

Understanding Adolescent Physical Activity Participation. A Program Evaluation of a Body  
Positive Resistance Training Program.

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### **Abstract**

The increase of physical inactivity and sedentary behaviour among adolescents is alarming. With decreasing physical activity rates among Canadian adolescents there is a major concern to their overall health and wellbeing. Regular physical activity has been shown to have many health benefits for adolescents; therefore, it is important to understand current barriers and motivators influencing adolescents' participation in physical activity. The primary purpose of this study was to evaluate a program designed to increase physical activity participation for adolescents at risk for chronic illness. Three group interviews were conducted with thirteen adolescents who participated in a 10-week chronic disease prevention program that included resistance training in a body positive environment. Additionally, I maintained a reflective journal documenting aspects of the research process and observations from the weekly sessions. Through providing a safe physical activity program, this study assessed the effects of a body positive approach to physical activity with adolescents. This thesis provides an understanding of barriers and motivators that adolescents experience in relation to physical activity participation, aiding in future program design.

Keywords: body positive approach, physical activity, participation, adolescents

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## Chapter 1: Introduction

### 1.1 Introduction

Many adolescents are living a more sedentary lifestyle (ParticipAction, 2022) and this is of major concern for families and health professionals. The 2022 ParticipAction report card, states that only 37% of youth aged 12-17 years are meeting the daily recommended moderate to vigorous physical activity recommendations. Additionally, rates of type two diabetes and insulin resistance are rising in youth, and chronic disease prevention programs (CDPPs) are being devised to decrease risks and lessen concerns (Amed et al., 2010; Cruz et al., 2005; Public Health Agency of Canada, 2016). The goal of many CDPPs is to reduce risk factors, such as insulin resistance, that lead to the development of chronic diseases, through clinical services, research, government programming, and policy change (Allen et al., 2007; Bridger & Wareham, 2014). This study evaluated a program designed to increase physical activity participation for a population at risk for chronic illness.

Physical activity participation is a modifiable factor and health professionals including Recreation Therapists play an important role in reducing the risk of chronic disease among adolescents. Therapeutic Recreation (TR) is described as a health profession which utilizes recreation, leisure and play as treatment tools to increase client's quality of life (CTRA, 2023). Through increasing participation in physical activity, adolescents' risk of chronic disease is lowered (Allen et al., 2007; Henderson et al., 2012). Though the wide range of physical activity benefits are well documented (as discussed in chapter two), adherence rates among adolescents continue to decline (ParticipAction, 2022). Statistics Canada (2022), reported that

the physical activity rates of youth aged 12-17 have decreased from 50.8% in 2018 to 37.2% in 2022.

To achieve the benefits of physical activity, there must first be an understanding of how to increase participation rates. The literature suggests there are both extrinsic and intrinsic factors that influence participation in physical activity and these factors may be positive or negative. Those that positively influenced adolescents were identified as motivators and the negative influences were identified as barriers. Because this study was conducted in a pediatric setting, I focused primarily on factors relevant to the adolescent population, including motivators such as peer/parental support, enjoyment, and confidence (Salvy et al., 2009) as well as barriers including, perceived competence, peer presence, and stigma consciousness (Allender et al., 2006; Cameron & O'Reilly, 2014; Hagberg et al., 2009; Martins et al., 2015; Jaakkola et al., 2016).

Therapeutic Recreation uses various approaches to improve quality of life for participants, and navigating barriers to recreation participation is a critical piece of that work. By finding ways to remove or reduce barriers, participants will have greater success rates, resulting in higher participation in physical activity (Sylvester et al., 2001). Thus, exploring how to foster motivators and reduce barriers to improve physical activity participation and adherence for adolescents is important. In addition to being acknowledged in the literature, these motivators and barriers were identified by families of the CDPP that served as the study site and consequently became the focus of the current study.

The Janeway Lifestyle Program is a pediatric inter-professional CDPP whose primary focus is to address rising rates of chronic disease in Newfoundland and Labrador (NL). For the

current study, clients of the CDPP were invited to participate in a 10-week resistance training program designed and delivered by myself as the recreation therapist and Ms. Sarah Critch, the physiotherapist with the CDPP. Ms. Critch selected appropriate exercises and focused on how to complete the exercises safely while I focused on language, physical environment, safety, and participant enjoyment. The primary goal of the program was to improve physical activity participation rates to meet guidelines recommended by the Canadian Society for Exercise Physiology (CSEP, 2022) for adolescents.

### **1.2 Body Positive Approach**

Practitioners of the CDPP were guided by body positive principles (Appendix A) in designing all programs. This approach focused on shifting from weight and body image measures to health and wellness outcomes. This included recognition that people can be healthy in a variety of body shapes and sizes. Further, it was important to provide a safe, judgement free environment to improve participant engagement and enjoyment in activities (Faith et al., 2002; Lister et al., 2023). A primary goal of this study was to learn what influenced adolescents' participation in physical activity. Through employing a body positive approach, it was anticipated that the adolescents' view on physical activity would improve thus, increasing participation and reducing risk of chronic disease.

### **1.3 Physical Inactivity**

Most Canadian adolescents are living a sedentary lifestyle, with only 5% of children (5-11 years) and 1% of youth (12-17 years) meeting the Canadian 24-Hour Movement Guidelines, which includes 60 minutes of moderate to vigorous physical activity per day (CSEP, 2022). The combination of increased sedentary time and limited physical activity has led to a higher



number of adolescents at risk for developing chronic disease. Further, they do not experience health benefits attributed to regular physical activity (Janssen & Leblanc, 2010). It has been determined that there are multiple modifiable factors that influence the incidence of chronic disease among the Canadian pediatric population, including physical activity and sedentary behaviour (Brambilla et al., 2011; Cruz et al., 2005; Henderson et al., 2012; Lister et al., 2023). Physical inactivity is a concern as it puts many adolescents at increased risk of developing chronic diseases such as insulin resistance.

#### **1.4 Researcher's Position**

I graduated from the Bachelor of Recreation Co-operative program at Memorial University of Newfoundland and became a Certified Therapeutic Recreation Specialist (CTRS) in 2010. I have been working as a Recreation Therapist since graduation, and in 2012 I accepted a position with the Janeway Lifestyle Program (JLP). This role focused on improving health outcomes for children and youth using meaningful recreation participation. One of the primary purposes of my role within the JLP was to increase patients' participation in physical activity. This was especially difficult with the adolescent population as many lead sedentary lifestyles and tend to face a number of barriers, making participation and more importantly, adherence very challenging. Although patients and their families were provided with information on the health risks associated with sedentary lifestyles, they struggled to make recommended changes.

Therapeutic Recreation practice within Eastern Health is guided by the leisure ability model (Stumbo & Peterson, 2003) and social cognitive theory (Wise, 2002). These approaches fit well with the desire to promote behaviour change and the need for leisure education and

recreation participation. Both the leisure ability model and social cognitive theory guided my day-to-day practice and were used in the design of the intervention for this study. As previously noted, I developed this program in collaboration with the CDDP physiotherapist, to address the increasing prevalence of physical inactivity of our clients. This was the first program we created combining aspects of physiotherapy and TR using body positive principles.

All study participants had completed a group program with me as the facilitator and as such my relationships with the patients and their families served as an advantage because I understood their needs and we had some level of existing trust and rapport. This also meant I had to be mindful of possible biases regarding clients or programming. I managed potential bias by asking participants' follow-up questions to ensure their voices were accurately represented, discussing topics with my supervisor, maintaining a reflective journal and coding line-by-line to ensure accuracy.

My desire to help families overcome barriers and improve the health of adolescents compelled me to complete this research study. Through this study, I hoped to increase the understanding of what experiences the participants have already faced and better understand the impact they had on their future/current participation. In addition, I hoped to share knowledge with other physical activity providers and improve the overall approach to physical activity from focusing on weight to focusing on improved health. The findings can be used by other physical activity facilitators<sup>1</sup> in designing safe, motivating experiences for adolescents. In addition, this research will also be of interest to researchers in critical obesity and education

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<sup>1</sup> Physical activity facilitators refers to physical educators, coaches, community recreation leaders, and any other person who offers physical activity services.

studies, adding to the available research on adolescents. By sharing this knowledge with physical activity facilitators there is potential for those professionals to alter their approach and avoid making negative impacts.

### **1.5 Purpose of the Study**

As previously noted, the primary goal of the CDPP was to improve health indicators for children and youth in NL. All programming was evidence-based and was guided by body positive principles. In designing a resistance training program, we reviewed literature to understand barriers and motivators specific to the adolescent population and collected qualitative data to understand the influence of such factors for existing clients of the CDPP. The purpose of the current study was to evaluate a program designed to increase physical activity participation for adolescents at risk for developing chronic illnesses. A qualitative approach was employed to understand the adolescent perspective. Participants were invited to participate in a group interview at the start of the 10-week program, the end of the program and six months after the end of the program. Additionally, I maintained a reflective journal to capture my thoughts and observations of participation and other aspects of the research process.

### **1.6 Thesis Format**

This thesis has been organized into five chapters. The first chapter provides an introduction to the study including the context and value of the current study. Chapter Two outlines a review of literature that guided this study including, physical activity rates, participation barriers, participation motivators, therapeutic recreation, and body positive principles. The methodology and research design are detailed in Chapter Three. Chapter Four highlights the findings and Chapter Five considers the findings in the context of current

knowledge, closing remarks and recommendations for physical activity providers, including recreation therapists. This thesis will conclude by outlining the need for future research.

### **1.7 Statement of Contributions**

This research was conducted under the supervision of Dr. Anne-Marie Sullivan and with the support of Dr. Tracey Bridger, Endocrinologist with the JLP. While working with the JLP, I, as the recreation therapist and Sarah Critch as the physiotherapist, designed an inter-professional program intended to increase physical activity of our patients. As previously noted, Ms. Critch focused primarily on resistance exercises and I focused on psychosocial aspects of the program. Because this program was a collaborative effort and myself and Ms. Critch were collecting data for our thesis, we shared participant recruitment strategies and demographic information to minimize what participants were being asked to do. All other data was collected and analysed separately as we had different research questions and neither of us contributed to the writing of one another's thesis. Ms. Laura King, was a TR intern involved in the program implementation and she was employed to transcribe the group interviews.

## Chapter 2: Literature Review

### 2.1 Introduction

Physical activity is an essential aspect of health and it is documented that adolescents are not meeting the recommended amounts (ParticipAction, 2022). According to Statistics Canada (2022), only 31% of children aged 12-17 meet the recommended physical activity guidelines which include 60 minutes of moderate to vigorous physical activity per day, including a minimum of three days of strength-based exercise (CSEP, 2022). CDPPs aim to reduce risk factors through offering clinical services, government programming, research, and policy change (Public Health Agency of Canada, 2019). This has led healthcare professionals, including recreation therapists to focus efforts on modifiable factors such as physical activity adherence (Bridger & Wareham, 2014). In this chapter I review current literature related to TR approach, body positive approach, risks of physical inactivity, barriers to physical activity, and motivation to participate in physical activity.

### 2.2 Therapeutic Recreation Approach

The Canadian Therapeutic Recreation Association (CTRA) describes TR as an allied health profession which uses leisure, recreation and play as treatment modalities to help clients maximize their independence and quality of life (CTRA, 2023). The TR process entails assessing a client's strengths, needs, interests, medical condition, social history, legal status, and/or ethnic values/needs; developing an intervention plan to meet the goals and objectives identified following the assessment; implementing the intervention plan into action; and evaluating outcomes to determine whether client goals and objectives were achieved (CTRA, 2023; Shank & Coyle, 2002). TR services focus on using recreation so people can change and

maintain desired behaviours, with the ultimate goal of improving their health through meaningful recreation participation (Wise, 2002). Working in a strengths-based approach, the practitioner and client jointly identify strengths and seek opportunities for progress rather than focusing on limitations (Anderson & Heyne, 2013).

It is important that recreation therapists are able to guide clients to overcome barriers and provide inclusive opportunities that facilitate participation. In order to provide participants with the best possible experience, recreation therapists must be prepared to adapt and modify their practices and service delivery (Craig & Sable, 2011). Recreation and leisure experiences can change based on the perceptions, actions, demographics, and personalities of clients (Craig & Oja, 2012). As a result, the leisure experience is constantly evaluated to ensure its effectiveness and efficiency (Ross et al., 2019).

The Leisure Ability Model is one of the oldest and most widely used practice models in the field of TR and is based on “internal locus of control, intrinsic motivation, personal causality, freedom of choice, and flow” (Stumbo & Peterson, 1998, pp. 106). The model has three primary service categories: functional intervention (treatment), leisure education, and recreation participation (Peterson & Gunn, 1984; Stumbo & Peterson, 1998) and is based on the distinct needs of clients. The primary outcome of services is a satisfying, independent and freely chosen leisure lifestyle. Stumbo and Peterson (2003), outline the TR process as follows, (1) determination of client needs or deficits and exploration of existing barriers to participation, (2) design of the TR treatment plan outlining specific interventions based on information gathered as part of assessment process, (3) implementation of interventions (functional intervention, leisure education and recreation participation), and (4) evaluation of client progress towards

independent leisure lifestyle that incorporates physical, social, emotional, and psychological benefits.

Leisure participation requires mental, social, emotional, and physical capacities; deficits in any of these areas can inhibit leisure participation. The overall goal of the functional intervention is to overcome or adapt to these deficits (Stumbo & Peterson, 2003). This involves the belief that everyone should have access to leisure and recreation, emphasizing the importance of establishing flow for motivation. Csikszentmihalyi (1997), describes flow as a complete immersion in an activity which often occurs when a person utilizes skill to overcome challenges which are manageable. If challenges are too difficult, new skills can be acquired to reach the state of flow and if there is no challenge, the environment can be adapted to improve client experience. It is important that recreation therapists provide a functional intervention that is challenging enough to engage participants but not too difficult that participants might be deterred. In addition, providing individuals with freedom of choice can lead to empowerment and increased engagement which is correlated with intrinsic motivation. Therefore, it is important for participants to feel they have autonomy and the ability to choose their recreation and leisure (Dattilo, 2015). These key elements of the leisure ability model make it a good fit for increasing participation motivation. Once the intervention process is complete, independent leisure should occur (Stumbo & Peterson, 2003).

Leisure education enables clients to explore their leisure attitudes, knowledge, skills, and preferences. According to Stumbo and Peterson (2003), there are four main areas of leisure education: social interactions, leisure awareness, leisure resources, and leisure skills. The development of leisure skills, which can include social and/or physical abilities necessary for an

individual to fully enjoy the leisure activity they choose to engage in, is a crucial component of leisure education (Stumbo & Peterson, 2003). In order to optimize one`s independent leisure lifestyle, clients are urged to become more involved in their leisure activities (Stumbo & Peterson, 1998). Additionally, Stumbo and Peterson (2003), explain that a recreation therapist can provide clients with new knowledge of leisure opportunities and help them identify their strengths, thus leading to increased motivation. This includes assisting clients in achieving flow, and assisting with reducing or removing barriers (Datillo, 2015). Leisure education programs should focus on both the individual and their environment and help build intrinsic motivation and enjoyment.

Recreation participation programming provides clients with opportunities to practice newly acquired skills while taking greater responsibility for decision-making and self-regulation (Stumbo & Peterson, 1998). The recreation therapist helps mentor and guide clients through the activity in hopes of building intrinsic motivation and subsequently increasing participation. Datillo (2015) describes the role of recreation therapist as supportive and key to clients overcoming barriers associated with leisure participation. The ability of TR to help foster independence and build client confidence makes it important in health interventions.

### ***2.2.1 Application of Social Cognitive Theory within TR***

Social cognitive theory (SCT) is often used in TR to guide program development when the intended outcome is behaviour change. This theory was selected for the study because it is inclusive of both personal and environmental factors that influence behaviour change. A similar approach was applied to this study when examining what influences adolescents` decisions to participate in physical activity (Wise, 2002). The TR profession strives to identify theories that



accurately explain behaviour and provide guidance on how to implement behaviour change through interventions; one of those theories is the SCT. Wise (2002), demonstrated the ability of SCT to promote health behaviors by serving as a framework for therapeutic recreation practice, including the many ways self-efficacy can improve quality of life. The purpose of this section is not to describe the full scope of SCT but rather relate it to the current study; for in-depth details of SCT, readers can explore Bandura's work (1986, 1991, 1997).

Self-efficacy is the one of the primary constructs of SCT and often influences the activities people choose as well as the effort which is applied (Motl, 2007; Wise, 2002). There are four primary forms of efficacy which are present in TR intervention; performance accomplishments, vicarious experiences, verbal persuasion, and physiological signals (Wise, 2002). Performance accomplishments are an excellent source of information about personal capabilities. They demonstrate what can be done and can be a strong indicator of success. Usually, successful performances strengthen efficacy, while failures weaken it. Recreation therapists should concentrate on helping clients successfully perform the desired behaviour. This can be done by developing an individualized skill progression; this may require physical assistance from recreation therapists as clients attempt specific steps (Bandura et al., 1980; Bandura et al., 1975; Wise, 2002). Vicarious experiences are particularly useful for clients who cannot participate in a desired activity, this could be due to physical limitations or other barriers (Wise, 2002). This technique can be facilitated by the recreation therapist or a peer; the facilitator provides verbal imagery, and the goal is for the client to visualize themselves successfully completing the activity (Oliver et al., 2021; Wise, 2002). Verbal persuasion requires the recreation therapist to be optimistic and knowledgeable about the topic they are

conveying. The recreation therapist provides direct feedback to the client, if the clients' performance is successful, the recreation therapist should provide positive feedback and if unsuccessful, the recreation therapist should attribute it to external factors that do not involve the individual such as weather conditions. To strengthen efficacy, the recreation therapist should be optimistic and convey confidence in their clients' ability to be successful (Oliver et al., 2021; Wise, 2002). The fourth form of efficacy is physiological signals, the recreation therapist should be knowledgeable of how to interpret physiological signals specific to the intervention they are offering. This knowledge can help reassure the client and also provide a safe experience for the participant, for example, a client may become alarmed when their heart rate rises during physical activity; the recreation therapist needs to be able to identify if this is a normal response and reassure the client that it is safe to continue. Wise (2002), provides the example of physical fatigue during a fitness program; the Recreation Therapist should be capable of reassuring the client that the physiological signals they are experiencing are or are not normal. These elements of SCT make them a good fit for a physical activity intervention (Brown, et al. 2023). Facilitators are responsible for guiding and motivating clients while maintaining a safe environment for participation.

### **2.3 Body Positive Approach**

A body positive approach is believed to be effective because adolescents who demonstrate positive self-images have been found to be more likely to engage in healthy behaviours including physical activity participation (Faith et al., 2002; McVey et al., 2013; Pickett & Cunningham, 2017; Robinson et al., 1995). Body dissatisfaction and weight criticism in activity has been shown to negatively impact physical activity participation among youth (Ku,

2022). Cox et al. (2019), state that focus on body monitoring and surveillance can interfere with achieving flow and has a negative impact on motivation for physical activity participation. The need for a shift in clinical service for families dealing with weight management is clear. A nonjudgmental and respectful approach to weight management was identified as a primary concern for participants in the study conducted by Kirk et al. (2014), this study included 42 Canadian participants who identified as being overweight, health professionals or policy makers. Creating an environment which fosters body appreciation has been found to improve adolescents' self-compassion and in turn increase intrinsic motivation to participate in physical activity (Cox et al., 2019). In addition, a health focused approach has been found to be more effective than a weight focused approach for long term health and well-being and instills a belief that people can be healthy despite body shape, size or weight (Bridger & Wareham 2014; Kebbe et al., 2018; Robinson et al., 1995). This idea is further supported by evidence which shows that cardiorespiratory fitness is a better predictor of health than weight (Allen et al., 2007).

Some practical concepts when using a body positive approach are presented in Table 1. These concepts are those that are employed by the JLP described in this thesis. Details of this approach are presented in Appendix A.

Table 1: Practical concepts when using Body Positive Approach in physical activity programming

<b>Practical Concepts</b>	<b>Examples</b>
Recognize what health looks like	Good health comes in many body shapes, sizes, and weights. Weight does not equate directly with health.
Promote health	Cardiorespiratory fitness is more predictive of health than weight. Rather than focusing on obesity treatment or weight loss, design physical activity programs that promote healthy active living for all participants.
Educate yourself	Be aware of your own assumptions, beliefs, and judgments about body weight and size, including assumptions made about a person's character/behaviours based on their weight. Work toward changing your personal assumptions and biases. Evidence shows that health is not directly correlated to weight. There are people who are naturally slim based on their genetics but engage in unhealthy behaviours; just as there are people with extra weight who are active and healthy.
Set health goals	Do not make goals which are weight focused. Instead, set fitness or health goals with participants, such as "I will be able to run 5 kilometres in 12 weeks".
Provide a safe space	Have clear guidelines around appropriate language, conversations, and behaviour. Never make comments about participants' weight or appearance. Do not enforce physical activity and dieting rules for the sole purpose of reducing participants' weight or changing their body shape. Be responsive and supportive of participants needs. Do not tolerate bullying of any kind. Address weight-based bullying when it occurs.
Be a good role model	Do not make negative comments about your weight or body shape. It is important that certain body types are not featured more visibly, such as putting dancers with extra weight on in the back row in a performance. Program leaders need to model a respectful, inclusive attitude.
Be media smart	Be mindful of program posters or brochures - show photographs of people of all body sizes being physically active.

## 2.4 Risks of Physical Inactivity

Children and adolescents who engage in regular physical activity show a variety of health benefits, including strong functional muscles and bones, improved self-esteem and psychological well-being, increased strength and endurance, angiogenesis, and neurogenesis, as

well as lower levels of stress, anxiety, and depression (Archer, 2014; Tagi et al., 2020). Physical activity also lowers the risk of developing chronic diseases like diabetes and cardiovascular disease (Archer, 2014; Tagi et al., 2020). It is crucial that physical activity be included in children's and adolescents' long-term health programs because it has a positive impact on cognitive, emotional, learning, and neurophysiological domains, both directly and indirectly. Physical activity is a non-invasive, nonpharmacological modifiable intervention (Archer, 2014).

Physical inactivity during adolescence is associated with many risk factors to one's overall health including physical, social, and emotional health. Komf (2020), states that physical inactivity is ranked as the fourth leading cause of premature deaths globally, this highlights the importance of developing healthy behaviours at a young age. The World Health Organization (2023), describes multiple risk factors associated with physical inactivity including, depression, cardiovascular disease, type two diabetes, obesity, and stroke. In addition, physical inactivity has been linked to psychosocial concerns among adolescents, such as social anxiety and low self-esteem (Stankov et al., 2012). With the knowledge that physical activity rates decrease (ParticipAction, 2022) from childhood to adolescence, and knowing the associated health risks, physical inactivity has become a focus in healthcare.

#### ***2.4.1 Current Physical Activity Rates***

According to Statistics Canada (2022), only 31% of children aged 12-17 met the recommended physical activity guidelines of 60 minutes of moderate to vigorous physical activity a day and include a minimum of three days of strength-based exercises (Canadian Society of Exercise Physiology (CSEP), 2022). The ParticipAction annual report card is based on Canadian children and youth's 24 hour clock assessments, providing an overall summary using

the academic grading system. The 2022 report states that there has been a decrease in children and adolescents' physical activity rates, with the grade dropping from a D+ in 2020 and 2021 to a D in 2022 (ParticipAction, 2022). It is also known that as children get older, their physical activity levels decrease, which can be attributed to an emerging trend that more adolescents are dropping out of the structured physical activities they participated in during their childhood (Statistics Canada, 2022). Similarly, having a strong peer support system which is related to physical activity can increase both the likelihood to participate in and increase the duration of the physical activity (Salvy et al., 2012). Concerns about social and physical wellness are raised when involvement in structured activities declines (Pino et al., 2019). The high percentage of overweight and obese adolescents has been attributed to lower rates of physical activity and longer periods of inactivity. Lister et al. (2023), explain that obesity rates among children and adolescents aged 5-19 years rose 7.6% for boys and 5.6% for girls between 1975 and 2016, and have remained high ever since. Adolescent obesity is linked to a number of known health consequences, such as a 1.4-fold increased risk of prediabetes; therefore, it is important to take into account all modifiable behaviours, such physical exercise (Lister et al., 2023).

## **2.5 Barriers to Physical Activity**

Although there are many well-documented benefits of physical activity, people cite a number of reasons explaining why they do not meet physical activity recommendations. Understanding common barriers to physical activity and how to negotiate them is crucial to being able to commit to regular physical activity. External barriers include financial burden, time restraints, available resources (Smith et al., 2014), built environment, weather and lack of community resources (Kebbe et al., 2018; Stankov et. al., 2012). Physical and psychological

limitations are considered interpersonal barriers that are specific to the individual, while intrapersonal barriers such as weight stigma, bullying, and negative self-image involve others and have been identified in the literature as a significant barrier to physical activity participation for adolescents who are overweight or obese (Kebbe et al., 2018; Schmalz, 2010; Stankov et. al., 2012). Given the age of the population and their reliance on parents/guardians, some external barriers, such as transportation and finances, were not included.

Decreased levels of physical activity among adolescents can be attributed to many of the barriers noted above. Additionally, increased use of technology and decreased active transport (ParticipAction, 2022) also negatively impact physical activity participation. Research (Schmalz, 2010; Stankov et. al., 2012) has indicated that these factors appear to be more prevalent in adolescents who are overweight, which may stem from intrapersonal barriers mentioned above. These barriers likely result from increased sedentary time during crucial development years, leaving adolescents who are overweight without the necessary skills or supportive friends to confidently participate in physical activity (Jodkowska et al., 2017).

For the purpose of this thesis, I focused on barriers more commonly experienced by adolescents who are overweight or obese. Further, these barriers are more prevalent for individuals in a larger body size and thus a focus for this study (Stankov et al., 2012). Stankov et al. (2012), identify adolescents who are overweight as being more likely to face barriers such as perceived ability, weight stigma, and peer relationships. Each of these barriers will be discussed in detail in the following sections.

### **2.5.1 Self-image and Perceived ability**

Self-image has been defined as one's perception of their body image, appearance, personality and view of their capabilities (Bailey, 2003). Low self-image is known to be a psychosocial barrier to physical activity, and can adversely affect the pleasure experienced. Further, negative self-image increases insecurities and leads to reduced physical activity participation (Martins et al., 2015). In addition, poor self-image has been found to directly influence adolescent leisure participation choices (Phoenix, 2001). For example, there are a variety of factors that can reinforce a person's negative self-image, such as presence of peers, presence of the opposite sex, discomfort caused by sweating, the skills exhibited, or the body and clothing worn during sports can all impact an adolescent's self-image (Faith et al., 2002; Martins et al., 2015; McVey et al., 2013). These elements can be a concern to any adolescent but such concerns are exacerbated for adolescents who are not comfortable with their body weight (Faith et al., 2002; Martins et al., 2015; McVey et al., 2013). Weight bias has been negatively correlated to physical activity motivation and often results in low self-image as described above. Adolescents often feel pressure to conform to societal expectations, which impacts their self-image and although low self-image can be experienced at any weight, Puhl et al. (2013), explain that higher weight adolescents tend to experience greater levels of weight-based victimization, further lowering self-image. Adolescents who have experienced weight related bullying during physical activity are left with feelings of incompetence, failure, and poor self-image. Concerns over judgment by peers are especially evident in adolescent females during physical education class (Allender, et al., 2006; Kebbe et al., 2018). Puhl et al. (2013), found that the primary reason for adolescent bullying/teasing was weight related, and the



second most common reason was appearance. Overcoming such feelings is challenging and unfortunately many adolescents do not, rather they avoid physical activity out of fear of re-experiencing such embarrassment (Faith et al., 2002; Martins et al., 2015). Negative psychological implications associated with increased weight-based bullying include depression, low self-image, and increased suicidal thoughts (Bridger & Wareham, 2014; Puhl et al., 2013). Thus, negative self-image can reduce enjoyment and demotivate adolescents, causing a major barrier to physical activity adherence.

Adolescents may focus on their ability to perform physical activity and are often concerned they will be teased about their performance; again, such teasing can become a motivator or a barrier for physical activity participation. People who are competent in physical movements and tasks are more likely to enjoy activity and thus participate more often while feelings of inadequacy can act as a barrier to participation (Dattilo et al., 1998; Hutchinson et al., 2006). The use of sports in physical education classes, can create a competitive and skill focused environment which in turn can produce performance stress (Dattilo et al., 1998; Hutchinson et al., 2006) and an adolescents' perceived ability to demonstrate skill competency was directly related to their comfort participating. Dattilo et al. (1998), also found when an activity was perceived to be too challenging, individuals were less likely to participate and the challenge acted as a barrier rather than a motivator. Therefore, to promote participation and engagement, professionals should adapt programs to meet the needs and skill level of all participants. In addition, Jackson et al. (2013), found that 13-year-old students who had higher participation rates believed their physical education teacher had confidence in their capabilities. Further research is needed to explore the external influences of adolescents'

perceived ability such as, peers, parents/guardians, and others that are involved in adolescents' lives.

### **2.5.2 Weight stigma and teasing**

Weight stigma can be defined as, “the devaluing of individuals with overweight and obesity and forms the basis of discrimination in a number of life domains” (Pearl et al., 2015, p. 1). Children as young as preschool age have expressed these negative attitudes towards overweight/obesity and a child's exposure to media has been identified as a strong influence on their opinions of individuals with overweight or obesity (Bridger & Wareham, 2014; Latner et al., 2007). Poor physical, social, and psychological health have been directly linked to weight-stigma (Listen et al., 2023; Vartanian & Novak, 2010). Furthermore, weight-based teasing led to a decrease in adolescents' physical activity, which has a detrimental effect on cardiorespiratory fitness (Greenleaf et al., 2013). Avoiding physical activity is one of the main coping mechanisms used by adolescents who are the targets of weight-based bullying or teasing (Bridger & Wareham, 2014; Cameron & O'Reilly, 2014). According to Thedinga et al. (2021), environments including sports and exercise are more likely to see stigma and prejudice associated with weight. Experiences of stigma, such as weight-related teasing, seem to be associated with reduced levels of physical activity, according to research (Listen et al., 2023; Vartanian & Novak, 2010). Avoiding physical activity is a 'safer' option than participating and potentially being monitored or teased by peers.

These negative attitudes and stereotypes influence all age groups; however, with the emphasis on gaining more independence as part of identity development, adolescents are at a higher risk for negative influences. Greenleaf et al. (2013), suggest that adolescents are at a

vulnerable stage in life in which they seek social acceptance from their peers, a critical aspect of adolescent development is identity development which involves shifting from parents/guardians to peers. Puhl et al. (2013), completed a study on youth enrolled in weight loss programs in which participants completed online surveys about their experiences with weight-based bullying. The study surveyed 361 males and females in grade seven and eight where 64% of the participants were considered to be overweight or obese. In terms of findings, 90% of adolescents have experienced weight-based bullying/teasing from peers; 70% from friends, 42% from physical activity facilitators and 37% from parents. It is important to be aware of all potential sources of weight-based teasing. Research indicates that weight-based teasing during physical activity reduces physical activity participation and that higher body mass indexes (BMI) are directly associated with a higher prevalence of teasing during physical activity (Jensen, et al., 2013). Roberts & Polfuss (2022) and Smith et al. (2014), refer to weight stigma as being a major barrier which prevents adolescents from participating in lifestyle changes, such as physical activity participation. Similarly, adolescents who experience weight-based teasing, view themselves as being less capable to participate in physical activity than their peers who have not experienced weight-based teasing (Greenleaf et al., 2013). Vartanian and Novak (2010), explain, adolescents are reluctant to participate in school physical activities due to the fear of being teased or bullied because of their weight.

Studies have shown that physical activity professionals, trainers, and other volunteers are likely sources of weight-based teasing. The correlation between teasing and physical activity facilitators has potential to influence adolescents' experience with physical activity thus impacting participation (Cameron & O'Reilly, 2014; Kirk et al., 2014). A study conducted by Kirk

et al. (2014), identified the need for providing a non-judgemental, respectful environment for participation. Overall, the presence of weight stigma has a negative impact on health, well-being, and physical activity participation level among the adolescent population. Similarly, Greenleaf et al. (2013), suggest that weight-based teasing results in negative attitudes towards physical activity which in turn reduces enjoyment and participation.

### ***2.5.3 Identity Development***

Physical activity has been proven to have a critical role in the development of identity during the adolescent years, which are critical for identity formation (ParticipAction, 2022; Raffoul & Williams, 2021). This is a crucial time for the process of forging a solid identity and choosing a course for one's life, according to Erikson (1950). Adolescents explore who they are as individuals, develop self-awareness, and experiment with different roles, activities, and behaviours. In addition, the adolescent mind is a stage between childhood and adulthood, where ethics and morals are formed (Erikson, 1950). Caldwell et al. (2001) state that adolescent participation in recreation and leisure activities can impact critical identity development such as perceived self-competence and social integration with peers.

During this transition, many adolescents explore different activities and many choose to stop participating in activities which were an interest during their childhood (Allender et al., 2006; Martins et al., 2021). In a study by Jaakkola et al. (2016), participants who perceived themselves as physically active participated more often and explored various forms of activity. This highlights the importance of developing physical activity competence and confidence at a young age. Though adolescents' primary support system shifts from parents/guardians to peers, research has shown that parental support still plays an important role for physical

activity participation (Khan et al., 2020). Adolescents are often dependent on family for the financial component and transportation, therefore strong family support is central for participation in many physical activity programs. Adolescents experience more concrete barriers to physical activity such as programs and resources available, funding available for physical activity, transportation, and personal time restraints (Craggs et al., 2011). In addition to relying on parental support for tangible factors, there is a positive correlation between modeling and encouragement of a healthy lifestyle and adolescent physical activity rates (Khan et al., 2020). Doggui et al. (2021), describe parental influences during childhood as lasting into adolescence, therefore it is important for children to be encouraged to engage in physical activity to build a strong foundation for future participation.

As adolescents rely more on their peers, there is an increased need for a strong, supportive peer group. Doggui et al. (2021), states that encouraging positive physical activity experiences is especially important during the foundational years as it can have a lasting association with how individuals view physical activity, thus the creation of a social network that is associated with physical activity plays a significant role in motivation to participate (Allender, et al., 2006).

#### ***2.5.4 Peer Support***

Adolescents with less family and peer support tend to be less active (ParticipAction, 2022). Khan et al. (2020), described the importance of both parental and peer support for adolescent participation in an active lifestyle, finding that adolescent's with higher peer or parental support were more likely to participate in the recommended amount of physical activity. As discussed above, weight-based bullying negatively influences participation in

physical activity; thus, is it crucial to understand how peers can act both as a barrier or a motivator to participation.

Without the presence of peer support, adolescents, especially those who are overweight, feel more vulnerable to weight criticism than when participating with friends (Salvy et al., 2009). Fear of weight criticism and judgement from unfamiliar peers may decrease motivation for physical activity (Faith et al., 2002). Salvy et al. (2012), state that adolescents who are overweight are more concerned with how peers perceive them and want to make a good impression when participating in physical activity. Although this can also be experienced by normal weight adolescents, the literature suggests that there is a higher perceived fear of judgement when an adolescent is overweight or obese (Kebbe et al., 2018). The presence of a friend was viewed by all adolescents, regardless of body size, as a way to make a positive impression and thus increase participation in physical activity with peers; however, adolescents who were overweight reported a higher number of negative experiences with 'school-based-peers' which in turn decreased physical activity rates. Adolescents who were overweight faced heightened weight criticism from peers, often resulting in them being more likely to select sedentary activities, which felt safer and more comfortable (Lister et al., 2023; Salvy et al., 2009).

As previously noted, peers become the primary support system during adolescence and an important influence on physical activity participation. Haidar et al. (2019), found stronger peer support increased adolescent participation in physical activity. Salvy et al. (2009), found that adolescents biked for a longer duration when participating with a friend versus biking alone. Physical activity and recreation can offer an opportunity for adolescents to form

friendships. For example, many adolescents who participated on sports teams, identified having friends on the team as motivation to participate (Salvy et al., 2009). Having supportive peer relationships acted as a motivator for physical activity participation compared to unsupportive peer groups.

## **2.6 Motivation**

To facilitate adolescent participation in physical activities, it is necessary to explore barriers, as well as motivators. Physical activity motivation is defined as the mechanism that promotes and guides behaviour towards the purpose or goal, for example, the adolescents in this study the goal would be to increase overall physical activity participation (Pino et al., 2019). Jodkowska et al. (2017), found that adolescents who were overweight identified many of the same barriers as normal weight peers, thus it is important to understand what motivates physical activity participation for adolescents at any size. There are two primary forms of motivation, internal/intrinsic or external/extrinsic. It is thought that a combination of intrinsic and extrinsic motivators is needed for long term change in physical activity participation (Edmunds et. al., 2006). Extrinsic motivation is thought to be driven by reward or to avoid punishment, (Ryan & Deci, 2020) whereas intrinsic motivation involves feelings related to engagement such as pride or enjoyment (Cox, et al., 2019). Intrinsic motivation is thought to be the most important motivation element for physical activity participation and the most reliable predictor of physical activity behaviours. Cox et al. (2019), suggest that focus on body monitoring and body image influenced intrinsic motivation and the ability to experience peak states of flow. On the other hand, intrinsic motivation can be enhanced by positive body image. Pino et al. (2019), identified enjoyment and occupying free time as key motivational factors for

physical activity participation. Enjoyable physical activity is more likely to increase participation. A systematic literature review completed by Allender et al. (2006), found that adolescent female's primary reason for physical activity participation was connected to body image or weight concerns. There are many motivators for physical activity, the literature related to adolescents who are overweight helped guide the literature review and deductive coding for this thesis.

### ***2.6.1 Self-efficacy and Confidence***

Research has shown that children and youth who are confident, report having higher physical activity levels (ParticipAction, 2022). Self-efficacy is the belief that you have the skills and abilities needed to achieve the desired outcome. A strong sense of self-efficacy is hypothesized to influence choice of physical activity, amount of time and effort put forth, and level of persistence in the face of barriers (Dezewaltowski et al., 2007). It is positively correlated with physical activity levels and intentions to be physically active. There is experimental evidence that suggests that improving self-efficacy can lead to increased physical activity among adolescents. Cervone (2000), believes that people are more effective when their strengths are necessary for the success of the activity and less effective when their weaknesses are believed to be important factors in success. Thus, it is important to understand the full scope of self-efficacy in relation to physical activity.

Research outlines six main forms of self-efficacy which can be related to physical activity adherence; mastery, experiences, vicarious experiences, verbal persuasion, imaginal experiences psychological states, and emotional states (Bandura, 1999; Wise, 2002). Mastery experiences are the best source of information about how well an individual will do in a new



situation because they show past successes and this results in increased confidence in the present. The more mastery experiences an individual has, the less likely they are to have future failures (Bandura, 1999). When individuals watch someone else perform a task, they may feel more confident about doing it themselves, this is defined as a vicarious experience. Vicarious experiences can help individuals learn new skills quickly and is especially important when it comes to parenting, role modeling is known to influence children's physical activity (Bandura, 1999; Ryan & Dzewaltowski, 2002). Self-efficacy is influenced by the words and actions of others. Adolescents who receive positive feedback about their physical activity habits from their parents or other adults in their life have a higher self-efficacy when it comes to maintaining a healthy lifestyle (Bandura, 1999; Wise, 2002). Some sources of self-confidence come from visualizing yourself doing a task well. Bandura (1999) provides an example; one can imagine going for a run by picturing how good it would feel to finish it successfully (Bandura, 1999; Wise, 2002).

Self-efficacy comes from two sources: physiological indicators (such as how tired you feel or how much pain you are in) and emotional indicators (such as how happy or stressed you feel). Physiological indicators are important for understanding how your body feels before, during, and after you do something. Emotional indicators include how you feel before, during, and after you do something, and they can impact your self-efficacy beliefs (Ryan & Dzewaltowski, 2002).

Much research has been done on how individuals feel about their ability to be physically active, but very little is known about how self-efficacy directly impacts physical activity (Dattilo et al., 1998; Ryan & Dzewaltowski, 2002). Ryan and Dzewaltowski (2002), provided preliminary

evidence that measuring self-efficacy for regulatory tasks other than overcoming barriers may be important in enabling the adoption and maintenance of physical activity in youth. Both social and environmental surroundings are important factors contributing to adolescents' long term physical activity participation and changes to surroundings can influence self-efficacy (Kebbe et al., 2018; Ryan & Dzewaltowski, 2002). When adolescents become confident in their ability to ask peers to participate in physical activity, their participation rates increase. Similarly, when an adolescent feels confident in their environment (physical, transportation, ability to ask parent or adult for assistance), there is a higher probability of physical activity participation. Health education practitioners play an important role in promoting physical activity in youth by helping teenagers develop skills such as asking others to be active with them and changing the environment to make it easier to be physically active (Ryan & Dzewaltowski, 2002).

### ***2.6.2 Physical Activity Enjoyment***

Physical activity enjoyment is described as an emotional boost that participants experience during physical activity which they find fun or pleasurable (Hagberg, et al., 2009; Paxton et. al., 2008). When youth enjoy physical activity, participation is more likely and results in longer-term adherence (Faith et al, 2002; Jaakkola et al., 2016). Enjoyment is a key factor for intrinsic motivation, enjoyable activities can be so captivating that one loses focus on their own needs and become absorbed in activity (Dattilo et al., 1998). Therefore, when counseling youth about increasing physical activity, a key feature that must be considered is enjoyment related to physical activity. Dishman et al. (2005), describe physical activity enjoyment as influencing self-efficacy and physical activity views of high school students. It is known that the level of enjoyment experienced during physical activity can affect the effectiveness of interventions

which are health care-based, when an intervention is enjoyable, the client is more likely to adhere to it. Increased enjoyment leads to increased self-efficacy which improves how one views physical activity, resulting in increased participation (Boyd & Yin, 1996; Hagberg et al., 2009; Sallis et al., 1999). Physical activity enjoyment can be directly correlated with perceived competence and self-image, therefore adolescents who struggle with these barriers are less likely to enjoy physical activity thus participating less than someone who does not have such barriers.

Social interaction is also related to enjoyment because people often seek opportunities to create support networks which have a positive impact on physical activity participation (Hagberg et al., 2009). Martin et al. (2015), conducted a systematic review which assessed qualitative literature on adolescents' perspectives on physical activity barriers. They identified key areas that influence adolescents' physical activity adherence; similar to other literature, peer support including families and friends, as well as having a positive self-image and outlook on physical activity. The presence of peers can increase the level enjoyment experienced during the activity and have potential to motivate participation, for example, if an adolescent enjoys swimming, they may be more likely to participate if a friend invites them to go to a public swim. Peers can indirectly influence physical activity rates by impacting the enjoyment of the activity, the enjoyment of an activity may be enhanced when participating with a friend (Khan et al., 2020).

## **2.7 Need for Research**

Individuals who do not meet current physical activity recommendations established by CSEP are at a greater risk of developing chronic disease and reducing longevity. Current

research highlights great concern regarding adolescent physical activity patterns, including low levels of physical activity and much higher levels of sedentary behaviours (Finne et al., 2011; Lister et al., 2023). Adolescent years are a period of development with significant life transitions and identity formation tasks; therefore, this is a crucial time for forming a positive association with physical activity. As stated above, adolescents face a number of barriers to physical activity and those who are overweight or obese face additional weight related barriers (Smith et al., 2014). Peer relationships have a strong influence on this age group and can have a big impact on activity choices (Khan et al., 2020). The literature also indicates things that are key for motivating adolescents to participate, such as building confidence and providing an enjoyable atmosphere for physical activity (Hagberg et al., 2009; Martins et al., 2015).

Additional research outlining best practices for applying a body positive approach in a physical activity setting is needed (Cox et al., 2019). Body dissatisfaction, low confidence, and poor body image are all predictors of low physical activity participation which require further research (Lister et al., 2023). Stankov et al. (2012), explain that engaging adolescents who are overweight in physical activity requires addressing the barriers that may deter them from participating in the first place. There is also a gap in the research on motivating adolescents with body dissatisfaction to participate in physical activity.

## **Chapter 3: Methods**

### **3.1 Introduction and Purpose**

The primary purpose of this study was to evaluate a program designed to increase physical activity participation for a population at risk for chronic illness. A qualitative approach was employed in order to understand what barriers and motivators were experienced by participants. This allowed the researcher to gather firsthand experiences and views of the participants, focusing on past experiences in physical activity. In addition, a body positive approach was applied to the intervention and further data was collected to determine whether this approach influenced participant experience or physical activity adherence behaviours beyond the intervention.

The information gathered from this study may guide the future design and implementation of activity programming for adolescents. With a better understanding of adolescents' experiences with body positive programming, facilitators can reduce or eliminate common barriers to participation. Furthermore, by understanding what motivates adolescents, facilitators can adjust how physical activity is promoted to this population which in turn can improve their motivation to participate and increase their activity levels and adherence rates long term.

### **3.2 CDPP Program Evaluation**

The CDPP, where the current study was conducted, is a publicly funded program that delivers family-based care for children and adolescents who have been identified as having a risk factor for chronic diseases such as high BMI, family history of diabetes, polycystic ovarian syndrome, or insulin resistance. This study was designed to evaluate a pilot program offered to

CDPP clients. Families were referred to the CDPP by a healthcare professional such as a family physician. Programming was evidence-based and developed to target ongoing issues identified by the inter-professional team, such as the rising rates of insulin resistance. The resistance training program was developed to improve insulin resistance and was offered to adolescents who met the inclusion criteria for the program as described below. While this program was designed to be a regular offering within the CDPP, clients who accepted to participate in this initial program delivery were also invited to participate in an optional research component. CDPP program development protocol required that all pilot programs be evaluated during the first delivery. As such, the program described in this thesis was to be evaluated to follow proper protocol for all new programs. As graduate students, we decided to conduct research to systematically evaluate the body positive approach and fulfill the thesis requirement of our academic programs.

Qualitative program evaluations provide an in-depth, holistic review of health practices, through examining existing programs. This method allows professionals a time effective method for conducting research which can be used for improving the effectiveness of programs (Murphy et al., 2018; Vaterlaus & Higginbotham, 2011). This method is becoming more widely used by practitioners to assess programs effectiveness, including programs within multidisciplinary teams and the adolescent population (Murphy et al., 2018). Program evaluations differ from typical research studies in that they capture holistic details of an intervention which are used to inform and further improve the intervention. The results of a program evaluation can be used to help support funding requests and promote the effectiveness and value of the program (Murphy et al., 2018). In addition to the dedication to

provide quality programs, the CDPP receives government funding and providing such data on a new program is critical to the justification and avocation for continued funding support.

### **3.3 Rationale for Chosen Methods**

This study utilized a qualitative program evaluation method. This method allowed for the collection of detail rich data, which helped the researcher understand the full picture. The use of interviews allowed researchers to gain a holistic understanding of the specific things that influenced adolescent participation in physical activity. Qualitative research is optimal for studies which seek to understand the 'why' questions (Yin, 2003). In relation to this study, we wanted to learn why adolescents do not participate in physical activity and whether the intervention was effective or not.

### **3.4 Research Question**

The main research question that guided the research was:

*What influences adolescent's physical activity adherence?* From the research question, these sub-questions were also explored:

- *Was the program design effective in increasing physical activity participation?*
- *What motivates adolescents to participate in physical activity?*

### **3.5 Research Setting**

This study was conducted within a pediatric CDPP in NL, Canada. The inter-professional team determined the need for an intervention to increase physical activity levels of adolescents with insulin resistance. The program was then designed collaboratively by the physiotherapist and recreation therapist. The physiotherapist focused on the physical aspects of the resistance training program, including the exercise program and measuring health indicators, while the

recreation therapist focused on providing psychosocial educational sessions as well as providing a safe, encouraging recreation participation setting.

### **3.6 Study Recruitment and Participants**

All participants were enrolled in a government funded CDPP as patients. This research was approved by the university research ethics board (see Appendix B). Interested patients had to meet the following inclusion criteria to participate in the research: (1) be between ages 13-18 years, and (2) be diagnosed with insulin resistance, based on results from oral glucose tolerance tests (OGTT) and the presence of physical markers, such as acanthosis nigricans. Additionally, patients were excluded if they (1) were taking prescription medication which would affect glucose or insulin metabolism, (2) had syndromic obesity (e.g., Prader-Willi syndrome), (3) had type 1 diabetes or other metabolic condition affecting glucose or insulin metabolism, or (4) were unable to commit to the 10-week resistance training program.

Patients' who met the inclusion criteria were identified by the CDPP and invited to an orientation session outlining the details of the study (see Appendix C). Given the age of participants, parents were required to provide consent on their behalf and participants verbally assented at the beginning of each interview. Once consent was obtained, participants completed the *Physical Activity Readiness Questionnaire for Everyone* and the treating paediatrician completed the *Physical Activity Readiness Medical Examination* (see Appendix D) (Bredin et al., 2013). Only participants who were declared safe to exercise proceeded; all participants met these criteria.

All participants and their parents/guardians completed a 10-week program through the CDPP prior to registering for the pilot program that was the focus of the current study. Some of



the relevant topics covered by the CDPP and co-facilitated by the recreation therapist included; leisure education, sedentary behaviour, physical activity adherence, and body positive approach. In addition, all participants met with the recreation therapist and physiotherapist for individual assessments and one or more counselling sessions through. The CDPP team members followed patients' during and following the pilot program as part of their ongoing treatment plans. The pilot program was designed and delivered separately from the standard 10-week program through CDPP.

### **3.7 Data Collection**

The primary data collection approaches used were group interviews, qualitative evaluation questionnaires, and my observations of participant engagement over the duration of the study as recorded in a reflective journal. Consent was provided for all three focus groups. All 13 participants completed the resistance training program and participated in all three of the focus groups. Group interviews were conducted before the start of the program, immediately following the 10-week program, and again six months later; all interviews were conducted at the same facility as the intervention. The questions for the interview preceding the program focused on past physical activity experiences and barriers that participants described related to those experiences. Questions during the interview immediately following the program were related to motivation and their immediate impressions of the program including the body positive strategies used in the program. During the six-month follow-up interview, participants were asked about their overall experience and whether the program had any lasting impact on their current physical activity decisions, specifically around adherence. In addition to the interviews, I maintained a journal to record observations of each session as well

as my own reflections about impressions of participant engagement and necessary modifications or suggestions I might have for future programs. Program protocol also required qualitative evaluations, participants provided self-reported responses related to the program and participant changes in confidence and attitude towards physical activity and whether there was a change in perceived ability to participate; all 13 participants completed the evaluations. In addition, program-based tools were administered to collect data as for the CDPP, this data was not analyzed as part of the study. Program-based assessments included the completion of two questionnaires: (1) Physical Activity Enjoyment Scale (PACES); and (2) Physical Activity Questionnaire for Adolescents (PAQ-A). The quantitative data presented was program-based and not collected by the researcher for the purposes of this study.

### **3.8 Data Analysis**

Data included focus groups transcripts, facilitator journal entries, program evaluations, and questionnaires. Deductive coding was used to organize qualitative data, with two primary codes; barriers to physical activity participation and motivators to physical activity participation. Codes were determined based on the literature reviewed and clinical indicators as observed by the recreation therapist. Eight deductive codes related to physical activity participation for adolescents were identified including, confidence, weight stigma, peer support, enjoyment, body positive approach, perceived ability, and health motivation. All interviews were audio recorded, transcribed verbatim and uploaded to NVivo for analysis. All transcripts were first reviewed for accuracy and completeness. For the second reading, Dr. Sullivan and I read the first interview transcript independently and then met to compare codes and identify themes. Once we were confident that the codes were accurate, these were applied to each transcript

individually before searching for patterns across all the manuscripts. Through this procedure, we were able to confirm, enhance, and derive themes (Pearse, 2019). A similar coding process was used for the facilitator journal notes and the program evaluations.

The primary objective was to explore adolescents' experience with physical activity, specifically the barriers and motivators which influence participation. Basic demographic information including, age, gender, and co-morbidities were also recorded. Attendance was recorded at all community sessions and adherence to the home-based sessions were self-reported weekly. As this study was situated within an existing clinical program, additional questionnaires that were previously completed including, the PACES, and PAQ-A were reviewed for relevance to the program design for the current study. All data collection and analysis for this study were qualitative but the quantitative evaluation findings that were already happening in the program were used to help inform the researcher.

### **3.9 Data Storage**

In accordance with the Health Research Ethics Board, all electronic data (i.e., digital audio recordings, transcripts, consent forms, and research notes) were stored on password protected computers and paper documents were stored at Eastern Health offices behind two locked doors. In addition, there were no names, numbers, or other identifying factors stored with the data. Only members of the research team were granted access to stored files. Electronic data will be kept for five years after completion of study with the Janeway Lifestyle researcher, in the Janeway Pediatric Research Unit, RM406.

### **3.10 Ethical Considerations**

The current research was approved by the Health Research Ethics Board (Appendix B). All families were invited to an orientation session which provided information on the research and pilot program. Families were informed that participation in the study would have no impact on any current or future care received by the CDPP. In addition, families were provided the option to enroll their youth in the resistance training program without participating in the research element. Families were provided an opportunity to ask questions and informed that they could withdraw from the study at any time without repercussions. Participants were also informed that their identity would remain anonymous and any identifying information would not be disclosed. Participants were reminded that focus groups were confidential and information from the discussion should not be shared with others. All participants were reminded that they were free to participate in the group interview at their own comfort level; they were also reminded they could withdraw at any time. Parents/guardians provided written consent and completed the program evaluation at the end of the program. Participants verbally assented at the start of each interview.

## **Chapter Four: Findings**

### **4.1 Introduction**

For this study, data was gathered over approximately an eight-month period (March-November, 2016) and consisted of group interviews with the participants at three intervals, assessment screening tools, and program evaluations (Appendix E) completed by parents/guardians and youth. In addition to field notes recording observations, I maintained a reflective journal throughout the experience, recording methodological issues and personal reflections on the process and engagement of the youth.

Findings from the observations, interviews, and assessment/evaluation tools are presented in this chapter. It is important to note, the age of the participants and the nature of group interviews meant participants often interrupted one another and quickly changed the direction of the discussion. At times the change of topic resulted in incomplete statements and limited opportunity to probe participants for further details. I relied on my field notes and journal to elaborate on the context and provide additional information to improve readability.

### **4.2 Research Participants**

As noted in Chapter Three, 69 youth who completed a 10-week leisure education program with the CDPP were invited to participate in this research. In total, 13 participants diagnosed with insulin resistance agreed to participate in the current study; all participants who signed up for the program, completed it. Data was included for youth who participated in all 10 weeks of the program and engaged in the three group interviews. Parents/guardians of the 13 youth provided consent and completed the program evaluation at the end of the program.

Eight females and five males, with a mean age of 14.16 years, participated in the study. The majority of the youth who were familiar with one another having completed the 10-week leisure education program with the CDPP. I had worked with all of them and knew from previous sessions that they all had past negative experiences with physical activity and were reluctant to participate in resistance training.

#### **4.3 Overview of findings**

Barriers to physical activity identified from the literature specific to adolescents in larger body sizes, including confidence, weight stigma, body image, peers, enjoyment, program design, perceived ability, and health motivation, guided the interviews. To make sense of the data, hurricane thinking (Kirby and McKenna, 1989) was employed, and the findings were grouped into the following two themes, which were representative of all the youth and evidence of the codes noted above were evident in the group interviews as well as my journal:

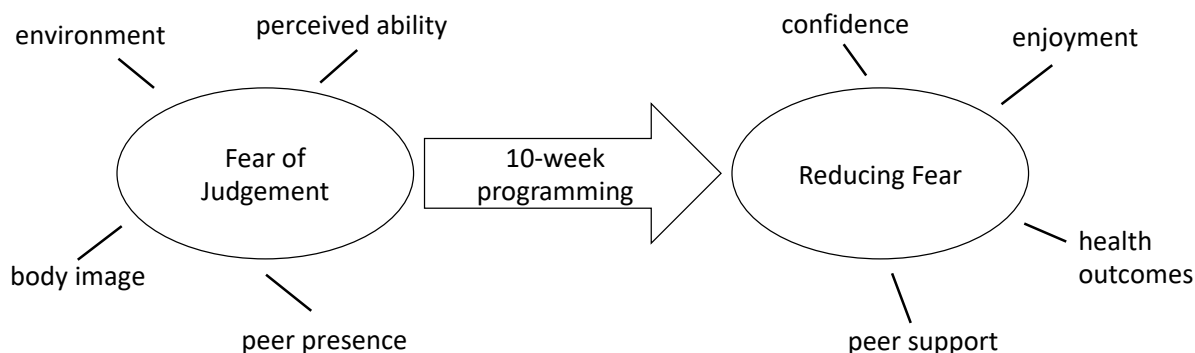
- Fear of judgement
- Reducing fear

As I gathered the data and began the initial data analysis, I referred back to the primary goal of my research to ensure I remained focused. To determine whether a physical activity program could increase adherence and improve enjoyment for youth, I aimed to understand their experiences in past experiences, focusing on barriers. They discussed factors from their pasts that negatively impacted current levels of physical activity including humiliation, body image, perceived ability, environment, and peer presence and these are described in the section entitled *fear of judgement*.

Following their participation in the 10-week resistance program and again at the 6-month follow-up, youth were invited to share their experiences in a group interview. Additionally, they were encouraged to report on whether participation in the program changed their attitudes towards or participation levels in physical activity programs. The findings suggest that the program was successful in its aim of increasing physical activity levels and enjoyment. Participants spoke about self-confidence, enjoyment, health outcomes, and peer support, these are described below in the “*reducing fear*” section.

The relationship between these two primary themes is illustrated in Figure 1.

**Figure 1: Emerging themes and patterns: Hurricane thinking**



#### **4.3.1 Fear of Judgement**

The primary purpose of the first group interview was to provide youth with an opportunity to share past experiences with physical activity, report current activity levels, and consider what limits their participation in physical activities. As illustrated in Figure 1, four main patterns characterized these experiences:

- body image
- perceived ability
- environment
- peer presence

These four patterns will be described in the following sections.

#### **4.3.1.1 Body Image**

All participants acknowledged that they either personally experienced or they witnessed a peer experience weight related bullying/teasing. Participants worried about what others might be thinking about their appearance, in particular their body size and/or shape. One teen explained that she worried that others were focused on bodies stating, [they are paying attention to] *“Your weight, your size.”* She cannot enjoy activities because she worries that others are judging her body during physical activity. Another young girl shared an experience when she was wearing a swimsuit, *“They said I was spilling out of my bathing suit...They had another girl there who was actually spilling out of her bathing suit, and I didn’t say anything though.”* Although she was engaged in the activity, her awareness of the comments being made by others negatively impacted her experience. Further, she acknowledged that she was also aware of the appearance of others having mentioned that she also noticed the fit of a peer’s swimsuit. Although she noticed the swimsuit, she chose not to make a comment knowing how hurtful inappropriate comments about weight and body image can be.

Participants spoke at great length about health and beauty messages presented in the media, focusing in particular on the influence of social media on how they feel about their bodies. *“It makes you feel like you don’t have the right body”* explained a female participant,



while others agreed and made similar statements, *“Part of you still wants that body that’s on the magazine...even though you know it is bad”*. The desire to resemble society’s representation of health and beauty creates a very poor body image for adolescents who are trying to fit in with their peer group. For those in larger body sizes, this desire is unattainable and often leads to worsening body image and at times health threatening behaviours.

Referencing these behaviours as “bad” likely reflects the recent education they received in the CDPP program. For example, a female participant commented *“being skinny is tied with being healthy.”* Others added to the conversation sharing, *“you need to be accepted into society”*, with another adding, *“it’s called normalization and it sucks.”* This focus on weight and size was something that the participants were aware of and spoke to how it negatively influenced their views of themselves. In particular, one participant explained *“... I understand that....like because you are skinny does not mean you are healthy, but not everyone understands that so there are still a lot of people who are like no because I am this size, I am obviously going to be healthier than you...”* Some participants confirmed that they had been teased because of their body size and following being teased, they avoided participating in similar activities again. They also shared experiences when a peer was the focus of this kind of teasing, *“I have seen people in my class make fun of a way a girl in my class runs, and I’m thinking, oh my god, is everyone making fun of me like that...”* Although she was not the target of this teasing, seeing it happen to someone else increased her concern that she could also be ridiculed in future situations. One participant shared a time when he was the object of this kind of attention, *“When I was in gym and we were playing a game and someone made fun of my weight.”* Another participant explained that not only does this kind of teasing hurt, people don’t always think about the

indirect implications of this kind of behaviour, *“Making fun of overweight people at the gym is like they are there because they don’t want to be overweight anymore.”* Participants described being concerned about the potential for being *“harassed”* or *“made fun of”* if they were to participate in public gyms, and they admitted that because they worry about these types of comments, they often chose not to participate to avoid the worry.

#### **4.3.1.2 Perceived Ability**

Adolescents’ perceived ability was another area of concern described by the participants in the current study. They described the pressure they felt to perform and how their perceived ability influenced their overall experience of physical activity, particularly in physical education classes. Given their ages, all participants had recent experiences in physical education classes making this a primary focus of their discussion. Physical performance is a primary focus for evaluation in physical education, and participants described this evaluation as a source of stress. Participants described the added pressure brought on by peer evaluation with one stating, *“A friend has to record you in gym class. If you get 31 laps it’s a mile so there is pressure to at least get a mile. Some days we have to do push ups. My friend can do 55 push ups and I can do one.”* A second participant added, *“Some people can run 20 laps or something. The people that can’t just feel bad. You have a partner that watches you run and records your laps; I feel like I’ll puke at the end. I don’t like it.”* This kind of pressure negatively impacted participation rates as some indicated they chose to sit out when possible.

All participants agreed that the pressure to perform impacted how they felt about participating in gym class, stating, *“I hate gym class”* and *“I don’t like being watched.”* They worried about what others might think if they were unable to successfully complete an activity.

Such thoughts made it very difficult to enjoy participation. One female participant stated, *“It depends on who’s in your gym class if it’s good. If you’re in with the good kids and you can’t keep up than its bad. I don’t like being watched.”* This statement demonstrates an awareness of their own and their peers’ abilities to perform physically and highlights the discomfort that is felt when participating with peers who they perceive to be more competent in physical activity. Making such comparisons contributed further to a negative view of participating in physical activity with others resulting in lower levels of enjoyment.

Such reluctance to participate in physical activity extended beyond physical education classes to public settings. One young female spoke about a past negative experience in a public recreation facility, *“I went skating once and there was a bunch of people from my school there, and I was like oh my god if I fall this is going to be the death of me. And so, like I was like go slow don’t fall, go slow, don’t fall because like oh my god I can’t do this”*. Again, the performance pressure experienced in the presence of peers does not only exist in the gymnasium at school; participants worried in all environments where they may encounter peers.

The final aspect of perceived physical ability evident in the data related to how participants felt physically when they engaged in activity. In particular they talked about not having any control over physiological responses such as sweating, rapid breathing, or stamina.<sup>2</sup> A male participant shared, *“I find the stamina part cause like my lungs get full of weird fluid when I exercise for a long time and it just scares me cause like it feels like I can’t breathe and I*

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<sup>2</sup> This term was used by a participant to describe his overall ability to continue to participate in physical activity. Several other participants then used this term similarly.

*have to like cough it all up and stuff, that's why.*" A female participant also shared, *"That's honestly what comes to mind. Me being tired and out of breath and sweaty. Because I don't have very good stamina and that's why exercise is so scary to me.* Another participant made a similar statement, *"Um, I just don't have the energy for it most of the time, don't have enough stamina."* The discomfort of the body's physiological response to exercise and perceived physical fitness weighed heavy on the minds of these adolescents and their statements highlighted the impact this has on their desire to be active.

These examples illustrate how perceived ability can negatively impact enjoyment and participation rates. Overall, adolescents in this group worried about what others thought of their ability to perform the physical activity. They also perceived their uncomfortable physiological responses associated with being physically active, were indicators of this inability and further highlighted negative aspects of their bodies.

#### **4.3.1.3 Environment**

The setting and environment in which physical activity takes place was also identified as a potential barrier to participation. All adolescents identified aspects of different environments that acted as a barrier to enjoyable participation in physical activity. Specific environmental elements that deterred participation included, the physical space (type of equipment, size of gym), emphasis on body image, and whether they had a sense of belonging in the space. For example, the presence of large gym equipment such as weight machines was described as *"intimidating"* and deterred some from *"joining a commercial gym"*. Separate from equipment, participants described posters and other body focused advertisements in the environment showing *"muscular"*, *"fit"* and *"skinny"* people, and although they acknowledged that the body

types were not always realistic, they admitted that such images influenced how they felt about their own body image. Those who had gym memberships in the past explained that there were members who resembled those images and they never quite fit in with a male participant sharing, *“I actually went to a gym and someone came up to me and said you shouldn’t be here.”* Another participant shared, *“I just remember lots of people with big muscles walking around very sweaty and that was kind of the last time I went there. Very fit people doing it, intimidation.”* This highlights how intimidating such spaces can be for adolescents who want to be physically active. Another two participants agreed sharing, *“Yeah it is awfully intimidating. You know you see the people that are like pretty much like 7-foot-tall beef sticks. Like do you eat the weights?”* and *“You walk in, the main entrance and there is big bulky men running on treadmills.”* These statements speak to the awareness of both physical environment and the adolescents’ perception of the type of people who attend public gyms.

These examples illustrate the influence environment can have on adolescent physical activity participation patterns. The participants all agreed that many components which make up public gyms are intimidating and not an environment in which they feel comfortable participating. The post focus group explored the contrast in public space and the safe space provided during this study; those findings can be found below.

#### **4.3.1.4 Peer Presence**

The presence of peers in physical activity was seen as a motivator or a barrier depending on the nature of the relationship. Participants spoke about two distinct peer groups: friends and other peers. Other peers included unsupportive peers or peers who were unknown to them such as a classmate, schoolmate, or someone in their neighbourhood. This other peer group

was those who they were not connected to, and they worried these others might contribute to their concerns about being physically active and potentially causing emotional harm.

One female participant described her concerns about being physically active with other peers present, sharing, *“It is not necessarily exercising or physical activity in front of your friends. It is the people you don’t trust almost, like you don’t know them well. They have done some stuff before that you wouldn’t exactly want done to you or anything, like a video of you falling put online.”* When I asked for a little more information about the video, it was evident in the discussion that followed there is fear not only of emotional harm that may be inflicted in the moment but that the teasing will continue through social media. One female shared that she preferred to participate in physical activity with strangers rather than peers in her class, *“I would rather work out in front of complete strangers than do it in front of my classmates. Because you feel less judged because you don’t know them so it doesn’t really matter as much, but as the people in your class you are around them like every day, so you feel like it would follow you. And like if they made fun of you behind your back, talking to other people, the other people know who you are, that makes it worse.”* This demonstrates the impact peer presence can have on adolescent participation rates and experiences.

Peer presence often meant an increased risk of being ridiculed and led to decreased participation. Participants also discussed the added stress of being recorded, meaning these embarrassing moments could be shared with others or posted on social media. One participant explained, *“But at school you are kind of like, all these people have their phones out, oh no, oh that’s my biggest fear. Like people that you have to see every day.”* Related, a male participant shared *“the people who make like compilations of fat people falling down its stupid. I have*

*actually seen one and I dislike that and left a comment saying shut down this YouTube channel.”*

Another young girl shared a similar awareness,

*I know it is probably a rule that is not really enforced, but no cell phones and stuff because then you feel like, oh my god, someone is gonna have that on snapchat tonight or some social media of me falling down or something and that's always and that everyone well, I am not saying everyone, but a lot of people in school worry about being videotaped cause like I'll go on social media and I'll see all these pictures of people taken in school and they don't know it's happening, so I'm kinda like did someone take a picture of me today?*

This worry is very real, and although participants believe there are rules in place restricting recording devices, they are not confident that these policies can be enforced.

#### **4.3.2 Reducing Fear**

The primary purpose of the group interview immediately following the program was to evaluate their experiences in the resistance training program and to determine whether they believed they had the necessary knowledge and skills to continue participating in physical activities. The interview held six months following the end of the program focused on whether participation led to increased physical activity adherence. It was also important to determine whether participants made any other lifestyle changes based on their involvement in the program. As illustrated in Figure 1, four main patterns characterized these experiences:

- health outcomes
- self-confidence
- enjoyment

- peer support

These four patterns will be described in the following sections.

#### 4.3.2.1 Health Outcomes

As previously noted, a body positive approach guided the program design with an emphasis on improved health rather than reduced weight. To remove barriers associated with a negative environment, the program was delivered in a private facility with access restricted to program participants. One male shared, *“It’s different because you don’t have a lot of the like, ah people that go there like Goodlife or something like that and like the machinery is there and there is no treadmill here and only one bike, and um it’s just a different environment all together. I don’t feel like I am being judged if I mess up or something.”* This male felt uncomfortable participating at a public gym because he did not feel safe. A few other participants simply stated, *“I don’t feel judged.”* A primary goal of this program was to create a safe space to increase adolescents’ physical activity adherence and to enable them to explore physical activity as a healthy behaviour without worrying about environmental barriers described in the pre-program interview.

A body positive approach guided all decisions regarding both the physical and emotional space of the program. When asked how this program differed from other physical activity experiences, participants responded, *“It wasn’t body image focused.”*, *“I liked that I didn’t feel judged at all and the fact that like everyone helps out each other without judging each other”* and *“I felt supported”*. They described being able to participate freely without body image related pressure. This was also evident in that their participation patterns over the duration of



the study was consistent and they noted improvements in their strength and their ability to perform exercises.

Focusing on health rather than appearance had a positive impact on an adolescents' motivation to be physically active, this was evident through their regular participation and expressed desire for the program not to end. One participant compared the current program to a past experience with a personal trainer, *"But the problem with the personal trainer though is he is focusing more on like not insulin resistance, not like health, they are more body."* He was able to identify that the personal trainer's focus was on physical appearance and weight rather than health. Further, he noted that after completing this program when he and his dad decided to go back to a personal trainer, he informed the trainer that he had insulin resistance and wanted to focus on his health rather than his appearance. Another participant described their motivation for continuing to be physically active, *"What I think motivated me was the fact that you know it is low insulin resistance right. So, you get to reduce the risk of getting diabetes or future heart disease, so really when there's even the slightest chance, it doesn't even matter if it is the tiniest chance possible that it could damage your lifestyle, then that is pretty good motivation."* Participants not only understood their focus should be their health rather than appearance, but this understanding also motivated them to be physically active. When discussing health as a motivator for committing to the program, a young female shared an experience she had:

*I was at a curling practice and I was sitting with a girl and I had to leave early to come here and I was going to come here because I did not want to miss and um I said it was for like insulin resistance, pre diabetic and I was like, I really don't want to get diabetes*

*when I am older and she was like, oh I don't even care about getting diabetes, I know I am going to get it when I am older because it runs in my family. And like it dawned on me how people don't care about their health and that made me want to come even more because some people feel like so unmotivated. They think there is nothing you can do. When I feel better trying even if it doesn't work, I know that I tried to stop what was happening.*

This illustrated the motivation of this participant; she was able to identify the difference between her current views, informed by her participation in the program, versus one of her peers and she described her motivation to feel in control of her health and how she can use physical activity to improve her longer-term health.

#### **4.3.2.2 Confidence**

Improved confidence<sup>3</sup> was evident in the post program data and led to greater desire to participate in physical activity and improved adherence. The following responses reflected the positive impact the program had on their belief that they are capable of participating in physical activity, *"I am much more confident with my body and fitness level"*, while another shared, *"I never was very confident when it came to physical activity because I thought people would stare at me and make fun."* These statements demonstrated the need for body positive programs for adolescents, especially those who are overweight or obese. Others wrote about their new found confidence in their ability to participate in physical activity, *"I feel I have more confidence when it comes to working out or playing sports"* and another stated, *"it increased my*

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<sup>3</sup> Self-efficacy and self-confidence are being used interchangeably. Much of the research reviewed reference self-efficacy while the youth in this study used "confidence" to describe their experiences relevant to self-efficacy/mastery.

*confidence with equipment.*” It is critical that adolescents’ feel they are capable of taking part in physical activities, whether it is a complete sport or individual activity, without this belief, they will not have the confidence to participate in an active lifestyle.

Approximately half of the participants were not competent in their movements at the beginning of the program. I noted concerns regarding participants’ movement competencies and physical literacy and teaching them fundamental movements required for strength training not only improved their physical literacy, but they also felt better equipped to join a public physical activity program with one male participant stating, *“It was a good learning experience for people going to the gym for the first time.”* When reflecting on physical changes related to the program, eight participants noted improvements in strength and flexibility. A female participant attributed her participation in this program to improvement in movements for her preferred sport, *“I noticed my slides were getting a lot stronger in curling. When we started doing the lunges and stuff, I noticed after a while my slides were getting stronger.”* This kind of shift in thinking meant she focused on increased strength rather than appearance. Specifically, she related resistance training to her curling skills and was pleased to see how this program improved her skills as a curler. Similarly, another participant stated, *“I feel I have more confidence when it comes to working out or playing sports.”* The increased confidence will hopefully carry over to other physical activity opportunities available in school and the community, thus increasing their overall participation in physical activity and reducing sedentary time.

As noted above, my journal entries indicated that many of the participants were unable to complete basic movement skills at the beginning of the program. For example, participants

were unable to complete a squat, nor were they were familiar with proper use of hand weights. I observed poor form and a lack of awareness of the appropriate level of weight to select, with some participants picking up weights much heavier than they were capable of lifting. My notes suggested that participants were fatigued and lacked the ability to finish the full exercise when they first started the program. They requested more frequent and longer breaks in between exercises and often did not understand directions including basic fundamental movement skills. Although participants developed at their own pace, all of them improved. I observed less complaining and fewer breaks were required. As they became familiar with the process, they assisted in setting up stations, and often initiated the warm-up without prompting. I also noted increased abilities and confidence in all participants at about the mid-way point of the program.

In addition to data from the focus groups and journal entries, the program evaluations also reflected an improvement in confidence. The majority of participants referenced improved self-confidence in their post intervention program evaluation. One adolescent responded to the question regarding how the program impacted their confidence, *"I feel more comfortable exercising in front of people"*. This is an important shift to note, as participating in front of others was identified as a barrier to participation in the pre-program interview. Others stated, *"It has helped me so much in being healthy and feeling better and confident"*, *"I am much more confident with my body and fitness level"* and *"It increased my confidence with equipment."* These responses demonstrate the impact of the program had on these three participants' confidence in their ability to be physically active. Another participant shared, *"I am stronger than I thought."* All of these statements demonstrate a positive shift in mindset and belief in their ability. The increased confidence was correlated with their ability to start participating

more in physical activity with peers. Two participants stated, *"If we have gym I play a lot more than what I did before"* and *"I can keep up with people more and I have better endurance"*.

Building their confidence in physical abilities, they felt more comfortable participating with their peers.

Improved confidence is an important motivator for physical activity and adolescents' willingness to participate and the findings suggest this was an outcome of this program.

#### **4.3.2.3 Enjoyment**

Some participants shared that they were not looking forward to the program before we started, making statements such as *"At the beginning, I was like ok if it is gym. I am probably going to hate it but I mean, I ended up liking it a lot"*, *"I didn't know how I would like it because like I said, I was working out alone but I ended up liking it a lot."* and *"I really enjoyed this program it really did help. Hope there's more programs in the future."* Although they were hesitant to get involved, these statements suggest a willingness to try as well as changes in their beliefs about physical activity. They pushed through their initial concerns and found enjoyment in the activity. It is critical to provide opportunities that enable adolescents to safely enjoy physical activity and learn fundamental movements, to increase the likelihood of continued participation.

Overall, participant feedback suggested that that the program was generally positive. One participant described the program, *"...it [was] very enjoyable and it helps to get me more into physical activity. I am thinking about joining up with a gym."* Another adolescent described their new relationship with physical activity, *"I feel like I am happier while I'm exercising almost because I can feel my energy and stuff."* Such statements suggest that when participants enjoy

activity and experience positive changes in terms of how they feel physically, they are more likely to seek out additional activities so they can continue to participate.

Although a qualitative study, the PACES measure was completed as part of the CDDP and the results were used to design the program and this also captured evidence of participant enjoyment. Repeated measures ANOVA demonstrated that there was a significant improvement in enjoyment, as measured by PACES ( $F_{(2,24)}=7.52, p<0.01, \eta^2=0.63$ ] over time. Post-hoc analysis demonstrated a significant increase in enjoyment from pre to post and pre to follow-up assessments. Although there was no increase found between the post and follow-up assessments, the PACES scores were maintained (Table 1.2).

**Table 1.2: Changes in outcomes from PACES at the three assessment times**

Outcomes	Pre (n=13)	Post (n=13)	P value	6-month (n=11)	P value
PACES	57.27 ± 11.55	62.91 ± 13.52*	0.015	64.73 ± 10.51 <sup>#</sup>	0.002

Values expressed as mean ± standard deviations \* difference from PRE  $p<0.05$ , <sup>#</sup> difference from POST  $p<0.05$ .

Abbreviations: n = sample size; PACES = Physical Activity Enjoyment Scale, N/A = not assessed

Overall, the data supported the notion that if a program is enjoyable, participation adherence is more likely to occur.

#### 4.3.2.4 Peer Support

It was evident in that data that peers fell into one of two distinct categories: someone who provided support or someone who added to their worry. In general, those who they could trust were identified as friends and participants felt safe in their presence. Participants suggested that having a friend or supportive peer involved in physical activity increased their motivation to participate. One female participant described the presence of a supportive peer in a physical activity setting as, “You don’t feel judged and they can motivate you more than

*anyone else and you will believe them.*" Having peer support motivated participants and helped create a safe environment for activity. Participating with a friend made activities more enjoyable with one participant sharing, *"I like having someone to do it with, it makes it fun."* and another explained friends influenced their desire to be active, *"If I'm not feeling like going for a walk but my friend calls and wants me to go I will."* All participants agreed with these statements, suggesting that friends had a positive influence on participation. When planning physical activity for this age group, it is important to facilitate opportunities for friendship development as related to participation adherence.

I encouraged participants to choose partners when appropriate for specific exercise. In doing so, I observed they often chose the same partner suggesting a friendship was forming. When participants partnered with a friend, they were observed spending more time *"chatting."* I recorded in session five, *"There is more talking in between exercises, the social aspect of the activity has grown."* Additionally, increased opportunities for socialization increased participant affect during the program which in turn contributed to participant enjoyment. I also observed there were times when participants did not work as hard when partnered together; however, I decided to continue to allow participants to pick partners because their interest and enjoyment in the activity was more important than exercise intensity.

Peer support was identified as a key factor in their commitment to the program. Some of the participants were known to each other prior from having recently completing the CDDP 10-week program together and two attended the same school. Although some of them knew each other, none of the participants described fellow participants as friends at the beginning of the program. By the third session however, there was evidence of friendship developments

particularly amongst a small group of girls, as they planned to meet outside of the program and shared contact information. Additionally, participants were observed talking before the sessions started and often selected the same partner throughout the program. These friendships were also observed in the six-month follow-up focus group.

#### **4.4 Preliminary Conclusions**

The findings suggest that the program design was critical in improving attitudes towards and participation in physical activity. Setting appropriate goals for health was important for improving physical activity motivation, and therapeutic recreation played an important role. All participants, with the exception of one, identified a plan for future involvement in physical activity. Some planned to participate in structured programs like Zumba or gym programs, and others planned to be active in unstructured activities like walking, biking, or swimming with friends.

Although there were a number of barriers identified in the literature, exploring these factors with the youth suggested that the majority of barriers are made worse as a result of fear of judgement by others. To reduce this fear, the program was designed to build confidence and increase levels of enjoyment by focusing on health outcomes and enjoyment. In the final chapter, I will attempt to more fully explain the role of fear as a significant factor contributing to poor physical activity participation patterns of youth. Note, the data may look different today as social media and other cultural factors have continued to shift, for example the concerns over having an embarrassing moment recorded and shared electronically would be more significant for adolescents today.



## Chapter Five: Discussion

### 5.1 Concluding remarks

Overall, the findings suggest that fear is a major barrier to physical activity participation for adolescents. Through applying a body positive approach, barriers related to fear were reduced, resulting in improved confidence, peer support, enjoyment, perceived ability, and health motivation. These findings are similar to the existing research on physical activity barriers and motivators (Allender et al., 2006; Martins et al., 2021; Schmalz, 2010).

The primary theme found in this study was fear, some element of fear was evident throughout the data on barriers to physical activity participation. Whether there was a fear of experiencing weight-based bullying or fear of being judged by peers, it was clear that this was a major concern for the adolescents in this study. Many of the participants in this study identified that they have either experienced weight stigma or observed a peer being shamed because of their weight. This aligns with research that suggests almost half of adolescent's experience weight-based teasing, and 85% of adolescents have witnessed a peer being bullied within a physical activity setting (Pearl & Dovidio, 2015). These negative experiences often took place during a physical activity, a time which a person's body is on display. Further, the findings demonstrated the importance of the language being used in a physical activity environment, especially that of coaches, teachers and/or other physical activity facilitators. Making negative comments about an adolescents' image or performance was demonstrated to create fear of participating. Similarly, participants spoke of negative experiences during gym class and how they fear that they may experience similar weight-based teasing in the future. Participants also discussed how weight-based teasing is present during gym class in school and that they are

worried that they would be ridiculed if they participated. This demonstrates the impact that weight stigma and weight-based teasing can have on participation, especially for adolescents who are overweight. As Vartanian and Novak, (2011), explain, adolescents are reluctant to participate in school physical activities due to the fear of being teased or bullied because of their weight. In order to help adolescents, increase their physical activity presence, the presence of weight stigma needs to be eliminated and a body positive approach implemented. Similarly, Greenleaf et al. (2014) suggest that weight-based teasing results in negative attitudes towards physical activity which in turn reduces enjoyment and participation. Adolescents who experience weight stigma have lower levels of physical activity participation and spend more time engaged in sedentary activities. It is important that physical activity facilitators, in particular physical education teachers are aware of the potential risk and have zero tolerance for weight-based bullying.

Providing a body positive approach was key in forming the framework of the intervention, and helped facilitators reduce the barrier of fear. The significance of this approach was identified within the data and it is essential for physical activity facilitators to be educated on how to provide programs which foster body positivity. The participants highlighted the difference between the physical activity program we provided versus their previous experiences with gym class or mainstream gyms, with our program resulting in a positive change to physical activity participation. It was evident that the adolescents felt safer participating in the body positive environment. Activity facilitators in the current study were educated on a body positive approach and weight-based stigma such as, refraining from making weight-based comments about participants' or supervisors' and being aware not to suggest

dieting or physical activity rules to reduce weight or change body image. It was also important not to use shaming tactics in effort to motivate participants to work harder (Moran et al., 1999). We found it was key to avoid language focused on weight or negative in nature, rather positive reinforcement was used to promote health and wellness. The result of this was evident with all participants reporting improved health during their post intervention evaluations.

The results demonstrate an improvement in participants' confidence and perceived ability. It became evident that many of the adolescents lacked the basic fundamental movements skills needed to be competent in the strength training program. Being able to run, squat, or jump did not come natural to most, with the exception of a few. With current research highlighting the impact that fundamental movement skill has on the trajectory of physical activity over a lifetime, it is important that children are provided with opportunities to learn and become confident in their movement at a young age (PHE, 2023). Confidence in the participants' ability to be physically active continually increased throughout the intervention and was notable in the post intervention data. Through teaching some of the basic movements and providing a safe environment for participants to practice, they became confident in their ability to move their bodies. This aligns with research on self-efficacy and mastery, when one feels competent in their ability, they are more likely to participate (Wise, 2002). Many participants stated that they now feel comfortable participating in future physical activities that would have avoided prior to the intervention. Participants were hesitant when first attending the intervention, previous experiences and/or physical activity assumptions influenced their pre notions. However, in the post interview, a number of participants stated that the experience was positive and that they have continued to participate in physical activity. This aligns with

research that adolescents may feel fear and trepidation when attempting new activities if they have had limited success in the past. It is important to help them understand the degree of challenge associated with the activity, so they can make an accurate appraisal of whether or not it is appropriate for them (Dattilo et al., 1998).

Peer support was another important theme that was highlighted in the data. The participants were able to clearly identify the difference between a present peer and a supportive peer or friend. The existence of a strong support system allowed adolescents to be more vulnerable and less hesitant to try physical activity. We found that adolescents were very aware of the people around them while they participated in physical activity. One participant explained, *“I would rather work out in front of complete strangers than do it in front of my classmates. Because you feel less judged because you don’t know them so it doesn’t really matter as much, but as the people in your class you are around them like every day, so you feel like it would follow you...”* This speaks to the pressure felt by adolescents to perform around peers, if they do not feel safe, they will be less likely to participate. This aligns with literature by Faith et al. (2002), which describes that fear of weight criticism and fear of being judged by peers may decrease an adolescent’s physical activity motivation. Similarly, Haider et al. (2019), noted that negative experiences with school-based peers can negatively influence participation rates. This was a recurring theme in the study, with the addition of the presence of mobile devices, adolescents were concerned that if they make a mistake, it could be captured on camera. Participants provided examples of experiences they have witnessed where a peer was recorded during physical activity and it was shared among classmates, not only did adolescents

worry about being teased in the moment but there was an additional fear of an embarrassing moment being shared on social media.

In contrast, we found having a supportive peer involved in the physical activity increased participants' motivation to adhere to the program. Haidar et al. (2019) and Khan et al. (2002), discuss the strong influence peers can have on physical activity participation demonstrating positive peer influence is correlated with adolescents attaining recommended physical activity levels. This highlights an important aspect of group programming, allowing opportunities for relationships to build will help with adherence. Similarly, Haidar et al. (2019), recommended that physical activity programs focus on creating an environment which fosters peer support. The adolescents in our intervention did not know one another prior to joining the physical activity group, however many formed friendships which they maintained after completing the group. Some reported in their six-month follow-up that they remained friends and connected to do physical activity together on occasion. By providing a safe, enjoyable environment for the intervention, friendship development was encouraged. Participants benefited from having a peer they could rely on and felt safe performing next to as this reduced the fear of being judged based on their movement or ability and allowed adolescents to fully engage. Physical activity often involved having participants compete or measure one another, and participants in this study provided multiple examples of experiences during gym class where they felt their performance was being measured or judged by peers. Removing any peer comparison and keeping health measures private eliminated performance stress and provided a positive experience with physical activity.

This study found that enjoyment was positively correlated with adolescents' desire to participate in physical activity. This aligns with the Faith et al. (2002) and Hutchinson et al. (2016), who found when youth enjoy a physical activity experience, it was much more likely they would participate and adhere to the activity. Similarly, this study also supported the idea that enjoyment was related to multiple physical activity correlates such as; perceived competence, self-efficacy, and self-determination (Boyd & Yin, 1996). Some of the factors which may have enhanced the enjoyment of the intervention included providing participants the opportunity to choose exercises, play their own music, and complete the exercises with a partner. By allowing some autonomy and creating the opportunity for peer support, participants reported higher levels of enjoyment and appreciated being able to bond with their peers. Over the 10-week duration of the intervention, participants demonstrated learning in that after the first few sessions, they came in, turned on their music and started the warm up without being prompted. Additionally, they started to request to do specific exercises in each session demonstrating increased confidence in executing the movements and higher levels of enjoyment and commitment to physical activity.

Based on the concerns voiced regarding past experiences with physical education classes, it was evident significant change in lesson plans and increased knowledge of body positive principles is critical for physical education pedagogy. Participants feared participating in physical education for multiple reasons including, fear of being embarrassed, fear of being judged by peers and fear of weight-based bullying. These feelings of inadequacy and fears surrounding the general PE environment resulted in decreased participation. This supports Sanabrias-Moreno et al., (2023) finding that adolescents feel that physical education class

should be offered in a different way. Physical education teachers need to be educated to design environments that foster positive physical activity experiences. Adolescence is a critical time for developing lifelong lifestyle habits, and physical education class provides an opportunity to make a positive change on how adolescents view physical activity (Sanabrias-Moreno et al., 2023).

The main objective of this research was to determine the value of TR programming in increasing physical activity participation for adolescents at risk for chronic illness. Overall, it was clear that recreation therapists using body positive principles can positively influence adolescent participation in physical activity. Such programming provided participants an opportunity to explore and better understand barriers related to fear of participating and how to manage or remove these barriers. This included providing a safe space, free of criticism which supported adolescents to engage in physical activity programs. Peer support should also be considered when planning programs or trying to encourage adolescents to participate. Ensuring the program was enjoyable and provided an appropriate level of challenge was also found to be important for motivation.

## **5.2 Need for Change**

Change is hard, but it was evident that engaging youth in how to make changes in a specific setting not only increased participation rates but also taught them how to take the lessons learned and apply these to an alternate environment. Participants responses described a new outlook on physical activity with one participant reporting, *“I didn’t like physical activity before but this program really gave me an open mind about it”* while another participant shared, *“I feel now that I enjoy it more, knowing that I get something good out of it”*. Others

shared how they have increased their participation since beginning the program, *“if we have gym [physical education], I play a lot more than what I did before”*, *“I feel now that I can do way more when I participate in things”* and *“I can keep up with people more and I have better endurance”*. These statements demonstrate the need for positive programs which build participants confidence and skill which transfer to other physical activity environments. Participants were asked to describe how the program impacted their overall health and all participants reported improvements, such as more energy and muscle gain. Some participants commented on feeling healthier or losing weight, one participant wrote, *“it impacted my health by me being more active and not always tired like I used to be.”* Although there was an intentional effort to not focus on weight loss as an outcome, participants were still happy to report weight loss; however, they connected the loss on the scale with other factors as reported by one participant who noted *“I’ve lost weight and I feel better”* and another shared, *“I feel happy and healthy and I also feel slimmer”*. Shifting mindset from weight to health is challenging and requires undoing years of messaging they have already experienced.

Most participants identified the shift to a body positive approach when asked how the program differed from other physical activities they have tried in the past. For example, they spoke about important elements of the program that helped shift their perception, *“it focused on fitness and health”*, *“it was less intimidating”* and *“it was fun, not stressful.”* Other participants stated that the program was goal focused and that they were motivated to get the most from the program, *“it pushed me but in a good way, I was motivated to do my best.”* Another adolescent wrote, *“this is more constant and I want to be healthy, I haven’t set goals before this program.”*



### 5.3 Recommendations

Overall, the resistance training program was deemed to be a success, with participants reporting not only a positive experience but also continued participation in physical activity six months post-intervention. During the follow-up focus group, participants expressed that they enjoyed the program so much that they would have liked for it to continue and be longer than 10 weeks. Others discussed the frequency of sessions, *“three times a week would have been better”* similarly another shared *“I would rather not do the home program and come here an extra time a week.”* When asked why they prefer the in-person program over the home program, the group agreed that the presence of friends would motivate them to participate in a program outside the home versus an in-home program. This feedback is important to know when designing physical activity programs for adolescents. Based on this information, it is recommended that programs be designed for in-person delivery to better support friendship development with supportive peers.

The results of this study highlighted some of the many factors that influence adolescent participation in physical activity. These factors can be applied to the design, implementation, and evaluation of physical activity programs for adolescents. It is critical that the findings not only be considered by recreation therapists; physical educators, coaches and other activity leaders could also benefit from continuing education that addresses body positive principles and fostering safe, inclusive environments that support participation from all youth (Raffoul & Williams, 2021). When designing programs, providing a safe space, free from intimidation or negative body messaging promotes enjoyable physical activity experiences. The adolescents in this study explained how the pressure to perform was a barrier to participation, so avoiding

scenarios where there is peer to peer comparison and setting clear guidelines around appropriate behaviour in the setting are important for creating a safe space. One of the participants shared, *“the place may be welcoming but the people that go there are not friendly. The place planned to be body positive but they can’t help the people that come.”* This comment demonstrated the importance of setting guidelines on participant behaviour and having a zero-tolerance policy addressing bullying or other intimidating behaviours/language. Providing adolescents with opportunities to build confidence in their ability to participate is also important to reduce insecurities often experienced when entering public gyms or programs. Additionally, the presence of cell phones was raised as a common concern, with several participants reporting fear of being recorded by a peer. It is recommended that physical activity facilitators consider creating guidelines around the use of technology within program spaces. Providing a safe space where adolescents feel they are not being judged or compared to peers is key for increasing meaningful participation. Physical activity often revolves around a focus on body movement and building participant confidence in their ability to move will increase their perceived ability and lead to increased enjoyment of the activity. Early intervention with a focus on acquiring fundamental movement skills before adolescence is key for building confidence and improving overall physical activity rates. Further research around the impact of fundamental movement skills and adolescent participation is needed and more programs which provide the skills needed to be active for life.

Participants also brought forth the importance of having similar programs available for their age group in the community. Some shared that it would have been helpful for there to be an option to register for a similar program once the CDPP resistance training program

concluded. This could be done through collaboration with municipalities or offered through schools in consultation with a recreation therapist. At the time there was nothing similar available in the community for participants to join. This feedback along with the positive program evaluations helped justify the need to continue to offer the program to members of the CDPP, and the program continues to run to this day. Although this was an important program offering for CDPP clients who qualify, it also highlights the need for similar opportunities for all adolescents looking to increase their physical activity rates.

#### **5.4 Limitations**

There were limitations worth noting in this study including, timing, sample size and volunteer bias. A convenience sample was used which invited participants from an existing CDDP program to volunteer to participate. There were 69 patients invited to participate and only 13 volunteered, it could be thought that the people who volunteered to take part were already more motivated than those who chose not to participate. Though the sample size was appropriate for this study, a larger sample may have provided more in depth understanding of the relationship adolescents have with physical activity. In addition, future research should consider why the remaining 53 patients did not volunteer and efforts should be made to understand factors that influenced their decision not to participate. Additionally, this study was conducted as part of a program evaluation within an existing program which created restrictions such as timing of the program, recruitment, and varying the program protocol. Similarly, data was only collected from one offering of the program to fit within the anticipated time frame of a master's program.

## 5.5 Final comments

The findings suggest that applying a body positive approach to physical activity programs can improve adolescents' enjoyment as well as reduce fears associated with physical activities, thus increasing participation in physical activity. This study also identified that the fear of being judged by peers was a common concern reported by adolescents and was a major barrier to participation. It was found that by providing an opportunity for adolescents to build confidence in their physical abilities, they were more likely to try new physical activities in the future. Many of the principles of Social Cognitive Theory were implemented by the recreation therapist throughout the intervention including, performance accomplishments, verbal persuasion, and physiological signals (Wise, 2002). Facilitators provided encouragement and positive feedback throughout the intervention, highlighting participants' successes, modeling a body positive approach. It is important for physical activity to be enjoyable. For most of the participants this meant having a supportive peer or friend present during physical activity. Finally, it is essential for physical activity providers to create a safe, body positive environment in which adolescents can participate, free of judgement and weight stigma.

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## Appendix A: Body Positive Approach

### BE ACTIVE

## Body Positive Approach

### What is a Body Positive Approach?

An approach which focuses on fostering body appreciation and taking care of one's body by promoting health behaviours rather than focusing on weight loss as the overall goal.

### Why Use a Body Positive Approach?

A body positive approach diminishes the potential for unintended harm to the participants while participating in a physical activity program. There is a societal belief that shaming people about their bodies will motivate them to make changes such as, increasing their physical activity level. Focusing on weight, and not health, is ineffective at producing healthier people and can be damaging. A physical activity program which is weight-focused contributes to:

When only assessing weight as a measure of success, it is impossible to determine someone's cardiorespiratory fitness level or metabolic health; which are known to be stronger predictors of overall health. Someone may be categorized as obese, but be metabolically healthy and have a good cardiorespiratory fitness level; while a non-obese person may be the opposite. It is impossible to tell just by looking at their weight. In fact, if the focus is solely on weight, a large segment of the population at risk for chronic disease is missed.

When a physical activity program is offered using a body positive approach, it can foster a positive body image. A positive body image includes feeling good about one's body regardless of appearance, weight or shape. Children who have a positive body image are more likely to take care of their bodies by engaging in healthy behaviours. A negative body image is associated with many problems, including lower physical activity levels, low self-esteem, anxiety, eating disorders and depression. It is important that children recognize that people can be healthy in different body shapes, sizes and weights. It is not necessary to achieve the 'thin ideal' that is portrayed in the media in order to have a positive body image.

When children engage in active play and physical activity using a body positive approach, they:

- Learn fundamental movement skills
- Develop a positive body image
- Participate more in physical activity
- Have fun

With regular physical activity, children's cardiorespiratory fitness will improve thus preventing or delaying the onset of chronic disease. This is seen regardless of reductions in weight, BMI or waist circumference. Creating a safe social space for children to be active will support the development of healthy physical activity habits so that they can be active for life.



Good Health for EveryBODY



[www.easternhealth.ca/OurServices](http://www.easternhealth.ca/OurServices)

## BE ACTIVE

### Key Concepts When Using a Body Positive Approach

- ✓ Recognize what health looks like
  - Good health comes in many body shapes, sizes and weights.
  - Weight ≠ Health
- ✓ Promote health
  - Cardiorespiratory fitness is more predictive of health than weight.
  - Rather than focusing on obesity treatment or weight loss, design physical activity programs that promote healthy active living for all participants.
- ✓ Educate yourself
  - Be aware of your own assumptions, beliefs and judgments about body weight and size; including assumptions made about a person's character/behaviours based on their weight.
  - Work toward changing your personal assumptions and biases.
  - Evidence shows that health is not directly correlated to body weight. There are people who are naturally slim based on their genetics but engage in unhealthy behaviours; just as there are people with extra weight who are active and healthy.
- ✓ Set health goals
  - Do not make goals which are weight focused. Instead, set a fitness or health goal (e.g. run 5 km in 12 weeks).
- ✓ Provide a safe space
  - Have clear guidelines around appropriate language, conversations and behaviour.
  - Never make comments about children's weight or appearance.
  - Do not enforce physical activity and dieting rules for the sole purpose of reducing children's weight or changing their body shape.
  - Be responsive and supportive of children's needs.
  - Do not tolerate bullying of any kind. Address weight based bullying when it occurs.
- ✓ Be a good role model
  - Do not make negative comments about your weight or body shape.
  - It is important that certain body types are not featured more visibly (e.g. putting dancers with extra weight on in the back row in a performance).
  - Program leaders need to model a respectful, inclusive attitude.
- ✓ Be media smart
  - Be mindful of program posters or brochures - show photographs of people of all body sizes being physically active.



## Appendix B: HREB Approval



Ethics Office  
Suite 200, Eastern Trust Building  
95 Bonaventure Avenue  
St. John's, NL  
A1B 2X5

March 07, 2016

Janeway Lifestyle Program  
ST. John's, NL A1B 3V6

Dear Mrs. Moore:

Researcher Portal File # 20162014  
Reference # 2016.010

**RE: "The influence of removing weight stigma during a physical activity program on the enjoyment and motivation of adolescents with insulin resistance to be physically active: A program evaluation"**

This will acknowledge receipt of your correspondence.

This correspondence has been reviewed by the Chair under the direction of the Health Research Ethics Board (HREB). *Full board approval* of this research study is granted for one year effective **March 3, 2016**.

**This is your ethics approval only. Organizational approval may also be required.** It is your responsibility to seek the necessary organizational approval from the Regional Health Authority (RHA) or other organization as appropriate. You can refer to the HREA website for further guidance on organizational approvals.

This is to confirm that the HREB reviewed and approved or acknowledged the following documents (as indicated):

- Application, approved
- Letter from K. Pike Division Manager, acknowledged
- Letter from Dr T. Bridger, acknowledged
- Letter from A. Wareham Janeway Lifestyle Program, acknowledged
- PARmed-X Physical Activity Readiness Medical Examination, acknowledged
- PAR-Q+ questionnaire, acknowledged
- Bruce Treadmill Test Work Sheet, approved
- Insulin Resistance Group Invitation, approved
- Orientation Session Telephone Script, approved
- Revised consent form, approved
- Budget, acknowledged
- Physical Activity Enjoyment Scale, approved
- Physical Activity Questionnaire (High School), approved
- Adolescent Sedentary Activity Questionnaire, approved
- Focus Group Guide, approve

**MARK THE DATE**

**This approval will lapse on March 3, 2017.** It is your responsibility to ensure that the Ethics Renewal form is submitted prior to the renewal date; you may not receive a reminder. The Ethics Renewal form can be found on the Researcher Portal as an Event form.

*If you do not return the completed Ethics Renewal form prior to date of renewal:*

- *You will no longer have ethics approval*
- *You will be required to stop research activity immediately*
- *You may not be permitted to restart the study until you reapply for and receive approval to undertake the study again*
- *Lapse in ethics approval may result in interruption or termination of funding*

**You are solely responsible for providing a copy of this letter, along with your approved HREB application form; to Research Grant and Contract Services should your research depend on funding administered through that office.**

Modifications of the protocol/consent are not permitted without prior approval from the HREB. **Implementing changes without HREB approval may result in your ethics approval being revoked, meaning your research must stop.** Request for modification to the protocol/consent must be outlined on an amendment form (available on the Researcher Portal website as an Event form) and submitted to the HREB for review.

The HREB operates according to the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2), the Health Research Ethics Authority Act (HREA Act) and applicable laws and regulations.

**You are responsible for the ethical conduct of this research, notwithstanding the approval of the HREB.**

We wish you every success with your study.

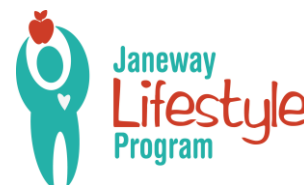
Sincerely,



Dr Fern Brunger (Chair, Non-Clinical Trials Health Research Ethics Board)  
Ms. Patricia Grainger (Vice-Chair, Non-Clinical Trials Health Research Ethics Board)

CC: A.M. Sullivan

## Appendix C: Invitation Letter



### Insulin Resistance Group invitation

The Janeway Lifestyle Program has identified the need to provide specialized services to youth with insulin resistance. One of the evidenced-based treatments for insulin resistance is physical activity, specifically strength training.

The Janeway Lifestyle Program would like to invite your child, \_\_\_\_\_, to participate in a 10-week physical activity program for youth with insulin resistance. This will take place twice a week (Thursday and Sunday) after school at Power Conditioning in St. John's. As well, your child will complete one session at week at home (activities and equipment will be provided). There is no cost to participate in this program.

The program has been developed by the Janeway Lifestyle Program and will be supervised by team members. It is also part of a research study looking at the effects of physical activity on insulin resistance. This study has two phases. They are entitled *The effects of resistance-based physical activity on insulin sensitivity in adolescents: a program evaluation* and *The influence of removing weight stigma during a physical activity program on the enjoyment and motivation of adolescents with insulin resistance to be physically active: a program evaluation*. By participating in these studies your child will be required to complete some additional assessments such as, focus groups, wear a step counter and fitness testing with additional measures. The studies have been approved by the Health Research Ethics Board.

Please note that if you and your child do not wish to participate in the research studies, the 10-week physical activity program will still be offered to your child.

If you are interested in learning more, both parents and youth are invited to attend an orientation session. Please call Ashley - 777-4870 or Sarah - 777-4309 to REGISTER for the program. A maximum of 15 participants can take part in the program at a time, they will be randomly selected from the list of registered participants. Those who are not initially selected will be placed on a waitlist for the next time the program is offered.

You must attend the orientation session in order to participate in the program. Orientation session details will be provided upon registration.

If you choose not to participate in this program, your child will continue to be followed by the Janeway Lifestyle Program through clinic appointments.

## Appendix D: PARmed-X and PAR-Q

Physical Activity Readiness  
Medical Examination  
(revised 2002)

# PARmed-X PHYSICAL ACTIVITY READINESS MEDICAL EXAMINATION

The PARmed-X is a physical activity-specific checklist to be used by a physician with patients who have had positive responses to the Physical Activity Readiness Questionnaire (PAR-Q). In addition, the Conveyance/Referral Form in the PARmed-X can be used to convey clearance for physical activity participation, or to make a referral to a medically-supervised exercise program.

Regular physical activity is fun and healthy, and increasingly more people are starting to become more active every day. Being more active is very safe for most people. The PAR-Q by itself provides adequate screening for the majority of people. However, some individuals may require a medical evaluation and specific advice (exercise prescription) due to one or more positive responses to the PAR-Q.

Following the participant's evaluation by a physician, a physical activity plan should be devised in consultation with a physical activity professional (CSEP-Professional Fitness & Lifestyle Consultant or CSEP-Exercise Therapist™). To assist in this, the following instructions are provided:

**PAGE 1:** • Sections A, B, C, and D should be completed by the participant BEFORE the examination by the physician. The bottom section is to be completed by the examining physician.

**PAGES 2 & 3:** • A checklist of medical conditions requiring special consideration and management.

**PAGE 4:** • Physical Activity & Lifestyle Advice for people who do not require specific instructions or prescribed exercise.  
• Physical Activity Readiness Conveyance/Referral Form - an optional tear-off tab for the physician to convey clearance for physical activity participation, or to make a referral to a medically-supervised exercise program.

This section to be completed by the participant									
<p><b>A PERSONAL INFORMATION:</b></p> <p>NAME _____</p> <p>ADDRESS _____</p> <p>TELEPHONE _____</p> <p>BIRTHDATE _____ GENDER _____</p> <p>MEDICAL No. _____</p>	<p><b>B PAR-Q:</b> Please indicate the PAR-Q questions to which you answered YES</p> <p><input type="checkbox"/> Q 1 Heart condition</p> <p><input type="checkbox"/> Q 2 Chest pain during activity</p> <p><input type="checkbox"/> Q 3 Chest pain at rest</p> <p><input type="checkbox"/> Q 4 Loss of balance, dizziness</p> <p><input type="checkbox"/> Q 5 Bone or joint problem</p> <p><input type="checkbox"/> Q 6 Blood pressure or heart drugs</p> <p><input type="checkbox"/> Q 7 Other reason: _____</p>								
<p><b>C RISK FACTORS FOR CARDIOVASCULAR DISEASE:</b> <i>Check all that apply</i></p> <p><input type="checkbox"/> Less than 30 minutes of moderate physical activity most days of the week.</p> <p><input type="checkbox"/> Currently smoker (tobacco smoking 1 or more times per week).</p> <p><input type="checkbox"/> High blood pressure reported by physician after repeated measurements.</p> <p><input type="checkbox"/> High cholesterol level reported by physician.</p> <p><input type="checkbox"/> Excessive accumulation of fat around waist.</p> <p><input type="checkbox"/> Family history of heart disease.</p> <p style="border: 1px solid red; padding: 2px;"><i>Please note: Many of these risk factors are modifiable. Please refer to page 4 and discuss with your physician.</i></p>	<p><b>D PHYSICAL ACTIVITY INTENTIONS:</b></p> <p>What physical activity do you intend to do?</p> <p>_____</p> <p>_____</p> <p>_____</p>								
This section to be completed by the examining physician									
<p><b>Physical Exam:</b></p> <table border="1" style="width: 100%;"> <tr> <td style="width: 20%;">Ht</td> <td style="width: 20%;">Wt</td> <td style="width: 20%;">BP i) /</td> <td style="width: 20%;"></td> </tr> <tr> <td></td> <td></td> <td>BP ii) /</td> <td></td> </tr> </table> <p><b>Conditions limiting physical activity:</b></p> <p><input type="checkbox"/> Cardiovascular      <input type="checkbox"/> Respiratory      <input type="checkbox"/> Other</p> <p><input type="checkbox"/> Musculoskeletal      <input type="checkbox"/> Abdominal</p> <p><b>Tests required:</b></p> <p><input type="checkbox"/> ECG      <input type="checkbox"/> Exercise Test      <input type="checkbox"/> X-Ray</p> <p><input type="checkbox"/> Blood      <input type="checkbox"/> Urinalysis      <input type="checkbox"/> Other</p>	Ht	Wt	BP i) /				BP ii) /		<p><b>Physical Activity Readiness Conveyance/Referral:</b></p> <p>Based upon a current review of health status, I recommend:</p> <p><input type="checkbox"/> No physical activity</p> <p><input type="checkbox"/> Only a medically-supervised exercise program until further medical clearance</p> <p><input type="checkbox"/> Progressive physical activity:</p> <p style="margin-left: 20px;"><input type="checkbox"/> with avoidance of: _____</p> <p style="margin-left: 20px;"><input type="checkbox"/> with inclusion of: _____</p> <p style="margin-left: 20px;"><input type="checkbox"/> under the supervision of a CSEP-Professional Fitness &amp; Lifestyle Consultant or CSEP-Exercise Therapist™</p> <p><input type="checkbox"/> Unrestricted physical activity—start slowly and build up gradually</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>Further Information:</p> <p><input type="checkbox"/> Attached</p> <p><input type="checkbox"/> To be forwarded</p> <p><input type="checkbox"/> Available on request</p> </div>
Ht	Wt	BP i) /							
		BP ii) /							



## Appendix E: Program Evaluation

### Janeway Lifestyle Program Physical Activity Program Evaluation

1. Overall did the Physical Activity Program meet your expectations?
2. How would you describe the programs impact on your confidence?
3. How would you describe the programs impact on your attitude towards physical activity?
4. How would you describe the programs impact on your ability to participate in physical activity?
5. How would you describe the programs impact on your health?
6. Have you ever experienced bullying during physical activity?
7. Have you ever watched a peer be bullied during physical activity?
8. Could you describe how participating in this physical activity program has benefited you?
9. How has this physical activity experience been different from others activities you have tried in the past? (example, setting, goals, ect.)