

More Than a Fitness Studio: The role of collegiate recreation group exercise programs in undergraduate student wellbeing

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ABSTRACT

Much research has shown that regular physical activity influences both physiological and psychological health. More specifically, physical activity positively impacts wellbeing, across physical, emotional and social wellness. Furthermore, group-based physical activity has been linked to increasing adherence to an exercise protocol as well as improving social connectedness. For college students, collegiate recreation facilities are the main providers of physical activity services and programming for the campus population to utilize. In the collegiate recreation literature, several university studies have pointed out that students who participate in their recreational facilities and programs have benefited from positive feelings of wellbeing. The purpose of this study was to investigate the impact that Virginia Tech Recreational Sports' group-based fitness programming has on Virginia Tech students' overall wellbeing. Wellbeing was defined by six dimensions: career (or sense of purpose), social, financial, community, physical and emotional. This study used a concurrent explanatory mixed methods design, composed of a brief cross-sectional survey and focus groups. This work simultaneously contributes to collegiate recreation by providing evidence that students who utilize facilities and programs have higher perceptions of wellbeing as well as highlighting suggested strategies for improvement including resource limitations and communication barriers. Finally, in terms of group fitness and wellbeing, this thesis provides preliminary evidence that those who participate in collegiate group exercise programs have higher perceptions of physical and social wellbeing.

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I. Literature Review

1.1 Introduction

There is a strong relationship between physical inactivity and the development of chronic diseases. The negative impact that chronic disease has on the economy, as well as, morbidity and mortality rates (Durstine et al., 2013; WHO, 2010), has put emphasis on the need for physical activity as a primary and secondary prevention technique in the fight against non-communicable diseases (e.g., diabetes, obesity). It is also important to point out that individuals who already have a chronic disease show improvement when physical activity or exercise are included on their medical management plans (Durstine et al., 2013). More specifically, epidemiologic literature has demonstrated that structured exercise routines can reduce the risk of impairment and death from many chronic diseases like heart disease, cancers, strokes, respiratory disease, kidney disease and diabetes (Brawner et al., 2016).

When exploring the literature for physical activity and chronic disease prevention and management, it is evident that there is a number of definitions used in the literature to describe ‘physical activity’. The terms that are largely used, like physical activity, exercise, and fitness, are often used interchangeably. While each term is alike, and shares the same category of physical wellness, each term should be clearly defined separately. The 2018 Physical Activity Guidelines Advisory (PAGA) Committee Scientific Report defines physical activity as “bodily movement produced by skeletal muscles that results in energy expenditure” and notes that “the term does not require or imply any specific aspect or quality of movement and encompasses all types, intensities, and domains”. The 2018 PAGA Committee defines exercise separately as any intensity of “physical activity that is planned, structured, repetitive, and designed to improve or maintain physical fitness, physical performance, or health”. Lastly, there is the use of the term

fitness or physical fitness. PAGA's 2018 Committee defines physical fitness as "the ability to carry out daily tasks with vigor and alertness, without undue fatigue and with ample energy to enjoy leisure-time pursuits and meet unforeseen emergencies". The World Health Organization (WHO) defines physical fitness differently and more briefly as "the ability to perform muscular work satisfactorily". Physical fitness consists of a number of components including cardiorespiratory endurance, muscular endurance, muscular strength, flexibility and body composition (PAGA, 2018). Regardless of the definitions, 80% of Americans are not active enough, so Americans need physical fitness interventions in settings where people live, learn, work, and play (HHS, 2011). There are a number of settings with exercise programs aimed to improve physical fitness and one broad reaching program is the offerings of collegiate recreation departments within colleges or universities.

The role of collegiate recreation on university or college campuses has evolved from its foundation of intramural sports to a student affair department that believes in "holistic wellness and lifelong activity" (McFadden & Carr, 2015). Now collegiate recreation has an established purpose on campuses to improve wellness and learning within the university environment (McFadden & Carr, 2015). Recreational facilities have become an important part of campus life for students over the past few decades. How these recreational facilities look, what they are called, and what programs they offer (e.g., group fitness, wellness, adventure trips) vary on college campuses across the country. Similar to 'physical activity,' recreation departments are called a variety of names, like collegiate recreation, campus recreation, university recreation center (or UREC), or recreational sports. Regardless of nomenclature, the benefits that college students report receiving from recreational programs are similar across many university and college campuses (Ellis et al., 2002; Forrester, 2014; Hall, 2006; Henchy, 2013; Henchy, 2011).

For example, college students have noted that the top health and wellness benefits they have received from participating in campus recreation facilities and programs included an improvement in overall health, fitness level, physical strength, stress management, athletic ability, weight control, self-confidence, balance and coordination, and concentration (Forrester, 2014). Over 33,500 students from 38 different colleges and universities across the United States ranked a feeling of wellbeing as the most important health and wellness benefit they have gained from campus recreation participation (Forrester, 2014).

Similar to physical activity, wellbeing has been reported in the literature with a variety of definitions, constructs, and measures, which hinders the ability to study the concept. A universal meaning or measure of wellbeing may remove confusion regarding its definition, constructs and dimensions (Dodge et al., 2012). Kern et al. defines wellbeing as “an abstract construct that includes both feeling good and functioning well” and notes that wellbeing “cannot be defined by a single measure, but is comprised of various aspects that are more readily measured” (2015). In their book, *Wellbeing: The Five Essential Elements*, Rath and Harter (2010) define wellbeing in more detail as, “the combination of our love for what we do each day, the quality of our relationships, the security of our finances, the vibrancy of our physical health, and the pride we take in what we have contributed to our communities”. The authors mention that the most important part of this definition of wellbeing is how these five elements interact (Rath & Harter, 2010). Virginia Polytechnic Institute and State University (Virginia Tech, VT) utilizes Rath and Hart’s definition of wellbeing, along with emotional wellbeing as an additional element, to examine the student population experiences and perceptions. While Virginia Tech’s division of student affairs has made efforts towards evaluating the sense of wellbeing in their student population, there is a lack of research on wellbeing in the various student affairs departments and

those departments' specific areas. For example, Fitness at Virginia Tech Recreational Sports (VT Rec Sports) is a comprehensive program that helps VT students stay active in a variety of ways, including group exercise, personal training, fitness assessments, strength and conditioning, and more, but the specific link between these efforts and student perceptions of wellbeing is yet to be understood. Notably, to understand these links, pragmatic methods and measures are needed.

A pragmatic approach focuses on issues and research that are relevant for making decisions and taking action (Peek, 2014; Glasgow, 2013). For example, if VT Rec Sports finds that fitness programs do not improve wellbeing, decisions will need to be made in order to take action, implement intervention, and evaluate if those changes impact wellbeing. Outcomes of this pragmatic work would then be shared with other university recreation centers to help improve wellbeing in their fitness programming (Bodison et al., 2015; Owen et al., 2006; Jacobson et al., 2003). Furthermore, a pragmatic approach will allow VT Rec Sports to assess the outcomes of the variety of programs offered that are important to key stakeholders, increasing the relevance of the research (Proctor et al., 2011). To assess these outcomes, pragmatic measures must be used in order to make the collection of data feasible for a real-world setting, like VT Rec Sports, and to emphasize context and appropriateness for the specific setting in which the measures will be used (Glasgow, 2013). One framework that proposes pragmatic measures of five dimensions is RE-AIM, which stands for reach, efficacy, adoption, implementation, and maintenance. Reach is an individual-level measure of participation, efficacy is assessing both positive and negative outcomes of a program, adoption refers to the proportion of settings that take up the program, implementation is the extent to which the program is delivered as intended, and maintenance is the extent to which the program has become stable (Glasgow, Vogt & Boles, 1999).

In a recent perspective paper, Harden et al. (2018) outline strategies for facilitating the application of RE-AIM and its pragmatic use for planning and evaluation in clinical, community, and corporate settings. VT Rec Sports is a hybrid of community and corporate settings. Recreational Sports is a community on campus that develops the processes necessary to support the ongoing implementation and sustainability of programs for their students. However, the department is also corporate in the sense that it is interested in offering evidence-based programs to the students because programs with demonstrated efficacy and effectiveness are most likely to result in positive outcomes, which ultimately satisfies key consumers (the students) and stakeholders (student affairs professionals), and sustains the programs (Harden et al., 2018).

The purpose of this thesis project was to investigate if VT students have an overall increase feeling of wellbeing from participating in recreational sports, specifically group-based physical activity programs (e.g. group exercise, small group training), and if so, what dimensions of wellbeing were being impacted (i.e., purpose, social, financial, physical, community, and emotional). The following literature review is separated into 11 categories: physical activity - prevalence and outcomes, group dynamics based physical activity promotion, physical activity in young adults and college students, campus recreation, defining wellbeing, wellbeing and physical activity, wellbeing in young adults, campus recreation and wellbeing, wellbeing at Virginia Tech, Virginia Tech Recreational Sports, and Pragmatic Methods and Measures.

1.2 Physical Activity: Prevalence and Outcomes

Physical activity is often expressed as essential to a healthy lifestyle and good physical wellness, alongside proper diet and sleep (Warburton et al., 2006; Kokkinos, 2012; Reiner et al., 2013). Though the term physical activity is widely used in research, exercise is often used interchangeably. While physical activity (PA) is a “bodily movement produced by the contraction of skeletal muscles that results in a substantial increase in caloric requirements over resting energy expenditure” (Thompson, Gordon & Pescatello, 2010), exercise is a “type of PA consisting of planned, structured, and repetitive bodily movement done to improve and/or maintain one or more components of physical fitness” (Thompson, Gordon & Pescatello, 2010). Since both terms are used interchangeably so often in research, both physical activity and exercise will be studied in this literature review to explore and examine the most appropriate definition for this thesis project. In addition to the variety of similar definitions between physical activity and exercise, there is often confusion and misinterpretation of the PA recommendations that are suggested for adults ages 18-65 years old.

The American College of Sports Medicine (ACSM) recommends that most adults engage in moderate-intensity cardiorespiratory exercise for about 30 minutes a day, for five days a week, for a total of about 150 minutes a week (Garber et al., 2011). Along with cardiorespiratory training, adults should partake in resistance exercises two to three times a week for each of the major muscle groups (Garber et al., 2011). Lastly, adults should perform flexibility exercises about two times per week to maintain joint range of motion (Garber et al., 2011). When these recommendations are followed by performing moderate amounts of PA on most days of the week, important health benefits can be obtained. For example, research has indicated that regular physical activity helps reduce the risk of several chronic diseases including stroke and coronary

heart disease, hypertension, breast cancer, colon cancer, diabetes, and depression (Kokkinos, 2012; Reiner et al., 2013; Warburton et al., 2006). While it is well known that PA can reduce the risk of and help manage chronic diseases, the World Health Organization (WHO, 2010) has identified physical inactivity as the fourth leading risk factor for global deaths, falling not too far behind other risks factors like high blood pressure, tobacco use, and high blood glucose. Furthermore, 31% of adults are physically inactive globally, increasing regionally in the western hemisphere to 43% of adults (Hallal et al., 2012). The prevalence and impact of physical inactivity has underscored PA as primary and secondary interventions in the fight against non-communicable diseases. While PA benefits those with chronic disease, and reduces the risk of others developing those diseases, it is also critical to discuss the psychological benefits that physical activity can provide for those with mental illness.

Physical activity is a critical component in the holistic approach to recovery for those with mental illness (Rosenbaum, Tiedemann & Ward, 2014). For example, those with depressive disorders have found structured exercise to be a helpful alternative and supplemental strategy to their usual treatment and care (Rosenbaum et al., 2014). Large epidemiological studies report that structured exercise has psychological benefit for those with and without mental illness by making them feeling less depressed and anxious (Mandolesi et al., 2018), and that PA can delay or even prevent the onset of several mental illnesses (Zschucke, Gaudlitz, & Ströhle, 2013). For those who already have a mental illness, more specifically, a severe mental illness, cardiovascular disease (CVD) and type 2 diabetes are highly prevalent (Nyboe & Lund, 2013). This high prevalence is due to the fact that patients with severe mental illnesses are often physically inactive, a risk factor for chronic diseases like CVD and type 2 diabetes (Nyboe & Lund, 2013). Overall, like chronic disease, mental illness is creating social and economic strains

on the healthcare system and therefore, PA is gaining attention by healthcare professionals and researchers as a solution to the problem in the form of primary and secondary interventions (Zschucke, Gaudlitz & Ströhle, 2013). PA as a health intervention can come in many forms, one of those forms being group-based PA promotion.

1.3 Group Dynamics Based Physical Activity Promotion

Evidence-based interventions are utilized in order to promote and increase PA participation across the lifespan. There are a number of psychological factors that influence a person's motivation to be physically active including enjoyment, self-efficacy, and social influence (Irwin et al., 2012). Another influential factor, that is often overlooked and understudied in the literature, is exercising in groups (Irwin et al., 2012). Spink & Carron (1994) posit that a collection of individuals become a group when “the individuals converse freely, become interested in the achievements of the total collectivity, assist and receive assistance from others, identify the collectivity as ‘we,’ refer to non-group members and other collectivities as ‘they,’ or attend and actively participate in group functions”.

More specifically, group dynamics is “the field of study that examines the positive and negative forces that reside within groups” (Estabrooks, Harden & Burke, 2012; Lewin, 1939). There are several psychosocial outcomes to a collection of individuals that participate in a group dynamics-based PA (GDBPA) intervention, one of those being group cohesion. Cohesion is defined as “a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs” (Carron, Brawley & Widmeyer, 1998, p. 213). In the psychology literature, with a specific interest from exercise psychologists, cohesion has been established as a predictor for

adherence behaviors within the setting of group-based exercise programs (Dunlop, Falk & Beauchamp, 2013). Group cohesion is characterized as dynamic because it is constantly changing over time throughout the formation, development, maintenance and dissolution of the group. Besides group cohesion, social support and increased motivation are also psychosocial outcomes of GDBPA interventions (Samendinger, Pfeiffer & Feltz, 2018). Burke et al. (2006) demonstrated that as the social support of exercise participants increases, so does the beneficial effects of the GDBPA intervention, and the increased motivation that occurs in GDBPA interventions greatly impacts behavior change.

To fully understand GDBPA interventions, it is important to discuss the difference between an aggregate of people and a true group. An aggregate of people are a collection of individuals who happen to be in the same location, performing the same activity, whereas a true group is when the collection of individuals' goals become that of the group's achievements and not themselves (Spink & Carron, 1994). Furthermore, an aggregate of people is not considered a true group because group or member interactions are not used as a source of motivation for behavior change (Estabrooks, Harden & Burke, 2012). In the context of physical activity, group-based programs can differ from a standard exercise class to an exercise class where group dynamics principles were used. A standard exercise class is a different psychological environment from a GDBPA intervention because GDBPA develops and utilizes task and social cohesion to enhance the participants' experience (Burke et al., 2006; Estabrooks, 2008; Lewin, 1939). Carron, Hausenblas, and Mack (1996) emphasize the use of GDBPA interventions as strategies to increase the effectiveness of group-based programs and specify that exercising in a true group is superior to exercising as a collective.

GDBPA interventions provide moments of interaction, includes activities that enhance the group experience, and increases awareness of group cohesion (Estabrooks, Harden & Burke, 2012). GDBPA provides, improves and enhances moments of interaction and communication through the use of self-introductions, partner work and activities, small group work within the larger group, and individuals teaching others in the group how to perform exercises (Beauchamp & Eys, 2014, p. 128). GDBPA also increases group cohesion through four factors including environmental, leadership, group/class, and personal factors (Beauchamp & Eys, 2014, p. 123). The size of an exercise class is one example of an environmental factor that influences cohesion in groups. As group size increases, cohesion in the group decreases (Beauchamp & Eys, 2014, p. 123). Furthermore, exercise leaders, similar to coaches, are also an important factor in developing group cohesion. The leader's behavior and decision style can play an important role in the cohesion of the group. Additionally, group or class factors, like group structure, processes and goals, have been well-documented on improving group performance (Beauchamp & Eys, 2014, p. 125). Lastly, personal factors, like demographics, behavior, and cognitions, can play a key role in group cohesion. However, the most studied personal factor related to group cohesion in physical activity classes is adherence (Beauchamp & Eys, 2014, p. 124). Findings from Carron et al. (1996) and Burke et al. (2006) provide evidence for the conclusion that individuals are more likely to adhere to an exercise program if they exercise in a group, and a feel a sense of belonging.

A group dynamics-based approach to PA improves adherence and reduces delivery burden, meaning an organization does not have to deliver to one person at a time (Estabrooks, Harden & Burke, 2012). Overall, GDBPA interventions are successful and have a widespread positive effect across most populations and settings, including those that are hard to reach

(Harden et al., 2015). While a considerable amount of the original studies in GDBPA research were conducted with college students (Carron et al., 1996), there is a paucity in the literature related to comparing individualized, group (aggregate of people), and group dynamics-based PA interventions on university students. Particularly, there is a lack of studies regarding college students' preferences and behaviors for PA interventions (i.e., programs) that exist on campus.

1.4 Physical Activity in Young Adults and College Students

As mentioned previously, the majority of Americans are not meeting the PA recommended guidelines, even though participation in PA has been linked to many health benefits (Piercy et al., 2018). A decline in regular PA has been reported to occur in adolescence and the greatest decline in PA occurs right before young adulthood (Gordon-Larsen, Nelson, & Popkin, 2004). Furthermore, a majority of adolescents are not achieving the recommended amount of moderate PA per week, and continue to fail at doing so into adulthood (Gordon-Larsen, Nelson, & Popkin, 2004). Although the benefits of PA are well known and reported, motivating young adults to begin and sustain a regular PA regimen may be a challenge due to the following trends (Lauderdale et al., 2015; Strong et al., 2008). Young adults are defined in the literature by a variety of age ranges, but the most commonly used definition is 18-24 years. Young adults are widely represented on university campuses as undergraduate and graduate students. While it is understood that not all college students identify as young adults, a vast majority of students fall into this age range.

Moreover, there are 20 million college students in the U.S., which represents 39.9% of young adults (Towne et al., 2017). However, 23% of university students in the U.S. are inactive during leisure time, half of on-campus college students are not meeting the recommended

moderate PA guidelines, and only 30% of college students routinely participate in vigorous PA (Haase et al., 2004; Towne et al., 2017; Lemoyne, Valois, & Guay, 2015). Additional findings in the literature show that college students who tend to be physically inactive in school continue to be physically inactive following graduation, placing the students at increased risk for obesity and other health issues, like anxiety and depression (King et al., 2014; Deliens et al., 2015; Deng et al., 2011; Eichorn et al., 2018). Exercise habits that a student adheres to while in college will often determine the student's exercise habits for the rest of their lives (Eichorn et al., 2018). Barnett et al. (2013) mentions as well that "the college years are a critical time for the development of positive and negative health behaviors that persist into later life."

Engaging in healthy behaviors, like regular PA, has social and mental health benefits on college students. College students are often faced with personal, educational, and social stressors and choose to cope with these through positive and negative health behaviors (Bland et al., 2014). Regular PA, specifically vigorous PA, stretching, and resistance training, are positive health behaviors associated with higher stress tolerance in college students (Bland et al., 2014). Another mental health benefit for college students participating in regular PA, especially aerobic activity, is the reduced risk of hopelessness and depression (Taliaferro et al., 2009). Additionally, college students who routinely participate in PA, specifically group-based physical activity, experience social health benefits. One study found that a caring climate among college students participating in group exercise classes predicted feelings of connectedness (Newland et al., 2017). Furthermore, feelings of connectedness increases participation and adherence to PA regimens due to a sense of social cohesion generated by group based PA settings (Newland et al., 2017).

These numerous studies indicate the importance of educating students about PA while they are attending college and enhancing the college students' PA experience through a variety of programs. One department on campus that offers educational opportunities based on health and wellness and physical activity programming geared towards students is campus recreation, or recreational sports.

1.5 Collegiate (Campus) Recreation & Recreational Sports

Collegiate recreation comprises the services, programs, equipment, facilities, and staff that provides recreation opportunities for the entire campus community. The programs and services offered (e.g., group exercise, intramurals, aquatics, outdoor recreation) allow students to partake in activities outside of their academics, as well as, supplies “fun and fitness options” for any kind of participant (Kampf & Teske, 2013). Collegiate recreation departments call their facilities different titles including campus recreation, university recreation or recreational sports, however, they all serve the same purpose. The main purpose of collegiate recreation on college campuses is to serve the students by providing wellness and learning opportunities within the university environment (McFadden & Carr, 2015). Recreational departments have evolved over the years from strictly intramural sports programming to a field that is grounded in holistic wellness and lifelong physical activity promotion (McFadden & Carr, 2015). The student population benefits in many ways from participating in recreational sports, those of which are explained in the recreational sports literature.

Research conducted on topics related to collegiate recreation is often done by professionals in NIRSA: Leaders in Collegiate Recreation, formerly known as the National Intramural-Recreational Sports Association. NIRSA is a non-profit membership association, with

over 4,500--member institutions, that provides resources, research and education for advancing campus recreation. A popular area of research in the recreational sports literature is students' participation in campus recreation and how this impacts student retention. Participation in recreational sports' offerings has demonstrated positive effects on student retention, satisfaction, and recruitment (Downs, 2003; Haines, 2001; Lindsay & Sessoms, 2006; Henchy, 2011; Kampf & Teske, 2013; Hall, 2006). A study that included graduate and undergraduate students showed participation in campus recreation equally influenced students' decisions to attend and continue to attend the university (Henchy, 2013). Another popular area of research in NIRSA is student's benefits from participating in campus recreation.

Several studies have been conducted on the benefits of participation in campus recreation (Belch et al., 2001; Haines, 2001; Bryant, Banta & Bradley 1995; Miller, 2011), the majority of these studies focusing on undergraduate students. One of these studies surveyed students and found that the students who participated in campus recreation benefited from the following categories: feeling of physical wellbeing, sense of accomplishment, fitness, physical strength, and stress reduction (Haines, 2001). Furthermore, participating in campus recreation programs had a positive influence on a variety of aspects of the students' lives including academic, health, and social benefits (Henchy, 2013). Additionally, students who actually work for collegiate recreation centers have shown development in leadership and skills employers desire most (Cramp et al., 2015; McFadden & Carr, 2015). Haines' work emphasizes the need for research that determines the benefits college students gain from participation in collegiate recreation because it is "needed to defend the existence of university recreation and to align oneself for further growth" (2001).

While the following benefits (e.g., reduced stress, leadership skills, retention) are known for students who participate or work in campus recreation, there is a need for more research in campus recreation participation and how it influences holistic wellbeing. In a study by Forrester in 2014, over 33,500 students from 38 different colleges and universities across the United States ranked a feeling of wellbeing as the most important health and wellness benefit they have gained from campus recreation participation. It is important that wellbeing becomes a priority in the recreational sports literature, not just overall, but from each dimension of the definition.

1.6 Wellbeing: Definition, Dimensions, and Importance

Wellbeing is a theoretical perspective that has grown considerably in the research over the past few decades (Diener, Suh, Lucas & Smith, 1999; Kahneman, Diener & Schwarz, 1999; Keyes, Schmotkin & Ryff, 2002; Stratham & Chase, 2010; Seligman, 2011). However, the definitions of wellbeing in the literature conflict and are often “blurred and overly broad” (Forgeard et al., 2011, p. 81). Furthermore, the term wellbeing is viewed differently by almost every discipline and is used interchangeably with the terms quality of life and wellness, even though these words have their own individual meanings (Linton, Dieppe & Medina-Lara 2016). Quality of life focuses on communities and refers to context and environments, whereas, wellbeing relates to the individual level and refers to actual experiences (Gasper, 2010). Wellness, as defined by Stoewen (2017), “necessitates good self-stewardship, for ourselves and for those we care about and who care about us”, whereas wellbeing, as defined by Dodge et al. (2012), is “the balance point between an individual’s resource pool and the challenges faced”. While these definitions are not universal, they are able to show that wellbeing stands apart as its own term because it is a holistic approach to all aspects of one’s life. To account for the holistic

nature of the word, a popular way that research likes to define wellbeing is through the use of dimensions or constructs.

One example of defining wellbeing through constructs, from a meta-analysis by Zessin et al. (2015), divides the topic into subjective and psychological wellbeing. Subjective wellbeing describes how an individual evaluates their life and includes two aspects, cognitive wellbeing and affective wellbeing, whereas psychological wellbeing describes the fulfillment of an individual's potential (Zessin et al., 2015; Diener et al., 1999). Additionally, in the research, subjective wellbeing has been separated into seven dimensions including happiness, positive emotion, engagement, meaning and purpose, life satisfaction, relationships and social support, and accomplishment and competence (Forgeard et al., 2010). Similarly, Kern et al. (2015) attempt to define psychological wellbeing with a multidimensional approach including positive emotions, engagement, relationships, meaning, and accomplishment. The following two examples from Forgeard et al. and Kern et al. demonstrates the overlap of dimensions between subjective and psychological wellbeing and shows the need for universal dimensions that encompasses the entire definition of wellbeing. Rath and Harter (2010), both researchers from Gallup, Inc., attempt to encompass the holistic nature of wellbeing using five constructs:

Career wellbeing, or sense of purpose, is how you occupy your time, or simply liking what you do every day. **Social wellbeing** is about having strong relationships and love in your life. **Financial wellbeing** is about effectively managing your economic life.

Physical wellbeing is about having good health and enough energy to get things done on a daily basis. **Community wellbeing** is about the sense of engagement you have with the area where you live. (p. 6)

Like other researchers who have attempted to define wellbeing in the literature, the definition may not be perfect, but it is an attempt to simplify the term wellbeing into five distinct dimensions. Regardless of the variety of contexts in which wellbeing is presented, there is a consistency in the attributes that positive perceptions of wellbeing promise.

There are a variety of reasons why wellbeing is so prominent in the literature and important across a number of disciplines. Wellbeing is fundamental to the overall health of an individual and allows people to overcome barriers and achieve life goals. An individual's attitudes and outlook, as well as, past experiences can impact one's wellbeing. White (2010) explains the importance of wellbeing through three qualities: the positive charge, holistic outlook, and center placed on the individual's priorities and perspectives. The next four sections will focus on the impact that wellbeing has on a wide array of disciplines.

1.7 Wellbeing and Physical Activity

Evidence in the literature supporting the positive physiological and psychological health benefits of PA and exercise continues to grow at a rapid rate (Warburton et al., 2006; Kokkinos, 2012; Reiner et al., 2013; Mandolesi et al., 2018; Rosenbaum et al., 2014). It has already been discussed that PA is a critical component in the holistic approach to recovery for those with mental illness (Rosenbaum, Tiedemann & Ward, 2014), but there is also research that demonstrates the impact PA can have on an individual's day to day holistic wellbeing and vice versa. For example, results from a prospective cohort study by Kim et al. (2016) suggest that increase levels of psychological wellbeing may increase levels of PA, therefore, it is possible that psychological wellbeing could be a new target for PA intervention efforts. Furthermore, there are a number of studies that have established a positive relationship between levels of recurrent PA

and subjective wellbeing (Downward & Dawson, 2016; Huang & Humphreys, 2012; Pawlowski et al., 2011; Rasciute & Downward, 2010; Wicker et al., 2015). The findings on PA and wellbeing are vast and include a variety of target audiences and certain dimensions as the research topics.

Studies regarding PA and wellbeing in adolescents found that low levels of PA may decrease psychological wellbeing, but participation in sports and vigorous PA are associated with increased psychological wellbeing (Ussher et al., 2007; Steptoe & Butler, 1996). There have also been studies done on PA in older adults and the impact PA has on their wellbeing. Results illustrated that light PA is positively associated with wellbeing among those over the age of 60 and PA may contribute to the promotion and maintenance of psychological wellbeing in later life (Morgan & Bath, 1998; Bae et al., 2017). One dimension explored quite often in the literature, outside of subjective and psychological wellbeing, is emotional wellbeing. The results from a review by Penedo & Dahn (2005) showed that engaging in PA programs can benefit emotional wellbeing by improving mood, reducing symptoms of depression and anxiety, potentially preventing the onset of depression, and increasing health-related quality of life by enhancing the experience of one's wellbeing.

While research on the positive relationship between psychological and subjective wellbeing and PA is well established in the literature, there is a need to look at the relationship between PA and a wide variety of specific dimensions of wellbeing, like the Rath and Harter (2010) multi-faceted definition of wellbeing that includes social, financial, community, and career components. Additionally, research on the relationship between PA and wellbeing has been mainly conducted on older adult, children and adolescent audiences. There is a need for more research on how PA impacts the wellbeing of young adults and college students

specifically, as well as, an increased overall awareness on the current trends of holistic wellbeing in young adults and college students.

1.8 Wellbeing in Young Adults and College Students

Many individuals start to take full responsibility for their health and wellbeing at the beginning of young adulthood. Young adults, especially college students, begin to establish health and wellbeing patterns during this time that influence and lay the foundation for future health risk behaviors, like alcohol and tobacco use (Wetter et al., 2004; Timberlake et al., 2007). While young adults and college students (18 to 24 years old) are a relatively healthy group of people and have few chronic diseases, wellbeing in this population is at great risk due to the increased autonomy and change that comes with young adulthood and university life (Ridner et al., 2016). During the college years many young adults are required to independently deal with their financial, social, and health-related needs and the degree to which these needs are balanced can have a direct impact on a young adult's overall wellbeing (Baldwin et al., 2017).

There are a number of studies investigating college students' wellbeing covering a variety of topics. For example, a longitudinal study found that when transitioning from living at home to living at school, first year college students can experience a decline in psychological and social wellbeing (Conley et al, 2014). While these students may recover from this decline, many first years do not return back to their baseline wellbeing by the end of freshman year (Ridner et al., 2016). In the first year of school, the behaviors that students choose to partake in can impact their overall wellbeing. For example, a cross-sectional study found that low grades and alcohol consumption are associated with decreased wellbeing amongst first years, but being a full-time student and having a part-time job can have positive effects on first years' overall wellbeing

(Bowman, 2010). Another popular topic in the literature on college students, “hook ups” may have an impact on college students’ wellbeing as well. A cross-sectional study on “hook ups” in college students found that higher levels of psychological wellbeing were associated with casual intimate relationships in college men, but no relationship was found between wellbeing and hooking up in a longitudinal study that spanned over nine months (Owen et al., 2010; Vrangalova, 2015). The relationship between wellbeing and PA, discussed in the section prior, can also impact the wellbeing of college students. Young adults often experience changes in their PA routine when transitioning from high school to college. Students whose PA routine changes during this transition may experience a decrease in psychological wellbeing, but students who remain active in the college years may increase their physical and emotional wellbeing in the short and long term (Bray & Born, 2004).

These preliminary results from the literature show the potential impact of student affairs departments, resources, and services provided on overall wellbeing while attending college. Advocating for wellbeing within higher education has shown to reduce disease frequency and enhance overall health (Baldwin et al., 2017). More college campuses are moving their wellness center, counseling center, health center, and campus recreation department under one roof to help better promote wellbeing to their college students. One of these areas, collegiate recreation, is highly ranked amongst students as a place on campus where they benefit from increased wellbeing (Forrester, 2014).

1.9 Wellbeing and Campus Recreation

Recreational and fitness activities offered by campus recreation facilities are a key factor to students before enrolling at a university as well as a feature that supports positive perceptions

after graduating from that university (Forrester, 2014). Furthermore, students have noted that participating in recreational and fitness activities at their school's campus recreation facility have supplemented their interests in staying "in shape" and healthy as defined by stress management, athletic ability, physical strength, fitness level, and overall health (Forrester, 2014). These statements primarily come from a cross-sectional analysis of 33,522 college students' responses. Notably, there are also results from the Forrester (2014) cross-sectional survey, as well as other research in the recreational sports literature, that shows the impact collegiate recreation has on students' overall wellbeing.

In alignment with the Rath and Harter (2010) definition of wellbeing, recreational sports research is categorized by: physical wellbeing, social wellbeing, and career wellbeing or sense of purpose. Regarding physical wellbeing, research has shown that student participation in collegiate recreation programs, activities and services increases physical activity and physiological benefits (Colditz & Mariani, 2000; Haines, 2001). Results from a cross-sectional survey in Haines' study (2001) shows that 75% of students rank a feeling of physical wellbeing as number one on benefits they've received from participating in campus recreation programs. Regarding social wellbeing, research has shown that students who participate in campus recreation activities and programs experience an ease of social integration, as well as, several social benefits (Artinger et al., 2006; Bryant, Bradley, & Milborne, 1994; Christie & Dinham, 1991). Findings from Artinger et al. (2006) indicated that students who participate in intramural sports through campus recreation benefit the most socially in the areas of personal social benefits and social group bonding. Regarding career wellbeing, or "sense of purpose" as a broader term, students who participate in campus recreation programs and activities benefit from this wellbeing construct in several areas including academic persistence and improved self-image (Bryant &

Bradley, 1993; Christie & Dinham, 1991; Hall, 2006; Huesman et al., 2009; NIRSA, 2004; Ragheb & McKinney, 1993), college satisfaction (Forrester, 2006; NIRSA, 2004), and student development (Milton, 1992; Todaro, 1993).

Two gaps in the recreational sports literature relating to Rath and Harter's constructs of wellbeing are financial and community wellbeing. To get a better understanding of how students' overall holistic wellbeing is impacted by participation in collegiate recreation programs, there is a need for these two constructs to be explored in the recreational sports domain. A construct of wellbeing not in Rath and Harter's definition, but still important when discussing wellbeing, is emotional wellbeing, which relates to one's mental and psychological health. The recreational sports literature has shown that those who participate in campus recreation experience emotional wellbeing benefits of improved self-esteem and better handling of stress (Collins, Valerius, King, & Graham, 2001; Kanters & Forrester, 1997; Kanters, 2000; Kimball & Freysinger, 2003; Ragheb & McKinney, 1993).

Virginia Polytechnic Institute and State University (Virginia Tech) utilizes Rath and Harter's (2010) definition of wellbeing, from Gallup, Inc., to create opportunities for the student population to increase their wellbeing in all areas. Virginia Tech believes that incorporating emotional wellbeing into the list of Gallup's five constructs fits well with the institution's mission and values. As the setting for the thesis project, it is important to review previous efforts to understand the relationship between Virginia Tech students and alumni's experiences, perceptions of wellbeing, and engagement with offerings from the Recreational Sports department.

1.10 Wellbeing at Virginia Tech

VT is an institution that is dedicated to providing opportunities for all students, faculty and staff to better their holistic wellbeing. Using the definition from Rath and Harter (2010) and Gallup, Inc., as well as VT's addition of emotional wellbeing, Virginia Tech views wellbeing as "the interaction and interdependence between many aspects of life, such as finding fulfillment in daily work interactions, having strong social relationships and access to the resources people need, feeling financially secure, being physically healthy, and taking part in a true community". In 2017, Virginia Tech partnered with Gallup, Inc. to investigate student wellbeing and how it compares to other college students across the country. The Virginia Tech student survey measured five constructs of wellbeing for a holistic view of student wellbeing utilizing Gallup researchers' definition, not Virginia Tech's. Therefore, emotional wellbeing was not included.

The VT student survey (Gallup, Inc., 2018), from a sample of 2,041 students (10%) who completed the survey, found that VT students' holistic wellbeing is higher than college students nationally, as well as, students at larger institutions. Among the five constructs, VT students particularly are thriving in the areas of purpose and community wellbeing. Students attribute their flourishing purpose wellbeing to the professors who make them excited to learn and care about them as a person, the faculty who are committed to helping students find a successful career, their confidence in finding ways to use their strengths at school every day, and their involvement in clubs and organizations (Gallup, Inc., 2018). Furthermore, VT students credit their thriving community wellbeing to the professors and mentors who have encouraged them to pursue their goals, their belief that VT is a good place for racial and ethnic minorities, their confidence in VT doing the right thing during an issue of discrimination, and their peers who look out for them (Gallup, Inc., 2018). In addition to surveying student wellbeing, VT and

Gallup also conducted a survey in 2015 on undergraduate alumni wellbeing. Again, emotional wellbeing was not included in the holistic view.

The VT alumni survey (Gallup, Inc., 2015), from a sample of 13,994 alumni (99,741 alumni were invited to participate in the study, 14% responded) who completed the survey, found that the holistic wellbeing of VT alumni is higher than college graduates nationally and one in six VT alumni are thriving in all five constructs of wellbeing. The majority of VT alumni who completed the survey are flourishing in their purpose (career), social and financial wellbeing (Gallup, Inc., 2015). This means that VT graduate respondents enjoy what they do for a living, are motivated to reach their goals, have supportive relationships in their lives, and possess a sense of financial security. Even though VT has been named the fittest college in America (“50 Fittest Colleges”, 2015), student and alumni survey respondents ranked physical wellbeing last in the list of wellbeing constructs (Gallup, Inc., 2015 & 2018). This is a gap in understanding for two reasons: one being physical activity is a precursor for other health benefits and the other being the sample of respondents may be those who feel most well, in general. Therefore, to get a better understanding of VT students’ holistic wellbeing, it is important to look somewhere on campus where physical wellbeing is included as a value and priority. A student affairs department on Virginia Tech’s campus whose priority mission is to promote and grow the physical wellbeing of the student population, is VT Recreational Sports.

1.11 Virginia Tech Recreational Sports

Recreational Sports, a department under the Division of Student Affairs at Virginia Tech, aspires to influence students to commit to unwavering curiosity, pursue self-understanding, practice civility, prepare for courageous leadership, and embrace UT Prosim (“That I may

serve”) (“About Rec Sports”, n.d.). The mission of Virginia Tech Recreational Sports (herein VT Rec Sports) is to “enhance the quality of life for the university community by educating and encouraging participation in activities that promote healthy lifestyles, social interactions, and leadership skills” (“About Rec Sports”, n.d.). The VT Rec Sports staff works towards this mission daily by following six core values that include pursuing growth and learning, building positive relationships, prioritizing work/life harmony, believing in exercise and movement, creating memorable memories, and infusing fun into all programs (“About Rec Sports”, n.d.). VT Rec Sports serves 90% of the student body with about 45% of those students being involved in at least one program that VT Rec Sports offers under the department (“About Rec Sports”, n.d.). Students who use the VT Rec Sports facility at least twice per week have higher grade point averages (GPAs) and the department contributes to a rich experience at VT in a number of ways including academic success, mental health, leadership and character development, physical health, pride, connection and belonging to VT, sense of adventure and play, stress management and resilience (Liu et al., 2016; Stridsberg, 2018; “About Rec Sports”, n.d.; Forrester, 2014).

With that in mind, VT Rec Sports has been involved with, or sponsored, several studies and assessments to examine the impact that VT Rec Sports has on the student’s experience at VT or help evaluate the student’s experience and wellbeing at VT in general. Some of the studies examining VT Rec Sports’ impact on the student’s experience included GPA and academic success and social belonging in intramural sports (IM sports). In summary, the GPA and academic success study found a positive association between physical activity at VT Rec Sports and higher GPAs (Liu et al., 2016) and the IM sports study found that participation in IM sports at VT Rec Sports results in higher levels of social connectedness and social assurance (Stridsberg, 2018). Other studies that have been sponsored by and involved the department in

some part, to better the student's experience at VT in general, included the Wake Forest Wellbeing Assessment. The Wellbeing Assessment is an annual large-scale, national survey that is designed to help institutions develop effective programs that support their students' wellbeing (WFU Wellbeing Assessment, 2018). The assessment looks at several areas of wellbeing to get a holistic perspective on the students' experiences and those included academic engagement and outcomes, belongingness, health behaviors, life satisfaction, meaning, mood, relationships, and purpose (WFU Wellbeing Assessment, 2018). While all the following studies provide the department and university with information related to the student's experience, there is a lack of information on the impact that VT Rec Sports' programs have on students' holistic wellbeing, one of those program areas being VT Fitness.

VT Fitness, alongside of IM Sports, is one of VT Rec Sports' largest program areas providing a variety of group-based PA programming, as well as, personal training, fitness assessments and special events. VT Fitness' group-based PA programs include group exercise classes, small group trainings, instructional dance classes, and sports club strength and conditioning sessions. These programs are utilized by thousands of students on campus for a variety of beneficial reasons, one of those potentially being wellbeing. There is a need for more research on how students' holistic wellbeing is impacted by specific program areas at VT Rec Sports as the department has made it a priority to work with an integrated wellbeing model, bringing together many wellbeing areas to continue to enrich the student's experience at Virginia Tech. Pragmatic methods and measures are needed to better understand the impact that VT Fitness' group-based PA programming has on the holistic wellbeing of Virginia Tech students.

1.12 Lack of Generalizability and Transparency: Need for Pragmatic Methods and Measures

Despite the recognition of and efforts for promoting wellbeing within VT rec Sports, there are challenges in data collection, reporting, and generalizability across campus settings to truly understand how recreational sports offerings are related to constructs of wellbeing. Notably, to understand these links, pragmatic methods and measures are needed. A pragmatic approach focuses on issues and research that are relevant for making decisions and taking action (Peek, 2014; Glasgow, 2013). For example, if VT Rec Sports finds that fitness programs do not improve wellbeing, decisions will need to be made in order to take action, implement intervention, and evaluate if those changes impact wellbeing. Outcomes of this pragmatic work would then be shared with other university recreation centers to help improve wellbeing in their fitness programming (Bodison et al., 2015; Owen et al., 2006; Jacobson et al., 2003). Furthermore, a pragmatic approach will allow VT Rec Sports to assess the outcomes of the variety of programs (e.g. Fitness, IM Sports, Adventure) offered that are important to key stakeholders, increasing the relevance of the research (Proctor et al., 2011). To assess these outcomes, pragmatic measures must be used in order to make the collection of data feasible for a real-world setting, like VT Rec Sports, and to emphasize context and appropriateness for the specific setting in which the measures will be used (Glasgow, 2013). A pragmatic and mixed-methods data collection process increases both generalizability and transferability of empirical data while also informing actionable steps within the department.

II. Chapter 2: More Than a Fitness Studio: The role of collegiate recreation group exercise programs in undergraduate student wellbeing

2.1 Introduction

There is a strong relationship between physical inactivity and the development of chronic diseases. The negative impact that chronic disease has on the economy, as well as, morbidity and mortality rates (Durstine et al., 2013; WHO, 2010), has put emphasis on the need for physical activity as a primary and secondary prevention technique in the fight against non-communicable diseases (e.g., diabetes, obesity). It is also important to point out that individuals who already have a chronic disease show improvement when physical activity or exercise are included on their medical management plans (Durstine et al., 2013). More specifically, epidemiologic literature has demonstrated that structured exercise routines can reduce the risk of impairment and death from many chronic diseases like heart disease, cancers, strokes, respiratory disease, kidney disease and diabetes (Brawner et al., 2016).

When exploring the literature for physical activity and chronic disease prevention and management, it is evident that there is a number of definitions used in the literature to describe ‘physical activity’. The terms that are largely used, such as physical activity, exercise, and fitness, are often used interchangeably. While each term is alike, and shares the same category of physical wellness, each term should be clearly defined separately. The 2018 Physical Activity Guidelines Advisory (PAGA) Committee Scientific Report defines physical activity as “bodily movement produced by skeletal muscles that results in energy expenditure” and notes that “the term does not require or imply any specific aspect or quality of movement and encompasses all types, intensities, and domains”. The 2018 PAGA Committee defines exercise separately as any intensity of “physical activity that is planned, structured, repetitive, and designed to improve or

maintain physical fitness, physical performance, or health”. Lastly, there is the use of the term fitness or physical fitness. PAGA’s 2018 Committee defines physical fitness as “the ability to carry out daily tasks with vigor and alertness, without undue fatigue and with ample energy to enjoy leisure-time pursuits and meet unforeseen emergencies”. The World Health Organization (WHO) defines physical fitness differently and more briefly as “the ability to perform muscular work satisfactorily”. Physical fitness consists of a number of components including cardiorespiratory endurance, muscular endurance, muscular strength, flexibility and body composition (PAGA, 2018). Regardless of the definitions, 80% of Americans are not active enough, so Americans need physical fitness interventions in settings where people live, learn, work, and play (HHS, 2011). There are a number of settings with exercise programs aimed to improve physical fitness and one broad reaching program is the offerings of collegiate recreation departments within colleges or universities.

The role of collegiate recreation on university or college campuses has evolved from its foundation of intramural sports to a student affair department that believes in “holistic wellness and lifelong activity” (McFadden & Carr, 2015). Now collegiate recreation has an established purpose on campuses to improve wellness and learning within the university environment (McFadden & Carr, 2015). Recreational facilities have become an important part of campus life for students over the past few decades. How these recreational facilities look, what they are called, and what programs they offer (e.g., group fitness, wellness, adventure trips) vary on college campuses across the country. Similar to ‘physical activity,’ recreation departments are called a variety of names, like collegiate recreation, campus recreation, university recreation center (or UREC), or recreational sports. Regardless of nomenclature, the benefits that college students report receiving from recreational programs are similar across many university and

college campuses (Ellis et al., 2002; Forrester, 2014; Hall, 2006; Henchy, 2013; Henchy, 2011). For example, college students have noted that the top health and wellness benefits they have received from participating in campus recreation facilities and programs included an improvement in overall health, fitness level, physical strength, stress management, athletic ability, weight control, self-confidence, balance and coordination, and concentration (Forrester, 2014). Over 33,500 students from 38 different colleges and universities across the United States ranked a feeling of wellbeing as the most important health and wellness benefit they have gained from campus recreation participation (Forrester, 2014).

Wellbeing is a growing area of research, but the varying amounts of definitions, constructs and dimensions for wellbeing in the literature create confusion and show the need for a universal meaning or measure of wellbeing (Dodge et al., 2012). Kern et al. defines wellbeing as “an abstract construct that includes both feeling good and functioning well” and notes that wellbeing “cannot be defined by a single measure, but is comprised of various aspects that are more readily measured” (2015). In their book, *Wellbeing: The Five Essential Elements*, Rath and Harter (2010) define wellbeing in more detail as, “the combination of our love for what we do each day, the quality of our relationships, the security of our finances, the vibrancy of our physical health, and the pride we take in what we have contributed to our communities”. The authors mention that the most important part of this definition of wellbeing is how these five elements interact (Rath & Harter, 2010). Virginia Polytechnic Institute and State University (Virginia Tech, VT) utilizes Rath and Hart’s definition of wellbeing, along with emotional wellbeing as an additional element, to examine the student population experiences and perceptions. While Virginia Tech’s division of student affairs has made efforts towards evaluating the sense of wellbeing in their student population, there is a lack of research on

wellbeing in the various student affairs departments and those departments' specific areas. For example, Fitness at Virginia Tech Recreational Sports (VT Rec Sports) is a comprehensive program that helps VT students stay active in a variety of ways, including group exercise, personal training, fitness assessments, strength and conditioning, and more, but the specific link between these efforts and student perceptions of wellbeing is yet to be understood. Notably, to understand these links, pragmatic methods and measures are needed.

A pragmatic approach focuses on issues and research that are relevant for making decisions and taking action (Peek, 2014; Glasgow, 2013). For example, if VT Rec Sports finds that fitness programs do not improve wellbeing, decisions will need to be made in order to take action, implement intervention, and evaluate if those changes impact wellbeing. Outcomes of this pragmatic work would then be shared with other university recreation centers to help improve wellbeing in their fitness programming (Bodison et al., 2015; Owen et al., 2006; Jacobson et al., 2003). Furthermore, a pragmatic approach will allow VT Rec Sports to assess the outcomes of the variety of programs offered that are important to key stakeholders, increasing the relevance of the research (Proctor et al., 2011). To assess these outcomes, pragmatic measures must be used in order to make the collection of data feasible for a real-world setting, like VT Rec Sports, and to emphasize context and appropriateness for the specific setting in which the measures will be used (Glasgow, 2013). One framework that proposes pragmatic measures of five dimensions is RE-AIM, which stands for reach, efficacy, adoption, implementation, and maintenance. Reach is an individual-level measure of participation, efficacy is assessing both positive and negative outcomes of a program, adoption refers to the proportion of settings that take up the program, implementation is the extent to which the program is

delivered as intended, and maintenance is the extent to which the program has become stable (Glasgow, Vogt & Boles, 1999).

In a recent perspective piece, Harden et al. (2018) outline strategies for facilitating the application of RE-AIM and its pragmatic use for planning and evaluation in clinical, community, and corporate settings. When utilizing the following strategies for this specific project, it is significant to indicate that VT Rec Sports is a hybrid of community and corporate settings. Recreational Sports is a community on campus that develops the processes necessary to support the ongoing implementation and sustainability of programs for their students. However, the department is also corporate in the sense that it is interested in offering evidence-based programs to the students because programs with demonstrated efficacy and effectiveness are most likely to result in positive outcomes, which ultimately satisfies key consumers (the students) and stakeholders (student affairs professionals), and sustains the programs (Harden et al., 2018). Therefore, because VT Rec Sports is evidently a hybrid of these two settings, strategies from community and corporate can be utilized when applying pragmatic methods to this project.

The purpose of this thesis project was to investigate if VT students have an overall increase feeling of wellbeing from participating in recreational sports, specifically group-based physical activity programs (e.g. group exercise, small group training), and if so, what dimensions of wellbeing were being impacted (i.e., purpose, social, financial, physical, community, and emotional).

2.2 Research Questions and Objectives

Research Question #1: How does participation in Virginia Tech Recreational Sports' group fitness program impact each domain of students' wellbeing?

- Objective #1: Determine how those students who engage in VT Rec Sports' group fitness program and their perceptions of wellbeing compares the overall student average. The following will be analyzed using comparison of means.
 - Hypothesis #1: Those who participate in group fitness have better physical, social, community and emotional wellbeing compared to the undergraduate student average.
 - Hypothesis #2: Those who participate in group fitness have lower financial wellbeing as well as sense of purpose compared to the undergraduate student average.
- Objective #2: Determine the relationship between students' group fitness class attendance frequency and their perceptions of wellbeing. The following will be analyzed using linear regressions.
 - Hypothesis #1: Greater participation in group fitness has a significant relationship with thriving physical, social and emotional wellbeing.
 - Hypothesis #2: Frequency of participation in group fitness has no significant relationship with financial and community wellbeing or sense of purpose.
- Objective #3: Qualitatively explore student perceptions of participation (or lack thereof) in VT Rec Sports' group fitness classes impacts their wellbeing. The following will be analyzed by coding transcripts from the semi-structured interview.

- Hypothesis #1: Participation in group fitness positively impacts physical, social, community and emotional wellbeing.
- Hypothesis #2: Participation in group fitness neither positively or negatively impacts sense of purpose.
- Hypothesis #3: Participation in group fitness negatively impacts financial wellbeing.

Research Question #2: Does engaging in physical activity alone (e.g., by oneself) impact students' holistic wellbeing?

- Objective #1: Determine how those students who prefer working out alone and their perceptions of wellbeing compares to the overall student average. The following will be analyzed using comparison of means.
 - Hypothesis #1: Those who exercise alone have better physical and emotional wellbeing compared to the undergraduate student average.
 - Hypothesis #2: Those who exercise alone have lower financial, social and community wellbeing as well as sense of purpose compared to the undergraduate student average.
- Objective #2: Determine the relationship between students' individual exercise routine frequency and their perceptions of wellbeing. The following will be analyzed using linear regressions.
 - Hypothesis #1: The more an individual exercises alone has a significant relationship with thriving physical and emotional wellbeing.
 - Hypothesis #2: Frequency of exercising alone has no significant relationship with financial, social and community wellbeing or sense of purpose.

- Objective #3: Qualitatively explore the relationship between exercising alone or with others related to wellbeing. The following will be analyzed by coding transcripts from the semi-structured interview.
 - Hypothesis #1: Exercising alone positively impacts physical and emotional wellbeing.
 - Hypothesis #2: Exercising alone neither positively or negatively impacts financial, social and community wellbeing or sense of purpose.

Research Question #3: Do the perceptions of wellbeing of students who prefer to exercise alone differ from student participants in the Virginia Tech Recreational Sports' group fitness program? Do certain dimensions of wellbeing have specific impact on other dimensions?

- Objective #1: Examine the difference in wellbeing scores between students who work out alone and students who participate in VT Rec Sports' group fitness program. The following will be analyzed using independent samples t-test.
 - Hypothesis #1: Students who participate in group fitness have wellbeing scores that are significantly different and higher in social, emotional, community wellbeing and sense of purpose.
 - Hypothesis #2: Students who exercise alone fitness have wellbeing scores that are significantly different and higher in financial and physical wellbeing.
- Objective #2: Identify if there are significant associations between the dimensions of wellbeing using the wellbeing composite scores from students' perceptions of wellbeing. The following will be analyzed using Pearson's Correlations.

- Hypothesis #1: Wellbeing dimensions such as social and community as well as emotional and physical will have significant associations.
- Hypothesis #2: Other wellbeing dimensions such as sense of purpose and financial will have no significant associations.
- Objective #3: Compare and contrast how those students who prefer to exercise alone and those students who participate in VT Rec Sports' group fitness program believe their involvement has positively or negatively impacted their perceptions of wellbeing. The following will be analyzed by coding transcripts from the semi-structured interview.
 - Hypothesis #1: Both groups believe their preference for exercising in groups or alone has positively impacted their physical and emotional wellbeing.
 - Hypothesis #2: Both groups believe their preference for exercising in groups or alone has neither positively or negatively impacted their community wellbeing or sense of purpose.
 - Hypothesis #3: Students who prefer to exercise alone believe their choice has positively impacted their financial wellbeing and negatively impacted their social wellbeing.
 - Hypothesis #4: Students who participate in group fitness believe their preference for group fitness class has positively impacted their social wellbeing and negatively impacted their financial wellbeing.

2.3 Methods

Overview

This study will use a concurrent explanatory mixed methods design (Palinkas et al., 2011), composed of a brief cross-sectional survey and focus groups. These combined data methods will reveal a rich picture of Virginia Tech's undergraduate students' perceptions of Virginia Tech Recreational Sports' group exercise programming and its impact on the students' six dimensions of wellbeing.

Recruitment

Quantitative

Recruitment for responses to the quantitative portion of this work (e.g., survey, please see Appendix D) took place towards the midway point of the Fall 2019 semester. The cross-sectional survey was launched the second to last week of October through undergraduate email listservs and marketing mediums (i.e. TVs, bulletin board flyers, social media). The cross-sectional survey was opened for data collection for 2 weeks, with a reminder email after week 1. This allowed approximately two weeks for students to respond. During the second week, the research team hosted "pop-up" tables around campus (McComas, Owens, West End & Dietrick) for five consecutive days, with iPads and QR code flyers, in the hopes of recruiting more responses outside of the email and marketing realm. The cross-sectional survey takes 5-10 minutes to complete and was administered online through VT Qualtrics.

During week 1, a recruitment flyer and recruitment email were distributed to the undergraduate study body of Virginia Tech using a variety of mediums within Virginia Tech Recreational Sports and student affairs. The recruitment flyer with a QR code (Appendix B) was put on the marketing TVs in McComas Hall which are placed on a rotating display for upcoming events and announcements in the department. The VT Rec Sports marketing team also sent the

recruitment slide to the team at Squires Student Center to place on TV display. Furthermore, the various bulletin boards used in McComas and War Memorial Hall for marketing materials, were utilized to display the recruitment flyer with the QR code. Group fitness instructors showed the TV slide flyer during the pre-class announcements and had a script to read for consistency. Lastly, a recruitment flyer with the QR code was put in a plastic display and placed on the check in desk for students to view when swiping in with their Hokie passports to use the facility. Customer service attendants had a script to follow as well to advertise the plastic display flyer. Attempting to reach a wider audience of undergraduate students outside of the Recreational Sports' facilities, the recruitment flyer with the QR code was posted on various Recreational Sports' social media including Facebook, Twitter and Instagram. The recruitment email (Appendix C) was sent to various VT Recreational Sports listservs including group exercise pass holders, McComas and War Memorial Hall patrons, and other fee-for-service groups like personal training, small group training, intramural, sports club, and venture out participants. To increase reach and representation of those undergraduate students not aware of VT Rec Sports' offerings, the recruitment email was also sent to undergraduate student listservs from various colleges at Virginia Tech.

During week 2, while the mediums from week 1 were still in use, the research team (co-investigator and research assistants on the IRB protocol) had "pop-up" booths around campus for 5 consecutive days to help recruit survey respondents. The booth was set up outside of Owens, West End and/or Dietrick during lunch time (11AM-2PM) on those 5 days (randomly assigned on each day) and another booth was set up in McComas Hall from 4-9PM from Monday to Thursday and 3-5PM on Friday. The booths had iPads for participants to respond on, if they

choose to do so, and the recruitment QR code flyer for them to take with them if they didn't have time to sit with an iPad.

Qualitative

Participants for the focus groups were recruited through the quantitative survey. Students who took the quantitative survey were asked if they were interested in participating in a focus group that will provide their choice of either a semester group exercise pass at VT Rec Sports, fitness assessment package at VT Rec Sports or \$10 compensation for 90 minutes of their time. The students had the option to check yes or no and, if they choose yes, a slot was provided for them to enter their email and their exercise preference (i.e. individual exerciser, group fitness participant or both). Once the collection of quantitative data was closed, the emails were compiled and assigned to their labeled group. Students were randomly selected by group and contacted to schedule and attend a focus group in mid-November.

Measures

Quantitative

Demographic Characteristics: The demographic variables of the quantitative survey were constructed based off the Virginia Tech Recreational Sports Group Exercise Fall 2018 - Spring 2019 Feedback survey that is sent to all participants with a group exercise pass from the 2018-2019 school year.

Physical Activity Behaviors: Questions related to physical activity frequency, intensity and time were adapted from questions on exercise in the Nord-Trøndelag Health Study - HUNT 1 (Kurtze et al., 2008). This survey includes 3 items on a 5-point scale, for example, "How frequently do you exercise?" (1 = Never, 5 = almost every day). The same 5-point scale from the HUNT 1 survey was adapted to ask group exercise pass holders what they believed their group exercise class attendance frequency was.

Exercise Preference (alone or together): Participants exercise preference was assessed on an adapted version of Stroke Exercise Preference Inventory (SEPI) and was used to ask participants about their preference towards working out with groups and working out alone (Bonner et al., 2016). These items include preference to exercise with other people of similar age, with family and friends, or alone, as well as, how much their exercise is motivated by health reasons. The items are scored on a percentage scale, for example, “I like to exercise with other people of similar age” (0% = don’t agree at all, 100% = totally agree).

Dimensions of Wellbeing: Wellbeing questions were developed based on the questions in the Gallup Inc.’s Wellbeing Finder assessment (Rath & Harter, 2010). Each table of questions represents the six constructs of wellbeing defined by Virginia Tech and Gallup Inc. Sense of purpose has 8 items, physical wellbeing has 7 items, social wellbeing has 8 items, community wellbeing has 7 items, financial wellbeing has 8 items, and emotional wellbeing has 4 items. All these items are scored on a 5-point scale, for example, “I often feel sad or depressed” (1 = strongly disagree, 5 = strongly agree). A composite score for each dimension was developed by giving a numeric value for each of the student’s responses to the wellbeing questions (1 = strongly disagree, 5 = strongly agree). Questions with negative meaning, for example, “I often feel sad or depressed”, for given an inverse numeric scale (1 = strongly agree, 5 = strongly disagree). Each survey response was given a wellbeing composite score for each dimension (i.e. purpose, community, financial, physical, social and emotional) based on the mean of the items answered from each dimension. Wellbeing composite scores are on a 5-point scale (1= struggling in the dimension, 5= thriving in the dimension).

Recreational Sports Involvement: The scale used in the recreational sports involvement tables (both programs and facilities) were developed from the 5-point scale used in the Wellbeing

Finder assessment (Rath & Harter, 2010) to ask students how involvement in recreational sports has positively or negatively impacted their perceptions of wellbeing, for example, “Participation in group exercise classes has positively impacted my wellbeing” (1 = strongly disagree, 5 = strongly agree).

Attendance: Weekly group fitness attendance, or weekly exercise frequency in general, was determined by utilizing the questions related to physical activity frequency adapted from the Nord-Trøndelag Health Study - HUNT 1 (Kurtze et al., 2008). This survey includes 3 items on a 5-point scale, for example, “How frequently do you exercise?” (1 = Never, 5 = almost every day). The same 5-point scale from the HUNT 1 survey was adapted to ask group exercise pass holders what they believed their group exercise class attendance frequency was, for example, “In a week, how frequently do you attend group exercise classes a week at VT Rec Sports?” (1 = Never, 5 = almost every day).

Qualitative

Following the structure of a concurrent explanatory mixed methods design (Palinkas et al., 2011), a semi-structured interview guide was designed for the focus groups to help explain and build on the initial results from the quantitative survey. The focus group guide can be found in Appendix E. The interview questions are organized based off of each wellbeing construct. The set of questions for each construct involve participants defining that wellbeing construct and discussing the impact that participation in group fitness programming at VT Rec Sports (or lack thereof) has impacted this wellbeing construct in their life. While the majority of the focus group guide is centered around wellbeing and the constructs, there are also a set of questions at the end that inquire why the participants choose to exercise with or without a group and how VT Rec Sports can improve their experiences in group fitness or get them to try group fitness.

Analysis

Quantitative

Statistical analysis was conducted using IBM SPSS Statistical Software, Version 29 (2019). Descriptive statistics was employed to analyze the demographic data of the respondents. Means and standard deviations were used to analyze the student perceptions of wellbeing in each dimension, as well as, their perceptions of recreational sports involvement impacting their wellbeing. Comparison of means were used to compare the wellbeing scores between students who have or have had a VT Rec Sports' group fitness pass or lack thereof. Linear regressions were conducted to determine whether significant relationships exist between group fitness attendance frequency (or lack thereof) and student perceptions of wellbeing. Pearson's correlations were conducted to identify significant associations between the dimensions of wellbeing using the wellbeing composite scores. Lastly, independent samples t-tests were used to examine the differences in wellbeing dimension scores between students who work out alone and students who hold a VT Rec Sports' group fitness pass.

Qualitative

The 32-item COREQ checklist was used to report the qualitative data approach (Tong, Sainsbury & Craig, 2007). Two members of the research team were at each of the focus groups. One was the primary facilitator and one was the co-moderator responsible for note taking (specifically for nonverbal cues) and time keeping. Both researchers debriefed for 15 minutes after each focus group to refine the working codebook. The codebook is a list of potential categories and themes based on current empirical and practical knowledge related to student needs, wellbeing, and facility offerings. There were two "mock" focus groups that were conducted by the lab, before the actual focus groups, to give the primary facilitator and co-moderator time to practice and receive feedback from the PI. Focus groups were audio-recorded.

Audio recordings were transcribed by the PARCI lab undergraduate research assistants and reviewed for accuracy. The two researchers independently coded one focus group and met to discuss any discrepancies. Once interrater reliability was met (>85%), the remaining focus groups were coded by one of the researchers and reviewed by the other moderator. Meaning units are defined as any operationalization of a research question that enables a certain kind of measurement. The number of participants that report meaning units within a given category was calculated to demonstrate data saturation. Data saturation was reported when >50% of the focus group participants contributed meaning units to a given category in a dimension.

Reflexivity

I am a 23-year-old female who is a second year Masters student in the Human Nutrition, Foods and Exercise (HNFE) program with a graduate assistantship at Virginia Tech Recreational Sports in fitness programming. The phenomenon of this research project is undergraduate students' perceptions of various wellbeing dimensions and how their choice of exercise at or outside of Rec Sports (alone or with a group) impacts these dimensions. Based on this phenomenon, there are aspects of my personal history that are relevant and important to discuss. As a graduate assistant at VT Rec Sports, I work closely with the group exercise program and other fitness-related programs. My experiences with the fitness program at VT Rec Sports may create bias with how I interpret the responses from participants in the focus group. Therefore, having two researchers independently code one focus group and meet to discuss any discrepancies will be an important step to the qualitative approach.

2.4 Results

Quantitative

Sample Demographic Information: The total sample size of students who participated in the survey was 353 (see Table 1 for more details). The sample was comprised predominantly of females (74%) and Caucasian (76%) who were juniors and seniors with the lowest academic status representation coming from the freshman class. Notably, the sample included individuals representing six different race/ethnicity groups. The average GPA of the study sample was 3.39 ($\pm.37$) and all seven colleges from the university were represented, College of Agriculture and Life Sciences (20%) and College of Science (21%) being the most represented with 41% of the participants. Student athletes only made up 4% of the study sample. Of the 353 survey participants, 54% identified as current or past group fitness pass holders.

Table 1. Demographic characteristics of study sample.

	Total Sample N= 353	Focus Group* N= 12
Academic Status, n(%)		
Freshman	67(19)	0(0)
Sophomore	71(20)	1(8)
Junior	111(32)	9(75)
Senior	103(29)	2(17)
Age, M(SD)	19.9(1.5)	20.2(.72)
College, n(%)		
College of Agriculture and Life Sciences	70(20)	1(8)
College of Architecture and Urban Studies	3(1)	0(0)
Pamplin College of Business	51(15)	3(25)
College of Engineering	64(19)	2(17)
College of Liberal Arts and Human Sciences	67(19)	5(42)
College of Natural Resources and Environment	18(5)	0(0)
College of Science	72(21)	1(8)
Race/Ethnicity, n(%)		
Asian	32(9)	0(0)
Black/African American	13(4)	0(0)
Caucasian	267(76)	10(83)
Hispanic/Latino/a	8(2)	1(8)
Indigenous/Native American	0(0)	0(0)
Middle Eastern	1(<1)	0(0)
Pacific Islander	0(0)	0(0)
Multiracial	31(9)	1(8)
Gender, n(%)		
Female	261(74)	11(92)
Male	92(26)	1(8)
Student Athlete, n(%)		
Yes	13(4)	0(0)
No	340(96)	12(100)
GPA, M(SD)	3.39(.37)	3.49(.3)
Group Fitness Pass Holder, n(%)		
Yes	191(54)	10(83)
No	162(46)	2(17)

**Focus group participants were anonymous and not compared to the total sample as they are included in the total sample as well.*

Wellbeing Results: Overall, the total sample reported high perceptions of wellbeing across sense of purpose, physical, financial, social, and community wellbeing (scores > 3.5) – with emotional wellbeing closer to neutral ($3.07 \pm .82$). While group fitness pass holders had higher wellbeing scores when compared to individual exercisers, only physical and social wellbeing dimensions were significantly greater ($p < 0.05$). See Table 2 for more details.

Table 2. Comparison of means and independent samples t-tests for undergraduate students' wellbeing composite scores.

Dimension of Wellbeing	Total Sample M(SD) N	Group Fitness Pass Holders M(SD) N	Non-Group Fitness Pass Holders M(SD) N	p value	α N of items
Sense of Purpose	3.81(.64) 322	3.83(.58) 147	3.79(.71) 175	.547	.827 8
Physical	3.51(.65) 305	3.58(.64) 170	3.41(.66) 135	.022*	.705 7
Financial	3.52(.71) 294	3.56(.76) 166	3.46(.65) 128	.254	.787 8
Social	4.20(.65) 281	4.27(.62) 158	4.10(.68) 123	.033*	.859 8
Community	4.03(.66) 268	4.06(.65) 149	3.98(.67) 119	.373	.801 7
Emotional	3.07(.82) 266	3.14(.83) 148	2.97(.79) 118	.074	.684 4

*Significant at $p < 0.05$

There were significant associations between several of the wellbeing dimensions (see Table 3). Physical wellbeing and financial wellbeing were significantly associated ($p < 0.05$), and even stronger associations ($p < 0.01$) were shown between community and social wellbeing, emotional and social wellbeing, and emotional and community wellbeing. While the dimensions showed significant associations, the strength of the positive relationships according to the r-values are weak ($r = 0.10 - 0.25$).

Table 3. Pearson Correlation between wellbeing dimensions.

Dimension of Wellbeing	Sense of Purpose	Physical	Financial	Social	Community
Sense of Purpose	--				
Physical	.053	--			
Financial	.048	.124*	--		
Social	.079	.084	-.065	--	
Community	-.015	.069	.100	.157**	--
Emotional	.086	.067	.013	.205**	.246**
* $p < 0.05$; ** $p < 0.01$					

Out of the six dimensions, financial wellbeing was the only dimension to show a significant relationship between students' group fitness class attendance frequency and their perceptions of wellbeing ($p < 0.05$; see Table 4). This means that there was a significant difference in financial wellbeing scores for those group fitness participants who identified attending more classes throughout the week versus those who attend fewer classes in a week. Out of the six dimensions, physical wellbeing was the only dimension to show a significant relationship between individual exercise routine frequency and their perceptions of wellbeing ($p < 0.01$). This means that there was a significant difference in physical wellbeing scores for those student patrons who identified using Recreational Sports for their individual workout routine more throughout the week versus those whose individual workout routine was less occurring throughout the week.

Table 4. Linear regressions of wellbeing composite scores and group fitness attendance or general exercise frequency.

Dimension of Wellbeing	Group Fitness Pass Holder p value (r²)	Non-Group Fitness Pass Holder p value (r²)
Sense of Purpose	.096(.017)	.251(.010)
Physical	.552(.002)	.004**(.063)
Financial	.023*(.032)	.374(.006)
Social	.572(.002)	.634(.002)
Community	.468(.004)	.643(.002)
Emotional	.939(.000)	.746(.001)

**Significant at p <0.05, **Significant at p<0.01*

Qualitative

Sample Selection: Focus group participants were randomized, selected and contacted after the 2-week cross sectional survey timeline closed. There were 63 survey respondents out of the original 353 who expressed interest in participating in a focus group. Interested respondents were organized based on their exercise identifier (i.e. primarily workout alone, in group fitness or equally both) and randomly selected to be contacted for a focus group using a random number generator. After randomization, five focus groups were assembled and 46 respondents were contacted. The focus group recruitment email can be found in Appendix C. Out of the 46 respondents contacted, 11 declined to participate, 16 never responded to the email, and 19 agreed to participate on the assigned date they were given. After the initial responses to the focus group recruitment emails, four focus groups were confirmed. Each focus group respondent was contacted the day of with a reminder email and consent form attached for them to review (the email template can be found in Appendix C).

Two members of the research team were at each of the focus groups. One was the primary facilitator and one was the co-moderator responsible for note taking (specifically for nonverbal cues) and time keeping. Out of the 19 respondents who agreed to participate in the focus groups, 5 contacted the researcher the day of to cancel due to “other matters”, 2 didn’t show up, and 12 showed up to participate. Two focus groups were conducted with 6 individuals who primarily workout alone, one focus group was conducted with 3 individuals who primarily use group fitness and one focus group was conducted with 3 individuals who equally workout alone and in group fitness. The four focus groups were allotted 90 minutes each to go over consent, build rapport, answer any questions the participants had and run through the focus group guide. The four focus groups on average had a duration of 59.5 minutes with each focus group varying in duration (FG1 63 min, FG2 62 min, FG3 40 min, FG4 72 min). The demographic characteristics of the study sample from the focus groups are presented in Table 1. Focus group participants were anonymous and not compared to the total sample as they are included in the total study sample as well. The majority of the sample were juniors with a couple seniors and one sophomore, 92% of focus group participants were female with one male participant, and 83% of the sample were Caucasian. The average GPA of the focus group sample was 3.49 (\pm .3) and five colleges from the university were represented, College of Liberal Arts and Human Sciences being the most represented with 42% of the participants. No student athletes were represented in this group. Overall, 3 themes, 10 subthemes, 23 categories and 969 meaning units were generated from the four focus groups providing an in-depth insight from the students on their perceptions of wellbeing and recreational sports. A summary table of common themes and categories of undergraduate student focus group participants is presented in Appendix G.

Themes & Categories

Theme #1: Impact of VT Rec Sports on Wellbeing

Overall, 2 subthemes, 13 categories and 356 meaning units were generated to inform the theme “Impact of VT Rec Sports on Wellbeing”. The 2 subthemes that emerged were ‘Positive Impact’ and ‘Negative or Neutral Impact’.

Subtheme - Positive Impact of VT Rec Sports on Wellbeing

Conversations around the positive impact of VT Rec Sports on wellbeing generated 10 categories: 1) Community & Relationships; 2) Mental Health; 3) Fitness; 4) Builds Structure & Productivity; 5) Goal Attainment & Purpose; 6) Increased Involvement; 7) Fun; 8) Diversity & Inclusion; 9) Holistic Wellbeing; and 10) Convenient Access.

Community & Relationships: All participants noted that participation in VT Rec Sports has largely impacted various dimensions of their wellbeing (i.e. social, community, emotional and physical) by building communities in their life and providing social environments for their wellbeing to thrive. For example, one student, who equally works out in group fitness and alone, said, *“I think the whole you know idea behind VT Rec Sports is a community”*. VT Rec Sports has also introduced the participants to new relationships through various program offerings (i.e. group fitness, sport clubs, and intramurals) and has allowed avenues for those relationships to build and become stronger. Participants have been strongly impacted by VT Rec Sports in their communities and relationships because the department provides opportunities for them to spend time with their friends and build camaraderie. One participant from the individual exerciser group summed this category up in saying, *“I think sports, in general, create a really strong community, um, and then like it’s easy to see that with Rec Sports. Whether it’s intramural*

sports, club sport, or just working out together, there is a sense of cohesiveness and camaraderie with sports just by the nature of what it is”.

Mental Health: The category of mental health spanned across several wellbeing dimensions including emotional, physical, social and purpose. Many participants, group fitness and individual exercisers alike, noted that VT Rec Sports is a place where they can go to relieve stress and improve their mood. Overall, the participants discussed improved and strengthened mental health in their lives due to utilizing Rec Sports facilities to work out and/or participating in a Rec Sports program. For example, one student from the combined exercise preference focus group said, *“If I am feeling anxious or stressed it’s amazing the impact of going into the gym and having any sort of workout can have on your mood. So, I feel like having the facilities to do that, to go in and use the gym whenever for the most part is super critical to my [mental health]”*. The students noted that Rec Sports has been there for them as an outlet when they needed exercise for a distraction or release from stress.

Fitness: Conversations surrounding the impact that Rec Sports has had on students’ fitness were brought up with questions related to purpose, physical, financial and social wellbeing dimensions. Group fitness participants discussed how being a member of the group fitness program has motivated them to workout more both due to the actual workouts and the cost of the group fitness pass. For example, one participant from the combined exercise preference focus group said, *“So, knowing that I paid for this [GX Pass] and I need to get my money’s worth drives me to go to the classes and make sure I’m going”*. The individual exercisers’ fitness has been positively impacted by VT Rec Sports because it provides a space for their personal workouts. Overall, focus group participants emphasized how VT Rec Sports, whether that be

facility or program use, has positively impact their fitness abilities and motivates them to move and be active on a daily basis.

Builds Structure & Productivity: VT Rec Sports positively impacts participants' physical, emotional, financial and social wellbeing as well as sense of purpose by providing spaces and offerings where they can boost their productivity, make better decisions and feel accomplished in their daily lives. Students noted how Rec Sports has encouraged them to establish a routine and schedule as well as build better habits towards physical activity, *“So, I’ve been more consistent with my exercise and fitness since starting using Virginia Tech Rec Sports”*. Student participants of Rec Sports have improved focus and success and feel held accountable to stay active by the various program offerings. For some, Rec Sports is also an opportunity for work and source of income.

Goal Attainment & Purpose: Rec Sports has impacted the students' sense of purpose, physical and emotional wellbeing by being a place on campus where they can achieve their goals and find their purpose. Several participants found that using Rec Sports facilities and/or programs facilitates goal attainment in their lives as well as gives them something to look forward to, *“In terms of, I guess, my specific sense of purpose it just kind of gives me something to wake up and look forward to doing every day”*.

Increased Involvement: Students' sense of purpose, social, community, financial and physical wellbeing are positively impacted by VT Rec Sports because it has increased their overall campus involvement. Participants found that Rec Sports has increased their involvement by increasing their sense of engagement with others in the community, giving them opportunities for work through an on-campus job, and/or making the transition from high school to college a little bit easier. For example, one student from the combined focus group mentioned, *“I think VT*

Rec Sports does a really good job of helping students make that transition from high school to college because definitely it's a big transition in terms of like physical health".

Fun: VT Rec Sports positively impacts students physical, emotional and social wellbeing by being a place on campus where people can have fun and enjoy life. Participants find fun in various program offerings (i.e. intramurals, sport clubs and group fitness) that improve their overall wellbeing.

Diversity & Inclusion: Participants find VT Rec Sports to be a judgement free zone and a place where they feel included. This in return positively impacts their community, social and physical wellbeing. For example, one participant from the combined group pointed out, *"[VT Rec Sports is] somewhere you can go and feel included and somewhere that is diverse in the people who are teaching classes or the people that you see working the facilities".*

Holistic Wellbeing: VT Rec Sports has helped participants tackle all aspects of their life as well as provides a space where they can do something for both their mind and body, *"[VT Rec Sports] kind of clears your head a little bit, so I think for me I think when my mental health is okay, I can kind of tackle all the other aspects that we talked about, and that's a very important thing".*

Convenient Access: Students' community and physical wellbeing are positively impacted by VT Rec Sports because the department conveniently provides access to new places and activities that participants have not tried before. Even programs that are an extra cost, like group fitness, some participants believe the added cost is "worth it" and an investment in their overall wellbeing.

Subtheme – Negative or Neutral Impact of VT Rec Sports on Wellbeing

Conversations around the negative or neutral impact of VT Rec Sports on wellbeing generated 3 categories: 1) Cost or Access as a Barrier; 2) Exercise Overuse; and 3) No Correlation of wellbeing with Rec Sports.

Cost or Access as a Barrier: While some group fitness participants see the value in a group exercise pass, many participants find that their financial wellbeing is negatively impacted by the added fees that come with program use, *“I just want to like bring up, you said \$50 was like a super good deal to you, and I would agree to other gym prices and stuff, but to a lot of people that is an expense they are not willing to make”*. Participants noted that they have to seriously consider the investment they are making before they choose to purchase a pass each semester.

Exercise Overuse: Individual exercisers’ emotional and physical wellbeing are sometimes negatively impacted by VT Rec Sports because of how often they are allowed to use it in times of stress. Some participants admitted to over exercising in a day during times of stress, or using exercise as punishment, and wished that Rec Sports had a daily swipe limit to enforce moderation and healthy exercising habits.

No Correlation of Wellbeing with Rec Sports: Some participants were neutral when it came to VT Rec Sports’ impact on student wellbeing. While many comments were made from all focus group participants on the impact that the department has on community, social, physical and emotional wellbeing, some students found that VT Rec Sports does not impact their financial wellbeing or sense of purpose in any way.

Theme #2: Perceptions of VT Rec Sports

Overall, 2 subthemes, 8 categories and 210 meaning units were generated from this theme. The 2 subthemes that emerged were ‘Positive Perceptions’ and ‘Areas for Improvement’.

Subtheme - Positive Perceptions of VT Rec Sports

Conversations around positive perceptions of VT Rec Sports generated 4 categories: 1) Convenient Access; 2) Wide and Positive Variety; 3) Staff Behaviors and Training; and 4) Content with the Atmosphere.

Convenient Access: The most conversation surrounding positive perceptions of VT Rec Sports was on the topic of access. Students noted that Rec Sports, compared to other corporate gyms, is a reasonable cost that is included in your tuition and “feels free”. For those that are interested in additional program offerings, students pointed out how much cheaper the added pass fees are compared to corporate competition, *“I mean you pay small fees for the year for like group classes and other things but they’re very minimal fees compared to like the gym at home that you have”*. Students find the location of VT Rec Sports convenient to go to before or after class when they are on campus and the facilities are easy for them to use regardless of fitness levels.

Wide and Positive Variety: Student participants of VT Rec Sports have always been impressed by the amount and variety of program offerings that are provided and feel like they are always able to try new things, *“I feel like Rec Sports offers a wide variety of just different things that you can do, whether it be work out classes, a program that they’re having or a Hokie Wellness thing per say or something like that. So, I think offering such a wide variety of things for students is very beneficial”*. Specifically, to group-based fitness programming, group fitness participants enjoy the variety of classes that offered on the schedule and the different group exercise passes they can choose from.

Staff Behaviors and Training: Participants of the VT Rec Sports group fitness program had many positive things to say about the staff and how they are trained. The students noted how much they enjoy the instructors' energy and passion; how relatable they are and their helpfulness. For example, one participant from the combined focus group said, *"I would say that the group fitness instructors are very well trained and it's clear that the format that they chose to teach is something that they're passionate about and it's something that they really enjoy"*.

Content with the Atmosphere: Participants of VT Rec Sports find the atmosphere to be positive and relaxing as well as an environment where they can socialize and see friends from work, class and life. Students expressed how satisfied they are with Rec Sports because the department meets their needs. Some participants even mentioned that they could not think of anything Rec Sports need to do better. For some students, Rec Sports is already doing a good job.

Subtheme – Areas of Improvement for VT Rec Sports

Conversations around areas of improvement for VT Rec Sports generated 4 categories: 1) Limited Resources Leads to Frustration; 2) Program Improvements; 3) Communication Barriers; and 4) More Variety Needed.

Limited Resources Leads to Frustration: The category had the most conversation from the participants for areas of improvement. All participants, group fitness and individual exercisers, expressed their frustrations with the recent facility closure and how that impacts the crowding of Rec Sports facilities during the times they choose to exercise. Specifically, to group-based fitness programming, participants are frustrated with having to come to a group exercise class early to wait in line and still be at risk of not getting a spot in class. Participants expressed the need for

pre-class reservations to hold people accountable and protect participants who are unable to arrive early to wait in line.

Program Improvements: While students who participate in VT Rec Sports find many positives in the programs that are offered, participants had feedback and suggestions on how Rec Sports could be offering even more or improve upon what is already being offered. Students mentioned wanting to see Rec Sports involved in more collaborations with other departments on campus. They also wanted to see more programming that was based on the topic of mental health. Specifically, to group-based fitness programming, students enjoy the hybrid group fitness classes as well as small group trainings, but would like to see more of each. Some participants admitted to not taking advantage of all the things that Rec Sports has to offer.

Communication Barriers: Participants commonly shared that VT Rec Sports could improve upon how they are communicating their information. Students said that there are many programs and special events that are offered that they didn't know about and would have loved to attend. Others noted that the website navigation can be difficult and an app would be more user friendly. Specifically, to group-based fitness programming, participants want to see better descriptions of class offerings so they know what to expect from a class and more advertisement on small group training offerings.

More Variety Needed: The topic of variety for an area of improvement came mainly from the group fitness focus group. Group fitness participants mentioned wanting to see more variety of classes on the schedule, more fitness level options in the class offerings and more studio spaces for different program offerings.

Theme #3: Perceptions of Gallup/VT Wellbeing Definitions:

Overall, 6 subthemes, 2 categories and 401 meaning units were generated from this theme. The 6 subthemes that emerged were student perceptions from each of the six wellbeing dimensions. Each subtheme included two categories: 1) Addition or Clarifications Needed for Definition; and 2) Similarities or Agreements to Definition.

Perceptions of Community Wellbeing: Gallup and VT define community wellbeing as, “the sense of engagement you have with the area where you live”. While many of the students found agreement with the engagement piece, they felt Gallup’s usage of engagement to be too broad, *“I feel like they could elaborate a little bit or go off of engagement a little bit more. I think engagement is a broad term, so I think there could be a lot more to the definition to describe basically what community wellbeing is”*. Students also wanted to see support systems added to this definition.

Perceptions of Financial Wellbeing: Gallup and VT define financial wellbeing as, “effectively managing your economic life”. Students did not find very many similarities or agreements with the Gallup definition and had several thoughts on additions and/or clarifications. Students mentioned that financial wellbeing is more than just effective management and that the definition that is presented can vary by individual, *“It’s [the definition] a little bit too much of an umbrella term that doesn’t really encompass everyone”*. The participants said that financial wellbeing is more about having enough money to make ends meet as well as enjoy your life. Lastly, the participants wanted to see a component added on financial comfort and financial literacy.

Perceptions of Physical Wellbeing: Gallup and VT define physical wellbeing as, “having good health and enough energy to get things done on a daily basis”. While students found agreement with the first part of the definition (i.e. good health), there were still several points of feedback

that were given. Overall, participants noted that the audience needed to know what the standards are in physical health in order to obtain and maintain good health. Some felt like the definition was too vague and could vary by individual. Others said that their mental health has a greater impact on their energy than their physical wellbeing does. Students thought the definition should include components on “feeling good about yourself” and “being able to push and challenge your body”.

Perceptions of Social Wellbeing: Gallup and VT define social wellbeing as, “having strong relationships and love in your life”. The students gave the most feedback for additions and/or clarifications for Gallup’s definition of social wellbeing. It was discussed that the word love needs to be defined because social wellbeing is more than just romantic relationships.

Participants also noted that the definition was missing components like community and support systems. Lastly, many pointed out that social wellbeing is subjective and cannot be bound by this definition, “*So I don’t think we can put a definition on social wellbeing just because this is subjective*”.

Perceptions of Emotional Wellbeing: Gallup and VT define emotional wellbeing as, “relating to one’s mental and psychological health”. The Gallup definition of emotional wellbeing was the only dimension that had more meaning units in similarities and agreements than additions and clarifications, “*[Out of all the other definitions of wellbeing that we kind of went through] one that makes the most sense to me I guess, in a way I think it really fits emotional wellbeing*”.

However, students still gave suggestions on how the definition could be improved noting that the definition was still a bit too broad, lacked a piece on ‘sense of purpose’ and could include additions of emotional awareness, optimism and hope.

Perceptions of ‘Sense of Purpose’: Gallup and VT define sense of purpose as, “how you occupy your time, or simply liking what you do every day”. While the students found some similarities or agreements with the definition, the majority of conversation was surrounded around additions or clarifications. Students felt that “your why” that drives your sense of purpose was grander than the VT/Gallup definition, “*And, when it says simply liking what you do every day, I don’t think it’s a matter of simplicity. Like it’s, it’s not simply what you like every day, its, its bigger than that*”. Furthermore, students thought the definition was missing a social component and could include more on your preparedness for the future and goal attainment.

2.5 Discussion

Prior to this study, it was unknown the degree to which working out together or working out alone is associated with perceptions of wellbeing and perceptions of collegiate recreational sports. This concurrent mixed-methods study revealed a number of interesting findings for empirical and practical implications. Group fitness pass holders have significantly higher perceptions of wellbeing in several dimensions and the perception of wellbeing of students who participate in VT Rec Sports, either individually or in group fitness, is positively impacted by the department in a variety of ways.

Students who are group fitness pass holders had high perceptions of wellbeing, and were significantly higher for physical and social wellbeing. The literature showcases the physiological and psychological health benefits of PA and exercise in general (Warburton et al., 2006; Kokkinos, 2012; Reiner et al., 2013; Mandolesi et al., 2018; Rosenbaum et al., 2014), but the findings from this study are important because they emphasize the physiological and psychological benefits of specifically group-based physical activity. The influence that exercising in groups has on a person's motivation to be physically active, as well as the benefits it can bring to one's wellbeing, is often overlooked and understudied in the literature (Irwin et al., 2012). Further research is needed to study the influence of group-based physical activity on not only college students' wellbeing, but the overall population.

Second, out of the six dimensions, financial wellbeing was the only dimension to show a significant relationship between students' group fitness class attendance frequency and their perceptions of wellbeing. Therefore, as the students' perception of group fitness attendance throughout the week increased their financial wellbeing score increased. Participants are required to purchase a group fitness pass for either the year or semester in order to participate in group

fitness classes. It was assumed that financial wellbeing would decrease for group fitness pass holders because of the investment they have to make in the group fitness program. However, pass holders who engage in fitness classes more routinely every week, and are avid users of the program, may view their investment as a positive influence on their financial wellbeing because they are getting their money's worth versus those who purchase the pass and only attend class once a week or less than once a week. This may indicate that those who have financial security are more likely to perceive that they can afford the group fitness passes. Alternatively, it may mean that those who purchase a pass want to make it "worth" the investment and attend more regularly. Furthermore, those who identify as individual exercisers, or non-group fitness pass holders, may not have purchased the group fitness pass because their perceptions of financial wellbeing were lower than group fitness pass holders. Either way, access to these classes that are associated with wellbeing have a cost, and in order to increase health equity, different financial structures may be needed to reach students who do not have financial support to have access to the group fitness classes (whether that barrier is perceived or actual). Overall, very little literature exists on the influence of purchases related to physical activity on financial wellbeing, but more research related to this topic could be beneficial for collegiate settings that have fee-for-service programs like VT Rec Sports. Furthermore, one gap in the recreational sports literature related to Gallup and VT's constructs of wellbeing is financial wellbeing. To get a better understanding of how students' overall holistic wellbeing is impacted by participation in collegiate recreation programs, there is a need for the construct of financial wellbeing to be explored in the recreational sports domain more.

Finally, the results from qualitative inquiry found that VT Rec Sports positively impacts student wellbeing across several dimensions including social, community, physical and

emotional wellbeing. Students who are pass holders for VT Rec Sports' group fitness program develop communities and relationships, improved mental health, and improved fitness. Negative or neutral impacts that VT Rec Sports has on student wellbeing, specifically with group fitness pass holders, were also found related to financial wellbeing and sense of purpose. Topics related to this, commonly discussed amongst group fitness pass holders, were cost or access as a barrier to wellbeing and certain wellbeing dimensions not having any correlation with their Rec Sports participation. Students perceptions from the focus group match the findings from the literature related to the influence that collegiate recreation has on students' physical (Colditz & Mariani, 2000; Haines, 2001), social (Artinger et al., 2006; Bryant, Bradley, & Milborne, 1994; Christie & Dinham, 1991) and emotional wellbeing (Collins, Valerius, King, & Graham, 2001; Kanters & Forrester, 1997; Kanters, 2000; Kimball & Freysinger, 2003; Ragheb & McKinney, 1993). However, the recreational sports literature also shows the influence that campus recreation has on students' 'sense of purpose' (Forrester, 2006; NIRSA, 2004; Milton, 1992; Todaro, 1993), but focus group participants from the study did not see a connect in their lives between Rec Sports and their own sense of purpose. It is well known from VT Rec Sports' departmental research that students who use the VT Rec Sports facility at least twice per week have higher grade point averages (GPAs) and the department contributes to a rich experience at VT in a number of ways including academic success, leadership and character development (Liu et al., 2016; "About Rec Sports", n.d.). Further efforts may need to be taken by VT Rec Sports to show this connect that participation in the department's facilities and programs has on several areas of the student's sense of purpose.

Those who choose to work out alone had significantly lower scores for physical and social wellbeing. While lower perceptions of social wellbeing in students who choose to work

out alone makes sense because they are choosing to interact less with others around them in order to get their work out done, it is interesting that perceptions of physical wellbeing are significantly lower in those who work out alone. These students may think they have lower physical wellbeing because they are “working harder” on themselves. They may have set higher standards and goals for themselves that, when not met, may negatively influence their perceptions of physical wellbeing (Edmunds, Biggs & Goldie, 2013). Overall, these findings further emphasize the influence that exercising in groups, versus choosing to exercise alone, has on a person’s motivation to be physically active, as well as the benefits it can bring to one’s wellbeing, which is often overlooked and understudied in the literature (Irwin et al., 2012). Further research is needed to study the influence of group-based physical activity on not only college students’ wellbeing, but young adult populations in general, and how this compares to people in those populations who choose to work out alone. The study presented here is relevant to the collegiate recreation field by emphasizing the need to provide more group fitness programming for their undergraduate student population because of the impact it can have on overall student wellbeing.

Participants’ individualized exercise routine frequency was positively associated with physical wellbeing. As the students’ perception of exercise frequency throughout the week increased their physical wellbeing score increased. These results are not surprising because those who work out alone more frequently are usually students who are dedicated to their established workout routine and are more motivated in their physical activity behaviors. This also supports results from a cross-sectional survey in Haines’ study (2001) that showed 75% of college students find a feeling of physical wellbeing as the number one benefit they’ve received from participating in campus recreation. There are also many other benefits that come from working

out in campus recreation across several wellbeing dimensions that are not shown in the results in this study group. More education could be provided to students who choose to work out alone on the benefits of exercise on wellbeing outside of the physical wellbeing dimension.

Finally, the results from qualitative inquiry found that VT Rec Sports positively impacts student wellbeing across several dimensions including social, community, physical and emotional wellbeing. Students who participate in VT Rec Sports for their individual exercise routine develop communities and relationships, improved mental health, and improved fitness. Individual exercisers commonly discussed exercise overuse as a negative impact Rec Sports has had on their wellbeing. While students who work out alone felt strongly about the impact VT Rec Sports can have on their physical and emotional wellbeing, they also emphasized the need for balance when it comes to participation in Rec Sports. Due to this concern, further measures should be taken by Rec Sports to ensure that students are not overusing the facility in one day. This may be through policy or screening (e.g., monitoring swipes for access). More research could also be done in the recreational sports domain on the impact that exercise overuse can have on a students' overall wellbeing and success in college.

Students who hold a pass for VT Rec Sports' group fitness program had wellbeing scores that were significantly different and greater than those who prefer to work out alone in both physical and social wellbeing dimensions. The other four dimensions showed no significant differences amongst the two groups. These results are important because it shows the impact that group-based physical activity can have in multiple wellbeing dimensions. It also further emphasizes the influence that collegiate group fitness programs can have in undergraduate student's wellbeing. While it is already known from the recreational sports literature the impact that collegiate recreation has on students' overall wellbeing (Forrester, 2014), this study provided

more detail to how certain collegiate recreation programming can impact certain wellbeing dimensions. Further research should be done on how other specific campus recreation programs (e.g. intramurals, sport clubs, adventure trips, aquatics) impact students' various dimensions of wellbeing. This would paint a more detailed picture of recreation departments as a whole in how they specifically influence students' wellbeing in their various areas.

Significant associations exist between several of the wellbeing dimensions including physical and financial, community and social, emotional and social, and emotional and community. The associations between community, social and emotional wellbeing show that an individual's mood can be impacted by being around others and having strong support systems. Furthermore, it shows that communities can build strong relationships and vice versa. The association between physical and financial wellbeing is interesting because the two dimensions are normally not associated together in the literature (O'Neill et al., 2005). We know that holistically all dimensions influence one another directly or indirectly, but further research could be done on specifically why these two dimensions are associated with one another.

All three student focus groups (i.e., group fitness, individual and both) had positive things to say about the impact that Rec Sports has had on their wellbeing related to all six dimensions and very little to say about the negative or neutral impact of Rec Sports on wellbeing. Common categories of conversation related to the theme amongst the three groups included community and relationships, mental health, fitness, structure and productivity, goal attainment and purpose, and more. The results were significant because they line up with the mission and core values that VT Rec Sports stands for ("About Rec Sports", n.d) and shows that these values are translating into the students' everyday lives from their participation with Rec Sports. Furthermore, it showcases how the department is taking the university's definition of wellbeing and influencing

every dimension in their participants. Other program areas at VT Rec Sports, or even other departments in student affairs, could use a similar semi-structured interview guide to explore how their programs and departments are influencing student wellbeing.

The results of this study outline the relationship between undergraduate students' physical activity behaviors, their perceptions of wellbeing, and use and perceptions of VT Rec Sports. While there are differences in perceptions of wellbeing between those who hold a pass in group fitness and those who work out alone, all results from the study showed what is commonly supported throughout the literature and that is there is an increased feeling of wellbeing that comes when students participate in physical activity and collegiate recreation. The implications of this study are relevant for student affairs professionals, collegiate recreation departments and college administrators for designing recreational facilities and implementing physical activity programming that is tailor to students' lifelong health, fitness and wellbeing.

Limitations: It is important to acknowledge that the majority of the sample from this study were female Caucasian upperclassmen with a GPA around 3.39 (\pm .37) (see Table 1). While all seven colleges from the university were represented, the rest of the demographic characteristics of this study are not well representative of the various populations at Virginia Tech. Focus group participants were anonymous and not compared to the total sample as they are included in the total sample as well. However, most focus group participants were also female Caucasian upperclassmen with a GPA around 3.49 (\pm .3). Future directions are needed to study the usage of Recreational Sports by the freshman class and those from racial minority groups to understand how it has impacted their holistic wellbeing and their overall perceptions of Rec Sports. Increasing participant diversity will provide a richer, more representative picture of VT

undergraduate students' perceptions of Rec Sports and wellbeing. Therefore, one way to increase generalizability of knowledge may be to test similar hypotheses across different institutions.

It is important to acknowledge that all data from the cross-sectional survey was self-reported by the student participants. Furthermore, the cross-sectional survey provides comparison and correlation results, but no causation relationships can be inferred. Lastly, group fitness pass holders were self-identified as present or pass VT Rec Sports group fitness pass holders. It needs to be recognized that not all group fitness participants are pass holders and students who choose to work out alone at VT Rec Sports may be group fitness participants at other gyms. This study analyzed just those who identified as VT Rec Sports present or pass group fitness pass holders as the group fitness participant group.

2.6 Conclusions and Implications

The purpose of this study was to investigate the impact that Virginia Tech Recreational Sports' group-based fitness programming has on Virginia Tech students' overall wellbeing. This work simultaneously contributes to collegiate recreation by providing evidence that students who utilize facilities and programs have higher perceptions of wellbeing as well as highlighting suggested strategies for improvement including resource limitations and communication barriers. Finally, in terms of group fitness and wellbeing, this thesis provides preliminary evidence that those who are pass holders and participate in collegiate group exercise programs have higher perceptions of physical and social wellbeing. The implications of this study are relevant for student affairs professionals, collegiate recreation departments and college administrators for designing recreational facilities and implementing physical activity programming that is tailor to students' lifelong health, fitness and wellbeing. Further research should be done in the collegiate

recreation field on how other specific campus recreation programs (e.g. intramurals, sport clubs, adventure trips, aquatics) impact students' various dimensions of wellbeing. This would provide a holistic representation of how Rec Sports program offerings specifically influence students' wellbeing. Furthermore, increasing participant diversity will provide a richer, more representative picture of VT undergraduate students' perceptions of Rec Sports and wellbeing. Therefore, one way to increase generalizability of knowledge may be to test similar hypotheses across different institutions. Lastly, the influence and benefits that exercising in groups can bring to one's wellbeing is highlighted in this study. Therefore, the influence of group-based physical activity, on not only college students' wellbeing, but the overall population, should be explored more in the physical activity literature.

III. Chapter 3: Conclusion and Future Directions

The thesis project outlined the relationship between undergraduate students' physical activity behaviors, their perceptions of wellbeing, and use and perceptions of VT Rec Sports. Group fitness participants had higher wellbeing scores when compared to individual exercisers in both physical and social wellbeing dimensions. While there are differences in perceptions of wellbeing between those who participate in group fitness and those who work out alone, my thesis found that there is an overall increased feeling of wellbeing that comes when students participate in physical activity and collegiate recreation. The wellbeing of students who utilize recreational sports is impacted holistically across all six dimensions. Students who use VT Rec Sports have found a community and strong relationships, improved mental health and fitness, and more structure and productivity in their lives. Furthermore, students have been able to attain goals and find their purpose through Rec Sports, they are more involved on Virginia Tech's campus, and they find enjoyment and fun in the activities they're a part of. I hope that student affairs professionals, collegiate recreation departments and college administrators are able to learn from this study and use the findings when designing recreational facilities and implementing physical activity programming that is tailor to students' lifelong health, fitness and wellbeing. Furthermore, I hope VT Recreational Sports is able to take these study findings to advocate for the department and improve upon the various group fitness offerings. Other areas in the department may also be able to use the study design to evaluate the impact that their program offerings have on students' overall wellbeing.

In the future, a replication study to determine if the results from this study related to VT Rec Sports are true for other collegiate recreation group fitness programs would be of value. Virginia Tech is a large, public state university and VT Rec Sports' department may match other

large, public state universities across the country, but what about schools that are different from Virginia Tech's setting? I think it would be interesting to compare and contrast the impact of group exercise programming on student wellbeing in various collegiate settings. Some of these could include small, private colleges, historically black colleges and universities, urban versus rural campuses and geographical comparisons. Not every college campus is the same, therefore, the measures that Virginia Tech takes to improve their fitness and wellbeing programming based off this study may not be the same steps that another university would take. Furthermore, I think it would be interesting to explore the impact that group fitness programming has on various age groups' holistic wellbeing. While this study found that students at Virginia Tech who participate in group fitness have higher perceptions of physical and social wellbeing, it would be intriguing to see how children, working middle-age adults and retired older adults' perceptions of wellbeing are impacted by group fitness programming. I think overall it would be interesting to see if their wellbeing is impacted more or less by this medium of physical activity and why.

If I could change three things about this study they would be the methods to reach and recruit survey respondents, the timing of conducting the focus groups and the length of the survey. There are many factors that influence the behaviors of college students that I think could have been considered more in-depth in this study related to survey design and recruitment. The methods to reach and recruit survey respondents in this study were email requests, social media posts and pop-up booths. All these mediums can be, and often are, ignored by the undergraduate student population. Furthermore, the length of the survey, while considered short by the research team, was often perceived by potential survey participants as 'too long'. The lesson learned from these experiences were that college students like to have their information fed to them quickly and in a concise manner. If I were to do the study over again, I would make sure that the survey

was more concise and do more research on other universities to see what survey recruitment methods have been the most successful for them in studying an undergraduate student population. Lastly, the focus groups were conducted during a time in the semester when undergraduate students are under a lot of stress. This had an impact on the number of students who were willing to participate in the focus group and actually show up on the day of. Ideally, the focus groups should have been conducted at the beginning of the semester when students' schedules are more open and their stress is lower, but it was not possible for this study timeline.

This thesis experience has been very fulfilling and rewarding. As an individual who is very passionate about collegiate recreation, student development and student wellbeing, I am happy to see results that showcase the benefits and influence that campus recreation can have on student wellbeing. I am excited to see how VT Rec Sports is able to utilize the findings and continues to impact student wellbeing in the future.

References

- 50 Fittest Colleges in America 2015. (2015). Retrieved from <https://www.theactivetimes.com/50-fittest-colleges-america-2015-slideshow>
- About Recreational Sports. (n.d.). Retrieved from <https://www.recsports.vt.edu/About.html>
- Artinger, L., Clapham, L., Hunt, C., Meigs, M., Milord, N., Sampson, B., & Forrester, S. A. (2006). The social benefits of intramural sports. *Naspa Journal*, *43*(1), 69-86.
- Bae, W., Ik Suh, Y., Ryu, J., & Heo, J. (2017). Physical activity levels and well-being in older adults. *Psychological reports*, *120*(2), 192-205.
- Baldwin, D. R., Towler, K., Oliver, M. D., & Datta, S. (2017). An examination of college student wellness: A research and liberal arts perspective. *Health Psychology Open*, *4*(2), 2055102917719563.
- Barnett, N. P., Ott, M. Q., Rogers, M. L., Loxley, M., Linkletter, C., & Clark, M. A. (2014). Peer associations for substance use and exercise in a college student social network. *Health Psychology*, *33*(10), 1134.
- Beauchamp, M. R., & Eys, M. A. (Eds.). (2014). *Group dynamics in exercise and sport psychology*. Routledge.
- Belch, H. A., Gebel, M., & Maas, G. M. (2001). Relationship between student recreation complex use, academic performance, and persistence of first-time freshmen. *NASPA journal*, *38*(2), 254-268.
- Bland, H. W., Melton, B. F., Bigham, L. E., & Welle, P. D. (2014). Quantifying the impact of physical activity on stress tolerance in college students. *College Student Journal*, *48*(4), 559-568.
- Bodison, S. C., Sankaré, I., Anaya, H., Booker-Vaughns, J., Miller, A., Williams, P., ... & Community Engagement Workgroup. (2015). Engaging the Community in the Dissemination, Implementation, and Improvement of Health-Related Research. *Clinical and translational science*, *8*(6), 814-819.
- Bonner, N. S., O'Halloran, P. D., Bernhardt, J., & Cumming, T. B. (2016). Developing the stroke exercise preference inventory (SEPI). *PloS one*, *11*(10), e0164120.
- Bowman, N. A. (2010). The development of psychological well-being among first-year college students. *Journal of College Student Development*, *51*(2), 180-200.
- Brawner, C. A., Churilla, J. R., & Keteyian, S. J. (2016). Prevalence of physical activity is lower among individuals with chronic disease. *Medicine and science in sports and exercise*, *48*(6), 1062-1067.

- Bray, S. R., & Born, H. A. (2004). Transition to university and vigorous physical activity: Implications for health and psychological well-being. *Journal of American College Health, 52*(4), 181-188.
- Bryant, J. A., Banta, T. W., & Bradley, J. L. (1995). Assessment provides insight into the impact and effectiveness of campus recreation programs. *NASPA journal, 32*(2), 153-160.
- Bryant, J. A., & Bradley, J. L. (1993). Enhancing academic productivity, student development and employment potential. *Recreational Sports Journal, 18*(1), 42-44.
- Bryant, J., Bradley, J., & Milborne, C. (1994). Comparing student participation in campus recreation to other aspects of campus life. In *NIRSA annual conference review* (Vol. 45, pp. 144-168).
- Burke, S. M., Carron, A. V., Eys, M. A., Ntoumanis, N., & Estabrooks, P. A. (2006). Group versus individual approach? A meta-analysis of the effectiveness of interventions to promote physical activity. *Sport and Exercise Psychology Review, 2*(1), 19-35.
- Carron, A. V., Brawley, L. R., & Widmeyer, W. N. (1998). The measurement of cohesiveness in sport groups. *Advances in sport and exercise psychology measurement, 23*(7), 213-226.
- Carron, A. V., Hausenblas, H. A., & Mack, D. (1996). Social influence and exercise: A meta-analysis. *Journal of Sport and Exercise Psychology, 18*(1), 1-16.
- Christie, N. G., & Dinham, S. M. (1991). Institutional and external influences on social integration in the freshman year. *The Journal of Higher Education, 62*(4), 412-436.
- Colditz, G. A., & Mariani, A. (2000). The cost of obesity and sedentarism in the United States. *Physical activity and obesity, 55-65*.
- Collins Jr, J. R., Valerius, L., King, T. C., & Graham, A. P. (2001). The relationship between college students' self-esteem and the frequency and importance of their participation in recreational activities. *Recreational Sports Journal, 25*(2), 38-47.
- Conley, C. S., Kirsch, A. C., Dickson, D. A., & Bryant, F. B. (2014). Negotiating the transition to college: Developmental trajectories and gender differences in psychological functioning, cognitive-affective strategies, and social well-being. *Emerging Adulthood, 2*(3), 195-210.
- Deliens, T., Deforche, B., De Bourdeaudhuij, I., & Clarys, P. (2015). Determinants of physical activity and sedentary behaviour in university students: a qualitative study using focus group discussions. *BMC public health, 15*(1), 201.
- Deng, X., Castelli, D., Castro-Pinero, J., & Guan, H. (2011). University Students Meeting the Recommended Standards of Physical Activity and Body Mass Index. *ICHPER-SD Journal of research, 6*(1), 20-26.

- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological bulletin*, 125(2), 276.
- Dodge, R., Daly, A. P., Huyton, J., & Sanders, L. D. (2012). The challenge of defining wellbeing. *International journal of wellbeing*, 2(3).
- Downs, P. E. (2003). Value of recreational sports on college campuses. *Recreational sports journal*, 27(1), 5-8.
- Downward, P., & Dawson, P. (2016). Is it pleasure or health from leisure that we benefit from most? An analysis of well-being alternatives and implications for policy. *Social Indicators Research*, 126(1), 443-465.
- Dunlop, W. L., Falk, C. F., & Beauchamp, M. R. (2013). How dynamic are exercise group dynamics? Examining changes in cohesion within class-based exercise programs. *Health Psychology*, 32(12), 1240.
- Durstine, J. L., Gordon, B., Wang, Z., & Luo, X. (2013). Chronic disease and the link to physical activity. *Journal of sport and health science*, 2(1), 3-11.
- Edmunds, S., Biggs, H., & Goldie, I. (2013). Let's get physical, The impact of physical activity on wellbeing. *Mental Health Awareness Week*.
- Eichorn, L., Bruner, K., Short, T., & Abraham, S. P. (2018). Factors That Affect Exercise Habits of College Students. *Journal of Education and Development*, 2(1), 20.
- Ellis, G. D., Compton, D. M., Tyson, B., & Bohlig, M. (2002). Campus recreation participation, health, and quality of life. *Recreational Sports Journal*, 26(2), 51-60.
- Estabrooks, P. A., Harden, S. M., & Burke, S. M. (2012). Group dynamics in physical activity promotion: what works?. *Social and Personality Psychology Compass*, 6(1), 18-40.
- Estabrooks, P. A., Harden, S. M., Johnson, S. B., & Pardo, K. A. (2014). Group integration interventions in exercise: theory, practice, and future directions. In *Group dynamics in exercise and sport psychology* (pp. 164-182). Routledge.
- Forgeard, M. J., Jayawickreme, E., Kern, M. L., & Seligman, M. E. (2011). Doing the right thing: Measuring wellbeing for public policy. *International journal of wellbeing*, 1(1).
- Forrester, S. (2006). An examination of the factors contributing to student satisfaction with their overall academic experience. *Scholar: A Journal of Leisure Studies and Recreation Education*, 21(1), 21-33.
- Forrester, S. (2014). The benefits of campus recreation. Corvallis, OR: NIRSA.

- Gallup, Inc. (2018). Virginia Tech student survey: Understanding students' experiences and perceptions of Virginia Tech. Washington, DC: Gallup World Headquarters.
- Gallup, Inc. (2015). Great jobs, great lives: The Gallup-Purdue Index report, Virginia Tech. Washington, DC: Gallup World Headquarters.
- Garber, C. E., Blissmer, B., Deschenes, M. R., Franklin, B. A., Lamonte, M. J., Lee, I. M., ... & Swain, D.P. (2011). Quantity and quality of exercise for developing and maintaining cardiorespiratory, musculoskeletal, and neuromotor fitness in apparently healthy adults: guidance for prescribing exercise. *Medicine & Science in Sports & Exercise*, *43*(7), 1334-1359.
- Gasper, D. (2010). Understanding the diversity of conceptions of well-being and quality of life. *The Journal of Socio-Economics*, *39*(3), 351-360.
- Glasgow, R. E. (2013). What does it mean to be pragmatic? Pragmatic methods, measures, and models to facilitate research translation. *Health Education & Behavior*, *40*(3), 257-265.
- Glasgow, R. E., Vogt, T. M., & Boles, S. M. (1999). Evaluating the public health impact of health promotion interventions: the RE-AIM framework. *American journal of public health*, *89*(9), 1322-1327.
- Gordon-Larsen, P., Nelson, M. C., & Popkin, B. M. (2004). Longitudinal physical activity and sedentary behavior trends: adolescence to adulthood. *American journal of preventive medicine*, *27*(4), 277-283.
- Haase, A., Steptoe, A., Sallis, J. F., & Wardle, J. (2004). Leisure-time physical activity in university students from 23 countries: associations with health beliefs, risk awareness, and national economic development. *Preventive medicine*, *39*(1), 182-190.
- Haines, D. J. (2001). Undergraduate student benefits from university recreation. *Recreational Sports Journal*, *25*(1), 25-33.
- Hall, D. A. (2006). Participation in a campus recreation program and its effect on student retention. *Recreational Sports Journal*, *30*(1), 40-45.
- Hallal, P. C., Andersen, L. B., Bull, F. C., Guthold, R., Haskell, W., Ekelund, U., & Lancet Physical Activity Series Working Group. (2012). Global physical activity levels: surveillance progress, pitfalls, and prospects. *The lancet*, *380*(9838), 247-257.
- Harden, S. M., McEwan, D., Sylvester, B. D., Kaulius, M., Ruissen, G., Burke, S. M., ... & Beauchamp, M. R. (2015). Understanding for whom, under what conditions, and how group-based physical activity interventions are successful: a realist review. *BMC public health*, *15*(1), 958.

- Harden, S. M., Smith, M. L., Ory, M. G., Smith-Ray, R. L., Estabrooks, P. A., & Glasgow, R. E. (2018). RE-AIM in clinical, community, and corporate settings: perspectives, strategies, and recommendations to enhance public health impact. *Frontiers in public health*, 6, 71.
- Henchy, A. (2013). The perceived benefits of participating in campus recreation programs and facilities: A comparison between undergraduate and graduate students. *Recreational Sports Journal*, 37(2), 97-105.
- Henchy, A. (2011). The influence of campus recreation beyond the gym. *Recreational Sports Journal*, 35(2), 174-181.
- Huang, H., & Humphreys, B. R. (2012). Sports participation and happiness: Evidence from US microdata. *Journal of economic Psychology*, 33(4), 776-793.
- Huesman Jr, R., Brown, A. K., Lee, G., Kellogg, J. P., & Radcliffe, P. M. (2009). Gym bags and mortarboards: Is use of campus recreation facilities related to student success?. *NASPA journal*, 46(1), 50-71.
- Irwin, B. C., Scorniaenchi, J., Kerr, N. L., Eisenmann, J. C., & Feltz, D. L. (2012). Aerobic exercise is promoted when individual performance affects the group: a test of the Kohler motivation gain effect. *Annals of Behavioral Medicine*, 44(2), 151-159.
- Jacobson, N., Butterill, D., & Goering, P. (2003). Development of a framework for knowledge translation: understanding user context. *Journal of health services research & policy*, 8(2), 94-99.
- Kahneman, D., Diener, E., & Schwarz, N. (Eds.). (1999). *Well-being: Foundations of hedonic psychology*. Russell Sage Foundation.
- Kampf, S., & Teske, E. J. (2013). Collegiate recreation participation and retention. *Recreational Sports Journal*, 37(2), 85-96.
- Kanters, M. A. (2000). Recreational sport participation as a moderator of college stress. *Recreational Sports Journal*, 24(2), 10-23.
- Kanters, M. A., & Forester, S. (1997). The motivations and self-esteem of intramural sports participants. *Recreational Sports Journal*, 21(3), 3-7.
- Kern, M. L., Waters, L. E., Adler, A., & White, M. A. (2015). A multidimensional approach to measuring well-being in students: Application of the PERMA framework. *The journal of positive psychology*, 10(3), 262-271.
- Keyes, C. L., Shmotkin, D., & Ryff, C. D. (2002). Optimizing well-being: the empirical encounter of two traditions. *Journal of personality and social psychology*, 82(6), 1007.

- Kim, E. S., Kubzansky, L. D., Soo, J., & Boehm, J. K. (2016). Maintaining healthy behavior: A prospective study of psychological well-being and physical activity. *Annals of Behavioral Medicine*, 51(3), 337-347.
- Kimball, A., & Freysinger, V. J. (2003). Leisure, stress, and coping: The sport participation of collegiate student-athletes. *Leisure sciences*, 25(2-3), 115-141.
- King, K. A., Vidourek, R. A., English, L., & Merianos, A. L. (2013). Vigorous physical activity among college students: using the health belief model to assess involvement and social support. *Archives of Exercise in Health and Disease*, 4(2), 267-279.
- Kokkinos, P. (2012). Physical Activity and Mortality Risk. *Encyclopedia of Exercise Medicine in Health and Disease*, 705-708.
- Kurtze, N., Rangul, V., Hustvedt, B. E., & Flanders, W. D. (2008). Reliability and validity of self-reported physical activity in the Nord-Trøndelag Health Study—HUNT 1. *Scandinavian journal of public health*, 36(1), 52-61.
- Lauderdale, M. E., Yli-Piipari, S., Irwin, C. C., & Layne, T. E. (2015). Gender differences regarding motivation for physical activity among college students: A self-determination approach. *The Physical Educator*, 72(5).
- Lemoyne, J., Valois, P., & Guay, F. (2015). Physical self-concept and participation in physical activity in college students. *Medicine and science in sports and exercise*, 47(1), 142-150.
- Lewin, K. (1939). Experiments in social space. *Harvard Educational Review*, 9, 21-32.
- Lindsey, R., & Sessoms, E. (2006). Assessment of a campus recreation program on student recruitment, retention, and frequency of participation across certain demographic variables. *Recreational Sports Journal*, 30(1), 30-39.
- Linton, M. J., Dieppe, P., & Medina-Lara, A. (2016). Review of 99 self-report measures for assessing well-being in adults: exploring dimensions of well-being and developments over time. *BMJ open*, 6(7), e010641.
- Liu, S., Hill, J., Randall, A., Schwartz, C., & Smiljanec, K. (2016). *Exercise and academic success: Effect of physical activity on college GPA*.
- Mandolesi, L., Polverino, A., Montuori, S., Foti, F., Ferraioli, G., Sorrentino, P., & Sorrentino, G. (2018). Effects of physical exercise on cognitive functioning and wellbeing: biological and psychological benefits. *Frontiers in psychology*, 9, 509.
- McFadden, C. W., & Carr, J. W. (2015). Collegiate recreation student employee as student leader. *New directions for student leadership*, 2015(147), 65-76.

- Miller, J. J. (2011). Impact of a university recreation center on social belonging and student retention. *Recreational Sports Journal*, 35(2), 117-129.
- Milton, P. R. (1992). Relating student development theory to women's recreational sports participation. *Recreational Sports Journal*, 17(1), 3-7.
- National Intramural-Recreational Sports Association (US) (Ed.). (2004). The value of recreational sports in higher education. Human Kinetics Publishers.
- Newland, A., Newton, M., Stark, A., Podlog, L., & Hall, M. (2017). College students' perceptions of a caring climate in group physical activity classes. *Biomedical Human Kinetics*, 9(1), 99-106.
- Nyboe, L., & Lund, H. (2013). Low levels of physical activity in patients with severe mental illness. *Nordic Journal of psychiatry*, 67(1), 43-46.
- O'Neill, B., Sorhaindo, B., Xiao, J. J., & Garman, E. T. (2005). Financially distressed consumers: Their financial practices, financial well-being, and health. *Journal of Financial Counseling and Planning*, 16(1).
- Owen, J. J., Rhoades, G. K., Stanley, S. M., & Fincham, F. D. (2010). "Hooking up" among college students: Demographic and psychosocial correlates. *Archives of sexual behavior*, 39(3), 653-663.
- Owen, N., Glanz, K., Sallis, J. F., & Kelder, S. H. (2006). Evidence-based approaches to dissemination and diffusion of physical activity interventions. *American journal of preventive medicine*, 31(4), 35-44.
- Palinkas, L. A., Aarons, G. A., Horwitz, S., Chamberlain, P., Hurlburt, M., & Landsverk, J. (2011). Mixed method designs in implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, 38(1), 44-53.
- Pawlowski, T., Downward, P., & Rasciute, S. (2011). Subjective well-being in European countries—on the age-specific impact of physical activity. *European Review of Aging and Physical Activity*, 8(2), 93.
- Peek, C. J., Glasgow, R. E., Stange, K. C., Klesges, L. M., Purcell, E. P., & Kessler, R. S. (2014). The 5 R's: an emerging bold standard for conducting relevant research in a changing world. *The Annals of Family Medicine*, 12(5), 447-455.
- Penedo, F. J., & Dahn, J. R. (2005). Exercise and well-being: a review of mental and physical health benefits associated with physical activity. *Current opinion in psychiatry*, 18(2), 189-193.

- Piercy, K. L., Troiano, R. P., Ballard, R. M., Carlson, S. A., Fulton, J. E., Galuska, D. A., ... & Olson, R. D. (2018). The physical activity guidelines for Americans. *Jama*, *320*(19), 2020-2028.
- Proctor, E., Silmere, H., Raghavan, R., Hovmand, P., Aarons, G., Bunger, A., ... & Hensley, M. (2011). Outcomes for implementation research: conceptual distinctions, measurement challenges, and research agenda. *Administration and Policy in Mental Health and Mental Health Services Research*, *38*(2), 65-76.
- Ragheb, M. G., & McKinney, J. (1993). Campus recreation and perceived academic stress. *Journal of College Student Development*.
- Rasciute, S., & Downward, P. (2010). Health or happiness? What is the impact of physical activity on the individual?. *Kyklos*, *63*(2), 256-270.
- Rath, T., Harter, J. K., & Harter, J. (2010). *Wellbeing: The five essential elements*. Simon and Schuster.
- Reiner, M., Niermann, C., Jekauc, D., & Woll, A. (2013). Long-term health benefits of physical activity—a systematic review of longitudinal studies. *BMC public health*, *13*(1), 813.
- Ridner, S. L., Newton, K. S., Staten, R. R., Crawford, T. N., & Hall, L. A. (2016). Predictors of well-being among college students. *Journal of American college health*, *64*(2), 116-124.
- Rosenbaum, S., Tiedemann, A., & Ward, P. B. (2014). Meta-analysis physical activity interventions for people with mental illness: a systematic review and meta-analysis. *J Clin Psychiatry*, *75*(0), 1-11.
- Samendinger, S., Pfeiffer, K. A., & Feltz, D. L. (2018). Testing group dynamics with a virtual partner to increase physical activity motivation. *Computers in Human Behavior*, *88*, 168-175.
- Seligman, M. E. (2011). *Flourish: A new understanding of happiness and well-being and how to achieve them*. Boston: Nicholas Brealey.
- Spink, K. S., & Carron, A. V. (1994). Group cohesion effects in exercise classes. *Small Group Research*, *25*(1), 26-42.
- Statham, J., & Chase, E. (2010). Childhood wellbeing: A brief overview. *Loughborough: Childhood Wellbeing Research Centre*.
- Steptoe, A. S., & Butler, N. (1996). Sports participation and emotional wellbeing in adolescents. *The Lancet*, *347*(9018), 1789-1792.
- Stoewen, D. L. (2017). Dimensions of wellness: Change your habits, change your life. *The Canadian Veterinary Journal*, *58*(8), 861.

- Stridsberg, S. (2018). *Investigating the social connectedness and social assurance among college students related to participation in intramural sports.*
- Strong, K. A., Parks, S. L., Anderson, E., Winett, R., & Davy, B. M. (2008). Weight gain prevention: identifying theory-based targets for health behavior change in young adults. *Journal of the American Dietetic Association, 108*(10), 1708-1715.
- Taliaferro, L. A., Rienzo, B. A., Pigg, R. M., Miller, M. D., & Dodd, V. J. (2009). Associations between physical activity and reduced rates of hopelessness, depression, and suicidal behavior among college students. *Journal of American College Health, 57*(4), 427-436.
- Thompson Coon, J., Boddy, K., Stein, K., Whear, R., Barton, J., & Depledge, M. H. (2011). Does participating in physical activity in outdoor natural environments have a greater effect on physical and mental wellbeing than physical activity indoors? A systematic review. *Environmental science & technology, 45*(5), 1761-1772.
- Thompson, P. D., Gordon, N. F., & Pescatello, L. S. (2010). Benefits and risks associated with physical activity. *ACSM's Guidelines for Exercise Testing and Prescription, 2*-17.
- Timberlake, D. S., Hopfer, C. J., Rhee, S. H., Friedman, N. P., Haberstick, B. C., Lessem, J. M., & Hewitt, J. K. (2007). College attendance and its effect on drinking behaviors in a longitudinal study of adolescents. *Alcoholism: Clinical and Experimental Research, 31*(6), 1020-1030.
- Todaro, E. (1993). The impact of recreational sports on student development: A theoretical model. *Recreational Sports Journal, 17*(3), 23-26.
- Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International journal for quality in health care, 19*(6), 349-357.
- Towne, S. D., Ory, M. G., Smith, M. L., Peres, S. C., Pickens, A. W., Mehta, R. K., & Benden, M. (2017). Accessing physical activity among young adults attending a university: the role of sex, race/ethnicity, technology use, and sleep. *BMC public health, 17*(1), 721.
- US Department of Health and Human Services. (2018). 2018 Physical activity guidelines advisory committee scientific report.
- US Department of Health and Human Services. (2011). Healthy People 2020. Washington, DC.
- Ussher, M. H., Owen, C. G., Cook, D. G., & Whincup, P. H. (2007). The relationship between physical activity, sedentary behaviour and psychological wellbeing among adolescents. *Social psychiatry and psychiatric epidemiology, 42*(10), 851-856.
- Vrangalova, Z. (2015). Does casual sex harm college students' well-being? A longitudinal investigation of the role of motivation. *Archives of Sexual Behavior, 44*(4), 945-959.

- Wake Forest University. (2018). *Wellbeing collaborative: WFU wellbeing assessment benchmark report 2018*.
- Warburton, D. E., Nicol, C. W., & Bredin, S. S. (2006). Health benefits of physical activity: the evidence. *Cmaj*, *174*(6), 801-809.
- Wetter, D. W., Kenford, S. L., Welsch, S. K., Smith, S. S., Fouladi, R. T., Fiore, M. C., & Baker, T. B. (2004). Prevalence and predictors of transitions in smoking behavior among college students. *Health psychology*, *23*(2), 168.
- White, S. C. (2010). Analysing wellbeing: a framework for development practice. *Development in practice*, *20*(2), 158-172.
- Wicker, P., & Frick, B. (2015). The relationship between intensity and duration of physical activity and subjective well-being. *The European Journal of Public Health*, *25*(5), 868-872.
- World Health Organization. (2010). Global recommendations on physical activity for health. World Health Organization.
- Zessin, U., Dickhäuser, O., & Garbade, S. (2015). The relationship between self-compassion and well-being: A meta-analysis. *Applied Psychology: Health and Well-Being*, *7*(3), 340-364.
- Zschucke, E., Gaudlitz, K., & Ströhle, A. (2013). Exercise and physical activity in mental disorders: clinical and experimental evidence. *Journal of Preventive Medicine and Public Health*, *46*(Suppl 1), S12.

IV. Appendices

Appendix A: IRB Approval Letter



**Division of Scholarly Integrity and
Research Compliance**

Institutional Review Board
North End Center, Suite 4120 (MC 0497)
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-3732
irb@vt.edu
<http://www.research.vt.edu/sirc/hrpp>

MEMORANDUM

DATE: October 8, 2019
TO: Samantha Marie Harden, Becky Eacho, Alyssa Quynh-Anh Ton, Abby Meadema Stekete, Sarah Lynn, Nathalie Claudine Thomas, Kathryn Ratliff, Ryan Stanley Stanley, Anna Murphy
FROM: Virginia Tech Institutional Review Board (FWA00000572, expires January 29, 2021)
PROTOCOL TITLE: More Than a Fitness Studio: The role of collegiate recreation group exercise programs in undergraduate student wellbeing
IRB NUMBER: 19-616

Effective October 7, 2019, the Virginia Tech Human Research Protection Program (HRPP) and Institutional Review Board (IRB) determined that this protocol meets the criteria for exemption from IRB review under 45 CFR 46.104(d) category(ies) 2(ii).

Ongoing IRB review and approval by this organization is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these activities impact the exempt determination, please submit a new request to the IRB for a determination.

This exempt determination does not apply to any collaborating institution(s). The Virginia Tech HRPP and IRB cannot provide an exemption that overrides the jurisdiction of a local IRB or other institutional mechanism for determining exemptions.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

<https://secure.research.vt.edu/external/irb/responsibilities.htm>

(Please review responsibilities before beginning your research.)

PROTOCOL INFORMATION:

Determined As: **Exempt, under 45 CFR 46.104(d) category(ies) 2(ii)**
Protocol Determination Date: **October 7, 2019**

ASSOCIATED FUNDING:

The table on the following page indicates whether grant proposals are related to this protocol, and which of the listed proposals, if any, have been compared to this protocol, if required.

Invent the Future

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
An equal opportunity, affirmative action institution

Appendix B: Recruitment Flyer

Hokies! We want to hear from YOU!

Virginia Tech Recreational Sports is committed to the health and wellness of the Virginia Tech community.

One way we encourage others to join the #HokieMovement is to provide excellent recreational facilities and programs for you to **achieve** your **fitness goals** and reach your **ideal wellbeing**.

Please take **5-10 minutes** to share your thoughts with us in this survey and let us know how we can serve you best. Just scan the QR code on display here!

Participants must be 18 years or older and hold undergraduate academic status to participate. This is a Virginia Tech research study (IRB #19-616). If you have any questions or concerns about this survey, please contact:
Becky Eacho - eachora@vt.edu, Fitness Graduate Assistant, VT Rec Sports



STUDENT AFFAIRS
RECREATIONAL SPORTS
VIRGINIA TECH.

Appendix C: Recruitment Emails

Survey

Subject Line: VT Rec Sports' Physical Activity and Wellbeing Survey

Hi Hokies!

The Recreational Sports staff is committed to the health and wellness of the Virginia Tech community. One way we can continue to build healthy Hokies is to provide excellent recreation facilities and programs for you to achieve your fitness goals and reach your ideal wellbeing. This brief survey is an opportunity for us to learn more about your wellbeing, your physical activity participation with Rec Sports, how our facilities and programs impact these, and how to serve you best. To participate, you must hold an undergraduate academic status. Please take 5-10 minutes to share your thoughts with us.

To access the survey please click [here](#). If the survey does not open automatically, please copy and paste the following link to your internet browser's address bar:

https://viriniatech.qualtrics.com/jfe/form/SV_50IsRpoaMHYYDQx

This is a Virginia Tech research study (IRB #19-616).

If you have any questions or concerns about this survey, please contact:

Becky Eacho: eachora@vt.edu
Fitness Graduate Assistant, Virginia Tech Recreational Sports
Masters Student, Dept. Human Nutrition, Foods and Exercise

Thank you so much for your time,

Focus Group (initial interest)

Subject Line: VT Rec Sports' Physical Activity & Wellbeing Focus Group

Good Afternoon,

Thank you for your interest in participating in our focus group. You have been selected to participate on **XX day, November X, 2019 at X PM**. If still interested, please respond with a confirmation by tomorrow (X/XX) at 5PM, as well as, your choice of compensation: VT Rec Sports Spring group fitness pass, VT Rec Sports fitness assessment/BODPOD package, or \$10.

The focus groups will be held at the Integrated Life Sciences Building, Classroom 1040, located at the Corporate Research Center (1981 Kraft Drive). There is free parking outside the building, as well as, a bus that runs from campus to the CRC every 30 minutes. The bus schedule can be found [HERE](#).

If you have any questions at all, please don't hesitate to ask.

Thank you for your time,

Focus Group (reminder)

Subject Line: REMINDER: VT Rec Sports' Physical Activity & Wellbeing Focus Group (TONIGHT)

Good Morning,

Thank you for volunteering to participate in our focus group. **This is just a reminder email for the focus group scheduled tonight at X PM.**

The focus groups will last **90 minutes** and will be held at the **Integrated Life Sciences Building, Classroom 1040, located at the Corporate Research Center (1981 Kraft Drive)**. There is free parking outside the building, as well as, a bus that runs from campus to the CRC every 30 minutes. The bus schedule can be found [HERE](#).

The consent form is attached for your reference. We will be going over this form in detail before the focus group begins to give you the opportunity to ask questions and gain clarification before signing and participating. If you have any questions at all, please don't hesitate to ask.

Look forward to seeing you all tonight.

Appendix D: Survey

Participation in this survey is voluntary. This survey was developed to contribute to the ongoing research projects in the Physical Activity Research and Community Implementation (PARCI) Laboratory, specifically to Becky Eacho's Master's Thesis project. All of the results will be reported as group data, whereby no individual will be identifiable in the results or any reports of the study findings. The research may be published. Any information you provide will remain confidential. Please answer each question to the best of your knowledge. If you choose not to answer any question, just leave it blank and move on to the next question.

For questions or concerns about this survey or study, please contact:

Dr. Samantha Harden,
Principal Investigator, Virginia Tech
Email: harden.samantha@vt.edu
Phone: (540) 231-9960

Should you have any questions or concerns about the study's conduct or your rights as a research subject, or need to report a research-related injury or event, you may contact:

Virginia Tech Institutional Review Board
Phone: (540) 231-3732
Email: irb@vt.edu

By completing this form and clicking next, I am providing my consent to partake in this research study.

DEMOGRAPHICS

- What is your academic status?
 - Freshman
 - Sophomore
 - Junior
 - Senior
- What is your age?: _____
- What is your major?
 - (Drop down of all options)
- If applicable, what is your minor(s)?
 - (Drop down of all options)
- What is your race/ethnicity?
 - Asian
 - Black/African American
 - Caucasian
 - Hispanic/Latino/a
 - Indigenous/Native American
 - Pacific Islander
 - Multiracial
 - Prefer not to answer
 - Other: _____
- What is your gender identity?
 - Man
 - Woman
 - Transgender
 - Prefer not to respond
- What is your cumulative GPA?: _____

- Are you currently a student athlete?
 - Yes
 - No
- Do you currently have, or have purchased in the past, a group fitness pass with VT Rec Sports?
 - Yes
 - No
- If yes, in a week, how frequently do you attend group exercise classes a week at VT Rec Sports?
 - Never
 - Less than once a week
 - Once a week
 - 2-3 times per week
 - Almost everyday

PHYSICAL ACTIVITY & EXERCISE PREFERENCE

- How frequently did you exercise? (Examples of exercise: going for walks, skiing, swimming, or training/sport)
 - Never
 - Less than once a week
 - Once a week
 - 2-3 times per week
 - Almost everyday
- If you exercise as frequently as once or more times a week: How hard do you push yourself?
 - I took it easy without breaking into a sweat or losing my breath
 - I pushed myself so hard that I lost my breath and broke into a sweat
 - I pushed myself to near-exhaustion
- How long does each session last?
 - Less than 15 minutes
 - 16-30 minutes
 - 30 minutes to 1 hour
 - More than 1 hour
- Please indicate how much you agree with each of the following statements:
(0% Don't agree at all → 100% Totally agree)
 - I like to exercise with other people of similar age: ____%
 - I like to exercise for health reasons: ____%
 - I like to exercise alone: ____%
 - I like to exercise with family or friends: ____%

WELLBEING

Thinking about your life in general, how much do you agree or disagree with the statements on the following?

	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
I like what I do each day					
I get to use my strengths to do what I do best every day					

My life has an important purpose or meaning					
I learn or do something interesting every day					
Up to this point, my life has exceeded my wildest expectations					
In the last 12 months, I have spent a lot of my time doing things that are most meaningful to me					
In the last 12 months, I have reached most of my goals					
In the last 30 days, I have done something better than ever before					

Thinking about your life in general, how much do you agree or disagree with the statements on the following?

	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
My physical health is near-perfect					
I always feel good about my physical appearance					
A doctor would say that I do a great job of managing my health					
I have a lot of pain on most days					
I exercise regularly to improve my health					
I have a very healthy diet					
There is someone in my life who always motivates me to be healthy					

Thinking about your life in general, how much do you agree or disagree with the statements on the following?

	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
I have more than enough money to do what I want to do					

I have built a financial reserve that sustains my lifestyle					
I believe I will have enough money in the future					
My money is well managed					
In the last seven days, I have worried about money					
Compared to the people I spend time with, I am satisfied with my standard of living					
The house or apartment that I live in is ideal for me and my family					
I have the resources I need to do good work every day					

Thinking about your life in general, how much do you agree or disagree with the statements on the following?

	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
I have a lot of love in my life					
I regularly make time for friends and family					
The relationships in my life are strong as they possibly could be					
I have a group where I belong, where I am accepted					
My relationship with my spouse, partner, or closest friend is stronger than ever					
There is somebody in my life who encourages my development					
The relationships in my life give me positive energy every day					
There is a leader in my life who makes me enthusiastic about the future					

Thinking about your life in general, how much do you agree or disagree with the statements on the following?

	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
I can't imagine living in a better community than the one I live in today					
The community or area where I live is a perfect place for me					
I feel safe drinking the water and breathing the air in my community					
I am proud of my community (or the area where I live)					
I always feel safe and secure					
I am treated with respect every day					
In the last 12 months, I have received recognition for contributions to my community					

Thinking about your life in general, how much do you agree or disagree with the statements on the following?

	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
I often feel sad or depressed					
I have too much stress in my life					
I take time to enjoy life, rarely taking things for granted					
In the last seven days, I have had a lot of energy every day					

REC SPORTS INVOLVEMENT

Thinking about your involvement with VT Rec Sports facilities and programs, how much do you agree or disagree with the following statement:

“Use of _____ has positively impacted my wellbeing.”

<u>Facility</u>	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree	N/A

McComas Gym						
McComas Pool						
War Memorial Gym						
War Memorial Pool						
Venture Out Center/Rentals						
Venture Out Trips						
Recreation Area Fields						
Fitness Park						
Challenge Course						
Tennis Courts						

Thinking about your involvement with VT Rec Sports facilities and programs, how much do you agree or disagree with the following statement:

“Participation in _____ has positively impacted my wellbeing.”

<u>Program</u>	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree	N/A
Group Exercise Classes						
Personal Training Sessions						
Small Group Training						
HokieFit: Online Fitness Program						
Olympic Weightlifting Clinics						
Instructional Dance Classes						
Intramural Sports						
Sport Clubs						
Pick Up Games						
Swim Lessons						

WHAT'S NEXT?

- Group Exercise Pass Holders: Are you willing to provide your name so we can pull your class attendance records? Your name will only be used for these purposes and not connected back to your answers from before.
 - Yes, Name _____
 - No
- Are you interested in participating in a focus group (\$10 compensation for 90 minutes of your time)? If yes, please provide an email address in the text box below.
 - Yes, Email: _____
 - No

Appendix E: Focus Group Guide

Physical Activity and Wellbeing Semi-Structured Focus Group Guide

Thank you for joining us today to participate in this focus group. A focus group is an interview with multiple persons at once in order to gain a rich understanding of a particular topic. Today I'd like us to discuss your thoughts about your choice in physical activity and how it relates to your holistic wellbeing. We will cover topics ranging from your perceptions of the different domains of wellbeing and how your preferred physical activity routine impacts these domains. We are conducting these focus groups in two different groups: those who prefer participating in VT Rec Sports' group exercise classes and those who prefer working out alone.

This focus group will take approximately 90 minutes to complete.

I am _____, and I am part of the research team. We will start by talking about your role as a participant in this study, obtaining informed consent, and completing a brief questionnaire. Then, I will start the focus group. My role as a facilitator is to present the topic areas, probe for any follow-up details we may need related to a specific response, and to keep track of time.

_____ is here as my assistant to take notes and help me keep track of time.

First I will read the consent form, allow time for any related questions, and collect signed consent for those of you who wish to continue with this focus group interview.

(Read consent form, collect signed consent forms. Participants complete questionnaire. Resume).

There are no right or wrong answers, so please share your experience and thoughts as we continue.

I will begin recording now.

Please state the number assigned to you in your packet.

(Allow participants to read their assigned participant number to both test for volume and 'record' voice recognition.)

Thank you for joining.

The following set of questions are related to your perceptions of wellbeing and how your preferred choice of physical activity impacts these various domains of wellbeing... (60 minutes)

Physical Wellbeing (not read) (10 minutes)

- How would you define physical wellbeing?

According to Gallup's "Wellbeing: The Five Essential Elements" and Virginia Tech's definition of wellbeing, **physical wellbeing** is about having good health and enough energy to get things done on a daily basis.

- How is your definition of physical wellbeing similar to Virginia Tech and Gallup's?

Prompt: In your opinion, what is this definition missing?

- How is your definition of physical wellbeing different from Virginia Tech and Gallup's?
- How has using VT Rec Sports' impacted your physical wellbeing?

Prompts: McComas/War Memorial Gyms, McComas/War Memorial Pools, Rec Fields, Tennis Courts, Venture Out Rentals, Venture Out Challenge Course

Probes: What is it about that particular facility/offering that impacts your physical wellbeing?

Prompts: Personal training, small group training, HokieFit, Olympic lifting clinics, instructional dance, intramurals, sport clubs, pickup games, swim lessons

- *Group Fitness participants only (not read):* More Specifically, how has VT Rec Sports' group fitness programming affected your physical wellbeing?

Prompts: positive & negative impact, specific formats, instructors, time of day, day of the week, how do you see these impacting other students

Social Wellbeing (not read) (10 minutes)

- How would you define social wellbeing?

According to Gallup's "Wellbeing: The Five Essential Elements" and Virginia Tech's definition of wellbeing, **social wellbeing** is about having strong relationships and love in your life.

- How is your definition of social wellbeing similar to Virginia Tech and Gallup's?

Prompt: In your opinion, what is this definition missing?

- How is your definition of social wellbeing different from Virginia Tech and Gallup's?
- How has using VT Rec Sports' impacted your social wellbeing?

Prompts: McComas/War Memorial Gyms, McComas/War Memorial Pools, Rec Fields, Tennis Courts, Venture Out Rentals, Venture Out Challenge Course

Probes: What is it about that particular facility/offering that impacts your social wellbeing?

Prompts: Personal training, small group training, HokieFit, Olympic lifting clinics, instructional dance, intramurals, sport clubs, pickup games, swim lessons

- *Group Fitness participants only (not read):* More Specifically, how has VT Rec Sports' group fitness programming affected your social wellbeing?

Prompts: positive & negative impact, specific formats, instructors, time of day, day of the week, how do you see these impacting other students

Sense of Purpose/Career Wellbeing (not read) (10 minutes)

- How would you define career wellbeing or sense of purpose?

According to Gallup’s “Wellbeing: The Five Essential Elements” and Virginia Tech’s definition of wellbeing, **career wellbeing**, or **sense of purpose**, is how you occupy your time, or simply liking what you do every day.

- How is your definition of sense of purpose similar to Virginia Tech and Gallup’s?

Prompt: In your opinion, what is this definition missing?

- How is your definition of sense of purpose different from Virginia Tech and Gallup’s?
- How has using VT Rec Sports’ impacted your sense of purpose?

Prompts: McComas/War Memorial Gyms, McComas/War Memorial Pools, Rec Fields, Tennis Courts, Venture Out Rentals, Venture Out Challenge Course

Probes: What is it about that particular facility/offering that impacts your sense of purpose?

Prompts: Personal training, small group training, HokieFit, Olympic lifting clinics, instructional dance, intramurals, sport clubs, pickup games, swim lessons

- *Group Fitness participants only (not read):* More Specifically, how has VT Rec Sports’ group fitness programming affected your sense of purpose?

Prompts: positive & negative impact, specific formats, instructors, time of day, day of the week, how do you see these impacting other students

Financial Wellbeing (not read) (10 minutes)

- How would you define financial wellbeing?

According to Gallup’s “Wellbeing: The Five Essential Elements” and Virginia Tech’s definition of wellbeing, **financial wellbeing** is about effectively managing your economic life.

- How is your definition of financial wellbeing similar to Virginia Tech and Gallup’s?

Prompt: In your opinion, what is this definition missing?

- How is your definition of financial wellbeing different from Virginia Tech and Gallup’s?
- How has using VT Rec Sports’ impacted your financial wellbeing?

Prompts: McComas/War Memorial Gyms, McComas/War Memorial Pools, Rec Fields, Tennis Courts, Venture Out Rentals, Venture Out Challenge Course

Probes: What is it about that particular facility/offering that impacts your financial wellbeing?

Prompts: Personal training, small group training, HokieFit, Olympic lifting clinics, instructional dance, intramurals, sport clubs, pickup games, swim lessons

- *Group Fitness participants only (not read):* More Specifically, how has VT Rec Sports’ group fitness programming affected your financial wellbeing?

Prompts: positive & negative impact, specific formats, instructors, time of day, day of the week, how do you see these impacting other students

Community Wellbeing (not read) (10 minutes)

- How would you define community wellbeing?

According to Gallup’s “Wellbeing: The Five Essential Elements” and Virginia Tech’s definition of wellbeing, **community wellbeing** is about the sense of engagement you have with the area where you live.

- How is your definition of community wellbeing similar to Virginia Tech and Gallup’s?

Prompt: In your opinion, what is this definition missing?

- How is your definition of community wellbeing different from Virginia Tech and Gallup’s?
- How has using VT Rec Sports’ impacted your community wellbeing?

Prompts: McComas/War Memorial Gyms, McComas/War Memorial Pools, Rec Fields, Tennis Courts, Venture Out Rentals, Venture Out Challenge Course

Probes: What is it about that particular facility/offering that impacts your community wellbeing?

Prompts: Personal training, small group training, HokieFit, Olympic lifting clinics, instructional dance, intramurals, sport clubs, pickup games, swim lessons

- *Group Fitness participants only (not read):* More Specifically, how has VT Rec Sports’ group fitness programming affected your community wellbeing?

Prompts: positive & negative impact, specific formats, instructors, time of day, day of the week, how do you see these impacting other students

Emotional Wellbeing (not read) (10 minutes)

- How would you define emotional wellbeing?

According to Gallup’s “Wellbeing: The Five Essential Elements” and Virginia Tech’s definition of wellbeing, **emotional wellbeing** relates to one’s mental and psychological health.

- How is your definition of emotional wellbeing similar to Virginia Tech and Gallup’s?

Prompt: In your opinion, what is this definition missing?

- How is your definition of emotional wellbeing different from Virginia Tech and Gallup’s?
- How has using VT Rec Sports’ impacted your emotional wellbeing?

Prompts: McComas/War Memorial Gyms, McComas/War Memorial Pools, Rec Fields, Tennis Courts, Venture Out Rentals, Venture Out Challenge Course

Probes: What is it about that particular facility/offering that impacts your emotional wellbeing?

Prompts: Personal training, small group training, HokieFit, Olympic lifting clinics, instructional dance, intramurals, sport clubs, pickup games, swim lessons

- *Group Fitness participants only (not read):* More Specifically, how has VT Rec Sports' group fitness programming affected your emotional wellbeing?

Prompts: positive & negative impact, specific formats, instructors, time of day, day of the week, how do you see these impacting other students

The next set of questions are related to your use of Virginia Tech Recreational Sports and your preferred choice in physical activity... (20 minutes)

- Why (or why not) do you choose to use Virginia Tech Recreational Sports to stay active?
- How can Virginia Tech Recreational Sports help you better thrive in your holistic wellbeing?

Group Fitness participants only (not read)

- Why did you choose to purchase a group fitness pass with VT Rec Sports? What was appealing to you about the group fitness program?
- In your opinion, what is VT Rec Sports' group fitness program doing well?
- In your opinion, how can the VT Rec Sports' group fitness program improve?

Individual exercise participants only (not read)

- Why do you choose to work out alone?
- What can VT Rec Sports do to get you to try the group fitness program?

Prompts: Incentives, new formats, pop up events, more equity/diversity/inclusion

Wrap-up (*Remaining Time*)

- Is there anything else you would like to share with the research team at this time?

I am going to stop recording now.

Thank you for your participation in this interview. Members of the research team will transcribe this session verbatim. We will then interpret the findings. If at any time during this process you wish to retract all or part of your statements, you may do so.

Appendix F: Timeline

Table 1. Becky Eacho's M.S. Degree/Thesis Timeline												
	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
	Year 1											
Begin Fitness GA position at Rec Sports												
Begin coursework for Master's degree												
Establish an advisory committee												
Complete literature review												
Submit a plan of study to graduate school												
Complete annual progress report with advisory committee												
Create survey												
Create interview guide												

	Year 2											
	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Take and pass proposal exam												
Submit IRB protocol												
Collect Surveys												
Conduct Focus Groups												
Complete coursework on plan of study												
Job Search for Fitness Positions												
Analyze Quantitative Data												
Transcribe Qualitative Data												
Analyze Qualitative Data												
Submit thesis to Graduate school												
Take and pass final exam (thesis defense)												
Submit proposal to present at NIRSA Regional Conference												

Appendix G. Common themes and categories of undergraduate student participants, n= Meaning Unit (MU)

Theme	Subtheme	Category	Sample Meaning Unit		
			Individual Exercisers 2 Focus Groups, 6 Participants	Group Fitness Participants 1 Focus Group, 3 Participants	Both 1 Focus Group, 3 Participants
Impact of VT Rec Sports on Wellbeing (n= 356)	Positive Impact (n= 328)	Community & Relationships (n= 87)	“[Rec sports allows you to] find your community and foster relationships...”	“The group fitness program has kind of given me a new outlet and a new family at school.”	“Yeah, I’ve definitely met a lot of good people through being involved with Rec Sports.”
		Mental Health (n= 59)	“Um, it [Rec Sports] just allows a really, um, an environment where you can destress and where you can be active.”	“And, I feel better after [GX] because I think the endorphins kick in, and I just feel better in general.”	“So if I am feeling like anxious or stressed or whatever like it’s amazing the impact of going into the gym and having any sort of workout can have on your mood.”
		Fitness (n= 56)	“And I always wake up feeling sore [after body pump] and my friends are like “oh that’s part of the experience. But I always enjoy it, even though it hurts in the morning.”	“I think that going to McComas and using the Rec Sports programs and doing the group exercise stuff has really helped me because I’m staying in shape that way now.”	“And like knowing that I have a nice place to go like definitely motivates me to go work out.”
		Builds Structure & Productivity (n= 41)	“...and more until it becomes a habit and then the facilities and exercise classes, um, allow that to become habit cause it’s always there.”	“So for me I like need to like schedule out my entire day so it makes me happier to know I like used my day more by like making sure I’ve made use of the gym as well.”	“And that [GX Pass] just really help me so much more because I was just so used to structured practices and stuff like that in high school so then I really did struggle with like coming up with my own routine.”
		Goal Attainment & Purpose (n= 28)	“I can accomplish my goals that I want to while there so that’s why I like to choose Rec Sports.”	“So that’s something I definitely really like is that there is, it’s kind of like, you can tailor it [GX] to what you, to what experience you want to make it.”	“So it’s [Rec Sports/GX] helped me to kind of hone in you know on where I want to go with my career outside of just like it’s a way to keep healthy and stay fit and things like that.”
		Increased Involvement (n= 17)	“I think once those relationships that Rec Sports kind of introduced me to, it makes you want to be more engaged with it.”	“But also just finding out that I could work at Rec Sports and could take a class to get certified to work at any gym practically, um, made me realize that if you look for opportunities then you’ll find them.”	“And I think VT Rec Sports like does a really good job of like helping students make that transition from high school to college because definitely it’s a big transition in terms of like physical health.”
		Fun (n= 11)	“I’ve taken a couple of the, um, body pump classes and I really enjoy them.”	“I just really like the fact that it’s all to music, and that is probably you know the reason I actually exercise because it’s easier to do it, it feels	“Well like the Rec Sports, like specifically the volleyball and stuff like that, I know I just participated in soccer so that was fun...”

				like dancing, everybody likes to dance...”	
	Diversity & Inclusion (n= 10)	N/A		“I think for me, specifically with group fitness classes, I just like being able to see other people whose body types are similar to mine...”	“...somewhere you can go and feel included, that is diverse in the people who are teaching classes or the people that you see working the facilities...”
	Holistic Wellbeing (n= 10)	“I mean we’ve like we’ve talked about how Rec Sports essentially helps every single aspect of wellbeing.”		“...but I’m doing something for my body, which is clearing my mind, which is helping me to just take a break and to refocus for my rest of the things I need to do.”	“I feel like if you have good physical wellbeing, emotional wellbeing, and a sense of purpose, then you’re set up to be more successful in your career and be able to put more effort into whatever you may do so I feel like that can impact your financial wellbeing.”
	Convenient Access (n= 9)	“So yes, it is [VT Rec Sports] taking money but at the same time, it’s giving me a lot more, so it’s not as much of a negative impact.”		“So, like out of all the things you could buy ... for whatever \$85 it is, I think it’s [GX Pass] 100% worth it.”	N/A
Negative or Neutral Impact (n= 28)	Cost or Access as a Barrier (n= 18)	“Mmm...I mean I think you know we pay for the classes [GX]. That’s another payment...”		“So definitely the cost behind it [GX Pass] has impacted me because I have to be willing to invest in myself and invest in my, um, health, and my fitness.”	“Well, so I now the group pass, it costs money...”
	Exercise Overuse (n= 6)	“I know some people kind of use it as a punishment like ‘oh I overate so I got to go exercise it off or I hate the way I look, I hate what I’m going through right now so I’m going to almost like punish myself by doing tons of burpees and, um, running all the time”		N/A	“I think I for my emotional wellbeing I’ve worked really hard especially this year on not getting caught up on OMG I didn’t go to the gym 5 times this week like I planned like you know what, life gets in the way, sometimes it’s just not going to happen.”
	No Correlation of Wellbeing with Rec Sports (n= 4)	N/A		“Um, I’m personally a very drive, motivated person, so I don’t think VT Rec Sports has like had a huge impact on my sense of purpose because I don’t really have a lot fitness goals.”	“I personally have never really made a correlation between my financial wellbeing and using VT Rec Sports.”

Perceptions of VT Rec Sports (n= 210)	Positive Perceptions (n= 114)	Convenient Access (n= 51)	“I mean I use the facilities every single day. The fitness park, McComas, War, um, all that to work out every day.”	“It’s part of your tuition, that’s nice. So yeah even if you don’t get the group exercise pass, you just go to the gym and swipe in and workout and then go, and you don’t have to pay extra for it.”	“I’m not gonna pay to use another gym.”
		Wide and Positive Variety (n= 26)	“I feel like Rec Sports offers a wide variety of just different things that you can do, whether it be work out classes or just a program that they’re having...”	“...and it [Rec Sports] had a bunch of variety and stuff that I could kind of challenge myself with like oh, I could try this one day, try this the other day.”	“For me, I chose to purchase one [GX Pass] just I love variety I like that with the one pass I can do there’s so many different types of classes on the schedule.”
		Staff Behaviors and Training (n= 21)	“I think they do a really good job at making sure students know that there are resources that they can use and it doesn’t have to just be working out but in a bunch of different areas that they can do.”	“I think that’s definitely one of my favorite things is the instructors and they’re really really awesome people.”	“I would say that the group fitness instructors are very well trained.”
		Content with the Atmosphere (n= 19)	“Right now, I’m very satisfied with what is offered and available to me.”	“I don’t want to graduate because that means I can’t use the facility anymore. It’s going to be really sad. But that’s ok, we have two years to not think about that.”	“Yeah, I would say that VT Rec Sports does a good job.”
	Areas for Improvement (n= 96)	Limited Resources Leads to Frustration (n= 37)	“Um, I know being off campus it’s sometimes harder to get there [Rec Sports],”	“You have to show up early on free week because everyone shows up as well and they’re all trying to get into class, um, it’s definitely something I kind of felt bummed out...”	“It’s like the crowded gym I think is also something that can be really intimidating for a lot of people um and especially people who are new to fitness or maybe they’re not comfortable yet.”
		Program Improvements (n= 32)	“I think maybe they could offer more like not pop up classes but more just like random classes that anyone can go to or you can get invited by like filling out another survey or just by people like walking in the gym through the hallway.”	“Maybe, um, what I was just thinking about is if there was a, um, not really an exercise class but maybe an exercise class that was geared towards more emotional wellbeing.”	“I think people definitely don’t take advantage of what they have to offer. I know at least I don’t, I just go to the gym and I go to group exercise classes, and that’s it. I don’t really use any other resources.”
		Communication Barriers (n= 18)	N/A	“Um, I know that before this year, for me, I didn’t know a whole lot about events or programs at McComas or War...”	“So, you know being more specific of like benefits of [GX] class, what exactly to expect...”
		More Variety Needed (n= 9)	“I think if I don’t work out at like VT Rec Sports, it’s just because of uh just switch it up.”	“They need and I don’t know if they’ll be able to do this and they need more studios.”	“So like just like a different change of scenery can sometimes help ‘cause sometimes you can just be stuck on one thing and just really

					dreading it and if you like switch it up a little bit then it helps.”
Perceptions of Gallup/VT Wellbeing Definitions (n= 401)	Perceptions of community wellbeing (n= 38)	Additions or clarification needed for definitions (n= 22) <u>Common Subcategories:</u> Definition of engagement too broad (n=6) Support System (n=5)	“I feel like when I first heard community wellbeing I was thinking the whole community and not like in their definition it specifically says the engagement you have.”	N/A	“Yeah, and I feel like they didn’t really add like anything about it being diverse and inclusive. Um, I feel like that can add a whole ‘nother layer.”
		Similarities or agreements to definition (n= 16)	“We did mention engagement in our definitions and that’s like the cornerstone of their definition.”	N/A	“I think if you feel like you belong and you feel included, then you know you would feel like you are engaged in your community and you also probably have options to engage in your community.”
	Perceptions of emotional wellbeing (n= 61)	Similarities or agreements to definition (n= 39)	“[Out of all the other definitions of wellbeing that we kind of went through] one that makes the most sense to me I guess, in a way I think it really fits emotional wellbeing.”	“... but similar in the sense that you are coming along the themes of being aware and like, um, being resilient plays into your health of your mental state.”	“I think um all participants kind of touched on those things: psychological and mental health.”
		Additions or clarification needed for definitions (n= 22) <u>Common Subcategories:</u> Definition too broad (n=6) Emotional Awareness (n=6) Lacks piece on ‘sense of purpose’ (n=4) Optimism and Hope (n=4)	“I mean I feel like a lot more could be said. I don’t know just relates to one’s mental and psychological health ... like I don’t know for me this isn’t ... almost wouldn’t say it’s a definition it’s just like saying two things are related to one another.”	“...because you can’t really measure it with this definition. So, relates to one’s mental and psychological health, well, how do you measure someone’s mental health, how do you measure someone’s psychological health?”	“I think also, this kind of plays into sense of purpose, like a desire to want to succeed and do well.”
		Perceptions of financial wellbeing (n= 68)	Additions or clarification needed for definitions (n= 56) <u>Common Subcategories:</u> Missing component on financial comfort (n=14)	“Financial wellbeing is more about just effectively managing your economic life.”	“I think that ability to be resilient in an economic situation is something that would be different and I would add to this definition.”

		<p>Definition varies by individual (n=9)</p> <p>Having enough to enjoy life (n=8)</p> <p>More than effective management (n=8)</p> <p>Having enough to make ends meet (n=7)</p>			
		<p>Similarities or agreements to definition (n= 12)</p>	<p>“Well I mentioned managing, and it’s like you have what you have but you gotta figure out where it’s all gonna fall and how it’s gonna fit into your life.”</p>	<p>“I would say like, mine’s similar because if you have financial literacy, you probably can effectively manage your financial situation, just as a probable means.”</p>	<p>“We said, well I said um feeling comfortable and I feel if you effectively manage your economic life, you’ll feel, it puts you in a position to feel that way so.”</p>
	Perceptions of physical wellbeing (n= 82)	<p>Additions or clarification needed for definitions (n= 60)</p> <p><u>Common Subcategories:</u></p> <p>Need to know what the standards are (n=13)</p> <p>Too Vague (n=7)</p> <p>Mental health has a bigger impact on energy (n=6)</p> <p>Definition varies by individual (n=5)</p> <p>Feeling good about yourself (n=4)</p> <p>Being able to push and challenge your body (n=4)</p>	<p>“Yeah our [students’] definition definitely is more encompassing of variety, a wide variety of people and age groups, for sure.”</p>	<p>“I think using a term like good health, is not specific enough to, like you can’t, good health is really subjective to a person so, if defining something with good health it doesn’t really define it.”</p>	<p>“I wouldn’t necessarily include having enough energy to get things done on a daily basis because I think there are some people who might be in good health and get tired way earlier than people who aren’t in good health and can make it through the whole day.”</p>
		<p>Similarities or agreements to definition (n= 22)</p>	<p>“I think just that first part, that good health part, um was something that we all kind of really focused on.”</p>	<p>N/A</p>	<p>“I would think that like if you have all the physical measures um and you’re in like good health then you will have enough energy.”</p>
	Perceptions of social wellbeing (n= 74)	<p>Additions or clarification needed for definitions (n= 62)</p> <p><u>Common Subcategories:</u></p>	<p>“I think you could go further than just strong relationships and love in your life.”</p>	<p>“So I don’t think we can put a definition on social wellbeing just because this is subjective.”</p>	<p>“Um, I think you could specify love because I feel like a lot of people their first assumption is like a partner, but I mean you can have love with your siblings or your</p>

		<p>Community & Support System (n=12)</p> <p>Love needs to be defined (n=8)</p> <p>Social wellbeing is subjective (n=7)</p> <p>Social wellbeing is about balance (n=6)</p> <p>Social wellbeing not always about relationships (n=5)</p>			<p>parents or your friends. It doesn't have to be like a romantic thing."</p>
		<p>Similarities or agreements to definition (n= 12)</p>	<p>"I think what was similar was just the strong relationships part. I think all of us talked about having either that as a strong community or strong support group, but, strong relationships are what I think is really important and key in social wellbeing."</p>	<p>"So, what I said is that I think that most people do need at least one strong relationship or a little bit of love in their life, whether they want to admit it or not, um, everybody needs that so that's kind of where it's similar."</p>	<p>"Uh I mentioned having like relationships with family and friends, so I think that's very similar."</p>
	<p>Perceptions of 'sense of purpose' (n= 78)</p>	<p>Additions or clarification needed for definitions (n= 60)</p> <p><u>Common Subcategories:</u> Your "why" was grander than Gallup definition (n=12) Missing a Social Component (n=6) Preparedness for Future (n=6) Goal Attainment (n=6)</p>	<p>"And, when it says simply liking what, what you do every day, I don't think it's a matter of simplicity. Like it's, it's not simply what you like every day, its, its, its bigger than that."</p>	<p>"Um, I think that possibly this definition is missing a social component."</p>	<p>"It's very vague it's not necessarily working towards that sense of purpose or that goal."</p>
		<p>Similarities or agreements to definition (n= 18)</p>	<p>"I mean, I think we all definitely hit on the, the liking what you do in terms of like say your career or something."</p>	<p>"I would say mine was slightly similar in the sense that, um, kind of having a positive outlook and kind of being comfortable in what you're doing..."</p>	<p>"By well, simply liking what you do every day, I think if you like what you do then you have some um somewhat of a passion for that and also if you like it then you should be happy doing it."</p>