The Effect of an Integrated Physical Activity and Psychosocial Program on Perceptions of Social Support Among At-Risk Adolescent Girls

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Abstract

Rates of physical activity (PA) among adolescents are on a continuous descent, with girls appearing to be most susceptible to these declines. Furthermore, “at-risk” adolescent girls, whom may experience a number of negative preceding lifestyle conditions, may be exceptionally vulnerable to these declines. Girls United and on the Move (GUM) is a 9-week, integrated PA and psychosocial program aimed at enhancing PA and social-connectedness among “at-risk” adolescent girls. The overarching goal of this study was to explore the relationship between PA participation, motivation, enjoyment, and perceived social support among at-risk adolescent girls who took part in GUM. Participants (n=83) between the ages of 11-15 and classified as “at-risk” were recruited from five middle schools in British Columbia, Canada. Data was collected at baseline, 6-weeks, and 9-weeks post-intervention. A quasi-experimental mixed methods design was utilised. PA participation, PA enjoyment and motivation, social support, and the basic needs support provided from the program facilitators was measured utilising valid and reliable self-report measures. Semi-structured interviews (n=30) were undertaken to further explore the importance of social support. Regarding self-report data, paired samples t-test indicated no significant differences from baseline to post-intervention in PA participation (p=0.92), motivation (p=0.61), enjoyment (p=0.44), or perceived social support (p=0.81). However, additional analyses suggested that basic needs support from program facilitators was able to predict PA motivation ($F_{(2,80)} = 3.62, p \leq 0.05$) and enjoyment ($F_{(2,80)} = 4.53, p \leq 0.05$), above perceptions of social support. Regarding the semi-structured interviews, a thematic analysis revealed three themes, including: 1) **PA barriers and challenges specific to at-risk adolescent girls**, 2) **Role of social support as an enabler of PA** which acknowledged the importance of girls-only PA groups, and the role peers and program leaders play in facilitating feelings of enjoyment.
and motivation during PA, and 3) *Perceptions of essential components for successful programming with at-risk girls* which discussed the specific program pieces such as the conversations around sensitive topics and opportunities to try new activities. This study indicated that an integrated approach, where elements of social support are fostered, provides promising outcomes for future PA programs catered towards “at-risk” adolescent girls.
Lay Summary

This research aimed to explore the relationship between physical activity (PA) and perceptions of social support among “at-risk” adolescent girls during a 9-week program, referred to as the Girls United and on the Move (GUM) Program. GUM was delivered weekly within five schools in the Okanagan region of British Columbia, Canada. GUM incorporated a PA (i.e., rock-climbing, yoga, etc.) and a mental well-being component (i.e., discussion of sensitive topics, confidential journaling, etc.) and was facilitated by a trained researcher and registered social worker. Changes in PA and perceived social support were evaluated at the beginning (week-1), mid-point (week-6), and end of the program (week-9). Results indicated that peer and health-program leaders play a vital role in both the enjoyment and motivation of PA. Notably, GUM highlighted that introducing an integrated-approach to the lifestyles of “at-risk” adolescent girls offers promising outcomes for enhancing both physical and mental health.
Preface

Ethical approval for this project was obtained from the Behavioural Human Research Ethics Board at the University of British Columbia (H17-01540) and School District 23 (430-2017-00144).
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List of Abbreviations

CASSS: Child and Adolescent Social Support Scale
CHD: Coronary Heart Disease
COEFS: Central Okanagan Elizabeth Fry Society
GJWHF: Girls Just Wanna Have Fun
GoM: Girls on the Move
GUM: Girls United and on the Move
IPB: Internalised Problem Behaviour
LCQ: Learning Climate Questionnaire
MVPA: Moderate-Vigorous Physical Activity
PA: Physical Activity
PAQ-C: Physical Activity Questionnaire for Children
PE: Physical Education
SDT: Self-Determination Theory
SES: Socio-Economic Status
SNAP: Scouting Nutrition and Activity Program
Glossary of Terms

Adolescence: a critical time of life between the age of 10 – 19 years when individuals face changes in independence, create new relationships, develop social skills, and learn life-lasting behaviours. It is a time when one can be highly influential and it can also be one of the most challenging periods of life (WHO, 2019).

At-Risk: the likelihood of an individual adopting future problem behaviours that have future long-term health costs as a result of being exposed to a number of negative preceding lifestyle conditions (Resnick & Burt, 1996). It is characterised by a number of both psychological and psychosocial conditions, and is a prevalent characteristic among those suffering with depression and/or low self-esteem (Lubans, Plotnikoff, & Lubans, 2012).

Enjoyment: a positive affective state that reflects feelings of pleasure, liking, and fun. This trait may be associated with physical activity, especially among youth (Motl et al., 2001)

Health: Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO, 2019).

Motivation: perceived incentives or reasons for engaging in a specific behaviour. It is able to specifically relate to physical activity initiation and maintenance, and assumes that all individuals are naturally motivated by distinct personal needs (Litt, Iannotti, & Wang, 2011).

Physical Activity: any bodily movement produced by skeletal muscles that requires energy expenditure (WHO, 2019).

Self-Efficacy: relates to the beliefs or judgements that an individual has in their own ability to perform or complete a series of given tasks or situations, and has been deemed a consistent correlate of PA among adolescents (Bandura, 1977; McGeown et al., 2014).
Self-Esteem: refers to a variety of concepts, including all the positive and negative assessments of how an individual views themselves. Usually formed by a combination of social comparison and feedback received from others regarding positive or negative aspects related to personal qualities (Dobrescu, 2013).

Social Isolation: a lack of quantity and quality of social relationships that an individual encompasses, as well as having difficulty maintaining these relationships. Specifically, this can have detrimental effects regarding the development of adolescents (dos Santos, Hardman, Barros, Santos, & de Barros, 2015).

Social Support: an intentional act provided by a variety of social groups which help to assist an individual in adopting or maintaining a specified behaviour. It can be administered in a number of forms, including emotional, instrumental, appraisal, psychological and/or informational (Beets, Vogel, Forlaw, Pitetti, & Cardinal, 2006; Mendonça & Farias Júnior, 2015).

Well-Being: involves the presence of positive affective states, satisfaction with life, fulfillment and positive functioning, and the absence of negative emotions; includes feeling good and judging life positively. Integrates both mental and physical health, resulting in a holistic approach to disease prevention and health promotion (CDC, 2018).
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Chapter 1 Introduction

1.1 Layout of Thesis

This thesis is divided into six chapters. Chapter one includes a brief introduction to the purpose and significance of the current study. Chapter two provides an extensive review of the literature by illustrating the importance of physical activity (PA) among adolescent girls, focusing primarily on the relationship between PA and perceived social support. Chapter three outlines the methodology, elucidating the project design, as well as the study population included in the 9-week intervention protocol. Chapters four and five discuss the intervention outcomes. The sixth and final chapter provides an overall summary of the study, highlights the strengths and limitations, while also providing insight concerning best practice recommendations and future research.

1.2 Overview

Physical inactivity is a world-wide issue of concern among a vast majority of populations (Brenner, 2014; Gopinath, Hardy, Baur, Burlutsky, & Mitchell, 2012). Although the consequences of a sedentary lifestyle were once thought to only be apparent later in life, the repercussions are now developing at a much younger age (Aktürk, Büyükavcı, & Aktürk, 2018). The incidence of chronic diseases and mental illnesses are now prevailing among children and adolescents (Ogden, Carroll, Lawman, & et al., 2016; Schneider & Cooper, 2011). Of particular concern, adolescents appear to be on a rate of steady decline in regard to levels of PA, thought to be a result of a number of barriers specific to this population including but not limited to factors such as lack of enjoyment, motivation, social isolation, and low self-efficacy (Schneider & Cooper, 2011). Adolescent girls have emerged to be exceptionally vulnerable to this decline in
PA participation as they begin to undergo physical maturations, alterations in personal interests, as well as being faced with changes in their social relationships (Coleman, Cox, & Roker, 2008; Verloigne, Cardon, De Craemer, D'Haese, & De Bourdeaudhuij, 2016). A specific subgroup of this population defined as “at-risk” may be particularly vulnerable to these declining levels of PA participation, where at-risk is characterised by a variety of psychological, psychosocial, and socio-economic conditions, and individuals are known to have a higher prevalence of depression and low self-esteem when compared to the general population (Lubans et al., 2012). An at-risk adolescent may be defined as such as a result of a number of negative preceding lifestyle conditions, which may further enhance the likelihood of adopting future problem behaviours that consequently have more serious long-term health costs (Resnick & Burt, 1996). Disadvantaged lifestyle factors such as low socio-economic status (SES), history of abuse or sexual exploitation, and social isolation are all predisposing factors which may lead girls to engage in negatively encouraging lifestyle behaviors, inclusive of low levels of PA engagement (van den Berg, Mond, Eisenberg, Ackard, & Neumark-Sztainer, 2010).

The Canadian Physical Activity Guidelines recommend that adolescents engage in 60 minutes of moderate-vigorous PA (MVPA) each day, in addition to participating in bone-strengthening activities on at least three days each week (CSEP, 2017; WHO, 2018). There is a clear dose-response relationship with regard to PA, where heightened activity engagement brings forth increased health benefits. Additionally, PA involvement in adolescence helps contribute to the adoption of healthy lifestyle behaviours in adulthood, and further decreases the risk of acquiring chronic diseases, various types of cancers, as well as reduces all-cause mortality rates during later stages in life (Hallal, Victora, Azevedo, & Wells, 2006; McNamee, Timken, Coste, Tompkins, & Peterson, 2016). Although there is numerous evidence to support that these
guidelines deliver adequate benefits to the adolescent population, the recommended levels are seldom achieved by this population (Colley et al., 2011; Owen, Curry, Kerner, Newson, & Fairclough, 2017; StatsCanada, 2017; WHO, 2018). Specifically, only 33% of adolescent girls report to engage in regular PA, with only 3% meeting the recommended Canadian PA guidelines, and this number is steadily declining (StatsCanada, 2017; Thompson, 2011).

One strategy worth utilising is the introduction to community-based PA programming designed specifically for the needs of at-risk girls. Although it is well known that PA yields positive alterations in body composition, PA also aids in the development of fundamental movement patterns during youth, provides improvements in bone health, decreases cholesterol levels, and helps to control insulin levels (Carlsson, Ludvigsson, Huus, & Faresjö, 2016; Janz, Thomas, & Williams, 2015; Kopcakova, Veselska, Geckova, van Dijk, & Reijneveld, 2014; McAuley et al., 2002). It is also associated with the prevention and management of numerous chronic diseases such as diabetes or cardiovascular diseases, and some cancers which typically occur during the later stages of adulthood (McNamee et al., 2016). The benefits of a regular PA program directed towards adolescent girls extend further than just enhanced physical health. It also has the ability to impact a number of psychological self-perceptions, including heightened self-esteem, self-efficacy, and social cohesion, all of which are factors that contribute to the diminishing rate of PA participation among adolescent girls (Ahn & Fedewa, 2011; Kantanista, Bronikowski, Laudańska-Krzemińska, Król-Zielińska, & Osiński, 2017; Laird, Fawkner, Kelly, McNamee, & Niven, 2016). Of particular importance, PA has the ability to encourage the opportunity for social interaction experiences among this population, which is an extremely valuable factor for at-risk adolescent girls since they often suffer from amplified levels of
loneliness, depression, and as a result may lead to engagement in other high-risk behaviours such as substance abuse (Laird et al., 2016; Lubans et al., 2012; Trzesniewski et al., 2006).

Adolescent girls allocate high value to their peer or social groups, making these groups an important factor in influencing health-related behaviours (Laird et al., 2016). PA interventions which have focused on the combined effects of encouragement from role models or peers, have yielded particularly promising outcomes. These various aspects of social support yielded from different sources have the potential to positively influence a number of health-related behaviours (Laird et al., 2016). In particular, at-risk adolescent girls may experience heightened benefits from an effective support system as this subgroup suffers from magnified levels of debilitative behaviour patterns, making a stable support system highly sought after (Trzesniewski et al., 2006). Especially noteworthy is the integration of the Self-Determination Theory (SDT) theoretical framework in the design of PA interventions for adolescents, as this framework focuses on understanding how factors relating to autonomy, competence, and relatedness may help to increase intrinsic motivation and engagement in PA, especially among underserved youth (Lawman, Wilson, Van Horn, Resnicow, & Kitzman-Ulrich, 2011; Mitchell, Gray, & Inchley, 2015). As such, at-risk girls may benefit from encouragement in the form of compassion and support; therefore, delivery of a PA program tailored specifically to overcome psychosocial barriers and to help meet the needs and concerns of “at-risk” adolescent girls is highly indispensable. To address these issues, Girls United and on the Move (GUM), an integrated PA and psychosocial program, was developed.
1.3 Purpose and Objectives

The purpose of this study was to explore the relationship between a unique integrated intervention focused on PA and a variety of psychosocial factors relevant to at-risk adolescent girls. The specific objectives of this study included:

1) Implement the 9-week integrated (psychosocial and PA) GUM intervention aimed at engaging and increasing PA among “at-risk” adolescent girls.

2) Evaluate the relationship between enhanced levels of PA and a constructive social support system.

3) Explore the perceived role of importance provided by the program facilitators, as well as discuss participants’ perceptions of the program components and recommendations for future program delivery.

1.4 Significance and Contribution to Research Literature

Although there are a number of PA interventions that currently exist for adolescent girls, this program is deemed to be significant as it was designed to target a specific subset of at-risk adolescent girls. The design of the GUM program may be easily conveyed to real-world settings involving at-risk youth, making it easily replicable and adaptable based on the needs of these particular participants. The program encompasses a practical psychosocial component in order to help target the underlying issues and psychosocial problems commonly faced by adolescent girls, to help further aid in the enhancement of PA participation. Additionally, by administering a sufficient social support dimension governed by the program facilitators on the project, insights into the potential role that these mentors may have in the adoption of PA behaviours will make a significant contribution to the current literature.
Chapter 2 Review of Literature

2.1 Overview

PA engagement contributes to the health and well-being of various populations worldwide (Bauman, 2004; Camacho-Miñano, LaVoi, & Barr-Anderson, 2011). Despite countless attempts at implementation of health promotion programs with the aim to increase PA, physical inactivity remains a major global issue (Brenner, 2014; Gopinath et al., 2012; Springer, Kelder, & Hoelscher, 2006). In fact, insufficient PA engagement is responsible for approximately 6-10% of deaths from non-communicable diseases (e.g., cardiovascular disease, cancer, diabetes, etc.), making it one of the leading risk factors of death worldwide (Zelle et al., 2017). This physical inactivity pandemic continues to be a problem across the age spectrum, however in recent decades this trend has progressed into early childhood and adolescence (Ogden et al., 2016; Schneider & Cooper, 2011).

More than 80% of the worldwide adolescent population is reportedly physically inactive (WHO, 2018). This issue is particularly concerning as these unhealthy behaviours are transferred forward into adulthood, which ultimately leads to health concerns related to cardiovascular diseases, poor mental health, diabetes, and obesity (Camacho-Miñano et al., 2011; McDavid, Cox, & Amorose, 2012; McNamee et al., 2016; Singh, Mulder, Twisk, Van Mechelen, & Chinapaw, 2008). Low PA levels may also further predispose individuals to difficulties in medical treatment of various health concerns, as well as increased healthcare cost needs. Children tend to become less physically active as they move into adolescence, and adolescent girls (ages 11-15) have been shown to engage in more sedentary behaviours and be less active than their male counterparts (Gruno, Gibbons, Condie, & Wilton, 2018; Schneider & Cooper, 2011; Springer et al., 2006; Verloigne et al., 2016). This gender-specific decline may be due to a
variety of factors including, but not limited to, issues revolving around body image, lack of confidence, and lack of social support (Coleman et al., 2008). By understanding the variables associated with successful PA interventions, researchers and practitioners will be able to further develop and refine PA programs to address the needs and concerns of adolescent girls in regard to PA participation.

2.2 Benefits of PA

2.2.1 Physical Benefits

Regular moderate intensity PA (e.g., cycling, swimming, sport participation, etc.) has been shown to provide a significant number of health benefits for adolescents including a reduction in the risk of acquiring various non-communicable diseases and cancers, such as diabetes, cardiovascular disease, colon cancer, and breast cancer (McAuley et al., 2002; McNamee et al., 2016; Prentice et al., 2004; Springer et al., 2006). For instance, a study lead by Sese et al., (2012) acknowledged the importance of regular PA and other healthful behaviours with regard to insulin regulation among adolescents ($n=3546$), emphasizing that PA has the ability to increase insulin sensitivity and discourage the accumulation of excessive body fat. This is just one study that helps to confirm the importance of stressing how imperative PA is in the prevention of Type 2 diabetes, and highlights its ability to control levels of insulin (Sese et al., 2012). In addition, lower blood pressure and lower levels of blood lipids are evident in adolescents that are physically active when compared to their inactive counterparts (Carlsson et al., 2016). In a longitudinal study performed by Saakslahti and colleagues (2004), which analyzed the relationship between PA and coronary heart disease (CHD) risk factors among 155 children, it was discovered that the amount of high-intensity playing was negatively correlated
with CHD risk factors, as well as total cholesterol concentration (Saakslahti et al., 2004). This is largely beneficial for issues pertaining to poor health that may arise at later points along the lifespan.

While considering all these physical benefits, PA also has a role in developing a solid foundation of movement patterning among the early stages of life. It is important for children and adolescents to adopt and learn numerous physical literacies through actions such as sport, or just general play, as this enhances motor skill development (Carlsson et al., 2016). PA also largely impacts bone health and function, improves cardiorespiratory and muscular fitness, and is fundamental to enhancing energy expenditure and controlling weight (Carlsson et al., 2016; Janz et al., 2015). Adolescence is a critical time period in the development of adequate peak bone mass, which makes it an important feature for prevention of osteoporosis later in life (Gabel, Macdonald, Nettlefold, & McKay, 2017; Janz et al., 2015; Tan et al., 2014). In fact, hip and other bone fractures among older adults are a commonly reported occurrence within hospitals. Numerous studies suggest that even small increases in bone strength during early stages of life can significantly prevent or delay the risk of osteoporotic fractures later in life (Brama, TeKoppele, Bank, Barneveld, & van Weeren, 2002; Kessler, Glaser, Tittel, Reiser, & Imhoff, 2008), in addition to lessening the burden of these healthcare costs, especially more so among women than men (Cook et al., 2011; Janz et al., 2015). If focus can be brought to enhancing levels of PA in adolescent girls, then suitable levels of physical fitness, maintenance of a healthy body weight, and improvements in bone health may also emerge later in the lifespan.

2.2.2 Psychological Benefits

Not only does regular PA have the ability to impact a vast realm of physical attributes, but its benefits also extend to positively influence mental health and well-being. Increased levels
of PA have been shown to decrease anxiety, depression, psychological distress, and emotional disturbance, whilst also increasing perceptions of themselves, alluding to greater self-efficacy, self-esteem, and enhancing social circles among both adults and adolescents (Ahn & Fedewa, 2011; Kantanista, Bronikowski, et al., 2017). As outlined in a meta-analysis by Ahn & Fedewa (2011), a number of PA studies that have focused on the combination of high-intensity aerobic and strength training activities have been shown to significantly reduce mental disturbances among adolescents, as well as indicate that PA levels have a significantly negative relationship with depression, and a significantly positive relationship with perceived self-concept (Ahn & Fedewa, 2011). One such study performed by Bonhauser and colleagues (2005) examined the relationship between PA and a number of mental health variables in 198 adolescents at the age of ~15 years (Bonhauser et al., 2005). The intervention yielded significant outcomes with improved PA adherence being associated with enhanced mental health scores, including depression, anxiety, and self-esteem scores (Bonhauser et al., 2005). In fact, individuals’ perceptions of their physical-self have been examined as mediators in the relationship between PA and various psychological outcomes (McNamee et al., 2016).

Low levels of self-esteem may be combatted through proper PA adherence due to the positive effects that PA has on an individuals’ competence, social interactions, and autonomy (Ranøyen, Stenseng, Klöckner, Wallander, & Jozefiak, 2015). Self-esteem refers to a variety of concepts, including all the positive and negative assessments of how an individual views themselves, and how others view them as well as a result of these assessments (Dobrescu, 2013). It is usually formed by a combination of social comparison and feedback received from others regarding positive or negative aspects related to personal qualities. While changes in self-esteem may be evident with pubertal changes, PA participation may stabilize and enhance this individual
self-worth during adolescent years; and these perceptions of ones’ physical self may be sensitive to variations in activity levels as well (Haugen, Säfvenbom, & Ommundsen, 2011). This may in part be due to the fact that PA participation is beneficial for enhancing perceptions of ones’ physical self, such as perceived physical appearance or physical competence (Haugen et al., 2011).

Not only does enhanced PA have the ability to positively impact levels of self-esteem and vice versa, it additionally has the potential to influence self-efficacy. Self-efficacy relates to the beliefs or judgements that an individual has in their own ability to perform or complete a series of given tasks or situations, and has been deemed a consistent correlate of PA among adolescents (Bandura, 1977; McGeown et al., 2014; Motl et al., 2005). It has been shown that adolescents who have higher levels of self-efficacy are more likely to engage in difficult or challenging tasks; it also has a close relationship with motivation in that self-efficacy is generally associated with increased drive to engage in behaviours associated with high self-belief (McGeown et al., 2014). In general, self-efficacy is typically quite low among adolescent girls, but has been shown to be significantly higher in those who are physically active (Ahn & Fedewa, 2011; Dishman et al., 2004). Self-efficacy is a primary correlate of adolescent girls’ engagement in levels of MVPA (Dishman et al., 2004), therefore making it an important variable to consider in the delivery of successful PA programs. In a study performed by Dishman and colleagues (2004), which examined a number of psychosocial variables and PA in 2,087 adolescent girls, a direct relationship was found between increased self-efficacy and increased PA. These researchers suggested that targeting adolescent girls’ self-efficacy levels as a mediating variable in exercise interventions could be used to enhance their total daily PA minutes (Dishman et al., 2004; Katanista, Bronikowski, et al., 2017; Schneider & Cooper, 2011). Therefore, self-efficacy is an
especially important characteristic because it can fundamentally determine positive behaviour changes, such as the desired outcome of enhanced PA following many exercise interventions (Kantanista, Bronikowski, et al., 2017). The role of self-esteem and self-efficacy is crucial among adolescents, with ample evidence supporting that individuals with higher levels of self-esteem and self-efficacy achieved through PA have the ability to persist in the face of failure, further emphasizing the importance of adopting a physically active lifestyle, and making it especially beneficial for at-risk adolescent girls (Gibbons, Ebbeck, Gruno, & Battey, 2018; Trzesniewski et al., 2006).

Another relationship that is important to consider is the connection between leading a physically active lifestyle and its ability to reinforce better functioning within social dimensions. A link has been shown between sporting activity participation and the development of social reinforcements and social desirability (Gopinath et al., 2012). In contrast, adolescents who are physically inactive report feelings of increased loneliness and are more likely to be shy (Gopinath et al., 2012). Gopinath et al., (2012) found a direct association between social-connectedness and levels of PA among adolescents, where adolescents who scored lower in a number of social domains, which included extended engagement in television watching or video game usage, were reportedly less active (Gopinath et al., 2012). In turn, having a strong peer network that collectively participates in PA may also serve as encouragement to engage in PA behaviours among individuals, and provide support in the uprising of other healthful behaviours in comparison to the alternative predispositions yielded by socially isolated, sedentary behaviours (Martins, Marques, Sarmento, & Carreiro da Costa, 2015). As outlined by Cribb & Haase (2016), it was apparent that adolescent girls in particular who had a greater awareness of body thinness ideals demonstrated lower levels of self-esteem; but that these effects could be
reduced with enhanced positive social support from peers (Cribb & Haase, 2016). This is especially impactful as it outlines the importance of a reliable social support group during adolescence.

In summary, regular PA has the ability to influence a vast realm of psychological variables, and a PA program that appeals to adolescents may offer a promising approach to reducing a large range of problem behaviours among them, while also promoting their social inclusion (Coleman et al., 2008). Despite all these potential benefits associated with regular PA engagement, there continues to be a declining trend for PA participation among adolescent girls, particularly those categorised as at-risk (Lubans et al., 2012; McNamee et al., 2016).

2.3 Barriers to PA

2.3.1 Barriers Among the Adolescent Population

Although there are numerous benefits that come with regular PA for adolescents, questions are raised as to why PA participation continues to be on the decline. As with any population, there are a variety of barriers that prevent sufficient engagement of PA. Perceived barriers to PA among the adolescent population may include; low energy levels and motivation, inaccessibility to facilities, lack of transportation, time constraints, psychosocial factors, body-centered issues, negative physical education (PE) class experiences, and social factors and/or advancing technology which involve sedentary behaviours (Ahn & Fedewa, 2011; Coleman et al., 2008; O'Dea, 2003; Valencia-Peris, Devis-Devis, & Peiro-Velert, 2016; Verloigne et al., 2016). Although these barriers may manifest among all genders of adolescents, girls are most susceptible to developing psychological impairments, leading to even lower levels of PA compared to their male counterparts (Kantanista, Król-Zielińska, Borowiec, & Osiński, 2017). It
should be noted that the term ‘barrier’ relative to PA refers to something immaterial that impedes participation in PA. Many modern-day advances and conveniences have made people’s lives much easier, but in turn have also reduced opportunities to engage in PA. Although the term barrier may be interchangeable with determinants in regard to PA participation, both considerably effect levels of PA participation.

2.3.2 Barriers and Challenges Among Adolescent Girls

As outlined above, specific to adolescent girls, self-esteem, self-efficacy, body image, and social isolation are deemed to be psychological factors that raise major concern in relation to insufficient levels of PA engagement (Kantanista, Bronikowski, et al., 2017). These aforementioned barriers have the ability to predict an individuals’ lifestyle behaviours as they may act as a cognitive restriction to PA participation, and are influenced by both internal and personal perceptions (Herazo-Beltrán et al., 2017). Firstly, insufficient levels of self-esteem are considered a barrier specific to adolescent girls as it relates to the way an individual portrays themselves and how they perceive others portray them (Dobrescu, 2013), where a variety of studies have provided evidence stating that self-esteem substantially decreases during adolescence due to drastic changes in body composition, particularly more dramatically among females than males (Cribb & Haase, 2016; Lindwall, Asci, & Crocker, 2014). If an adolescent girl views themselves with having low self-esteem, they may perceive more personal barriers to PA and sport participation than a girl who does not have low self-esteem. In turn, by enhancing their self-esteem it may lead to reductions in their perceptions of barriers and subsequently increase their levels of PA (Kincye, Amir, Gillespie, Carleton, & Theaker, 1993). Self-esteem appears to go hand-in-hand with levels of PA, and therefore may consequentially decline from physical inactivity (Dishman et al., 2004). In addition, Lindwall and colleagues (2014)
demonstrated that adolescent girls physical self-perceptions, inclusive of self-esteem, become more negative with increasing age; and that there appears to be a strong relationship between reduced levels of global self-esteem and physical self-perceptions, especially with regard to body attractiveness (Lindwall et al., 2014). Adolescent girls with greater internalization of media ideals portray a predicted drive for body thinness and higher levels of bodily dissatisfactions, subsequently lowering levels of self-esteem (Cribb & Haase, 2016). The more that images are internalised within an individual, the greater the likelihood of social comparison despite the unrealistically attainable body shape; and given the association with bodily dissatisfaction, internalization is arguably linked to have a direct impact on self-esteem (Cribb & Haase, 2016). This evidence highlights the disparity that exists between levels of self-esteem and PA behaviour, where low self-esteem creates implications for PA engagement, and these low levels of PA only further expedite lower levels of self-esteem. Further, low levels of self-esteem are shown to be especially prevalent among at-risk adolescent girls, implying negative consequences on health behaviours, inclusive of level of PA engagement (Lindwall et al., 2014; Manley et al., 2014; Trzesniewski et al., 2006).

Additionally, adolescent girls have been shown to demonstrate substantially low levels of self-efficacy (Ahn & Fedewa, 2011) which is another common barrier to PA participation faced by this population. Because self-efficacy refers to the belief that one has in their own ability to achieve a desired outcome (Bandura, 1977; McGeown et al., 2014), an individual who has a strong sense of self-efficacy permits them to efficiently use their personal skills when faced with situational difficulties (Bandura, 1977; Dwyer et al., 2012). Therefore, having a strong sense of self-efficacy to overcome perceived barriers to PA has been considered to be a significant predictor of PA participation among adolescents (Dwyer et al., 2012). In turn, low levels of self-
esteem create an issue in regard to the physical health and well-being of adolescent girls since low levels of self-efficacy lead to decreased PA engagement, which in turn leads these low levels of PA to further diminish already low levels of self-efficacy, forming a negative affiliation between one another. As explained by Manley et al. (2014), adolescent girls who do not engage in sufficient levels of PA have proven to have lower levels of self-efficacy, creating a negative relationship involving increased engagement in sedentary behaviours. Interestingly, those with low self-efficacy are more likely to have negative views of their environment and to perceive fewer opportunities for PA in their schooling environment (Plotnikoff, Gebel, & Lubans, 2014). This further broadens the gap between PA engagement and levels of self-efficacy, posing low levels of self-efficacy to be a major barrier in regard to PA adoption among adolescent girls. Physical self-efficacy has been reported to be one of the most influential components of PA engagement, and has the potential to positively influence behaviour change (Manley et al., 2014). As proposed by Bandura (1977), an individuals’ persistence and efforts to adopt a specific behaviour are closely related to their level of perceived self-efficacy. Improving self-efficacy among adolescent girls, in combination with enhancing external validations about their bodily satisfactions, may be crucial in promoting life-long adherence to PA (Lee, Kuo, Fanaw, Perng, & Juang, 2012).

Self-perceptions of body image may also contribute a major role in determining the level of engagement of PA among adolescent girls. By feeling uncomfortable in front of others, particularly boys or peers that girls are not close with, this acts as an additional obstacle to PA participation. Feelings of discomfort stemming from ones’ physical appearance during PA (i.e., sweating, wearing athletic sports gear, weight-centered issues, etc.) while being surrounded by others is highlighted as a barrier to PA, and linked to body image concerns among adolescent
girls (Martins et al., 2015). Decreased self-perceptions of body image and body dissatisfaction has been shown to be most prevalent among adolescent girls, who show exceedingly higher levels of dissatisfaction when compared to boys, especially among girls with a more developed pubertal status (Kantanista, Król-Zielińska, et al., 2017; Kopcakova et al., 2014). Research shows that approximately 60% of adolescent girls report some type of desire to alter their body shape or size, issuing it to be a major concern as a potential risk factor for the onset of eating disorders (Lawler & Nixon, 2011). Lawler and colleagues (2011) demonstrate that a variety of socio-cultural models help to explain the development of body image dissatisfaction, and that idealistic forms of female beauty associate body thinness to be a central attribute to physical attractiveness (Lawler & Nixon, 2011). These socio-cultural models highlight that society promotes the importance of self-image, along with the desirability of physical attractiveness among both girls and boys (Lawler & Nixon, 2011). To further emphasise the correlation between body image and PA engagement amidst adolescent girls, Neumark-Sztainer et al., (2006) showed that among 2516 adolescents, low levels of body satisfaction (e.g., issues concerning body image) were associated with more health-compromising behaviours such as binge eating and physical inactivity (Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006). Many individuals who suffer from eating disorders are advised to abstain from PA, aligning with previous thoughts on the risky relationship between excessive PA and eating disorders. However, recent research has suggested that by incorporating a healthy amount of PA into an individuals’ everyday life, improvements may be seen among their physical self-perceptions, decrease levels of anxiety, provide enjoyment, and aid in improving any supplementary eating-disorders associated with body-thinness ideals (Kantanista, Bronikowski, et al., 2017; Quesnel et al., 2017).
Additionally, socially isolated adolescents are at increased risk of low levels of PA participation. Social isolation, or loneliness, can be described as a lack of quantity and quality of social relationships that an individual encompasses, as well as having difficulty maintaining these relationships; this can have a large detrimental effect the lifestyles of adolescents (dos Santos et al., 2015). In fact, dos Santos et al., (2015) indicated that social isolation was one of the main barriers to lack of engagement in PE classes among adolescents (dos Santos et al., 2015); and conversely, adolescents who were actively involved in PA or sports teams displayed lower levels of social isolation than those who were not involved. This unfavorable trait has been associated with numerous physical and psychological health problems, including issues with cardiovascular health, obesity, poor sleeping patterns, and depression (Cruz et al., 2016; Drake, Sladek, & Doane, 2015; Steptoe & Kivimaki, 2012; Yang et al., 2016). As outlined by Hall-Lande et al. (2007), the period of adolescence encompasses amplified exposure to psychological vulnerability, where the factors associated with social isolation become extremely evident (Hall-Lande, Eisenberg, Christenson, & Neumark-Sztainer, 2007). This is because adolescence is considered to be a time of extensive exposure to stressors, especially during periods of change in social contexts, such as switching between schools, where heightened awareness is brought to the psychosocial stress related to loneliness (Cruz et al., 2016; Drake et al., 2015). Of utmost importance, social isolation is considered to be one of the largest barriers to PA among adolescents (dos Santos et al., 2015). Adolescent girls may exclusively suffer from social isolation more so than boys. The findings conveyed by dos Santos and colleagues (2015) found that adolescent girls reported significantly higher feelings of loneliness and reported having fewer friends when compared to boys. Lack of participation in organised sport or PA programs
has also been found to play a significant role in the elevated levels of feelings of loneliness, particularly among girls (dos Santos et al., 2015).

As mentioned above, there is reported evidence indicating that socially isolated adolescents are more likely to adopt unhealthy lifestyle behaviours, such as a sedentary lifestyle and reduced PA levels; thus, increasing the need for social integration in this population (dos Santos et al., 2015; Gür, Yurt, Bulduk, & Atagöz, 2015; Sanders, Field, Diego, & Kaplan, 2000). In a study performed by Gür et al., (2015) findings showed that many adolescents who were sedentary as a result of excessive internet or technology-use, spent very minimal time engaging in PA or street-activities with friends or family members (Gür et al., 2015). By encouraging both physical and social activities among adolescents outside of educational hours, it is suggested that this could limit their screen-time, and in turn reduce their daily sedentary hours (Gür et al., 2015).

Although many of these psychological issues prove to be quite prevalent among adolescent girls in particular, heightened attention should be brought to adolescent girls who are classified as “at-risk”, as they may arguably suffer more as a result of enhanced hardships throughout their pre-mature lifespan.

### 2.3.3 Barriers and Challenges Among At-Risk Adolescent Girls

In addition to experiencing all the potential barriers that the general population of adolescent girls are exposed to (i.e., lowered levels of self-esteem, self-efficacy, body image, and risk of increased social isolation), the challenges and barriers associated with PA participation may be magnified for “at-risk” adolescents. When defining this population, it should be noted that an “at-risk” adolescent can be identified as one who is exposed a number of negative preceding conditions, which may create vulnerabilities in combination with the presence of
specific early-life negative behavioural traits or experiences, likely to further lead to future problem behaviours that consequently have more serious long-term health consequences (Lubans et al., 2012; Resnick & Burt, 1996). Importantly, disaffection is found to be prevalent among at-risk youth, which involves disengagement from mainstream activities, disruptive or antisocial behaviours, and/or involvement in criminal activities (Lubans et al., 2012). Disaffection has been found to lead to social isolation and may contribute to the lack of engagement in PA programs by at-risk adolescents (Lubans et al., 2012). Attention should be drawn to at-risk adolescent girls in particular with regards to PA engagement, as PA interventions have shown to be less successful among girls than boys, especially among those from at-risk backgrounds (Lawman et al., 2011).

Internalised problem behaviour (IPB) is more common among at-risk adolescent girls than boys; this refers to an individuals’ ability to direct their emotional responses inwards towards oneself, and can therefore explicitly influence levels of depression or anxiety (Bask, 2015), making at-risk adolescent girls more susceptible to the condition. Due to the fact that differences in the development of IPBs among genders occurs during adolescence, this indicates that it may result as an outcome of socialization-related aspects of the self (Bask, 2015). Self-esteem in particular is a major psychological variable that suffers when girls are exposed to substance abuse, delinquent behaviours, depression, dysfunction in life, and aggressive behaviours (Dobrescu, 2013), all characteristics frequently seen among at-risk adolescent girls. Additionally, family type may play a role in determining the occurrence of IPB, where exposures to harsh discipline and marital conflicts may enhance the likelihood of developing IPB (Bask, 2015). Age-specific and uncontrollable life events such as parental divorce may also contribute to the increased risk of developing IPB since girls are more prone to internalise their emotional issues (Bask, 2015). Not only does internalising emotional issues have the ability to negatively
impact PA engagement, but an adolescents’ upbringing and familial SES may also play a
significant role in their levels of PA as well.

SES has the ability to directly influence a number of factors relating to PA engagement. Adolescents from low socio-economic backgrounds have been shown to lack access to PA and sporting facilities, have less value in their attitudes directed towards leisure PA involvement, show less involvement in organised sport activities, as well as have lower perceptions of neighbourhood aesthetics or street connectivity (Morgan, 2018; Mota, Santos, Pereira, Teixeira, & Santos, 2011). Furthermore, SES can also influence adolescent girls’ self-esteem, where important markers are able to validate their levels of self-esteem, such as mobile phones, family vacations, or other physical items that are considered important to this age group (Dobrescu, 2013). Lower SES is also more frequently associated with delinquent behaviours and heightened levels of depression when compared to those with a higher SES (Bask, 2015). Additionally, a family’s economic hardships may place adolescents in stressful situations, where living conditions may cause enhanced emotional distress (e.g., living in overcrowded housing or insecure neighbourhoods) (Bask, 2015). However, by introducing a regular PA program into the lifestyles of at-risk adolescents, this may reduce the self-perceptions associated with a low SES, and further strengthen an individual’s self-efficacy, self-esteem, body image judgements, social inclusion, as well as enhance their overall life satisfaction (Kirkcaldy, Shephard, & Siefen, 2002; Lubans et al., 2012).

Importantly, a study conducted by Mitchell et al., (2015) suggested that learning environments which address promoting the three basic psychological needs of autonomy, competence, and relatedness contributes to the healthy psychological development of self-concept (Mitchell et al., 2015). Enhancing these three facets in turn may increase a learners’
intrinsic and extrinsic motivation, and therefore have a positive impact on the learners’ engagement and participation in PA (Mitchell et al., 2015). These three factors are crucial components encompassed within the SDT framework, which is an important theoretical framework for understanding how these psychological factors may relate to PA engagement in underserved youth (Lawman et al., 2011; Mitchell et al., 2015). Enjoyment that stems from PA engagement may lead to enhanced intrinsic motivation, which conversely leads to continued sustainment and participation in PA behaviours throughout the lifetime. SDT is a useful framework for further understanding how these aforementioned barriers effect both motivation and engagement in PA behaviours, and was therefore incorporated within this intervention to help understand and explore at-risk adolescent girls’ perspectives regarding motivations to engage in PA.

2.4 Impact of Social Support on PA

The construct of social support has proven to largely mediate the influence of PA participation among adolescent girls. Social support can be defined as an intentional act provided by a variety of social groups (i.e., family, peers, etc.) which help to assist an individual in adopting and/or maintaining a desired behaviour (Beets et al., 2006; Mendonça & Farias Júnior, 2015). It can be provided in various forms, including emotional, instrumental, appraisal, psychological and/or informational social support, and may involve examples such as positive feedback, transportation assistance, or joint participation in activities (Beets et al., 2006; Laird et al., 2016; Mendonça & Farias Júnior, 2015). Emotional support can be defined as a type of affective support that provides a sense of intimacy, such as offering sympathy or listening to ones issues and/or problems when need be; whereas instrumental support may be referred to as...
support that is offered in a tangible or physical sense, such as parents providing sufficient funds for their children to participate in community sport teams (Kang, 2013; Langford, Bowsher, Maloney, & Lillis, 1997). Appraisal and informational social support differ from one another in that appraisal can shape how an adolescent perceives significant life events and involves the communication of information which is relevant to self-evaluation (Jackson & Warren, 2000; Langford et al., 1997); and informational social support may be considered as the information provided to another during a period of stress, such as providing effective advice or feedback on ones’ actions (Langford et al., 1997).

These various forms of social support systems can be viewed as a buffer against heightened stress levels among adolescents which are often seen amidst major life changes such as physical maturations, development of intimate relationships, academic pressures, emerging adult responsibilities, etc. (Camara, Bacigalupe, & Padilla, 2017; Steptoe & Kivimaki, 2012). Social support has the ability to provide the individual with resources extracted from the social interactions with significant others, and majority of this evidence involving social support and its relationship to positive behaviour adoption emerges from parental models as well as peer influences (Laird et al., 2016). In fact, social support provided from friends and family is shown to emerge as a superior measure of support throughout adolescence (Camara et al., 2017). Additionally, these various aspects of social support provided by friends and family has the ability to positively influence many health-related behaviours as well (Laird et al., 2016; Langford et al., 1997). This element may be even more influential and beneficial for at-risk adolescent girls who suffer from extraordinary levels of loneliness, low self-esteem, depression, aggression issues or high-risk behaviours involving substance abuse, seeing as effective social
support systems have the ability to positively influence all of these areas (Trzesniewski et al., 2006).

2.4.1 Role of Parental and Adult Support

Parental support is an important predictor of PA engagement among adolescent girls, and can be provided in a variety of ways. These include social support strategies in the form of parental care, encouragement, co-participation, logistic support, transportation services, and financial support for resources needed for proper PA engagement (Beets et al., 2006; Henriksen, Ingholt, Rasmussen, & Holstein, 2016). It is suggested that individuals spend roughly eighteen years of their lives in close proximity with their parents, making parents a direct source of health information, and deeming them as highly influential for demonstrating health-related behaviours to their children (Beets et al., 2006). This includes parents own PA behaviours influencing their children’s actions, and in a study conducted by Sallis et al., (1999) it was concluded that frequency of parental involvement in transportation to and from activities involving PA behaviours were strongly correlated to overall activity levels among adolescents (Sallis, Alcaraz, McKenzie, & Hovell, 1999). Moreover, Saunders and colleagues (2004) conducted a study among 4044 adolescent girls who discovered that social support provided from family members strongly predicted team sport involvement among adolescent girls, further benefitting the facilitation of social connections with peers (Saunders, Motl, Dowda, Dishman, & Pate, 2004).

In another study performed by Humbert et al., (2006), it was discovered that there may be differences in the significance of the different types of social support offered by parental figures. While taking into account age and gender, adolescents from lower socio-economic class households typically expressed the need for security from their parents; whereas children from higher socio-economic households expressed the need for other types of support schemes, like
instrumental support systems (i.e., transportation to and from the sport or activity, or spectating during the activity) (Henriksen et al., 2016; Humbert et al., 2006; Mendonça & Farias Júnior, 2015). This raises particular concern among adolescent girls who are considered at-risk, due to the increased likelihood of poor family dynamics, where sometimes these parental support systems are scarce. In situations such as this, the importance of social support is emphasised among an individuals’ peers and other various sources, including figures who are able to closely imitate a parental role such as teachers within academic settings or other adult role models (e.g., coaches, program facilitators, etc.). However, although parental support for PA engagement is important, it is also essential to recognise that adolescence is a time where girls begin to seek independence from family members and strengthen their identification with peers. Hence, support from family members is regarded to be less important than support provided from peers (He et al., 2013). With this in mind, it is important that parents be regarded as potential ‘gatekeepers’, acting as mediators to support opportunities for PA behaviours among adolescent girls (He et al., 2013; Humbert et al., 2006); and alternately, a high value is situated on social support provided from other adult role models and and/or peer influences.

As previously suggested, adolescent girls who are considered to be at-risk may lack parental support systems due to poor household dynamics. Other adult figures presumed to mirror a similar supporting role as a parent are thought to be teachers, coaches, program facilitators, or other leaders in various settings. In a study performed by Eather et al. (2013), which analyzed PA outcomes among students (n=213) with exposure to enhanced social support by teachers in the classroom settings, it was demonstrated that greater PA adherence was mediated by the teachers who verbally promoted and encouraged PA during class time. This study was able to support the unmistakable role that teachers have in the promotion and
adherence of PA among adolescents (Eather, Morgan, & Lubans, 2013), while also teaching them about the values of maintaining an active lifestyle.

Although social support provided by teachers can significantly impact PA levels for adolescents, other adult figures or leaders may additionally play a compelling role in the promotion of healthful behaviours. A few primary sources may include club or sport coaches, health program facilitators, or other support leaders from various contexts. It has been found that making connections with community instructors and local facilities is identified as a particularly important factor in determining girls’ PA enjoyment and participation among health and PE programs, along with engagement in PA outside of school settings (Gibbons, 2014; Gruno et al., 2018). These individuals may serve as role models for adolescents outside of educational settings, which may be an influential component in the uprising and adoption of healthful behaviours in everyday life. In fact, role modeling has been explored as a significant component to engagement in sport or PA behaviour among youth (Sabiston & Crocker, 2008). It has also been shown throughout the literature that health program leaders are worthy exemplars as they provide adolescents with resources to enhance their intrinsic motivation and their perceived athletic abilities, giving them a large role in the adoption of PA among this younger, more influential population (Eather et al., 2013; McDavid et al., 2012; Olivares, Cossio-Bolanos, Gomez-Campos, Almonacid-Fierro, & Garcia-Rubio, 2015; Sabiston & Crocker, 2008). In fact, student’s perceptions of their own PA behaviours appear to be related to their role models’ involvement in PA, while role modeling and encouragement emerge as important factors in the conveyance of these self-mediated perceptions (McDavid et al., 2012; Sabiston & Crocker, 2008). Moreover, role modeling is associated with enhancing a number of healthful behaviours, such as inducing positive development and well-being, and increasing the likelihood of engaging
in these positive behaviours (Babey, Wolstein, & Diamant, 2016). Support leaders may play an exceptionally significant role among at-risk adolescent girls in particular, as the likelihood of lack of parental support is especially common among this young, at-risk subgroup. Regardless, social support offered in a variety of contexts and by numerous individuals is exceptionally important in the adoption of PA behaviours among adolescent girls.

2.4.2 Role of Peer Support

The value of the role that peers play in promoting and influencing PA behaviours during adolescence is irrefutable. In the transition from adolescence to adulthood, adolescents tend to allocate spending more time with peers than with family members, suggesting the peer group to be an important context for growth and independence (Springer et al., 2006; Trinh, Rhodes, & Ryan, 2008; Verloigne et al., 2016). Peer groups are deemed to be extremely influential during adolescence, and are likely to have a significant impact on PA levels among individuals (Trinh et al., 2008). In a study performed by Springer et al. (2006), who analyzed the relationships between PA intensity and a number of social support variables among 718 adolescent girls, it was discovered that peer encouragement was the only significant predictor of levels of vigorous PA (Springer et al., 2006). Moreover, adolescent girls with active friends are more likely to be active themselves, and being physically active together with friends is associated with higher levels of reported PA (dos Santos et al., 2015; Duncan, 1993; Gür et al., 2015; Verloigne et al., 2016). Martins et al., (2015) found that adolescents indicated that having peers present offers companionship and esteem support during PA engagement and tends to make PA more enjoyable, and has the ability to significantly influence positive affective states related to PA, as well as the choice to participate in PA outside of school (Duncan, 1993; Martins et al., 2015). It has also been stated that levels of PA rise with increased frequency of meeting with peers during
and after educational hours (dos Santos et al., 2015; Springer et al., 2006). In a study performed by dos Santos and colleagues (2015), PE class participation was suggested to be associated with lower levels of social isolation in adolescent girls; and girls who participated in multiple PE classes were more likely to have an extensive peer support group.

Not only do peers play an important role in determining PA behaviours, but they are also able to directly impact physical self-perception and appearance concerns. Peers can be extremely influential, providing both positive and negative outcomes of how an adolescent girl may perceive her body image and overall self-esteem (Cribb & Haase, 2016). Peer groups often share similar attitudes towards the importance of appearance, with these conversations reinforcing the notion of physical attractiveness (Cribb & Haase, 2016). Having insufficient support from peers has shown to be associated with higher levels of body dissatisfactions and lower self-esteem (Cribb & Haase, 2016); thus further highlighting the importance of a positive peer social network for adolescent girls.

Although there appears to be a clear association between parents, other adult figures and peer influences on PA behaviour among adolescent girls, it should be noted that each of these support systems offer different types of support for the individual. For example, friends may contribute to the pleasant experiences that underlie PA participation and expose them to the perceived benefits of being around friends whilst also meeting new ones; whereas parents may contribute to the life-long adoption of PA through fostering girls’ self-efficacy to be active, and provide ongoing support throughout the period of adolescence (Laird et al., 2016; Verloigne et al., 2016). Importantly, other adult support leaders may serve as role models who facilitate intrinsic motivation, encouragement, and aid in promoting physical self-efficacy. With this in mind, both family and peer PA encouragement play important and unique roles in mediating the
participation of PA among adolescent girls (Springer et al., 2006). By understanding the impact of an effective social support system, there are currently a number of PA interventions with the primary goal of increasing PA among adolescent girls through utilising of a variety of these social support strategies.

2.5 Previous PA Interventions for Adolescent Girls

A number of health organizations across the globe have aimed to emphasize the importance of delivering quality PE programs through the educational system. In 2013, the Institute of Medicine highlighted the importance of incorporating quality PE programs throughout schools, suggesting that PE be designated a ‘core subject’ area, similar to how the educational curriculum encompasses mathematics or science subjects (Kohl et al., 2013). Due to the fact that adolescents spend a large proportion of time in school, schools have been considered to be a major strategizing tool for delivering effective PA promotion (Lee et al., 2012). However, although there is time devoted to PE programs embedded within most school mandates, the actual time designation is left to the discretion of local education officials, with a majority of schools allocating less than the recommended amount of time dedicated to PE (Committee on Physical Activity and Physical Education in the School Environment, 2013). This poses a major issue in teaching children and adolescents about the significance of life-long PA adherence. The loss of time spent with teachers promoting PA among youth may be detrimental, as it limits the opportunities that teachers have to engage in supporting and encouraging healthy-lifestyle behaviours among adolescents and youth. While PE programming is still considered to be one of the primary means of promoting PA, there are a number of successful interventions outside of
school that have shown to provide an effective social environment, supportive of the adoption of PA and other health-related behaviours among adolescent girls.

One such intervention developed by Rosenkranz and colleagues (2010), termed the Healthier Troops in a SNAP (Scouting Nutrition and Activity Program), looked at the fidelity of delivering a health promotion program within girl scouting groups (Rosenkranz, Behrens, & Dzewaltowski, 2010). The purpose of the trial was to evaluate the effectiveness of a health promotion program through modification of Girl Scout troop meetings, and by empowering adolescent girls to improve the quantity and quality of health-related issues, such as levels of PA engagement and healthy eating.

The program aimed to deliver an educational curriculum to the Girl Scout troops through eight different modules, with the topics addressed including; worksheets for goal-setting and self-monitoring of behaviours, PA recreation sessions, fruit and vegetable snack preparation sessions, and a number of others. Troop meetings were initiated by the troop leaders of the study, who acted as role models for the adolescent girls. The troop leaders were assigned tasks such as engaging in PA’s with the troops, verbally promoting PA, overseeing healthy snack recipe sessions, and eating healthy foods with the girls. The findings suggested that the leaders played an important role in the delivery of role modeling for the young girls through providing verbal praise and active mastery experiences, which served as a way of supporting and enhancing their self-efficacy for engaging in the desired healthful behaviours. Importantly, the program occurred in a group setting where peer social support was encouraged. The combination of the group setting and peer support promoted socialization among the girls, and influenced their willingness to engage in the activities. The outcomes of the Healthier Troops in a SNAP intervention showed that the adolescent girls, or troops, accumulated significantly less sedentary behaviours along
with significantly more MVPA, as well as provided many opportunities for healthful eating during the troop meetings. This study highlights the importance of group activities in the promotion of healthful behaviours; both the troop leaders and peer scouts fostered the adoption of these behaviours by creating an environment which provided the girls with opportunities for enhancing their PA. This intervention was able to demonstrate the powerful effects that a successful social support system can have on girls’ health and lifestyle behaviours. By creating a physically active and health-promoting environment for adolescent girls through role modeling and providing peer social support, this could assist with the uprising of healthful behaviours in this specific age group.

Another intervention of particular interest is the Girls in Sport randomised trial (Okely et al., 2017). This 18-month intervention focused on preventing the decline in participation of MVPA among adolescent girls ($n=1518$), while also aiming to improve currently provided programs to better suit the needs of girls. The intervention involved 24 schools, all of which highlighted the concern that girls’ participation in PA was lacking and that they expressed unenthusiastic attitudes about PE or sport. The adolescent girls emphasized that they did not feel the willingness to participate in PA due to lack of choice in activities, lack of resources, and ‘dominating’ behaviours of male peers during PE classes; however, they would be more willing to participate if given some choice in their activity classes and to participate with their close peers (Okely et al., 2017). Each school included in the intervention developed their own individual 18-month action plans to increase MVPA among the adolescent girls. One member from the research team on the project was assigned to work with each participating school, assisting them in developing and implementing their action plans. Examples of activities that some schools chose to incorporate into their action plan included; running boot camp style
classes during lunch-time, power-walking classes, Pilates, and Zumba classes, all of which the girls showed initial interest in. Although this intervention occurred within an educational setting, it was more useful as a recruitment strategy to engage the girls in additional fitness activities that usually are not offered during school hours. As such, the programs offered included activities often found in community-type settings, making it highly transferrable to out-of-school settings.

The outcomes of this study showed non-significant findings in reducing the decline in MVPA, but these findings may be the result of a number of factors. First, one-third of the schools who participated showed very poor implementation of their unique action plans. What was promising, however, was that among the schools that effectively implemented their action plans, an improvement in the decline of MVPA was evident (Okely et al., 2017). The authors also discussed concerns that not all school staff involved may have been properly trained and lacked enthusiasm on the subject, which may also explain the lack of success rates in some of the schools. Additional positive outcomes of the study included aspects involving social support, where among the successful schools, girls exemplified increased levels of peer support for PA. This is an extremely important outcome, as well it was a factor that the participants expressed high importance for at baseline. The girls also expressed a heightened awareness and more perceived support for PA being provided by both teachers and the program facilitators in the schools that successfully implemented the program, which helps to affirm the importance of commendable role models for the adoption of PA behaviours. The results of this study highlight the importance of quality program implementation, including effective training of the leaders for establishing an effective intervention for increasing PA among adolescent girls.

The final intervention explored for the purposes of this literature review is the study directed by Collingwood and colleagues (1994), which utilised a staff training model for the
prevention of delinquent behaviours among at-risk youth, through implementation of a PA program (Collingwood, Sunderlin, & Kohl, 1994). The major components of the program focused on a number of aspects, including developing the youth participants fitness skills via fitness leaders, teaching the youths’ parents and/or guardians about providing effective support skills to the participants (i.e., behaviour contracting, role modeling, and development of family fitness activities), and lastly, a peer fitness leader component where peers of the participants were trained to serve as ‘exercise buddies’ for the participants. Program implementation took place among sixteen different sites, serving approximately 1,500 youth with an average participation rate of about 86%. The outcomes of the study concluded that trends in enhanced PA participation, along with statistically significantly increases in fitness scores, resulted in reduced substance use and increased psychological well-being, and participants perceived the program as having a positive impact on their well-being overall. These results may have emerged due to the various modes of social support provided to the at-risk adolescents, which served as a source of encouragement and positive reinforcer for the desired behaviours. However, fitness leader staff turnover for the fitness skill development component was rather high, and only a few of the program sites were able to apply the parent modules due to lack of parental involvement. Despite this, the youth who chose to participate in the program did so enthusiastically, and found great value within the program. If stable social support is able to be effectively provided to adolescents, then perhaps desired PA outcomes would be met with a greater success rate.

2.6 Summary

Despite the evidence that exists around the benefits of regular PA, the gap remains between implementation and adoption of this healthful lifestyle behaviour. As the issues relating
to physical inactivity are easily carried through into adulthood, it is especially important that we focus on targeting younger generations to illustrate the importance of PA throughout the entire lifespan; and those adolescents classified as “at-risk” may see additional benefits from this. Because this specific cohort of adolescent girls appears to have magnified issues relating to low self-esteem, self-efficacy, body-centered issues, and lack adequate social circles, they could largely benefit from a PA program designed to tackle these psychosocial issues. Therefore, by implementing a PA program that also incorporates a number of underlying psychosocial components, this may help reduce the gap between rates of PA and physical self-perceptions among at-risk adolescent girls, and would further have a positive impact on their overall health and well-being.
Chapter 3 Methods

3.1 Prelude

The following chapter details the methodology procedures of the current study. A pre-post quasi-experimental, mixed-methods design was utilised which included a variety of questionnaires and semi-structured interviews with program participants. Ethical approval was granted by the Behavioural Human Research Ethics Board at the University of British Columbia (H17-01540) and School District 23 (430-2017-00144). The following sections provide specific details concerning the study design, participants and setting, recruitment strategies used throughout the intervention, the measures utilised for data collection, procedural techniques, and data analysis.

3.2 Research Questions

The overarching purpose of the following study was to examine the relationship between PA and perceived social support within an integrated PA and psychosocial intervention program designed for at-risk adolescent girls. The research questions for the current study included:

1) Can participation in an integrated PA and psychosocial program increase PA enjoyment, PA motivation, and PA participation among at-risk adolescent girls.

2) Can participation in an integrated PA and psychosocial program enhance perceptions of social support among at-risk adolescent girls.

3.3 Study Design

The current study utilised a pre-post quasi-experimental mixed-methods design. Mixed-methods research is useful when studying real-world phenomena, when both quantitative and
qualitative approaches are involved in the research process (Thomas, Nelson, & Silverman, 2015). It is often grounded in a pragmatic paradigm and helps to answer specific questions that cannot necessarily be answered by only one of the types of research methods, as well it is useful in the advancement of research programs (Thomas et al., 2015). The GUM study was primarily formulated by the quantitative research, but was strongly supported by the qualitative results in a way that the findings from both of these methods were complimentary to one another. The quantitative methods of this study included collecting demographic variable information, as well as a series of other self-report questionnaires assessing factors associated with PA which are further discussed below. Whereas the qualitative methods involved voluntary, in-person semi-structured interviews with a sub-sample of participants.

A quasi-experimental design is used when assessment of desired variables is necessary both before and after the intervention is implemented (Thomas et al., 2015). This type of study design does not involve random selection or assignment of participants into groups, but enables researchers to observe whether any change in performance has occurred as a result of the intervention (Thomas et al., 2015). In real-life educational settings, randomizing depends on many constraints and it is sometimes impossible to determine the population due to complexity of the situation (i.e., determining at-risk students due to under-reporting of risky behaviours) (Frey, 2018). The 9-week intervention was delivered among eight groups residing in the Central Okanagan region, all of which were formed from five different middle schools among School District 23. Program implementation occurred from December 2017 – March 2018; April – June 2018; June – August 2018; and September – December 2018. A trained student researcher from the University of British Columbia, as well as a registered social worker from the Central Okanagan Elizabeth Fry Society (COEFS) were the program facilitators on the GUM project.
COEFS is a non-profit organization with the overall objective to bring an end to violence, poverty, and seeks justice for women and children in the Central Okanagan region (Central Okanagan Elizabeth Fry Society, 2017). The COEFS has been working with numerous schools across the Okanagan valley over several years to deliver the Girls United program. The Girls United program is an in-school 8-week intervention lead by a social worker, specifically designed to address the psychosocial needs of pre-teen and adolescent girls through strengthening their sense of belonging, resiliency, and connection (Central Okanagan Elizabeth Fry Society, 2017). To further benefit the adolescent girls who join the program, the current intervention named Girls United and on the Move (GUM) was created, providing participants with the opportunity to engage in and seek the benefits that PA has to offer, while also benefiting from participation in active discussion concerning various topics that are applicable to the girls’ personal circumstances, such as self-awareness, emotional wellness, and healthy sexuality.

3.4 Participants and Setting

The present study utilised a purposeful sample of adolescent girls \((n=83)\) classified as “at-risk” in the Central Okanagan area. Purposeful sampling is utilised when the researcher establishes certain criteria to purposefully recruit participants into a research study (Thomas et al., 2015). Purposeful sampling techniques are often used in qualitative research when it is necessary to identify and select information-rich cases in the most efficient way (Palinkas et al., 2015). It is a powerful technique to utilise for studies where recruitment of participants may be difficult and ensures that the target population is properly identified (Palinkas et al., 2015). All participants who were asked to participate in the current study were attending one of five middle school in the Central Okanagan region, and were between 11-15 years of age. The girls were
asked to participate via school counsellors according to whether or not they met the description of being considered “at-risk”, which may have involved issues regarding home life, anxiety, depression, behavioural inadequacies, etc. (Lubans et al., 2012; Resnick & Burt, 1996). Adolescents who satisfied these particular criteria were selected as they may require additional support to engage in PA and healthy lifestyle behaviours, and are thought to experience considerable benefits from adopting a physically active lifestyle.

3.5 Recruitment, Consent, and Assent

All of the middle schools involved in the current study resided within the Central Okanagan region. As mentioned above, participants of the program were recruited through the guidance counsellors at each of the participating schools. Specifically, girls deemed as “at-risk” who had a previous history or current relationship with the counsellors were approached by their respective counsellor and asked to participate. This recruitment protocol has previously been and continues to be used by the collaborators on this project, the COEFS.

The only exclusion criteria for the current study was that participants had not previously participated in the pilot study, Girls on the Move (GoM), which took place in 2015 – 2016. GoM was undertaken among two schools in the Okanagan, with the primary aim to explore program feasibility and test various outcome measures in the target population. This previous study was similar to the GUM program in terms of the program scheduling and itinerary of events; however, the research component primarily assessed the relationship between body image and physical self-concept with enhanced PA among at-risk adolescent girls.

Participants who expressed interest for participating in the GUM program, after discussion with a guidance counsellor, were given a parental consent form (Appendix A) and a
student assent form (Appendix B), and were asked to take these forms home to discuss the program with their parent and/or guardians. Participants were asked to return signed copies of the forms to the primary researcher before the start of the program (up to one week before) or at the start of the first GUM session (during week one - prior to baseline data collection). It was ensured that the participants were made aware that they did not need to participate in the research component in order to participate in the GUM program. Further, those who chose to participate in the research component were also made aware that they could withdraw at any time, for any reason, without consequence.

3.6 Girls United and on the Move Program (GUM)

After parental consent and student assent were obtained, the participants underwent the 9-week intervention, which included a weekly 1.5-hour session. However, week 9 was solely used for the purposes of data collection, where the girls were asked to fill out the same questionnaires that were distributed during week 1 (baseline). Each of the program sessions consisted of 45 minutes of PA delivered by the primary researcher, and 45 minutes of discussing various psychosocial topics delivered by the Girls United program facilitator (i.e., registered social worker from COEFS). The PA component included engaging in organised activities such as dance classes, hiking, or self-defence sessions, all of which were pre-determined by the primary student researcher (in consolation with the COEFS social worker) on the project. The psychosocial component of the program followed the existing schedule used by the Girls United program previously lead by COEFS, and encompassed topics such as building healthy relationships, conflict resolution strategies, substance abuse issues, cyber-bullying, etc. Table 3.1 provides an example of what a typical schedule of events for the 9-week program looked like. In
addition to the group discussions, personal journals were distributed to the girls during week 1, which the girls were encouraged to write in and then return to the social worker at the end of each session. Through these journals, the participants were able to express their thoughts and feelings related to the program activities, personal struggles they were undergoing, or whatever they wanted to share. The social worker and primary researcher would read and give a written response if the participant indicated they wanted it, giving them the option to seek advice without having to discuss the personal issues in-person with the program facilitators. The participants verbally expressed that they found this strategy of ‘writing out’ to be particularly beneficial.

Table 3.1 Girls United and on the Move (GUM) typical program components.

<table>
<thead>
<tr>
<th>Week</th>
<th>Physical Activity Component</th>
<th>Psychosocial Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>• Introductions &amp; questionnaires</td>
<td>• Emotional wellness</td>
</tr>
<tr>
<td>Week 2</td>
<td>• Yoga</td>
<td>• Self-awareness, self-esteem &amp; body image</td>
</tr>
<tr>
<td>Week 3</td>
<td>• Dance</td>
<td>• Healthy relationships</td>
</tr>
<tr>
<td>Week 4</td>
<td>• Self-defense</td>
<td>• Healthy sexuality</td>
</tr>
<tr>
<td>Week 5</td>
<td>• Hike/walk outdoors</td>
<td>• Communication skills, conflict resolution &amp; boundaries</td>
</tr>
<tr>
<td>Week 6</td>
<td>• Rock climbing</td>
<td>• Sexual exploitation &amp; abuse</td>
</tr>
<tr>
<td>Week 7</td>
<td>• Kickboxing</td>
<td>• Media &amp; gender issues</td>
</tr>
<tr>
<td>Week 8</td>
<td>• Free play &amp; outdoor games (e.g., capture the flag, scavenger hunt, etc.)</td>
<td>• Questionnaires &amp; wrap-up</td>
</tr>
<tr>
<td>Week 9</td>
<td></td>
<td>• Media &amp; gender issues</td>
</tr>
</tbody>
</table>
3.7 Measures

Participants were asked to fill out various questionnaires relating to their PA experiences and enjoyment, perceived social support, perceived psychological needs support, and sport motivation and commitment. Questionnaires were used for this study as they are a simple way to collect a large amount of data among individuals, and may capture changes in the variables of interest in the study (Chinapaw, Mokkink, van Poppel, van Mechelen, & Terwee, 2010). Questionnaires were distributed by the primary researcher at the start of the session during both week 1 and week 9, and then collected at the end of the session. An additional questionnaire was distributed during week 6 which served as a measure of the participants perceptions of psychological needs support received from the instructors/facilitators of the program. Self-report questionnaires contain relevant statements in a variety of response formats, which serve the purpose of helping the participant to answer specific questions; as well as they provide a means by which the researcher can record and score values in a systematic fashion (Fernandez-Ballesteros, 2004). They are commonly used in the social sciences as they are easy to administer, relatively inexpensive, and known as an acceptable way to study participants and psychological constructs that are often not observable (Chinapaw et al., 2010).

3.7.1 Demographics

Demographic information collected from participants during week 1 included information on age, grade, number of siblings, housing location in the Okanagan area, mode of transportation to school, and whether the participants engage in any PA or sport both inside and outside of school (Appendix C). This data was collected for descriptive purposes.
3.7.2 Physical Activity Questionnaire for Children (PAQ-C)

Self-report PA was measured using the *Physical Activity Questionnaire for Children – PAQ-C* (Appendix D) (Kowalski, Crocker, & Faulkner, 1997). The PAQ-C is a valid and highly feasible 7-day recall instrument used to assess levels of MVPA among children during the school year, and may be advantageous for longitudinal research studies (Kowalski, Crocker, Donen, & Honours, 2004). The PAQ-C consists of 10 items which assess the frequency of PA participation over a 7-day period, and it has been supported as a valid and reliable measure of PA from childhood to adolescence (Kowalski et al., 1997). The PAQ-C’s ability to measure general PA among children and adolescents is a known strength of this questionnaire as it is difficult to precisely measure intensity, frequency, and duration in this specific population (Kowalski et al., 1997). The PAQ-C has also been shown to demonstrate good internal consistency ($\alpha = 0.76 – 0.84$) on each of the 10 items.

3.7.3 Child and Adolescent Social Support Scale (CASSS)

The *Child and Adolescent Social Support Scale – CASSS* (Malecki, Demaray, Eliott, & Nolten, 1999) was used to measure perceived social support among the participants in the program (Appendix E). The CASSS consists of five 12-item subscales which measure perceived support from different sources, including parents, teachers, classmates, close friends, and school, equating to a total of 60 items (Demaray, Malecki, Davidson, Hodgson, & Rebus, 2005). Additionally, each item assesses a particular type of support (emotional, informational, appraisal, or instrumental). Students indicate how often they receive support from each specified support source (frequency rating on a 6-point Likert scale), as well as how important they perceive the support source to be (importance rating on a 3-point Likert scale). There is strong evidence supporting that the CASSS provides strong reliability and validity for its intended purposes.
(Demaray et al., 2005). The CASSS demonstrates reliability through high internal consistency overall ($\alpha = 0.96$), as well as strong internal consistency on each of the subscales ($\alpha = 0.93 – 0.96$). However, for the purposes of the GUM program, the specific subscale relating to the ‘school’ environment was disregarded as it may have related to issues of uncertainty, since the actual sources of social support within the school environment were not well defined (White, 2009). Therefore, the current CASSS questionnaire used for the GUM program consisted of a total 48 items.

3.7.4 Sports-Commitment Model

The Sports-Commitment Model (Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993) was developed to examine the motivation underlying persistence in organised sports and PA (Appendix F). The model addresses five components or subscales which are believed to impact sport commitment; this includes sport enjoyment, involvement alternatives, personal investments, social constraints, and involvement opportunities. Not only has this construct been shown to be very important in motivating youth in sport, but it also may indicate the positive affect to commitment in youth sport programs (Scanlan et al., 1993). The model consists of 58-items which are addressed on a 1 (strongly disagree) to 5 (strongly agree) point Likert scale. The instrument has been shown to provide both valid and reliable measures of sport-commitment among youth (Scanlan et al., 1993). Cronbach’s alpha has indicated high internal consistency among each of the five subscales ($\alpha = 0.77 – 0.94$) on the model.

3.7.5 Learning Climate Questionnaire (LCQ)

The Learning Climate Questionnaire – LCQ (Williams & Deci, 1996) was distributed during week 6 of the program, roughly halfway through the duration of the program. The LCQ is a 15-item measure that was developed as a protocol to assess students’ perceptions of basic
psychological needs support (e.g., autonomy, competence, and relatedness) delivered by instructors in specific settings (Williams & Deci, 1996) (Appendix G). All responses were indicated on a 7-point Likert scale, with values ranging from ‘strongly disagree’ (1), to ‘strongly agree’ (7), and an intermediate score of neutral (4). This questionnaire was utilised as it provides a good indication of support leaders provide for the three basic psychological needs, which is important because research has shown that when one’s psychological needs of autonomy, competence and relatedness are supported they show higher levels of psychological wellbeing (Williams & Deci, 1996). The LCQ has been supported with having extensive internal reliability and consistency ($\alpha = 0.84 – 0.92$, and 0.96 respectively), as well as has been validated with youth outside of sport contexts (Standage, Duda, & Ntoumanis, 2005).

3.7.6 Semi-Structured Interviews

A number of participants ($n=30$) who had given consent at the start, were invited to participate in an individual semi-structured interview after completion of the 9-week program. Semi-structured interviews are best used in situations where you do not have the opportunity to interview participants more than once (Fylan, 2005). They contrast from structured interviews in that there is a pre-determined list of questions that are covered in sequential order for each participant, but the questions may be very open-ended and lead the conversation to take on many different directions (Miles & Gilbert, 2005). Due to the fact that semi-structured interviews are such a flexible way of collecting participations perceptions, they can be used to develop a much deeper understanding of one’s experience of a particular phenomenon (e.g., participation in a particular program) (Miles & Gilbert, 2005). In-person interviews allow the researcher to gain information-rich data that cannot be captured through questionnaires or surveys (Knox & Burkard, 2009). They are helpful when trying to answer the ‘why’ in a research project, in that
questions can be slightly tailored to address participants personal insights, and by doing so, can enhance an investigator’s ability to understand a phenomenon and answer proposed research questions (Fylan, 2005).

Interviews were conducted by the primary researcher. Participant responses were recorded using a Sony™ audio recorder (ICD-PX333) and then transcribed verbatim. The interviews were scheduled to take place at the school where the program was implemented, at a time of which was convenient to the participants. The interviews gave the participants the opportunity to express their opinions about the program, as well as their perceptions concerning their PA experiences and the role of social support provided by family and peers. Interview times varied between approximately 10 to 20 minutes, but had a mean time of 14.6 minutes in length.

As part of the qualitative research process, the primary researcher was involved in program delivery, data collection, analysis, and interpretation of the results. Although qualitative protocols often call for higher involvement and rapport between researchers and participants, this may additionally result in possible bias during the research process. In hopes of mitigating this bias, strategies of rigor were encompassed during the qualitative analysis, and these strategies are further described below.

The interview guide was formed around major findings in the literature, and questions asked were composed ahead of time and based on their ability to contribute to the knowledge around the research topic. The questions asked varied in that some had covered broad umbrella topics around PA behaviours and experiences, while others focused on narrower topics including personal perceptions around social support provided by family and peers (Appendix H). Questions relating to the theme of social support revolved around self-perceived support provided by parents or guardians, siblings, and peers both involved in and outside of the GUM
program. While other questions entailed concepts revolving around PA enjoyment and adherence, and the acceptability of the GUM program. This led to the formation of two major sections from the types of questions asked: One involving personal perceptions of social support, and one focused on PA enjoyment. Question cues or probes were used to assist participants in recalling events or to get them to further elaborate on different components of the program. The researcher also prompted participants for suggestions on how the GUM program could be improved for future delivery.

3.8 Data Analysis

Analysis was conducted using the intention-to-treat principle, such that all participants who completed the questionnaires at baseline were included in analyses, even if they did not complete the questionnaires at follow-up. Intention-to-treat is useful for avoiding bias among treatment effects during analyses, as well as ignores non-compliance, withdrawal, protocol deviations, and anything that happens after initial commencement of the program (Gupta, 2011). The intention-to-treat principle is beneficial because there is no need to exclude non-compliant participants from the study analysis, as this may create extrapolative effects among the groups (Gupta, 2011; White et al., 2011). This principle is also useful in ensuring sample size is maintained throughout the intervention (White et al., 2011). In alignment with the intention-to-treat principle, subjects who had completed a questionnaire package at baseline ($n=83$), but did not complete the same package during follow-up (week 9) and/or had missing data, had their initial baseline scores carried forward to ensure power was maintained. Nine participants did not complete follow-up measurements due to program drop-out; therefore, principles of intention-to-treat were employed. Three other participants had missing data from both of the measures of PA
motivation and PA enjoyment, which was left unaltered and reported as missing. On top of this, nine other participants had missing data at baseline (week 1) due to late program enrolment, and were therefore dropped from analysis, but continued to participate in the GUM program with provided parental consent and student assent.

Data obtained for descriptive purposes were presented as means (M) and standard deviations (SD) for all sample characteristics. Baseline and post-test data regarding the outcome variables (PA behaviours, perceived social support, etc.) was examined for any outliers or missing values. Standardised scores were used to identify any univariate outliers. Any outlier values were replaced with a score that was three standard deviations (±3 SD) from the mean of the variable of interest. A series of paired-samples t-tests were conducted in order to assess changes over time from baseline to post-intervention among all of the following variables of interest: PA participation, PA motivation, PA enjoyment, and perceptions of social support. In order to assess whether basic psychological needs support, as indicated by the LCQ, predicted scores on any of the following variables: PA participation, PA motivation, and/or PA enjoyment, three simple regression analyses were conducted (Field, 2013). Both assumptions for the simple regression analysis were tested, including 1) linearity, and 2) homoscedasticity. The assumption of linearity was met; however, the assumption of homoscedasticity was violated. However, this violation was not of concern due to being in accordance with the central limit theorem, which states that in big samples (n= >40) with light distribution tails, the sampling distribution will be normal regardless (Field, 2013). Finally, three hierarchical regression analyses were conducted in order to assess whether basic psychological needs support predicted PA participation, PA motivation, and/or PA enjoyment, above and beyond perceptions of social support. Hierarchical regression analyses is useful for predicting an outcome variable from several predictor variables.
(Field, 2013). All assumptions for the hierarchical regression analysis were tested, including 1) linearity, 2) homoscedasticity, and 3) multicollinearity; all of which were met, except for the assumption of homoscedasticity, similarly to above. Assumption 3 was tested using the Durbin-Watson Test to ensure the residuals on the model remained independent (Field, 2013). Level of significance (α) was set at p < 0.05. All statistical analyses were performed using IBM’s Statistical Package for Social Sciences (SPSS Version 21.0).

All interview recordings were transcribed verbatim by the primary researcher. An inductive thematic analysis was conducted once all interviews were completed and transcribed using NVivo10™. Thematic analysis is a systematic technique used for identifying and analyzing patterns in qualitative data (Vaismoradi, Turunen, & Bondas, 2013). These patterns can be assessed through two different means, one of which includes utilisation of an inductive approach (Braun & Clarke, 2006). Inductive thematic analysis is a flexible and useful research tool that provides rich and highly detailed data, and involves the identification of common underlying patterns that extend across the data (Braun & Clarke, 2006; Vaismoradi et al., 2013). The purpose of using an inductive thematic analysis was to identify common themes, barriers to PA, and provide insights into improving of the GUM program. Inductive thematic analysis utilises individual observations, and gradually begins to move from specific to more broad and generalised patterns found throughout the data throughout the research process (Soiferman, 2010). The results often lead to general conclusions or theories about the research (Soiferman, 2010). Both valid and reliable constructs are emphasised in an inductive thematic analyses (Braun & Clarke, 2006), both of which were achieved through review and interpretation of the transcriptions by an experienced qualitative researcher.
3.9 Rigor

Rigor refers to the trustworthiness of data collection, analysis, and interpretation throughout the research process (Prion & Adamson, 2014). Throughout this study, rigor was accomplished through credibility, generalisability, validity, and reliability (Mayan, Taylor, & Francis eBooks, 2009). Credibility is an important component in both quantitative and qualitative analyses as it ensures the truthfulness of data and its succeeding interpretations, and is achieved through validating the data and results, and confirming interpretations by asking both participants and other experts to review the data (Prion & Adamson, 2014). This was achieved through various verification strategies, such as having data systematically checked by other trained researchers, and keeping a close monitor on progressively-learned information throughout the research process via the confidentiality journals and open group discussions.

Quantitative research methods place heightened emphasis on generalisability, as it ensures that the knowledge gained can accurately be affiliated with the population from which the sample was drawn from (Palinkas et al., 2015). Because quantitative studies typically require larger sample sizes than qualitative research studies, this provides the best foundation for broad generalisability (Thomas, Nelson, & Silverman, 2011). On the other hand, in qualitative studies generalisability refers to the ability to transfer the applicability of the study findings to other similar settings so that the knowledge can be easily generalised (Mayan et al., 2009). In this case, particular participants, documents, etc., were carefully selected as they were believed to capture a range of experiences with regard to the specific phenomenon of interest (Mayan et al., 2009). Specifically related to GUM, a large sample size was used to provide the best foundation for broadly generalising the results to the rest of the population of “at-risk” adolescent girls at large.
Validity is another important component to consider in both types of research methods. In quantitative inquiries this may refer to characteristics which enforce high external validity, where this is successfully achieved when a study takes place in real-world settings (Mayan et al., 2009). Where as in qualitative studies, validity refers to the extent to which the description of phenomena are accurately depicted by the data (Mayan et al., 2009). External validity was achieved in the GUM study by appropriately selecting participants deemed as “at-risk”; this ensured that the findings from the sample were assumed to be representative of the specific population of interest. Lastly, reliability in quantitative data is concerned with consistency of findings (Mayan et al., 2009). This was achieved with the use of acceptable measures of self-report as per the various questionnaires in the GUM study, all of which reported high internal consistency according to Cronbach’s alpha. Similarly, reliability in qualitative data comes from repetition or duplication within the data, such as observing common experiences repeatedly from various participants (Mayan et al., 2009). By using a tape recorder to store all the recorded interviews, this adequately informed both the study’s validity and reliability. From each audio recording, the interviews were transcribed verbatim which aided in further adding rigor. In addition to this, peer review strategies was also utilised to enhance the study’s validity and reliability, where this involved engaging supervisors and professionals external to the project to discuss and review the data, and additionally provide questions and insights about data analysis techniques and strategies (Mayan et al., 2009).

3.10 Data Storage

All physical hard-copy data (i.e., demographics and questionnaires) obtained for the purposes of this study remained confidential and in a securely locked location in the Physical
Health and Activity Behaviour (PHAB) Laboratory at UBCO, which is directed by Dr. Cristina Caperchione (primary researchers’ supervisor). This data was only accessible by the primary researcher and Dr. Caperchione to ensure confidentiality was maintained. All electronic-copy data (i.e., interview recordings) was kept on a password protected computer which was only accessible by the researchers involved in the project. Participants were kept anonymous by assigning numeric codes to each individual along with their group number. All data will be stored for a minimum of five years following publication of the results. After this time, all data will be destroyed and/or deleted to avoid a breach of confidentiality agreement.
Chapter 4 Results

4.1 Prelude

The following chapter highlights the results of the GUM study, utilising a mixed-methods approach in order to explore the findings in rich detail. The results reveal the importance of perceived social support from close friends, family, and program facilitators in regard to enhancing both PA enjoyment and PA motivation, which is supported by both the quantitative and qualitative results. The importance of friendships and small group cohesion was also emphasised in regard to strengthening these facets. These concepts are explored in further detail in the following sections, encompassed in both the quantitative findings (section 4.3) and the qualitative findings (section 4.4).

4.2 Baseline Characteristics

The sample consisted of 83 participants at baseline from various local middle schools in the Central Okanagan region of British Columbia. The mean age was 13 years (SD = ±0.72). Majority of the participants (83%) resided within areas of the Central Okanagan classified as low SES, and many indicated that they either walked (55%) and/or received a different means of vehicular transportation (87%) to school daily. Forty-seven percent of participants indicated that they participated in either team or individual organised PAs or sports teams outside of school time, while only 33% of participants indicating they participated in organised activities within school. Table 4.1 provides a detailed outline of the baseline demographics of the current sample.
### Table 4.1 Demographics of participants (n=83).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Participants %, (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
</tr>
<tr>
<td>11-12</td>
<td>41, (34)</td>
</tr>
<tr>
<td>13-15</td>
<td>59, (49)</td>
</tr>
<tr>
<td><strong>Grade</strong></td>
<td></td>
</tr>
<tr>
<td>6-7</td>
<td>45, (37)</td>
</tr>
<tr>
<td>8-10</td>
<td>55, (46)</td>
</tr>
<tr>
<td><strong>Siblings</strong></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>10, (8)</td>
</tr>
<tr>
<td>1-2</td>
<td>60, (50)</td>
</tr>
<tr>
<td>3-4</td>
<td>22, (18)</td>
</tr>
<tr>
<td>5+</td>
<td>8, (7)</td>
</tr>
<tr>
<td><strong>Area of residence</strong></td>
<td></td>
</tr>
<tr>
<td>Rutland</td>
<td>47, (39)</td>
</tr>
<tr>
<td>Mission</td>
<td>2, (2)</td>
</tr>
<tr>
<td>Glenmore</td>
<td>4, (3)</td>
</tr>
<tr>
<td>Downtown</td>
<td>4, (3)</td>
</tr>
<tr>
<td>Black Mountain</td>
<td>7, (6)</td>
</tr>
<tr>
<td>Other (Ellison, Glenrosa, Peachland, West Kelowna)</td>
<td>36, (30)</td>
</tr>
<tr>
<td><strong>Transportation to school</strong></td>
<td></td>
</tr>
<tr>
<td>Walk</td>
<td>(46)</td>
</tr>
<tr>
<td>Bike</td>
<td>(9)</td>
</tr>
<tr>
<td>Drive (get a ride)</td>
<td>(45)</td>
</tr>
<tr>
<td>Bus</td>
<td>(27)</td>
</tr>
<tr>
<td><strong>PA outside of school</strong></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>(24)</td>
</tr>
<tr>
<td>Team sports</td>
<td>(19)</td>
</tr>
<tr>
<td>Leisure</td>
<td>(21)</td>
</tr>
<tr>
<td><strong>PA in school</strong></td>
<td></td>
</tr>
<tr>
<td>Sports team(s)</td>
<td>(28)</td>
</tr>
<tr>
<td>Club(s)</td>
<td>(5)</td>
</tr>
<tr>
<td>None</td>
<td>(50)</td>
</tr>
</tbody>
</table>

Participants were able to indicate more than one option; \(^a\) Few participants (n=3) indicated yes, but did not specify in provided area.
4.3 Quantitative Findings

4.3.1 Comparison of PA Participation, Motivation, Enjoyment, and Social Support

For the following analyses, significance level was set at $p \leq 0.05$. A number of paired-samples t-tests were conducted in order to test for significance differences between baseline and post-intervention for each of PA participation, PA motivation, PA enjoyment, and perceived social support. The first paired-samples t-test was conducted in order to examine differences in PA participation as per total PAQ-C scores from baseline (week 1) to post-intervention (week 9) ($n=83$). Results suggest that there was no significant difference between PA participation from baseline ($M = 1.96$, $SD = \pm 0.48$) to post-intervention ($M = 1.97$, $SD = \pm 0.54$), ($t_{(82)} = -0.12$, $p > 0.05$).

In addition to this, although there was an increase in mean scores for PA motivation, significant improvement was not achieved ($t_{(79)} = -0.52$, $p > 0.05$) from baseline ($M = 3.76$, $SD = \pm 1.13$) to post-intervention ($M = 3.83$, $SD = \pm 1.20$). Results also indicated no significant difference for PA enjoyment ($t_{(79)} = 0.77$, $p > 0.05$) from baseline ($M = 4.23$, $SD = \pm 1.01$) to post-intervention ($M = 4.14$, $SD = \pm 1.20$), or for total perceptions of social support from the CASSS questionnaire ($t_{(82)} = -0.22$, $p > 0.05$) from baseline ($M = 4.18$, $SD = \pm 0.81$) to post-intervention ($M = 4.20$, $SD = \pm 0.86$).

However, upon examination of the CASSS subscales, a significant difference for social support provided from teachers was found. Specifically, results suggested that participants felt that support from teachers ($t_{(82)} = 2.53$, $p \leq 0.05$) declined from baseline ($M = 4.30$, $SD = \pm 1.16$) to post-intervention ($M = 3.95$, $SD = \pm 1.32$), which was in the opposite direction of what was expected, as teacher support actually decreased over time. Effect size based on Pearson $r = 0.27$ indicating a small effect size, and only 7% of the variance in scores from baseline to post-
intervention can be attributable to the different time points.

Table 4.2 Results of t-tests and descriptive statistics for numerous variables.

<table>
<thead>
<tr>
<th>Outcome Variable</th>
<th>Baseline M</th>
<th>Baseline SD</th>
<th>Post-intervention M</th>
<th>Post-intervention SD</th>
<th>95% CI of Difference</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAQ-C (n=83)</td>
<td>1.96</td>
<td>.48</td>
<td>1.97</td>
<td>.54</td>
<td>-.10, .09</td>
<td>-.107</td>
<td>.92</td>
</tr>
<tr>
<td>PA Motivation (n=80)</td>
<td>3.76</td>
<td>1.13</td>
<td>3.83</td>
<td>1.19</td>
<td>-.30, .17</td>
<td>-.52</td>
<td>.61</td>
</tr>
<tr>
<td>PA Enjoyment (n=80)</td>
<td>4.23</td>
<td>1.01</td>
<td>4.13</td>
<td>1.20</td>
<td>-.16, .36</td>
<td>.77</td>
<td>.44</td>
</tr>
<tr>
<td>CASSS (n=83) parent support</td>
<td>4.14</td>
<td>1.09</td>
<td>4.30</td>
<td>1.19</td>
<td>-.036, .03</td>
<td>-1.67</td>
<td>.10</td>
</tr>
<tr>
<td>CASSS (n=83) teacher support</td>
<td>4.29</td>
<td>1.16</td>
<td>3.95</td>
<td>1.32</td>
<td>.07, .62</td>
<td>.62</td>
<td>.01*</td>
</tr>
<tr>
<td>CASSS (n=83) classmate support</td>
<td>3.23</td>
<td>1.24</td>
<td>3.38</td>
<td>1.35</td>
<td>-.41, .10</td>
<td>-1.19</td>
<td>.24</td>
</tr>
<tr>
<td>CASSS (n=83) close friend support</td>
<td>5.04</td>
<td>1.12</td>
<td>5.15</td>
<td>.99</td>
<td>-.37, .16</td>
<td>-.81</td>
<td>.42</td>
</tr>
</tbody>
</table>

Significant main effects are denoted by an asterisks (*) (p ≤ 0.05).

4.3.2 Predicting PA Participation, Motivation, and Enjoyment from Basic Needs Support

As mentioned above, a number of simple regression analyses were conducted to determine whether basic psychological needs support (M = 6.21, SD = 0.86), as indicated by LCQ scores, predicted scores on PA participation, PA motivation and/or PA enjoyment. Results indicated that psychological needs support significantly predicted PA motivation (β = 0.28, t = 2.60, p ≤ 0.05) with 7.7% of the variance in PA motivation being explained by basic psychological needs support ($F_{(1, 81)} = 6.77$, p ≤ 0.05). Basic psychological needs support also significantly predicted PA enjoyment (β = 0.31, t = 2.95, p ≤ 0.05) with 9.7% of the variance in PA enjoyment explained by the basic needs support ($F_{(1, 81)} = 8.72$, p ≤ 0.05). These analyses suggest that when basic psychological needs support from program facilitators is met, then both PA motivation and PA enjoyment will subsequently increase. However, the regression analysis
examining the predictive relationship between basic psychological needs support and PA participation was not significant.

Table 4.3 Results for simple regression analyses and descriptive statistics for numerous variables.

<table>
<thead>
<tr>
<th>Variable of Interest at T2</th>
<th>β</th>
<th>t</th>
<th>F-value</th>
<th>R-square value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA Participation</td>
<td>-.02</td>
<td>-.15</td>
<td>.02</td>
<td>.00</td>
<td>.88</td>
</tr>
<tr>
<td>PA Motivation</td>
<td>.28</td>
<td>2.60</td>
<td>6.77</td>
<td>.08</td>
<td>.01*</td>
</tr>
<tr>
<td>PA Enjoyment</td>
<td>.31</td>
<td>2.95</td>
<td>8.72</td>
<td>.09</td>
<td>.00*</td>
</tr>
</tbody>
</table>

Note: each variable is predicted against LCQ scores. Significant main effects are denoted by an asterisks (*) (p ≤ 0.05).

4.3.3 Controlling for Other Sources of Social Support

To examine whether basic psychological needs support predicts PA participation, PA motivation, and PA enjoyment above and beyond perceptions of social support, three hierarchical multiple regressions were conducted. Results suggest that basic needs support predicts PA motivation above and beyond perceived social support ($F_{(2,80)} = 3.62, p ≤ 0.05$) with 8.3% of the variance in PA motivation being explained by basic needs support after controlling for social support. Results were similar for PA enjoyment ($F_{(2,80)} = 4.53, p ≤ 0.05$) with basic psychological needs support being a significant predictor of PA enjoyment, above and beyond that of social support and the only significant predictor in the model ($β = 0.29, t = 2.60, p ≤ 0.05$). Basic psychological needs support explained 10.2% of the variance in PA enjoyment. The third hierarchical regression examining where basic needs support predicted PA participation above and beyond social support was not significant.
Table 4.4 Results for hierarchical multiple regression analyses and descriptive statistics for numerous variables.

<table>
<thead>
<tr>
<th>Variable of Interest at T2</th>
<th>$\beta$</th>
<th>t</th>
<th>F-value</th>
<th>R-square value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PA Participation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 1</td>
<td>.00</td>
<td>-0.00</td>
<td>.00</td>
<td>.00</td>
<td>.99</td>
</tr>
<tr>
<td>Model 2</td>
<td>-.02</td>
<td>-1.4</td>
<td>.01</td>
<td>.00</td>
<td>.88</td>
</tr>
<tr>
<td><strong>PA Motivation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 1</td>
<td>.08</td>
<td>0.71</td>
<td>2.09</td>
<td>.02</td>
<td>.48</td>
</tr>
<tr>
<td>Model 2</td>
<td>.25</td>
<td>2.24</td>
<td>3.62</td>
<td>.08</td>
<td>.03*</td>
</tr>
<tr>
<td><strong>PA Enjoyment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 1</td>
<td>.07</td>
<td>0.64</td>
<td>2.18</td>
<td>.03</td>
<td>.53</td>
</tr>
<tr>
<td>Model 2</td>
<td>.29</td>
<td>2.60</td>
<td>2.53</td>
<td>.10</td>
<td>.01*</td>
</tr>
</tbody>
</table>

Note: CASSS T2 variable was entered into the model first in all cases (model 1) (control), followed by LCQ scores (model 2). Significant main effects are denoted by an asterisks (*) ($p \leq 0.05$).

### 4.4 Qualitative Findings

Inductive thematic analysis revealed three underlying themes: 1) PA barriers and challenges specific to at-risk adolescent girls, 2) Role of social support as an enabler of PA, and 3) Perceptions of essential components for successful programming with at-risk girls. These results are discussed along with their relevant subthemes, and further supported with direct quotes from the participants. Pseudonyms were used to replace participant names for the purposes of confidentiality.

#### 4.4.1 PA Barriers and Challenges Specific to At-Risk Adolescent Girls

Barriers identified by at-risk adolescent girls have not been explored in much detail as this group is often difficult to reach and engage. Based on participants responses, the data concerning barriers and challenges was further divided into three associated sub-themes, consisting of: 1) Family responsibilities and financial concerns, 2) Social anxieties and burdens, and 3) Common dislikes associated with being active.
4.4.1.1 Family Responsibilities and Financial Concerns

Many of the girls expressed that they enjoyed being active, but in some cases, their participation had been suppressed due to family affairs. Many indicated that although they had intentions of joining sports teams after school hours with friends, they could not due to the fact that their parents or caregivers were unable to support them where they needed it. Some girls indicated that both their parents or caregivers worked long days, so they were held responsible for caring for younger siblings or other family members. Stephanie indicated that although she "would like to join [numerous] clubs, she never wanted to put more pressure on my parents” because they always seemed busy between work and other matters. Kayla outlined her reasons for withholding from PA participation in detail:

“Well basically, I have to take care of my brother. And because, like, my mom won’t get daycare. I wanted to try out for the basketball team, and then my mom was like ‘no you can’t, you have to take care of your brother’, and so I didn’t get to do that. And then volleyball was something I really, really wanted to do, like even more than basketball. So I basically like, told mom that my dad could take him [my brother] if he wanted because my parents are divorced. So we ended up making it work, but I still kind of felt guilty a lot when I was going to practice.”

One participant expressed she felt as though she “never really has time [to be active] at my dad’s because they just had a baby, so it’s like... It’s just very hectic.” In fact, another participant who initially started the program shared that although she was interested in participating in the GUM program after week 1, she was unable to continue participation due to family responsibilities at home, and needed to stay home during that time in order to care for younger siblings.
In addition, some participants identified financial hardships as a barrier to joining many organised sports teams outside of school. Brooke indicated that she “wasn’t able to do it because like financially I wasn’t able to”, and others stated that sports can be “really expensive”, and that “looking at prices” was always a primary concern.

4.4.1.2 Social Anxieties and Burdens

Many girls indicated that they suffered from psychological insecurities which impaired their participation in some activities, as they felt as though they were “singled out” or “different” from other girls their age. Some girls indicated that social anxiety played a significant role in limiting their participation. Abby expressed:

“The only reason I can’t [join a sports team] is because of like, my ADHD and stuff and my anxiety, because doing it, like, I enjoy doing it and football is like one of my favourite things to do, but because of my anxieties and stuff it’s really hard for me to be able to play.”

Being active around others who they felt uncomfortable with emerged as an issue tied into this concept as well. Some girls indicated that they felt “embarrassed” around others, and one indicated that “I don’t like being active in front of people that I’m not very comfortable around, and so like, in PE I have trouble because I don’t like running in front of people and stuff” (Kayla). Being aware of the way they looked when playing sport was another concern. Julia indicated that she would:

“Want to do hockey super badly because I absolutely love hockey. But I suck at skating, I can’t go fast and I can’t stop without running into the glass. I’d be too sweaty and gross and hot and then I’d complain if I had to wear all the gear and helmet, and then I’d be
Being around boys was a major concept that emerged as facilitating an uncomfortable environment for many of the participants as well. Many expressed that boys can make for an “intimidating” environment, and that “you kind of feel pressured to do better and stuff, and they always show off” (Katrina). The importance of a ‘girls only’ environment in PA programming is further explored in section 4.4.3.

4.4.1.3 Common Dislikes Associated with Being Active

In addition to the barriers specific to at-risk adolescent girls outlined above, there were a number of barriers indicated that are common to most adolescent girls today. The thought of “sweating”, “breathing heavy”, or “feeling tired” were all ideas that did not appeal to girls when they thought about being active. Even obstacles that are only specific to girls, like “getting period cramps while running” (Gina) were identified as another barrier. Other physical limitations, such as injuries or asthma, were also reported. Emma outlined that “my ankles are just killing me, so that kind of stops me sometimes and my teacher [at school] knows, so I can sit out for some time, but I hate doing that.”

Feeling forced into doing PA was something that was also brought to attention. For example, in PE class many girls emphasised that they do not find it fun or enjoyable because of the lack of choice in activities they are assigned to do. One participant said that she didn’t like PE because “they don’t make us do fun stuff. I like doing fun active things, but I like it being fun. They just make us jog in PE” (Alex). Additionally, some indicated that some of the sports that do interest them are not always given as an option to participate in. Maddy stated “I would love to
do football, but going into [high school], football is only for guys. And that kind of sucks because it’s such a fun sport and no girls play it.”

Further, many participants identified that using exercise as punishment was unenticing and did not help the cause. For example, Jennifer expressed that:

“Every warm up [in PE] is just like ‘okay do this’, and if you don’t do it, you have to redo it till you get it right. And it’s like annoying because I like to try my best. And it’s like, if some one person messes up, it’s a punishment for the whole class and it’s so annoying because it’s not us who were doing it. So [our teacher is] like, ‘okay, three laps around the whole gym’ and some people are walking. And he’s like, nope, do it again because one person didn’t run. And it makes me so mad because the people who actually did it, have to do it again.”

On some occasions, the idea of being pushed to do PA was recognised as undesirable. Some participants indicated that they “don’t like doing things with other people around and having them to tell me what to do” (Stephanie). Olivia expanded on this idea where she stated that she was interested in joining a sports team at school up until she felt as though she was “starting to get pushed to do it”. Another participant expressed her dislikes associated with PE in that she felt that “we never get like breaks or anything to just like slow down for a sec. [So] I always get stressed in PE” (Shelby).

4.4.2 Role of Social Support as An Enabler of PA

This section aims to outline adolescent girls’ thoughts surrounding their perceptions of peer support in relation to PA engagement, as well as describe the role of program facilitators and potential PA motivators. This section was further divided into four sub-themes, consisting
of: 1) Being active with friends makes PA fun, 2) Learning to trust the program facilitators, 3) Role modeling to encourage healthy behaviours and 4) Other motivators to PA engagement.

4.4.2.1 Being Active with Friends Makes PA Fun

The participants unanimously voiced that the program provided them with a space to just “hang out” and allowed them “to make friendships with [others] and stuff while doing physical activity” (Rachel). It was noteworthy that many of the participants felt as though the social aspect was very important in engaging and encouraging them to participate in an activity “because you still get an opportunity to talk to people while you can still do activities, you know” (Rachel). Especially when it came to trying new and unfamiliar activities, many girls voiced that they thought that by having “someone there to talk to and someone who knows how to do it” (Sydney) granted them to feel more comfortable and more willing to try the activities. By having someone to relate to while engaging in PA, the girls felt more confident in their own abilities as well. Kendra voiced that when doing activities with friends, she felt as though they are more “my level of doing sports. So like, I feel like we can do the same thing and then it won’t feel like left out.” Katrina added:

“I guess it’s just more confidence to go into it kind of thing, because when you know someone then it’s easier because it’s like ‘we can do this together’ kind of thing. But if I do something on my own, like if I join a sports team by myself, then I will feel a little bit like ‘I don’t really know anyone’. And I get worried that they all know each other, and that I’ll be all by myself. But when my friends join stuff, then it makes it a lot easier, like emotionally I guess? And they kind of help you out through it and motivate you.”

Many girls also said that they prefer doing activities as a group with their peers rather than on their own, because “there’s this feeling that makes me like sad when I’m alone and I
don’t like it. I like being like with my friends” (Jennifer). The sense of comfort administered from peers and the emotional support they have the ability to provide, allowed the girls to “feel like I know them, and I don’t have to impress them. So like I don’t look, like, out of place when I’m with them” (Sarah). Julia further expressed:

“I like doing [PA] as a group, because it’s like you can take your mind off of everything else that’s going on and be with people that you love being with and enjoy it. [...] And then if you’re alone, you’re alone with your thoughts and sometimes thoughts can take over lots of things. So if you’re with people, you can have fun while doing exercise and stuff.”

Further, the ability that friends have in motivating girls to engage in PA is conspicuous, where Shelby pointed out that:

“Because some of my friends are really active and they say [an activity is] really fun so I’ll at least try and be like ‘okay’ and I try. And like in volleyball, they were playing [...] and they were like ‘you should come’ and I was like ‘okay’ and I tried and it was really fun. Now I really like volleyball.”

4.4.2.2 Learning to Trust the Program Facilitators

Many of the participants indicated that they felt “comfortable” around the leaders because they sensed “good vibes” from them, and that the leaders helped the girls to just “feel better.” Even simply granting them with the opportunity to discuss openly with somebody who was not actively involved in the various routine aspects of the participants’ personal lives, allowed the girls to open up about internalising issues. The girls voiced that by being able to approach the leaders in confidentiality was a vital component of the program, and is further discussed in section 4.4.3. Of particular interest, the personal confidentiality journals that were
distributed during week 1 were expressed as an immense asset, where they allowed the participants to get any built-up emotions or feelings “off your head” without having to physically approach the leaders. As indicated by Julia:

“I like writing stuff down instead of saying it face to face. And then when people reply you have somebody to talk to even though you don’t want to say it face to face, you can still talk to somebody and it makes you feel like they’re there for you and you have somebody to talk to.”

The fact that the program leaders would provide a written response back when indicated by the participants was something that participants appreciated. For example, according to Jennifer:

“We could write about it, and then if we asked you guys [program leaders], you guys could reply and help us. And then, I don’t know who wrote back to me, but it helped me. [...] I was really stressed out about school work and school stuff, and then one of you wrote back to me taking walks is nice, it helps with their stress. [...] And I tried that and it actually does work.”

To build on this statement, Kandace added that:

“Writing out, like with the journal activity, helps a lot with anxiety and stressful days if you write about it. And then I like how you guys did the ‘read’ thing if [we wanted] you want to read it, and like ‘don’t read’, or ‘read and reply’. I feel like that’s a good way to tell people about things instead of having to tell them [in person] because sometimes I get really nervous when I have to tell people in person.”

Building rapport between the program facilitators and participants facilitated feelings of openness and trustworthiness between the program participants and leaders. One participant
explained that she felt as though “I could tell you guys stuff, and like I know I can trust you guys. So it’s just like helped me.”

It is also crucial to consider the impact that a significant role model, such as the program leaders, can have on a younger individual, where the younger individuals are easily influenced by even the slightest actions. For example, Jennifer explained:

“The group leaders, [...] like you guys were always so happy and like, joyful, and it’s just like awesome. And like, you guys always spread positive vibes to everybody and I think I could do the same more often because like I’m kind of like a sad person, like a lot of things in my life, like, go wrong when I try and do something. And you guys have showed me like, even if somethings wrong, you should always stay positive because something good is going to happen. And like, everything will turn out okay. And it’s just like, I should be happy more.”

Other group activities, such as the group leaders answering to anonymous questions prompted by the participants during open discussions, enabled the participants to feel more comfortable around others in the group as well. Brooke indicated that asking these questions within the group anonymously “helped a lot knowing that [other] people were in the same place.” Also, by encouraging the participants to participate in all the PAs during GUM fostered enhanced confidence in their own abilities. One girl explained that, in relation to the program leaders, “you guys made it like ‘oh it’s okay if you’re not the fastest, but you can still participate in this’” (Kayla). Providing positive encouragement in this context is vital to PA enjoyment and willingness to participate.
4.4.2.3 Role Modeling to Encourage Healthy Behaviours

Many of the girls also indicated that by participating in the program, not only did the program facilitators allow the girls to feel more comfortable and create a safe environment for them, but they also taught them the importance of PA and how to “be a better person” and to effectively communicate with close friends and family. Kayla explained that the program taught her to:

“Just kind of being more self-positive and also like, more active, because like that totally changes how you are. Like if you’re down on yourself and you’re being active just because you want to look better, instead of having a healthier lifestyle or whatever, is totally different.”

Many girls continued to explain how they “feel like we’ve learned, like, to do more like physical activities in our life and it still could be fun” (Sarah), and one participant explained that she “really liked all the active things we were doing and stuff, and I kind of miss that, so then I want to do more out by myself so that I can do more of that” (Katrina). Additionally, as a result of participating in GUM, some of the girls found themselves more willing to participate in other activities, like PE class during school hours. “I find myself kind of wanting to participate in more stuff and in gym and stuff. Like before I kind of just wanted to sit in the corner and like not do anything.” Stephanie explained. It is evident that the GUM program facilitators had the ability to foster a new liking for PA and served as a major driver behind encouraging healthful behaviours among the girls. Olivia also stated that “I used to hate walking to school. And after I joined [GUM] I started walking to school like all the time. […] And I participate in gym a lot more now.” By having leaders with extensive knowledge and expertise in each individual field of physical health and psychosocial development, this helped to teach them the importance of
various health related behaviours. Another participant noticed that she realised that “exercise is good for your physical strength, and also your mental strength” (Megan). Other healthful behaviours, including nutritional knowledge, were also recognised as important to the girls and was another additional component that came with engaging in regular PA. One participant explained:

“I’ve been eating a lot more healthy food. I was still very healthy before I joined, but now I barely eat junk food whatsoever, so I can see myself improving. I’m definitely more healthy now” (Lauren).

Not only did the girls learn the importance of many health-related behaviours from the program facilitators, but additionally the psychosocial component that the program facilitators were able to effectively deliver had a significant impact on the outcomes. This vital component is further discussed in section 4.4.3.

4.4.2.4 Other Motivators to PA Engagement

Some participants indicated that PA had the ability to make them “feel healthier” and instilled them with a “sense of confidence”. Many girls also outlined that engaging in regular PA allowed them to feel better about their appearance and any physical insecurities they may have. Julia outlined:

“It makes me feel better about myself because I usually hate on myself a lot and think my thighs are too big or my waist is too big or my arms are too skinny or something, and exercising or physical fitness just makes me feel better about myself. It changes my mood, which, I’m mostly down most of the time but I’ve been super happy lately.”

Additionally, the ability that PA has on making individuals feel more energised, improving their mood, and helping aid in better sleep was recognised. One participant stated that she felt as
though PA “makes me feel happy [...] because it gives me a rush of adrenaline” (Paris). Shelby also shared “I’m always tired, so like [PA] makes me feel less tired and I actually want to do things.” Maddy added to this and expressed that PA made her feel:

“Energised, and like it makes me feel like a lot happier because I’m doing something that I like doing. I feel like I’m putting more into going out and doing, like, I’m trying to do a new gymnastics skill, like I’m putting work into it and then I get happy if I get it and stuff, so just trying to improve my skills and stuff makes me happy.”

Some of the participants acknowledged that having an active family also motivated them. Many girls indicated that they frequently engaged in family activities such as walking on most nights of the week, and stated that it made for a good way to spend time together and strengthen their relationships. Additionally, many of the girls highlighted that having a family that encouraged them to be active was also a motivating factor. Kandace elaborated:

“[my parents] love when I get physical and play with friends and stuff. It just makes them happy to see that, and I’m happy doing it, and so they encourage me to do sports and ask me if I want to do it all the time.”

Many girls stated that their parents just “want us to be healthy so they encourage us to do physical activity” (Sarah), such as joining school sports teams or to be active regularly. On top of this, being active with siblings was another way that many girls indicated they are motivated to be active outside of school. Playing sports such as basketball, volleyball, or jogging with siblings were all activities that were noted.

4.4.3 Perceptions of Essential Components for Successful Programming with At-Risk Girls

The third overarching theme focused on the components of the intervention that participants believed are imperative to successful implementation; however, based on participant
responses this section was divided into sub-themes, inclusive of: 1) Introducing new opportunities and choice for PA, 2) Importance of small all-girls group environments, and 3) Importance of open and sensitive group discussions.

4.4.3.1 Introducing New Opportunities and Choice For PA

Many of the girls expressed that the GUM program was different than just regular PE class because they had the opportunity to try new activities they had not previously tried. Activities such as rock climbing, Pound fitness classes, self-defense, and yoga were all activities that emerged as new and appealing to the girls. Both individualised activities, (i.e., yoga, fitness classes, etc.) and team-based activities (i.e., competition-based games, outdoor sports, etc.) were recognised as enjoyable to the girls, and not one appeared more prominently likeable than the other. One participant stated her experience with trying new activities during GUM:

“Never doubt yourself and if you get the opportunity to do something, just take it. Even though I hated yoga to begin with, I still tried it and didn’t like it but I’m proud of myself for trying things that I didn’t like. But snowshoeing though, I felt like I didn’t like it all and then at the end, it turned out to be okay and I loved it” (Lauren).

The value in this program is that it enabled many girls to seek out new activities that they may not have previously been aware of, and allow them to try new thing with their peers whom they feel most comfortable around. Other desirable activities that the girls discussed they enjoyed and preferred doing involved activities that focused on “play” such as hopscotch, small friendly competitions or games between friends, and other activities such as laser tag where “you don’t even notice [you’re sweating] until you’re done” (Kelsi). Katrina explained her thoughts on PA:

“I just like being able to get out, I just like that feeling that you’re not being inside kind of thing. I just like how nice and refreshing it feels to be out and do something active. So
yeah. [...] I like to play games like running games. Sometimes we get the whole neighborhood, like a lot of the neighborhood kids and stuff will come out, and we play cops and robbers and I find that really fun. I feel like it keeps us going for hours.”

This made it apparent that sometimes, just ‘being a kid’ and playing friendly games with friends was among one of their favourite ways to be active. Katrina also shared:

“We got to, like, step more out of comfort zone, and we kind of got used to that [in the group], which is like really good because normally I feel like ‘oh, we have to, like, touch each other’ kind of thing. But then you kind of just like step out of your comfort zone, and basically just do it. And you kind of feel like ‘oh that wasn’t so bad’, and it’s kind of brought people a little bit closer.”

One pivotal idea that emerged was providing the participants with a sense of choice in the activities they would get the opportunity to do during GUM, and they emphasised that they enjoyed “doing more fun activities instead of just having to work out” (Megan), and doing activities that didn’t “just feel like PA”. One participant stated that she felt more willing to participate in the planned activities in GUM because “Because it was more fun. And it’s not just constant, repetitive, [and] no choices [as opposed to PE class]” (Kelsi). Kadance also explained that she liked the freedom in choosing “the activities we [could] do and kind of do what we want to do”. Having the freedom in dictating the types of activities implemented, and having the group facilitators actively listening to their concerns regarding unwillingness to participate in certain activities, was another essential component of the program that emerged as important.

4.4.3.2 Importance of Small All-Girls Group Environments

Within the group, emphasis was placed on the importance of a ‘boy-free’ zone, due to the fact that this created a “trusting” environment and allowed them to feel more “understood by
one another.” “Because I can be myself, unlike when we’re around boys” Alex explained while opening up about the value of an all-girls environment. Some participants voiced that they believed they felt more comfortable about their physical appearance just being around girls, where “it feels like the guys are judging us, and like, watching us. Or like, bragging about how they can like, do whatever that they want and we can’t, and looking at our bodies” (Kendra). Having less concern regarding what they looked while doing an activity in a boy-free environment, especially during GUM, may have been a factor that made them more willing to participate. Some girls explained that they felt more comfortable “because [GUM] was with people that I liked and more trusted around my body and stuff” (Paula).

In terms of creating a safe and confidential space for the participants, the girls felt as though they could be open up more easily and “share things, and just feel more comfortable” (Kayla) while being surrounded by only girls. Abby noted that she felt as though:

“We could say more, like more personal stuff and like, stuff about our well-being. Because like around boys, it’s just more awkward because like, [to] talk about your period, and stuff like that around boys is just... weird. So I feel like, yeah, we can say more and do more.”

It was clear that girls appreciated the sense of belonging to group and feeling as though they fit in well with their peers, without feeling like they needed to hide their “true selves”. This was clearly summed up by Julia:

“I felt like I could be me there and not hide who I really was [...]. When there’s boys around I feel like you have to be perfect and you have to do something a certain way and if you don’t do it right they are going to laugh at you or something. With girls, it’s just like you’re all like together and you don’t laugh at each other and you’re nice to each
other and you can be yourself, but with guys it’s just the total opposite. Like you have to be perfect, you have to eat a certain way, you have to look a certain way, you have to do stuff a certain way and it’s just like, why?”

4.4.3.3 Importance of Open and Sensitive Group Discussions

One important program component that the girls appreciated was the active group discussions and exposure to sensitive topics that were a part of the weekly sessions. This was noted as important to the girls as it provided an opportunity for them to open up with others. Abby felt as though her relationship with other significant people in her life had improved since participating in the program;

“A lot of the stuff I talk about with you guys I haven’t talked about with other people so it makes me feel more comfortable talking to other people now too. Like, my mom, I didn’t really talk to her because my mom’s always busy, so it makes me feel like, it’s more important to talk to her now.”

Another participant also shared her experience with GUM as follows:

“Yes it’s easier for me to discuss how I feel with others now. Since I’ve shared so much in [GUM]. [...] And it made me feel like I could just tell people how I feel whenever. Like, if I’m feeling sad or something, it’s not hard for me to express my feelings anymore. Before it was, and then now it’s not” (Shelby).

Jennifer disclosed that she felt as though “I used to not really tell people about my problems. But now it’s easier for me to tell them. [...] And I think it’s because of this, because I could tell you guys stuff, and I know I can trust you guys. So it’s just helped me.” This brings to light that learning the value of certain things within the group had the ability to project to the participants personal lives, further highlighting the importance of open group discussions around sensitive
topics. Jennifer also stated that she learned “to have a lot of confidence in what you do and be proud of who you are. Like, just be happy about what you have”. Brooke indicated that by participating in the GUM program, she realised “that there are people [girls] in the same place as me and I’m not alone with what we’re dealing with”. Lauren further added to this and explained:

“I struggle with very bad anxiety but it made me more confident with it because I was scared because I usually got panic attacks at random times, but now I rarely get them, now that I’ve joined [GUM]. I can see, after we were done with [the program], I rarely get panic attacks anymore. It made me feel more aware of everyone, a lot of people have it too so it made me feel more confident.”

And Gina added to this by revealing her thoughts on what she felt she learned from GUM:

“Just like, take our closeness from this group and try to spread more love, I guess you could say? Because everyone in here had me thinking about, if it’s so nice in here, why can’t it be so nice out there. I just want to try to take the love and support that we’ve all had in [GUM], and put it into my other relationships and friendships as well.”

The open group discussions facilitated by the program leaders, along with the confidentiality journals, were a large contributor to enabling comfort and trustworthiness in the group environment, as previously discussed in section 4.4.2. Further, it taught them how to properly cope with their emotions, with some girls stating that “it was good to let my feelings out because I don’t usually let my emotions out” (Paris), and that “sometimes if there’s something I can’t say, I like putting it down on paper” (Alex). This psychosocial component of the intervention was a crucial part of the program as it allowed for the girls to open up about all aspects of their personal lives if they felt necessary, and allowed them to feel as though they
were in a comfortable and safe space to discuss about any issues. Shelby explained that she “had a lot of things going on those weeks that we wrote in our journals, so like I always put ‘read and reply’ cause like there were some things that I needed help with”. Having experienced leaders who were knowledgeable and capable of dealing with any imminent concerns among the girls was a huge asset to the program and illuminated vast amounts of positive feedback from the participants. The girls identified these individuals as resources for teaching them valuable life skills and strategies, and therefore were recognised as valuable assets to the program.

4.5 Summary

In summary, the GUM program was successful in fostering perceptions of enjoyment and motivation towards PA behaviours, and emphasized the importance of a stable and reliable social support system. The participants also highlighted that the program had the ability to foster strengthened relationships amongst their personal lives, as well as addressed the fundamental role that the program facilitators played in encouraging PA behaviours. The quantitative results proved that the program facilitators played an important role in facilitating PA enjoyment and PA motivation, which was further supported by the qualitative data presented. The participants also emphasized the importance placed on feelings associated with comfort and confidentiality within an all-girls PA group, as well as addressed what factors are able to impact their willingness to participate in PA.
Chapter 5 Discussion

The GUM study provides an exploratory examination into the perceptions of PA and social support among at-risk adolescent girls. The following sections aim to provide potential explanations and implications for the preceding findings of the GUM project. Based on the research questions for this study, the discussion has been organised into two sections. The first section aims to discuss the findings around PA participation, PA motivation, and PA enjoyment as a result of the GUM project, and the second section aims to discuss the findings around perceptions of social support as a result of the program.

5.1 Physical Activity Outcomes

Although the present study found no significant differences from baseline to post-intervention regarding enhanced PA participation, PA motivation, or PA enjoyment, the participants still acknowledged via the interview data that they found the GUM program to be enjoyable and instilled them with a newfound sense of confidence with regard to their PA abilities. Regarding the quantitative outcomes, there may be a number of explanations as to why these non-significant outcomes were yielded. Firstly, the program may have lacked frequency (i.e., dose) in scheduled program days for noticeable changes to occur among the studied population, as sessions were limited to only 90-minutes, one day per week. If the program was scheduled to take place more often during each week, or if the intervention exceeded 9-weeks in length, then maybe we could have expected different outcomes to result. Previous studies have shown that PA interventions are more likely to be successful if they are comprised of a multicomponent, and span longer than 12 weeks in duration, with an additional longer follow-up period (Dobbins, DeCorby, Robeson, Husson, & Tirilis, 2009; Kriemler et al., 2011; Pearson,
Braithwaite, & Biddle, 2015; Sutherland et al., 2016). Although the group leaders also encouraged the girls to be active outside of the program and on their own time, this was not measured or accounted for as it was beyond the scope of the intervention. Despite many of the girls emphasizing that some of the new activities that they had the opportunity to try each week were enjoyable and engaging, it did not result in significant changes in any PA outcomes among the participants, and perhaps a longer duration intervention (i.e., greater dose of intervention) would have been beneficial to consider upon implementing the original project proposal.

Secondly, the current study employed only subjective self-report measures of PA outcomes. Self-report is limited in a range of aspects, inclusive of social desirability, cognitive complexity of activity recall, as well as over-estimation of PA recall among adolescents (Ridgers, Timperio, Crawford, & Salmon, 2011), and has shown to have weak validity due to recall error and bias (Pearson et al., 2015). Accelerometry is known to be the ‘gold standard’ indicator of PA outcomes among adolescents (Hager et al., 2015; Pearson et al., 2015), therefore this may have been a more reliable alternative to self-report measurements. Many participants also voiced that the self-report questionnaires were ‘very lengthy’ and therefore may not have been an accurate indication of their true perceptions, since many began to feel impatient and feel the need to rush to get them done. Along with these possible disingenuous responses, personal perceptions of frequency of PA or intensity can differ between participants, where in some cases they may either be underestimating or overestimating their self-reported levels of PA (Ridgers et al., 2011). In addition to this, tracking attendance rates would have been an asset to the intervention outcomes and something to consider for future PA programming. Although the full 9-week intervention was delivered to each of the eight groups, it did not necessarily mean that each individual received the full intervention. Attendance rates varied, with some participants
missing multiple weeks throughout the program duration, which in turn may have had some undesirable effect on the intervention outcomes. By tracking attendance among the groups, then this component could have been accounted for during analysis.

Additionally, each one of the eight groups that participated in the GUM program had varying program start dates, which also may have potentially had an impact on the study outcomes as seasonal changes also varied during these times. For example: groups 1 and 2 had a start date in January 2018; groups 3 and 4 in April; group 5 in June; and groups 6 through 8 in September and October of the following school year. It should be noted that the ability to participate in certain outdoor activities is rather limited during the winter months in regions of Canada such as this; it is more likely for individuals to report higher levels of PA participation during summer months where weather permits engagement for outdoor activity. It has been shown that the natural environment is an important predictor of outdoor PA participation for adolescents, and that both high and low temperatures may influence the pleasure derived from outdoor activities (Aibar et al., 2015). Other studies have shown that there appears to be seasonal differences in activity levels, with the highest PA levels occurring in the summer, with a decline in the fall months, and then to the lowest levels in the winter, and increasing again in the spring (Kolle, Steene-Johannessen, Andersen, & Anderssen, 2009; Rusby, Westling, Crowley, & Light, 2014). Therefore, the PA opportunities each group was exposed to, dependent on their program start dates and time of year, may not necessarily be consistent with one another. This being said, this intervention aimed to mimic a real-world PA program, many of the outdoor activities needed to be catered towards the seasons and aligned with school policies, and therefore each group received a slightly different PA schedule from one another. It is possible that in doing so, this
caused inconsistencies in the program delivery and therefore may have had an impact on the intervention outcomes.

There are also a number of factors to consider that are external to the program components that may have played a role in these PA outcomes. The girls additionally stated that they felt as though their educational system only offered sport programs that were not of explicit interest to them, and only catered towards boys or those interested in traditional sporting activities. One factor to take into consideration to aid in enhancing levels of PA participation among adolescent girls is to introduce PA programs within the education system that have the ability to gage the specific interest of adolescent girls, or to introduce same-gender PE classes during school hours. In fact, many girls report high levels of dissatisfaction with traditional sporting and competition, but are more accepting of participating in activities such as dance or other fitness classes (Timken, McNamee, & Coste, 2019). By engaging adolescent girls in sports teams and other physical and leisure activities that they display interest in, this further allows their physical and socio-emotional competencies to expand (Fitzgerald, Fitzgerald, & Aherne, 2012; Salvy et al., 2008).

Further, specific to this population (i.e., ‘at risk’) where financial security is of concern, offering free PA programing is hugely advantageous. During the interviews, the girls revealed that they did not want to put pressure on their families because financial instability was a key component of restricting their PA access. This absence of financial aid prohibits after-school PA community program engagement. And although many girls were aware that schools offer free access to clubs and sports teams, there is a lack of interest in the free PAs and traditional sports teams offered in schools for adolescent girls, further compounding a lack PA participation. Free
after-school and community PA programs that are able to specifically captivate the interest of adolescent girls could result in rising levels of PA participation, enjoyment, and motivation. Another important aspect to keep in mind is that although significant changes were not evident from baseline to post-intervention regarding the three PA outcomes, contemporary environments often have a role in hindering PA. In present day society, sedentary behaviour has become rather socially normative and habitual, particularly with the rise of technology and increased screen time, making these behaviours difficult to change (Pearson et al., 2015), especially among adolescents. In fact, a study by Gur et al., (2015) reported that internet and technology use is associated with negative attributes such as poor physical fitness, sleep deprivation and irregular eating habits; whilst it is also recognised as being associated with the increase in rates of depression and aggressive behaviour (Gür et al., 2015). No matter how powerful a PA intervention may be, it is difficult to go against an environment that promotes numerous, every-day unhealthy and sedentary behaviours, so even modest positive trends should not be over-looked (Coleman et al., 2008; Gür et al., 2015; Valencia-Peris et al., 2016). However, contrary to this, the qualitative results also indicated that the GUM program introduced a number of new and enjoyable activities into the girls lives. It was noted that making an activity fun, enjoyable, and providing freedom in choice of activities allowed the girls to feel more accepting and willing to participate in certain PAs. This is likely because the girls felt as though they had a sense of control and autonomy over the activities implemented, which further facilitated feelings of comfort and confidence in their own abilities (Mitchell et al., 2015). These outcomes are important because although there were no significant differences indicated among the quantitative data from baseline to post-intervention for all outcomes of PA participation, PA motivation, and PA enjoyment, the goal of PA programming for adolescent girls should be to
focus on making activities fun and enjoyable, and making it seem like it ‘isn’t just PA’. The findings reflected from the qualitative data emphasized that at-risk adolescent girls are more accepting to PAs that are unstructured and appreciate engaging in them in a small group environment, making these especially important factors to consider when designing PA programs for this specific population. Drawing from this, attention should especially focus on enhancing PA motivation and PA enjoyment, as these factors are likely to dictate PA participation in the long term. If adolescents perceive an activity as enjoyable, it is more likely to result in positive health-behaviour change and predict future PA participation (Chen, Sun, & Dai, 2017; Timken et al., 2019). The likelihood of seeing significant changes in these variables over a nine-week period may be unlikely in this specific age cohort given an intervention that occurred only once per week. Possibly due to the fact that the girls only physically participated in the PAs was not enough on its own to initiate behavior change, but instead focus should also be directed to mentally teaching them about the benefits that PA has to offer in aims to initiate a change from within the individual.

Many of the girls also voiced that PA had the ability to make them ‘feel healthier’, and that by engaging in the program they also learned the value of other health-related behaviours. It was evident that PA had the ability to instill girls with a sense of confidence because they began to feel better about their physical appearance and their ability to perform certain activities. This shows similar results to a study by Okely et al., (2017), stating that one key reason that girls disengage in PE activities during school is because they feel they lack the proper skills and confidence (Okely et al., 2017). As well, factors such as peer teasing related to PA in terms of body image and competence have been shown to reduce adolescent girls’ confidence to participate (Casey, Eime, Payne, & Harvey, 2009). It was clear that the GUM program was able
to foster a newfound sense of confidence among the girls, and perhaps this is linked to what made them more willing to participate in the activities performed during GUM. Additionally, whilst the girls realised that PA had the capacity to allow them to feel more energised throughout the day, they also noted the value of nutrition and the role it plays in a healthy and balanced lifestyle. Although emphasis was not necessarily placed on teaching the participants about good nutrition throughout the duration of the program, this is particularly alluring as PA and nutrition go hand in hand and it may have been something that they learned as they noticed they began to feel better as a result of engaging in enjoyable PAs. Alternatively, this may have resulted from the role modeling performed by the group leaders and the casual discussions about any health-related questions the girls may have had during group time. The group leaders always tried their best to address any questions or concerns put forward by the girls, including offering any health advice the trained health promotion specialist could provide. Likewise, a study by Tavares (2014) confirmed a positive correlation between healthy eating and PA engagement, and continued to further indicate that health authorities should aim to focus on promoting a healthy lifestyle, rather than just trying to highlight one or the other of these health factors (Tavares, 2014). Tied with the aforementioned about including an educational component around the benefits of PA, perhaps an effective approach would also include incorporating educational components around teaching the girls about proper nutrition and diet as well, and focus on how these components can be easily adopted into their everyday lifestyles.

5.2 The Role of Social Support in Predicting PA Behaviour

Although no significant differences were found from within the pre-post intervention quantitative data regarding perceptions of support from parents, classmates, or close friends (i.e., aside from the significant declines noted from perceived teacher support), the qualitative
interview data contrarily emphasized the essential role of peer support in regard to PA. Important
to note from the GUM study was that the self-report measure of pre to post program social
support (i.e., the CASSS questionnaire) did not measure support received from the program
leaders. Having a questionnaire which successfully measured this may have been a beneficial
component to integrate in order to evaluate how the girls’ perceptions of the leaders changed
over the course of the intervention. In addition to this, the interviews were also able to highlight
the critical component that the program facilitators brought in enabling a safe space to encourage
PA and foster improved self-perceptions. Through these semi-structured interviews, the
participants emphasised the importance of being surrounded by like-minded peers while
engaging in PA, and how engaging in PA with friends enabled willingness to participate. It has
been demonstrated within the literature that peer support is related to PA among adolescents, and
that peer support has been found to be related to increased self-efficacy for overcoming potential
barriers associated with activities (i.e., feeling tired, muscle pain, etc.) (Chen et al., 2017;
Fitzgerald et al., 2012). Additionally, having peers that promote PA involvement, as well as the
perception that an individuals’ peers are open to PA, is also found to be linked to enhanced
participation (Fitzgerald et al., 2012). This may explain why many of the girls found themselves
more willing to participate in the activities in the GUM program as opposed to routine PE or
fitness programming. Some girls voiced that during PE or other fitness programs, hesitations
exist around participating in certain activities which may lead them to feel more self-conscious
or embarrassed about the way they look while doing an activity; but by having their close peers
surrounded them in the group during GUM, they felt more inclined to participate if their friends
were as well. Research has shown that issues around self-presentation and social physique
anxiety may be especially heightened around the time of adolescence (Pearson et al., 2015),
making the presence of close friends exceptionally important to support one another and reduce feelings of self-consciousness while engaging in PA. Although the quantitative findings did not show a relationship between increased peer support and increased PA participation from GUM, it was evident through the interview data that the participants thoroughly enjoyed the activities in the group, more so as a result of being with their peers. The quantitative non-significant findings regarding perceptions of peer support may have been due to the fact that the subscales which measured ‘classmates’ and ‘close-friend’ support were likely not a true reflection of their friendships within the GUM program, but rather the questions were interpreted from the larger context of peers. Many of the girls did state in the interviews that they valued making new friendships from participating in GUM, but it may have been valuable to have a social support scale that measured changes among peer support from peers confined specifically within the program. Focus should be drawn towards the aspect of PA enjoyment, because peer support has been shown to enhance PA enjoyment and self-efficacy, which in turn may increase future PA participation (Chen et al., 2017; Dishman et al., 2005).

Specifically, the importance of peer support for at-risk youth should be accentuated as sport and PA have the ability to positively impact marginalized youth by promoting confidence, self-esteem, and a vast array of interpersonal skills (Parker, Morgan, Farooq, Moreland, & Pitchford, 2019). Not only does PA participation have the capacity to increase levels of social engagement among at-risk youth, but it can also provide a sense of positive behavioural progression, further shaping their personal and social lives (Parker et al., 2019). PA has the potential to provide an outlet to control anti-social behaviours; and when done with peers, it enables individuals with a sense of belonging to a group or club and provides more opportunity for social interaction (Parker et al., 2019; Ranøyen et al., 2015).
Although not significant, the t-test results indicated trends in the positive direction demonstrated among perceived parent, classmate, and close friend peer support. Additionally, a high emphasis was placed on the importance of a girls-only group within the qualitative data, and the value of friendships within the program. Being nervous or having a fear of embarrassment to try new activities in front of others was recognised as a large barrier among adolescent girls, and this may prohibit PA engagement in some circumstances (Mitchell et al., 2015; Robbins, Pender, & Kazanis, 2003); however the girls emphasised that being surrounded by their peers in a small, girls-only group environment had the ability to foster improved confidence and allowed for a sense of collaboration amongst them, while simultaneously allowing them to develop new and strengthen existing relationships amidst their peers in the group. In accordance with this, a study by Mitchell et al., (2015) found that when girls were introduced to a ‘girl-friendly’, single-gendered PE class, participation rates dramatically increased due to instilled feelings of confidence and comfort, along with allowing them to participate with friends (Mitchell et al., 2015). Being able to be their ‘true selves’ is especially important when it comes to girls PA programming as this has the ability to potentially facilitate enhanced participation and enjoyment when surrounded by those whom they feel most comfortable around (Dishman et al., 2005).

The peer relationships that are developed through PA have been found to offer important opportunities for favorable psychosocial growth and development, support, and companionship which are all exceptionally important factors to consider alongside at-risk girls (Fitzgerald et al., 2012; Storch et al., 2006), as opposed to social isolation and exclusion or peer victimization which may alternatively cause restriction on access to certain PAs (Stearns, Carson, Spence, Faulkner, & Leatherdale, 2017). This emphasises the value that all-girls PA programing can propose in terms of enhancing PA outcomes, and how peers are able to support one another or
provide someone to relate to during PA. As mentioned previously, this is particularly alluring to consider regarding at-risk adolescent girls where anti-social behaviour can be rather conspicuous (Parker et al., 2019); so therefore, the feelings of comfort facilitated by an all-girls PA environment may provide them with a sense of relatedness and belonging that they may need (Mitchell et al., 2015).

It was, however, noted that perceived teacher support experienced significant declines from pre- to post-intervention. There may have been a number of reasons for these findings, with one leading possibility being that the participants alternately began to feel closer to the program facilitators. Having new and different role models outside of their routine environment, who were specifically trained to deal with any psychosocial issues the girls may have had, allowed for the girls to feel as though they had an alternative option in terms of opening up and talking to someone else (Mitchell et al., 2015). Having an ‘outsider’ who is not involved in all the usual, routine aspects of the participants lives was seen as a beneficial component to the program, and may be exactly what adolescents who are exposed to heightened hardships need. This unique bond formed between the program facilitators and participants can be portrayed as different compared to the types of relationships between teachers and students, because the former allows for complete confidentiality (e.g., unless the situation needed to be intervened upon on behalf of the health and safety of the participants) and honesty without having to worry about being penalized or hurting someone else’s feelings.

Building on this, the role that the program facilitators on the project exhibited was an exceptionally important component to the program. The results demonstrated that the social support provided from the group leaders was predictive of both PA enjoyment and PA motivation above social support from alternative sources. This outcome may have manifested
from the group leaders’ abilities to be able to facilitate a comfortable and inclusive environment for the participants, and allowed the girls to be more open and in touch with their emotional well-being. Creating an environment where the participants felt comfortable and understood was especially important in facilitating PA engagement from the participants, and many voiced that they felt comfortable enough to participate in new activities they previously were too nervous to try on their own or with other groups, such as in PE class.

The SDT theoretical framework states that learning environments which support the basic psychological needs of competence, relatedness, and autonomy are able to contribute to the healthy development of a learner’s engagement and motivation in a given activity, such as PA (Mitchell et al., 2015). In fact, when PE teachers or PA leaders focus on improving students’ competence and perceptions of their own competence by providing them with the power of choice and appropriately challenging activities, then this has the ability to increase intrinsic motivation among them (Mitchell et al., 2015; Standage et al., 2005). This is another possible explanation as to why the girls’ in GUM began to feel as though they were more motivated and enjoyed the activities more so than those PAs in their regular PE class. The GUM study indicated that the participants felt as though their basic psychological needs support were met from the program leaders (i.e., as indicated by the LCQ), which is an essential stepping-stone in the adoption of future health behaviours. Additionally, SDT also is believed to be a major contributor to enhancing opportunities for social interaction, which further is shown to increase self-esteem and reduce anxiety and depression, all of which are common traits carried by this at-risk population (Mitchell et al., 2015; Ranøyen et al., 2015). SDT is a central theoretical framework to the GUM study, where enhancing all of these internal perceptions of autonomy, competence, and relatedness are key components in future PA adoption (Mitchell et al., 2015).
Aligned with this concept, another study by Mitchell et al., (2015) focused on the relationship between health program role-models and ‘disengaged’ adolescent girls, finding that this relationship was critical to PA engagement (Mitchell et al., 2015; Timken et al., 2019). This study was able to highlight that by having someone to listen to the girls’ concerns and requests, interacting with them, and participating in fitness activities alongside them, this was something the girls’ voiced they greatly appreciated and enjoyed throughout the duration of the program (Mitchell et al., 2015; Timken et al., 2019). The vital role that trained program facilitators’ play in successful PA programing is undeniable, and clearly extended to other facets inclusive of perceptions of PA enjoyment and PA motivation amongst participants. The program facilitators never forced PA on the participants, but rather encouraged them to always participate to the best of their abilities in each of the organised PAs. In fact, other studies have found that a lack of encouragement provided by teachers during PE is actually perceived as a negative evaluation of their performance, and can further heighten disengagement from an activity (Mitchell et al., 2015). In the GUM study, participants acknowledged the constructive form of support they received, where the positive encouragement from the group leaders enticed the girls and made them feel good about what they were capable of doing in regard to PA. This may have specifically related to the girls’ perceived PA enjoyment and motivation, where the girls never felt forced into doing any of the activities in GUM. Therefore, they may have perceived the activities to be more enjoyable and felt more motivated to do them with their surrounding peers as it was more so seen as something to do for fun, rather than just as a compulsory activity. Importantly, considering this specific population is classified as “at-risk” where disengagement in PA is more notable (Parker et al., 2019), this role of encouragement from a role model other than a parental figure may be crucial. Seeing as parents are able to create a foundation for
lifelong habits of PA for children at a young age and provide ongoing support for PA participation during adolescence (Laird et al., 2016), this translates to the potential role that the program facilitators on the GUM project inherited seeing as in many cases, parental figures may have been absent from the participants lives for a variety of reasons.

Whilst the confidentiality journals and group discussions around sensitive topics may have fostered feelings of comfort and trust between the participants and group leaders, this also allowed the participants to learn more about themselves and their peers. This central aspect of confidentiality and a judgement-free space encompassed throughout the duration of the program may have been related to the degree of closeness felt among participants, as it allowed them to feel like they were able to openly talk about any concerns they may have been having (Smart, Parker, Lampert, & Sulo, 2012). It made it apparent that each girl was not alone in undergoing many of the personal struggles in their lives, and that they felt a sense of belonging to a group of other like-minded girls (Mitchell et al., 2015). The GUM program enabled a safe space for the girls to discuss inherent issues, without feeling judgement from others in the group. The group leaders had an essential role in facilitating a comfortable and open environment for all the girls, and in turn may have played a role in helping to strengthen the relationships amongst their peers within the group and the degree of closeness they felt with others. While implementing PA programs among adolescent girls, this is a noteworthy component to keep in mind.

Also, many of the girls highlighted that they felt as though they had become close with the group leaders’ post-intervention. During the age of adolescence, individuals are highly influential and look to their peers or other role models for guidance (Fitzgerald et al., 2012; Mitchell et al., 2015). Parental support has been recognised as an asset to PA participation (Laird et al., 2016), but this may be problematic for girls who do not necessarily have a stable
relationship with their parents or caregivers at home (Mitchell et al., 2015; Parker et al., 2019). Therefore, this reiterates the importance of having leaders with expertise in areas of physical health and social development, and someone who the girls felt as though they were ‘understood’ by. Even simply demonstrating positive and friendly attitudes was something that resonated with many of the participants and made them feel welcome in a safe group environment, and made the participants feel as though they could easily approach the leaders about any concerns they were having in their personal lives.

In turn, the value of this program is immense. Housing an effective integrated program for at-risk adolescent girls to engage in PA in a socially accepting environment is able to be used as a strategy to help teach them social skills to carry with them throughout the rest of their lives. It has been shown that participation in PA based initiatives can be looked at as an advocate for both social and personal change, and that such activities are able to inspire positive change in at-risk youth by mitigating any offending or anti-social behaviours (Parker et al., 2019; Woods, Breslin, & Hassan, 2017). By having support from both peers and expert program facilitators in areas of both physical and mental health, this program advocates for positive change in both of these realms.
Chapter 6 Conclusion

6.1 Overview

The overarching aim of the GUM study was to explore the relationship between a unique, integrated intervention focused on PA and a variety of psychosocial factors relevant to at-risk adolescent girls, with a particular focus on social support. The results of this study indicated that the program was highly satisfactory and acceptable among the participants. Although there were no significant differences found for PA participation, PA motivation, PA enjoyment, or perceived social support from baseline to post-intervention, the girls still voiced that they believed the program granted them with a newfound sense of confidence in both their physical perceptions of themselves, and their ability to engage in PA. The results did, however, demonstrate that the social support provided from the program facilitators was predictive of both PA enjoyment and PA motivation above social support from alternative sources. This highlights the essential component that role models have in mediating enjoyment and motivation to engage in PA, both of which are factors that have been shown to enhance PA participation in the long term. This unique program reached a population that is frequently neglected and provided an inclusive environment that focused on bettering their health and personal lifestyle choices. An integrated PA and psychosocial program catered towards the needs of at-risk adolescent girls offers promising outcomes, especially when delivered in small, girls-only environments.

6.2 Strengths and Limitations

The present study provided preliminary insight into the effectiveness of an integrated PA and psychosocial program tailored specifically towards the needs of at-risk adolescent girls. The program offered a number of strengths, with one major one being that it provided the opportunity
to connect this population with the specific resources that they may need in order to thrive both socially and emotionally. This involved a socially inclusive environment, program leaders with specific expertise in both physical and mental health, as well as connected with outreach community resources they are able to utilise for help if need be via the registered social worker. Due to the fact that adolescence is a period of extensive growth and development within an individual, they are subjected to a number of changes and undergo exposure to many different influences both from peers and other social sources. While this specific subset of the population may be exposed to enhanced hardships and behavioural issues, it is important that they are equipped with the essential resources they need. Once these girls are made aware that opportunities to reach for help are more easily accessible than they may have previously believed, this may help to enhance their quality of life for the future. The registered social worker continues to stay connected with those who need it, and may offer counselling services for continued positive psychosocial development. Linked with this psychosocial component, the PA opportunities the girls are provided with may enhance the likelihood of them discovering a new activity they may potentially enjoy and adopt into routine life. Exposing them to the benefits of what PA has to offer in terms of ‘feeling good’ about their physical selves and capabilities and the potential to further empower them and give them the confidence they may lack. This integrated approach offers a promising avenue into aiding the lifestyles of at-risk adolescent girls.

Similar to GUM, another intervention conducted by Robbins et al., (2006) termed the Girls on the Move program aimed to increase PA via an individual and specifically tailored computer feedback program and nurse counselling (Robbins, Gretebeck, Kazanis, & Pender, 2006). While this study was successful in enhancing perceptions of social support received for
PA, it also reported experiencing difficulty in counseling some girls who lacked the proper resources and social support for engaging in PA behaviours; it further indicated that increasing intrapersonal support and access to proper equipment and facilities for PA engagement is also a crucial component to consider when designing future PA interventions for adolescent girls (Robbins et al., 2006). All of these components were successfully addressed by the GUM program, where access to new PA opportunities were presented to the girls, and weekly face-to-face contact was administered to help build rapport and trust between the program participants and program facilitators. This component was vital for successfully building a trusting network between participants and leaders in the GUM program.

Another intervention conducted by Bean et al., (2014) termed Girls Just Wanna Have Fun (GJWHF) program focused on enhancing PA and empowering adolescent girls from low-income families. Similar to GUM, the GJWHF intervention consisted of weekly PA and psychosocial support sessions facilitated by numerous program leaders, with one major success of the program focusing on the strong supportive network provided the program facilitators (Bean, Forneris, & Halsall, 2014). Much like GUM, this study also exhibited positive feedback regarding leader support; however one other finding also revealed that the leaders felt that they could have used more training in helping with aspects that did not directly arise from the program itself, such as dealing with newly formed social cliques and any other issues that the participants may be experiencing that were external to the program (Bean et al., 2014). This was indicated as a strength of the GUM program in that it encompassed two program facilitators with expertise in both areas of mental and physical health. The registered social worker was knowledgeable in providing relevant advice and facilitating positive psychosocial development for a population who may need this type of support more so than the general population of adolescent girls.
Often times, many PA programs specific for adolescent girls aim to focus on either positive psychosocial development or enhanced PA outcomes; but the GUM program is unique in that it provided a balance of each of these components, making it extremely beneficial for targeting the issues faced by this subset of the population. Furthermore, the material discussed during direct contact time with the groups contained sensitive and meaningful topics that are often neglected, or are not explored in great detail in more general PA or psychosocial programs; thus, other programs fail to adequately address some of the major issues faced by these girls. An intervention by Dewar et al., (2014) implemented a multicomponent program aimed at enhancing PA participation and decreasing sedentary behaviour among adolescent girls in low SES communities, and involved components of enhanced PA sessions during school time, interactive seminars, and nutrition workshops (Dewar et al., 2014). Although this study was shown to significantly decrease sedentary behaviours, it did not however impact any PA outcomes, or any mediators (i.e., self-efficacy, social support, perceived environment, etc.) of PA behaviour change (Dewar et al., 2014). This is perhaps due to the fact that this other intervention missed out on the sensitive components aspect entailed in the GUM intervention, and did not aim to address the underlying issues specifically related to low SES adolescent girls. Therefore, this intervention lacked addressing the fundamental components of autonomy, relatedness, and competency, which are comprised within the theoretical framework of SDT, and a key component to successful behaviour change (Mitchell et al., 2015) and outlined in the GUM program. Having both a PA specialist and registered social worker enabled flexibility in topics for discussion, and when sensitive topics arose, they were able to be appropriately addressed. This is something other programs may overlook and be unable to competently address in regard to one of these two major health facets.
In relation to this, the community partnership developed between COEFS and trained researchers in the field of health-promotion is able to offer a valuable connection for community stakeholders. Having two facilitators who offer expertise in two distinct areas of both physical and mental/psychological health provides inestimable services to those the program aims to target. This relationship is important not only for the key stakeholders, but also in order to help assist with the translation of research into community practice, and aid in long-term program sustainability. Additionally, this program aims to mimic a real-world approach, making it highly transferrable to the real-world and to a more natural setting. This is why no two groups received the exact same intervention; not all groups followed the exact same organised PA schedule or discussed the same psychosocial topics during the confidential group sessions. This is because the program was designed to specifically cater towards the individual needs of each group, where some may have emphasised they valued learning more about conflict resolution skills, or others more about self-esteem and body image, etc. This makes it easily adaptable and transferable to better cater towards specific populations and for future program dissemination.

Lastly, utilizing a large sample size was more likely representative of the varying scores among the population of at-risk adolescents. As well, using a mixed-methods study design was fundamental in comprehensively answering the research questions posed, and at little cost. Although the GUM study was unable to show significance in the quantitative results regarding PA behaviour outcomes, which is aligned with other PA studies designed for adolescent girls (Dobbins et al., 2009; Meyer et al., 2014; Okely et al., 2017), the study also utilised qualitative measures of data collection to go above and beyond what may have been overlooked by the quantitative measures alone. Both of these measures are able to sufficiently compliment one another, and by utilising both, this offers a pragmatic approach for answering specific questions
that cannot necessarily be answered by only one of the types of research methods, as well it is useful to advance future research programs (Thomas et al., 2015).

Despite the strengths of the study, there were a number of limitations that should be considered. First, this program relied solely on subjective measures of self-report for levels of PA. This is problematic as the ability to recall PA engagement can be rather deceptive among adolescents (Pearson et al., 2015; Ridgers et al., 2011). Utilising an objective measure of PA (i.e., by use of a pedometer or preferably an accelerometer) may have been a better indicator of PA outcomes. Self-report is only as good as ones’ ability to be able to recall, so approaching these findings should be done so with vigilance (Pearson et al., 2015). Additionally, due to the fact that this study was explicitly designed for adolescent girls who were classified as “at-risk”, generalisability is limited to this specific population. Further, this study was exploratory in nature and utilised a pre-post quasi-experimental design, thus it did not include a control group. Therefore, a true cause and effect, based on the intervention, cannot be determined and the outcomes could possibly be a result of some unforeseen variables. Lastly, a number of hindrances associated with the specificity of being classified as “at-risk” provided a few obstacles in the research process. For example, obtaining the necessary research forms was difficult, specifically regarding collecting the parental consent forms since communication between the participants and their parents/caregivers was obscure. Collecting the self-report questionnaire data was also challenging in some cases, as adolescent populations can be rather uninterested and inattentive in filling out questionnaires that require an ample amount of time to complete. Also, tracking attendance in each weekly session may have been beneficial as it was noted that a number of participants missed numerous days of school on which the program took place, making it difficult to genuinely interpret if the program had an impact on them.
6.3 Future Directions

Based on the findings of this study, there are a number of future directions which should be explored. First, by conducting a randomised control trial with an associated control group, comparisons could have been made between the intervention groups and the control, allowing the researchers to determine any effects of the treatment when compared to the non-treatment group (Bird, Taylor, & Francis eBooks, 2018). A randomised control trial is often referred to as the ‘gold standard’ for a clinical trial, as it makes for easy comparisons among groups (Bird et al., 2018). Also, it is clear that girls do have preferences in terms of their interest in PAs; therefore, importance should be emphasised on including girls in future PA programming. Listening and catering towards their needs will help to shape future PA programming for adolescent girls, and help to better engage them in activities unlike the traditional sporting activities that they are so unwilling to participate in today. In addition to this, the benefits of an integrated PA and psychosocial program such as this are evident; however, focus should be drawn towards designing programs that incorporate numerous agencies or settings working together. Trying to incorporate other settings or groups within the program components, such as family or parent groups as well or nutritionists to educate them on other health-related topics, could be beneficial for strengthening these relationships for the girls. Multicomponent interventions that are designed to provide comprehensive programs that facilitate changes in behaviour in numerous ways are more effective when compared to programs that are explicitly designed to focus on changing a singular behaviour (Kriemler et al., 2011; Pearson et al., 2015).

Also, given the outcomes of this study and the high attention focused on the effectiveness of a socially inclusive environment, this can be one major factor to consider when implementing future PA programming for adolescent girls. Having an all-girls PA group to foster a sense of
comfort and confidence, as well as having leaders with extensive knowledge in specific areas of health and wellness who provide verbal encouragement and ongoing support is highly beneficial. Future PA programs should aim to mimic a similar program foundation to this, but cater towards the individual needs of the population served. Seeing as this population was considered “at-risk”, the presence of a registered social worker was advantageous in addressing specific sensitive and emotional needs. Additionally, the freedom of choice in activities performed was considered a huge asset to the program. Some negotiation should be done concerning giving girls a voice in the activities they chose to perform, and should even be considered as a central aspect to the PE curriculum within the education system (Mitchell et al., 2015). The foundation of the GUM program encompassed a sense of social-connectedness among both the participants, their peers, and the driven program leaders, with the girls receiving continuous encouragement and motivated one another towards positive behaviour change, and this should be a central aspect to consider when negotiating future PA program development for adolescent girls. Also important to highlight is the inclusion of qualitative research methods in this specific study, as these methods helped to accurately capture the true perceptions of support that the participants felt they received. Qualitative research methods should not be overlooked when conducting sensitive research such as this, as it aids in successfully understanding the true thoughts and feelings of the population as a whole.

As mentioned in the discussion, future PA researchers should also aim to promote change ‘from the inside’ through the integration of both affective and cognitive interventions. Solely focusing on just emphasizing the ‘physical’ component of a PA intervention may not be enough, and it may be beneficial to incorporate more time focusing on teaching about the educational benefits of PA among this population in order to initiate change from within the individual
(Standiford, 2009). This way, the individual may be more likely to continue on with engaging in regular PA throughout their lives, with the enhanced knowledge of the benefits of what an active lifestyle can offer. Additionally, seeing as this generation relies heavily on technology as a primary source of entertainment, thought should be given into expanding or using this as a means to enhance PA. Given that technology promotes sedentary behaviour, using devices that encourage adolescent girls to decrease activities such as television and computer time could see promising results (Standiford, 2009).

Overall, the GUM program highlighted the importance of providing free PA programming to at-risk adolescent girls, and the capacity these types of programs have in introducing a new liking for PA and enhancing their social-connectedness. The value that these types of programs present in shaping the life-long healthful behaviours among adolescents is remarkable; and if continued support is offered to this population through ongoing community programming, then this has the potential to lead to notable positive changes whilst enhancing the overall quality of life among at-risk adolescent girls.
References


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Appendices
Appendix A: Parental Consent Form

Consent Form

Study Title: Girls United and on the Move (GUM)

Principal Investigator
Dr. Cristina Caperchione, PhD., Associate Professor, School of Health and Exercise Sciences, University of British Columbia, (250) 807-9679, cristina.caperchione@ubc.ca

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Dr. Stephen Berg, PhD., Assistant Professor, Faculty of Education, University of British Columbia, (250) 807-9682, stephen.berg@ubc.ca

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Nikki Hargreaves, BHK., Masters Student, School of Health and Exercise Sciences, University of British Columbia, n.hargreaves@shaw.ca

Purpose
The main purpose of this research study is to gain insight into the physical activity interests and experiences of adolescent girls living in Kelowna. Specifically, we would like to learn more about how girls who participate in the Girls United and on the Move (GUM) program think about and experience being active. This is an exciting opportunity for young girls to openly share their thoughts and feelings about adolescence, as well as experience different types of physical activity in a safe, supportive and welcoming environment.

Study Procedures
This study, in which your daughter has been invited to participate, is an extra component to the GUM program, which involves 45 minutes of physical activity and 45 minutes of workshops per week, about topics such as body image, healthy relationships, and self-esteem. All girls who take part in the GUM program will be asked to fill out a questionnaire about their physical activity experiences, their social environment and their thoughts about self-kindness in the first week (week 1) and last week (week 9) of the program. Some girls may also be invited to participate in a brief individual, 30-45 minute voluntary interview after the completion of the program. The interview will be scheduled at a time and place that is convenient for each participant and will be conducted by co-investigator Nikki Hargreaves. With your daughter's permission, the interview will be recorded.
Participation in this research is voluntary and there is no requirement to take part. In no way will your daughter’s involvement with the GUM program be affected if she decides not to participate in the research.

**Potential Risks**
If your daughter participates in this research study, there are no risks greater than what she would experience in her daily life or from regular physical activity participation (i.e., sweating, muscle soreness, or potential minor injury). If your daughter has a physical activity limitation or restriction, please notify the researchers and adaptations will be made so she can participate.

**Potential Benefits**
Physical activity contributes to overall health and wellbeing and has specifically been linked to increase self-confidence and a positive body image for adolescent girls. By providing fun and relevant activities for the girls, they will gain an understanding about the endless benefits of being active everyday.

**Confidentiality**
Participation in the study is free and voluntary. Only the Principal Investigator and the Co-Investigators will have access to the digital audio files and transcripts. Although participants will be asked to respect the confidentiality of what is discussed in each weekly group session, the researchers cannot ensure that all participants will comply with this request. Therefore, complete confidentiality cannot be guaranteed due to the nature of group-based program.

At any time throughout the program, and up to 4 months after the interview is complete, your daughter may withdraw from the research study without penalty or prejudice. All documents related to this research project will be identified only by code number and kept in a locked filing cabinet. This study forms part of Nikki’s thesis, which will be published; therefore, will be publically available on the internet via cIRcle. All documents from the research study will be retained for five years after publication in a secure storage location on UBC-O campus.

**Contact for information about the study:**
If you have any questions or desire further information with respect to this study, you may contact Dr. Cristina Caperchione at (250) 807-9684 or cristina.caperchione@ubc.ca.

**Contact for concerns about the rights of research subjects**
If you have any concerns or complaints about your rights as a research participant and/or your experiences while participating in this study, contact the Research Participant Complaint Line in the UBC Office of Research Services at 1-877-822-8598 or the UBC Okanagan Research Services Office at 250-807-8832. It is also possible to contact the Research Participant Complaint Line by email (RSIL@ors.ubc.ca).
**Consent**
Your daughter’s participation in this study is entirely voluntary. You may refuse permission to participate or withdraw your daughter from the study at any time without jeopardy. If she decides to withdraw, her individual data collected will be destroyed. Your signature indicates that you give consent for your daughter to participate in this study.

☐ I agree to have my daughters in-person interview recorded (please check box).

__________________________________________  ________________
Parent or Guardian Signature                      Date

__________________________________________  ________________
Printed Name of the Parent or Guardian signing above
Appendix B: Student Assent Form

Student Assent Form

Study Title: Girls United and on the Move (GUM)

Dear Student,

As a member of the GUM program, you are invited to participate in a research study about the girls’ experiences of physical activity. If you agree to take part, please fill out the form at the bottom of this letter and return it to Nikki Hargreaves with your signed parent consent form.

As a participant, you will have the opportunity to fill out a brief 20-minute questionnaire about the kinds of physical activities you do and your thoughts about physical activity, the people around you and yourself, at the start and the end of the program. You may also be invited to participate in an in-person interview to share your opinions about your physical activity experiences. This may take approximately 30-45 minutes. If you choose to participate in the individual interviews, you will help us understand how we can create more enjoyable physical activity experiences for girls like you. The interview will occur after the program has been completed and will be scheduled at a time and place that is convenient for you. The interview will be conducted by Nikki Hargreaves and with your permission the interview will be recorded.

You don’t have to participate in the interview or fill out a questionnaire if you don’t want to; it is completely up to you. There are no risks greater than what you would experience in your daily life or from regular physical activity participation like in PE class (i.e., sweating, muscle soreness, or potential minor injury). If you have a physical activity limitation, please let us know and we will make changes or adaptations so you can participate. Also, you can withdraw from the research or change your mind up to 4 months after the interview without any consequences. You can still take part in the GUM program and no one will treat you differently if you don’t complete the questionnaire or interview. If you decide to withdraw, your individual data collected will be destroyed.

If you participate, your identity will remain anonymous as all individual records and results will be analyzed and referred to by number code only. You may also pick a pseudonym, or a fake name for your data that only the researcher will know. For accurate data collection in the interview, we would like to audiotape the discussions and will ask your permission to do this before the start of the interview. If you don’t want us to record the discussion, we will take notes instead. No true names will appear in any written report. Once the interview is completed and the researcher transcribes it, you will be given the opportunity to review your transcript, and change anything that you feel identifies yourself.

Please know that when you take part in the interview, what is talked about in the interview will always remain confidential. The interview will be scheduled at a time that is convenient for you outside of the program. It will be an additional 30-45 minutes to learn
about your personal thoughts of the program. Also, while in the weekly group sessions you should know that other group members might know who you are and will hear what you say. We will ask everyone to not tell others outside of the group what we discussed during the weekly group sessions; however, we cannot control what other participants do with the information discussed. This study forms part of Nikki’s thesis, which will be published; therefore, will be publicly available on the internet via cIRcle.

If you have any questions or would like more information about this study, you may contact Dr. Cristina Caperchione at (250) 807-9684 or by email at cristina.caperchione@ubc.ca.

If you have any concerns or complaints about your rights as a research participant and/or your experiences while participating in this study, contact the Research Participant Complaint Line in the UBC Office of Research Services at 1-877-822-8598 or the UBC Okanagan Research Services Office at 250-807-8832. It is also possible to contact the Research Participant Complaint Line by email (RSIL@ors.ubc.ca).

Please return this form

I __________________________ (your name) give/do not give (please circle one) my consent to take part in Girls United and on the Move (GUM) Program.

☐ I agree to be recorded during the in-person interview (please check box).

__________________________________________

Your signature

__________________________________________

Date

With kind regards,

Dr. Cristina Caperchione, PhD., Associate Professor, School of Health and Exercise Sciences, University of British Columbia, (250) 807-9679, cristina.caperchione@ubc.ca

Dr. Stephen Berg, PhD., Assistant Professor, Faculty of Education, University of British Columbia, (250) 807-9682, stephen.berg@ubc.ca

Dr. Catherine Sabiston, PhD. Professor, Faculty of Kinesiology and Physical Education, University of Toronto, (416) 978-5837, catherine.sabiston@utoronto.ca
Dr. Kent Kowalski, PhD. Professor, College of Kinesiology, University of Saskatchewan, (306) 966-1709, kent.kowalski@usask.ca

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Nikki Hargreaves, BHK., Masters Student, School of Health and Exercise Sciences, University of British Columbia, n.hargreaves@shaw.ca
Appendix C: Demographics

Demographic Information

Using the blanks provided, please complete the following. Circle one answer.

1. Age: ______________

2. Grade: ______________

3. Do you have sibling(s)? YES or NO
   a. How many? ______ brother(s)
      ______ sister(s)

4. What area of Kelowna do you live?
   a. Rutland
   b. Mission
   c. Glenmore
   d. Downtown
   e. Black Mountain
   f. Other: _________ (Please specify)

5. How do you get to school? (Circle all that apply)
   a. Walk
   b. Bike
   c. Drive (get a ride)
   d. Bus

6. Do you participate in any organized physical activity or sport outside of school? YES or NO
   a. Individual (yoga, dance, skiing, gymnastics, swimming)
   b. Team sports (soccer, hockey, basketball)
   c. Leisure (walking, cycling, working out)

7. Do you participate in any physical activity or sport in school? YES or NO (please specify)
   a. Sports team: ______________
   b. Club: __________________
   c. Other: __________________
Appendix D: Physical Activity Questionnaire for Children (PAQ-C)

Physical Activity Questionnaire

Name: ___________________  Age: __________

Sex:  M____  F____  Grade: __________

We are trying to find out about your level of physical activity from the last 7 days (in the last week). This includes sports or dance that make you sweat or make your legs feel tired, or games that make you breathe hard, like tag, skipping, running, climbing, and others.

Remember:
1. There are no right and wrong answers – this is not a test.
2. Please answer all the questions as honestly and accurately as you can —this is very important.

1. Physical activity in your spare time: Have you done any of the following activities in the past 7 days (last week)? If yes, how many times? (Mark only one circle per row.)

<table>
<thead>
<tr>
<th>Activity</th>
<th>No</th>
<th>1-2</th>
<th>3-4</th>
<th>5-6</th>
<th>7 times or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skipping</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Rowing/canoeing</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>In-line skating</td>
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<td>o</td>
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<td>o</td>
<td>o</td>
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<tr>
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</tr>
<tr>
<td>Jogging or running</td>
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<td>o</td>
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<td>o</td>
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<td>o</td>
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<tr>
<td>Swimming</td>
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<td>o</td>
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<td>o</td>
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<td>o</td>
<td>o</td>
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<td>o</td>
</tr>
<tr>
<td>Dance</td>
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<td>o</td>
<td>o</td>
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<tr>
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<tr>
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<tr>
<td>Floor hockey</td>
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<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Other:</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>_________________________</td>
<td></td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>
2. In the last 7 days, during your **physical education (PE) classes**, how often were you very active (playing hard, running, jumping, throwing)? (Check one only.)

   I don’t do PE ............................................. o
   Hardly ever ............................................. o
   Sometimes ............................................. o
   Quite often ............................................ o
   Always .................................................... o

3. In the last 7 days, what did you do most of the time at **recess**? (Check one only.)

   Sat down (talking, reading, doing schoolwork) ..... o
   Stood around or walked around ........................ o
   Ran or played a little bit ............................. o
   Ran around and played quite a bit ................. o
   Ran and played hard most of the time ............ o

4. In the last 7 days, what did you normally do at **lunch** (besides eating lunch)? (Check one only.)

   Sat down (talking, reading, doing schoolwork) ..... o
   Stood around or walked around ........................ o
   Ran or played a little bit ............................. o
   Ran around and played quite a bit ................. o
   Ran and played hard most of the time ............ o

5. In the last 7 days, on how many days **right after school**, did you do sports, dance or play games in which you were very active? (Check one only.)

   None ....................................................... o
   1 time last week ........................................ o
   2 or 3 times last week ................................. o
   4 times last week ...................................... o
   5 times last week ...................................... o

6. In the last 7 days, on how many **evenings** did you do sports, dance, or play games in which you were very active? (Check one only.)

   None ....................................................... o
   1 time last week ........................................ o
   2 or 3 times last week ................................. o
   4 or 5 times last week ................................ o
   6 or 7 times last week ................................ o
7. On the last weekend, how many times did you do sports, dance or play games in which you were very active? (Check one only.)

None .................................................. o
1 time .................................................. o
2 – 3 times ............................................. o
4 – 5 times ............................................. o
6 or more times ..................................... o

8. Which one of the following describes you best for the last 7 days? Read all five statements and please circle one letter that best describes you.

A. All or most of my free time was spent doing things that involve little physical effort.

B. I sometimes (1 – 2 times last week) did physical things in my free time (e.g. played sports, went running, swimming, bike riding, did aerobics).

C. I often (3 – 4 times last week) did physical things in my free time.

D. I quite often (5 – 6 times last week) did physical things in my free time.

E. I very often (7 or more times last week) did physical things in my free time.

9. Mark how often you did physical activity (like playing sports, games, doing dance, or any other physical activity) for each day last week.

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th>Little bit</th>
<th>Medium</th>
<th>Often</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Tuesday</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Wednesday</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Thursday</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
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<tr>
<td>Friday</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Saturday</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Sunday</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>

10. Were you sick last week, or did anything prevent you from doing your normal physical activities? (Check one.)

Yes ......................... o
No ............................ o

If yes, what prevented you? ________________________________________
Appendix E: Child and Adolescent Social Support Scale (CASSS)

On the next two pages, you will be asked to respond to sentences about some form of support or help that you might get from either a parent, a teacher, a classmate, a close friend, or people in your school. Read each sentence carefully and respond to them honestly. There are no right or wrong answers.

For each sentence you are asked to provide two responses. First, rate how often you receive the support described and then rate how important the support is to you. Below is an example. Please read it carefully before starting your own ratings.

1. My teacher(s) helps me solve problems.
   HOW OFTEN?
   NEVER  ALMOST NEVER  SOME OF THE TIME  MOST OF THE TIME  ALWAYS
   1   2   3   4   5   6
   IMPORTANT?
   VERY IMPORTANT  IMPORTANT  NOT IMPORTANT  VERY IMPORTANT
   1   2   3

In this example, the student describes her ‘teacher helps me solve problems’ as something that happens ‘some of the time’ and that is ‘important’ to her.

Please ask for help if you have a question or don’t understand something. Do not skip any sentences. Please turn to the next page and answer the questions. Thank you!
<table>
<thead>
<tr>
<th>E</th>
<th>I</th>
<th>A</th>
<th>I</th>
<th>My Parent(s)...</th>
<th>How Often?</th>
<th>Important?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Never</td>
<td>Almost Never</td>
<td>Some of the Time</td>
</tr>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td>...show they are proud of me.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td>...understand me.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td>...listen to me when I need to talk.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
<td>...make suggestions when I don’t know what to do.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
<td>...give me good advice.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
<td></td>
<td>...help me solve problems by giving me information.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
<td></td>
<td>...tell me I did a good job when I do something well.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
<td></td>
<td>...nicely tell me when I make mistakes.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td></td>
<td></td>
<td>...reward me when I’ve done something well.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td></td>
<td></td>
<td>...help me practice my activities.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td></td>
<td></td>
<td>...take time to help me decide things.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>12.</td>
<td></td>
<td></td>
<td></td>
<td>...get me many of the things I need.</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E</th>
<th>I</th>
<th>A</th>
<th>I</th>
<th>My Teacher(s)...</th>
<th>How Often?</th>
<th>Important?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Never</td>
<td>Almost Never</td>
<td>Some of the Time</td>
</tr>
<tr>
<td>13.</td>
<td></td>
<td></td>
<td></td>
<td>...cares about me.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>14.</td>
<td></td>
<td></td>
<td></td>
<td>...treats me fairly.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>15.</td>
<td></td>
<td></td>
<td></td>
<td>...makes it okay to ask questions.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>16.</td>
<td></td>
<td></td>
<td></td>
<td>...explains things that I don’t understand.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>17.</td>
<td></td>
<td></td>
<td></td>
<td>...shows me how to do things.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>18.</td>
<td></td>
<td></td>
<td></td>
<td>...helps me solve problems by giving me information.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>19.</td>
<td></td>
<td></td>
<td></td>
<td>...tells me I did a good job when I’ve done something well.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>20.</td>
<td></td>
<td></td>
<td></td>
<td>...nicely tells me when I make mistakes.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>21.</td>
<td></td>
<td></td>
<td></td>
<td>...tells me how well I do on tasks.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>22.</td>
<td></td>
<td></td>
<td></td>
<td>...makes sure I have what I need for school.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>23.</td>
<td></td>
<td></td>
<td></td>
<td>...takes time to help me learn to do something well.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>24.</td>
<td></td>
<td></td>
<td></td>
<td>...spends time with me when I need help.</td>
<td>1</td>
<td>2</td>
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</tbody>
</table>
### My Classmates

<table>
<thead>
<tr>
<th></th>
<th>How Often?</th>
<th>Important?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
<td>Almost Never</td>
</tr>
<tr>
<td>25.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>26.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>27.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>28.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>29.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>30.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>31.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>32.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>33.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>34.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>35.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>36.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
</tbody>
</table>

### My Close Friend

<table>
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<tr>
<th></th>
<th>How Often?</th>
<th>Important?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
<td>Almost Never</td>
</tr>
<tr>
<td>37.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>38.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>39.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>40.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>41.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>42.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>43.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>44.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>45.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>46.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>47.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
<tr>
<td>48.</td>
<td>1 2 3 4 5 6</td>
<td>1 2 3</td>
</tr>
</tbody>
</table>
Appendix F: Sports-Commitment Model

Sports Commitment Questionnaire-2 (The Athletic Questionnaire)

Directions: Based on the sport that you are currently playing, please rate how much you agree/disagree to each statement by circling a number from 1 to 5 using the scale given below. There are no right or wrong answers. We only want your honest opinion about the following statements.

The sport that I am currently playing and basing my responses on is:

<table>
<thead>
<tr>
<th>Item</th>
<th>Strongly disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree nor disagree</th>
<th>Somewhat agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Playing this sport is fun.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. I have spent a lot of time in this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Other things in my life make it difficult to play this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. I try to dominate in this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. In this sport, I am constantly trying to improve my skills.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. The mental effort I have put into this sport makes it difficult to stop playing.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Staying in this sport is more of necessity than a desire.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. There are future events in this sport that I would really miss experiencing if I no longer played.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. I am being pulled away from this sport by other things in my life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. The physical effort I have put into this sport makes it difficult to stop playing.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. I like playing this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. I am dedicated to keep playing this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13.</td>
<td>Once I attain a goal in this sport, I challenge myself to continue improving.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14.</td>
<td>I would really miss the travel experiences I have if I no longer played this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15.</td>
<td>People would be upset if I didn’t keep playing this sport because they have invested so much.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16.</td>
<td>In this sport, I strive for the perfect performance.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17.</td>
<td>In this sport, I have put in a lot of training.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18.</td>
<td>People would be disappointed if I didn’t keep playing this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19.</td>
<td>I have a mentor who provides guidance in this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20.</td>
<td>People who are important to me attend the majority of my competitions in this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21.</td>
<td>I feel trapped in this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22.</td>
<td>People who are important to me are there for me after I perform poorly in this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23.</td>
<td>The time I have spent in this sport makes it difficult to stop playing.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24.</td>
<td>I constantly try to learn from my mistakes in this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25.</td>
<td>When things get tough in this sport, people who are important to me provide comfort.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>26.</td>
<td>It is almost impossible to play this sport because of other things in my life.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27.</td>
<td>People who are important to me teach me the strategies of this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>28.</td>
<td>I love to play this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>29.</td>
<td>In this sport, I strive to be better than my opponents.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td>---</td>
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<td>---</td>
<td>---</td>
</tr>
<tr>
<td>30.</td>
<td>I would really miss the things I learn in this sport if I didn’t play.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>31.</td>
<td>I am willing to overcome any obstacle to keep playing this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>32.</td>
<td>Although I think about quitting this sport, I feel I must keep playing.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>33.</td>
<td>I push myself to win every time I compete in this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>34.</td>
<td>I have put a great deal of mental effort into this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>35.</td>
<td>People who are important to me teach me about the mental side of this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>36.</td>
<td>There are other things in my life that limit my participation in this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>37.</td>
<td>Because people who are important to me also play this sport, it is assumed that I will keep playing.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>38.</td>
<td>In this sport, I strive to improve every aspect of my performance.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>39.</td>
<td>I feel I am forced to keep playing this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>40.</td>
<td>Other things in my life compete with playing this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>41.</td>
<td>I push myself to reach my full potential in this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>42.</td>
<td>It is difficult to stop playing because of the personal discipline I have maintained in this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>43.</td>
<td>I feel I have to keep playing this sport, even though I don’t want to.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>44.</td>
<td>To improve in this sport, I push myself to achieve the goals that I have set.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>45.</td>
<td>Playing this sport is very pleasurable.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>I am determined to keep playing this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<td>------------------------------------------</td>
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</tr>
<tr>
<td>47</td>
<td>In this sport, I challenge myself to be better than everyone else.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>48</td>
<td>I put a great deal of physical effort into this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>49</td>
<td>I am very attached to this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>50</td>
<td>I would really miss the competition in this sport if I no longer played.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>51</td>
<td>When I compete in this sport, people who are important to me cheer me on.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>52</td>
<td>People who are important to me expect me to keep playing this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>53</td>
<td>I will continue to play this sport for as long as I can.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>54</td>
<td>People give me trustworthy advice about this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>55</td>
<td>Playing this sport makes me happy.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>56</td>
<td>It is difficult to stop playing because of the training I have put into this sport.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>57</td>
<td>In this sport, people provide useful instruction to improve my performance.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>58</td>
<td>I am willing to do almost anything to keep playing this sport.</td>
<td>1</td>
<td>2</td>
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</tr>
</tbody>
</table>
Appendix G: Learning Climate Questionnaire (LCQ)

Name: _____________________

Learning Climate Questionnaire

This questionnaire contains items that are related to your experience with your instructors in this project. Instructors have different styles in dealing with participants, and we would like to know more about how you have felt about your encounters with your instructors. Please rate how much you agree/disagree with each statement by circling a number from 1 to 7 on the scale below. Your responses will be kept confidential. Please be honest.

<table>
<thead>
<tr>
<th>Item</th>
<th>1 Strongly Disagree</th>
<th>2</th>
<th>3</th>
<th>4 Neutral</th>
<th>5</th>
<th>6</th>
<th>7 Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I felt that the leaders provided us with choices and options.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2. I felt understood by the leaders.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>3. The leaders showed confidence in our abilities to do well.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>4. The leaders encouraged us to ask questions.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>5. The leaders tried to understand how we see things before suggesting new ways to do things.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>6. The leaders listened to how we would like to do things.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>7. The leaders helped us to improve.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>8. The leaders made us feel like we are good at physical activity.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>9. I felt that the leaders liked us to do well.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>10. The leaders made us feel like we are able to do the activities in the program.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>5</td>
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<td>7</td>
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<tr>
<td>11.  The leaders supported us.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>12.  The leaders encouraged us to work together in practice.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>13.  The leaders had respect for us.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>14.  The leaders were interested in us.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>15.  I felt that the leaders were friendly towards us.</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
Appendix H: Interview Guide

1. Tell me a little bit about your experience in Girls United.

2. Do you find yourself doing more physical activity now than before Girls United started?
   a) How does being active make you feel?
      i. What do you enjoy about it?
      ii. What do you dislike about it?
   b) Are there currently any physical activities or sport teams you wish you could participate in or join, but there’s a reason you aren’t able to?
   c) Do you have any plans to join a community teams or clubs in the future?

3. What made Girls United different from your regular PE class in school?
   a. Did you find you were willing to participate in the activities we did during Girls United?
   b. What’s different when you’re just with us girls, compared to when you’re with boys?

4. Did you enjoy doing the activities as a group, or do you prefer to be active on your own? (i.e., home workouts, jogging, etc.)
   a. What would you consider a fun group activity to do with your friends?
   b. Are you more willing to try new physical activities if your friends are doing it too?
      i. What is it that makes you more willing to participate when your friends are doing the activity? (i.e., more comfortable, fun, etc.)

5. Are your parents/caregivers and/or siblings active?
   a. What kinds of physical activities do they do?
   b. Do you ever do any physical activities with them?
   c. In what ways does your family encourage or discourage you do be active?
   d. Has any of this changed since participating in Girls United?
   e. Is there something you would like to change in the future – something you learned in Girls United to get your family more active?

6. Do you think you will continue being active now that Girls United is over?
   a. Which activities that we had the opportunity to do, did you really enjoy?
   b. How could you take what you learned from Girls United and make it part of your life?
   c. Were there any activities you disliked that we did?
RELATIONSHIPS

7. As a result of participating in Girls United, have you developed any new peer relationships? If so, please explain/give an example.
   a. Were there any specific activities we did that made you feel close to your peers in the program?

8. Have any of your friendships outside of the Girls United program strengthened?
   a. Tell me more about this? What do you think helped to strengthen them?

9. Has participating in the Girls United program helped you feel closer to any adults (teachers, parents)? In what ways?
   a. Were there any specific activities we did that made you feel closer to adults?

10. Have you found that participating in Girls United has helped you feel better or that it’s easier to discuss your thoughts and feelings with others? Please explain or give an example.

11. What can you take from what you learned or experienced in Girls United that you can use in your own life to help you in your relationships or in talking with others?

12. What would be the main messages or lessons learned that you took away from Girl United?

13. Do you have any last suggestions on what can be done to improve this program?

Thank you so much for taking the time to talk with me today. Is there anything else you want to add or any other questions you have for me?