HOW “WE” FEEL: THE RELATIONSIP BETWEEN SOCIAL IDENTITY AND AHDERENCE BEHAVIOUR IN OLDER ADULT GROUP-BASED EXERCISE CLASS ATTENDEES

by

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Abstract

Physical activity plays a salient role in healthy aging, yet levels tend to decline with increasing age, and therefore, factors that can predict sustained physical activity are needed (Clarke et al., 2019). Growing evidence indicates that the strength of an individual's social identification as a member of an exercise group (e.g., running group, exercise class) is positively associated with attendance (e.g., Steffens et al., 2019; Strachan et al., 2012). One segment of the population in which this relationship is less understood is among older adults. The purpose of this thesis was to examine the relationship between social identity and group-based exercise class attendance among older adults. Using a prospective research design, 80 group-based older adult exercise class attendees (M_{age} = 68.00, *SD* = 7.01 years; 87.5% female) from 16 exercise classes completed a baseline questionnaire assessing the three dimensions of social identification (ingroup ties, cognitive centrality, ingroup affect) and recorded their exercise class attendance using a logbook over four months. A hierarchical multiple regression analysis was performed in which exercise adherence (i.e., percentage of classes attended) was regressed upon the three dimensions of social identity. After removing cognitive centrality as a predictor due to multicollinearity concerns, a significant regression model was found (R^2_{adj} =.12, p = .001). Ingroup affect was found to be the sole significant predictor of group-based exercise class attendance throughout the four-month session (β = .32, $t(80)$ = 2.41, p = .02), whereas ingroup ties did not contribute significantly to the model (β = .12, $t(80)$ = .82, p = .42). These results support ongoing research that associates social identification with exercise adherence behaviour, and adds specificity in that the positive feelings associated with group membership (i.e., ingroup affect) may be particularly salient among older adult group-based exercisers.

Keywords: Social identity; exercise; adherence; group dynamics; older adults

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How 'We' Feel: The Relationship between Social Identity and Adherence Behaviour in Older Adult Group-Based Exercise Class Attendees

Chapter 1: Introduction

Maintaining a physically active lifestyle is essential for healthy aging. Specifically, physical activity can protect against the development of chronic health conditions, the risk of falling, and social isolation (Franco et al., 2014; Paterson & Warburton, 2010; Sebastião & Mirda, 2021; Warburton et al., 2010). Despite the numerous benefits, trends in physical activity behaviour consistently demonstrate that levels decrease with increasing age (Clarke et al., 2019). As a result, research concerning factors that contribute to sustained physical activity participation as individuals grow older is of particular interest given the high prevalence of chronic disease, functional limitations, and social isolation among the fastest growing segment of the population (i.e., older adults; Statistics Canada, 2020; Stevens & Cruwys, 2020; Stevens et al., 2021; World Health Organization, 2018).

It has been well recognized that physical activity behaviour is complex and dynamic (Bauman et al., 2012). Accordingly, researchers have begun to consider numerous individual (e.g., health status), environmental (e.g., access to facilities), policy (e.g., physical activity guidelines), and social (e.g., social support) level factors that influence physical activity behaviour and health among older adults (Bauman et el., 2012; Chiang et al., 2008; Fisher et al., 2018). The degree to which these factors contribute to an individuals' physical activity behaviour is largely situated in the context of the physical and social environment, and more specifically, the many groups to which we belong (Beauchamp, 2019; Harden et al., 2015; Stevens et al., 2017). Therefore, a key area to focus on is the use of group-based exercise given the strong

evidence surrounding groups as a venue for physical activity promotion (de Lacy-Vawdon et al., 2018; Harden et al., 2015; King, 2001).

In the broader health and exercise psychology literature, there has been a lack of consensus in the aging literature when old age begins (i.e., Chad et al., 2005; Chodzko-Zajko et al., 2009). In the present study, the term "older adult" refers to an individual who is 55 years of age and older. Based on ongoing research encompassing social group membership and physical activity behaviour, this age cut point presented an opportunity to capture older adults from the age of young retirees and following the retirement transition (Stevens et al., 2021). This focus on retirement represents a major life transition, marked by a shift in lifestyle, usually resulting in more time for leisure time pursuits (Touvier et al., 2010). Further, longitudinal evidence illustrates that increased physical activity levels following retirement are only temporary and not maintained long-term (Stenholm et al., 2016).

There has been a growing desire to understand older adults' engagement with group-based exercise, and how exercise groups can be targeted to foster exercise adherence (Beauchamp et al., 2018; Stevens & Cruwys, 2020; Stevens et al., 2021). Emerging observational and experimental evidence points to older adults reporting a positive preference to exercise with individuals of similar age (Beauchamp et al., 2007; Beauchamp et al., 2018), and that exercise adherence is greater in group-based contexts when compared with individual-based contexts (e.g., Burke et al., 2006). Group-based exercise provides an opportunity for older adults to fulfil an innate desire to belong, to form and maintain social connection, and to develop a social identity (Baumeister, & Leary, 1995; Beauchamp, 2019; Martino et al., 2017). Importantly, older adults have reported that their sustained engagement in physical activity, particularly from participation in group-based exercise, is from feeling a sense of belonging,

connection, and social support (de Lacy-Vawdon et al., 2018; Farrance et al., 2016; Franco et al., 2015; Harden et al., 2015; Killingback et al., 2017; Stevens & Cruwys, 2020). As such, gaining insight into group-based exercise, as a social setting for positive behaviour change in order to support physical activity levels post-retirement, is warranted.

To better understand engagement in group-based exercise, health and exercise psychology researchers have recently highlighted social identity as a key social correlate for understanding individual adherence behaviour (Beauchamp, 2019; Bruner & Benson, 2018; Rees et al., 2015; Stevens et al., 2017). Social identity is defined as "that part of an individual's self-concept which derives from his/her knowledge of his/her membership of a social group (or groups) together with the value and emotional significance attached to that membership" (Tajfel, 1981, p. 255). More specifically, when an exercise group attendee places significance on their membership in a specific exercise group, and their membership with an exercise group becomes integrated into one's sense of self, (i.e., "as a member of this exercise class"), this can fundamentally shape one's behaviours (Beauchamp, 2019; Stevens et al., 2017; Tajfel & Turner, 1979; Turner et al., 1987). A positive relationship has been frequently observed between social identity strength as a member of a particular exercise group and attendance within running groups, and group-based exercise classes among youth and adult populations (Bruner et al. in press; Steffens et al., 2019; Stevens et al., 2018; Stevens et al., 2019; Strachan et al., 2012). Accordingly, these findings are in line with social identity theorizing (Tajfel & Turner, 1979; Turner et al., 1987), and suggests that when exercise behaviour is normative of the group, group members who identify more strongly with the exercise group will be more motivated to align their behaviours with normative group-based activities (e.g., exercise sessions; Bruner et al. in

press; Rowe & Slater, 2021; Steffens et al., 2019; Stevens et al., 2018; Stevens et al., 2019; Strachan et al., 2012).

While previous research provides promising evidence of a positive relationship between the strength of social identity and exercise attendance, research in an exercise setting to date has typically examined this relationship through a unidimensional construct (i.e., group identification[1]), and attendance measures of frequency/volume in a typical week or month (e.g., Bruner et al., in press; Steffens et al., 2019; Stevens et al., 2018; Strachan et al., 2012). Given the cross-sectional nature of previous research, further investigation that examines the relations between social identity strength using a multidimensional perspective and adherence behaviour using a longitudinal design (e.g., four-month exercise term) is warranted (e.g., Steffens et al., 2019).

Emerging social identity research in sport (e.g., Bruner, Boardley, & Côté, 2014), and adult exercise groups (e.g., Rowe & Slater, 2021), have sought to explore social identity through a multidimensional perspective. Using Tajfel's (1979) formal definition, Cameron (2004) advanced a conceptual model known as the *Three Factor Model of Social Identity.* Utilizing Cameron's (2004) model, social identity strength can be understood and measured using three dimensions which are referred to as in-group ties (IGT; perceptions of togetherness or belongingness experienced with other group members), cognitive centrality (CC; the frequency with which the group comes to mind and the importance that individuals place on group membership), and in-group affect (IGA; the positive feelings or emotions associated with group

[1]. The terms group identification and social identification are often used interchangeably in the exercise psychology literature (Stevens et al., 2019). For the purposes of this thesis, and wherever possible, the term "social identification" will be used which simply represents an individual's identification with a group in a specific context such as a group-based exercise class.

membership). In a youth sport context, research has shown that the three dimensions of social identity are distinct and represent varying levels of importance for individual athlete outcomes such as IGT to effort, IGA to self-worth, and CC to antisocial behaviour toward opponents (Bruner, Boardley, Benson et al., 2018; Martin et al., 2017). Building on this promising research, a recent study exploring group-based exercise and adherence behaviour found initial support that social identity dimensions associate differently with expected adherence, whereby IGA emerged as a significant predictor of expected likelihood of future attendance in group-based exercise classes among adult attendees (Rowe & Slater, 2021).

In light of the accumulating evidence that points to social identity in helping to understanding adherence behaviour, the present study sought to advance the current body of literature by examining relations between older adult perceptions of exercise group social identity (IGT, CC, IGA) and adherence behaviour over time. Given that physical activity levels decline with increasing age (Clarke et al., 2019), gaining novel insight into the dimensions of social identity with regard to group-based exercise adherence is an important research endeavour. A review of the literature follows that outlines the importance of examining these relationships in the context of community group-based exercise classes with a particular focus on older adults.

Chapter 2: Review of Literature

Physical Activity and Exercise

Within the field of exercise psychology, physical activity and exercise are sometimes used interchangeably. In this thesis and consistent with the extant literature, physical activity and exercise are related yet distinct. Physical activity represents an umbrella term that is used to describe various forms of activity pursuits, including exercise (Beauchamp, 2019). More specifically, physical activity is any movement of the body (leisure and non-leisure related) that is produced by skeletal muscles that expends energy (Caspersen et al., 1985). Physical activity represents a broader term that helps researchers to operationalize segments of day-to-day, minute-by-minute daily life in which activity occurs – including sleep, occupational, transportation, and during leisure time (Caspersen et al., 1985). Leisure-time physical activity is a type of activity that is performed during an individual's discretionary time, which can be divided into categories including exercise, sport participation, household tasks (i.e., gardening), and hobbies (Caspersen et al., 1985). Exercise is planned, repetitive, and structured around improvements or maintenance of one or more components of physical fitness (Caspersen et al., 1985). Given that this research focused on targeting group-based exercise as a venue for physical activity promotion (de Lacy-Vawdon et al., 2018; Harden et al., 2015; King, 2001), the term exercise will be used to refer to the structured and planned group-based exercise class sessions that took place each week (i.e., same type, time, and place) at the recreational facility involved in the thesis.

Benefits of Physical Activity

For older adults, living a healthy active lifestyle by engaging in regular physical activity is fundamental for reducing the incidence of chronic disease and disability, increase the years of

living independently, and improve quality of life (Canadian Society for Exercise Physiology, 2018; Chodzko-Zajko et al., 2009; Paterson & Warburton, 2010; Warburton et al., 2010). Specifically, physical health benefits may include increased muscle and bone strength, balance, flexibility, mobility, and maintaining a healthy body weight (Chodzko-Zajko et al., 2009). Psychological health benefits may include reduced anxiety, depression, and stress, while increasing self-confidence, self-efficacy, self-esteem, mood, and quality of life (Chodzko-Zajko et al., 2009). Social health benefits may include increasing social connection, belonging, and support (de Lacy-Vawdon et al., 2018; Farrance et al., 2016; Franco et al., 2015; Killingback et al., 2017) and this, in turn, may decrease perceptions of loneliness and social isolation, which are prominent concerns among older adult populations (World Health Organization, 2002).

Physical Activity Guidelines

To ensure that all Canadians have the opportunity to understand physical activity, the 24-Hour Movement Guidelines offers information on how to make informed decisions about the different types (e.g., aerobic vs. muscle-strengthening), varying intensity (e.g., moderate and vigorous-intensity activity), frequency of physical activity behaviour (e.g., how often a person should engage in activity throughout the week), the duration of physical activity behaviour (e.g., length of time that a person should engage in a single activity), sleep (i.e., getting quality sleep on a regular basis), and sedentary behaviour (e.g., breaking up long periods of sitting as often as possible; Canadian Society for Exercise Physiology, 2020).

The Canadian Society for Exercise Physiology (CSEP), ParticipACTION, and The Public Health Agency of Canada (PHAC) have worked collaboratively to provide this new set of recommendations for toddlers (aged 1-2 years), preschoolers (aged 3-4 years), children and youth (aged 5-17 years), adults (aged 18-64 years), and older adults (aged > 65 years). In brief,

individuals should be physically active each day, minimize sedentary behaviour, and achieve sufficient sleep (Canadian Society for Exercise Physiology, 2020).

The new guidelines for older adults include: 1) performing a variety of types and intensities of physical activity that contribute to an accumulation of at least 150 minutes of moderate to vigorous aerobic physical activities per week, muscle strengthening at least twice a week, balance activities, and several hours of light physical activity, 2) getting 7 to 8 hours of good-quality sleep on a regular basis, and 3) limiting sedentary time to 8 hours or less (Canadian Society for Exercise Physiology, 2020). A key assertion for all international physical activity recommendations is that in order for physical activity to produce health benefits it is strongly encouraged that physical activity becomes an integral part of daily life and becomes routine over months and/or years (Bull et al., 2020; Canadian Society for Exercise Physiology, 2020; Piercy et al., 2018). This thesis specifically addresses the aerobic activity component of the 24-Hour Movement guidelines (i.e., activity that contributes to the recommended 150 minutes of weekly moderate-to vigorous-intensity aerobic physical activity; Tremblay et al., 2011).

Older Adults Adherence to Physical Activity Guidelines

Despite government and organizational efforts to promote physical activity, the latest findings from the Canadian Health Measures Survey (CHMS), in which used objective assessments to measure of activity levels, found that only 16.9% of older adults aged 60-79 years met the recommended 150 minutes of moderate-to vigorous-intensity aerobic physical per week in bouts of at least 10 minutes (Clarke et al., 2019). Unfortunately, the CHMS does not take into account accelerometer data from older adults greater than 79 years, however, the prevalence of physical activity behaviours has been consistently illustrated to decline over the course of adulthood and into older adulthood (Chad et al., 2005; Clarke et al., 2019). For example, data

from objectively measured physical activity levels among older adults (i.e., >80 years) in the United States demonstrate that this segment of the older adult population engages in less activity compared to other age groups (Evenson et al., 2012).

With the new 24-Hour Movement Guidelines recognizing that all movement (including light activity) is important health, as opposed to just moderate-to vigorous-intensity (Canadian Society for Exercise Physiology, 2020), structured exercise classes captures a unique context to explore physical activity participation. In this regard, this thesis is primarily concerned with efforts to promote exercise adherence as a way to increase physical activity levels among older adults considering that they represent the least active segment of the Canadian population (Clarke et al., 2019). Indeed, the current lack of sufficient physical activity indicated by older adults is one of the major public health concerns facing Canada (Statistics Canada, 2020; World Health Organization, 2010). This is a concern because growing older, in addition to physical inactivity, can present many challenges such as the risk of developing physical, social and cognitive health problems that can arise from chronic disease, disability, fall-related injuries and social isolation (Chou et al., 2012). This, in turn, may pose substantial social and economic burden on individuals, families, and health care spending in Canada (Janssen, 2012). Therefore, in order to improve the health of older adults while reducing the social and economic burden associated with insufficient physical activity (Janssen, 2012), there is a desire to better understand the factors that influence behaviour among this population (e.g., King, 2001). In doing so, we can therefore identify the factors with the greatest likelihood of supporting sustained participation in physical activity throughout older adulthood.

Correlates of Physical Activity Behaviour

Given the low levels of physical activity observed, research investigating correlates (factors associated with activity) and determinants (those with a causal relationships) of physical activity behaviour have accelerated in recent decades (e.g., Bauman et al., 2012). For example, in a comprehensive systematic review of physical activity correlates and determinants, Bauman and colleagues (2012) developed an inclusive socio-ecological model to explore personal (e.g., biological, psychological), interpersonal (e.g., social support, cultural norms), environmental (e.g., social, built, natural environment), policy (e.g., transport, urban planning, parks, national physical activity plans), and global level factors on physical activity across the life course. A number of constructs captured by each of these dynamic and integrative categories were reported to be associated with physical activity behaviour for adults (i.e., 18 years of age) such as male sex, age, ethnicity, education, weight, income, health status, self-efficacy, attitudes (i.e., perceived benefits, motivation), and intentions to exercise (Bauman et al., 2012).

Research has also found that similar factors contribute to an individual's physical activity behaviour in older age. For example, Fisher et al. (2018), demonstrated that age, living in seniors' housing, using nursing/home care services, receiving encouragement to be active, and having benches available in the neighborhood were associated with physical activity (Fisher et al., 2018). In addition, self-efficacy, health status, barriers, social support, and the presence of trails were positive associated with physical activity (Fisher et al., 2018). In another example, Haley and Andel (2010), found that male gender, being married, greater perceived functional health, lower body-mass index and high education were associated with physical activity in older adults. Altogether, research to date illustrates that physical activity behaviour is complex and dynamic over the life course (Bauman et al., 2012). Considering that the majority of research has often focused on identifying demographic and individual factors associated with physical activity

among older adults, there is a need to examine additional factors related to physical activity participation, such as social factors. Therefore, one avenue to explore is the exercise group itself, and in particular, the role of group-based exercise in relation to adherence behaviour in older adults (e.g., Stevens & Cruwys, 2020).

Group-Based Exercise

In light of the benefits of physical activity and the low levels of physical activity observed (Clarke et al., 2019), continued calls advocate for exploring the context of group-based exercise (e.g., Beauchamp, 2019; Harden et al., 2015; Stevens et al., 2017). Indeed, group-based exercise programs represent a fruitful social context to explore, whereby group members meet at the same place, at the same time, and undergo the same exercise activity (Estabrooks, 2008; Estabrooks et al., 2012). The findings from systematic and meta-analytic review studies have pointed to exercising with others in a group-based setting (i.e., walking and running groups, community, worksite, and medical group-based exercise programs), as more advantageous than exercising alone in terms of promoting sustained participation (see Burke et al., 2006; Carron et al., 1996; Dishman & Buckworth 1996; Harden et al., 2015; Kahn et al., 2002; Van der Bij et al., 2002 for reviews). Specific to older adults, community group-based exercise programs that are conducted within recreational facilities have been particularly effective at promoting sustained participation in physical activity as well as improving social connection through reducing social isolation (Beauchamp et al., 2018; Bennet et al., 2018; Sebastião & Mirda, 2021). Further, participation in community group-based exercise programs has been linked to exercise-specific enjoyment and exercise-specific motivation in older adult group-based exercise class attendees (Bennet et al., 2018; de Lacy-Vawdon et al., 2018; Farrance, Tsoflio, & Clark 2016; Franco et al., 2015).

To better understand the effect that exercising with others has on individual exercise behaviour, researchers have identified several aspects of the group that may drive this positive change (Burke et al., 2006; de Lacy-Vawdon, et al., 2018; Farrance et al., 2016; Franco et al., 2015; Harden et al., 2015). A review of extant literature reveals that constructs such as the desire to belong, social support, and group cohesion are frequently reported to be associated with adherence to group-based exercise programs among older adults (de Lacy-Vawdon et al., 2018; Farrance et al., 2016; Franco et al., 2015. In addition, instructor characteristics (i.e., being enthusiastic and providing encouragement), program design (i.e., location, affordability, type), and perceived and observable benefits are also particularly important (de Lacy-Vawdon et al., 2018; Farrance et al., 2016; Franco et al., 2015). Notably, each one of these group relevant constructs provides a better understanding of how groups influence exercise adherence behaviour. However, one promising group construct that has grown exponentially within the field of health and exercise psychology is social identity (Beauchamp et al., 2019; Steven et al., 2017).

Identity

Identity is considered to exist along a spectrum ranging from personal identity to social identity (Hogg & Williams, 2000). Personal identity is concerned with a distinctive set of personality characteristics and qualities that an individual would define him or herself (e.g., self as an exerciser; Bruner, Dunlop, & Beauchamp, 2014). Research points to the strength of exercise identity being strongly associated with behavioural outcomes such as frequency of weekly exercise (Strachan et al., 2010), minutes of weekly moderate to vigorous exercise (Strachan et al., 2010), and general exercise adherence (Strachan et al., 2015). Moreover, social identity is focused on the individual aligning themselves with specific social group membership

(e.g., church, workplace, family, school, sports team). The focus of this thesis lies on the social end of the spectrum, which aligns directly with the extent research demonstrating that exercise adherence is greater in groups than exercising alone (e.g., Harden et al., 2015). Further, it's important to note that personal identity and social identity in relation to exercise may be interrelated (Evans et al., 2019; Strachan et al., 2012), however, this investigation extends beyond the scope of this thesis.

Social Identity

Within the field of health and exercise psychology, research exploring the Social Identity Approach (SIA) has received considerable attention in recent decades (Beauchamp, 2019; Stevens et al., 2017). The SIA originated from the field of social psychology, which is grounded in two theories: Social Identity Theory (SIT; Tajfel & Tuner, 1979) and Self-Categorization Theory (SCT; Turner et al., 1987). SIT considers how groups (e.g., sports teams, exercise groups, family, religion, workplace) are incorporated into our self-concept, and explains the mechanisms through which individuals define and evaluate themselves (Hogg & Abrams, 2001). SCT extends SIT by considering that individuals within a group categorize themselves in relation to salient and observable attributes of others (e.g., age, gender, race, and education; Turner et al., 1987). Separately, the two theories provide a thorough explanation of how and why groups, and the social relationships they encompass, are important for health and behaviour.

Together, the fundamental idea of the SIA is that when a group becomes integrated into the sense of self (SIT; as a member of exercise class X"), and the individual perceives themselves to be similar to other members (SCT), they will be more likely to feel a sense of belonging, connection and support. The consequences of individuals categorizing themselves in

terms of a specific social identity can ultimately lead individuals to align personal behaviour to affirm and express behaviour that is representative of in-group members (Turner et al., 1987). In this regard, the SIA offers a fresh perspective for exploring group-based exercise contexts and the impact of social identity for helping to understand why motivation to maintain involvement in group-based exercise becomes salient (Stevens et al., 2017).

Accordingly, one's social identity with an exercise class may relate to exercise adherence behaviour in older adults. For example, Beauchamp et al (2018) successfully implemented a social identity based intervention among older adults >65 years of age which led to increased adherence. More specifically, Beauchamp et al (2018) used strategies informed by social identity to structure group-based exercise programs in which participants exercised with others who shared similar attributes (i.e., older adults), and encouraged post-workout gatherings which included refreshments and a place to gather, thus increasing social connection among participants. Given that participation in group-based exercise presents older adults with an opportunity to establish a social identity, it is possible that social identity may influence older adult's adherence behaviour. While researchers have not yet directly investigated social identity and adherence behaviour among older adults, support can be taken from many studies that have explored the role of social identity in group-based exercise contexts among adults (Steffens et al., 2019; Stevens et al., 2018; Stevens et al., 2019; Strachan et al., 2012).

Definition and Measurement of Social Identity

In an exercise setting, social identity has been primarily viewed as a unidimensional construct, and has typically focused on the general strength of an individual's identification with a particular exercise group (Steffens et al., 2019; Stevens et al., 2018; Stevens et al., 2019). In this regard, exercise psychology researchers that have adopted a unidimensional construct to

examine social identity have often operationalized using the four-item social identification scale (e.g., "I identify with this exercise class"; Postmes et al., 2013). Recent studies have established important links between social identification and attendance (Steffens et al., 2019; Stevens et al., 2018; Stevens et al., 2020; Stevens et al., 2019), however, recent calls highlight the need to understand social identification through a multidimensional lens given the potential to add novel insight for promoting exercise adherence (Beauchamp, 2019; Rowe & Slater, 2021; Stevens et al., 2017).

Emerging research from sport and exercise domain illustrate that social identity may be multidimensional (Bruner & Benson, 2018; Rowe & Slater, 2021). For example, research investigating social identity in youth sport, and more recently, group-based exercise contexts has utilized Cameron's (2004) three-factor model of social identity (e.g., Bruner, Balish et al., 2017; Bruner, Boardley, Benson et al., 2018; Bruner et al., 2014; Bruner et al., 2015; Martin et al., 2017; Rowe & Slater, 2021). Grounded in Tajfel's (1981) formal definition, Cameron (2004) developed a multidimensional model of social identity which proposes three key dimensions of social identity (ingroup ties, cognitive centrality, ingroup affect). While Cameron's (2004) three factor model was developed in social psychology, this conceptualization has informed important research avenues for youth athletes and adult exercise class attendees (e.g., Bruner et al., 2014; Rowe & Slater, 2021). Notably, empirical support can be drawn from several studies that have applied the three-factor model of social identity in sport and exercise contexts, demonstrating that IGT, CC, IGA relate differently to various individual athlete outcomes (e.g., Bruner et al., 2014; Martin et al., 2017), and most pertinent to the current thesis, adherence to group-based exercise (Rowe & Slater, 2021). For example, Bruner and colleagues (2014) found that high school athletes' perceptions of IGA were positively associated with prosocial behaviour amongst

teammates, whereas perceptions of IGT were positively associated with antisocial behaviour directed towards both teammates and athletes on the other team (Bruner et al., 2014). In another example, Martin and colleagues (2017) found that athletes perceptions of in-group ties and in-group affect significantly and positively predicted follow up assessments of commitment in youth athletes. More recently, Bruner and Benson (2018) developed the Social Identity Questionnaire for Sport (SIQS), which contextualized Cameron's (2004) model within a sport context. Research in adult exercise class by Rowe and Slater (2021) adapted and applied the SIQS for an adult group-based exercise context and found that IGA was a significant predictor of exercise adherence in adults whereas IGT and CC was not. Altogether, there is strong theoretical basis and empirical evidence supporting the importance of social identity dimensions in sporting outcomes, and more recently, exercise adherence outcomes in adult populations. Given the importance that older adult exercise class attendees place on social aspect of group-based exercise (e.g., Farrance et al., 2016), it is possible that social identity dimensions may influence older adults' exercise adherence in exercise groups. Therefore, is of particular interest to explore measures of social identity dimensions in an older adult group-based exercise context.

Social Identity and Exercise Groups

Social identity has recently been highlighted as a salient theoretical framework to understand engagement in physical activity, exercise group behaviour, and effective leadership (Beauchamp, 2019; Rees et al., 2015; Stevens et al., 2017). While researchers have not directly investigated social identity and adherence through a multidimensional measurement in older adults, several studies have demonstrated that social identity, and in particular social identification, has important consequences for exercise adherence (i.e., greater attendance) in

group-based contexts among youth and adult population (Bruner et al., in press; Rowe & Slater, 2021; Steffens et al., 2019; Stevens et al., 2018; Stevens et al., 2019; Strachan et al., 2012).

Situated in the context of group-based exercise, a growing body of evidence points to the strength of social identification and the desire to engage in normative group behaviour (i.e., engaging in group-relevant activities; Bruner et al., in press; Rowe & Slater, 2021; Steffens et al., 2019; Stevens et al., 2018; Stevens et al., 2019; Strachan et al., 2012). For example, Strachan et al. (2012) investigated role and group identity among a sample of runners. Using the cognitive centrality dimension of Cameron's (2004) model, researchers found that those who perceived the running group to be more important to self-definition completed a greater percentage of runs with the running group compared to those who perceived the running group to be less important (Strachan et al., 2012). In addition, group runners who perceived the running group to be important also had a more maladaptive response to the group disbanding, reporting higher perceptions of difficulty, and felt less confident in their abilities if the group were to disband. Building on the study limitations (i.e., hypothetical scenarios), Stevens et al. (2019) explored social identification and adult runners' involvement in parkrun, (i.e., a free weekly community 5k running event that takes place on Saturdays). Researchers found that runners who strongly identified as a 'parkrunner' engaged in more normative in-group behaviours (i.e., regular participation in scheduled running events). In addition, the degree to which individuals identified more strongly as a 'parkrunner' were shown to be associated with greater perceptions of exercise satisfaction of parkrun experiences, greater running participation, and greater perceptions of group cohesiveness compared to individuals who identified less strongly as a 'parkrunner'.

As another example, in a prospective study of 255 group exercise participants across 88 different gym and fitness facilities, Steffens et al (2019) examined how identity leadership

portrayed by group-based exercise instructors may be associated with group member attendance, and in-class effort. In particular, researchers found that group members who identified more strongly with their group-based exercise program had greater attendance to their respective exercise program and reported greater in-class effort (Steffens et al., 2019). In a similar vein, Bruner et al. (in press) examined the relations between social identity and adherence in adolescence participating in a school, group-based exercise setting. Researchers used the IGT dimension of social identity that was originally developed by Cameron (2004) and found that members who felt a stronger sense of connection and belonging with other club members significantly predicted higher objective attendance (i.e., attended more sessions recorded by the instructor).

Collectively, these studies demonstrate promising evidence that points to the salience of social identity and its applicability to group exercise contexts and that developing social identities derived from exercise groups can exhibit a positive impact on physical activity engagement and adherence to group exercise classes (Beauchamp, 2019; Stevens et al., 2017). However, the majority of previous studies have been cross-sectional in nature and have adopted short-term attendance measures of frequency/volume. For example, Steffens and colleagues (2019) measured frequency of class attendance over 4 weeks, Stevens and colleagues (2018) measured percentage of total sessions attended in a single week, and Strachan and colleagues (2012) measured percentage of running sessions attended in a typical week, while Bruner et al. (in press) examined social identity and attendance over an eight week period. To date, no known studies have specifically examined perceptions of social identity in an exercise class and adherence behaviour over the course of an exercise class term (e.g., four months).

In addition, recent studies investigating social identity within exercise groups contexts have predominately used a unidimensional measure of identification (e.g., Stevens et al., 2019), despite evidence from sport research suggesting that social identity has multiple dimensions (Bruner & Benson, 2018; Dimmock et al., 2005: Rowe & Slater, 2021). Further, recent research has demonstrated that adult exercise group attendees' social identity is multidimensional and the dimensions may be associated differently with exercise class adherence (Rowe & Slater, 2021). There is no known research to date, that addresses the dimensions of social identity in relation to older adult populations in the context of exercise group adherence behaviour. In line with the multidimensional view of social identity, it is important to explore whether social identity dimensions (i.e., IGT, CC, IGA) differentially relate to older adults' participation in, and adherence to, group-based exercise programs. Further, one of the proposed benefits of using a multidimensional conceptualization and measurement of social identity is that it allows researchers to gain a nuanced understanding of how the different dimensions of social identity associate with behaviour, and more broadly, improve physical activity promotion. Given that research to date has predominantly conceptualized social identity as a unidimensional construct, some of the sensitivities associated with the multidimensional nature of the construct (e.g., different dimensions of social identity predicting or not predicting certain outcomes) may be lost. As an illustration, the extent to which each of the three factors (i.e., IGT, CC, IGA) signifies identity with a group could differ for the same group member. Therefore, potential nuances of how each factor may differentially relate to individual exercise adherence behaviour in an exercise context, is an important research endeavour.

With mounting evidence highlighting the salience of social identity for adherence in group-based exercise contexts (Steffens et al., 2019; Stevens et al., 2018; Stevens et al., 2019;

Strachan et al., 2012), the primary purpose of this thesis was to examine relations between social identity dimensions (IGT, CC, IGA), and adherence behaviour over time in a sample of older adults participating in a community, group-based exercise class. It was hypothesized that older adult exercise class attendees with stronger perceptions of the dimensions of social identity (i.e., IGT, CC, IGA) related to their community group-based exercise class would report higher adherence to the exercise class over the four-month exercise term.

Chapter 3: Methods

Design

This study was a prospective research design. Participants completed a baseline questionnaire that was composed of items that queried demographic information, descriptive information (i.e., current physical activity, previous exercise class history, and previous exercise class participation), and social identity. During the course of the four-month exercise term, participants then tracked their weekly exercise class attendance using individualized logbooks; see Appendix A.

Sample Size

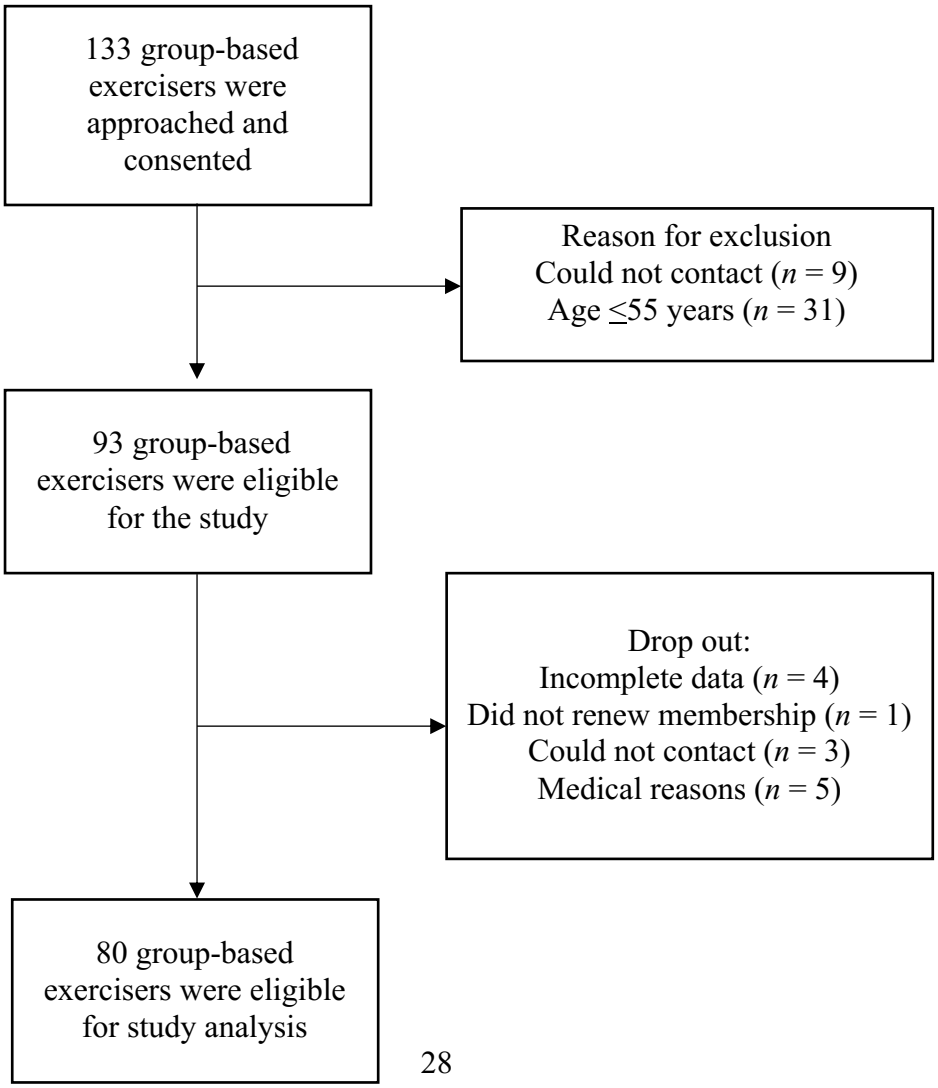
A total of 77 older adult group-based exercise class attendees was the targeted sample size in order to detect a medium effect (Cohen's $f^2 = 0.15$), at a power equal to .80 and a two-tailed alpha = .05 (Cohen, 1988; Faul et al., 2007). This analysis accounted for three test predictors (IGT, CC, IGA), and six total predictors (age, gender, previous exercise class participation as covariates). See Appendix B (screen shot G*power).

Participants

Participants were eligible to participate in the study if they met the following criteria: 1) intention to participate in a group-based exercise class over the four-month exercise term, 2) over the age of 55 years, and 3) able to provide written consent in English. After excluding participants who did not make the age cut point of 55 and older *(n* = 31), did not complete necessary study documents (*n* = 3), were on vacation (*n* = 1), did not renew their membership (*n* = 1), could not be contacted (i.e., lost to follow up) (*n* = 3), or stopped exercising for medical reasons (*n* = 5), 80 participants were eligible for final analyses (see Figure 1 for participant flow through the study).

Figure 1

Flow Diagram of Study Recruitment and Final Sample Eligibility



Participants in this thesis were 80 group-based older adult exercise class attendees (M_{age} = 68.00, *SD* = 7.01 years). In regard to demographics, there were 70 females (87.5%) and 10 males (12.5%). Overall, older adults ranged in age from age from 55 to 82 years. Participants were primarily Caucasian (91.3%), with a small minority reporting being Chinese (1.3%), Indigenous/Aboriginal (1.3%), Latin (1.3%) and other (2.5%). In addition, 70% of participants were married, 40% had a post-secondary (college/university) degree, 90% were retired, and 95% reported a car as the primary source of transportation to get to the recreational facility.

Table 1

Demographic Characteristics and Frequencies of Older Adult Group-Based Exercisers

Variable	*X*	SD
Age (years)	68	7.01
Variable	n	%
Gender (*N* = 80)		
Male	10	12.5
Female	70	87.5
Marital Status (*N* = 80)		
Married	56	70.0
Divorced	6	7.5
Widow	11	13.8
Single	6	7.5
Living common law	1	1.3
Separated	0	0
Ethnicity (*N=78*)		
Caucasian (White)	73	93.6
Black	0	0
Chinese	1	1.3
Japanese	0	0
Indigenous/Aboriginal	1	1.3
Korean	0	0
South Asian	0	0
Latin	1	1.3
Other	2	2.6
Level of Education (*N=80*)		
Eighth grade or less	0	0
Some high school	9	11.3
High school diploma	15	18.8
Vocational school or some college	9	11.3

Variable	*X*	SD
College or university degree	32	40.0
Professional or graduate degree	15	18.8
Annual Family Income (*N* = 77)		
<$20,000	3	3.9
$20,000 - $39,000	10	13.0
$40,000 - $60,000	21	27.3
$60,000 - $80,000	8	10.4
$80,000 - $100,000	4	5.2
>$100,000	10	13.0
Prefer not to specify	21	27.3
Employment Status (*N* = 80)		
Retired	72	90.0
Part-time employed	1	1.3
Self-employed	1	1.3
Homemaker	2	2.5
Full-time employment	3	3.8
Unemployed more than 1 year	0	0
Unemployed less than 1 year	0	0
Disabled and unable to work	1	1.3
Mode of Transport (*N* = 80)		
Car	76	95.0
Bus	0	0
Walk	4	5.0
Bike	0	0
Run	0	0
Other	0	0
Health Status (*N* = 80)		
Excellent	16	20.0
Very Good	30	37.5
Good	25	31.3
Fair	5	6.3
Poor	4	5.0

Participants in this thesis were a part of a range of adult group-based exercise classes that were open to anyone above the age of 18 years. Further, group-based exercise class represented three main categories of physical activity that were offered at one recreational facility. These group exercise classes focused on aerobic physical activity (*n* = 53), muscle strengthening activity (*n* = 15), and balance and flexibility activity (*n* = 12). Participants intended to participate

in classes either “once per week”, twice per week and “3 times per week”, with the majority (*n* = 33) attending three times per week.

Table 2

Frequency of Participant (N = 80) by Group-Based Exercise Class Type

Physical Activity Category	n =	%
Aerobic	53	
H.I.T.T.	5	(6.3)
Circuit training	1	(1.3)
Dynamic boxing	7	(8.8)
Bootcamp	2	(2.5)
Aqua combo	16	(20.0)
Aquafit	18	(22.5)
Aqua running	4	(5.0)
Muscle Strengthening	15	
Easy fit	12	(15.0)
Total core	1	(1.3)
Yoga fitness	2	(2.5)
Balance and Flexibility	12	
Aqua yoga	1	(1.3)
Hydrotherapy	4	(5.0)
Chair yoga	2	(2.5)
Easy yoga	1	(1.3)
Moderate yoga	1	(1.3)
Tai chi stretch	3	(3.8)
Variable	n =	M ± SD
Group Size	79	19.29 ± 8.29

Table 3

Participants by Intended Frequency of Class Attendance

Intended attendance frequency	Number of participants (n = 80)
Zero times per week	0
Once per week	29
Twice per week	18
Three times per week	33

On average, participants reported being members in exercise groups consisting of approximately 19 members (*SD* = 8.29 members) and had participated in their chosen group-

based exercise for 6.11 years (*SD* = 7.21 years). 59.2% of participants reported attending their group-based exercise class between one month to 3 years. The average self-reported MVPA was 253.42 (*SD* = 378.3). Thirty-nine participants (48.8%) reported meeting public health physical activity guidelines of 150 minutes of MVPA lasting 10 minutes (Tremblay et al., 2011). An overview of participants' demographic information, exercise class types, class attendance intentions, and current levels of physical activity can be located in Table 1, 2, 3, and 4.

Table 4

Time 1 Exercise Behaviours of Older Adult Group-Based Exercisers

Variable	n =	%
Meeting exercise guidelines	39	48.8
Not meeting exercise guidelines	41	51.2
Variable	n =	*M* ± *SD*
History of group-based exercise (years)	77	6.11 ± 6.80
History of group exercise class participation (years)	76	4.92 ± 6.10
Mild exercise (min/week)	57	196.0 ± 219.1
Moderate exercise (min/week)	57	195.3 ± 274.1
Vigorous exercise (min/week)	43	153.6 ± 174.4
Moderate-to-vigorous exercise (min/week)	70	253.42 ± 378.3
Resistance training (min/week)	34	59 ± 38.8
Attendance to exercise class[a]	80	70.50 ±16.98

Note. [a]Percentage of class attended over the four-month exercise term

Recruitment

The study was conducted at a single recreational facility in Northeastern Ontario. The facility offers a variety of weekday registered and drop-in adult group-based exercise classes to members above the age of 18. The recreational facility, and the various group-based exercise classes represent a unique social context to study because the members meet at the same time, place, and undergo the same exercise activity, and therefore, group membership can be fostered. At the time the study was conducted, the recreational facility offered 22 group-based exercise

classes between Monday and Friday, ranging in duration from 45 to 60 minutes, and in frequency between one and three times per week; see Appendix C.

Procedure

Prior to conducting the study, the study procedures were approved by the Nipissing University Ethics Review Board and the participating recreational facility from Northeastern Ontario. Researchers were granted permission to speak with exercise class leaders and participants about the study at the start of the new exercise term. Convenience sampling was used as participants were recruited in person at a local recreational facility. More specifically, participants were recruited in two ways. First, participants were recruited through informational posters placed on bulletin boards throughout the facility which displayed important inclusion criteria, dates and length of study, contact information of the research team, and participant benefits; see Appendix D. Second, participants were approached by exercise class leaders as well as a member of the research team who gave participants a brief detailed description about an opportunity to participate in a group-based research study before and after various exercise class sessions. Following initial recruitment procedures, purposeful sampling took place (i.e., only older adults above the age of 55 years).

At the announcement, participants were informed that the study would involve answering questions about their experiences with group-based exercise classes and that the collection of data would take place during the early stages of the exercise term (within two weeks of the class starting) and they would be asked to track their attendance throughout the four-month exercise term using a logbook. Participants submitted their logs every month directly to the researcher or delivered them to a locked drop box located at the front desk of the recreational facility. Participants were given a two dollar coffee card for completing two out of the four monthly log

sheets. In order to attract prospective participants and minimize participant dropout, participants were informed that by participating in the research they could voluntarily enter a random draw for a $100-dollar pre-paid visa card.

Once written consent was obtained (see Appendix E), participants were given a choice to complete the questionnaire via Qualtrics (an online survey platform) or pen-and-paper copy; see Appendix F and G. At this time, participants were also given a brief overview of the individual logbook that would be individualized during the initial visit. Further, participants were encouraged to complete the Time 1 questionnaire immediately at the recreational facility in a space provided or bring the questionnaire back to the following class. It was possible that participants may have been involved in more than one group-based exercise class at the time of the study. Therefore, at the beginning of the study, if participants attended multiple independent group-based exercise classes each week they were further instructed to choose only one exercise class that they attended most frequently and to complete the remainder of this study with this one group-based exercise class in mind. To aid in this process, participants were shown a visual group fitness calendar provided by the participating recreational facility with the dates and times of each scheduled exercise class that was offered during the fall session. Participants were then instructed to circle the dates and times that they would go to this one class each week.

Participants tracked their exercise class attendance via individualized logbooks over the course of the four-month exercise term. Following baseline data collection, a member of the research team frequently attended the recreational facility by placing a booth in a common entryway that was easily recognizable by study participants. Researchers provided assistance to participants, helping to answer questions about the study, and collecting log sheets. Participant confidentiality was ensured by not using names on any of the documents and by allowing

participants to create a unique identifier code at the beginning the questionnaire and on the logbook sheets in order to match their data across time.

Measures

Demographic and background information. Demographic information including gender, age, marital status, racial background, level of education, annual family income, employment status, mode of transport and health status were collected at baseline. Self-reported physical activity at baseline was assessed using the Godin Leisure Time Exercise Questionnaire (GLTEQ; Godin, 2011). Participants reported the number of times per week that they performed mild exercise (minimal effort, no perspiration), moderate exercise (not exhausting, light perspiration), strenuous exercise (heart beats rapidly, perspiration), and resistance training (weight training) during their free time in a typical seven-day period. While the original GLTEQ (Godin & Shepard, 1985) asks participants to report the number of 15-minute bouts of exercise, the modified questionnaire was adapted to reflect the current Canadian Physical Activity Guidelines (i.e., >10-minute bouts; Trembley et al., 2011) at the time of the study. Further, participants were also asked to report the average duration of the exercise bouts (minimum bouts of at least 10 minutes or longer) for each of the four categories of exercise. Moderate-to-vigorous physical activity (MVPA) was calculated by multiplying the frequency of exercise bouts (for the moderate and strenuous categories) by the average duration of an exercise bout for the given intensity category (Beauchamp et al., 2018). MVPA at baseline was investigated to explore the study sample because the Canadian Physical Activity recommendation is engaging in at least 150 minutes of MVPA per week (Tremblay et al., 2011).

Group Characteristics: Participants provided descriptive information about their exercise group by reporting frequency of class attendance within their exercise group (i.e., one, two and

three times per week). In addition, participants were provided open-ended response questions regarding how long they had been participating in this type of group-based exercise, how long they have been participating in their specific exercise class, and approximate group size.

Social Identity. Participants' social identity with their primary exercise group at the recreational facility was measured at the beginning of the exercise session using a 12 item positively worded version of the social identity measure (Cameron, 2004) adapted for an exercise setting. The 12-item social identity measure has been found to be psychometrically sound in a sport setting (Bruner, Balish et al., 2017; Bruner, Boardley, Benson et al., 2018; Bruner et al., 2015). The scale's 12 items were adapted to fit the exercise context with the word 'team' being replaced with 'exercise class', thus reflecting perceptions of the exercise class context and not a sport team. For example, the IGT item, "*I have a lot in common with other members in this team*" was modified to, "*I have a lot in common with other members in the exercise class*". Specifically, four items measured each of perceived IGT (e.g., "*I have a lot in common with other members in this exercise class*"), CC (e.g., "*I often think about the fact that I am an exercise class member*), and IGA (e.g., "*In general, I'm glad to be a member of this exercise class*"). Participant responses were captured using a 7-point Likert-type scale anchored at 1 (*Strongly Disagree*) and 7 (*Strongly Agree*), where higher scores reflected a stronger social identity relative to the dimension which was associated with the exercise class. Responses for the items in each subscale were averaged to create a score for each social identity dimension. The adapted measure demonstrated acceptable reliability (i.e., internal consistency) across each of the IGT ($\alpha = .93$), CC ($\alpha = .95$), and IGA dimensions ($\alpha = .79$).

Adherence. Exercise class attendance was operationalized as the percentage of classes attended throughout the four- month exercise class term. Participants' used their individualized

logbooks provided at study onset to self-report their attendance to their primary exercise class across the term. To make it simple, participants were instructed to circle either yes or no on the day the exercise class was offered to indicate if they attended. Because classes met once, twice, or three times per week, attendance was calculated as a percentage of classes attended out of the actual number of classes offered over four months for each respective exercise class. As a result, adherence scores could range between 0 (attended no classes) and 100 (attended all classes), where higher scores reflected greater class adherence vis-à-vis attendance.

Statistical Analysis

All statistical analyses were performed using IBM SPSS Statistics Version 26 (IBM Corp, Armonk, NY). Descriptive statistics and frequency statistics were used to describe the means and standard deviations of all the demographic and the main study variables (i.e., IGT, CC, IGA, adherence). In order to determine statistical significance, the p value was set at α=.05. Pearson bivariate correlation analyses between the main study variables were conducted in order to determine the existence, and strength of, any univariate relationships. A hierarchical multiple regression analyses was conducted in order to simultaneously examine the relationship between the social identity constructs and adherence while providing an understanding of the relative contribution of each predictor. In the first step, possible covariates were tested in the model (i.e., age, gender, and previous exercise class participation given their possible relationship with exercise; e.g., Bauman et al., 2012). In the second step, IGT, CC, and IGA were added to the model. Prior to analysis, preliminary data screening was conducted to check for missing values and incomplete cases. Further, the data set was screened for outliers and assumptions of normality were assessed.

Chapter 4: Results

Social Identity Predicting Adherence

Descriptive statistics including means and standard deviations for each variable used in the main analyses can be found in Table 5. In summary, each of IGT (M = 5.10, SD = 1.42), CC (M = 4.75, SD = 1.81), and IGA (M=6.08, SD = 1.00), scored in the moderate-to-high range of the 7-point Likert scales. Group exercise classes ranged from 12 (e.g., Tai Chi Stretch, Total Body Core) to 38 (e.g., Aqua Fit, Aqua Yoga, Easy Fit) classes scheduled over the four-month term. Participants attended an average of 70.5% of total classes, but this value ranged from 3 to 34 depending on the exercise class. To illustrate with a practical example, the participant with the fewest classes attended was a chair yoga attendee who only attended 3/13 sessions, and the participants (n = 2) with the most classes attended was an easy fit attendee and aqua combo attendee, who both attended 34/38 sessions respectively.

The results of the Pearson bivariate correlations are presented in Table 5. The correlations revealed that each of IGT (r = .31, p < .01), CC (r = .35, p < .01), and IGA (r = .39, p < .01) were positively related to class attendance in the moderate range.

Table 5

Descriptive and Bivariate Statistics and Scale Reliabilities for Main Study Variables

Variable	N=	Mean	SD	Skewness (*SE* = .27)	Kurtosis (*SE* = .53)	2.	3.	4.
1. Class attendance	80	70.50	16.99	-.62	.35	.31**	.35***	.39***
2. In-group ties	80	5.10	1.42	-.37	-.79	(.93)	85***	.58***
3. Cognitive centrality	80	4.75	1.81	-.61	-.72		(.95)	.68**
4. In-group affect	80	6.08	1.00	-1.00	.54			(.79)

Note: Cronbach alpha values on the inside diagonal. Class attendance scored as a percentage between 0 to 100, IGT, CC, and IGA scored on a 1 to 7 scale. * $p < .05$, ** $p < .01$, *** $p < .001$

Predictors of Adherence

In assessing normality of adherence to the exercise class over the four-month term, skewness and kurtoses were within the accepted values (Table 5). An examination of the Normal P-P plot (standardized residuals) suggested a linear relationship between the predictors and outcome variable. Based on normal chart probability, the existing points follow and approach the diagonal line, thus it was concluded that the residual value was normally distributed. Given that the normality assumptions were met, Pearson correlations and regression analysis were performed. In terms of multicollinearity, a high correlation was observed ($r = .85$) between the IGT and CC dimensions of social identity. The potential influence of multicollinearity was checked using the variance inflation factor (VIF) across a series of regression analyses. It was clear that cognitive centrality was problematic in the regression equation (VIF > 4), so it was removed from the main analysis. A single outlier was detected for IGA; however, the case was not deemed influential using Cook's distance (.019). As such, the raw score was retained.

A hierarchical multiple linear regression was conducted to develop a model for predicting group-based exercise class attendance from the social identity dimensions. In the first step of the hierarchical multiple linear regression, participant age, gender, and previous exercise class participation were added to the model, followed in step two by the two identity dimensions (IGT and IGA). In the first step of the regression, neither age (β = -.07, p = .58), gender (β = -.14, p = .24), nor previous exercise class participation (β = *03*, p = .98) were significantly related to exercise class attendance (F(3, 72) = -.018, p = .64). In step two of the regression analysis, the results indicate a significant model with the predictors accounting for 12% of the variance in adherence to exercise class over the four-month term (F(2, 77) = 7.53, p = .001; see Table 6). An examination of the individual dimensions of social identity revealed that IGA was significantly related to percentage of classes attended (β = .32, p = .02), whereas IGT was not significantly related (β = .11, p = .42). More specifically, for every unit increase in IGA, participants were expected to increase adherence by .32 percent. A visualization for the regression analysis is shown in Figure 2.

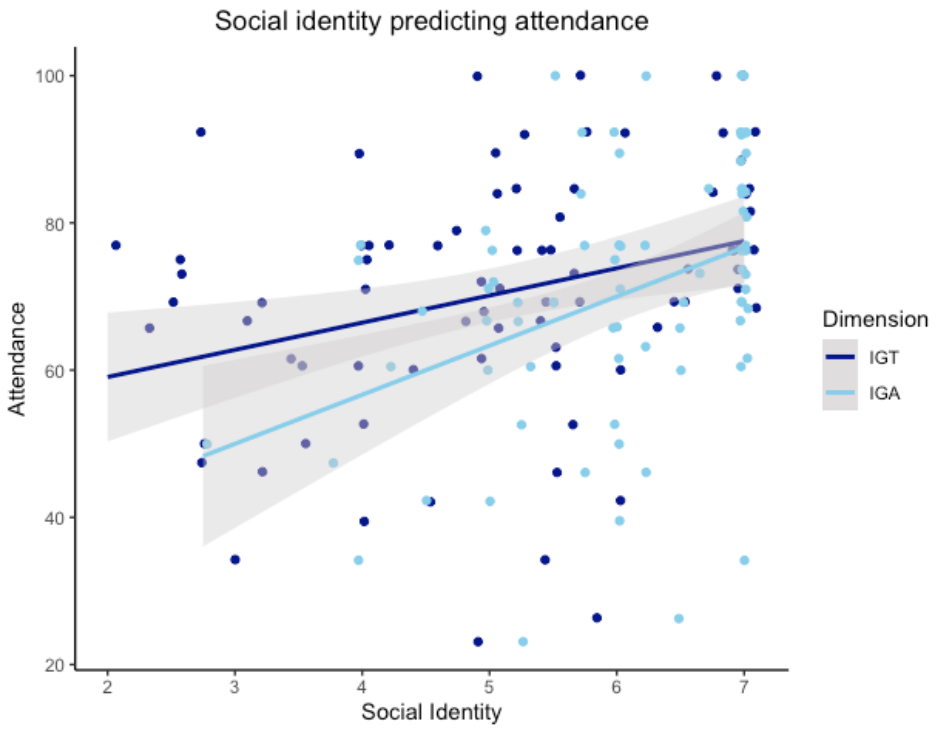
Table 6

Linear Regression Testing Social Identity and Class Attendance

	F_{change} (p value)	df	R^2_{change}	β^1(p value)	β^2(p value)
(Block #1)	.56 (.64)	3, 72	-.018		
Age				-.07 (.58)	-.06 (.60)
Gender				-.14 (.24)	-.12 (.32)
Previous exercise class history				.03 (. 98)	-.05 (.66)
(Block #2)	6.50 (.017)	2, 70	.12		
Ingroup ties					.11 (.42)
Ingroup affect					.32 (.02)

Figure 2

Social Identity Predicting Attendance to the Group-Based Exercise Class



Note: Data points are assigned a colour as a function of social identity dimension.

Chapter 5: Discussion

The purpose of this thesis was to understand the relationship between social identity and group-based exercise adherence among older adults. Building on previous research that has investigated social identity as a unidimensional construct and attendance cross-sectionally (e.g., Stevens et al., 2018; Strachan et al., 2012), this thesis sought to understand the degree to which older adults identify with their exercise group through the inclusion of a multidimensional measure. This thesis also sought to understand the relationship between the dimensions of social identity and exercise class adherence as measured by percentage of classes attended over four months. Support for the primary hypothesis was found, suggesting that older adults who perceived stronger perceptions of IGT, CC, IGA as a member of a particular exercise class have higher self-reported adherence over the four-month term. However, the multiple regression analysis revealed that IGA was the sole independent predictor of attendance over time, when controlling for age, gender, and previous exercise class history. In the following sections, the study findings in relation to the social identity and adherence literature will be discussed. The limitations and areas for future research will be addressed along with practical implications for group-based exercise programs targeting an older adult population.

Overall, the present research contributes to a large and growing body of literature that points to the salience of individuals developing strong social identities in sport and exercise contexts (Rees et al., 2015; Stevens et al., 2017), and answers recent calls to examine the multidimensionality of social identity (Steffens et al., 2019; Rowe & Slater, 2021). The present findings extend previous research (e.g., Steffens et al., 2019; Stevens et al., 2018; Strachan et al., 2012), which pointed to a positive relationship between perceptions of social identity and exercise adherence in adult exercise groups (e.g., Rowe & Slater, 2021; Steffens et al., 2019;

Stevens et al., 2019), and further demonstrate the salient role of developing a strong sense of social identification relative to older adults.

The current study used a multidimensional measure of social identity to examine the relations between older adult, group-based exercise class attendees' social identification and their adherence behaviour over time (a relationship that has received no attention to date). While bivariate correlations between social identity constructs and adherence were found to be significant and in the positive direction, a multiple regression analysis revealed that IGA was the sole significant predictor of adherence over and above age, gender and previous exercise class participation. This finding suggests that older adults who reported more positive feelings associated with being a member of their particular exercise group also attended class more frequently. This finding is consistent with recent work by Stevens et al. (2020) which also found that when controlling for previous group-relevant attendance, a positive relationship existed between group identification and group-relevant attendance. In addition, this finding extends previous cross-sectional research which pointed to a positive relationship between group identification and attendance in adult group-based exercise classes (Stevens et al., 2018) and strengthens recent work by Rowe and Slater (2021), which found a positive significant association between IGA and group members' anticipated future attendance in the exercise class with adults aged 18 to 71 years, (M_{age} = 40.11 years). More specifically, the current study findings provide further evidence of the relationship between IGA and adherence to an older adult population, applying a more rigorous research design (i.e., self-reported adherence behaviour over a four-month term). Altogether, the results provide important theoretical support by exemplifying that individual exercise behaviour may not only be initiated by an individual's sense of self, but also as an exercise group member (Stevens et al., 2020; Tajfel & Turner, 1979;

Turner et al., 1987). More precisely, an individual may be more motivated to align personal behaviour with an exercise class that is perceived to make them feel good about being an ingroup member (IGA).

Notably, the nuanced relationship found between IGA and adherence provides support for a growing body of research that highlights the capacity for groups to foster participation in physical activity (Beauchamp, 2019; Beauchamp et al.,2018; Burke et al., 2006; Harden et al., 2015). Further, this finding also provides important practical implications that can inform future physical activity interventions that aim to improve adherence to physical activity among older adults. More specifically, older adults' adherence behaviour may be supported by several other factors that share similar concepts to IGA such as exercise instructors' encouragement (de Lacy-Vawdon et al., 2018; Farrance et al., 2016), good music and friendship (Franco et al., 2015), socializing opportunities (i.e., post workout gatherings; Bennet et al., 2018), and social support (Dunlop & Beauchamp, 2013). Indeed, these factors have been frequently reported by older adults to produce pleasant affective exercise experiences and, in turn, increase their adherence to the exercise class.

Interestingly, stronger perceived connections to other group exercise members (e.g., IGT) were not significantly related to class attendance. While this nonsignificant finding is unexpected, the relationship between IGT and adherence was in the positive direction and was statistically significant in the bivariate analyses. The absence of IGT as a significant predictor of adherence behaviour in the multivariate analysis contradicts previous adherence literature in relation to older adult community-based group exercise program attendees (Killingback et al., 2017). Similar constructs to IGT such as member similarity (Beauchamp et al., 2018),

togetherness (Killingback et al.,2017), and belongingness (Farrance et al., 2016) have been shown to support sustained engagement in exercise group behaviour (i.e., classes or events).

One potential explanation for the absence of IGT to emerge as a significant independent correlate of adherence, may be related to the recreational nature of community group-based exercise classes opposed to other group-based exercise settings which specifically used strategies to foster a sense of identity (i.e., social connection), among older adult group members (Beauchamp et al., 2018). For instance, Beauchamp et al. (2018) found that when older adults had the opportunity to engage in group-based exercise with others who share a sense of similarity (i.e., as individuals of similar age), were provided with a group t-shirt that promoted a sense of belongingness and distinctiveness and were encouraged to bond by connecting outside the structured exercise class sessions, improvements were made in exercise class adherence due in part to increased connection. Further, given that the group-based exercise programs in the current study were offered to all adults above the age of 18 years, it is possible that the age composition of the group varied in some classes (i.e., made up of both younger and older adults). Therefore, older adults may not have perceived themselves to be of similar age to the rest of the group in some cases, and this may potentially explain the non-significant independent relationship between IGT and adherence behaviour.

From a holistic health perspective, it is important to recognize that social groups are a fundamental aspect of human living (VanVugt & Schaller, 2008). Given the increased need for support, belonging, and connection as older adult's experience major life transitions (i.e., retirement, bereavement, moving into a care home), having access to meaningful social groups is particularly important for protecting psychological and physical health (Haslam et al., 2012; Haslam et al., 2019; Stevens et al., 2021). For example, retirees who belonged to a greater

number of social groups predicted greater physical activity following retirement (Stevens et al., 2021). Notably, there has been an increased interest and understanding within the health and psychology literature (i.e., Jetten et al., 2017) that belonging to meaningful social groups can have a positive impact on health and health behaviours such as enhancing cognitive function (Haslam, Cruwys et al., 2014), improving recovery after stroke (Haslam et al., 2008), improving self-esteem (Jetten et al., 2015), protection against depression (Cruwys et al., 2013), and protection against age-related declines in physical activity (Stevens & Cruwys, 2020). Similarly, the social identities that older adults form as a result of participation in exercise groups may not only produce physical health benefits but also support mental health by providing resources that can buffer against social isolation (Bennet et al., 2018), particularly through increasing a sense of belonging and connection (Jetten et al., 2014). Therefore, the findings of the present study suggest that increased positive IGA can influence older adults' adherence over time is an important contribution to health-based research in a greater, more holistic light.

Limitations and Future Directions

Although the present study adds to the overall literature on the role of social identity in the group-based exercise environment using a multidimensional instrument to capture social identity, limitations do exist that warrant discussion. First, the correlation between IGA and CC was high, and thus cognitive centrality was excluded from the multiple regression analysis. While previous research has shown support for cognitive centrality as a correlate of exercise in younger adult exercise class attendee samples (Rowe & Slater, 2021; Strachan et al., 2012), the present study represented an initial attempt at exploring this multidimensional model in an exercise population focusing on older adult exercise class attendees. Therefore, further research is needed to identify if this is a pervasive issue, or simply a by-product of this study design (e.g.,

sample considerations, size). In this regard, adopting alternative study designs may be of value in understanding the relationships associated with different dimensions of social identity. As such, this study can be viewed as an initial stepping stone for future research to build from and therefore one may consider delving deeper through a qualitative lens to investigate personal exercise-related experiences regarding the three dimensions of social identity in relation to adherence behaviour (e.g., Bruner, Boardley, Allen et al., 2017; Cascagnette et al., 2020). For example, in both youth and elite level athletes, qualitative approaches have allowed athletes to differentiate between the dimensions of social identity when talking about their personal sport-related experiences (Bruner, Boardley, Allen et al., 2017; Cascagnette et al., 2020).

In an attempt to expand on previous research which has established important preliminary links between social identity and adherence behaviour cross-sectionally (i.e., one point in time as in frequency/volume over a typical week; Stevens et al., 2018; Steffens et al., 2019; Strachan et al., 2012), I used a self-report logbook to capture exercise adherence behaviour over a four - month term. Indeed, this extended previous cross-sectional research, however, the use of self-report methods introduced limitations around reliability and validity, including recall and response bias (Prince et al., 2008; Rhodes et al., 2017). Unfortunately, due to the limitations of self-report data, participants in the current study may have over-reported their attendance to the group-based exercise class. Therefore, future research may look to address this limitation by implementing more objective tools to measure attendance. For example, researchers have used membership card entry swipes (e.g., Beauchamp et al., 2018). In addition, researchers could look to exercise class instructors or exercise leaders to record attendance over a period of time to form a more robust account of participant attendance (Prince et al., 2008).

Participants were also recruited because they had the intentions to participate in group-based exercise over the course of the four-month term. This is evidenced by the fact that 41% had been engaging in their chosen exercise class for at least three years. Considering that the social identity strength of a long-term exercise group member may differ from someone who is new to the group, or new to exercise in general, it would be of particular value for future work to consider experimental research to assess temporal changes in social identity. Specifically, examining social identity perceptions of older adults at the beginning of a brand-new exercise class during, and immediately after, in both experienced (i.e., those with previous exercise history) and those who are new to exercise, would help to advance understanding of the conditions under which social identity dimensions are of particular importance in predicting class attendance.

Although a potential strength of the study included a broad range of group-based exercise classes from which the participants were recruited (to enhance the generalizability of the findings), the exercise groups in the study did not have an equal number of participants and thus could not examine potential differences in social identity strength and adherence across exercise groups. As a closely related issue, the findings are limited to a single recreational facility in northeastern Ontario, and an underrepresentation of men (n = 10) compared with women (n = 70). Previous research has suggested that gender-congruence is an important categorization factor in terms of group-based exercise adherence among older adults (Beauchamp et al., 2018). Nonetheless, this finding is not surprising given that previous health-based research has documented similar gender differences in group-based exercise participation given women generally choose to participate in group-based exercise studies more than men (e.g., Rowe &

Slater, 2021). Research in this area would benefit from broader sampling procedures to explore multiple fitness facilities throughout Canada and internationally (e.g., Steffens et al., 2019).

As a final future direction, researchers may look to online Social Identity Mapping tool (oSIM; Bentley et al., 2020) which can capture the connected nature of multiple social identities. Given that the social world is complex and multifaceted (Cruwys et al., 2016), older adults may be connected to a number of important groups in their lives (e.g., families, friends, church groups, social clubs). Ultimately, by understanding the many social group memberships that older adult exercisers may be part of, and the importance that older adults place on exercise group compared to other social groups, this, in turn, may help inform researchers to formulate new research questions surrounding the importance of social group memberships for health and quality of life across older adulthood.

Practical Implications

Given the pivotal role that group-based exercise programs play on physical, mental, and social health (e.g., Mortazavi et al., 2013), and the large and growing body of evidence that suggests social identity strength with an exercise group is associated with intention to exercise (Terry & Hogg, 1996), attendance, and effort (Steffens et al., 2019), as well as maladaptive behaviour if the group disbands (Strachan et al., 2012), the present study extends the current understanding regarding the multidimensionally of social identification and adherence behaviour in an older adult population. Specifically, the significant relationship observed between IGA and adherence behaviour provides both theoretical and practical importance to researchers, coordinators, and exercise instructors that promote group-based exercise programs.

First, from a theoretical perspective, this research builds off of Cameron's (2004) multidimensional model and recent work by Bruner and Benson (2018) in sport, and exercise

groups (Rowe & Slater, 2021), by presenting initial evidence that social identity strength particularly through IGA is a salient predictor of exercise adherence in older adults. Indeed, the application of the multidimensional model of social identity warranted a unique opportunity to tease out more precisely that among the different dimensions, the positive feelings associated with group membership (IGA) was most strongly associated with adherence behaviour over time. Future research may look to this finding as a stepping stone when investigating specific behaviors or strategies that may be involved in the process of strengthening perceptions of IGA within an exercise group.

From an applied research perspective, exercise coordinators and exercise instructors can consider fostering positive exercise class experiences though endorsing opportunities for socialization by providing a physical space for gathering outside the exercise class, thus reinforcing quality interactions (Beauchamp et al., 2018; Bennet et al., 2018). Building on this, exercise group leaders have been identified by older adults as a source of positive exercise class experiences (e.g., de-Lacy Vawdon et al., 2018; Farrance et al., 2016). Therefore, it would be particularly beneficial to investigate the role of social identity leadership in relation to older adults' adherence to group-based exercise programs. Specifically, emerging research shows that when an exercise leader behaves in a way that fosters a shared sense of 'us' among group members and when the exercise leader is perceived 'as one of us' in a particular exercise group, there is a tendency for improvement in attendance to group-relevant sessions among adult exercise attendees (Steffens et al., 2019; Stevens et al., 2018; Stevens et al., 2020). Furthermore, these emerging findings highlight the need for further research to explore social identity leadership in older adult exercise groups.

Conclusion

With the low levels of physical activity observed for older adults (Clarke et al., 2019) and the growth of evidence supporting the benefits of individuals developing strong social identities in physical activity settings (Stevens et al., 2017), this study was important as it examined the relationship between older adults' social identity with their group-based exercise class and exercise class adherence. This study found that older adults' perceptions of social identity with an exercise group at the beginning of a fall session predicted adherence behaviour throughout the four-month exercise class period. More precisely, IGA emerged as a significant positive predictor of adherence. Indeed, increasing levels of physical activity among older adults is a primary health objective given the growth in the proportion of older adults living and the associated consequences of inactive lifestyles. As such, future research exploring social identity dimensions and adherence behaviour has a unique opportunity to better understand the importance of exercise groups for health, wellbeing and quality of life.

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Appendix A

Participant Log-Book

Social Identity and Group-Based Exercise
Log-Book

Instructions: So that we can match the logbook with the questionnaires you complete at other points over the course of the study. Please provide the following information:

Provide the day and month of your birthday: Day: _____ Month: (numerical): _____
DD **MM**

What is the first and second letter of your middle name: ☐ ☐

INSTRUCTIONS

1. Thinking about the **ONE** class that you participate in the most frequently, please only circle **Yes** or **No** if you participated in the class on the day it was scheduled. You do not need to fill in the calendar boxes if the **ONE** class was not scheduled for that day of the week.
2. Please **circle/indicate** a percentage from 0% to 100% where 0% is no effort at all and 100% is maximum effort/the hardest you could possibly have tried in class on that day.
3. If you **did not** participate in class on the day it was scheduled, please indicate in the calendar box for why you missed the class (e.g., sick, didn't want to go, had to bring kids to school, work etc.)
4. At the end of each calendar month, please **hand in** your monthly attendance sheet to the drop box located at the front desk of the YMCA. **Please fill in your participant ID on each page so we can match the log-book information completed for the other months.**

September2019 Class:_____

Effort scale
0 10 20 30 40 50 60 70 80 90 100
No Effort — **Max Effort**

SUN	MON	TUE	WED	THU	FRI	SAT
	02	03	04	05	06	07
08	09	10	11	12	13	14
15	1st Day 16	17	18	19	20	21
	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	
22	23	24	25	26	27	28
	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	
29	30					
	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)					

Provide the day and month of your birthday:
Day: _____ (DD) Month: (numerical): _____ (MM)

What is the first and second letter of your middle name: ☐☐

October2019 Class:_____

Effort scale
0 10 20 30 40 50 60 70 80 90 100
No Effort — **Max Effort**

SUN	MON	TUE	WED	THU	FRI	SAT
		01	02	03	04	05
		Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	
06	07	08	09	10	11	12
	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	
13	14	15	16	17	18	19
	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	
20	21	22	23	24	25	26
	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	
27	28	29	30	31		
	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)		

Provide the day and month of your birthday:
Day: _____ Month: _____
DD MM
First and second letter of your middle name: ☐☐

November2019 Class:_____

Effort scale
0 10 20 30 40 50 60 70 80 90 100
No Effort — **Max Effort**

Provide the day and month of your birthday:
Day: _____ Month: (numerical): _____
DD MM

What is the first and second letter of your middle name: ☐☐

SUN	MON	TUE	WED	THU	FRI	SAT
					01 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	02
03	04 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	05 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	06 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	07 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	08 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	09
10	11 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	12 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	13 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	14 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	15 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	16
17	18 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	19 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	20 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	21 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	22 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	23
24	25 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	26 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	27 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	28 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	29 Did you Participate Yes or No If **no,** why:_____ Effort:_____(0-100)	30

December2019 Class:_____

Effort scale
0 10 20 30 40 50 60 70 80 90 100
No Effort — **Max Effort**

SUN	MON	TUE	WED	THU	FRI	SAT
01	02	03	04	05	06	07
	Did you Participate Yes or No If **no**, why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no**, why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no**, why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no**, why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no**, why:_____ Effort:_____(0-100)	
08	09	10	11	12	13	14
	Did you Participate Yes or No If **no**, why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no**, why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no**, why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no**, why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no**, why:_____ Effort:_____(0-100)	
Last day 15	16	17	18	19	20	21
	Did you Participate Yes or No If **no**, why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no**, why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no**, why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no**, why:_____ Effort:_____(0-100)	Did you Participate Yes or No If **no**, why:_____ Effort:_____(0-100)	
22	23	24	25	26	27	28
29	30					

Provide the day and month of your birthday:
Day: _____ Month: (numerical): _____
DD MM

What is the first and second letter of your middle name: ☐☐

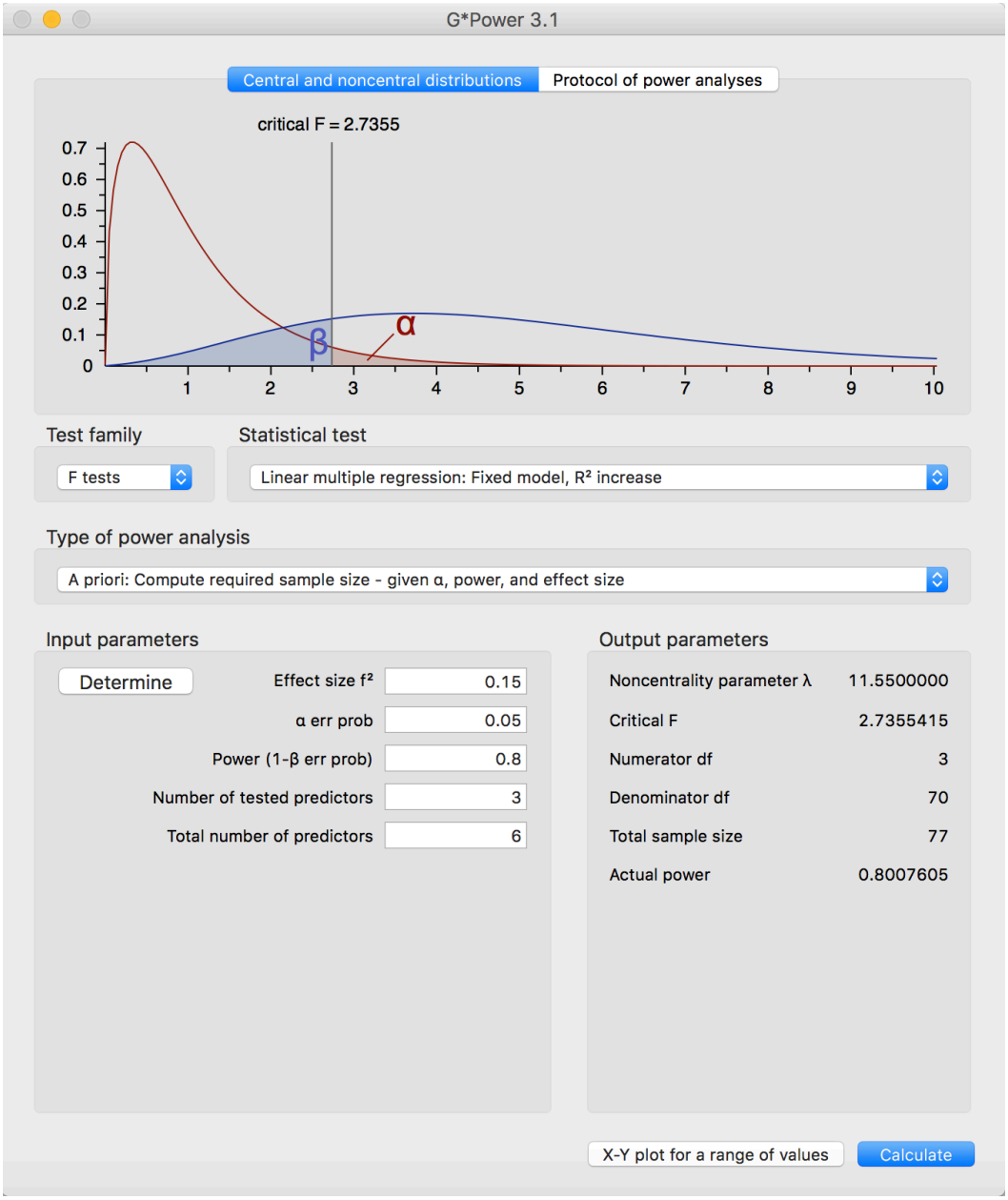
Thank you for participating in this logbook!

Your participation and time is greatly appreciated. Your responses to the logbook will help us in making a novel contribution to group-based exercise literature.

Please be reassured that the answers you provided will be coded, and your name will not be associated with any scores and will not be ranked in anyway.

Appendix B

Sample Size Calculation using G*Power



Appendix C

Group-Based Exercise Schedule

ADULT FITNESS

Fall 2019

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
6AM	**H.I.I.T.** 6:00AM-6:45AM	**CYCLE** 6:00AM-6:45AM	**BOOTCAMP** 6:00AM-6:45AM	**CYCLE** 6:00AM-6:45AM	**YOGA FITNESS** 6:00AM-6:45AM		
8AM	**AQUA COMBO** 8:00AM-8:45AM	**AQUA RUNNING** 8:00AM-8:45AM **AQUA YOGA** 8:45AM-9:20AM	**AQUA COMBO** 8:00AM-8:45AM	**AQUA RUNNING** 8:00AM-8:45AM **AQUA YOGA** 8:45AM-9:20AM	**AQUA FIT** 8:00AM-8:45AM		
9AM	**TRX®** 9:15AM-10:00AM	**BABY AND ME** **AQUA FIT** 9:00AM-9:45AM **H.I.I.T.** 9:15AM-10:00AM	**CIRCUIT TRAINING** 9:15AM-10:00AM	**BABY AND ME** **AQUA FIT** 9:00AM-9:45AM **DYNAMIC BOXING** 9:15AM-10:00AM			
10AM	**TAI CHI STRETCH** 10:05AM-10:55AM		**YOGA FITNESS** 10:05AM-10:50AM	**CHAIR YOGA** 10:00AM-10:45AM			
11AM	**EASY FIT** 11:00AM-12:00PM **YOGA** 11:05AM-12:00PM **HYDROTHERAPY** 11:15AM-12:00PM	**EASY YOGA** 11:00AM-11:45AM **HYDROTHERAPY** 11:15AM-12:00PM	**EASY FIT** 11:00AM-12:00PM **HYDROTHERAPY** 11:15AM-12:00PM	**MODERATE YOGA** 11:00AM-11:45AM **HYDROTHERAPY** 11:15AM-12:00PM	**EASY FIT** 11:00AM-12:00PM		
12PM	**CYCLE** 12:10PM-12:50PM		**CYCLE** 12:10PM-12:50PM	**TRX®** 12:10PM-12:50PM	**CYCLE** 12:10PM-12:50PM		
1PM	**STAND UP** 1:00PM-2:00PM		**STAND UP** 1:00PM-2:00PM				
2PM	**AQUA FIT** 2:00PM-2:45PM		**AQUA FIT** 2:00PM-2:45PM		**AQUA FIT** 2:00PM-2:45PM		
4PM	**TOTAL CORE** 4:45PM-5:25PM						
5PM	**H.I.I.T.** 5:30PM-6:15PM	**CYCLE/TRX®** 5:30PM-6:30PM	**BOOTCAMP** 5:30PM-6:15PM	**DYNAMIC BOXING** 5:30PM-6:15PM			
6PM	**YOGA** 6:30PM-8:00PM		**YOGA** 6:30PM-8:00PM				
7PM		**AQUA BOOTCAMP** 7:15PM-8:00PM		**AQUA BOOTCAMP** 7:15PM-8:00PM			

Aqua Fitness

New Program

Registration Required

Personal Training

Do you need extra motivation to work out? If so, check out our Personal Training options! A certified trainer will work with you to set goals and help you achieve those goals in a safe and timely manner. Inquire at Membership Services!

Child Minding Fall Schedule

Ages 6 Months - 6 Years

Monday - Sunday 9:00am - 12:00pm

Monday - Thursday 4:30pm -7:00pm

Building healthy communities

705-497-9622 | ymcaneo.ca

Appendix D

Participant Recruitment Tool

Looking for adults above the age of 18 participating in a group-based exercise class at
YMCA North Bay
If you volunteer to participate in the study, you will be requested to:
1) Complete two, 20 minute questionnaires
2) Potentially be asked for a follow-up interview

CONTRIBUTE TO HEALTH-BASED RESEARCH
CHANCE TO WIN A $100 GIFT CARD

SIGN UP TODAY

Contact Cameron Branch, BPHE
[redacted]
[redacted]

Appendix E

Letter of Information and Informed Consent for Study

The Influence of Social Identity on Participation to a Group-Based Exercise Class

Principal Investigator: Dr. Kristina Karvinen PhD
Contact: [redacted]
Graduate Researcher: Cameron Branch BHPE
Contact: [redacted]
School of Physical and Health Education
Nipissing University

Purpose and Background
You are invited to participate in a research study which aims to examine the perspectives of social identity (i.e., identities formed through membership in social groups) in relation to group-based exercise. Through the perspective of participants who partake in group-based exercise, we are interested in exploring how one's social identification influences participation in and engagement to exercise classes. This research is being conducted by Cameron Branch, graduate student, Dr. Kristina Karvinen, Associate Professor, and Dr. Mark Bruner, Professor from the School of Physical and Health Education at Nipissing University. The results of this study will contribute to graduate student research. If you have questions or concerns about the research, please contact Dr. Kristina Karvinen [redacted]
Taking part in this study is completely voluntary and you may choose to stop at any time without penalty.

Participation Procedures
If you volunteer to participate in this study, we would like you to identify one group-based exercise class that is offered at the YMCA of North Bay that you exercise with most frequently. We will ask you to complete one baseline questionnaire (either hard copy or electronic) at the beginning of the study (prior to, or in the two weeks of, you starting the Fall group-based exercise session at the YMCA of North Bay) and one post-test questionnaire at the end of the study (at the end of the group-based exercise session). The questionnaires will be related to the group-based exercise class that you identified to exercise most frequently with at the YMCA of North Bay. Each questionnaire will take approximately 20-25 minutes to complete. If you consent to participate in the study, we would like you to track your individual weekly attendance to the one class the you identified to be exercising with most frequently. We will provide you with a participant log-book portfolio that contains the calendar months, specifically (e.g., Sept, Oct, Nov, Dec). Instructions for the logbook include; marking (with a circle) if you did or did not attend the class on the specific day that it was offered, as well as indicating your perceived effort that you gave that day in class. With your consent we will access your class attendance report via the use of your YMCA access card. This data will provide us with a date and time stamp to which days and times you attended class. Additionally, a follow-up with electronic card data will continue into the first month of the Winter session (i.e., January, 2020) to track your attendance. You will also be asked to provide an email address or telephone number that you can be reached at for the purposes of arranging the administration of the post-test questionnaire and/or

potentially contacting you about participating in a subsequent follow-up interview (another consent form with further information will be provided for this component of the study). If you are interested, you may request that the researcher provide you with the findings of the study by contacting [redacted]. The data will be published in research articles and presented at research conferences. Participation in this study is voluntary and you are free to withdraw at any time. You have the right to refuse to answer any questions that you find objectionable or which make you feel uncomfortable. You may withdraw your consent at any time and discontinue participation without penalty.

Compensation
As a thank you for your participation in the study, you can consent to enter your name into a draw for a $100 prepaid visa card following the completion of the second questionnaire at the end of the study.

Risks and Study Withdrawal
There are minimal risks with participation in this study. There is a risk that you may feel some anxiety about addressing your personal attitudes about social identity which will be asked on the questionnaires and or answering questions during the interview. Please be reassured that the data will be coded, your name will not be associated with scores, and you will not be ranked in anyway. If you are worried and you require counselling serveries during the study, you may call ConnexOntario at 1-866-531-2600. Your choice of whether or not to participate in this project will not influence your membership at the YMCA or with Nipissing University. It is likely that the instructors of the exercise classes as well as other group members will be aware of individuals that may be associated with participation in the study. To reassure you, the information obtained from the access cards and questionnaires you complete is confidential and will NOT be revealed to instructors, classmates or employees of the YMCA. If you choose to participate in this study, you can withdraw your consent and discontinue participation at any time without prejudice. If at any time you wish to withdraw from the study, you may do so by indicating this verbally or through email to the researchers. If you choose to withdraw from the study, all of your data will be destroyed (e.g., all questionnaires shredded, and all electronic surveys will be permanently deleted). Consenting to this study does not waive any rights to legal recourse in the event of research-related harm (psych or physical). Participants are still eligible to regular legal rights even after consenting.

Benefits of Participation
You will not receive any direct compensation for participating in the current study. The anticipated benefit of your participation in this study will allow researchers to understand how social identity impacts exercise behaviour. Findings from this study will be shared at academic conferences and in academic publications. Findings may also contribute to the existing body of literature on social identity and participation in group-based exercise and shared via community workshops.

Confidentiality
The results from this study as well as any contact information you provide will be kept as confidential as possible. No individual identities will be used in publications, presentations, or reports that result from the study. Research information (e.g., data from questionnaires and

YMCA swipe in's) will be entered and stored on a password protected computer, located in the Psychology of Physical Activity and Health Promotion (PPAHP) lab at Nipissing University. Signed consent forms and completed hard copies of questionnaires will be stored in a locked filing cabinet in Dr. Karvinen's office. Researchers Dr. Kristina Karvinen, Dr. Mark Bruner and Cameron Branch will be the only individuals who will have access to the information collected from the current study. After the study is complete, it is recommended that all the data be kept for a minimum 5 years. After 5 years post-publication of the results, all data will be permanently deleted.

Sincerely,
Cameron Branch BHPE
Dr. Krintina Karvinen PhD

Please feel free to ask any questions of the research about the nature of this study.

Dr. Kristina Karvinen
[redacted]

Cameron Branch
[redacted]

This letter is yours to keep. If you consent to participating in the study, please detach and complete the rest of this package and return the signed consent form to the researcher at the beginning of the study (prior to, or in the two weeks of, you starting the group-based exercise session at the YMCA of North Bay).

Informed Consent to Participant in Research
By signing this form, you are indicating that you have read and understood the research description provided, are aware of what you will be asked of you and that you agree to take part in this study.

As a participant in this research project, I clearly understand what I am agreeing to do, and that I am free to decline involvement or withdraw from this project at any time, and that steps are being taken to protect me. I have read this Participant Information Letter and Consent Form and have had any questions, concerns or complaints answered to my satisfaction. I have been provided a copy of this letter.

Name: (please print) _____ **Date:** _____

Signature: _____

Please include contact information so that we can send you the Time 1 Questionnaire.

Email: _____

Phone: _____

This study has been reviewed and received ethics clearance through Nipissing University's Research Ethics Board. If you have questions regarding your rights as a research participant contact: Ethics Administrator, Nipissing University, 100 College Drive, North Bay, ON, P1B 8L7 or [redacted]

The results of the study will be available upon request at the end of the study. If you would like a copy of the study results, please check off one of the following boxes on how you would like to receive the results.

Via email (indicate address): _____
Via phone (indicate phone number): _____
I do not wish for the results of this study: _____

Appendix F

Qualtrics Questionnaire

Social Identity and Group-Based Exercise(G)

Start of Block: Time 1 Questionnaire

The Influence of Social Identity on Participation to a Group-Based Exercise Class

Time 1 Questionnaire

Investigators
Dr. Kristina Karvinen, PhD
Dr. Mark Bruner, PhD
Mr. Cameron Branch, BPHE

Instructions
Thank you for agreeing to participate in the study! In this questionnaire, we are going to ask you a series of questions about yourself. There are no right or wrong answers and all we ask is that you provide responses that are honest and accurate as possible. All responses are completely confidential. Please remember that you will never be individually identified in any reports or presentations.

End of Block: Time 1 Questionnaire

Start of Block: Participant I.D.

Instructions: So that we can match the logbook and the questionnaires you complete at other points over the course of the study. Please provide the following information:

Provide the day of your birthday: (DD)

○ Day of birthday: (4) _____

Provide the month of your birthday (numerical): (MM)

○ Month of birthday: (4) _____

What is the first and second letter of your **middle name:**

☐ First letter (4) _____

☐ Second letter (5) _____

End of Block: Participant I.D.

Start of Block: Part A

Q1 1.) My gender is:

_____

Q2 2.) Please indicate your age in years:

_____

Q3 3.) Marital Status:

- ○ Single (1)
- ○ Married (2)
- ○ Common Law (3)
- ○ Separated (4)
- ○ Widowed (5)
- ○ Divorced (6)
- ○ Other (please specify) (7) _____

Q4 4.) People living in Canada come from many different cultural and racial backgrounds. What best describes your background (please check all that apply)?

- ☐ White (1)
- ☐ Black (2)
- ☐ Chinese (3)
- ☐ Japanese (10)
- ☐ Indigenous/Aboriginal (5)
- ☐ Korean (6)
- ☐ South Asian (7)
- ☐ Latin (e.g., Hispanic) (8)
- ☐ Other (please specify) (9)

_____

Q5 5.) Level of Education: What is the highest level of education that you have achieved?

- ○ Eighth Grade or less (1)
- ○ Some high school (2)
- ○ High school diploma (3)
- ○ Vocational school or some college (4)
- ○ College/University degree (5)
- ○ Professional or graduate degree (6)

Q6 6.) Annual family income:

- ○ <$20,000 (1)
- ○ $60,000-80,000 (2)
- ○ $20,000-39,000 (3)
- ○ $80,000-100,000 (4)
- ○ $40,000-60,000 (5)
- ○ >$100,000 (6)
- ○ Prefer not to specify (7)

Q7 7.) Employment status:

- ○ Retired (1)
- ○ Part-time-employed (2)
- ○ Self-employed (3)
- ○ Homemaker (4)
- ○ Full-time employment (5)
- ○ Unemployed more than 1 year (6)
- ○ unemployed less than 1 year (7)

Q8 8.) Your typical mode of transportation to the YMCA of North Bay

- ○ Car (1)
- ○ Bus (2)
- ○ Walk (3)
- ○ Bike (4)
- ○ Run (5)
- ○ Other (please specify) (6) _____

End of Block: Part A

Start of Block: Part B

Q9 Below is a list of activities. The main difference between the four categories is the intensity of the exercise. In the column marked (Times Per Week), please indicate on each line how many times you performed that intensity of exercise during your free time (i.e., not occupation or house work) during a typical **7-day period** (a week). In the column marked (Average Duration), please indicate how long you exercise for at that level of intensity in minutes. Please only count exercise sessions that lasted 10 minutes or longer in duration. If you did not perform any exercise at a given intensity, please write '0' in that space.

Instructions: Remembering your average weekly exercise in the past month, during a typical **7-Day period** (a week), how many times on the average do you do the following kinds of exercise

for more than **10 minutes** during your free time:

	Times Per Week (1)	Average Duration (per session in minutes) (2)
Mild Exercise (Minimal effort, No Perspiration) (e.g., easy walking, yoga, bowling, lawn bowling, shuffleboard golf (1)		
Moderate Exercise (Not exhausting, light Perspiration) (e.g., fast walking, tennis, easy bicycling, easy swimming, popular and folk dancing) (2)		
Strenuous Exercise (Heart Beats Rapidly, Perspiration) (e.g., running, aerobics classes, cross country skiing, vigorous swimming, vigorous bicycling) (3)		
Resistance Training (Weight Training) (e.g., lifting weights, using resistance bands) (4)		

End of Block: Part B

Start of Block: Part C:

Instructions: Please answer each question as honestly as possible. There are no right or wrong answers; we are simply interested in understanding your exercise class history.

10 1.) Do you currently participate in one or more group-based exercise classes/groups **OUTSIDE** the YMCA of North Bay (e.g., a running or walking group)?

- ○ Yes (1)
- ○ *No (2)*

Display This Question:

If 1.) Do you currently participate in one or more group-based exercise classes/groups OUTSIDE the Y... = Yes

Q11 **If yes,** please describe which group-based exercise class/group (s) you participate in.

_____

_____

_____

_____

_____

Display This Question:

If 1.) Do you currently participate in one or more group-based exercise classes/groups OUTSIDE the Y... = Yes

Q12 a.) Approximately how many times per week do you exercise with this group (s)?

- ○ Times Per Week (1) _____

Display This Question:

If 1.) Do you currently participate in one or more group-based exercise classes/groups OUTSIDE the Y... = Yes

Q13 b.) On average, how long do you spend exercising with this group (s) in minutes per session?

- ○ Minutes Per Session (1) _____

Q14 2.) Do you currently participate in one or more group-based exercise classes/groups that are **OFFERED** at the YMCA of North Bay?

- ○ Yes (1)
- ○ No (3)

Q15 **If yes,** please indicate which group-based exercise class (s) that you participate in (check all that apply):

- ☐ H.I.I.T (1)
- ☐ TRX (2)
- ☐ Cycle (3)
- ☐ Cycle/TRX (4)
- ☐ Circuit Training (5)
- ☐ Dynamic Boxing (6)
- ☐ Bootcamp (7)
- ☐ Aqua Bootcamp (8)
- ☐ Aqua Combo/Aqua Fit (8:00am- 8:45am) Class (9)
- ☐ Aqua Fit (2:00pm-2:45pm) Class (10)
- ☐ Aqua Running (11)
- ☐ Aqua Yoga (12)
- ☐ Hydrotherapy (13)

- ☐ Yoga Fitness (14)
- ☐ Chair Yoga (15)
- ☐ Yoga (16)
- ☐ Easy Yoga (17)
- ☐ Easy Fit (18)
- ☐ Moderate Yoga (19)
- ☐ Tai Chi Stretch (20)
- ☐ Stand Up (21)
- ☐ Total Core (22)
- ☐ Other (please Specify) (23) _____

Q16 a.) Approximately how many times per week do you exercise with this group-based exercise class (s) at the YMCA of North Bay?

○ Times Per Week (1) _____

Q17 b.) On average, how long do you spend exercising with this group-based exercise class (s) in minutes per session at the YMCA of North Bay?

○ Minutes Per Session (1) _____

End of Block: Part C:

Start of Block: Part D

Instructions: You may currently participate in more than one group-based exercise class that is **offered** at the YMCA of North Bay. Please identify only **ONE** exercise class that you exercise

with **MOST** **FREQUENTLY**. You will need to complete the remainder of this study with this **ONE** group-based exercise class in mind.

Q18 1.) Please indicate the **ONE** group-based exercise class that you intend to exercise with **MOST FREQUENTLY** at the YMCA of North Bay this fall session. **(please check only one box)**

- ○ H.I.I.T (1)
- ○ TRX (2)
- ○ Cycle (3)
- ○ Cycle/TRX (4)
- ○ Circuit Training (5)
- ○ Dynamic Boxing (6)
- ○ Bootcamp (7)
- ○ Aqua Bootcamp (8)
- ○ Aqua Combo/Aqua Fit (8:00am- 8:45am) Class (9)
- ○ Aqua Fit (2:00pm-2:45pm) Class (10)
- ○ Aqua Running (11)
- ○ Aqua Yoga (12)
- ○ Hydrotherapy (13)
- ○ Yoga Fitness (14)
- ○ Chair Yoga (15)
- ○ Yoga (16)
- ○ Easy Yoga (17)
- ○ Easy Fit (18)

○ Moderate Yoga (19)

○ Tai Chi Stretch (20)

○ Stand Up (21)

○ Total Core (22)

○ Other (please Specify) (23) _____

Q19 a.) Approximately how many times per week do you exercise with this ONE group-based exercise class at the YMCA of North Bay?

○ Times Per Week (1) _____

Q20 b.) On average, how long do you spend exercising with this ONE group-based exercise class in minutes per session at the YMCA of North Bay?

○ Minutes Per Session (1) _____

Q21 c.) How many months or years have you participated in this type of group-based exercise class? Please provide one answer.

○ Months (1) _____

○ Years (2) _____

Q22 d.) How many months or years have you participated in/with your specific group-based exerclse class at the YMCA of North Bay? Please provide one answer.

○ Months (1) _____

○ Years (2) _____

Q23 e.) In the class that you identified to participate in most frequently, on average, how many individuals participate in the class?

○ Number of exercise class members (2)

_____

Fall Group-Based Exercise Schedule

Q24 f.) Thinking about the one group-based exercise class that you identified to exercise with most frequently, please indicate in the space below (and using the calendar above), in a typical week, the days/times you attend this ONE exercise class. There are no right or wrong answers; we are simply interested in understanding your average typical week of attendance to the ONE exercise class in a **7-day period.** Please be as SPECIFIC as possible (DAY, and TIME OF CLASS).

_____

_____

_____

_____

_____

Q25 g.) You provided us information about your average typical week **(7-Day period)** of being physically active with one group-based exercise class that you exercise with most frequently. The fall session is approximately 4 months. Please answer as honestly as possible if you will not be attending class for **valid** and **practical reasons** (e.g., ill health, caring duties, holidays). There are no right or wrong answers. Is there any reason that you would like to identify that you may miss a class or even more than a couple classes in the future (e.g., going away for vacation)?

_____

_____

_____

_____

_____

End of Block: Part D

Start of Block: Part E

Instructions: Keeping in mind the **one** exercise class that you exercise with most frequently, the following questions are designed to reflect **how you feel about being a part of that group-based exercise class.** Please CHECK a number from 1 to 7 to indicate your agreement with each of the statements.

Q26 1.) I have a lot in common with other members in this exercise class.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (8)
13 (13)	○	○	○	○	○	○	○

Q27 2.) I feel strong ties to other members of this exercise class

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (8)
13 (13)	○	○	○	○	○	○	○

Q28 3.) I find it easy to form a bond with other members in this exercise class.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (8)
13 (13)	○	○	○	○	○	○	○

Q29 4.) I feel a sense of being "connected" with other members in this exercise class.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (8)
13 (13)	○	○	○	○	○	○	○

Q30 5.) I often think about the fact that I am an exercise class member.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (8)
14 (14)	○	○	○	○	○	○	○

Q31 6.) Overall, being a member of this exercise class has a lot to do with how I feel about myself.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (8)
13 (13)	○	○	○	○	○	○	○

Q32 7.) In general, being a member of this exercise class is an important part of my self-image.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (8)
13 (13)	○	○	○	○	○	○	○

Q33 8.) The fact that I am a member of this exercise class often enters my mind.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (8)
13 (13)	○	○	○	○	○	○	○

Q34 9.) In general, I'm glad to be a member of this exercise class.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (8)
13 (13)	○	○	○	○	○	○	○

Q35 10.) I rarely regret that I am a member of this exercise class.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (8)
13 (13)	○	○	○	○	○	○	○

Q36 11.) I feel good about being a member of this exercise class.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (8)
13 (13)	○	○	○	○	○	○	○

Q37 12.) Generally, I feel good when I think about myself as a member of this exercise class.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (8)
13 (13)	○	○	○	○	○	○	○

End of Block: Part E

Start of Block: Part F:

The following questionnaire is designed to assess your perceptions of your group-based exercise class. There are no wrong or right answers, so please give your immediate reaction. Some of the questions may seem repetitive, but please answer ALL questions. Instructions: Keeping in mind the one exercise class that you exercise with most frequently, the following statements are designed to assess your feelings about YOUR PERSONAL Involvement with the group-based exercise class. Please CHECK a number from 1 to 9 to indicate your level of agreement with each of the statements.

Q38 1.) I enjoy the social interaction occurring in this exercise class.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

Q39 2.) I'm happy with the amount of physical activity I get.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

Q40 3.) I am going to miss the members of this exercise class when the program ends.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

Q41 4.) I'm happy with my exercise class's level of commitment to exercise.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

Q42 5.) Some of my best friends are in the exercise class.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

Q43 6.) This exercise class gives me enough opportunities to improve my personal fitness.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

Q44 7.) I enjoy social activities associated with this exercise class more than other social events.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

Q45 8.) I like the approach to exercise in this class.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

Q46 9.) For me, this exercise class is one of the most important social groups to which I belong.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

Keeping in mind the one exercise class that you exercise with most frequently, the following statements are designed to **assess your perceptions of YOUR EXERCISE CLASS AS A WHOLE.** Please CHECK a number from 1 to 9 to indicate your level of agreement with each of the statements.

Q47 10.) Our exercise class is united in trying to reach its goals for fitness.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

Q48 11.) Members of our exercise class would rather get together as a class than go out on their own.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

Q49 12.) We all take responsibility if one of our exercise classes goes poorly.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

Q50 13.) Members of our exercise class often socialize together.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

Q51 14.) Members of our exercise class have similar aspirations regarding the group's progress.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

Q52 15.) Members of our exercise class would like to spend time together after the program is over.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

Q53 16.) If members of our exercise class have problems in class. everyone wants to help them so we can work together again.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

Q54 17.) Members of our exercise class stick together outside of exercise classes.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

Q55 18.) Members of our exercise class communicate freely about the correct method of doing exercises during or after classes.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (10)	9 (11)
1 (1)	○	○	○	○	○	○	○	○	○

End of Block: Part F:

Start of Block: Part G:

Instructions: For each of the following statements and/or questions, please CHECK the point on the scale that you feel is most appropriate describing you.

Q56 1) In general, I consider myself:

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
2 (2)	○	○	○	○	○	○	○

Q55 2) Compared to most of my peers, I consider myself:

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
2 (2)	○	○	○	○	○	○	○

Q56 3) Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
1 (1)	○	○	○	○	○	○	○

Q57 4) Some people are generally not very happy. Although they are not depressed, they never seem as happy as they might be. To what extent does this characterization describe you?

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)
1 (1)	○	○	○	○	○	○	○

End of Block: Part G:

Start of Block: Part H

Q48 **Instructions:** Please answer each question as honestly as possible. There are no right or wrong answers. These questions ask for your views about your health. For each of the following questions, please check **one option** for each questionnaire item that best describes you.

Q29 In general would you say your health is:

○ 1 - Excellent (1)

○ 2 - Very Good (2)

○ 3 - Good (3)

○ 4 - Fair (4)

○ 5 - Poor (5)

Q30 **Compared to one year ago**, how would you rate your health in general **now**?

- ○ 1 - Much better now than one year ago (1)
- ○ 2 - Somewhat better now than one year ago (2)
- ○ 3 - About the same (3)
- ○ 4 - Somewhat worse now than one year ago (4)
- ○ 5 - Much worse now than one year ago (5)

Q101 Click to write the question text

- ○ Click to write Choice 1 (1)
- ○ Click to write Choice 2 (2)
- ○ Click to write Choice 3 (3)

Q32 During the **past 4 weeks**, have you had any of the following problems with your work or other regular activities **as a result of your physical health? (Please select ONE answer in EACH line)**

	Yes (1)	**No** (2)
a) Cut down the amount of time you spent on work or other activities (1)	○	○
b) Accomplished less than you would like (2)	○	○
c) Were limited in the kind of work or other activities (3)	○	○
d) Had difficulty performing the work or other activities (for example, it took extra effort) (4)	○	○

Q33 During the **past 4 weeks,** have you had any of the following problems with your work or other regular activities **as a result of any emotional problems** (such as feeling depressed or anxious)? **(Please select ONE answer on EACH line)**

	Yes (1)	**No** (2)
a) Cut down the amount of time you spent on work or other activities (1)	○	○
b) Accomplished less than you would like (2)	○	○
c) Didn't do work or other activities as carefully as usual (3)	○	○

Q34 During the **past 4 weeks**, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbours, or groups?

○ 1 - Not at all (1)

○ 2 - Slightly (2)

○ 3 - Moderately (3)

○ 4 - Quite a bit (4)

○ 5 - Extremely (5)

Q35 How much **bodily** pain have you had during the **past 4 weeks**?

- ○ 1 - None (1)
- ○ 2 - Very Mild (2)
- ○ 3 - Mild (3)
- ○ 4 - Moderate (4)
- ○ 5 - Severe (5)
- ○ 6 - Very Severe (6)

Q36 During the **past 4 weeks**, how much did **pain** interfere with your normal work (including both work outside the home and housework)?

- ○ 1 - Not at all (1)
- ○ 2 - A little bit (2)
- ○ 3 - Moderately (3)
- ○ 4 - Quite a bit (4)
- ○ 5 - Extremely (5)

Q37 These questions are about how you feel and how things have been with you **during the past 4 weeks**. For each question, please give the one answer that comes closest to the way you have been feeling. (**Please select ONE circle on EACH line**)

	All of the time (1)	**Most of the time** (2)	**A good bit of the time** (3)	**Some of the time** (4)	**A little of the time** (5)	**None of the time** (6)
⊗a) Did you feel full of pep? (1)	○	○	○	○	○	○
⊗b) Have you been a very nervous person? (2)	○	○	○	○	○	○
⊗c) Have you felt so down in the dumps that nothing could cheer you up? (3)	○	○	○	○	○	○
⊗d) Have you felt calm and peaceful? (4)	○	○	○	○	○	○
⊗e) Did you have a lot of energy? (5)	○	○	○	○	○	○
⊗f) Have you felt downhearted and blue? (6)	○	○	○	○	○	○
⊗g) Did you feel worn out? (7)	○	○	○	○	○	○
⊗h) Have you been a happy person? (8)	○	○	○	○	○	○
⊗i) Did you feel tired? (9)	○	○	○	○	○	○

Q38 During the **past 4 weeks**, how much of the time has **your physical health or emotional problems** interfered with your social activities (like visiting with friends, relatives, etc.)?

- ○ 1 - All of the time (1)
- ○ 2 - Most of the time (2)
- ○ 3 - Some of the time (3)
- ○ 4 - A little of the time (4)
- ○ 5 - None of the time (5)

Q39 How TRUE or FALSE is each of the following statements for you. **(Please select ONE circle on EACH line)**

	Definitely true (1)	**Mostly true** (2)	**Don't know** (3)	**Mostly false** (4)	**Definitely false** (5)
a) I seem to get sick a little easier than other people (1)	○	○	○	○	○
b) I am as healthy as anybody I know (2)	○	○	○	○	○
c) I expect my health to get worse (3)	○	○	○	○	○
d) My health is excellent (4)	○	○	○	○	○

End of Block: Part H

Start of Block: Thank You!

Thank you for participating in this questionnaire! Your participation and time is greatly appreciated. Your responses to the questionnaires will help us in making a novel contribution to group dynamics and exercise literature. Please be reassured that the answers you provided will be coded, and your name will not be associated with any scores, and will not be ranked in anyway.

Please remember that the study involves two questionnaires. If you are interested in continuing

your participation with this study, a second questionnaire will be given to you, approximately one week before the end of the fall session.
Upon completing your second questionnaire, you will be entered in a draw for a change to win a $100 pre-paid VISA card!

Q Please chose the method that is best to contact you, so that we can provide you with the second questionnaire. You may choose both!

☐ Phone: (1) _____

☐ Email: (2) _____

End of Block: Thank You!

Appendix G

Pen-and Paper Copy of Questionnaire

The Influence of Social Identity on Participation to a Group-Based Exercise Class

Time 1 Questionnaire

Investigators
Dr. Kristina Karvinen, PhD
Dr. Mark Bruner, PhD
Mr. Cameron Branch, BPHE

Instructions

Thank you for agreeing to participate in the study! In this questionnaire, we are going to ask you a series of questions about yourself. There are no right or wrong answers and all we ask is that you provide responses that are honest and accurate as possible. All responses are completely confidential. Please remember that you will never be individually identified in any reports or presentations.

Social Identity and Group-Based Exercise

Instructions: So that we can match the logbook and the questionnaires you complete at other points over the course of the study. Please provide the following information:

Provide the day and month of your birthday: Day _____ Month (numerical): ____
DD **MM**

What is the first and second letter of your **middle name:** ☐ ☐

Part A

1.) My Gender is: _____

2.) Please indicate your current age in years: _____

3.) Marital Status:

- ☐ Married
- ☐ Divorced
- ☐ Widowed
- ☐ Single
- ☐ Living Common Law
- ☐ Separated
- ☐ Other (please specify) _____

4.) People living in Canada come from many different cultural and racial backgrounds. What best describes your background <u>(please check all that apply)?</u>

- ☐ White
- ☐ Black
- ☐ Chinese
- ☐ Japanese
- ☐ Indigenous/Aboriginal
- ☐ Korean
- ☐ South Asian
- ☐ Latin (e.g., Hispanic)
- ☐ Other (please specify) _____

5.) Level of Education: What is the highest level of education that you have achieved?

- ☐ Eighth Grade or less
- ☐ Some high school
- ☐ High school diploma
- ☐ Vocational school or some college
- ☐ College/University degree
- ☐ Professional or graduate degree

6.) Annual family income:

- ☐ <$20,000
- ☐ $20,000-39,000
- ☐ Prefer not to specify
- ☐ $40,000-60,000
- ☐ $60,000-80,000
- ☐ $80,000-100,000
- ☐ >$100,000

7.) Employment status:

- ☐ Retired
- ☐ Part-time employed
- ☐ Self-employed
- ☐ Homemaker
- ☐ Full-time employment
- ☐ Unemployed more than 1 year
- ☐ Unemployed less than 1 year
- ☐ Disabled and unable to work

8). Your typical mode of transportation to the YMCA of North Bay:

- ☐ Car
- ☐ Bus
- ☐ Walk
- ☐ Bike
- ☐ Run
- ☐ Other (please specify) _____

Part B

Below is a list of activities. The main difference between the four categories is the **intensity** of the exercise. In the column marked **(Times Per Week),** please indicate on each line how many times you performed that intensity of exercise during your **free time** (i.e., not occupation or house work) during a typical **7-day period** (a week). In the column marked **(Average Duration),** please indicate how long you exercise for, at that level of intensity in minutes. **Please only count exercise sessions that lasted 10 minutes or longer in duration.** If you did not perform any exercise at a given intensity, please write '0' in that space.

Instructions: Remembering your average weekly exercise in the past month, during a typical **7-Day period** (a week), how many times on the average do you do the following kinds of exercise for more than **10 minutes** during your free time:

	Times Per Week	**Average Duration** (per session in minutes)
a.) MILD EXERCISE (MINIMAL EFFORT, NO PERSPERATION) (e.g., easy walking, yoga, bowling, lawn bowling, shuffleboard, golf)	_____	_____
b.) MODERATE EXERCISE (NOT EXHAUSTING, LIGHT PERSPERATION) (e.g., fast walking, tennis, easy bicycling, easy swimming, popular and folk dancing)	_____	_____
c.) STRENUOUS EXERCISE (HEART BEATS RAPIDLY, PERSPERATION) (e.g., running, aerobics classes, cross country skiing, vigorous swimming, vigorous bicycling)	_____	_____
d.) RESISTANCE TRAINING (WEIGHT TRAINING) (e.g., lifting weights, using resistance bands)	_____	_____

Part C

Instructions: Please answer each question as honestly as possible. There are no right or wrong answers we are simply interested in understanding your exercise class history.

1.) Do you currently participate in one or more group-based exercise classes/groups **OUTSIDE** the YMCA of North Bay (e.g., a running or walking group)?

Yes ☐ **No** ☐

If yes, please describe which group-based exercise class/group (s) you participate in.

_____

_____

_____

a.) Approximately how many times per week do you exercise with this group (s)?

_____Times Per Week

b.) On average, how long do you spend exercising with this group (s) in minutes per session?

_____ Minutes Per Session

2.) Do you currently participate in one or more group-based exercise classes/groups that are **OFFERED** at the YMCA of North Bay?

Yes ☐ **No** ☐

If yes, please indicate which group-based exercise class (s) that you participate in **(check all that apply):**

- ☐ H.I.I.T
- ☐ TRX
- ☐ Cycle
- ☐ Cycle/TRX
- ☐ Circuit training
- ☐ Dynamic Boxing
- ☐ Bootcamp
- ☐ Aqua Bootcamp
- ☐ Aqua Combo/Aqua Fit (8:00 am- 8:45)
- ☐ Aqua Fit (2:00pm-2:45pm)
- ☐ Aqua Running
- ☐ Aqua Yoga
- ☐ Hydrotherapy
- ☐ Yoga Fitness
- ☐ Chair Yoga
- ☐ Yoga
- ☐ Easy Yoga
- ☐ Easy fit
- ☐ Moderate Yoga
- ☐ Tai Chi Stretch
- ☐ Stand up
- ☐ Total Core
- ☐ Other (please specify) _____

a.) Approximately how many times per week do you exercise with this group-based exercise class (s) at the YMCA of North Bay?

_____Times Per Week

b.) On average, how long do you spend exercising with this group-based exercise class (s) in minutes per session at the YMCA of North Bay?

_____ Minutes Per Session

Part D

Instructions: You may currently participate in more than one group-based exercise class that is **offered** at the YMCA of North Bay. Please identify only **ONE** exercise class that you exercise with **MOST FREQUENTLY**. You will need to complete the remainder of this study with this **ONE** group-based exercise class in mind.

1.) Please indicate the **ONE** group-based exercise class that you intend to exercise with **MOST FREQUENTLY** at the YMCA of North Bay this fall session. **(check only one box)**

- ☐ H.I.I.T
- ☐ TRX
- ☐ Cycle
- ☐ Cycle/TRX
- ☐ Circuit training
- ☐ Dynamic Boxing
- ☐ Bootcamp
- ☐ Aqua Bootcamp
- ☐ Aqua Combo/Aqua Fit (8:00 am- 8:45)
- ☐ Aqua Fit (2:00pm-2:45pm)
- ☐ Aqua Running
- ☐ Aqua Yoga
- ☐ Hydrotherapy
- ☐ Yoga Fitness
- ☐ Chair Yoga
- ☐ Yoga
- ☐ Easy Yoga
- ☐ Easy fit
- ☐ Moderate Yoga
- ☐ Tai Chi Stretch
- ☐ Stand up
- ☐ Total Core
- ☐ Other (please specify) _____

a.) Approximately how many times per week do you exercise with this ONE group-based exercise class at the YMCA of North Bay?

_____Times Per Week

b.) On average, how long do you spend exercising with this ONE group-based exercise class in minutes per session at the YMCA of North Bay?

_____ Minutes Per Session

c.) How many months or years have you participated in this type of group-based exercise class? Please provide one answer.

Months: _____ Years: _____

d.) How many months or years have you participated in/with your specific group-based exercise class at the YMCA of North Bay? Please provide one answer.

Months: _____ Years: _____

e.) In the class that you identified to participate in most frequently, on average, how many individuals participate in the class?

Number of exercise class members: _____

f.) Thinking about the one group-based exercise class that you identified to exercise with most frequently, please **circle/indicate** using the calendar below, in a typical week, the days/times you attend this **ONE** exercise class. There are no right or wrong answers; we are simply interested in understanding your average typical week of attendance to the ONE exercise class in a **7-Day period.**

Fall 2019

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
6AM	H.I.I.T. 6:00AM-6:45AM	CYCLE 6:00AM-6:45AM	BOOTCAMP 6:00AM-6:45AM	CYCLE 6:00AM-6:45AM	YOGA FITNESS 6:00AM-6:45AM		
8AM	AQUA COMBO 8:00AM-8:45AM	AQUA RUNNING 8:00AM-8:45AM AQUA YOGA 8:45AM-9:20AM	AQUA COMBO 8:00AM-8:45AM	AQUA RUNNING 8:00AM-8:45AM AQUA YOGA 8:45AM-9:20AM	AQUA FIT 8:00AM-8:45AM		
9AM	TRX® 9:15AM-10:00AM	BABY AND ME AQUA FIT 9:00AM-9:45AM H.I.I.T. 9:15AM-10:00AM	CIRCUIT TRAINING 9:15AM-10:00AM	BABY AND ME AQUA FIT 9:00AM-9:45AM DYNAMIC BOXING 9:15AM-10:00AM			
10AM	TAI CHI STRETCH 10:05AM-10:55AM		YOGA FITNESS 10:05AM-10:50AM	CHAIR YOGA 10:00AM-10:45AM			
11AM	EASY FIT 11:00AM-12:00PM YOGA 11:05AM-12:00PM HYDROTHERAPY 11:15AM-12:00PM	EASY YOGA 11:00AM-11:45AM HYDROTHERAPY 11:15AM-12:00PM	EASY FIT 11:00AM-12:00PM HYDROTHERAPY 11:15AM-12:00PM	MODERATE YOGA 11:00AM-11:45AM HYDROTHERAPY 11:15AM-12:00PM	EASY FIT 11:00AM-12:00PM		
12PM	CYCLE 12:10PM-12:50PM		CYCLE 12:10PM-12:50PM	TRX® 12:10PM-12:50PM	CYCLE 12:10PM-12:50PM		
1PM	STAND UP 1:00PM-2:00PM		STAND UP 1:00PM-2:00PM				
2PM	AQUA FIT 2:00PM-2:45PM		AQUA FIT 2:00PM-2:45PM		AQUA FIT 2:00PM-2:45PM		
4PM	TOTAL CORE 4:45PM-5:25PM						
5PM	H.I.I.T. 5:30PM-6:15PM	CYCLE/TRX® 5:30PM-6:30PM	BOOTCAMP 5:30PM-6:15PM	DYNAMIC BOXING 5:30PM-6:15PM			
6PM	YOGA 6:30PM-8:00PM		YOGA 6:30PM-8:00PM				
7PM		AQUA BOOTCAMP 7:15PM-8:00PM		AQUA BOOTCAMP 7:15PM-8:00PM			

Building healthy communities

g.) You provided us information about your average typical week **(7-Day period)** of being physically active with **one** group-based exercise class that you exercise with most frequently.

The fall session is approximately 4 months. Please answer as honestly as possible if you will not be attending class for **valid** and **practical reasons** (e.g., ill health, caring duties, holidays). There are no right or wrong answers. Is there any reason that you would like to identify that you may miss a class or even more than a couple classes in the future (e.g., going away for vacation)?

_____

_____

Part E

Instructions: Keeping in mind the **one** exercise class that you exercise with most frequently, the following questions are designed to reflect **how you feel about being a part of that group-based exercise class.** Please **CIRCLE** a number from 1 to 7 to indicate your agreement with each of the statements.

1.) I have a lot in common with other members in this exercise class.

1	2	3	4	5	6	7
STRONGLY DISAGREE						**STRONGLY AGREE**

2.) I feel strong ties to other members of this exercise class.

1	2	3	4	5	6	7
STRONGLY DISAGREE						**STRONGLY AGREE**

3.) I find it easy to form a bond with other members in this exercise class.

1	2	3	4	5	6	7
STRONGLY DISAGREE						**STRONGLY AGREE**

4.) I feel a sense of being "connected" with other members in this exercise class.

1	2	3	4	5	6	7
STRONGLY DISAGREE						**STRONGLY AGREE**

5.) I often think about the fact that I am an exercise class member.

1	2	3	4	5	6	7
STRONGLY DISAGREE						**STRONGLY AGREE**

6.) Overall, being a member of this exercise class has a lot to do with how I feel about myself.

1	2	3	4	5	6	7
STRONGLY DISAGREE						**STRONGLY AGREE**

7.) In general, being a member of this exercise class is an important part of my self-image.

1	2	3	4	5	6	7
STRONGLY DISAGREE						**STRONGLY AGREE**

8.) The fact that I am a member of this exercise class often enters my mind.

1	2	3	4	5	6	7
STRONGLY DISAGREE						**STRONGLY AGREE**

9.) In general, I'm glad to be a member of this exercise class.

1	2	3	4	5	6	7
STRONGLY DISAGREE						**STRONGLY AGREE**

10.) I rarely regret that I am a member of this exercise class.

1	2	3	4	5	6	7
STRONGLY DISAGREE						**STRONGLY AGREE**

11.) I feel good about being a member of this exercise class.

1	2	3	4	5	6	7
STRONGLY DISAGREE						**STRONGLY AGREE**

12.) Generally, I feel good when I think about myself as a member of this exercise class.

1	2	3	4	5	6	7
STRONGLY DISAGREE						**STRONGLY AGREE**

Part F

The following questionnaire is designed to assess your perceptions of your group-based exercise class. There are no wrong or right answers, so please give your immediate reaction. Some of the questions may seem repetitive, but please answer ALL questions.

Instructions: Keeping in mind the **one** exercise class that you exercise with most frequently, the following statements are designed to **assess your feelings about YOUR PERSONAL INVOLVEMENT** with the group-based exercise class. Please CIRCLE a number from 1 to 9 to indicate your level of agreement with each of the statements.

1.) I enjoy the social interaction occurring in this exercise class.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

2.) I'm happy with the amount of physical activity I get.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

3.) I am going to miss the members of this exercise class when the program ends.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

4.) I'm happy with my exercise class's level of commitment to exercise.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

5.) Some of my best friends are in the exercise class.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

6.) This exercise class gives me enough opportunities to improve my personal fitness.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

7.) I enjoy social activities associated with this exercise class more than other social events.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

8.) I like the approach to exercise in this class.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

9.) For me, this exercise class is one of the most important social groups to which I belong.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

Instructions: Keeping in mind the **one** exercise class that you exercise with most frequently, the following statements are designed to **assess your perceptions of YOUR EXERCISE CLASS AS A WHOLE.** Please CIRCLE a number from 1 to 9 to indicate your agreement with each of the statements.

10.) Our exercise class is united in trying to reach its goals for fitness.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

11.) Members of our exercise class would rather get together as a class than go out on their own.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

12.) We all take responsibility if one of our exercise classes goes poorly.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

13.) Members of our exercise class often socialize together.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

14.) Members of our exercise class have similar aspirations regarding the group's progress.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

15.) Members of our exercise class would like to spend time together after the program is over.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

16.) If members of our exercise class have problems in class, everyone wants to help them so we can work together again.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

17.) Members of our exercise class stick together outside of exercise classes.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

18.) Members of our exercise class communicate freely about the correct method of doing exercises during or after classes.

1	2	3	4	5	6	7	8	9
STRONGLY DISAGREE								**STRONGLY AGREE**

Part G

Instructions: For each of the following statements and/or questions, please circle the point on the scale that you feel is most appropriate describing you.

1). In general, I consider myself:

1	2	3	4	5	6	7
Not a very happy person						**A very happy person**

2.) Compared to most of my peers, I consider myself:

1	2	3	4	5	6	7
Less happy						**More happy**

3.) Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?

1	2	3	4	5	6	7
Not at all						**A great deal**

4.) Some people are generally not very happy. Although they are not depressed, they never seem as happy as they might be. To what extent does this characterization describe you?

1	2	3	4	5	6	7
Not at all						**A great deal**

Part H

Instructions: Please answer each question as honestly as possible. There are no right or wrong answers. These questions ask for your views about your health. For each of the following questions, please check/circle **one option** for each questionnaire item that best describes you.

1.) In general, would you say your health is:

- ☐ 1- Excellent
- ☐ 2- Very Good
- ☐ 3- Good
- ☐ 4- Fair
- ☐ 5- Poor

2.) **Compared to one year ago**, how would you rate your health in general **now?**

- ☐ 1- Much better now than one year ago
- ☐ 2- Somewhat better now than one year ago
- ☐ 3- About the same
- ☐ 4- Somewhat worse now than one year ago
- ☐ 5- Much worse now than one year ago

3.) The following items are about activities you might do during a typical day. Does **your health now limit you** in these activities? If so how much? **(Please circle ONE number on EACH line)**

	Yes, limited a Lot (1)	**Yes, Limited a Little (2)**	**No, Not Limited at all (3)**
a.) **Vigorous activities,** such as running, lifting heavy objects, participating in strenuous sports	1	2	3
b.) **Moderate activities,** such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	1	2	3
c.) Lifting or carrying groceries	1	2	3
d.) Climbing **several** flights of stairs	1	2	3
e.) Climbing **one** flight of stairs	1	2	3
f.) Bending, kneeling, or stooping	1	2	3
g.) Walking more **than one mile**	1	2	3
h.) Walking **several blocks**	1	2	3
i.) Walking **one block**	1	2	3
j.) Bathing or dressing yourself	1	2	3

4.) During the **past 4 weeks,** have you had any of the following problems with your work or other regular daily activities **as a result of your physical health? (Please circle ONE answer on EACH line)**

a.) Cut down the **amount of time** you spent on work or other activities	Yes	No
b.) **Accomplished less** than you would like	Yes	No
c.) Were limited in the **kind** of work or other activities	Yes	No
d.) Had **difficulty** performing the work or other activities (for example, it took extra effort)	Yes	No

5.) During the **past 4 weeks,** have you had any of the following problems with your work or other regular daily activities **as a result of any emotional problems** (such as feeling depressed or anxious)? **(Please circle ONE answer on EACH line)**

a.) Cut down the **amount of time** you spent on work or other activities	Yes	No
b.) **Accomplished less** than you would like	Yes	No
c.) Didn't do work or other activities as **carefully** as usual	Yes	No

6.) During the **past 4 weeks**, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?

- ☐ 1- Not at all
- ☐ 2- Slightly
- ☐ 3- Moderately
- ☐ 4- Quite a bit
- ☐ 5- Extremely

7.) How much **bodily** pain have you had during the **past 4 weeks?**

- ☐ 1- None
- ☐ 2- Very mild
- ☐ 3- Mild
- ☐ 4- Moderate
- ☐ 5- Severe
- ☐ 6- Very severe

8.) During the **past 4 weeks,** how much did **pain** interfere with your normal work (including both work outside the home and housework)?

- ☐ 1- Not at all
- ☐ 2- A little bit
- ☐ 3- Moderately
- ☐ 4- Quite a bit
- ☐ 5- Extremely

9.) These questions are about how you feel and how things have been with you **during the past 4 weeks.** For each question, please give the one answer that comes closest to the way you have been feeling. **(Please circle ONE number on EACH line)**

How much of the time during the **past 4 weeks…**

	All of the time	**Most of the time**	**A good bit of the time**	**Some of the time**	**A little of the time**	**None of the time**

a.) Did you feel full of pep?	1	2	3	4	5	6
b.) Have you been a very nervous. person?	1	2	3	4	5	6
c). Have you felt so down in the dumps that nothing could cheer you up?	1	2	3	4	5	6
d.) Have you felt calm and peaceful?	1	2	3	4	5	6
e.) Did you have a lot of energy	1	2	3	4	5	6
f.) Have you felt downhearted and blue?	1	2	3	4	5	6
g.) Did you feel worn out?	1	2	3	4	5	6
h.) Have you been a happy person?	1	2	3	4	5	6
i.) Did you feel tired?	1	2	3	4	5	6

10.) During the **past 4 weeks,** how much of the time has **your physical heath or emotional problems** interfered with your social activities (like visiting with friends, relatives, etc.)? **(Check one number)**

- ☐ 1- All of the time
- ☐ 2- Most of the time
- ☐ 3- Some of the time
- ☐ 4- A little of the time
- ☐ 5- None of the time

11.) How TRUE or FALSE is **each** of the following statements for you. **(Please circle ONE number on EACH line)**

	Definitely true	**Mostly true**	**Don't know**	**Mostly false**	**Definitely false**
a.) I seem to get sick a little easier than other people	1	2	3	4	5

b.) I am as healthy as anybody I know	1	2	3	4	5
c.) I expect my health to get worse	1	2	3	4	5
d.) My health is excellent	1	2	3	4	5

Thank you for participating in this questionnaire! Your participation and time are greatly appreciated. Your responses to the questionnaires will help us in making a novel contribution to group dynamics and exercise literature. Please be reassured that the answers you provided will be coded, and your name will not be associated with any scores and will not be ranked in anyway.

Please remember that the study involves two questionnaires. If you are interested in continuing your participation with this study, a second questionnaire will be given to you, approximately one week before the end of the fall session.

Please chose the method that is best to contact you, so that we can provide you with the second questionnaire. You may choose both!

Phone: _____

Email: _____

Upon completing your second questionnaire, you will be entered in a draw for a chance to win a $100 pre-paid VISA card!