Some of these beloved instructors have recently left their positions delivering Aquafit. The departure of these instructors has left some participants disillusioned with the change, finding many newer instructors less personable than their predecessors. In addition, some instructors have backgrounds in other types of group fitness classes, which shapes the style of their delivery of Aquafit. Some participants feel that specific dance-like exercises do not work for Aquafit but acknowledge that this is their preference and that other participants enjoy such movements. Participants found it frustrating when instructors changed moves too quickly, as they felt they could not keep up with the instructor or did not understand what was happening during jarring transitions. Lastly, participants expressed a preference for instructors who allowed class attendees to talk amongst each other during class.

The management of facilities was a major point of contention among participants, but this was not the case for all facilities. Issues related to management tended to revolve around two issues: poor communication and the perception that instructors and other staff were undervalued. Communication issues were predominantly related to pool closures. One incident was reported

where a participant offered to inform the class about the closure by messaging an Aquafit social media group chat. Still, management informed the participant that this was unnecessary as the closure would be reported online. However, the facility's website was not updated to announce the closure, and all regular attendees showed up to find that Aquafit was cancelled. The website was updated later to announce the re-opening of the pool, but participants were frustrated the closure itself was not announced.

One final organizational aspect that participants of all facilities highlighted was pricing. For older adult participants, who are often on a fixed income, the cost of programming is a major issue that can determine whether someone can participate in Aquafit classes. Most facilities were described as having affordable classes, with these participants stating that they felt they were getting high-quality programming at a great price. However, one facility was described by both participants of that facility and participants from other facilities as being expensive. This expense was described as a barrier to participation that kept some of the study participants' friends from joining.

Theme 3 Summary

The third theme explored the factors that impacted participants' experiences and perceptions of the program. While good instructors and proper exercise selection were important, the perceived quality of the Aquafit experience was also related to the contexts of the organization delivering the programming and the facilities from which they attended the classes. Factors related to the built environment, such as cleanliness and facility amenities like showers, were listed alongside broader organizational issues. The latter issues often focused on instructors and the communication between management and program participants.

Theme 4: “These Relationships Are Precious... We Are an Aquafit Family, A Support Group”

The final of the four themes surrounded socialization and the preciousness of relationships born out of Aquafit programs. For four of the six participants, these long-term friendships were an important benefit of their participation and a reason to consistently attend classes over the course of multiple years. Even the two participants who did not have close relationships with other program participants enjoyed the company of being around the group. The two subthemes were (1) regular socialization and (2) community and support.

Regular Socialization

The subtheme of regular socialization refers to the routine interactions study participants reported as a direct result of their participation in Aquafit classes. This regular socialization encompassed interactions in changing rooms, in the pool, and outings after class. All six participants had some degree of regular social interaction with their fellow Aquafit participants, albeit to varying degrees. Dianne stated that Aquafit works not only because of cardio and strength but also because of the people. Eleanor and Robert, who both stated that they did not have friendships with fellow participants, nonetheless reported enjoying the passing social interactions they experienced due to seeing the same attendees on a regular basis. Eleanor, who has only lived in St. John’s for a few years, claimed that she still felt some benefit from being around the same people consistently. She said, “*[Aquafit] expanded [the] number of familiar faces... I’m from a small town... you had all kinds of people to talk to... I sort of missed that in here... it’s nice to see the same faces... and they recognized me.*”

Four of the six participants reported being members of a friend group surrounding Aquafit participation. It was for participants to engage together in coffee outings after class ended. For

some people, these regular outings and conversations are some of the only social interactions they engage in weekly. Other forms of social gatherings are more related to the second subtheme of social impacts and will be discussed in that section. Paula said, “*My kids say I have a more active social life than them!*” She continued that having friends from Aquafit “*boosts your ego.*” Participants described their feelings around going to the physical space of the recreation facility on a regular basis, often indicating that their social world is situated in that building and the staff and attendees alike are pleasant to talk to. This sentiment was expressed even by participants who do not engage in formal friendships with other participants.

The two participants who did not pursue deeper friendships with individuals in their aquatics program still clearly stated that they enjoyed seeing the same people on a regular basis. Recognizing fellow program participants outside of their recreation facility was reported as a pleasant experience that was appreciated. Robert shared that his lack of deep Aquafit friendships is primarily based on his inability to use hearing aids in the water and being one of the only men, if not the sole man, who would attend the program on any given day. Later in that same interview, however, he referred to his facility as “[*his*] *social life*” and that “*I see all these ladies, you know, virtually every day,*” indicating that he appreciates exchanging pleasantries with the same group of people throughout the week. Eleanor communicated that her focus is mostly on exercise, and she did not indicate a desire to expand her social circle. Still, both of these participants expressed enjoyment of the interactions, simply recognizing the same participants, and listening in on interesting conversations.

Community & Social Support

This subtheme focused on consistent, valuable friendships, larger Aquafit social circles, and the support that participants appreciated receiving. Four participants expressed that they had

immersed themselves in a social circle of fellow Aquafit attendees, and a clear sense of community shone through their words. According to Dianne, Aquafit attendees are like a family because people look out for each other, and those strong social ties are a large part of why people come consistently. With this sense of community came a noticeable identification with the group, primarily based shared life stage and experiences (e.g., retirement, loss of spouse, health changes). As a result of participants' shared experiences surrounding health, pain, and access to professional health services. Several participants stated that they have given and received referrals to practitioners such as massage therapists and acupuncturists as well as advice on other pain management strategies (e.g., non-prescription pain remedies like topicals).

One common shared experience is joint replacement; consequently, Aquafit attendees who are about to undergo such a procedure will likely be surrounded by support and understanding. One participant described the situation of one of her Aquafit friends who had no family nearby to help her recover after an invasive surgery. The immediate friend group from the program assured this person that each group member would help during the recovery period by aiding their friend with tasks requiring assistance. The same participant who relayed this story shared about the support she received from her Aquafit friends after her joint replacement: meals were consistently dropped off at her home, and she received so many visits that she was often tired from the extensive socialization by the end of the day. For individuals who are retired, widowed, or have smaller social support networks for other reasons, this social support was invaluable .

Regardless of marital status or whether a participant had friendships outside their Aquafit circle, every participant in one of these friend groups appreciated having supportive friends by their side. Most participants shared that missing Aquafit was a cause for concern among their fellow regular attendees. Participants stated that not showing up would typically lead to a phone

call, text message, or questions upon their return. Susan said, “*I’m not used to being checked in on like that... it’s not a nosy thing, it’s a caring thing.*” This ‘checking-in’ was generally appreciated and perceived as a genuine act of care and concern. Paula mentioned telling her Aquafit friends morning of the interview that she would be leaving early to attend the interview for this study to ensure others did not worry about her sudden departure.

Participants spoke of being accepted into a social circle early in their Aquafit involvement. Participants often choose a spot in the pool in their first few classes and consistently return to this spot. While one aspect of this is routine and, for shallow water participants, preference for water depth, others select their spot either as a group or choose to exercise around a group they’d like to befriend. Friendships form quickly among regular participants. Susan spoke of this phenomenon, sharing that she had to find her spot in the pool and make friendships with others in that area. “*We’re a chatty corner,*” she admitted with a laugh.

Aside from smaller friend groups formed in various pool areas, Paula’s facility’s participants have compiled a list of almost 40 regular Aquafit participants’ contact information. Paula spoke of the “beautiful friendships” created in Aquafit and how new attendees are added to this list, “*we ask everything about you right away. ‘What’s your name? Are you planning on coming forever? We have a list of people; do you want to get on the list?’*” Regardless of whether a participant was on this contact list or was immersed in a friend group in a different facility, major celebrations and life events were often the catalysts of larger social gatherings. These events include birthday dinners and large Christmas parties. Special occasions, milestones, and holidays were often celebrated together. Overall, participants received advice, support, and opportunities for social participation as a direct benefit of their Aquafit attendance.

Theme 4 Summary

This theme highlighted the social attributes of Aquafit classes and the relationships created through participation that often extended beyond the pool. Participants enjoyed the routine socialization of seeing the same attendees each week, from passing interactions to simply hearing other people converse amongst themselves. Further, four study participants experienced close friendships and received social support from their circle of friends, comprised of fellow Aquafit attendees. These relationships comprised a considerable portion of the social lives of the four participants, who expressed a sense of community both in and out of the pool.

Negative Case Analysis

Participants' statements that contradicted the generated themes have been provided to ensure a thorough analysis. There were very few occurrences of this, and the negative cases that did emerge related to the “pain management” and “community and social support” subthemes. While the statements discussed in this section do not outright contradict the results of the thematic analysis, they offer slightly different perspectives which deserve to be highlighted.

While all six participants stated that participating in Aquafit classes regularly was beneficial in their chronic pain management, two participants were less confident that Aquafit reduces their pain. Susan said that while she believes that Aquafit may alleviate her headaches, she does not know the true effect the classes have on her other pain symptoms, given that her pain tends to vary regardless of her participation. Instead, she focused on the role of distraction in making her symptoms more bearable. Further, she was uncertain if she felt any different immediately after an Aquafit class than she did before. Robert, much like Susan, stated about Aquafit, “*It’s part of my treatment of my pain.*” He further expressed that he does not hurt during

the exercises but is not a cure for his pain either. He pondered further before saying that the classes probably help his pain.

Among the social benefits expressed by participants, some of the most powerful stories involved the sense of community and social support attained through regular participation in Aquafit classes. However, two participants, Eleanor and Robert, did not enter these Aquafit friend groups. Neither of these participants expressed any sort of dislike for class attendees, but each had their own reasoning behind their decision not to pursue friendships. Eleanor clearly stated that she attends Aquafit purely for the exercise, as she is committed to being physically active. She has no desire to expand her social circle as she focuses on her closeness to family, which is why she relocated to St. John's. Still, Eleanor enjoyed listening to the conversations around her and felt good when she recognized an Aquafit participant outside of classes.

Robert's reasons for not immersing himself in the community aspect of Aquafit primarily related to his hearing and being male. Robert wears hearing aids but cannot wear them in the water. Consequentially, he struggles to hear people speaking. He indicated that he sometimes conversed with some attendees, but this was not consistent, nor did he attend any coffee outings that routinely followed an Aquafit class. The second reason provided by Robert was related to his gender. As a man, he is unlikely to be surrounded by other men during an Aquafit class. Robert said that he is often the only man in attendance of any given class, although sometimes there may be one other man. While he stated that the women who attend and deliver the classes are "*lovely ladies*," he did not feel inclined to develop close friendships with them.

Summary of Results

Six participants of community Aquafit classes enthusiastically shared stories of their lived experiences attending such programming as older adults with chronic pain. These participants

identified aspects of their experiences that were important to them: improvements to their lives as individuals with chronic pain, being empowered to continue and enjoy physical activity despite constraints, powerful social relationships centered around shared experiences, and their relationship to the organization delivering Aquafit programs. A reduction in chronic pain symptoms, whether from the exercises themselves or from distraction, was consistently reported as a benefit of participation and motivator to continue attending. Participants also believed the classes were responsible for improvements in their activities of daily living, their mood, and contributed to a structured and enjoyable weekly routine.

Aquafit allowed participants to remain physically active through involvement in an activity they enjoyed and felt competent engaging in. The water allowed participants to perform movements that would be much more difficult on land, while easily accessible equipment (e.g., weights, flutterboards, floatation belts, pool noodles, and paddles) and varying pool depths allowed participants to tailor their Aquafit experience to their individual needs. Participants enjoyed the aquatic setting, feeling their problems dissipate for an hour as they submerged their bodies in the water. Moving to the music, dancing, and enjoying silly moments during the exercises gave participants a venue to have fun and move to the music at their own pace.

While participants had positive and negative comments about the organization and facility that delivered their Aquafit program, four of the six participants found deep friendships and community in the pool. Powerful friendships sustained these four participants through health problems, the COVID-19 pandemic, and other major life changes. Being in a group with individuals of similar ages who have endured similar struggles allowed participants to relate to one another and help one another overcome challenges. Participants often gave each other advice for managing their pain, tips on how to get through joint replacement surgeries, and even support

in their recovery, providing companionship, meals, and care to their friends during times of need. Each of these aspects of participants' stories has provided a window into the experiences of older adults with chronic pain who attend community-based Aquafit classes.

Chapter 5: Discussion

Interviewing six regular attendees of Aquafit programming who experience chronic pain, revealed deeply personal stories of the meaningful experiences and outcomes that encouraged these participants to attend classes over the course of multiple years and, in many cases, decades. Exploring the lived experiences of these six participants through a phenomenological study revealed four themes related to pain management, the ability to participate in and enjoy PA, their connection to the facility where classes are delivered, and the social relationships formed in the pool. While coding and the mapping of themes were done inductively, reflecting on the interview content and results of the thematic analysis showed similar findings to past aging research on continuing involvement in activities (e.g., Baltes & Baltes, 1990; Kleiber et al., 2008), aquatic exercise as pain management (e.g., Weinstein, 1986; Zamunér et al., 2019), organizational issues with community programs (e.g., Fiskén, Keogh, et al., 2015), and social benefits of aquatic exercise participation (e.g., Fiskén, Keogh, et al., 2015; Moreira et al., 2020).

Impact on Individuals Living with Chronic Pain

Most research on aquatic exercise, particularly newer studies focused on positive health outcomes, has been quantitative and focused on study-specific interventions (e.g., Becker, 2009; Fiskén, Waters, et al., 2015; Katsura et al., 2010; Peng et al., 2022). Such research, especially studies focused on older adults, explored the effectiveness of aquatic exercise on various outcomes such as physical functioning (e.g., Bocalini et al., 2008), muscular strength (e.g., Kieffer et al., 2012; Taunton et al., 1996), flexibility (e.g., Bergamin et al., 2013), fall risk (e.g., Martínez-Carbonell Guillamón et al., 2019), obesity (e.g., Irandoust & Taheri, 2015; Nosrani et al., 2023), and managing various chronic pain conditions (e.g., Hinman et al., 2007; Waller et al., 2009; Zamunér et al., 2019).

This discussion will compare the current study's participants' experiences with Aquafit with research pertaining to specific benefits of aquatic exercise. However, it is essential to begin by comparing the current study to a seminal qualitative work by Weinstein (1986), which had many similar findings to the current study. Both studies explored aquatic exercise programs delivered in the context of community recreation. One major difference exists between Weinstein (1986) and the current study: the two programs explored in the first study were focused on swimming, as opposed to the types of aquatic exercise explored by more modern research and the current study on Aquafit. Still, many of the outcomes discussed by Weinstein (1986) were also reported by participants in the current study.

Participants of both studies appreciated the preferable environment the water provided, which allowed them to engage in exercises that would be difficult or impossible to complete on land. The common experience of joint replacement was another commonality, with participants of the current study using Aquafit to build strength before and after surgical intervention. One particularly interesting perception reported by a participant in Weinstein (1986) was feeling addicted to the water and attending aquatic exercise classes. Similarly, one participant in the current study spoke in detail about her struggles being away from Aquafit classes after surgery and when she could return, being relieved at the smell of the chlorine, likening the excitement associated with smelling chlorine to that of smelling a desirable intoxicant. Given that these studies were conducted over 35 years apart, however, participants in both reported their deep connection to their aquatic environment, highlights the longstanding role that the power of water can play for individuals living with chronic pain.

Back Pain

Past research has shown positive outcomes in individuals with back pain, with lower levels of pain and related disability in daily function being reported (Peng et al., 2022). Similar findings were expressed when Waller et al. (2009) conducted a systematic review exploring aquatic exercise to manage chronic low back pain, concluding that such programs may be a viable tool for pain management. This finding is consistent with statements made by all six participants of the current study, who noted that Aquafit helped alleviate their pain. Participants of the current study consistently reported that while Aquafit participation did not eliminate their pain, it was a major component of their self-management strategy. In a quote that became the title of the first theme, Eleanor stated that Aquafit is a part of her chronic pain arsenal. Eleanor elaborated on how much of her pain management she attributes to the classes, “If I were to give it a percentage, it would be... around 50% for sure.”

Dianne, who was previously employed in health care, shared her own experiences as an Aquafit participant and those of the attendees of the classes she teaches, commenting that Aquafit helps with pain, posture, and stability. Further, Dianne expressed her belief that she may have been able to continue working for a longer time had she discovered Aquafit sooner. A study by Irandoust and Taheri (2015) observed the impact of aquatic exercise on male older adults who lived with low back pain, concluding that the aquatic training group reported a significant decrease in physical and psychological pain symptoms compared to the control group. In the current study, participants reported reduced pain and relaxation during Aquafit classes.

Dianne, who has lived with chronic back pain since the late 1980s, emphasized how beneficial her regular Aquafit participation was in managing her pain symptoms, “It’s such a relief on your back.” She stressed that Aquafit was a tool in keeping her back pain under control.

Elizabeth, much like Dianne, also reported a long history of chronic back pain. She expressed a similar sentiment to Dianne's, adding that while in the water, her pain is forgotten, and while she is still in pain after class, her symptoms are better than before. When discussing her chronic pain, Eleanor stated, "Once you hit the water, it just disappears for me..." As previously stated above, Irandoust and Taheri (2015) found that participants felt not only physical pain relief, but experienced psychological aspects of pain relief as well, like how in the current study, Elizabeth and Dianne forgot about their pain during Aquafit. Similarly, Eleanor stated, "Once you hit the water, it just disappears for me..." Psychological relief from chronic back pain symptoms were found in the current study in the form of distraction, aligning with similar findings from Irandoust and Taheri (2015).

Osteoarthritis

Osteoarthritis was the most frequently reported chronic pain condition among participants of the current study. Five of the six study participants reported living with osteoarthritis. A randomized controlled trial exploring the effectiveness of aquatic exercise for managing hip and knee osteoarthritis reduced pain symptoms while improving their physical abilities and quality of life (Hinman et al., 2007). Elizabeth, who has a diagnosis of osteoarthritis in her hips and knees stated Aquafit "gets me through the day" and allows her to do activities of daily living like housework and walking her dog. Robert has osteoarthritis in his knees; his initial motivation to attend Aquafit was to strengthen his knees before a knee replacement surgery. He acknowledged that Aquafit is a part of his pain management strategy but stressed that it did not remove his pain. Robert reported acute benefits from Aquafit and said that during a class, "I don't feel any pain." Paula, who lives with osteoarthritis and multiple other chronic pain conditions, insisted she only experiences pain management benefits if she exercises in water that is chest-level or deeper.

Participants of a study by Fiskén, Keogh, et al. (2015) expressed that aquatic exercise classes were beneficial in managing pain from osteoarthritis. Participants were quoted stating that aquatic exercise is the only type of PA that alleviated their pain symptoms. This sentiment was shared by all six participants in the current study, who identified Aquafit as their primary form of PA. Elizabeth stated that Aquafit is in “a league of its own” when it comes to allowing her to remain active and mitigating the impacts of chronic pain from osteoarthritis. Similarly, Paula asserted, “Aquafit’s definitely the only way to go.” Statements like these demonstrate the consistent opinions of participants that Aquafit classes are the only type of PA that is effective in their pain management, opinions similar to those expressed by the participants of the study by Fiskén, Keogh, et al. (2015). Elizabeth expressed that her body feels better after Aquafit and believes her involvement in the classes has a cumulative benefit on her pain management.

Fibromyalgia

Aquatic exercise has been shown to be useful in managing pain symptoms among individuals with fibromyalgia (Rivas Neira et al., 2017; Tomas-Carus et al., 2009; Zamunér et al., 2019). Further, aquatic exercise performed three times per week has been shown to help some individuals manage the cognitive impacts of fibromyalgia (Munguía-Izquierdo & Legaz-Arrese, 2008). Only one of the six study participants reported a diagnosis of fibromyalgia. Paula lives with fibromyalgia, back pain and osteoarthritis; she has had chronic pain for over 30 years. For the past two years, Paula has been attending Aquafit classes five days per week, and occasionally swims on the weekends. She commented that while she still has pain after a class, she feels less joint pain, stating, “I’d recommend it for anyone with any kind of pain...”

Paula shared that she will take ibuprofen to mitigate her pain enough to attend Aquafit, where she knows her pain will be more tolerable. Paula also felt that it may be harder for

individuals with fibromyalgia to manage their pain and be physically active but that taking the plunge into PA was a preferable option to continuing or increasing the use of pain medication. Unlike the suggestion by Munguía-Izquierdo and Legaz-Arrese (2008) that aquatic exercise may alleviate the ‘fibrofog’ associated with fibromyalgia, Paula did not mention any positive impact on sleep or cognitive functioning during her interview. However, she was not asked about these symptoms. Nonetheless, she reported that she still wakes up at 3:30 AM every day, the same time she has awoken with pain for many years.

Obesity

Past research has shown that aquatic exercise is beneficial for weight loss among obese individuals (e.g., Abadi et al., 2017; Md Yusof et al., 2018; Shari et al., 2018). Studies specific to older adults, such as a randomized controlled trial by Nosrani et al. (2023) have found benefits to weight loss and body composition. In addition, the previously cited study by Irandoust and Taheri (2015), which also focused exclusively on older adults also found significant improvements in body composition in the aquatic training group. One of the many findings in a qualitative study on community aquatic exercise programming by Fiskén, Keogh, et al. (2015) also reported weight loss as a benefit reported by participants. Two of the six participants of the current study struggled with obesity throughout their lives. Both expressed that they lost body weight as a result of their involvement in Aquafit classes. One such participant, Dianne, lost 160 pounds from regular Aquafit participation. She stated that she did not make any dietary changes that could have contributed to her weight loss.

Another participant, Paula, was at her highest weight when she began participating in Aquafit and lost around 60 pounds. However, Paula did not place much emphasis on her weight loss itself, rather, the impact of Aquafit on quality of life and her ability to engage in PA despite a

lifetime of feeling “physically huge.” Paula’s experience reflects findings of studies that did not find significant weight loss in participants. For example, Abadi et al. (2019) found that even when aquatic exercise does not result in weight loss for participants, their quality of life is improved by reducing the impact of chronic pain symptoms on daily living.

Additional Impacts on Chronic Pain

Aside from pain management, other areas participants discussed were mood, the ability to engage in activities despite pain, lifestyle and routine. While all participants indicated experiencing an improved mood, they often did not wish to elaborate on their moods and instead preferred to talk about what aspects of their Aquafit participation were improving their moods. Paula shared that she was depressed before she joined Aquafit and elsewhere in the interview, she stated ways that her life had changed from those darker times before joining the classes, many of which related directly to the socialization theme. The ability to engage in PA despite pain was a major component of their overall lifestyle. Rather than remaining sedentary due to pain symptoms, the participants in this study expressed an understanding that they needed to move to stay well, something Aquafit helped them achieve both in and out of the water.

Continuation of Physical Activity Despite Constraints

While the intention of the current study was not to test any existing theories, the model of selective optimization with compensation (SOC) may be applied as a lens through which to view the results. Participants of this study may have chosen Aquafit to maintain their involvement in physical activity despite the constraints associated with aging and chronic pain. Further, they may have selected Aquafit due to the social nature of the classes and the enjoyment reported by those who attend such programs. Participants may have used compensation by adapting their PA experience. One possible example of compensation based on what participants reported was

choosing the deep or shallow end of the pool to mitigate the impact of Aquafit exercises. Throughout the shallow end of the pool, there are varying depths participants may choose to exercise in. The depth a participant chose depended on their unique needs, as different heights offer varying resistance levels and impact (Becker, 2009). Participants also described using equipment that could have optimized their Aquafit experience.

One potential example of selective optimization with compensation in this study may be found in the participant who had been active for his entire life, engaging in sports in his youth, adulthood, and into late adulthood. As his sport participation became less feasible, he selected Aquafit as a way to continue the type of PA he had been doing in the gym with less impact. After trying both the deep water and shallow water fitness programs, he felt that the shallow water exercises provided him with a better workout but found the increased impact in the shallow end to be painful. To adapt the classes to meet his needs, he wore a floatation belt, typically worn only by deep water fitness participants, to reduce the impact of shallow water exercises on his knees. This example may serve to demonstrate the reduction in activities to continue participation (selection), mindfully choosing activities based on preferences and abilities (optimization), and further adapting activities to meet the specific needs of the individual (compensation).

Selection

All six participants experienced constraints engaging in PA due to their chronic pain, particularly in their later years. Activities like running, aerobics, golf, and tennis that these participants enjoyed throughout their lives became less feasible in the presence of increasing pain symptoms. Rather than ending their participation in PA entirely, these participants described how they reduced the number of activities they participated to one or two activities, including

Aquafit. Participants reported attending classes two to five times per week and sometimes engaged in a second activity like walking, yoga, or gardening. Still, all study participants revealed that Aquafit was their primary form of PA. Participants' explanations of reducing the number of activities that are participated in to better their individual needs could be linked to the concept of 'specialization', although further exploration in this area would be needed to determine an association.

Optimization

All six study participants explained their reasoning for choosing Aquafit as their primary activity. Regardless of their history with PA, all six participants of the current study believed that living an active lifestyle was important. Participants acknowledged the impact of their chronic pain conditions and seemed to make choices based on their physical constraints and preexisting activity preferences. Such reflections among participants led to the understanding that physical limitations made PA difficult, but the water allowed them to exercise in a way that was both doable and enjoyable. Thus, the reason that Aquafit was selected because it took place in an environment where their abilities could be highlighted, while the water mitigated many of the limitations they experienced on land.

Compensation

Study participants also seemed to make choices about their participation that may have further tailored their Aquafit experience to their individual needs. Participants' explanations of these experiences could, if viewed through the SOC lens, show links to compensation. For example, Elizabeth switched to deep water fitness to reduce the impact on her joints, sharing that *"I found [shallow water fitness] really hard on my bone structure... when you hit the cement floor of the pool, you hit it almost as hard as... on dry land."* Another example that could

potentially be considered compensation may be found in Eleanor's interview, where she mentioned wearing the flotation belt lower than usual (at the hip level) to avoid twisting her back and reduce her fear of injury.

Aside from the use of equipment as a way of reducing the impact of pain-related constraints during Aquafit classes, participants referenced using equipment to maximize the effectiveness of their workout or to make the exercises more enjoyable. Robert used the flotation belt so he could do the shallow water exercises, which he believed to be more challenging than the deep water exercises, despite the added impact. Dianne described how pool noodles could be used to add some fun to the hour, stating that, "you're laughing your head off, and you're enjoying it." When considering the ways participants described their reduction in activities, reasons for choosing Aquafit as their primary form of PA, making adjustments (e.g., pool depth, equipment), it appears as though there may be connections between the participants experiences and the components of the SOC. Future work in this area could benefit from exploring Aquafit attendance within the context of the SOC model to determine its strategical application.

Comments About Experiences with Community Recreation Programming

When asked about their likes and dislikes when it came to Aquafit, all six participants of the current study commented on the classes they attended and the organization that delivers such programming. These comments were about factors they felt impacted their Aquafit experience either positively or negatively. Comments were overwhelmingly positive and often referenced the instructors and the exercises chosen. Further, long-time instructors were mostly preferred due to the exercise programs being routine and familiar, but also because of instructors' personalities. Study participants were mostly fond of the instructors who delivered Aquafit programming and

mourned the loss of former instructors who recently left the organization. However, participants from all organizations also stated that there were aspects of their Aquafit experience they were less satisfied with. Cleanliness, facility design, and management issues emerged as areas participants felt could be improved upon. These aspects of participants' experiences with Aquafit have been used to make recommendations for recreation organizations in the final section of this discussion.

Participants in a qualitative study by Fiskén, Keogh, et al. (2015) reported two organization-related aspects of participants' experience with and perceptions of aquatic exercise participation: instructors and facility design. Instructors were often appreciated for their upbeat personalities and knowledge of the human body. Facility design concerns involved poorly designed changing rooms, issues with showers, and low pool temperatures. One issue expressed by participants of the current study and those from a qualitative study by Fiskén, Keogh, et al. (2015) was showering facilities. Participants in the current study were more concerned about the low number of showers, whereas the participants Fiskén et al.'s study took issue with the temperature of the water in the showers.

Another issue reported by Fiskén, Keogh, et al. (2015) and the current study was the cost of the program, which was discussed as a possible barrier if costs are too high. For older adults, especially the many who live on a fixed income, the cost of recreational programs like a community Aquafit class can be an excluding factor (Dhurup, 2012; Petersen et al., 2021). Therefore, even for those who manage to attend Aquafit classes, a perceived lack of affordability may result in irregular attendance and be less likely to produce the beneficial outcomes seen in the current study. Participants from two of the three organizations in the current study believed

the classes were affordable for seniors on a fixed income. Participants who had attended a more expensive program acknowledge this is a barrier to some potential participants.

One final commonality between the study by Fiskens, Keogh, et al. (2015) and the current study regarding community recreation organizations was the location. Participants in both studies believed their facility was in an ideal area and had no issues getting to a class. In the current study, one participant walked to the facility almost every time due to its close proximity to her neighborhood. No participant reported the distance to their facility being a barrier to participation. Participants were so committed to attending their usual slots that they would ensure their schedule did not hinder their attendance unless a medical appointment or illness arose. This fierce commitment to regular Aquafit participation indicates that attendees are dedicated to overcoming obstacles that may hinder their ability to attend classes to the extent that many factors that others may consider constraints were not perceived as barriers by study participants.

Social Aspects of Aquafit

Despite a limited body of research, past studies have identified socialization as a positive outcome of aquatic exercise programs (e.g., Fiskens, Keogh, et al., 2015; Moreira et al., 2020). Social support and group outings after classes have been reported by participants as so important that they would motivate individuals to come to classes when they faced constraints and amotivation (Fiskens, Keogh, et al., 2015). One category of benefits measured by Moreira et al. (2020) was quality of life; increases in quality of life related to socialization were found. While an older study by Weinstein (1986) focused primarily on physical benefits, companionship was listed as a reason for attending classes regularly.

To supplement the still emerging body of knowledge on social benefits of aquatic exercise programs, findings from studies on the broader phenomenon of community group fitness classes

have returned similar results to the studies mentioned above (e.g., Graupensperger et al., 2019; Komatsu et al., 2017; Maher et al., 2015; Weselman et al., 2023). Friendships born out of participation in such programs can promote social support and the feeling that one is a part of a larger community (Komatsu et al., 2017). Further, Maher et al. (2015) reported that socialization improved participants' satisfaction with group fitness programs. Satisfaction was also found to be related to cohesion among the larger group of attendees. The importance of the group was also highlighted in a study by Graupensperger et al. (2019), who found that close-knit groups may experience greater enjoyment of group fitness classes and put more effort into the movements.

Regular Social Interaction

Participants of the current study identified socialization as a key element of their involvement in Aquafit. Regular socialization, the first of the two subthemes, centered around everyday interactions in the pool, changing rooms, and coffee outings after classes. For the four study participants who made friendships with other attendees, seeing their friends in the pool and having coffee were staples of their social life. This regular socialization made participants feel better about themselves, feeling that they had an active social life. Paula spoke of her tendency to chat during class, saying, “[other attendees] say, ‘you don’t come to exercise, you come to talk!’ I said, ‘yes, I gotta exercise my tongue too’... we have a ball.” Susan shared that her area of the pool was a talkative one. Dianne disagreed with instructors who discouraged talking in the pool, as she believed that socialization was equally important as exercise.

Two participants of the current study expressed that they did not seek out friendship during Aquafit classes. Robert was the one male participant in the current study, was one of the two participants who did not have close social bonds with other attendees. He stressed that his lack of

close friendships was not due to a dislike of people, sharing, “I do know a number of them, and I speak to people... But it’s not a social event for me, as it is for some. I hold nothing against [them].” He stated two reasons for not pursuing friendships with other attendees: his hearing and being one of the only, if not the sole man, in the pool on any given day. One finding in a previous qualitative study on a social program for older adults that contained group exercise reported that low male attendance was a barrier to participation (Weselman et al., 2023). The second of these two participants was simply uninterested in expanding her social circle, as her focus was on PA, but enjoyed hearing the conversations in the changing rooms and the pool.

Community and Social Support

The four aforementioned participants who socialized within their Aquafit circle reported more than passing conversations and small talk over coffee. Rather, they formed close-knit bonds within a larger Aquafit community that offered social support to those who needed it most. The second subtheme was community and social support, which was generated based on statements made by the four participants who formed social bonds with fellow attendees. Surprisingly, these tight social circles were often formed relatively quickly. New Aquafit attendees interested in pursuing friendships would be welcomed with open arms, often during their first class. If someone did not show up to a class they normally attended without prior explanation, concerned friends would send messages and make phone calls to check in and ensure all was well. Standing by one another through surgeries, health problems, and losses allowed members of these friend groups to feel supported through all of life’s trials.

Additional research exploring social benefits from community exercise programs is necessary to compare the current study's findings properly. Still, even the limited knowledge currently available expressed similar findings. Socialization has consistently been reported as a

benefit of attending aquatic exercise classes and other group fitness programs (Fisken, Keogh, et al., 2015; Maher et al., 2015). In this study and a qualitative study about group exercise programs by Killingback et al. (2017), study participants understood that regardless of their personal stance on chatting during classes and friendship, every person had their own motivation for attending the classes. Similarly, even the two participants of the current study who did not make friendships with other participants understood the importance of socialization for other attendees. One of these participants stressed that for some people, socialization related to Aquafit may be the highlight of their day and, therefore reported being unbothered by chatting during class.

Strengths and Limitations

One strength of the study was having multiple study sites. It allowed for a more diverse sample and the ability to explore organizational differences (Flynn, 2009). Another strength lay in the gaps this research study addresses. One gap identified in the literature review was the limited amount of research concerning older adults' use of community recreation services. By focusing on aquatic exercise within the context of community recreation, new information on how older adults interact with these programs and facilities could be presented. Further, most research on aquatic PA is quantitative in a clinical, rehabilitative, or exercise physiology context (e.g., Ariyoshi et al., 1999; Cadmus et al., 2010; Dundar et al., 2009). This qualitative study focuses on telling participants' stories about Aquafit participation in a community context.

One limitation is the impact of participant bias. Participating in recreation programming generally requires sufficient physical resources and discretionary income to afford transportation and program costs weekly, reducing the likelihood of low-income individuals consistently participating (Petersen et al., 2021). Another limitation is unequal gender representation; specifically, Aquafit classes tend to be attended primarily by women (Farinha et al., 2021). Five

of the six study participants were women. When attending Aquafit classes offered by the three organizations, only one or two men will typically participate. The one male participant stated that he was often the only man in attendance at any given class. Finally, it is important to note that I am entering this study with one major assumption: I assumed that participants were providing all relevant information about their experience with Aquafit. However, there may have been relevant information that study participants was not clearly in the memory of the participant at the time of the interview or was not perceived to be of sufficient importance by the participant.

Another limitation was that responses to the question on the participants' mood after an Aquafit class were often brief. In these instances, participants were prompted for more information. However, when participants answered this question, it was often related to the social elements of their participation. Follow-up questions consistently elicited statements pertaining to improved mood after Aquafit class participation, although these statements were often worded concisely.

Recommendations

While the current study focused on exploring the lived experiences of Aquafit participants, organizational comments provided by participants of this study highlighted some areas where community recreation organizations could adopt additional practices to better meet the needs of program participants. Based on comments made by the six study participants, the following recommendations emerged from exploring lived experiences: separate deep and shallow water programs into separate classes where possible, keep classes affordable to older adults, and enhance communication between management and program participants. Gaps in the literature that were highlighted through the findings of the current study have led to recommendations for future research.

Recommendations for Community Recreation Practice

One comment about program costs from a participant in the qualitative study by Fiskien, Keogh, et al. (2015) suggested that seniors pay a reduced rate for class passes. Another method of ensuring that Aquafit classes are affordable to the older adults who could benefit from them is subsidies. Fortunately, there are subsidy options in the city in which the current study took place. However, many older adults are not aware of them. Recreation facilities may wish to inform organizations working with and advocating for the older adult population of these subsidies. This may alleviate the financial barrier of Aquafit participation and encourage additional older adults to participate in a beneficial program.

To encourage feedback among the population of Aquafit attendees in each organization, management may wish to design and distribute anonymous questionnaires. Questionnaires should have a mixture of quantitative (e.g., scale) and qualitative (e.g., comment boxes) items. Scales may be used to gauge how participants feel about issues already known by the organization. Comment boxes could be utilized for two purposes: to allow elaboration on scale items and to allow participants to raise concerns not listed in the questionnaire.

Recommendations for Future Research

Persistent gaps in the literature and aspects of the current study that require additional support prompted recommendations for future research. There continues to be a need for additional qualitative accounts of Aquafit participation. The lived experiences of those who engage in community aquatic exercise programming contain a considerable amount of valuable knowledge, from details on its use as a pain management strategy to social aspects of participation and common comments that may be used to improve programming.

One recommendation for future research comes from a noticeable difference between a previous study on group fitness by Graupensperger et al. (2019) and the current study. This difference concerns collective social identity. Graupensperger et al. (2019) specifically investigated group identity and concluded that when a group of exercisers feels like a collective, this may become an aspect of participants' social identity. It should be clearly stated that the current study did not investigate this phenomenon, and participants did not explicitly mention it. Still, it is possible that, if a future phenomenological study on community Aquafit is conducted, social identity, and the sense of the collective "Aquafit family" be investigated, and its role on identity.

Additional studies that specifically focus on community aquatic exercise programs may complement existing literature encompassing various therapeutic aquatic interventions. Given that no existing studies explore Aquafit as an SOC strategy, and the current study did not test this framework, one major recommendation for future research is to fill this knowledge gap. The use of aquatic exercise as a SOC strategy is an area where empirical support and qualitative accounts are necessary to broaden our understanding of both the SOC model and the benefits of Aquafit. Qualitative accounts telling stories of aquatic exercise participation generate new knowledge on how participants' lives are altered through their involvement in the classes. Specific investigation into participants use of selection, optimization, and compensation strategies using mixed method approaches may allow participants to clarify whether they are intentionally using such strategies to remain active and age successfully.

While the current study was qualitative, future research exploring Aquafit in the context of community recreation should use both quantitative and qualitative approaches to maximize the knowledge gained. Such knowledge can serve not only to improve future programming, but also

to show possible benefits of community-based Aquafit that may be useful to primary care practitioners who recommend PA to their clients. One final recommendation for future research is to explore the role distraction plays in mitigating chronic pain symptoms during classes, as this is an area with limited research to date. While the focus of the current study was on exploring experiences with attending Aquafit programming, statements made by participants suggest there is a need for future studies focusing specifically on the role of distraction in managing chronic pain symptoms.

Conclusion

This study demonstrated many outcomes of community Aquafit participation for older adults living with chronic pain in St. John's, Newfoundland and Labrador. Aquafit participation gave participants more than pain management and distraction from symptoms; it also gave them a group of like-minded individuals of similar ages and experiences. Aquafit gave participants a circle of friends to laugh with, celebrate holidays and birthdays with, mourn losses with, confide in during tough times, and lean on for companionship, advice, and support. For one hour, two to five times each week, participants had an escape from their pain and other worries. Upon entering the water, their troubles would temporarily fade away as the music played, sharing laughter and conversation throughout the hour.

While such experiences have been explored in past research (e.g., Fiskien, Keogh, et al., 2015; Weinstein, 1986) and a local journalistic piece by Elgayar (2022) written about aquatic programming at one of the study sites, there is nonetheless still a need to explore lived experiences of Aquafit participation. In conducting such research, the findings of this study should remind researchers that maximizing quality of life is about more than pain reduction, but all of the unique benefits community Aquafit programs provide to participants: fun, friendship,

and improved physical fitness in daily living. According to participants in the current study, all of these benefits made life worth living in challenging times, allowing individuals who may have otherwise lacked the social support and repertoire of pain management techniques that keep them active and well.

References

Abadi, F. H., Elumalai, G., Sankaraval, M., & Mohd Ramli, F. A. B. (2017). Effects of aqua-aerobic exercise on the cardiovascular fitness and weight loss among obese students.

International Journal of Physiotherapy, 4(5), 278-283.

<https://doi.org/10.15621/ijphy/2017/v4i5/159422>

Abadi, F. H., Sankaravel, M., Zainuddin, F., Elumalai, G., Ai Choo, L., & Sattari, H. (2020). A perspective on water properties and aquatic exercise for older adults. *International*

Journal of Aging Health and Movement, 2(2), 1-10.

<http://www.ijahm.com/index.php/IJAHM/article/view/15>

Abadi, F. H., Sankaravel, M., Zainuddin, F., Elumalai, G., & Razli, A. I. (2019). The effect of aquatic exercise program on low-back pain disability in obese women. *Journal of*

Exercise Rehabilitation, 15(6), 855-860. <https://doi.org/10.12965/jer.1938688.344>

Abery, B. (2003). Social inclusion through recreation: What's the connection? *Impact*, 16(2).

<https://publications.ici.umn.edu/impact/16-2/social-inclusion-through-recreation-whats-the-connection>

Ainsworth, B. E., Haskell, W. L., Herrmann, S. D., Meckes, N., Bassett, D. R., Tudor-Locke, C., Greer, J. L., Vezina, J., Whitt-Glover, M. C., & Leon, A. S. (2011). 2011 Compendium of

Physical Activities: A second update of codes and MET values. *Medicine & Science in Sports & Exercise*, 43(8), 1575-1581. <https://doi.org/10.1249/MSS.0b013e31821ece12>

Albarracín, D., & Wyer, R. S., Jr. (2000). The cognitive impact of past behavior: Influences on beliefs, attitudes, and future behavioral decisions. *Journal of Personality and Social*

Psychology, 79(1), 5-22. <https://doi.org/10.1037//0022-3514.79.1.5>

Alemzadeh-Ansari, M. J., Ansari-Ramandi, M. M., & Naderi, N. (2017). Chronic pain in chronic heart failure: A review article. *J Tehran Heart Cent*, *12*(2), 49-56.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5558055/>

American Geriatrics Society. (2002). The management of persistent pain in older persons. *Journal of the American Geriatrics Society*, *50*(6), 205-224.

<https://doi.org/https://doi.org/10.1046/j.1532-5415.50.6s.1.x>

Aquatic Exercise Association. (2018). *Aquatic fitness professional manual* (7th ed.). Human Kinetics.

Ariyoshi, M., Sonoda, K., Nagata, K., Mashima, T., Zenmyo, M., Paku, C., Takamiya, Y., Yoshimatsu, H., Hirai, Y., Yasunaga, H., Akashi, H., Imayama, H., Shimokobe, T., Inoue, A., & Mutoh, Y. (1999). Efficacy of aquatic exercises for patients with low-back pain. *The Kurume Medical Journal*, *46*(2), 91-96.

<https://doi.org/10.2739/kurumemedj.46.91>

Ashe, M. C., Miller, W. C., Eng, J. J., & Noreau, L. (2009). Older adults, chronic disease and leisure-time physical activity. *Gerontology*, *55*(1), 64-72.

<https://doi.org/10.1159/000141518>

Assis, M. R., Silva, L. E., Alves, A. M. B., Pessanha, A. P., Valim, V., Feldman, D., Barros Neto, T. L. d., & Natour, J. (2006). A randomized controlled trial of deep water running: Clinical effectiveness of aquatic exercise to treat fibromyalgia. *Arthritis Care & Research*, *55*(1), 57-65. <https://doi.org/https://doi.org/10.1002/art.21693>

Bailey, J. (2008). First steps in qualitative data analysis: Transcribing. *Family Practice*, *25*(2), 127-131. <https://doi.org/10.1093/fampra/cmn003>

- Balogun, S., Scott, D., Cicuttini, F., Jones, G., & Aitken, D. (2020). Longitudinal study of the relationship between physical activity and knee pain and functional limitation in community-dwelling older adults. *Archives of Gerontology and Geriatrics, 90*, 104101. <https://doi.org/10.1016/j.archger.2020.104101>
- Baltes, M. M., & Lang, F. R. (1997). Everyday functioning and successful aging: The impact of resources. *Psychology and Aging, 12*(3), 433-443. <https://doi.org/10.1037/0882-7974.12.3.433>
- Baltes, P. B., & Baltes, M. M. (1990). Psychological perspectives on successful aging: The model of selective optimization with compensation. In *Successful aging: Perspectives from the behavioral sciences* (Vol. 4, pp. 1-34). Cambridge University Press. <https://doi.org/10.1017/CBO9780511665684.003>
- Baltes, P. B., Staudinger, U. M., & Lindenberger, U. (1999). Lifespan psychology: Theory and application to intellectual functioning. *Annual Review of Psychology, 50*, 471-507. <https://doi.org/10.1146/annurev.psych.50.1.471>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W.H. Freeman and Company.
- Bartels, E. M., Juhl, C. B., Christensen, R., Hagen, K. B., Danneskiold-Samsøe, B., Dagfinrud, H., & Lund, H. (2016). Aquatic exercise for the treatment of knee and hip osteoarthritis. *Cochrane Database of Systematic Reviews, 3*(3), Cd005523. <https://doi.org/10.1002/14651858.CD005523.pub3>
- Bartholomew, T. T., Joy, E. E., Kang, E., & Brown, J. (2021). A choir or cacophony? Sample sizes and quality of conveying participants' voices in phenomenological research. *Methodological Innovations, 14*(2), 20597991211040063. <https://doi.org/10.1177/20597991211040063>

- Bean, J. F., Vora, A., & Frontera, W. R. (2004). Benefits of exercise for community-dwelling older adults. *Archives of Physical Medicine and Rehabilitation*, 85, 31-42.
<https://doi.org/10.1016/j.apmr.2004.03.010>
- Beck, K. L., Weeks, L. E., Montelpare, W. J., & MacDonald, D. J. (2016). Identifying important factors for older adults' physical activity participation across individual/group, structured/unstructured contexts. *European Journal of Ageing*, 13(3), 209-218.
<https://doi.org/10.1007/s10433-016-0376-1>
- Becker, B. E. (2009). Aquatic therapy: Scientific foundations and clinical rehabilitation applications. *Physical Medicine and Rehabilitation*, 1(9), 859-872.
<https://doi.org/10.1016/j.pmrj.2009.05.017>
- Benedetti, T. R. B., Borges, L. J., Petroski, E. L., & Gonçalves, L. H. T. (2008). Physical activity and mental health status among elderly people. *Revista de Saúde Pública*, 42.
<https://pubmed.ncbi.nlm.nih.gov/18327498/>
- Bergamin, M., Ermolao, A., Tolomio, S., Berton, L., Sergi, G., & Zaccaria, M. (2013). Water-versus land-based exercise in elderly subjects: effects on physical performance and body composition. *Clinical Interventions in Aging*, 8, 1109-1117.
<https://doi.org/10.2147/cia.S44198>
- Bernard, H. R. (2006). *Research methods in anthropology: Qualitative and quantitative approaches* (4th ed.). AltaMira Press.
- Bethancourt, H. J., Rosenberg, D. E., Beatty, T., & Arterburn, D. E. (2014). Barriers to and facilitators of physical activity program use among older adults. *Clinical Medicine & Research*, 12(1-2), 10-20. <https://doi.org/10.3121/cm.2013.1171>

- Bidonde, J., Busch, A. J., Webber, S. C., Schachter, C. L., Danyliw, A., Overend, T. J., Richards, R. S., & Rader, T. (2014). Aquatic exercise training for fibromyalgia. *Cochrane Database of Systematic Reviews*(10), Cd011336.
<https://doi.org/10.1002/14651858.Cd011336>
- Bielec, G., Kwasna, A., & Gaworska, P. (2017). The influence of aqua power aerobics on body mass reduction in middle-aged, overweight women. *Turkish Journal of Physical Medicine and Rehabilitation*, 63(4), 293-298. <https://doi.org/10.5606/tftrd.2017.853>
- Bigatti, S. M., Hernandez, A. M., Cronan, T. A., & Rand, K. L. (2008). Sleep disturbances in fibromyalgia syndrome: Relationship to pain and depression. *Arthritis & Rheumatology*, 59(7), 961-967. <https://doi.org/10.1002/art.23828>
- Bishwajit, G., Tang, S., Yaya, S., & Feng, Z. (2017). Participation in physical activity and back pain among an elderly population in South Asia. *Journal of Pain Research*, 10, 905-913.
<https://doi.org/10.2147/JPR.S133013>
- Bocalini, D. S., Serra, A. J., Murad, N., & Levy, R. F. (2008). Water- versus land-based exercise effects on physical fitness in older women. *Geriatrics & Gerontology International*, 8(4), 265-271. <https://doi.org/10.1111/j.1447-0594.2008.00485.x>
- Booth, M. L., Bauman, A., Owen, N., & Gore, C. J. (1997). Physical activity preferences, preferred sources of assistance, and perceived barriers to increased activity among physically inactive Australians. *Preventive Medicine*, 26(1), 131-137.
<https://doi.org/https://doi.org/10.1006/pmed.1996.9982>
- Borhade, M. B., & Singh, S. (2022). Diabetes and exercise. In *StatPearls*.

- Boutevillain, L., Dupeyron, A., Rouch, C., Richard, E., & Coudeyre, E. (2017). Facilitators and barriers to physical activity in people with chronic low back pain: A qualitative study. *PLoS ONE*, *12*(7), e0179826. <https://doi.org/10.1371/journal.pone.0179826>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, *11*(4), 589-597. <https://doi.org/10.1080/2159676X.2019.1628806>
- Brinkmann, S. (2020). Unstructured and semistructured interviewing. In P. Leavy (Ed.), *The Oxford handbook of qualitative research* (2nd ed., pp. 424-456). Oxford University Press.
- Broach, E., & Dattilo, J. (1996). Aquatic therapy: A viable therapeutic recreation intervention. *Therapeutic Recreation Journal*, *30*(3), 213-229. <https://js.sagamorepub.com/trj/article/view/1204>
- Cadmus, L., Patrick, M. B., Maciejewski, M. L., Topolski, T., Belza, B., & Patrick, D. L. (2010). Community-based aquatic exercise and quality of life in persons with osteoarthritis. *Medicine & Science in Sports & Exercise*, *42*(1), 8-15. <https://doi.org/10.1249/MSS.0b013e3181ae96a9>
- Canadian Mental Health Association. (2018). *Social support*. <https://cmha.ca/brochure/social-support/>
- Canadian Society of Exercise Physiology. (2021). *Canadian 24-hour movement guidelines for adults aged 65 years and older: An integration of physical activity, sedentary behaviour, and sleep*. <https://csepguidelines.ca/guidelines/adults-65/>

Carlson, J. A., Sallis, J. F., Conway, T. L., Saelens, B. E., Frank, L. D., Kerr, J., Cain, K. L., & King, A. C. (2012). Interactions between psychosocial and built environment factors in explaining older adults' physical activity. *Preventative Medicine, 54*(1), 68-73.

<https://doi.org/10.1016/j.ypmed.2011.10.004>

Carta, M., Velluzzi, F., Monticone, M., Gonzalez, A., Minerba, L., Pau, M., Musu, M., Atzori, L., Ferreli, C., Cauli, A., Machado, S., Pintus, E., Fortin, D., Romano, F., Penna, M., Preti, A., & Cossu, G. (2022). Exercise improves the impact of chronic pain in older adults: Results of an RCT. *The Open Pain Journal, 15*.

<https://doi.org/10.2174/18763863-v15-e2202070>

Caspersen, C. J., Powell, K. E., & Christenson, G. M. (1985). Physical activity, exercise, and physical fitness: Definitions and distinctions for health-related research. *Public Health Reports, 100*(2), 126-131. <https://pmc.ncbi.nlm.nih.gov/articles/PMC1424733/>

Castro, M., Kraychete, D., Daltro, C., Lopes, J., Menezes, R., & Oliveira, I. (2009). Comorbid anxiety and depression disorders in patients with chronic pain. *Arq Neuropsiquiatr, 67*(4), 982-985. <https://doi.org/10.1590/s0004-282x2009000600004>

Chad, K. E., Reeder, B. A., Harrison, E. L., Ashworth, N. L., Sheppard, S. M., Schultz, S. L., Bruner, B. G., Fisher, K. L., & Lawson, J. A. (2005). Profile of physical activity levels in community-dwelling older adults. *Medicine & Science in Sports & Exercise, 37*(10), 1774-1784. <https://doi.org/10.1249/01.mss.0000181303.51937.9c>

Chen, D., Shen, J., Zhao, W., Wang, T., Han, L., Hamilton, J. L., & Im, H. J. (2017).

Osteoarthritis: Toward a comprehensive understanding of pathological mechanism. *Bone Research, 5*, 16044. <https://doi.org/10.1038/boneres.2016.44>

- Chodzko-Zajko, W. J., Proctor, D. N., Fiatarone Singh, M. A., Minson, C. T., Nigg, C. R., Salem, G. J., & Skinner, J. S. (2009). American College of Sports Medicine position stand: Exercise and physical activity for older adults. *Medicine & Science in Sports & Exercise*, 41(7), 1510-1530. <https://doi.org/10.1249/MSS.0b013e3181a0c95c>
- Choitz, P., Johnson, M. P., Berhane, Z., Lefever, G., Anderson, J. K., & Eiser, A. R. (2010). Urban fitness centers: Removing barriers to promote exercise in underserved communities. *Journal of Health Care for the Poor and Underserved*, 21(1), 221-228. <http://doi.org/10.1353/hpu.0.0239>
- Chung, K.-M., Ho, C.-H., Chen, Y.-C., Hsu, C.-C., Chiu, C.-C., Lin, H.-J., Wang, J.-J., & Huang, C.-C. (2020). Chronic pain increases the risk for major adverse cardiac and cerebrovascular events: A nationwide population-based study in Asia. *Pain Medicine*, 21(9), 1985-1990. <https://doi.org/10.1093/pm/pnaa107>
- City of North Vancouver. (2020). *A healthy city for all: The role of community recreation*. <https://www.cnv.org/Parks-Recreation/recreation/community-recreation-strategy#:~:text=The%20City's%20vision%20is%20to,their%20community%20throughout%20their%20life>.
- City of St. John's. (2022). *Financial support programs*. <https://www.stjohns.ca/en/recreation-culture/financial-support-programs.aspx>
- Codella, R., & Chirico, A. (2023). Physical inactivity and depression: The gloomy dual with rising costs in a large-scale emergency. *International journal of environmental research and public health*, 20(2). <https://doi.org/10.3390/ijerph20021603>

- Cohen-Mansfield, J., Marx, M. S., & Guralnik, J. M. (2003). Motivators and barriers to exercise in an older community-dwelling population. *Journal of Aging and Physical Activity*, *11*(2), 242-253. <https://doi.org/10.1123/japa.11.2.242>
- Costello, E., Kafchinski, M., Vrazel, J., & Sullivan, P. (2011). Motivators, barriers, and beliefs regarding physical activity in an older adult population. *Journal of Geriatric Physical Therapy*, *34*(3), 138-147. <https://doi.org/10.1519/JPT.0b013e31820e0e71>
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches*. SAGE Publications.
- Cruz-Ferreira, A., Fernandes, J., Laranjo, L., Bernardo, L. M., & Silva, A. (2011). A systematic review of the effects of pilates method of exercise in healthy people. *Archives of Physical Medicine and Rehabilitation*, *92*(12), 2071-2081. <https://doi.org/10.1016/j.apmr.2011.06.018>
- Cunningham, C., R, O. S., Caserotti, P., & Tully, M. A. (2020). Consequences of physical inactivity in older adults: A systematic review of reviews and meta-analyses. *Scandinavian Journal of Medicine & Science in Sports*, *30*(5), 816-827. <https://doi.org/10.1111/sms.13616>
- da Silva, L. A. D., Tortelli, L., Motta, J., Menguer, L., Mariano, S., Tasca, G., Silveira, G. B., Pinho, R. A., & Silveira, P. C. L. (2019). Effects of aquatic exercise on mental health, functional autonomy and oxidative stress in depressed elderly individuals: A randomized clinical trial. *Clinics*, *74*, 322. <https://doi.org/10.6061/clinics/2019/e322>
- Dagnino, A. P. A., & Campos, M. M. (2022). Chronic pain in the elderly: Mechanisms and perspectives [Review]. *Frontiers in Human Neuroscience*, *16*. <https://doi.org/10.3389/fnhum.2022.736688>

- Davis, T. J., Hevel, D. J., Dunton, G. F., & Maher, J. P. (2023). Bidirectional associations between physical activity and pain among older adults: An ecological momentary assessment study. *Journal of Aging and Physical Activity, 31*(2), 240-248.
<https://doi.org/10.1123/japa.2022-0014>
- de Vries, N. M., van Ravensberg, C. D., Hobbelen, J. S. M., Olde Rikkert, M. G. M., Staal, J. B., & Nijhuis-van der Sanden, M. W. G. (2012). Effects of physical exercise therapy on mobility, physical functioning, physical activity and quality of life in community-dwelling older adults with impaired mobility, physical disability and/or multi-morbidity: A meta-analysis. *Ageing Research Reviews, 11*(1), 136-149.
<https://doi.org/https://doi.org/10.1016/j.arr.2011.11.002>
- DeGraaf, D. G., Jordan, D. J., & DeGraaf, K. H. (2010). *Programming for parks, recreation, and leisure services: A servant leadership approach* (3rd ed.). Venture Publishing.
- Desai, G., Jaisoorya, T., S., Sunil Kumar, G., Manoj, L., Gokul, G. R., Bajaj, A., Thennarasu, K., & Chaturvedi, S. K. (2020). Disentangling comorbidity in chronic pain: A study in primary health care settings from India. *PLoS ONE, 15*(11), e0242865.
<https://doi.org/10.1371/journal.pone.0242865>
- Dhurup, M. (2012). Perceived constraints to leisure-time activity among the elderly. *South African Journal for Research in Sport, Physical Education and Recreation, 34*(1), 57-74.
<https://www.ajol.info/index.php/sajrs/article/view/76871?>
- Dowling, M. (2006). Approaches to reflexivity in qualitative research. *Nurse Researcher, 13*(3), 7-21. <https://doi.org/10.7748/nr2006.04.13.3.7.e5975>

- Dundar, U., Solak, O., Yigit, I., Evcik, D., & Kavuncu, V. (2009). Clinical effectiveness of aquatic exercise to treat chronic low back pain: A randomized controlled trial. *SPINE*, 34(14), 1436-1440. <https://doi.org/10.1097/BRS.0b013e3181a79618>
- Edwards, R., & Holland, J. (2013). *What is qualitative interviewing?* (1st ed.). Bloomsbury Academic. <https://doi.org/10.5040/9781472545244>
- Elgayar, A. (2022). Splish, splash, these seniors are having a laugh! Meet the aquafit class that's one big swim family. <https://www.cbc.ca/news/canada/newfoundland-labrador/seniors-aquafit-class-ymca-swim-family-1.6644724>
- Elliott, A. M., Smith, B. H., Penny, K. I., Smith, W. C. S., & Chambers, W. A. (1999). The epidemiology of chronic pain in the community. *The Lancet*, 354(9186), 1248-1252. [https://doi.org/10.1016/S0140-6736\(99\)03057-3](https://doi.org/10.1016/S0140-6736(99)03057-3)
- Etikan, I. (2017). Sampling and sampling methods. *Biometrics & Biostatistics International Journal*, 5(6), 215-217. <https://doi.org/10.15406/bbij.2017.05.00149>
- Farinha, C., Teixeira, A. M., Serrano, J., Santos, H., Campos, M. J., Oliveiros, B., Silva, F. M., Cascante-Rusenhack, M., Luís, P., & Ferreira, J. P. (2021). Impact of different aquatic exercise programs on body composition, functional fitness and cognitive function of non-institutionalized elderly adults: A randomized controlled trial. *International journal of environmental research and public health*, 18(17), 8963. <https://doi.org/10.3390/ijerph18178963>
- Fisken, A., Keogh, J. W., Waters, D. L., & Hing, W. A. (2015). Perceived benefits, motives, and barriers to aqua-based exercise among older adults with and without osteoarthritis. *Journal of Applied Gerontology*, 34(3), 377-396. <https://doi.org/10.1177/0733464812463431>

- Fisken, A., Waters, D. L., Hing, W. A., Steele, M., & Keogh, J. W. (2014). Perception and responses to different forms of aqua-based exercise among older adults with osteoarthritis. *International Journal of Aquatic Research and Education*, 8(1), 32-52. <https://doi.org/10.1123/ijare.2013-0007>
- Fisken, A., Waters, D. L., Hing, W. A., Steele, M., & Keogh, J. W. (2015). Comparative effects of 2 aqua exercise programs on physical function, balance, and perceived quality of life in older adults with osteoarthritis. *Journal of Geriatric Physical Therapy*, 38(1), 17-27. <https://doi.org/10.1519/jpt.0000000000000019>
- Flynn, L. (2009). The benefits and challenges of multisite studies. *American Association of Critical-Care Nurses Advanced Critical Care*, 20, 388-391. <https://doi.org/http://dx.doi.org/10.1097/NCI.0b013e3181ac228a>
- Foley, H. E., Knight, J. C., Ploughman, M., Asghari, S., & Audas, R. (2021). Association of chronic pain with comorbidities and health care utilization: A retrospective cohort study using health administrative data. *Pain*, 162(11), 2737-2749. <https://doi.org/10.1097/j.pain.0000000000002264>
- Franco, M. R., Tong, A., Howard, K., Sherrington, C., Ferreira, P. H., Pinto, R. Z., & Ferreira, M. L. (2015). Older people's perspectives on participation in physical activity: A systematic review and thematic synthesis of qualitative literature. *British Journal of Sports Medicine*, 49(19), 1268-1276. <https://doi.org/10.1136/bjsports-2014-094015>
- Fransen, M., Nairn, L., Winstanley, J., Lam, P., & Edmonds, J. (2007). Physical activity for osteoarthritis management: A randomized controlled clinical trial evaluating hydrotherapy or t'ai chi classes. *Arthritis Care & Research*, 57(3), 407-414. <https://doi.org/https://doi.org/10.1002/art.22621>

- Freund, A. M., & Baltes, P. B. (1998). Selection, optimization, and compensation as strategies of life management: Correlations with subjective indicators of successful aging. *Psychology and Aging, 13*(4), 531-543. <https://doi.org/10.1037/0882-7974.13.4.531>
- Freund, A. M., & Baltes, P. B. (2002). Life-management strategies of selection, optimization, and compensation: Measurement by self-report and construct validity. *Journal of Personality and Social Psychology, 82*(4), 642-662. <https://doi.org/10.1037/0022-3514.82.4.642>
- Frye, S. K., Ogonowska-Slodownik, A., & Geigle, P. R. (2017). Aquatic exercise for people with spinal cord injury. *Archives of Physical Medicine and Rehabilitation, 98*(1), 195-197. <https://doi.org/10.1016/j.apmr.2016.07.010>
- Gagliese, L., & Melzack, R. (1997). Chronic pain in elderly people. *Pain, 70*(1), 3-14. [https://doi.org/10.1016/s0304-3959\(96\)03266-6](https://doi.org/10.1016/s0304-3959(96)03266-6)
- Galloza, J., Castillo, B., & Micheo, W. (2017). Benefits of exercise in the older population. *Physical Medicine and Rehabilitation Clinics of North America, 28*(4), 659-669. <https://doi.org/10.1016/j.pmr.2017.06.001>
- Geneen, L. J., Moore, R. A., Clarke, C., Martin, D., Colvin, L. A., & Smith, B. H. (2017). Physical activity and exercise for chronic pain in adults: An overview of Cochrane Reviews. *Cochrane Database of Systematic Reviews, 4*(4), Cd011279. <https://doi.org/10.1002/14651858.CD011279.pub3>
- Geniusas, S. (2020). *The phenomenology of pain* (1st ed., Vol. 53). Ohio University Press. <https://doi.org/10.2307/j.ctv224twdv>

Gomez-Arguelles, J. M., Moreno-Zazo, M., & Maestu, C. (2022). Characterizing fibromyalgia flares: A prospective observational study. *Reumatologia*, 60(4), 242-246.

<https://doi.org/https://doi.org/10.5114/reum.2022.118677>

Gonzalez, L. (2017, April 17). Water aerobics keeps seniors moving & provides therapeutic benefits. *CBS News Miami*. <https://www.cbsnews.com/miami/news/water-aerobics-keeps-seniors-moving-provides-therapeutic-benefits/>

Government of Canada. (2016). *What is the difference between a registered charity and a non-profit organization?* Retrieved from <https://www.canada.ca/en/revenue-agency/services/charities-giving/giving-charity-information-donors/about-registered-charities/what-difference-between-a-registered-charity-a-non-profit-organization.html>

Graupensperger, S., Gottschall, J. S., Benson, A. J., Eys, M., Hastings, B., & Evans, M. B. (2019). Perceptions of groupness during fitness classes positively predict recalled perceptions of exertion, enjoyment, and affective valence: An intensive longitudinal investigation. *Sport, Exercise, and Performance Psychology*, 8(3), 290-304.

<https://doi.org/10.1037/spy0000157>

Gravelle, F., Paré, C., & Laurencelle, L. (1997). Attitude and enduring involvement of older adults in structured programs of physical activity. *Perceptual and Motor Skills*, 85(1), 67-

71. <https://doi.org/10.2466/pms.1997.85.1.67>

Griffin, J., B., Jr. (1990). Anxiety. In H. K. Walker, W. D. Hall, & J. W. Hurst (Eds.), *Clinical methods: The history, physical, and laboratory examinations* (3rd ed., pp. 913-914).

Butterworths. <https://www.ncbi.nlm.nih.gov/books/NBK315/>

- Hamedanchi, A., Zanjari, N., Khankeh, H. R., & Momtaz, Y. A. (2021). Phenomenology in gerontology: From philosophy to method. *Current Psychiatry Research and Reviews*, 17(4), 220-230. <https://doi.org/10.2174/2666082217666211105091239>
- Hanson, A. (2017). Negative case analysis. In J. Matthes, C. S. Davis, & R. F. Potter (Eds.), *The international encyclopedia of communication research methods*. John Wiley & Sons. <https://doi.org/https://doi.org/10.1002/9781118901731.iecrm0165>
- Häuser, W., & Fitzcharles, M. A. (2018). Facts and myths pertaining to fibromyalgia. *Dialogues in Clinical Neuroscience*, 20(1), 53-62. <https://doi.org/10.31887/DCNS.2018.20.1/whauser>
- Health Canada. (2021). *Canadian Pain Task Force report: March 2021*. Retrieved from <https://www.canada.ca/en/health-canada/corporate/about-health-canada/public-engagement/external-advisory-bodies/canadian-pain-task-force/report-2021.html>
- Henry, G. T. (1990). *Practical sampling* (Vol. 21). Sage Publications.
- Hewitt, J. (2007). Ethical components of researcher researched relationships in qualitative interviewing. *Qualitative Health Research*, 17(8), 1149-1159. <https://doi.org/10.1177/1049732307308305>
- Hickerson, B., Moore, A., Oakleaf, L., Edwards, M., James, P. A., Swanson, J., & A.Henderson, K. (2008). The role of a senior center in promoting physical activity for older adults. *Journal of Park & Recreation Administration*, 26(1), 22-39. <https://js.sagamorepub.com/index.php/jpra/article/view/1332>
- Hinman, R. S., Heywood, S. E., & Day, A. R. (2007). Aquatic physical therapy for hip and knee osteoarthritis: Results of a single-blind randomized controlled trial. *Physical Therapy*, 87(1), 32-43. <https://doi.org/10.2522/ptj.20060006>

Holland, S. K., Greenberg, J., Tidwell, L., Malone, J., Mullan, J., & Newcomer, R. (2005).

Community-based health coaching, exercise, and health service utilization. *Journal of Aging and Health*, 17(6), 697-716. <https://doi.org/10.1177/0898264305277959>

Holmes, A. G. D. (2020). Researcher positionality - a consideration of its influence and place in qualitative research - a new researcher guide. *Shanlax International Journal of Education*, 8(4), 1-10. <https://eric.ed.gov/?id=EJ1268044>

Huguet, A., Stinson, J. N., & McGrath, P. J. (2010). Measurement of self-reported pain intensity in children and adolescents. *Journal of Psychosomatic Research*, 68(4), 329-336. <https://doi.org/https://doi.org/10.1016/j.jpsychores.2009.06.003>

Hutchinson, S. L., & Warner, G. (2014). Older adults' use of SOC strategies for leisure participation following an acute health event: Implications for recreation service delivery. *Journal of Park & Recreation Administration*, 32(1), 80-95. <https://js.sagamorepub.com/index.php/jpra/article/view/3006>

Hutzler, Y., & Sherrill, C. (2007). Defining adapted physical activity: International perspectives. *Adapted physical activity quarterly*, 24(1), 1-20. <https://doi.org/10.1123/apaq.24.1.1>

Hwang, J., Wang, L., Siever, J., Medico, T. D., & Jones, C. A. (2019). Loneliness and social isolation among older adults in a community exercise program: A qualitative study. *Aging & Mental Health*, 23(6), 736-742. <https://doi.org/10.1080/13607863.2018.1450835>

Irandoost, K., & Taheri, M. (2015). The effects of aquatic exercise on body composition and nonspecific low back pain in elderly males. *Journal of Physical Therapy Science*, 27(2), 433-435. <https://doi.org/10.1589/jpts.27.433>

- Jahan, F., Nanji, K., Qidwai, W., & Qasim, R. (2012). Fibromyalgia syndrome: An overview of pathophysiology, diagnosis and management. *Oman Medical Journal*, 27(3), 192-195. <https://doi.org/10.5001/omj.2012.44>
- Jakobsson, U., Klevsgård, R., Westergren, A., & Hallberg, I. R. (2003). Old people in pain: A comparative study. *Journal of Pain and Symptom Management*, 26(1), 625-636. [https://doi.org/10.1016/s0885-3924\(03\)00145-3](https://doi.org/10.1016/s0885-3924(03)00145-3)
- Janke, M., Davey, A., & Kleiber, D. (2006). Modeling change in older adults' leisure activities. *Leisure Sciences*, 28(3), 285-303. <https://doi.org/10.1080/01490400600598145>
- Janssen, S. L., & Stube, J. E. (2014). Older adults' perceptions of physical activity: A qualitative study. *Occupational Therapy International*, 21(2), 53-62. <https://doi.org/10.1002/oti.1361>
- Jin, B., Lee, J., & Baumgartner, L. M. (2019). Perceptions of peer-led learning among older adults in a community-based aquatic exercise program. *Educational Gerontology*, 45(4), 297-308. <https://doi.org/10.1080/03601277.2019.1621435>
- Johnson, M., Putney, N., & Bengtson, V. (2005). The problem of theory in gerontology today. In *The Cambridge Handbook of Age and Ageing* (pp. 3-20). Cambridge University Press.
- Jones, I., Brown, L., & Holloway, I. (2013). Sampling. In I. Jones, L. Brown, & I. Holloway (Eds.), *Qualitative research in sport and physical activity* (pp. 35-44). Sage Publications. <https://doi.org/10.4135/9781473914995>
- Jopp, D., & Smith, J. (2006). Resources and life-management strategies as determinants of successful aging: On the protective effect of selection, optimization, and compensation. *Psychology and Aging*, 21(2), 253-265. <https://doi.org/https://doi.org/10.1037/0882-7974.21.2.253>

- Justine, M., Azizan, A., Hassan, V., Salleh, Z., & Manaf, D. (2013). Barriers to participation in physical activity and exercise among middle-aged and elderly individuals. *Singapore Medical Journal*, 54(10), 581-586. <http://dx.doi.org/10.11622/smedj.2013203>
- Kanter, J. W., Busch, A. M., Weeks, C. E., & Landes, S. J. (2008). The nature of clinical depression: Symptoms, syndromes, and behavior analysis. *The Behavior Analyst*, 31(1), 1-21. <https://doi.org/10.1007/bf03392158>
- Kantyka, J., Herman, D., Rocznik, R., & Kuba, L. (2015). Effects of aqua aerobics on body composition, body mass, lipid profile, and blood count in middle-aged sedentary women [journal article]. *Human Movement*, 16(1), 9-14. <https://doi.org/10.1515/humo-2015-0020>
- Katsura, Y., Yoshikawa, T., Ueda, S. Y., Usui, T., Sotobayashi, D., Nakao, H., Sakamoto, H., Okumoto, T., & Fujimoto, S. (2010). Effects of aquatic exercise training using water-resistance equipment in elderly. *European Journal of Applied Physiology*, 108(5), 957-964. <https://doi.org/10.1007/s00421-009-1306-0>
- Keenan, B. (2017). *Phenomenological approach utilizing semi-structured interviews: Do early career researchers feel they are practicing in an environment that values research?* <https://doi.org/10.4135/9781526419026>
- Kennedy, A. (2022). *A qualitative study on the aspects of accessibility and its impact on physical activity engagement of older adults in rural Newfoundland and Labrador* [Unpublished honours thesis, Memorial University of Newfoundland].
- Khasnabis, C., Heinicke Motsch, K., Achu, K., Al Jubah, K., Brodtkorb, S., Chervin, P., Coleridge, P., Davies, M., Deepak, S., Eklinth, K., Goerd, A., Greer, C., Heinicke-Motsch, K., Hooper, D., Ilagan, V. B., Jessup, N., Mulligan, D., Murray, B., Officer, A., . . . Lander, T. (2010). Community-based rehabilitation: CBR guidelines. In *WHO*

Guidelines Approved by the Guidelines Review Committee. World Health Organization.

<https://www.ncbi.nlm.nih.gov/books/NBK310940/>

Kieffer, H. S., Lehman, M. A., Veacock, D., & Korkuch, L. (2012). The effects of a short-term novel aquatic exercise program on functional strength and performance of older adults.

International Journal of Exercise Science, 5(4), 321-333.

<http://www.ncbi.nlm.nih.gov/pmc/articles/pmc4738878/>

Killingback, C., Tsofliou, F., & Clark, C. (2017). Older people's adherence to community-based group exercise programmes: a multiple-case study. *BMC Public Health*, 17(1), 115.

<https://doi.org/10.1186/s12889-017-4049-6>

Kim, S. B., & O'Sullivan, D. M. (2013). Effects of aqua aerobic therapy exercise for older adults on muscular strength, agility and balance to prevent falling during gait. *The Journal of Physical Therapy Science*, 25(8), 923-927.

<https://doi.org/10.1589/jpts.25.923>

King, A. C., Rejeski, W. J., & Buchner, D. M. (1998). Physical activity interventions targeting older adults. A critical review and recommendations. *American Journal of Preventive Medicine*, 15(4), 316-333.

[https://doi.org/10.1016/s0749-3797\(98\)00085-3](https://doi.org/10.1016/s0749-3797(98)00085-3)

Kleiber, D., McGuire, F. A., Aybar-Damali, B., & Norman, W. (2008). Having more by doing less: The paradox of leisure constraints in later life. *Journal of Leisure Research*, 40(3), 343-359.

<https://doi.org/10.1080/00222216.2008.11950144>

Komatsu, H., Yagasaki, K., Saito, Y., & Oguma, Y. (2017). Regular group exercise contributes to balanced health in older adults in Japan: A qualitative study. *BioMed Central Geriatrics*, 17(1), 190.

<https://doi.org/10.1186/s12877-017-0584-3>

Konlian, C. (1999). Aquatic therapy: Making a wave in the treatment of low back injuries.

Orthopaedic Nursing, 18(1), 11-18. [https://doi.org/10.1016/s1361-3111\(99\)80068-5](https://doi.org/10.1016/s1361-3111(99)80068-5)

- Krein, S. L., Heisler, M., Piette, J. D., Butchart, A., & Kerr, E. A. (2007). Overcoming the influence of chronic pain on older patients' difficulty with recommended self-management activities. *The Gerontologist*, *47*(1), 61-68.
<https://doi.org/10.1093/geront/47.1.61>
- Kvist, J., Ek, A., Sporrstedt, K., & Good, L. (2005). Fear of re-injury: A hindrance for returning to sports after anterior cruciate ligament reconstruction. *Knee Surgery, Sports Traumatology, Arthroscopy*, *13*(5), 393-397.
<https://doi.org/https://doi.org/10.1007/s00167-004-0591-8>
- Lampinen, P., Heikkinen, R. L., Kauppinen, M., & Heikkinen, E. (2006). Activity as a predictor of mental well-being among older adults. *Aging & Mental Health*, *10*(5), 454-466.
<https://doi.org/10.1080/13607860600640962>
- Landmark, T., Romundstad, P., Borchgrevink, P. C., Kaasa, S., & Dale, O. (2011). Associations between recreational exercise and chronic pain in the general population: Evidence from the HUNT 3 study. *Pain*, *152*(10), 2241-2247. <https://doi.org/10.1016/j.pain.2011.04.029>
- Langhammer, B., Bergland, A., & Rydwik, E. (2018). The importance of physical activity exercise among older people. *BioMed Research International*, *2018*, 7856823.
<https://doi.org/10.1155/2018/7856823>
- Larsson, C., Ekvall Hansson, E., Sundquist, K., & Jakobsson, U. (2016). Impact of pain characteristics and fear-avoidance beliefs on physical activity levels among older adults with chronic pain: A population-based, longitudinal study. *BMC Geriatrics*, *16*(1), 50.
<https://doi.org/10.1186/s12877-016-0224-3>
- Lee, T. L., Sherman, K. J., Hawkes, R. J., Phelan, E., & Turner, J. A. (2020). The benefits of t'ai chi for older adults with chronic back pain: A qualitative study. *The Journal of*

Alternative and Complementary Medicine, 26(6), 456-462.

<https://doi.org/10.1089/acm.2019.0455>

LeFort, S. M., & Hannah, T. E. (1994). Return to work following an aquafitness and muscle strengthening program for the low back injured. *Archives of Physical Medicine and Rehabilitation*, 75(11), 1247-1255. [https://doi.org/10.1016/0003-9993\(94\)90014-0](https://doi.org/10.1016/0003-9993(94)90014-0)

Lim, K., & Taylor, L. (2005). Factors associated with physical activity among older people—a population-based study. *Preventive Medicine*, 40(1), 33-40.

<https://doi.org/https://doi.org/10.1016/j.yjmed.2004.04.046>

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage Publications.

Lindsay Smith, G., Banting, L., Eime, R., O'Sullivan, G., & van Uffelen, J. G. Z. (2017). The association between social support and physical activity in older adults: A systematic review. *International Journal of Behavioral Nutrition and Physical Activity*, 14(1), 56.

<https://doi.org/10.1186/s12966-017-0509-8>

Loucks-Atkinson, A., & Mannell, R. C. (2007). Role of self-efficacy in the constraints negotiation process: The case of individuals with fibromyalgia syndrome. *Leisure Sciences*, 29(1), 19-36. <https://doi.org/10.1080/01490400600983313>

Ma, J., Zhang, T., Li, X., Chen, X., & Zhao, Q. (2022). Effects of aquatic physical therapy on clinical symptoms, physical function, and quality of life in patients with fibromyalgia: A systematic review and meta-analysis. *Physiotherapy Theory and Practice*, 1-19.

<https://doi.org/10.1080/09593985.2022.2119906>

Macera, C. A., Cavanaugh, A., & Bellettiere, J. (2017). State of the art review: Physical activity and older adults. *American Journal of Lifestyle Medicine*, 11(1), 42-57.

<https://doi.org/10.1177/1559827615571897>

- Magaldi, D., & Berler, M. (2020). Semi-structured Interviews. In V. Zeigler-Hill & T. K. Shackelford (Eds.), *Encyclopedia of personality and individual differences* (pp. 4825-4830). Springer International Publishing. https://doi.org/10.1007/978-3-319-24612-3_857
- Maher, J. P., Gottschall, J. S., & Conroy, D. E. (2015). Perceptions of the activity, the social climate, and the self during group exercise classes regulate intrinsic satisfaction [Original Research]. *Frontiers in psychology*, 6. <https://doi.org/10.3389/fpsyg.2015.01236>
- Makris, U. E., Higashi, R. T., Marks, E. G., Fraenkel, L., Sale, J. E. M., Gill, T. M., & Reid, M. C. (2015). Ageism, negative attitudes, and competing co-morbidities – why older adults may not seek care for restricting back pain: A qualitative study. *BMC Geriatrics*, 15(1), 39. <https://doi.org/10.1186/s12877-015-0042-z>
- Marcotte-Beaumier, G., Malivoire, B. L., Koerner, N., & Ovanessian, M. M. (2022). The role of overt and covert avoidance strategies in generalized anxiety disorder symptoms and fear of emotion [Article]. *Journal of Psychopathology & Behavioral Assessment*, 44(2), 344-352. <https://doi.org/10.1007/s10862-021-09929-5>
- Marsiske, M., Lang, F., Baltes, P., & Baltes, M. (1995). Selective optimization with compensation: Life-span perspectives on successful human development. In *Compensating for psychological deficits and declines: Managing losses and promoting gains* (pp. 35-79). Psychology Press.
- Martínez-Carbonell Guillamón, E., Burgess, L., Immins, T., Martínez-Almagro Andreo, A., & Wainwright, T. W. (2019). Does aquatic exercise improve commonly reported predisposing risk factors to falls within the elderly? A systematic review. *BMC Geriatrics*, 19(1), 52. <https://doi.org/10.1186/s12877-019-1065-7>
- Mayan, M. J. (2009). *Essentials of qualitative inquiry*. Routledge.

- McGrath, C., Palmgren, P. J., & Liljedahl, M. (2019). Twelve tips for conducting qualitative research interviews. *Medical Teacher, 41*(9), 1002-1006.
<https://doi.org/10.1080/0142159X.2018.1497149>
- McHugh, J. E., & Lawlor, B. A. (2012). Exercise and social support are associated with psychological distress outcomes in a population of community-dwelling older adults. *Journal of Health Psychology, 17*(6), 833-844.
<https://doi.org/10.1177/1359105311423861>
- Md Yusof, S. M., Shari, M., Idris, N., & Raja Hussain, R. N. J. (2018). Aqua zumba versus aqua jogging: Comparative effects on health parameters among obese middle age women. *Malaysian Journal of Movement, Health & Exercise, 7*.
<https://doi.org/10.15282/mohe.v7i2.224>
- Medley, M. L. (1980). Life satisfaction across four stages of adult life. *International Journal of Aging Human Development, 11*(3), 193-209. <https://doi.org/10.2190/d4lg-aljq-8850-gydv>
- Merleau-Ponty, M. (1962). *Phenomenology of perception*. Routledge.
- Molton, I. R., & Terrill, A. L. (2014). Overview of persistent pain in older adults. *American Psychologist, 69*(2), 197-207. <https://doi.org/10.1037/a0035794>
- Moran, M., Van Cauwenberg, J., Hercky-Linnewiel, R., Cerin, E., Deforche, B., & Plaut, P. (2014). Understanding the relationships between the physical environment and physical activity in older adults: A systematic review of qualitative studies. *The International Journal of Behavioral Nutrition and Physical Activity, 11*(1), 79-79.
<https://doi.org/10.1186/1479-5868-11-79>
- Moreira, N. B., da Silva, L. P., & Rodacki, A. L. F. (2020). Aquatic exercise improves functional capacity, perceptual aspects, and quality of life in older adults with musculoskeletal

- disorders and risk of falling: A randomized controlled trial. *Experimental Gerontology*, *142*, 111135. <https://doi.org/https://doi.org/10.1016/j.exger.2020.111135>
- Morse, J. (2006). Biased reflection: Principles of sampling and analysis in qualitative inquiry. In J. Popay (Ed.), *Moving beyond effectiveness in evidence synthesis*. National Institute for Health and Clinical Excellence.
- Morse, J. M. (2000). Determining sample size. *Qualitative Health Research*, *10*(1), 3-5. <https://doi.org/10.1177/104973200129118183>
- Munguía-Izquierdo, D., & Legaz-Arrese, A. (2008). Assessment of the effects of aquatic therapy on global symptomatology in patients with fibromyalgia syndrome: A randomized controlled trial. *Archives of Physical Medicine and Rehabilitation*, *89*(12), 2250-2257. <https://doi.org/10.1016/j.apmr.2008.03.026>
- Nadin, S., & Cassell, C. (2006). The use of a research diary as a tool for reflexive practice: Some reflections from management research. *Qualitative Research in Accounting & Management*, *3*, 208-217. <https://doi.org/https://doi.org/10.1108/11766090610705407>
- Naugle, K. M., Blythe, C., Naugle, K. E., Keith, N., & Riley, Z. A. (2022). Kinesiophobia predicts physical function and physical activity levels in chronic pain-free older adults. *Frontiers in Pain Research*, *3*, 874205. <https://doi.org/10.3389/fpain.2022.874205>
- Naugle, K. M., Ohlman, T., Naugle, K. E., Riley, Z. A., & Keith, N. R. (2017). Physical activity behavior predicts endogenous pain modulation in older adults. *Pain*, *158*(3), 383-390. <https://doi.org/10.1097/j.pain.0000000000000769>
- Nelson, A. E., Allen, K. D., Golightly, Y. M., Goode, A. P., & Jordan, J. M. (2014). A systematic review of recommendations and guidelines for the management of osteoarthritis: The Chronic Osteoarthritis Management Initiative of the U.S. Bone and

Joint Initiative. *Seminars in Arthritis and Rheumatism*, 43(6), 701-712.

<https://doi.org/https://doi.org/10.1016/j.semarthrit.2013.11.012>

Niederstrasser, N. G., & Attridge, N. (2022). Associations between pain and physical activity among older adults. *PLoS ONE*, 17(1), e0263356.

<https://doi.org/10.1371/journal.pone.0263356>

Nikolajsen, H., Sandal, L. F., Juhl, C. B., Troelsen, J., & Juul-Kristensen, B. (2021). Barriers to, and facilitators of, exercising in fitness centres among adults with and without physical disabilities: A scoping review. *International journal of environmental research and public health*, 18(14), 7341. <https://doi.org/10.3390/ijerph18147341>

Nosrani, S. E., Tartibian, B., Eslami, R., Farinha, C., Serrano, J., Ferreira, J. P., & Texeira, A. M. (2023). The effects of combined aquatic exercise on physical performance and metabolic indices in overweight healthy older adults. *International Journal of Exercise Science*, 16(4), 1499-1513. <https://doi.org/10.70252/soqt4818>

O'Brien Cousins, S. (2000). "My heart couldn't take it": Older women's beliefs about exercise benefits and risks. *The Journals of Gerontology: Series B*, 55(5), 283-294.

<https://doi.org/10.1093/geronb/55.5.P283>

Olmos-Vega, F. M., Stalmeijer, R. E., Varpio, L., & Kahlke, R. (2023). A practical guide to reflexivity in qualitative research: AMEE Guide No. 149. *Medical Teacher*, 45(3), 241-251. <https://doi.org/10.1080/0142159X.2022.2057287>

Olujinmi, D. (2023). From file to text: Using Notta to transcribe imported audio and video files.

Medium. <https://medium.com/@plyjynmi/from-file-to-text-using-notta-to-transcribe-imported-audio-and-video-files-2e1aff22523>

- Osteoporosis Canada. (2020, 2022, November 3). *General information about pain after a fracture*. <https://osteoporosis.ca/after-the-fracture/table-of-contents/general-information-about-pain-after-a-fracture/>
- Otones, P., García, E., Sanz, T., & Pedraz, A. (2020). A physical activity program versus usual care in the management of quality of life for pre-frail older adults with chronic pain: Randomized controlled trial. *BMC Geriatrics*, 20(1), 396. <https://doi.org/10.1186/s12877-020-01805-3>
- Owen, P. J., Miller, C. T., Mundell, N. L., Verswijveren, S. J. J. M., Tagliaferri, S. D., Brisby, H., Bowe, S. J., & Belavy, D. L. (2020). Which specific modes of exercise training are most effective for treating low back pain? Network meta-analysis. *British Journal of Sports Medicine*, 54(21), 1279-1287. <https://doi.org/10.1136/bjsports-2019-100886>
- Palekar, T. J., Shah, D. P., & Kadam, D. M. R. (2018). Effect of underwater treadmill training on young obese adults. *International Journal of Scientific Research in Science and Technology*, 4(5), 1487-1492. <https://ijsrst.com/IJSRST1845670>
- Pan American Health Organization, & World Health Organization. (2014). *Seniors and mental health*. Pan American Health Organization. https://www3.paho.org/hq/index.php?option=com_content&view=article&id=9877:seniors-mental-health
- Patton, M. Q. (2015). *Qualitative research and evaluation methods* (4th ed.). Sage Publications.
- Peeler, J., Christian, M., Cooper, J., Leiter, J., & MacDonald, P. (2015). Managing knee osteoarthritis: The effects of body weight supported physical activity on joint pain, function, and thigh muscle strength. *Clinical Journal of Sport Medicine*, 25(6), 518-523. <https://doi.org/10.1097/jsm.0000000000000173>

- Peeler, J., Leiter, J., & MacDonald, P. (2020). Effect of body weight-supported exercise on symptoms of knee osteoarthritis: A follow-up investigation. *Clinical Journal of Sport Medicine*, 30(6), e178-e185. <https://doi.org/10.1097/jsm.0000000000000668>
- Peng, M. S., Wang, R., Wang, Y. Z., Chen, C. C., Wang, J., Liu, X. C., Song, G., Guo, J. B., Chen, P. J., & Wang, X. Q. (2022). Efficacy of therapeutic aquatic exercise vs physical therapy modalities for patients with chronic low back pain: A randomized clinical trial. *JAMA Network Open*, 5(1), e2142069. <https://doi.org/10.1001/jamanetworkopen.2021.42069>
- Perna, G. (2013). Understanding anxiety disorders: The psychology and the psychopathology of defence mechanisms against threats. *Rivista di Psichiatria*, 48(1), 73-75. <https://doi.org/10.1708/1228.13618>
- Petersen, C. B., Bekker-Jeppesen, M., Aadahl, M., & Lau, C. J. (2021). Participation in recreational activities varies with socioeconomic position and is associated with self-rated health and well-being. *Preventive Medicine Reports*, 24, 101610. <https://doi.org/10.1016/j.pmedr.2021.101610>
- Phillips, E. M., Katula, J., Miller, M. E., Walkup, M. P., Brach, J. S., King, A. C., Rejeski, W. J., Church, T., & Fielding, R. A. (2010). Interruption of physical activity because of illness in the Lifestyle Interventions and Independence for Elders Pilot Trial. *Journal of Aging & Physical Activity*, 18(1), 61-74. <https://doi.org/10.1123%2Fjapa.18.1.61>
- Porter, H., & VanPuymbroek, M. (2007). Utilization of the international classification of functioning, disability, and health within therapeutic recreation practice. *Therapeutic Recreation Journal*, 41, 47-60. https://www.bctra.org/wp-content/uploads/tr_journals/949-3711-1-PB.pdf

Prochaska, J. O., & Velicer, W. F. (1997). The transtheoretical model of health behavior change.

American Journal of Health Promotion, 12(1), 38-48. <https://doi.org/10.4278/0890-1171->

[12.1.38](#)

Public Health Agency of Canada. (2023, June 12, 2023). *Chronic pain*. Government of Canada.

<https://www.canada.ca/en/public-health/services/diseases/chronic-pain.html>

Ranson, S., Hinings, B., & Greenwood, R. (1980). The structuring of organizational structures.

Administrative Science Quarterly, 25(1), 1-17. <https://doi.org/10.2307/2392223>

Ray, T. (n.d.). *Principles for adapting activities in recreation programs and settings*. National Center on Health, Physical Activity and Disability.

[https://www.nchpad.org/108/837/Principles~for~Adapting~Activities~in~Recreation~Pr
ograms~and~Settings](https://www.nchpad.org/108/837/Principles~for~Adapting~Activities~in~Recreation~Pr
ograms~and~Settings)

Renalds, A., Smith, T. H., & Hale, P. J. (2010). A systematic review of built environment and health. *Family & Community Health*, 33(1), 68-78.

<https://doi.org/10.1097/FCH.0b013e3181c4e2e5>

Resnick, B., & Spellbring, A. M. (2000). Understanding what motivates older adults to exercise.

Journal of Gerontological Nursing, 26(3), 34-42. <https://doi.org/10.3928/0098-9134->

[20000301-08](#)

Rica, R. L., Carneiro, R. M. M., Serra, A. J., Rodriguez, D., Pontes Junior, F. L., & Bocalini, D.

S. (2013). Effects of water-based exercise in obese older women: Impact of short-term follow-up study on anthropometric, functional fitness and quality of life parameters.

Geriatrics & Gerontology International, 13(1), 209-214.

<https://doi.org/https://doi.org/10.1111/j.1447-0594.2012.00889.x>

Richards, H. M., & Schwartz, L. J. (2002). Ethics of qualitative research: Are there special issues for health services research? *Family Practice*, *19*(2), 135-139.

<https://doi.org/10.1093/fampra/19.2.135>

Rimmer, J. H. (2006). Use of the ICF in identifying factors that impact participation in physical activity/rehabilitation among people with disabilities. *Disability and rehabilitation*, *28*(17), 1087-1095. <https://doi.org/10.1080/09638280500493860>

Rivas Neira, S., Pasqual Marques, A., Pegito Pérez, I., Fernández Cervantes, R., & Vivas Costa, J. (2017). Effectiveness of aquatic therapy vs land-based therapy for balance and pain in women with fibromyalgia: A study protocol for a randomised controlled trial. *BMC Musculoskeletal Disorders*, *18*(1), 22. <https://doi.org/10.1186/s12891-016-1364-5>

Rosenstein, A. A. (2007). *Water exercises for osteoarthritis: The effective way to reduce pain and stiffness, while increasing endurance and strength*. Idyll Arbor.

<https://books.google.ca/books?id=0dOwHAAACAAJ>

Roughan, W. H., Campos, A. I., García-Marín, L. M., Cuéllar-Partida, G., Lupton, M. K., Hickie, I. B., Medland, S. E., Wray, N. R., Byrne, E. M., Ngo, T. T., Martin, N. G., & Rentería, M. E. (2021). Comorbid chronic pain and depression: Shared risk factors and differential antidepressant effectiveness [Original Research]. *Frontiers in Psychiatry*, *12*, 643609. <https://doi.org/10.3389/fpsy.2021.643609>

Ruiz-Comellas, A., Sauch Valmaña, G., Mendioroz Peña, J., Roura Poch, P., Sabata Carrera, A., Cornet Pujol, I., Gómez Baena, I., Casaldàliga Solà, À., Saldaña Vila, C., Fusté Gamisans, M., Boix De la Casa, C., Rodoreda Pallàs, B., Ramirez-Morros, A., Vazquez Abanades, L., & Vidal-Alaball, J. (2021). Physical activity, emotional state and socialization in the elderly: Study protocol for a clinical multicentre randomized trial.

Journal of International Medical Research, 49(6), 03000605211016735.

<https://doi.org/10.1177/03000605211016735>

Ruslin, R., Mashuri, S., Sarib, M., Alhabsyi, F., & Syam, H. (2022). Semi-structured interview: A methodological reflection on the development of a qualitative research instrument in educational studies. *I2(1)*, 22-29. <https://doi.org/10.9790/7388-1201052229>

Sanders, M., Islam, M., Naruse, A., Takeshima, N., & Rogers, M. E. (2016). Aquatic exercise for better living on land: Impact of shallow-water exercise on older Japanese women for performance of activities of daily living. *International Journal of Aquatic Research and Education*, 10(1), 1-22. <https://doi.org/10.25035/ijare.10.01.01>

Sanders, M. E., Takeshima, N., Rogers, M. E., Colado, J. C., & Borreani, S. (2013). Impact of the S.W.E.A.T.TM water-exercise method on activities of daily living for older women. *Journal of Sports Science Medicine*, 12(4), 707-715.

<https://pubmed.ncbi.nlm.nih.gov/24421730>

Saulicz, E., Knapik, A., Saulicz, M., Linek, P., Rottermund, J., Wolny, T., & Mysliwiec, A. (2016). Physical activity in youth and level of kinesiphobia in older adults. *Baltic Journal of Health and Physical Activity*, 8(2), 64-77.

<https://doi.org/10.29359/BJHPA.08.2.06>

Schinzl, E., Kast, S., Kohl, M., von Stengel, S., Jakob, F., Kersch-Schindl, K., Kladny, B., Lange, U., Peters, S., Thomasius, F., Clausen, J., Uder, M., & Kemmler, W. (2023). The effect of aquatic exercise on bone mineral density in older adults. A systematic review and meta-analysis. *Frontiers in Physiology*, 14, 1135663.

<https://doi.org/10.3389/fphys.2023.1135663>

Schuch, F. B., Vancampfort, D., Richards, J., Rosenbaum, S., Ward, P. B., & Stubbs, B. (2016).

Exercise as a treatment for depression: A meta-analysis adjusting for publication bias.

Journal of Psychiatric Research, 77, 42-51.

<https://doi.org/10.1016/j.jpsychires.2016.02.023>

Schutzer, K. A., & Graves, B. S. (2004). Barriers and motivations to exercise in older adults.

Preventive Medicine, 39(5), 1056-1061.

<https://doi.org/https://doi.org/10.1016/j.ypped.2004.04.003>

Schwan, J., Sclafani, J., & Tawfik, V. L. (2019). Chronic pain management in the elderly.

Anesthesiology Clinics, 37(3), 547-560. <https://doi.org/10.1016/j.anclin.2019.04.012>

Shapka, J. D., & Khan, S. (2018). Self-perception. In R. J. R. Levesque (Ed.), *Encyclopedia of adolescence* (pp. 3406-3418). Springer International Publishing.

https://doi.org/10.1007/978-3-319-33228-4_481

Shari, M., Md Yusof, S. M., Idris, N., & Raja Hussain, R. N. J. (2018). Metabolic response to

12-weeks of Aqua Zumba® Fitness in obese women. *Malaysian Journal of Movement,*

Health & Exercise, 7. <https://doi.org/10.15282/mohe.v7i2.194>

Shari, M., Md Yusof, S. M., Raja Hussain, R. N. J., Teh Lay, K., Aiman, S., & Idris, N. M.

(2022, October 28-30). Aqua Zumba® versus aqua jog as the treatment of obesity among

collegiate students. ASEAN Council of Physical Education and Sport International Conference, Medan, Indonesia.

Simmonds, B. A., Hannam, K. J., Fox, K. R., & Tobias, J. H. (2016). An exploration of barriers

and facilitators to older adults' participation in higher impact physical activity and bone

health: A qualitative study. *Osteoporosis International*, 27(3), 979-987.

<https://doi.org/10.1007/s00198-015-3376-7>

- Simmons, V., & Hansen, P. D. (1996). Effectiveness of water exercise on postural mobility in the well elderly: an experimental study on balance enhancement. *The Journals of Gerontology: Series A, Biological Sciences and Medical Sciences*, 51(5), M233-238. <https://doi.org/10.1093/gerona/51a.5.m233>
- Smith, J. A., Flowers, P., & Larkin, M. (2009). *Interpretive phenomenological analysis: Theory, method and research*. Sage.
- Smith, T. O., Dainty, J. R., Williamson, E., & Martin, K. R. (2019). Association between musculoskeletal pain with social isolation and loneliness: Analysis of the English Longitudinal Study of Ageing. *British Journal of Pain*, 13(2), 82-90. <https://doi.org/10.1177/2049463718802868>
- Sofaer-Bennett, B., Holloway, I., Moore, A., Lamberty, J., Thorp, T., & O'Dwyer, J. (2007). Perseverance by older people in their management of chronic pain: A qualitative study. *Pain Medicine*, 8(3), 271-280. <https://doi.org/10.1111/j.1526-4637.2007.00297.x>
- Son, J., Kerstetter, D., Mowen, A., & Payne, L. (2009). Global self-regulation and outcome expectations: Influences on constraint self-regulation and physical activity. *Journal of Aging and Physical Activity*, 17, 307-326. <https://doi.org/10.1123/japa.17.3.307>
- Sperazza, L. J., & Banerjee, P. (2010). Baby boomers and seniors: Understanding their leisure values enhances programs. *Activities, Adaptation & Aging*, 34(3), 196-215. <https://doi.org/10.1080/01924788.2010.501484>
- Spiteri, K., Broom, D., Bekhet, A. H., De Caro, J. X., Laventure, B., & Grafton, K. (2019). Barriers and motivators of physical activity participation in middle-aged and older adults: A systematic review. *Journal of Aging and Physical Activity*, 27(6), 929-944. <https://doi.org/10.1123/japa.2018-0343>

Stathi, A., Gilbert, H., Fox, K. R., Coulson, J., Davis, M., & Thompson, J. L. (2012).

Determinants of neighborhood activity of adults age 70 and over: A mixed-methods study

[Article]. *Journal of Aging and Physical Activity*, 20(2), 148-170.

<https://doi.org/10.1123/japa.20.2.148>

Statistics Canada. (2022). *Physical activity, self reported, adult, by age group*. Government of Canada Retrieved from

<https://www150.statcan.gc.ca/t1/tb11/en/tv.action?pid=1310009613>

Statistics Canada. (2025). *Population estimates, July 1, by census subdivision, 2021 boundaries*.

Retrieved from <https://doi.org/10.25318/1710015501-eng>

Stevens, M., Cruwys, T., & Murray, K. (2020). Social support facilitates physical activity by reducing pain. *British Journal of Health Psychology*, 25(3), 576-595.

<https://doi.org/10.1111/bjhp.12424>

Strawbridge, W. J., Deleger, S., Roberts, R. E., & Kaplan, G. A. (2002). Physical activity reduces the risk of subsequent depression for older adults. *American Journal of Epidemiology*, 156(4), 328-334.

<https://doi.org/10.1093/aje/kwf047>

Strine, T. W., Mokdad, A. H., Dube, S. R., Balluz, L. S., Gonzalez, O., Berry, J. T.,

Manderscheid, R., & Kroenke, K. (2008). The association of depression and anxiety with obesity and unhealthy behaviors among community-dwelling US adults. *General Hospital Psychiatry*, 30(2), 127-137.

<https://doi.org/https://doi.org/10.1016/j.genhosppsych.2007.12.008>

Stubbs, B., Binnekade, T. T., Soundy, A., Schofield, P., Huijnen, I. P. J., & Eggermont, L. H. P.

(2013). Are older adults with chronic musculoskeletal pain less active than older adults

- without pain? A systematic review and meta-analysis. *Pain Medicine*, 14(9), 1316-1331.
<https://doi.org/10.1111/pme.12154>
- Suragarn, U., Hain, D., & Pfaff, G. (2021). Approaches to enhance social connection in older adults: An integrative review of literature. *Aging and Health Research*, 1(3), 100029.
<https://doi.org/https://doi.org/10.1016/j.ahr.2021.100029>
- Svenaesus, F. (2015). The phenomenology of chronic pain: Embodiment and alienation. *Continental Philosophy Review*, 48(2), 107-122. <https://doi.org/10.1007/s11007-015-9325-5>
- Takeshima, N., Rogers, M. E., Watanabe, E., Brechue, W. F., Okada, A., Yamada, T., Islam, M. M., & Hayano, J. (2002). Water-based exercise improves health-related aspects of fitness in older women. *Medicine & Science in Sports & Exercise*, 34(3), 544-551.
<https://doi.org/10.1097/00005768-200203000-00024>
- Taunton, J. E., Rhodes, E. C., Wolski, L. A., Donnelly, M., Warren, J., Elliot, J., McFarlane, L., Leslie, J., Mitchell, J., & Lauridsen, B. (1996). Effect of land-based and water-based fitness programs on the cardiovascular fitness, strength and flexibility of women aged 65-75 years. *Gerontology*, 42(4), 204-210. <https://doi.org/10.1159/000213794>
- Teshale, S. M., & Lachman, M. E. (2016). Managing daily happiness: The relationship between selection, optimization, and compensation strategies and well-being in adulthood. *Psychology and Aging*, 31(7), 687-692.
<https://doi.org/https://doi.org/10.1037%2Fpag0000132>
- Tian, D., & Meng, J. (2019). Exercise for prevention and relief of cardiovascular disease: Prognoses, mechanisms, and approaches. *Oxidative Medicine and Cellular Longevity*, 12, 3756750. <https://doi.org/10.1155/2019/3756750>

- Todd, M., Adams, M. A., Kurka, J., Conway, T. L., Cain, K. L., Buman, M. P., Frank, L. D., Sallis, J. F., & King, A. C. (2016). GIS-measured walkability, transit, and recreation environments in relation to older adults' physical activity: A latent profile analysis. *Preventive Medicine, 93*, 57-63. <https://doi.org/10.1016/j.ypmed.2016.09.019>
- Tomas-Carus, P., Gusi, N., Häkkinen, A., Häkkinen, K., Raimundo, A., & Ortega-Alonso, A. (2009). Improvements of muscle strength predicted benefits in HRQOL and postural balance in women with fibromyalgia: An 8-month randomized controlled trial. *Rheumatology, 48*(9), 1147-1151. <https://doi.org/10.1093/rheumatology/kep208>
- Torres-Ronda, L., & Del Alcázar, X. S. (2014). The properties of water and their applications for training. *Journal of Human Kinetics, 44*, 237-248. <https://doi.org/10.2478/hukin-2014-0129>
- Tribe, J. (2011). *The economics of recreation, leisure and tourism*. Elsevier.
- Tu, H.-M. (2020). Does active leisure participation promote psychological capital through peer support in economically disadvantaged children? *PLoS ONE, 15*(6), e0234143. <https://doi.org/10.1371/journal.pone.0234143>
- Turcotte, M., & Schellenberg, G. (2007). *A portrait of seniors in Canada: Introduction*. (89-519-X). Retrieved from <https://www150.statcan.gc.ca/n1/pub/89-519-x/89-519-x2006001-eng.htm>
- U.S. Department of Health and Human Services. (2018). *Physical activity guidelines for Americans*. Retrieved from https://health.gov/sites/default/files/2019-09/Physical_Activity_Guidelines_2nd_edition.pdf
- van der Linden, R., Bolt, T., & Veen, M. (2022). 'If it can't be coded, it doesn't exist'. A historical-philosophical analysis of the new ICD-11 classification of chronic pain. *Studies*

in History and Philosophy of Science, 94, 121-132.

<https://doi.org/10.1016/j.shpsa.2022.06.003>

Varkey, E., Dahlbäck, A., Thulin, M., Börjesson, M., Arvidsson, D., Fridolfsson, J., & Andréll, P. (2022). Physical activity, self-efficacy and quality of life in patients with chronic pain, assessed during and 1 year after physiotherapy rehabilitation: A prospective follow-up study. *Disability and rehabilitation*, 44(22), 6730-6737.

<https://doi.org/10.1080/09638288.2021.1971305>

Vicary, S., Young, A., & Hicks, S. (2017). A reflective journal as learning process and contribution to quality and validity in interpretative phenomenological analysis.

Qualitative Social Work, 16(4), 550-565. <https://doi.org/10.1177/1473325016635244>

Vincent, A., Whipple, M. O., & Rhudy, L. M. (2016). Fibromyalgia flares: A qualitative analysis. *Pain Medicine*, 17(3), 463-468. <https://doi.org/10.1111/pme.12676>

Walitt, B., Čeko, M., Khatiwada, M., Gracely, J. L., Rayhan, R., VanMeter, J. W., & Gracely, R. H. (2016). Characterizing "fibrofog": Subjective appraisal, objective performance, and task-related brain activity during a working memory task. *NeuroImage: Clinical*, 11, 173-180. <https://doi.org/10.1016/j.nicl.2016.01.021>

Waller, B., Lambeck, J., & Daly, D. (2009). Therapeutic aquatic exercise in the treatment of low back pain: A systematic review. *Clinical rehabilitation*, 23(1), 3-14.

<https://doi.org/10.1177/0269215508097856>

Waller, B., Ogonowska-Słodownik, A., Vitor, M., Rodionova, K., Lambeck, J., Heinonen, A., & Daly, D. (2016). The effect of aquatic exercise on physical functioning in the older adult: A systematic review with meta-analysis. *Age and Ageing*, 45(5), 593-601.

<https://doi.org/10.1093/ageing/afw102>

- Wang, T. J., Belza, B., Elaine Thompson, F., Whitney, J. D., & Bennett, K. (2007). Effects of aquatic exercise on flexibility, strength and aerobic fitness in adults with osteoarthritis of the hip or knee. *Journal of Advanced Nursing*, 57(2), 141-152.
<https://doi.org/10.1111/j.1365-2648.2006.04102.x>
- Warburton, D. E., Nicol, C. W., & Bredin, S. S. (2006). Health benefits of physical activity: The evidence. *Canadian Medical Association Journal*, 174(6), 801-809.
<https://doi.org/10.1503/cmaj.051351>
- Watts, A. S., Mortby, M. E., & Burns, J. M. (2018). Depressive symptoms as a barrier to engagement in physical activity in older adults with and without Alzheimer's disease. *PLoS ONE*, 13(12), e0208581-e0208581. <https://doi.org/10.1371/journal.pone.0208581>
- Weinstein, L. B. (1986). The benefits of aquatic activity. *Journal of Gerontological Nursing*, 12(2), 6-11. <https://doi.org/10.3928/0098-9134-19860201-05>
- Weselman, T., Naseri, C., Vaz, S., Beilby, J., Garswood, L., O'Connell, H., & Hill, A. M. (2023). Older adults' experiences of a community wellness program (Connect 60+) that focused on physical activity and social connections: a qualitative exploratory study. *Australian Journal of Primary Health*, 29(1), 64-73. <https://doi.org/10.1071/py22153>
- Whiting, L. S. (2008). Semi-structured interviews: Guidance for novice researchers. *Nursing Standard*, 22(23), 35-40. <https://doi.org/10.7748/ns2008.02.22.23.35.c6420>
- World Health Organization. (2002). *Towards a common language for functioning, disability, and health: ICF, the International Classification of Functioning, Disability, and Health*.
- World Health Organization. (2022). *Physical activity*. <https://www.who.int/news-room/fact-sheets/detail/physical-activity>
- World Health Organization. (n.d.). *Obesity*. <https://www.who.int/health-topics/obesity>

Yamada, N., & Heo, J. (2016). Determinants of engagement in leisure-time physical activity: Dialogue with senior athletes. *Canadian Journal on Aging, 35*(4), 513-525.

<http://dx.doi.org/10.1017/S071498081600057X>

Zaleski, A. L., Taylor, B. A., Panza, G. A., Wu, Y., Pescatello, L. S., Thompson, P. D., & Fernandez, A. B. (2016). Coming of age: Considerations in the prescription of exercise for older adults. *Methodist DeBakey Cardiovascular Journal, 12*(2), 98-104.

<https://doi.org/10.14797/mdcj-12-2-98>

Zamunér, A. R., Andrade, C. P., Arca, E. A., & Avila, M. A. (2019). Impact of water therapy on pain management in patients with fibromyalgia: Current perspectives. *Journal of Pain Research, 12*, 1971-2007. <https://doi.org/10.2147/jpr.S161494>

Zhang, W., & Radhakrishnan, K. (2018). Evidence on selection, optimization, and compensation strategies to optimize aging with multiple chronic conditions: A literature review.

Geriatric Nursing, 39(5), 534-542. <https://doi.org/10.1016/j.gerinurse.2018.02.013>

Appendix A – ICEHR Approval Letter


**Interdisciplinary Committee on
Ethics in Human Research (ICEHR)**

St. John's, NL Canada A1C 5S7
Tel: 709 864-2561 icehr@mun.ca
www.mun.ca/research/ethics/humans/icehr

ICEHR Number:	20241911-HK
Approval Period:	May 27, 2024 – May 31, 2025
Funding Source:	
Responsible Faculty:	Dr. Stephanie Field School of Human Kinetics and Recreation
Title of Project:	<i>Exploring lived experiences of community aquatic fitness participation among older adults with chronic pain</i>

May 27, 2024

Mrs. Ann Marie Kieley
School of Human Kinetics and Recreation
Memorial University

Dear Mrs. Kieley:

Thank you for your correspondence addressing the issues raised by the Interdisciplinary Committee on Ethics in Human Research (ICEHR) for the above-named research project. ICEHR has re-examined the proposal with the clarifications and revisions submitted, and is satisfied that the concerns raised by the Committee have been adequately addressed. In accordance with the *Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans (TCPS2)*, the project has been granted *full ethics clearance* for **one year**. ICEHR approval applies to the ethical acceptability of the research, as per Article 6.3 of the *TCPS2*. Researchers are responsible for adherence to any other relevant University policies and/or funded or non-funded agreements that may be associated with the project. If funding is obtained subsequent to ethics approval, you must submit a Funding and/or Partner Change Request to ICEHR so that this ethics clearance can be linked to your award.

The *TCPS2* **requires** that you **strictly adhere to the protocol and documents as last reviewed** by ICEHR. If you need to make additions and/or modifications, you must submit an Amendment Request with a description of these changes, for the Committee's review of potential ethical concerns, before they may be implemented. Submit a Personnel Change Form to add or remove project team members and/or research staff. Also, to inform ICEHR of any unanticipated occurrences, an Adverse Event Report must be submitted with an indication of how the unexpected event may affect the continuation of the project.

The *TCPS2* **requires** that you submit an Annual Update to ICEHR before **May 31, 2025**. If you plan to continue the project, you need to request renewal of your ethics clearance and include a brief summary on the progress of your research. When the project no longer involves contact with human participants, is completed and/or terminated, you are required to provide an annual update with a brief final summary and your file will be closed. All post-approval ICEHR event forms noted above must be submitted by selecting the **Applications: Post-Review** link on your Researcher Portal homepage. We wish you success with your research.

Yours sincerely,



Alyson Byrne, Ph.D.
Vice-Chair, Interdisciplinary Committee on
Ethics in Human Research

AB/bc

cc: Supervisor – Dr. Stephanie Field, School of Human Kinetics and Recreation

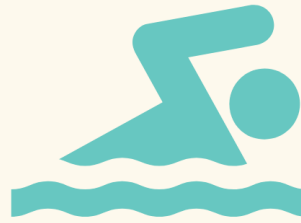
Appendix B – Poster

DO YOU EXPERIENCE CHRONIC PAIN?

We want to hear from you!

Your role

- **Contact me**
Phone or email me using the contact information below
- **Wait to be contacted**
If selected, I will contact you.
- **Schedule interview**
Interviews will be conducted in-person at the facility you attend for aquatic fitness classes
- **Attend interview**
This audio-recorded interview will last from 45 to 60 minutes
- **Review transcript**
You will have an opportunity to review the text from your interview and confirm if it is accurate



To participate, you must

- Be aged 65 or older
- Experience chronic pain for at least three months
- Attend aquatic fitness classes at least:
 - Twice per week
 - For three months
- NOT have a current diagnosis of cancer

CONTACT INFORMATION



(709) 693-9441



amkieley@mun.ca

This research has been approved by the Interdisciplinary Committee on Ethics in Human Research (ICEHR). If you have ethical concerns about the research, such as the way you have been treated or your rights as a participant, you may contact the ICEHR at icehr@mun.ca or by telephone at 709-864-2861.

Appendix C – Recruitment Letter for Potential Participants

Recruitment Letter for Potential Research Participants

My name is Ann Marie Kieley, and I am a graduate student at the School of Human Kinetics and Recreation at Memorial University of Newfoundland. For my master's degree, I am conducting a research project called *Exploring Lived Experiences of Community Aquatic Fitness Participation Among Older Adults with Chronic Pain* under the supervision of Dr. Angela Loucks-Atkinson and Dr. Stephanie Field.

The purpose of this study is to better understand the experiences of older adults with chronic pain who regularly attend aquatic fitness classes offered by community recreation organizations. I aim to recruit six to eight participants for this study. To be eligible for study participation, you must be aged 65 or older, currently live with chronic pain (persistent pain exceeding three months) and be a regular attendee of an aquatic fitness class in St. John's, Newfoundland and Labrador. In this context, regular participation means that you have been attending at least two classes per week for at least three months. Participants must not have a current diagnosis of cancer.

I am contacting you to invite you to participate in this study by partaking in an in-person interview. The interview will begin with background questions. This background portion of the interview will collect demographic information (e.g., age, gender, marital status) and a brief description of your chronic pain condition. The main interview questions will explore your participation in aquatic fitness classes. The interview will be audio-recorded.

Participation will require 45 to 60 minutes of your time and will be held either at the facility where you attend aquatic fitness classes or at Memorial University of Newfoundland School of Human Kinetics and Recreation, depending on which location is preferable to you.

If you are interested in participating in this study, you can reach me using the contact information provided below. If you know anyone who may be interested in participating in this study, please give them a copy of this information.

Phone: (709) 693-9441

Email: amkieley@mun.ca

Thank you in advance for considering my request,



Ann Marie Kieley

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research, such as your rights as a participant, you may contact the Chairperson of the ICEHR at icehr.chair@mun.ca or by telephone at 709-864-2861.

Appendix D – Script for Oral Recruitment

Oral Recruitment Script

The following script is to be read to a group of aquatic fitness participants at the end of a class.

Hello everyone! My name is Ann Marie; I am a researcher from Memorial University doing a study on aquatic fitness classes like this one. I am looking for participants who are aged 65 and older, have lived with chronic pain for at least three months, and do not currently have any type of cancer. You also need to come to aquatic fitness classes often—at least twice per week for the last three months.

If you meet this description and are interested in sharing your experiences with aquatic fitness classes, you can take one of these flyers on your way out of the building or ask me for more information. Participation is completely voluntary, you are under no pressure to take a flyer, but I will happily answer any questions you may have about the study. Thank you for your time, and have a fantastic day!

Participants will then have the opportunity to approach me after leaving the changing room, before exiting the facility. If they express interest, they can take a flyer or ask me questions related to the study. To decrease the likelihood that attendees feel pressured to take a flyer, I will not engage with attendees unless they approach me and initiate a conversation.

Appendix E – Organizational Consent to Recruit from Facilities



School of Human Kinetics and Recreation

School of Human Kinetics

Physical Education Building, #2023A, St. John's, NL, Canada, A1C 5S7

Tel: 709 864 8129 Fax: 709 864 3979 www.mun.ca

Study Information

- Title:** Exploring lived experiences of aquatic fitness participation among older adults with chronic pain
- Researcher(s):** Ann Marie Kieley, School of Human Kinetics and Recreation, Memorial University of Newfoundland, amkieley@mun.ca
- Supervisor(s):** Angela Loucks-Atkinson, School of Human Kinetics and Recreation, Memorial University of Newfoundland, aloucksa@mun.ca
Stephanie Field, School of Human Kinetics and Recreation, Memorial University of Newfoundland, scfield@mun.ca

Your organization has been asked to participate in a research project entitled "*Exploring lived experiences of aquatic fitness participation among older adults with chronic pain.*"

In this study, the experiences of aquatic fitness participation will be explored by interviewing four to eight current participants in the following four facilities: Paul Reynolds Community Centre, H.G.R. Mews Community Centre, The Works, and the Ches Penney Family YMCA.

Recruitment is expected to begin as soon as ethics approval is granted. The letter you have been asked to provide is a part of this application.

Participants will be recruited in person; the principal investigator (Ann Marie Kieley) will attend aquatic fitness classes at your facility. At the end of the class, she will read the following script to participants:

Hello everyone! I am a researcher from Memorial University doing a study on aquatic fitness classes like this one. I am looking for participants who are aged 65 and older, have lived with chronic pain for at least three months, and do not currently have any type of

cancer. You also need to come to aquatic fitness classes often—at least twice per week for the last three months.

If you meet this description and are interested in sharing your experiences with aquatic fitness classes, you can take one of these flyers on your way out of the building or ask me for more information. Participation is completely voluntary, you are under no pressure to take a flyer, but I will happily answer any questions you may have about the study. Thank you for your time, and have a fantastic day!

Participants can then approach the researcher after exiting the changing room and either take a flyer (see appendix) or ask me questions related to the study. I will be recruiting 6-8 participants for this study. Therefore, I aim to recruit three to four participants from your organization. The first participants who meet the eligibility criteria and express that they wish to participate will be recruited for the study. Once the total number of participants has been recruited, any additional interested persons will be thanked for their interest and told that while the study is currently full, they may be contacted if a participant withdraws from the study.

Participants who are selected for the study will plan a date and time at one of the following two locations:

- (1) The Social Science Lab in the Physical Education Building at Memorial University
- (2) A quiet room at the facility where they attend their aquatic fitness classes

The principal investigator will discuss the ideal space in your facility to conduct an interview. Interviews will last for 45-60 minutes. No participant will be interviewed without signing a consent form.

Your only involvement in this study will be:

- (1) The principal investigator recruiting participants from your classes
- (2) Providing a quiet room for participants who choose to be interviewed at your facility

If you are not able to provide a quiet room for the interviews, please let the principal investigator know so this change can be accommodated.

Thank you for your assistance in this project. One benefit of this study will be identifying the strengths and limitations of existing programming from the perspective of your regular participants. Such information may be useful in your future program planning and delivery.

If you have any questions about this study or your organization's involvement, please contact the principal investigator at amkieley@mun.ca

Appendix F – Participant Consent Form



School of Human Kinetics and Recreation

School of Human Kinetics

Physical Education Building, #2023A, St. John's, NL, Canada, A1C 5S7

Tel: 709 864 8129 Fax: 709 864 3979 www.mun.ca

Informed Consent Form

- Title: Exploring lived experiences of aquatic fitness participation among older adults with chronic pain
- Researcher(s): Ann Marie Kieley, School of Human Kinetics and Recreation, Memorial University of Newfoundland, amkieley@mun.ca
- Supervisor(s): Stephanie Field, School of Human Kinetics and Recreation, Memorial University of Newfoundland, scfield@mun.ca
Angela Loucks-Atkinson, School of Human Kinetics and Recreation, Memorial University of Newfoundland, aloucksa@mun.ca

You are invited to take part in a research project entitled “*Exploring lived experiences of aquatic fitness participation among older adults with chronic pain.*”

This form is part of the process of informed consent. It should give you a basic idea of what the research is about and what your participation will involve. It also describes your right to withdraw from the study. In order to decide whether you wish to participate in this research study, you should understand enough about its risks and benefits to be able to make an informed decision. This is the informed consent process. Take time to read this carefully and to understand the information given to you. Please contact the researcher, Ann Marie Kieley, if you have any questions about the study or would like more information before you consent.

It is entirely up to you to decide whether to participate in this research. If you choose not to participate or if you decide to withdraw from the research once it has started, there will be no negative consequences for you, now or in the future.

Introduction:

My name is Ann Marie Kieley, and I am a graduate student at Memorial University School of Human Kinetics and Recreation. For my master's thesis, I am conducting research under the supervision of Dr. Angela Loucks-Atkinson and Dr. Stephanie Field.

Purpose of Study:

Many older adults struggle to achieve the recommended guideline of 150 minutes of exercise per week due to barriers like chronic pain and fear of injury. You have been invited to participate in this study because you are an older adult living with chronic pain, and you participate in aquatic fitness classes in St. John's, Newfoundland, at least twice per week. The purpose of this study is to learn more about the experiences of people like yourself and how going to classes regularly impacts your life.

What You Will Do in this Study:

You will be asked to participate in a one-on-one interview with me, where I will ask questions about your experiences as an older adult with chronic pain and how regular participation in aquatic fitness classes impacts your life and chronic pain. Before the main interview, I will ask you some demographic questions (e.g., age, gender, and marital status), questions about your participation in aquatic fitness classes (e.g., the facility you participate at and how long you've been attending), and for a brief description of your chronic pain condition. Participants are free to skip any questions they do not wish to answer without consequence.

Length of Time:

The interview will take approximately 45-60 minutes. At some point after the interview, you will be sent a copy of the interview transcript. When the interview takes place, you will be asked how you would prefer to receive the transcript of your interview (i.e., sent an email or given a printed copy) and through which form of communication you wish to be notified. You will have the option to read through and make us aware of anything in the transcript that is incorrect or does not properly represent what you said. Reviewing the transcript should not take longer than 30 minutes. You will have two weeks to approve the transcript or submit any corrections upon receiving a copy. If you do not reply, it will be assumed that you are satisfied with the transcript of your interview.

Withdrawal from the Study:

Participation in this study is entirely voluntary. You can choose to withdraw your participation at any time, even mid-interview, without consequence. You also have the right to withdraw consent for a limited time after the interview has been completed. You will have until July 21, 2024, to request that your data be removed from the research. Should you choose to withdraw consent, your data will be destroyed by erasing the recordings, transcription, and any analysis performed on the transcript from the electronic devices they are saved to. Any information related to your participation that is on paper will be shredded.

Possible Benefits:

As a result of this study, you may have a greater understanding of your participation in aquatic exercise as it relates to your experience with chronic pain. The community of researchers who study physical activity, older adults, and/or community recreation will benefit from the

knowledge gained from your participation. We will have a greater understanding of how older adults with chronic pain experience community aquatic fitness classes. Depending on the findings of this study, it is possible that we could learn ways to improve these classes.

Possible Risks:

It is possible that you could experience social risks from participating in this study. While you will be identified only by a pseudonym, privacy may be compromised if someone who knows you is able to identify you by something you have said or if you choose to have your real name used. It is also possible that you may feel emotional distress if you discuss an aspect of your participation experience with chronic pain that you find upsetting. If you feel emotional or upset after the interview and need to speak with someone, you can contact one of the toll-free numbers below.

A Friendly Voice -- confidential 'warm line' for older adults, 8 am-10 pm every day -- 1 (855) 892-9992

Mental Health Crisis Line -- 24 hours every day -- 1-888-737-4668

Confidentiality:

The ethical duty of confidentiality includes safeguarding participants' identities, personal information, and data from unauthorized access, use, or disclosure. Your real name will not be included in the transcript or materials related to data analysis. While your name will not be associated with statements you make, it is possible that you may share information that could identify you to a person who knows you. You will have an opportunity to review the transcript of your interview and request that potentially identifying information be blacked out.

Anonymity:

Anonymity refers to protecting participants' identifying characteristics, such as name or description of physical appearance. Demographic information collected during the background information portion of the interview will only be reported as a summary of the group demographics and not at the individual level. For example, "Five participants ranged in age from 65-72. There were five female participants and one male participant."

Your name will not be revealed in this study. If a quotation from your interview is used, you will be assigned a pseudonym (false name). Every reasonable effort will be made to ensure your anonymity. You will not be identified in publications without your explicit permission. If you do not want to be anonymous, let the researcher (Ann Marie Kieley) know on the last page of this form, and you will not be assigned a pseudonym.

Recording of Data:

The audio from your interview will be recorded onto two digital recorders (one primary and one backup recorder to prevent data loss). I may make a written note of body language during the interview, but no photographs or video will be taken.

Use, Access, Ownership, and Storage of Data:

After conducting your interview, the audio files will be transferred onto a password-protected laptop. The original copies of the recordings will then be deleted from the recorders. The audio will be uploaded to a secure online transcription platform. No one besides the researcher (Ann Marie Kieley) will be able to access the uploaded audio file. The generated transcript may be viewed by my supervisors (Dr. Stephanie Field and Dr. Angela Loucks-Atkinson) or a critical friend (another graduate student) to provide critiques on my analysis, but they will not know your real name. Your interview transcript will be labeled by your pseudonym only, and no information that is on the laptop will refer to you by your real name.

Signed consent forms and a document linking participants' real names to their pseudonyms will be stored in a locked filing cabinet in the Social Science Labs in the School of Human Kinetics and Recreation. No one will have access to this document but me. Data will be kept for a minimum of five years, as required by Memorial University's policy on Integrity in Scholarly Research.

Third-Party Data Collection and/or Storage:

Data collected from you as part of your participation in this project will be stored electronically by Notta and is subject to their privacy policy, and to any relevant laws of the country in which their servers are located. Therefore, anonymity and confidentiality of data may not be guaranteed in the rare instance, for example, that government agencies obtain a court order compelling the provider to grant access to specific data stored on their servers. If you have questions or concerns about how your data will be collected or stored, please contact the researcher and/or visit the provider's website for more information before participating. The privacy and security policy of the third-party hosting data collection and/or storing data can be found at: <https://transcribe-saas-api.notta.io/static/policy-en-US.html>

Reporting of Results:

Information from this thesis may be published in future journal articles or presented at a conference. You will be contacted once the thesis is complete and be given a copy of the stories written based on the experiences of the participants. A webpage with these stories will be sent to you if you have provided an email address but you can also opt to pick up a physical copy.

Upon completion, a full version of the thesis will be available at Memorial University's Queen Elizabeth II library and can be accessed online at:
<http://collections.mun.ca/cdm/search/collection/theses>.

Data from your interview will be reported through summarizing content from interviews and may include some direct quotations using your pseudonym.

Sharing of Results with Participants:

After the completion of the thesis, an infographic will be made and distributed to study participants. This poster will contain the key findings of the thesis and may contain quotes from participants using their pseudonyms. In addition, the findings from the study will be summarized in a future YMCA newsletter.

Questions:

You are welcome to ask questions before, during, or after your participation in this research. If you would like more information about this study, please contact: Ann Marie Kieley (amkieley@mun.ca) or my supervisors Dr. Angela Loucks-Atkinson (aloucksa@mun.ca) or Dr. Stephanie Field (scfield@mun.ca).

This research has been approved by the Interdisciplinary Committee on Ethics in Human Research (ICEHR). If you have ethical concerns about the research, such as the way you have been treated or your rights as a participant, you may contact the ICEHR at icehr@mun.ca or by telephone at 709-864-2861.

Consent:

Your signature on this form means that:

- You have read the information about the research.
- You have been able to ask questions about this study.
- You are satisfied with the answers to all your questions.
- You understand what the study is about and what you will be doing.
- You understand that you are free to withdraw participation in the study without having to give a reason, and that doing so will not affect you now or in the future.
- You understand that if you choose to end participation **during** data collection, any data collected from you up to that **point will be destroyed**.
- You understand that if you choose to withdraw **after** data collection has ended, your data can be removed from the study up to July 21, 2024.

I agree to the use of direct quotations Yes No

I would like my real name to be used in publications Yes No

By signing this form, you do not give up your legal rights and do not release the researchers from their professional responsibilities.

Your Signature Confirms:

- I have read about this study and understood its risks and benefits. I have had adequate time to think about this and have had the opportunity to ask questions, which have been answered.
- I agree to participate in the research project, understanding the risks and contributions of my participation, that my participation is voluntary, and that I may end my participation.
- A copy of this Informed Consent Form has been given to me for my records.

Signature of Participant

Date

Researcher's Signature:

I have explained this study to the best of my ability. I invited questions and answered them. I believe that the participant fully understands what is involved in the study, any potential risks, and that he or she has freely chosen to be in the study.

Signature of Principal Investigator

Date

Appendix G – Semi-Structured Interview Guide

Background Questions

1. What is your name?
2. How old are you?
3. What is your gender?
4. What is your marital status?
5. What town or city do you reside in?
6. Where do you currently participate in Aquafit?
7. Where have you participated in aquafit in the past?
8. What types of Aquafit do you participate in? (Shallow/deep, jog, strength, Zumba)
9. How long have you been going?
10. What method of transportation do you use to get to class?
11. Please describe your chronic pain condition
12. How long have you had chronic pain?

Main Interview

1. Tell me about your experience participating in aquafit classes.
 - a. Why did you start coming to classes?
 - b. Before you started coming to Aquafit, did you participate in other kinds of exercise?
 - c. How do you feel that Aquafit classes fit into your lifestyle?
 - d. How do you feel it compares to other kinds of exercise you've done?
2. What do you like about aquafit? Is there anything you don't like?
 - a. What kind of mood are you in after a class?
 - b. How do you feel about your social relationships since starting to come to Aquafit?
 - c. What helps you to come regularly?
 - d. Does anything prevent you from coming?
 - e. Do you feel like the distance from your home to [site] has ever made it difficult to get to a class?
3. What is it like to have chronic pain and participate in aquatic fitness classes?
 - a. What do you do when an exercise feels painful?
 - b. How motivated do you feel to do Aquafit compared to other kinds of exercise?
 - c. How does your body feel after a class?
 - d. How does your body feel the next day?
 - e. Is there any equipment that helps you get the most out of the class? How does it help?