

The Impact of Personal Trainer's Leadership Style on Self-Presentational Concerns,
Enjoyment, Task Self-Efficacy and Intention to Exercise in an
Introductory Weight Training Orientation

Sarah L. Kennedy, BKin (Honours)

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Under the supervision of Kimberley Gammage, PhD
& David Gabriel, PhD

Faculty of Applied Health Sciences, Brock University
St. Catharines, Ontario

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ABSTRACT

The purpose of the present study was to examine two leadership styles of personal trainers (bland versus enriched) to evaluate their effects on exercise-related outcomes. Participants were 103 university women with no previous experience weight training. Participants were randomly assigned to one of the two leadership style conditions. They completed primary measures prior to being introduced to the personal trainer. Next, participants completed an introductory weight training session, followed by post-manipulation measures. The leadership styles were successfully manipulated. Participants in the enriched leadership style condition reported significantly higher levels of enjoyment and intention to exercise. Participants in the bland leadership style condition reported significantly higher levels of social anxiety; no differences were found for task self-efficacy, self-presentational efficacy, social physique anxiety, or handgrip performance between groups. Thus, an enriched leadership style of personal trainers can increase positive psychological outcomes.

Keywords: leadership styles, bland, enriched, exercise-related outcomes, performance, enjoyment, intention, weight training.

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CHAPTER ONE: LITERATURE REVIEW

1.1 Physical Activity

Physical activity is a vital component of overall good health and for the prevention of disease. However, according to the Canadian Fitness and Lifestyle Research Institute (CFLRI; 2008), Canadians are considered insufficiently active for health benefits. In fact, only 19% of women aged 20-79 years accumulate at least 150 minutes of moderate-to-vigorous physical activity (MVPA) per week as recommended (Statistics Canada, 2011). At most age groups, men are more active than women, with physical activity levels in women declining throughout the lifespan (CFLRI, 2008). Further, roughly one-third of Canadian adults indicated they require help in planning their daily schedules to include physical activity (CFLRI, 2008).

The Canadian Society for Exercise Physiology (CSEP; 2013) recommends that adults between the ages of 18 and 64 years who want to promote and maintain good health and reduce their risk of chronic disease should accumulate at least 150 minutes of moderate-to-vigorous intensity aerobic physical activity per week, in bouts of 10 minutes or more. They also recommend that these adults should engage in weight training on at least 2 days per week (CSEP, 2013). While inadequate physical activity is an issue for men and women, it is an even greater concern for women who are the focus of this thesis.

Weight training, also commonly known as resistance training or strength training, is defined as using the body's musculature to move or attempt to move against an opposing force (Fleck & Kramer, 2004). Weight training is an essential component of physical activity. Depending on one's goals, weight training can result in muscle hypertrophy or an increase in muscular strength, endurance, and/or power. Most often individuals will use barbells, free weights, or specific training machines to perform the

exercises. The most recent statement by Canada's Guide for Physical Activity suggests adults should strength train at least twice per week (Canadian Physical Activity Guidelines; CSEP, 2013). With respect to rates of weight training in women, in 2005, Statistics Canada reported that only 14.3% of women age 12 and older reported weight training at least once in the previous month; of those women who did weight train, they reported training an average of only 6 times in the past 3 months, meaning they weight trained less than once per week. Consequently, 86% of women are not getting the health benefits of weight training.

1.1.1 Benefits of Weight Training. There are many benefits to weight training, including increased strength and lean body mass and decreased body fat. As well, weight training is associated with decreased risk for some diseases (e.g., osteoporosis), injury prevention, and improvements in body image and self-image (Doyne et al., 1987; Fahey, Insel, Roth, & Wong, 2013; Fleck & Kramer, 2004; Pollock et al., 2000). There are many specific physiological and psychological benefits from weight training that Canadians are not fully receiving (Doyne et al., 1987; Pollock et al., 2000).

1.1.1.1 Physiological Benefits. Weight training can improve overall strength by putting stress on the body, which in turn causes neuromuscular adaptations. Most importantly, weight training helps prevent diseases such as cardiovascular disease, osteoporosis, and type 2 diabetes mellitus (Doyne et al., 1987; Fahey et al., 2013; Haskell et al., 2007; Pollock et al., 2000). For example, osteoporosis (low bone density) is a major health concern, affecting primarily lean, white, postmenopausal women; according to Statistics Canada (2009) 19.2% of women aged 50 or older reported they had been diagnosed with osteoporosis by a health professional. Weight training has been shown to

decrease the risk of osteoporosis by causing mechanical loading on the skeletal tissue slowing bone loss in middle-aged women (Haskell et al., 2007; Kelley, Kelley, & Tran, 2001).

Without adequate muscle strength people can become fatigued much more easily, leading to a greater risk of injury (Fahey et al., 2013; Haskell et al., 2007). Weight training is also associated with a decreased risk for chronic low back pain and more rapid recovery after an episode of acute back pain (Manchikanti, 2000).

With weight training, some individuals will experience an overall improved body composition. This improvement is achieved through a decrease in body fat and increase in muscle mass, leading to a decrease in the ratio of fat mass to fat free mass (Fahey et al. 2013). This increase in muscle mass can also give the individual a more “fit” appearance (Harris & Holly, 1987).

1.1.1.2 Psychological Benefits. Aside from all of the physiological benefits from exercise, previous research has examined the psychological benefits of exercise as well. Psychological factors such as decreased depression and anxiety, and changes in self-image can be improved from positive experiences while weight training (Doayne et al., 1987).

According to the World Health Organization (WHO; 2013) women are more susceptible to depression and anxiety than men. An estimated 73 million adult women worldwide suffer a major depressive episode each year (WHO, 2013). In one study, Norvell and Belles (1993) found that women who completed a weight training program reported lower levels of depression than those who dropped out of the weight-training program. Norvell and Belles (1993) also found that those who dropped out of the weight-

training program experienced greater levels of anxiety. Likewise, Cramer, Nieman, and Lee (1991) support these findings. They found that middle-aged women who participated in an exercise-training program reported decreased levels of anxiety at the end of the program.

An enhanced body image is another positive outcome of weight training; this can occur in women and men by developing stronger, firmer-looking muscles and a toned healthy looking body (Fahey et al., 2013). These positive psychological changes can also be seen without physical changes (Taylor, Sallis, & Needle, 1985). Williams and Cash (2001) investigated the effects of a weight training program on body image in college students; they found that participants experienced significant improvements in multiple aspects of body image following the program.

1.2 Correlates of Exercise Behaviour

Previous research has demonstrated that there are multiple factors that are related to exercise behaviour. How individuals are affected by these factors will determine multiple exercise outcomes. For example, they can affect one's exercise adherence and frequency. Trost, Owen, Bauman, Sallis, and Brown (2002), in a review of correlates of physical activity behaviour, concluded that physical activity levels are influenced by a diverse range of demographic, biological, psychological, behavioural, social, and environmental factors.

1.2.1 Demographic Characteristics. Several demographic characteristics have been found to correlate with physical activity including age and gender, which are the two most consistent demographic correlates. Specifically, physical activity participation

is higher in men than women and in general, physical activity declines throughout the lifespan (Trost et al., 2002).

1.2.2 Psychological. Within psychological characteristics, self-efficacy has demonstrated the strongest and most consistent association with physical activity behaviour. Self-efficacy is the belief that one can perform a given activity in a specific context (Bandura & Cervone, 1986). Self-efficacy influences outcomes such as effort (i.e., whether one might attempt a task or not), how persistent one is when difficulties are encountered, and ultimately how successful people are at performing a task (Schunk & Pajares, 2009). Someone with higher self-efficacy is generally better able to achieve what he/she sets out to accomplish, is more effective, and generally more successful than individuals with low self-efficacy (Bandura, 1977; Bandura & Cervone, 1986). Those with high self-efficacy are also more motivated to try new tasks and potentially adhere while gaining positive psychological and behavioural benefits.

Self-efficacy is influenced and enhanced through four key processes. First are prior mastery experiences; previous successes increase self-efficacy and previous failures decrease self-efficacy (Rodgers & Sullivan, 2001). Second, social modeling or vicarious learning can act as a source of self-efficacy, which involves seeing other people succeed, especially those who are similar. Social persuasion, which refers to feedback or encouragement from others, is the third factor that can enhance self-efficacy (e.g., having a friend or family member tell them they can do it; Rodgers & Sullivan, 2001). An exercise leader can also be an important source of enhanced self-efficacy through positive encouragement and verbal persuasion (Fox, Rejeski, & Gauvin, 2000). Lastly, physiological and emotional states can impact self-efficacy. Positive interpretation of

these states (e.g., seeing exercise as a challenge, associating exercise with reduced stress) can enhance self-efficacy (Rodgers & Sullivan, 2001).

There are two main types of self-efficacy that have been investigated in the exercise literature, task self-efficacy and coping (or self-regulatory) self-efficacy. Task self-efficacy refers to an individual's confidence in his/her ability to perform specific aspects or elements of an exercise (e.g., confidence to bench press 90lbs for 3 sets of 10 repetitions; Rodgers & Sullivan, 2001). People may avoid certain exercises (or exercise altogether) if their task self-efficacy is low for that specific skill or activity. Task self-efficacy is most important for the initiation of exercise behaviour, compared to adherence to exercise. People must have the confidence they can actually perform the exercise before they try it (Rodgers & Sullivan, 2001).

Coping self-efficacy, also referred to as self-regulatory self-efficacy, refers to an individual's confidence in his/her ability to perform exercise tasks in challenging conditions (e.g., confidence in the ability to exercise despite time pressures; Rodgers & Sullivan, 2001). While task self-efficacy is most closely linked to exercise initiation, coping self-efficacy is most closely linked to adherence (DuCharme & Brawley, 1995).

1.2.2.1 Enjoyment. A second psychological characteristic that is consistently positively related to exercise behaviour is enjoyment (Trost et al., 2002). Exercise adherence is greatly affected by the overall enjoyment of exercise itself (Wininger & Pargman, 2003). If people do not enjoy themselves, they are much more likely to drop out of regular physical activity. According to Wininger and Pargman (2003), enjoyment has been shown to be an important factor in determining adherence to exercise. The purpose of their study was to determine which specific factors were most related to group

exercise enjoyment in women. They found that music was the most important for enjoyment (21% of variance accounted for) while satisfaction with the instructor was found to be second most important (8% of the variance).

1.2.2.2 Intention to Exercise. A third psychological correlate of physical activity behaviour is intention. Intention is the probability or likelihood of performing a task or behaviour (Bozionelos & Bennet, 1999; Kimiecik, 1992). According to Ajzen (2006), intention is the immediate antecedent of any behaviour, including exercise. However, several factors can impact how well intention predicts actual behaviour. For example, the greater the time period between the intention and the performance of the behaviour, the poorer the prediction. Intentions can also change over time; the likelihood of change is increased when unexpected events arise (Ajzen, 1985). In general, intention to exercise has been shown to be a good predictor of a variety of indicators of exercise behaviour including adherence (Haggar, Chatzisarantis, & Biddle, 2002).

1.2.2.3 Other Psychological Correlates. Trost et al.'s (2002) review noted that although much is known about correlates, several important areas still need future work. They noted a need for correlates of moderate-to-vigorous physical activity (MVPA) specifically, as well as identifying correlates of exercise at different life stages, and a need for intervention studies. Further, this review was conducted in 2002; since then, other correlates of physical activity have been identified. In particular, several correlates related to self-presentational concerns have been identified.

1.3 Self-Presentation. Self-presentation, also known as impression management, refers to the process by which people monitor and control how they are perceived by others (Leary, 1992; Schlenker, 1980). Baumeister (1982) described self-presentation as

the use of behaviour to communicate some information about oneself to others. There are at least two self-presentational motives; the first includes the desire to please the audience and the second is to construct (create, maintain, and modify) one's public self (Baumeister, 1982). Baumeister (1982) stated that these motives arise when a person feels the pressure to create a specific image that is desirable to their evaluator.

It is possible that any social situation may elicit self-presentational concerns; however, several specific situational characteristics can increase the likelihood of increasing self-presentational concerns. For instance, an environment or situation that is new or unfamiliar to a person may increase self-presentational concerns (e.g., concerns possibly found in a weight-training environment for novice exercisers). These new situations are different than any previously experienced and therefore people may not know how to behave, or know what is expected of them. New situations may also elicit self-presentational concerns because they require new or complex skills, coordination, or knowledge.

Many outcomes in life depend to an extent on the impressions that others form (Leary, 1992). Because of this, there are few social situations in which people can afford to completely disregard the self-presentational implications of their behaviour (Goffman, 1959; Leary, 1992). Even when people are not consciously trying to make a particular impression they may self-present. For example, they may monitor others' reactions, often at a sub-conscious or pre-attentive level, and adjust their behaviour when they believe they are making undesired impressions (Leary 1992; Leary & Kowalski, 1990). Given the potential importance and common occurrence of self-presentation, it underlies many of

our social interactions (Hausenblas, Brewer, & Van Raalte, 2004). Leary and Kowalski (1990) developed a model to further explain self-presentation.

1.3.1 Self-Presentation in Physical Activity. Leary first explained how self-presentation may be related to physical activity. Individuals may have many reasons for exercise that are not self-presentational (Leary, 1992). For example, they may enjoy exercise, or they may exercise for the health and well-being benefits, as well as for social interaction. However, self-presentational motives may also impact physical activity participation. There are two main reasons for exercise that reflect self-presentational motives (Leary, 1992). The first is physical appearance; one of the primary reasons individuals exercise is to attain an appearance that is close to the North American ideal. This clearly reflects a self-presentational motive. As people that meet this ideal are considered more attractive (Leary, 1992). Social identity is the second self-presentational motive; many people gain social rewards from being seen as athletic and physically skilled (e.g., someone will be viewed more positively if they wear athletic attire; Leary, 1992). Several studies have shown that people depicted as exercisers are perceived more positively on a variety of physical and personality characteristics compared to non-exercisers (Hodgkins, 1992; Leary, 1992; Martin Ginis, Prapavessis, & Haase, 2008; Martin, Sinden, & Fleming, 2000; Shields, Brawley, & Martin Ginis, 2007).

However self-presentational concerns can also demotivate people from being physically active (Leary, 1992). If people believe their appearance will be viewed negatively (e.g., as unattractive, overweight) they may avoid physical activity. Similarly, persons who think their muscles are underdeveloped may not want to engage in activities in which their lack of strength will be evident (Leary, 1992). Conversely, if women are

afraid of looking too bulky or masculine when engaging in weight training they may avoid this form of exercise, or become demotivated to continue their training. Further, those who fear they may appear athletically incompetent (e.g., uncoordinated, unskilled) may also avoid physical activities that require certain skills.

1.3.2 Specific Self-Presentational Concerns. Several specific self-presentational concerns occur in exercise environments regularly. How individuals are affected by these concerns can influence their exercise behaviours. Concerns such as self-presentational efficacy, social anxiety, and social physique anxiety are all common concerns while exercising.

1.3.2.1 Self-Presentational Efficacy. Self-presentational efficacy (SPE) is the subjective probability of conveying a particular set of images to others (Leary & Atherton, 1986; Maddux, Norton, & Leary, 1988). This belief in one's ability to successfully self-present occurs within exercise settings as well. SPE within an exercise context is the confidence in one's ability to create the public impression of being a fit, coordinated, competent exerciser to others (Fleming & Martin Ginis, 2004; Gammage, Hall, & Martin Ginis, 2004). Many individuals are concerned with how successful they will be in presenting such images; if they feel they will be unsuccessful they may not exercise (Leary, 1992; Martin & Fox, 2001).

Gammage, Hall et al. (2004) found those classified as high-frequency exercisers reported higher levels of SPE than those defined as non-or low-frequency exercisers. They also found that SPE was related to both exercise behaviour and social physique anxiety. Lamarche, Gammage, and Strong (2009) found no difference in SPE based on

the presence or absence of mirrors in a group exercise class. However, they found SPE increased following a single exercise session (Lamarche et al., 2009).

1.3.2.2 Social Anxiety. Social anxiety arises from the prospect or presence of interpersonal evaluation in real or imagined social settings (Leary & Kowalski, 1995; Schlenker & Leary, 1982). Social anxiety occurs when people become concerned about how they are being perceived and evaluated by others (Leary & Kowalski, 1995). These anxious feelings can arise when one is not only being evaluated but also at just the *thought* of being evaluated (Leary & Kowalski, 1995). Feelings of social anxiety are quite common; everyone experiences social anxiety at least occasionally, although some people experience such feelings frequently (Leary & Kowalski, 1995). According to Leary and Kowalski (1995), social anxiety arises from low SPE.

Leary and Kowalski (1995) stated that social anxiety generally entails three distinct experiences all of which are interrelated. The first are cognitions or thoughts of apprehension (e.g., "...what if they think I am uncoordinated"). Secondly, somatic symptoms may occur; these reactions (e.g., sweaty palms and increased heart rate) signal that a threat may exist. Lastly, we may behave or react to these situations by attempting to avoid or escape the situation that causes such anxious feelings (Leary & Kowalski, 1995).

Anxiety may fluctuate over time. It is dependent on specific situations (i.e., state anxiety) but there *are* individual differences that predispose people to respond to a variety of situations with more or less anxiety (i.e., trait anxiety; Schlenker & Leary, 1982). State anxiety may also be elevated due to increased awareness of physiological responses to stress (i.e., somatic anxiety; Biddle & Ntoumanis, 2000).

Focht and Hausenblas (2003) found that social anxiety can increase within some exercise conditions (e.g., larger group exercise classes). Later, Gammage, Martin Ginis, and Hall (2004) examined the influence of SPE on social anxiety in an exercise context. They found that those women in a low-efficacy group (who believed they would be exercising in revealing clothing while being videotaped close-up by a male) showed higher levels of social anxiety than participants in the high-efficacy group. Thus, they found that SPE had a strong influence on social anxiety in an exercise context (Gammage, Martin Ginis et al., 2004). One specific form of social anxiety that may be highly relevant in exercise settings is social physique anxiety.

1.3.2.3 Social Physique Anxiety. Social physique anxiety (SPA) is the distress of the potential of a negative evaluation by others about one's physique or body (Hart, Leary, & Rejeski, 1989). SPA is a subtype of social anxiety stemming from self-presentational concerns about one's physical appearance (Raedeke, Focht, & Scales, 2007). Individuals with high SPA may experience apprehension and fear of negative social evaluation in situations in which they *perceive* their appearance is being evaluated by others (Hart, et al., 1989; Raedeke et al., 2007). Several researchers have shown that women report higher levels of SPA than men (Frederick & Morrison, 1996; Lamarche, Gammage, Sullivan, & Gabriel, 2013; Lantz, Hardy, & Ainsworth, 1997; McAuley, Bane, Rudolph, & Lox, 1995). Since one's physique is an important aspect of the overall self, particularly for women, favorable evaluations are desired (Lantz et al., 1997). People generally want to feel and believe their appearance is being favorably judged.

The relationship between SPA and physical activity has yet to be clearly distinguished, as inconsistent results have been found. For example, some studies have

shown SPA to be related with higher levels of physical activity within adults (Frederick & Morrison, 1996), while others have reported lower levels of physical activity in adults (Belling, 1992; Lantz et al., 1997). Conversely, several studies have shown no relationship between SPA and physical activity across many groups (Crawford & Eklund, 1994; Hausenblas & Fallon, 2002; Russell & Cox, 2003).

In order to more fully understand the SPA/physical activity behaviour relationship, the influence of potential moderator variables has been investigated (Lantz et al., 1997). These are variables that can impact the degree or direction of a relationship between two other variables (Smith, Smoll, Frank, & Schutz, 1990; Lantz et al., 1997). Previous research has demonstrated that gender (Kruisselbrink, Dodge, Swanburg, & MacLeod, 2004) and age (Lantz et al., 1997; McAuley et al., 1995) may influence the SPA/physical activity behaviour relationship. Particularly, the SPA/physical activity behaviour relationship holds especially true for females (Frederick & Morrison, 1996; Lamarche et al., 2013; Lantz et al., 1997; McAuley et al., 1995). Woodgate, Martin Ginis, and Sinden (2003) demonstrated that SPE is an important moderator of the SPA/physical activity relationship in older women. More recently, Cumming and Thogersen-Ntoumani (2011) found similar results in adolescent girls.

Over the past few years, researchers have noted that some exercise settings are associated with qualities that evoke SPA (Raedeke et al., 2007). Exercise settings that draw attention to the body may create an evaluative threat and thus, result in less positive psychological responses, compared to settings that de-emphasize physique for individuals with high SPA (e.g., large gym settings with mirrors and/or by body builders, versus a home/small gym setting; Focht & Hausenblas, 2003; Gammage, Martin Ginis, et al.,

2004; Katula, Rejeski, Wickley, & Berry, 2004; Martin Ginis, Latimer, & Jung, 2003; Raedeke et al., 2007). This emphasis on physique in exercise settings has been shown to result in less participation, as some people, particularly women, may feel they will be evaluated in a less favorable fashion. Additionally, Spink (1992) found that females with high SPA preferred to exercise in a more private setting compared to public.

However, it is not just the exercise environment that may influence social physique concerns, as well as other psychological outcomes. Exercise leaders have also been shown to play an important part in affecting self-presentational concerns of exercisers.

1.4 Importance of Exercise Leaders

Franklin (1986) stated that numerous variables affect exercise compliance, but the most important was the exercise leader. The two most common types of exercise leaders are group fitness instructors and personal trainers. Exercise leaders have the potential to influence their participants both positively and negatively. For example, exercise leaders have the ability to provide a strong sense of social support for participants. Exercise leaders can also provide motivation, knowledge, and a safe environment (Brady, 1995; Martin & Fox, 2001). They also have the ability to foster positive experiences, improved performance, and can potentially increase adherence to exercise (Lamarche & Gammage, 2010). Trost et al. (2002) found social support from family, friends, and staff/instructors was strongly, and positively related to exercise behaviour.

1.4.1 Exercise Leader Influence. Much of the literature has examined the influence of group fitness instructors on participants' exercise behaviours and cognitions, whereas little research has focused on the personal trainer's effects on exercise behaviour.

A growing body of literature has sought to better understand the role of the exercise leader as an influential role on exercise participants.

1.4.2 Group Fitness Instructors. Group fitness instructors have the ability to provide goal-setting techniques, feedback, and the opportunity to address stages of achievement. Bray, Bassett, and Amirthavasar (2011) found exercise leaders to have a significant influence on new exerciser's behaviour. Their findings demonstrated that proxy efficacy perceptions (participants' confidence in the exercise leaders' ability to communicate, motivate, and teach) predicted exercise class attendance across a 10-week fitness program for those with no prior experience in a structured group class. Given the potential importance of group exercise instructors it is not surprising that their influence has been investigated. There are several characteristics of the exercise leader that can influence the exercise outcomes of class participants (e.g., gender, clothing/appearance, commentary and leadership style).

1.4.3 Gender of Leader. Lamarche and Gammage (2010) examined the impact of an exercise leader's gender on self-presentational concerns of women, prior to and following an exercise class. Exercisers participated in a female or male instructed class. They found that participants reported significantly higher SPE and lower social state anxiety and state-SPA post-exercise regardless of leader gender. Later, Bray et al. (2011) examined the influence of the gender of the instructor in an imagined exercise setting. They found that participants who were high self-monitors experienced greater levels of SPA with a male instructor than a female instructor. Unlike Lamarche and Gammage (2010) they found that the instructor gender may influence cognitive and affective states in women exercisers.

1.4.4 Clothing and Appearance. Fleming and Martin Ginis (2004) examined the effects of commercial exercise video models on women's SPE and exercise task self-efficacy. Participants were divided into exercise status groups (i.e., low and high-frequency). Participants watched an exercise video featuring either a "perfect looking" instructor and exercisers whose bodies emphasized the thin-ideal, or a video in which the instructor and exercisers were considered more "normal looking" (Fleming & Martin, 2004). Results revealed that the women who saw the perfect-looking models had lower post-video SPE regardless of exercise status, and low frequency exercisers had lower post-video SPE after watching either type of model. There were no effects of model type on exercise task self-efficacy. SPE was a strong predictor of variance in exercise intentions (Fleming & Martin Ginis, 2004). However, in this study it was not possible to determine the effects of the instructor versus the class participants.

Later, a similar study was performed by Martin Ginis et al. (2008) in which they examined the effects of exposure to a physique salient or physique non-salient exercise leader in exercise videos and the moderating influence of perceived physique discrepancies on body image, self-presentational concerns, and exercise motivation. In the physique-salient condition, the instructor wore form fitting, revealing attire that emphasized her thin and toned body (Martin Ginis et al., 2008). In the physique non-salient condition, she wore attire that concealed her body. No differences in any of the outcomes were found based on the instructor's appearance. However, greater perceived negative discrepancy between the participant and the exercise leader (i.e., negative social comparison with the instructor) was associated with poorer post-exercise body satisfaction, body evaluations, and higher state physical anxiety. Thus, when a woman

made a negative comparison between herself and the instructor, negative body image outcomes were experienced.

1.4.5 Appearance-Focused Leadership Style. Raedeke et al. (2007) examined whether social-environmental factors influenced the psychological responses to participation in a single session of group exercise for females with heightened body image concerns. The purpose of this study was to examine the impact of a group step aerobics fitness class that varied in the extent to which physique-related issues were emphasized or de-emphasized through the instructor's comments on psychological responses. Women participated in a fitness class where the leader used either a health-oriented leadership style or an appearance-oriented class style (e.g., "keep on working, you will have more energy tomorrow" versus "keep on working, your arms will look more toned after this"). Participants in the health-oriented condition reported a more positive affect post-exercise after controlling for pre-exercise feeling state compared to participants in the appearance-oriented condition (Raedeke et al., 2007). Participants in the health-oriented condition felt more engaged and revitalized post-exercise than those in the appearance-oriented class. Health-oriented participants also enjoyed the class more, and had higher intentions of future participation (Raedeke et al., 2007). Thus, the aforementioned literature emphasizes the importance and influence of exercise leaders' physical characteristics and behaviours. However, other characteristics of the exercise leader may also be influential.

1.4.6 Leadership style. There are two types of leadership styles that have been investigated most frequently to determine if they can affect exercise-related outcomes. These two types of leadership styles have been termed bland and enriched (Bray, Millen,

Eidsness, & Leuzinger, 2005; Fox et al., 2000; Martin & Fox, 2001, Turner, Rejeski, & Brawley, 1997). Both styles address at a minimum what is required of a fitness professional; yet the enriched style of leadership exceeds expectations, compared to the bland instructor.

1.4.6.1 Bland Leadership Style. Martin and Fox (2001) describe a bland instructor as one who attends classes but is not invested in the class, participants or the overall well-being of the participants. These types of instructors show up right on time and promptly leave right after class. They omit social interaction and do not encourage interaction among participants. This type of instructor does not get to know members by their names, nor does he/she follow up with praise or feedback. Some bland style instructors may emphasize mistakes and focus on what not to do, in ways such as "...that is bad form you need to stop arching your back..." Generally speaking, this type of instructor gives participants a slightly negative experience overall (Martin & Fox, 2001).

1.4.6.2 Enriched Leadership Style. An enriched instructor is one who genuinely cares for his/her participants' well-being. An enriched leadership style is an instructor who is socially interactive, pleasant, and energetic (Martin & Fox, 2001). He/she gives positive encouragement and positive performance feedback. Enriched instructors address participants by name, engage in general conversation (before and after class), give specific reinforcement, and ignore mistakes while rewarding effort before and after exercise (Martin & Fox, 2001). This instructor leadership style generally elicits positive exercise-related outcomes.

1.4.7 Effects of Leadership Style on Exercise Related Outcomes

Turner et al. (1997) first examined the effects of both the bland and enriched leadership styles. The purpose of the study was to examine the influence of leadership style on feeling states and self-efficacy in women participating in a single bout of physical activity. This study used socially enriched or bland social interactions throughout their leadership. They found that participants in the enriched condition reported greater increases in self-efficacy, revitalization and enjoyment compared to those in the bland condition. They concluded that the social environment created by an activity leader could influence positive mental health outcomes associated with physical activity.

Fox et al. (2000) used a trained group of confederates to promote either an enriched or bland group environment in addition to manipulating leadership style. The primary purpose of Fox et al.'s (2000) study was to examine the independent and interactive effects of leadership style and group dynamics on enjoyment of physical activity and the probability of engaging in a similar activity in the future. They found that participants in the enriched leadership style plus enriched group dynamics reported higher enjoyment and future intentions to exercise than did participants in the other three conditions.

Later, Martin and Fox (2001) examined the effects of bland versus enriched leadership styles and group environments (i.e., bland versus enriched) on social anxiety experienced during an exercise class. Given the positive psychological benefits associated with an enriched leadership style, they hypothesized that exercisers would experience less social anxiety during an aerobics class that was led by an instructor with an enriched leadership style than during a class led by an instructor with a bland leadership style. It

was also predicted that exercisers would report the most social anxiety in the bland-leader/bland-group condition, and the least social anxiety in the enriched-leader/enriched-group condition. Contrary to their hypotheses, a socially enriched group environment produced greater levels of social anxiety among participants than did a bland group environment. However, there was a tendency for exercisers to experience less social anxiety when they participated in an aerobics class led by an instructor with a socially enriched leadership style than when they participated in a class led by an instructor with a bland leadership style. Participants also had more positive perceptions of the enriched group environment than the bland group environment. It was hypothesized that the extra attention in the enriched group environment from other participants could have elicited self-conscious states as people become more aware of their self-presentation when others comment on or are seen to be observing their features or behaviours (Leary & Kowalski, 1995; Martin & Fox, 2001). This excessive public attention could increase one's feelings of incompetency such as poor coordination or skill (Leary, et al., 1992; Martin & Fox, 2001). Therefore, the participants might be less anxious in a bland group condition.

The most recent study examining leadership styles was conducted by Bray et al. (2005). They examined the effects of exercise leadership style (bland and enriched) and program choreography (varied versus repetitive) on exercise enjoyment and intention to exercise. They found that a socially enriched leadership style and varied choreography were associated with greater enjoyment, although there was no effect on exercise intention.

1.5 Personal Trainers. Personal trainers are the second common type of exercise leaders. However, in the fitness industry in recent years, they have become more

important and influential. In fact, in the American College of Sport Medicine's (ACSM's) Worldwide survey for 2013, personal training and small group personal training were two of the top 10 trends for fitness, as they have been for the past several years (Thompson, 2011). By contrast, traditional group exercise classes (e.g., high/low impact step) are decreasing in popularity.

There are several differences between personal trainers and group exercise instructors. Generally, personal trainers work one-on-one or with small groups, eliminating the large group aspect of training, which has been known to increase dropout rates (Carron, Brawley, & Widmeyer, 1990). The smaller group training allows for the instructor to get to know his/her participants better, and he/she is better able to interact and increase the amount of feedback given compared to group exercise instructors.

Gavin (1996) described personal trainers as individualized coaches, who can provide advice and support. The benefit of a personal trainer compared to a group fitness instructor is that the practice can be performed in various locations/settings (e.g., home, gym, outdoors; Gavin, 1996). Similar to group fitness instructors, personal trainers can change the characteristics of their training style, resulting in a change in exercise behaviour of his/her participants. Limited research has been conducted on personal trainers as their popularity has only recently emerged within the fitness industry. Little research has addressed the influence of personal trainers in exercise settings; and most has focused on desirable or undesirable qualities in personal trainers (e.g., a personal trainer's level of fitness and knowledge of exercise and technique; i.e., body shape, weight management; Gavin, 1996).

1.6 Limitations to Extant Literature

Multiple studies have examined a variety of factors that have influenced exercise behaviour within group exercise settings. Many of these studies have successfully manipulated the leadership styles, choreography, or other environmental and social factors of fitness classes (e.g., gender, clothing; Bray et al., 2005; Fleming & Martin Ginis, 2004; Kruisselbrink et al., 2004; Lamarche & Gammage, 2010; Martin & Fox, 2001; Raedeke et al., 2007). Studies have shown that an enriched instructor is associated with greater enjoyment, lower self-presentational concerns, more positive affect, and higher intentions to exercise in the future (Bray et al., 2005; Martin & Fox, 2001; Raedeke et al., 2007). Yet no research to date has examined the effects of a personal trainer's leadership style, nor has research used a one-on-one introductory weight training session explicitly.

CHAPTER TWO: RATIONALE, PURPOSE, & HYPOTHESES

Previous studies have examined a variety of factors hypothesized to influence exercise adherence within group exercise settings, many of which have been shown to affect individuals' exercise-related cognitions and behaviours. Some of these factors have included the effects of mirrors (Gammage, Martin Ginis, et al., 2004; Lamarche et al., 2009; Raedeke et al., 2007), group gender composition (Kruisselbrink et al., 2004; Lamarche & Gammage, 2010), physical appearance of fitness video models (Fleming & Martin Ginis, 2004), and most relevant to this thesis, leadership styles of the fitness instructor (Bray et al., 2005; Martin & Fox, 2001; Raedeke et al., 2007). Previous research has shown the fitness instructor's leadership style can affect self-presentational concerns, affect, self-efficacy, enjoyment, and future intentions to exercise within an exercise group setting (Bray et al., 2005; Lamarche & Gammage, 2010; Martin & Fox 2001; Raedeke et al., 2007). However, none of these studies has explicitly examined these variables using another type of exercise leader, a personal trainer, in a one-on-one training setting.

2.1 Rationale

While physical activity is vital to overall good health, the majority of men and women are not participating in the recommended amounts of physical activity (Haskell et al., 2007). Women especially are less likely to meet the recommended amounts of physical activity compared to men throughout the lifespan. In fact, after adolescence, the decline in physical activity is greater in women than men (50.7% versus 47.9%; Haskell et al., 2007). In particular, rates of weight training by women is particularly poor; the most recent report by Statistics Canada (2005) indicated the number of women (aged 12

and older) who had weight trained at least once in the previous 3 months was only 14.3% of the surveyed population. Of those who did weight train, they averaged only 6 times in the past 3 months (which is less than once per week). By contrast, the most recent statement by Canada's Guide for Physical Activity suggests adults should strength train at least twice per week (Canadian Physical Activity Guidelines; CSEP, 2013).

Weight training can provide individuals with multiple health benefits; these benefits are not only physiological (e.g., increased strength, reduced risk for chronic diseases, such as osteoporosis) but psychological as well (e.g., decreased depression; Fahey et al., 2013; Salmon, 2001). Unfortunately, weight training can be a very threatening environment to some individuals. Particularly for women, this threat may be due to the fear of potentially developing a big or bulky physique or appearing masculine; it may also be intimidating when one is unsure of what to do (Grogan, 2011). Some women may experience negative psychological states in weight training environments that may cause them to limit or avoid exercise (i.e., SPA).

Women can be influenced by multiple factors in exercise settings, including social (i.e., other exercisers, exercise leader) or environmental (i.e., mirrors) factors; in turn these factors can affect exercise-related outcomes such as social anxiety, enjoyment, and body image concerns (Bray et al., 2005; Fleming & Martin Ginis, 2004; Gammage, Martin Ginis, et al., 2004; Kruisselbrink et al., 2004; Lamarche et al., 2009; Lamarche & Gammage, 2010; Martin & Fox, 2001; Raedeke et al., 2007). Thus, it is essential to investigate ways in which to maximize positive psychological outcomes as a way to promote weight training in women.

While many factors can influence the exercise experience, the exercise leader may be particularly influential. Franklin (1986) believed that numerous variables affected participant exercise compliance, but he stated that the most important one was the exercise leader. In a one-on-one gym setting, personal trainers have the opportunity to provide individuals with motivation and guidance to reach their goals, while providing safe and effective exercise programs. Understanding the role of personal trainers is particularly relevant today, as personal training is one of the biggest trends in fitness. The ACSM's worldwide survey for 2013 found that personal trainers and small group personal training were two of the top 10 trends predicted for the upcoming year (Thompson, 2011). Therefore, it is important to further examine characteristics and behaviours of the personal trainer that may impact exercise-related outcomes. Given that leadership style of group fitness instructors can impact such outcomes and can be easily modified, this is one factor that should be investigated in a personal training setting.

Within the literature on the effect of group fitness instructors, many studies have looked at the bland (negative feedback, not socially interactive, minimal feedback, negative experience overall) versus enriched (socially interactive, pleasant and energetic, positive feedback, ignores mistakes) styles of leadership and their influence on exercise-related outcomes. It is evident that this bland leadership style does exist in real-life settings. For example, some instructors may come across as more bland due to certain personality traits (e.g., introverted,) or if they are busy (i.e., distracted by other tasks), and participants may feel they are not receiving the attention they should. Bray et al. (2005) found that a socially enriched leader who varied choreography resulted in a more

enjoyable exercise experience in women compared to a bland leader using the same choreography.

Additionally, Fox et al. (2000) examined the independent and combined effects of leadership style and group dynamics on exercise-related outcomes. They found that participants experiencing the enriched style of exercise leader reported higher enjoyment than did participants in the other conditions. They concluded that enjoyment during physical activity is optimized when a positive and supportive leadership style is used. Using a similar design, Martin and Fox (2001) found that participants tended to have less social anxiety when the instructor used an enriched leadership style compared to when they used a bland leadership style, emphasizing the potential positive effects of an enriched leadership style.

While these studies are informative, they did not look at the influence of the personal trainer specifically, as previous studies were carried out in a group fitness exercise class. Manipulation of the two leadership styles has yet to be investigated in a personal training setting. Previous research also did not evaluate a performance measure; rather, they focused on cognitive and affective outcomes only. By evaluating performance we can also determine if the leadership style has a physical effect as well as a psychological one. This present study will address the current limitations within the previous literature.

2.2 Significance

In exercise environments, it is critical for beginners to have a positive first experience when weight lifting, particularly for women. If the participant feels uncomfortable or uncoordinated she is much less likely to adhere to an exercise regime

due to negative feelings, lack of enjoyment, low self-efficacy or self-presentational concerns. Developing an effective weight training consultation/introduction would be critical to ensuring women have the proper start to a new positive health experience. The social and physical environment can play a critical role when influencing women's enjoyment and future intention to exercise (Raedeke et al., 2007). As a result, it is important to determine if bland and enriched leadership styles used by a personal trainer have similar effects as they do in group exercise settings. If we are able to identify the ideal leadership style for a one-on-one introductory weight training environment for women. It will be possible to inform personal trainers how to best work with their clients. These findings could potentially help us determine the best practices for an introductory training session and personal training that will increase women's intention to exercise, psychological experiences, and eventually adherence.

2.3 Purpose & Hypotheses

In this study, the leadership style (i.e., bland versus enriched) of the personal trainer was manipulated to examine the impact on enjoyment, intention to exercise, self-efficacy, self-presentational concerns, and performance (hand-grip strength) in a one-on-one weight training orientation in a sample of university women. The specific hypotheses that were investigated are as follows:

- A.** It was hypothesized that following the training session, enjoyment would be higher in the enriched condition than the bland condition.
- B.** It was hypothesized that following the training session, social anxiety and SPA would be lower in the enriched condition compared to the bland condition.

- C.** It was hypothesized that following the training session, task self-efficacy, SPE and intention would be higher in the enriched condition compared to the bland condition.
- D.** It was hypothesized that following the training session, hand-grip strength in the enriched condition would be higher compared to the bland condition.

CHAPTER THREE: METHODOLOGY

3.1 Participants

For this study we recruited 103 women aged 17-35 years from the Brock University community (52 bland group and 51 enriched group). Previous literature (Turner et al., 1997) using a similar manipulation to the present study showed moderate to large effect sizes (ES; ES = 0.57, 0.76, respectively) of the enriched condition with increases in revitalization and self-efficacy (Turner et al., 1997). A study by Martin and Fox (2001) in which participants were assigned to either a bland or enriched fitness instructor yielded a small effect size (ES = 0.39) of leadership style on social anxiety; however this study included men and women. Sample size calculations with power = 0.80 and $\alpha = 0.05$ indicate the recommended sample size is 26 (large ES) to 64 (medium ES) participants per group (Cohen, 1992). With a slightly different manipulation compared to Martin and Fox (i.e., fitness instructor leadership style on males and females; 2001), the sample size of 51 (enriched group) and 52 (bland group) participants was considered adequate. Table 1 shows participant characteristics by group.

Participants were recruited by means of posters (see Appendix A) placed around the Brock University campus and through word-of-mouth for a study investigating the process of learning exercise skills in a weight training environment in novice weight trainers (see Appendix B). Participants in this study included women aged 17-35, as this group is generally insufficiently active and does not meet minimum guidelines for strength training (CFLRI, 2008). All participants were novices to weight training (i.e., had not weight trained in the past year and had not previously worked with a personal trainer), and were able to safely perform physical activity. Experienced weight lifters

were excluded from this study due to their increased knowledge, self-efficacy, and because they would already know the basic principles of weight training.

Table 1

Participant Demographic Characteristics by Group

Variable	Enriched (<i>n</i> = 51)		Bland (<i>n</i> = 52)	
	Mean	SD	Mean	SD
Age	20.6	2.33	20.5	2.32
Weight (kg)	64.79	13.23	62.93	9.81
Height (cm)	164.78	5.97	163.86	6.35
BMI	23.77	4.2	23.41	3.29
Physical Activity	32.43	17.78	34.73	3.91

Note. BMI = body mass index; Physical Activity = moderate/vigorous physical activity, measured in MET minutes/week; SD = standard deviation.

3.2 Measures

Participants completed a series of questionnaires for this study: baseline questionnaires for physical activity clearance and demographic information and a physical activity measure (see Appendix C). In addition, pre-and post-test measures were assessed: self-presentational concerns, self-efficacy, and future intentions to exercise (see Appendix D); enjoyment was measured post-exercise only (see Appendix D). In addition, several manipulation checks were administered following the manipulation (see Appendix E). Participants also completed a test of muscle strength.

3.2.1 Baseline Questionnaires. Baseline questionnaires included the Physical Activity Readiness Questionnaire (PAR-Q), a demographic questionnaire, as well as a physical activity questionnaire.

3.2.1.1 Physical Activity Readiness Questionnaire (PAR-Q; CSEP, 2002). Prior to physical activity participation it was a requirement that participants completed the PAR-Q questionnaire to ensure they were healthy and deemed ready for exercise. The questionnaire consisted of 7 “yes” or “no” questions pertaining to one’s health. If a participant selected “yes” to one or more of the questions, she was deemed ineligible to participate in the study.

3.2.1.2 Demographics. Participants were asked to self-report their age, occupation, height, weight and weight training experience (e.g., have you trained with a personal trainer, have you ever weight trained, if so, when? etc.). Participants were also asked if they had ever received an orientation or introduction to weight training prior to the one they would be receiving that day. If they had they were deemed ineligible to participate.

3.2.1.3 Physical Activity. Physical activity behaviour was measured using the Godin Leisure-Time Exercise Questionnaire (GLTEQ). This scale has demonstrated adequate psychometric properties in studies of healthy adults (Godin & Shephard, 1985). Participants indicated how many times they engaged in each of strenuous, moderate, and mild exercise for more than 15 minutes over the past 7 days. The GLTEQ provided examples of activity captured by each intensity level. Scores were calculated by multiplying frequencies of strenuous, moderate, and mild activity by known metabolic equivalents (METs) 9, 5, and 3 respectively, and summing the values to get a total value in METs/week.

3.2.2 Primary Measures: Pre-and Post-Weight Training Session. The primary measures included several measures of self-presentational concerns: state social anxiety, state-SPA and SPE, as well as a measure of task self-efficacy. These measures were also answered post-test in addition to measures of enjoyment and future intention to exercise. Post-test measures were reworded slightly to reflect the exercise session undergone. A measure of hand-grip strength was also taken pre-and-post weight training session.

3.2.2.1 State Social Anxiety. For this study we used a scale similar to Martin and Fox (2001). Martin and Fox (2001) originally used an 8-item scale to measure state social anxiety (e.g., concerns over being embarrassed) experienced during an exercise class (e.g., other exercisers' and the leader's evaluation of one's coordination). For the present study, we only used items related to the leader's evaluations. In addition, items were slightly reworded to change the word "instructor" to "trainer" and changed "exercise group" to "training session" (see Appendix D). Each question was answered on a 5-point Likert scale ranging from 1 (*not at all concerned*) to 5 (*extreme concern*). A sample

question was “I am concerned about looking uncoordinated in front of the personal trainer.” This scale was also used in a sample of men and women by Martin and Fox (2001); the scale yielded an acceptable level of internal consistency ($\alpha = 0.92$).

Cronbach’s alpha showed adequate internal consistency reliability ($\alpha = 0.85$ for pre-state-SA and, $\alpha = 0.88$ for post-state-SA).

3.2.2.2 Social Physique Anxiety Scale-State. The concern over one’s body being evaluated by others at that moment was measured using the State Social Physique Anxiety Scale (SPAS; Krusselbrink et al., 2004). Each item was rated on a 5-point Likert scale ranging from 1 (*not at all characteristic of me*) to 5 (*extremely characteristic of me*). Participants indicated the degree to which each of the 9 statements was true or characteristic of them. A sample item was “I feel uptight about my physique/figure.” Lower scores indicated lower SPA. The state SPAS has demonstrated adequate reliability and validity (Martin Ginis, Murru, Conlin, & Strong, 2011). Cronbach’s alpha showed adequate internal consistency reliability ($\alpha = 0.84$ for pre-SPA and $\alpha = 0.85$ for post-SPA).

3.2.2.3 Self-Presentational Efficacy. Self-presentational efficacy (SPE) was measured using the five items developed by Gammage, Hall et al. (2004) to assess confidence in the ability to present oneself as a competent exerciser. We modified the current scale by changing “group members” to “trainer.” These items asked participants to indicate their level of confidence that their trainer would think that they (a) were coordinated, (b) had a fit body, (c) had good stamina, (d) were regular exercisers, and (e) were in good shape. Participants were instructed to respond to each item with reference to “exercising with a personal trainer” and to indicate their confidence on a scale ranging

from 0% (*not at all confident*) to 100% (*completely confident*). An average score was calculated across the five SPE items. This scale has demonstrated adequate internal consistency and construct validity in studies of college-aged women (Fleming & Martin Ginis, 2004; Lamarche et al., 2013; Woodgate et al., 2003). Cronbach's alpha showed adequate internal consistency reliability ($\alpha = 0.93$ for both pre-and post-SPE).

3.2.2.4 Task Self-Efficacy. Task self-efficacy was measured using a similar scale to Rodgers and Sullivan (2001) assessing the participant's confidence to perform the elements of the tasks of the exercise session. Participants were asked: 'how confident you are that you can... (1) pace yourself to avoid over-exertion; (2) perform all the required movements; (3) follow directions from a personal trainer; and (4) follow the training program provided at least twice per week for the next four weeks. These items were all rated on a 100% confidence scale where 0% (*no confidence*) and 100% (*completely confident*). The mean of the 4 items for task self-efficacy were calculated. Cronbach's alpha showed adequate internal consistency reliability ($\alpha = 0.80$ for pre-TSE and $\alpha = 0.72$ for post-TSE).

3.2.2.5 Enjoyment. The original Physical Activity Enjoyment Scale (PACES) was developed by Kendzierski and DeCarlo (1991) for a college-aged population. A modified 8-item version of this scale by Raedeke et al. (2007) was used for the present study. The scale asked participants to rate their enjoyment (i.e., I enjoyed it, I felt interested, I liked it, I found it pleasurable, it was a lot of fun, it was very pleasant, I felt as though there was nothing else I'd rather be doing, I was very absorbed in this activity). Each item was rated on a 7-point bipolar scale; four represented a neutral point corresponding with how much the participant enjoyed the exercise session (Raedeke et al., 2007). Higher PACES

scores reflected greater levels of enjoyment (Mullen et al., 2011). Evidence of internal consistency reliability has been demonstrated (Mullen et al., 2011). Cronbach's alpha showed adequate internal consistency reliability ($\alpha = 0.91$ for enjoyment).

3.2.2.6 Intention to Exercise. For the present study we used a similar scale to DuCharme and Brawley (1995). Three intention statements were provided to the participant, which reflected their intentions to follow the exercise program given. The intention statements began with "I intend", "I will try", and "I plan" ... and were followed by "to follow my training program at least twice a week for the next four weeks." Participants indicated the degree of their agreement with each of the statements on a scale ranging from 1 (*extremely unlikely*) to 7 (*extremely likely*). The final behavioural intention score was calculated from the mean of the three items. Cronbach's alpha showed adequate internal consistency reliability ($\alpha = 0.92$ for pre-intention and $\alpha = 0.96$ for post-intention).

3.2.2.7 Muscle Strength. As previously stated, leadership styles have been shown to elicit positive cognitive and affective outcomes in exercise classes, such as decreased social anxiety, increased self-efficacy, enjoyment and intention to exercise, and more positive affective states (Bray et al., 2005; Fox et al., 2000; Martin & Fox, 2001, Raedeke et al., 2007; Turner et al., 1997). Further, participants have rated enriched instructors more favorably than bland instructors (Martin & Fox, 2001).

One type of outcome that has not been assessed based on the style of leadership is performance-based outcomes. However, it is possible that not only can the style of leadership impact cognitive and affective outcomes, but it may also affect performance-based outcomes. For example, if the enriched leader is rated more positively (i.e., good,

pleasant, energetic), she may try harder during performance of a task (Carron, Estabrooks, & Hausenblas, 2003) and thus perform better. Alternatively, if participants feel more efficacious in the enriched leadership style condition (as hypothesized), higher self-efficacy may also be associated with improved performance (Bandura & Cervone, 1986). Thus, the present study assessed a measure of performance relevant to the weight training orientation – strength.

Fess (1987) developed a protocol for measuring hand-grip strength as an indicator of overall body strength. These procedures were also recommended by the American Society of Hand Therapists (Fess, 1992) and used by Mathiowetz et al. (2002). Mathiowetz et al. (2002) achieved excellent reliability ($r = 0.99$) and good to excellent test-retest reliability ($r = 0.88$ and 0.93) using the standard procedures. The protocol that we used for the present study was the use of the grip strength dynamometer described by Fahey et al. (2013; originated from CSEP Health & Fitness Program's Appraisal and Counselling Strategy, 2003).

To start, the hand-grip was adjusted to match the size of the participant's hand. First, the participant stood with the hand to be tested first at her side away from the body. The dynamometer was in line with the participant's forearm and held at the level of their shoulder. The research assistant told the participant to "...squeeze the dynamometer as hard as possible while moving your arm from 90 degrees down to the side of your body without touching your thigh; exhale as you squeeze..." During the test, the participant could not let the dynamometer touch their body or any other object. Participants performed five trials with each hand. Participants rested for one minute between trials

and alternated hands. Scores for each hand were recorded to the nearest kilogram. The total strength score was calculated by taking the average of the total trials.

3.2.3 Manipulation Checks. There were three manipulation checks: rating of perceived exertion (RPE), perceptions of the trainer and the checklist for consistency.

3.2.3.1 Rating of Perceived Exertion (RPE; Borg, 1982). Participants rated how hard they felt they worked during the handgrip test as an indicator of effort. This scale ranged from 0 (*nothing at all*) to 10 (*extremely strong/almost maximal*). This scale was used to ensure that effort was approximately equal between the two leadership style groups during the handgrip test.

3.2.3.2 Perceptions of Trainer. This manipulation check ensured the two leadership styles were perceived differently with respect to their leadership style of personal training. Specifically, it ensured the enriched leadership style was perceived as more positive, friendly, and socially interactive compared to the bland leadership style. For the present study, we used a similar scale to Martin and Fox (2001). This scale consisted of four bipolar pairs of items assessing the perceptions of the trainer's style (bad/good, unpleasant/pleasant, tense/relaxed, flat/energetic). Ratings were made on a 7-point scale with the following anchors: extremely (-3); moderately (-2); slightly (-1); neutral (0); slightly (+1); moderately (+2); and extremely (+3). The 4 items were summed resulting in scores that could range from -12 to +12. Cronbach's alpha coefficients for Martin and Fox's (2001) study indicated an acceptable level of internal consistency for each subscale ($\alpha = 0.81$ and 0.87). Cronbach's alpha showed adequate internal consistency reliability ($\alpha = 0.74$ for perceptions of trainer).

3.2.3.3 Checklist for Consistency. The checklist for consistency was used to ensure the investigator's script remained the same throughout each participant in each group (bland or enriched style) and to ensure the leadership styles were different (see Appendix M). The checklist listed the exercises and appropriate cues for each exercise, and also helped to ensure the investigator proceeded in the correct order each time.

3.3 Procedures

Upon ethics clearance from the Research Ethics Board at Brock University (see Appendix F), individuals were recruited to participate in an introductory weight training session investigating the processes of learning skills in a weight training environment in novices; thus, the true purpose of the study was concealed. Interested individuals were asked to contact the principal investigator via email. Once interest was shown from the potential participant, we provided a letter of information and the inclusion/exclusion criteria via email (see Appendix G). At this time we invited any questions from the participant. Once participants were deemed eligible and agreed to participate in the study, a mutually convenient date and time for participation was scheduled. In this email the participant was told to meet at the Exercise Intervention Lab (Welch Hall 16) on campus, changed and ready for physical activity. At this time, the researcher randomly assigned the participant to one of the two groups without the participant's knowledge: the enriched leadership style group or the bland leadership style group. The principal student investigator of this study was also the personal trainer for both conditions (bland and enriched).

Upon arrival at the lab, the research assistant (not the principal investigator) initially greeted the participant, and invited the participant into the lab to have a seat.

During this time the research assistant was blind to the condition that the participant was assigned. Research assistants (a total of 10 over the course of the data collection) were trained prior to the session to maintain a neutral approach to ensure they had a minimal influence on participant's pre/post-test scores. The research assistant was blind to the condition until the trainer was introduced. Next, the researcher asked participants to provide informed consent (see Appendix H) and completed the PAR-Q (CSEP, 2002). All participants were cleared to participate. Participants were then asked to complete the demographic and physical activity questionnaire. In both conditions the trainer remained in the back room out of sight until the training session commenced.

Once participants completed the baseline questionnaires (demographic, physical activity) they were asked to complete the pre-test questionnaires (state social anxiety, social physique anxiety state, self-presentational efficacy, intention, and task self-efficacy), which were randomized to minimize order effects. Following completion of the questionnaires, the research assistant obtained the participant's height to the nearest 0.1 cm by a stadiometer (shoes were removed) and mass to the nearest 0.1 kg by means of a scale. The research assistant then explained the handgrip protocol (as previously described). Then the research assistant recorded the pre-test hand-grip values of the participant. After the handgrip protocol the respective trainer was introduced and then conducted an introductory training session with the participant, using the appropriate leadership style.

3.3.1 Introductory Weight Training Protocol.

3.3.1.1 Warm-up. To start, the personal trainer demonstrated how to properly use the cardiovascular modalities (i.e., treadmill, bicycle) and how to properly adjust the seat

height. The personal trainer then let the participant know that she would be warming up for approximately 10 minutes to ensure she was ready for exercise.

3.3.1.2 Weight Training Session. Next the participants underwent the introductory weight training session. This session included 8 specific exercises that targeted each of the major muscle groups (see Appendix I). The trainer started with the largest muscle group exercises and worked down to the smallest. She also began with upper body exercises followed by lower body exercises. For each exercise, the trainer demonstrated, then allowed the participant to try the exercise. The following exercises were performed: dumbbell bench press, seated row, bar bell bicep curl, dumbbell triceps extension, dumbbell shoulder press, body weight squat, hamstring curl with exercise ball, and leg press. Weights assigned were at the discretion of the participant using a recommended range by the personal trainer. The participant completed a maximum of 5 repetitions to obtain the correct technique.

3.3.1.3 Exercise Protocols. Certified Professional Trainers Network (CPTN; 2010) regulations for proper exercise technique were used. The participant was provided with the following instructions:

3.3.1.3.1 Dumbbell Bench Press. Lie flat on the bench with the 5 points of contact; these 5 points are your buttocks, your back, two feet, and your head. Start with the dumbbells on your knees and slowly lay back while bringing the dumbbells to your chest, keeping them close to your body. Ensure your wrists are turned facing your toes while squeezing your shoulder blades together. While maintaining a stable core, fully extend the arms to push the dumbbells away from your chest directly above the shoulder joint. Inhale and lower the dumbbells towards the chest, while controlling the descent of

the dumbbells. Pause slightly once the elbows reach a 90-degree angle and the upper arms are parallel to the floor. The dumbbells will be several centimeters above the sternum. Exhale, push yourself into the bench pushing upwards in a subtle arc, until the arms are extended and the dumbbells are directly above the shoulder joint. Extend the arms fully while maintaining a slightly bent elbow joint (avoid locking the elbows).

3.3.1.3.2 Seated Row. Sit in the seat with a proud posture (sitting tall, chest up, eyes forward). Grab the handles with a closed grip (thumbs and fingers wrapped around the handles) pull back and exhale. While pulling, squeeze your shoulder blades together. Keep your elbows close to your body throughout the entire movement. Allow your arms to extend to their starting position in a controlled manner while inhaling.

3.3.1.3.3 Bicep Curl. Stand with the feet approximately shoulder width apart and the knees slightly bent. Keep the shoulders back and head up. Grasp the bar with a closed, supinated grip, with the hands placed slightly wider than hip width. Have just a slight bend in the elbows. The elbows remain stationary against the ribs with the upper arm perpendicular to the floor and “hugging” the body. Exhaling, flex at the elbow and curl the bar towards the chest. Pause – keep the bar away from the shoulder or clavicle. Keep the wrists in a neutral (straight) position throughout. Maintain an erect body position, and avoid swinging through the hips or low back. Inhaling, lower the bar with control to the starting position.

3.3.1.3.4 Triceps Extension. Stand with feet approximately shoulder width apart and the knees slightly bent. Keep the chest lifted, and the shoulders back. Grasp the dumbbell using a closed grip with both hands. Bring the dumbbell overhead and point your elbows towards the front keeping your arms close to your ears. Exhale and extend

your arms above your head in a slow controlled manner. Inhale and lower the dumbbell behind your head in this same controlled manner.

3.3.1.3.5 Shoulder Press. Sit upright with or without a back support. Maintain a neutral spinal alignment, keeping abdominal muscles tight. Grasp the dumbbells shoulder width apart. The forearms should be perpendicular to the dumbbells. The feet are flat on the floor; the head is level, looking straight ahead. Exhale as you push the dumbbells overhead. You may create a more stable and stronger press by pushing yourself into the seat. Inhale and lower the dumbbells under control to the front upper chest. Lower the dumbbells by pulling with the latissimus muscles, which will help stabilize the scapula during the lowering phase.

3.3.1.3.6 Body-weight Squat. This exercise is best for beginners until they are comfortable with the movement, then they will be able to add weight. To start, feet are positioned side-by-side, approximately hip-width apart and directly underneath the shoulders. While looking straight ahead or slightly upwards, keep the chest out. Begin the descent at the hips by pushing the buttocks backwards, and then lower until the thighs are parallel with the ground. Keep the chest out. Initiate the movement at the hips by pushing the buttocks backwards and down; the lower leg remains close to vertical. Keep the body weight over the middle of the foot and heel. Knees remain behind the toes. The lumbar and thoracic spine is flat (no curves). The amount of forward lean in the upper body is such that the shoulders are in line with the ankles. Pause slightly in the lowest position (legs at a 90 degree angle) and avoid bouncing. Initiate the up phase by “pushing the floor away”. Exhale through the sticking point. Maintain an erect body position; avoid inward/outward knee movements. Slow down movement at the end of the repetition, and

reposition if necessary for the next repetition. Avoid locking knees and keep abdominal muscles tight with spine in neutral alignment.

3.3.1.3.7 Hamstring Curl with Exercise Ball. Lying on your back on a mat place both heels on an exercise ball and push your hips up into a bridge position. Only your shoulders and hands should be the three points of contact with the ground. The bodyline should be rigid and straight. Once you have become stable in this position you are going to use the ball to bring your heels in towards your buttocks while exhaling, keep lifting hips towards the ceiling. Inhale as you roll the ball back out to the starting bridge position. Maintain the bridge position and proper breathing throughout the entire movement.

3.3.1.3.8 Leg Press. Adjust the seat so the depth of the movement allows your thigh to meet a 90-degree angle with your shin. Adjust the weight accordingly (begin light, with 60-100lbs to start). Have your feet shoulder width apart; similar to the squat you want to ensure your knees remain behind your toes. Similar to the squat, focus on pushing through the heels of your feet. As you exhale push away from the platform so your legs extend with a slight bend. Inhale as you bend your knees back to the starting position. Maintain a stable core throughout the entire movement.

3.3.1.4 Cool-Down. The personal trainer demonstrated how the cool-down was similar to the warm-up. The personal trainer also let the participant know that they would be performing the cool-down for 10 minutes.

3.3.1.5 Flexibility Training. Lastly, the trainer took the participant through a full body stretch. She explained the purpose of stretching, while she explained the stretches, she had the participant follow her lead throughout the following stretches: quadriceps,

hamstrings, glutes, calves, core, lower back, triceps, biceps, chest, back, shoulders, and neck.

3.3.2 Post-Training Measures. Immediately following the participant's introductory weight training session the research assistant had the participant perform the handgrip protocol. Then the participant completed post-test questionnaires (i.e., SA, SPA, SPE, TSE, enjoyment, and future intention) in a random order to avoid order effects. Finally, participants completed manipulation check measures. Upon completion of these measures the investigator debriefed the participant on the true purpose of the study (see Appendix J). Finally the participant completed a summary of results request form if she was interested in the study results (see Appendix K). She was also provided with a copy of her weight training program with the prescribed weight, repetitions and sets from the introductory weight training session (see Appendix L).

3.3.3 Trainer characteristics and qualifications. For this study, the principal student investigator was the trainer for both bland and enriched leadership style conditions. She was 24 years of age, weighed 61 k., and stood 5'5'' tall. The investigator was a female Brock University, Kinesiology (Honours) graduate, with 4 years of personal training experience. She was a member of the Canadian Personal Trainer Network, a Certified Personal Trainer (CPTN-CPT), and First Aid and CPR Certified. She had trained several clients at varying fitness levels and capabilities. The trainer wore typical attire for a personal trainer for all sessions (i.e., shorts and a t-shirt).

3.3.4 Experimental manipulation. The manipulation was used to create two separate groups: an enriched leadership style and a bland leadership style. In order to ensure a significant difference between the two groups, the trainer leadership style varied

in regards to her feedback and social interactions with the participant. These manipulations were based on those used to create bland versus enriched group exercise leaders (Bray et al., 2005; Fox et al., 2001, Martin & Fox, 2001). Each group went through the same warm-up, weight training, cool-down and stretching routine but each group varied in terms of the feedback, praise, and social interactions made.

3.3.4.1 Enriched Personal Trainer Condition.

3.3.4.1.1 Introduction. The research assistant greeted the participant and obtained primary measures. Afterwards, the enriched personal trainer introduced herself by saying: “Hi _____! My name is Sarah, nice to meet you. I work at the Zone here at Brock and have been training for 4 years now. I am currently completing the second year of my Masters. I have trained various clients and I am excited to train you today. Are you ready to get started?”

3.3.4.1.2 Height, Weight and Strength. Upon completion of the introduction the research assistant had the participant complete the pre-test measures. She then thanked the participant after obtaining each measure needed. The research assistant was blind to the condition until the trainer was introduced.

3.3.4.1.3 Warm-up. To start, the trainer demonstrated the proper way to warm-up and ensured the participant was comfortable using the specified choice of cardio modalities for their warm-up (i.e. treadmill, recumbent or upright bicycle). The trainer explained that a warm-up was to ensure the body adjusts from rest to exercise, while increasing muscle blood flow preventing injuries, and adequately preparing the heart for physical activity. The trainer told participants that they were properly warmed-up if they had developed a light sweat or the participant “felt warm.” The warm-up lasted

approximately 10 minutes (e.g., walk on treadmill at 0% incline, pace of 3 mph maximum). Under the supervision of the trainer the participant watched the trainer demonstrate the proper use and safety of the machine then tried it themselves.

In the warm-up session, if the participant expressed any worry or concern about the upcoming session the trainer comforted and reassured the participant. She said things like “just remember this is not a performance test, you are here to learn something new”, or, “just try and do what you can.” In this enriched leadership style, the trainer gave the participant the choice of modality to warm-up on. This choice was given to help ensure the participant was most comfortable with the machine she used for her warm-up. It may also have been one that was most familiar to the participant. If the participant asked any questions throughout the session, the trainer answered and elaborated on any subject and followed-up with further explanation and reassurance throughout the training session. During this time positive praise was given: “that looks great, yes you’ve got it!” She was also reassured after the warm-up with more praise “you did great with the warm-up, are you ready to get started, you are doing great, let’s continue.”

3.3.4.1.4 Weight Training Session. This trainer ensured positive praise was given when an exercise was performed correctly or when effort was exerted. This trainer may have said things like “good job, way to go, you’ve got this, great, excellent, you’re a natural, good form, or good effort” Even when an exercise was performed incorrectly the trainer corrected their mistakes in a positive manner and reinforced effort by saying things like “try to keep your knees behind your toes, that’s much better” She also ensured she gave verbal cues to enhance the participant’s technique (e.g., “keep a proud posture, pretend like there is a pop can between your shoulder blades, you want to ‘crush it’, move

the dumbbells in a banana like motion”). This trainer also encouraged social interaction throughout the training session (e.g., what is your day looking like, have you worked at your current employment for long, do you have any hobbies outside of work, do you have any children?”). She also asked the participant: “How are the weights? Can you feel the proper muscles being worked? Are you okay with the exercise? Do you need a break?” These questions were asked to ensure the participant knew the trainer cared about their well-being.

3.3.4.1.5 Cool-down and Stretch. The cool-down and stretch was used for the trainer to give more positive praise to the participant (e.g., “You did great today. Way to go!). At this time she followed-up with any questions the participant may have had about the session while she ensured the participant felt good and was satisfied from her introductory session. She asked if the participant had any questions.

3.3.4.2 Bland Personal Trainer Condition.

3.3.4.2.1 Introduction. The research assistant greeted the participant and obtained primary measures. Afterwards, the bland personal trainer introduced herself: “Hi my name is Sarah, I’m a personal trainer. If you are unsure or have any questions please ask. Let’s get started.” This trainer interacted with the participant only enough to ensure safe performance of the exercises.

3.3.4.2.2 Height, Weight and Handgrip. Once questionnaires from the participant were completed the research assistant obtained the height and weight of the participant as well as the handgrip procedure. Once measures were obtained the research assistant introduced the personal trainer to the participant. She introduced herself and then preceded to tell the participant she was going to warm-up on the treadmill.

3.3.4.2.3 Warm-up. In the bland condition if the participant expressed any worry or concern the trainer did not make an effort to comfort the participant; she may have said "...just do what you can..." and then moved on. This trainer also selected the warm-up modality for the participant; she always used the treadmill for this condition. When the participant asked a question, the trainer was very vague, and did not follow-up with questions throughout the workout.

3.3.4.2.4 Weight Training Session. When the participant performed an exercise correctly, the trainer confirmed that the exercise was correct. She said something similar to "...yes, correct, that's fine, yes that is correct..." When an exercise was performed incorrectly the trainer corrected her movement in a negative way (i.e., by highlighting the mistakes). She said, for example "...don't let your knees cross over your toes, don't do..." This trainer did not use verbal cues to assist technique on certain movements. This type of trainer did not verbally encourage, nor engage in any social interaction with the participant. If the participant tried to initiate conversation with the trainer, she answered any questions the participant may have had but did not encourage any further conversation.

3.3.4.2.5 Cool-down and Stretch. During this part of the session the trainer maintained a general conversation about the training session, with no feedback: "we are all done the weight training, now just a few more questionnaires and handgrip then we are done." The bland trainer did not ask the participant how she felt when the session was completed; she maintained a neutral attitude. The research assistant administered the final surveys and collected what was needed.

3.3.5 Manipulation training. The principal investigator underwent training to ensure the two leadership styles were different from one another, and that her performance was consistent within each style. With the faculty supervisor she developed the protocol and script. She practiced each leadership style using the script until she was comfortable. At this time, she practiced with a non-participant for each condition to ensure that accuracy was attained for each leadership style. In addition, the checklist for consistency was used to ensure accuracy and consistency was obtained for each leadership style. This was repeated until she obtained a 95% consistency rate in each style, and then she was ready for an actual participant.

3.4 Data Analysis

All data were analyzed using the program SPSS 20.0. Data were first screened for entry errors and assumptions of statistical tests. Next, manipulation checks were conducted prior to hypothesis testing.

3.4.1 Screening Data. Prior to analyzing the data, it was screened for missing and inaccurate values by examining the frequencies of responses.

3.4.1.1 Missing Data. Missing data were visually screened to see if there were any missing data. If no more than 5% of the data was missing, it was replaced with the series mean.

3.4.1.2 Check for Inaccurate Values. Questionnaire items were screened for inaccurate values. A frequency count was conducted to ensure each value was plausible. If an implausible response was inputted, the original response was revisited and the correct value was obtained and corrected.

3.4.2 Subscale Scores. Items were reverse scored where appropriate. Scores were calculated for each subscale.

3.4.3 Univariate Outliers. Univariate outliers are cases with an extreme value on one variable. Among continuous variables, univariate outliers are cases with very large standardized values, z-scores that are disconnected from the other z-scores. To screen for potential univariate outliers z-scores were calculated. Values with a standard score (z-score) in excess of ± 3.29 ($p < .001$, two-tailed test) were investigated as potential univariate outliers. If outliers were identified their influence was reduced where possible.

3.4.4 Screening for Assumptions of Data Analyses. All data were screened to ensure that assumptions of the main analyses were met. These assumptions included normality, homogeneity of variance, linearity, and multicollinearity, independence of covariate effects and homogeneity of regression slopes.

3.4.4.1 Normality. Means and standard deviations, as well as skewness and kurtosis values were calculated for each group. Kurtosis is a measure of peakedness of the distribution, while skewness is a measure of the symmetry of the distribution (Tabachnick & Fidell, 2007). When a distribution is normal, the values of skewness and kurtosis are zero. Normality was assessed by significance tests (kurtosis \div standard error of kurtosis and skewness \div standard error of skewness) described by Tabachnick and Fidell (2007). As well, frequency histograms were examined visually.

3.4.4.2 Homogeneity of Variance. The assumption of homogeneity of variance is that the variance within each of the groups is approximately equal for each variable. This was tested by calculating the F_{max} and then comparing it to the values as suggested by Tabachnick and Fidell (2007). F_{max} is the ratio of the largest cell variance to

the smallest. If the sample sizes are relatively equal (within a ratio of 4 to 1 or less for the largest to smallest cell size), an F_{\max} as great as 10 was considered acceptable (Tahachnick & Fidell, 2007).

3.4.4.3 Linearity. Linearity occurs when a straight-line relationship best describes two variables. Bivariate scatterplots by group for all possible combinations of variables were used to compare and assess the assumption that the data is linear (Tabachnick & Fidell, 2007). If both variables were normally distributed and related in a linear fashion, the scatterplot was expected to be oval-shaped. Therefore, we wanted all scatterplots to indicate linearity in order to meet this assumption.

3.4.4.4 Multicollinearity. Multicollinearity is a statistical phenomenon in which two or more variables are highly correlated (Tabachnick & Fidell, 2007). Variables that are highly correlated ($r = .90$ or higher) were considered potential multicollinear variables. High correlations were expected between the same variable for pre- and post-tests as they are measuring the same variable.

3.4.4.5 Independence of Covariate Effects. The assumption of independence of covariate effects states that the covariate should not be influenced by the condition (Warner, 2013). Meeting this assumption reduces within group error variance (Field, 2009).

3.4.4.6 Homogeneity of Regression Slopes. The assumption of homogeneity of regression slopes is that the relationship between the outcome and the covariate is the same in each condition. To test the assumption of homogeneity of regression slopes, multiple ANCOVAs were run for each dependent variable, which

included an interaction term (dependent variable*covariate). If this assumption was met the interaction term would be non-significant (Field, 2009).

3.4.5 Manipulation Checks

3.4.5.1 Randomization Check. The demographic data (age, height, weight, body mass index (BMI; kg/m²) and physical activity) were analyzed to ensure randomization was effective. A series of independent sample *t*-tests were run to ensure that the 2 groups (bland and enriched leadership styles) were not significantly different on demographic variables.

3.4.5.2 Perceptions of Trainer. This manipulation check was used to ensure the two leadership styles of the personal trainer in the separate conditions were perceived differently. An independent sample *t*-test was performed to compare the scores between the two groups (e.g., good/bad) and to ensure that the trainer in the enriched condition was perceived more positively (i.e., socially interactive, and friendly) compared to the bland trainer.

3.4.5.3 Rating of Perceived Exertion. This measure was used as a manipulation check in order to ensure participants were working maximally during both pre- and post-test handgrip measures. A dependent sample *t*-test was conducted to compare the rating of perceived exertion for pre- and post-training session measures of handgrip strength within each group and to ensure they were not significantly different.

3.4.5.4 Checklist for Consistency. Any missed cue or instruction was marked as an error. Any additional unscripted cues, or instructions out of order were also noted as errors, and a total score (# correct cues/instructions) was summed at the completion of each participant. A percentage correct score (#correct cues/instructions ÷

total possible cues/instructions * 100) was calculated. Each leadership style was given a mark out of (138, for the enriched condition; 112 for the bland condition) for every participant, which was then converted into a percentage. In addition, the start and end times of each session were recorded.

3.4.6 Hypothesis Testing

First, potential covariates (BMI, physical activity) were examined through bivariate correlations. If these variables were significantly related to the dependent variable, they were used as a covariate in the subsequent analysis. To determine if the leadership styles were associated with different exercise-related outcomes, the following analyses were conducted:

- A.** To test the hypothesis that following a training session enjoyment would be higher in the enriched condition than the bland condition, an independent sample t-test was conducted. The condition (enriched or bland) was the independent variable and enjoyment was the dependent variable.
- B.** To test the hypothesis that SA and SPA would be lower in the enriched condition than the bland condition two ANCOVAs were conducted. Post-task SA and post-task SPA scores were the dependent variables and the condition (bland or enriched) was the independent variable. Pre-task SA and pre-task SPA were the covariates respectively.
- C.** To test the hypothesis that task self-efficacy, SPE, and intention would be higher in the enriched condition compared to the bland condition three ANCOVAs were conducted. Post-task self-efficacy, post-task SPE and post-task intention scores were the dependent variables and the condition (bland or enriched) was the

independent variable. Pre-task self-efficacy, pre-task SPE and pre-task intention were the covariates respectively.

- D.** To test the hypothesis that handgrip strength would be higher in the enriched condition compared to the bland condition an ANCOVA was conducted. Post-task handgrip was the dependent variable and the condition (bland or enriched) was the independent variable. Pre-task handgrip score was the covariate (see Appendix M, for an example ANCOVA output).

CHAPTER FOUR: RESULTS

4.1 Data Analysis

4.1.1 Screening Data. Prior to the analysis of any data, it was screened for missing and inaccurate values through the examination of frequency of responses.

4.1.1.1 Missing Data. Self-report measures of height and weight were missing from several participants; as objective height and weight were obtained, the missing self-report measures were left blank and not used for analysis. All other missing data, which was less than 5% of the total, was replaced with series means.

4.1.1.2 Check for Inaccurate Values. Three inaccurate values were discovered, and the original response was revisited to obtain the correct value, and then substituted for the inaccurate value.

4.1.2 Subscale Scores. Two items on the pre-and post-Social Physique Anxiety Scale-State were reversed scored such that higher scores represented higher levels of social physique anxiety. Next subscale scores were calculated for each measure as described previously.

4.1.2.1 Univariate Outliers. A total of 4 potential outliers were identified; one participant had a pre-intention z-score slightly below -3.29 (-4.41). Three participants' post-intention scores also had z-scores slightly below -3.29 (-3.94, -3.37, -4.22). These scores were revisited but as they represented accurate scores and were within one standard deviation of the next most extreme scores, they were left unchanged for the analysis.

4.1.3 Screening for Assumptions of Data Analyses. All data was screened to ensure that assumptions of the main analysis were met.

4.1.3.1 Normality. Means and standard deviations, as well as skewness and kurtosis values were calculated (see Table 2). Task self-efficacy, social anxiety, social physique anxiety, enjoyment, and self-presentational efficacy were all normally distributed. Pre-intention in the enriched group and post-intention in the bland group were slightly positively kurtotic (leptokurtic) but appeared generally normally distributed. These values were not adjusted prior to the analysis as they were slightly above the cut-off value of 3, and there is no transformation for kurtosis.

Table 2

Descriptives for Dependent Variables by Group

Variable	Enriched Trainer						Bland Trainer					
	<i>Mean</i>	<i>SD</i>	<i>Sk</i>	<i>SE_{Sk}</i>	<i>K</i>	<i>SE_K</i>	<i>Mean</i>	<i>SD</i>	<i>Sk</i>	<i>SE_{Sk}</i>	<i>K</i>	<i>SE_K</i>
PRE_TSE	78.68	14.64	-0.66	0.33	-0.46	0.66	80.22	14.81	-1.29	0.33	1.50	0.65
POS_TSE	89.04	10.3	-0.87	0.33	-0.24	0.66	87.23	11.76	-1.39	0.33	1.75	0.65
PRE_INT	5.7	1.28	-1.9	0.33	4.70	0.66	5.90	0.87	-0.38	0.33	-0.79	0.65
POS_INT	6.12	1.14	-2.07	0.33	5.5	0.66	5.87	1.22	-1.87	0.33	5.18	0.65
PRE_SPA	2.83	0.74	0.43	0.33	-0.88	0.66	2.69	0.56	-0.16	0.33	-0.81	0.65
POS_SPA	2.73	0.75	0.64	0.33	-0.48	0.66	2.59	0.60	0.41	0.33	-0.21	0.65
PRE_SPE	55.86	23.21	-0.55	0.33	0.76	0.66	54.72	18.70	-0.41	0.33	-0.89	0.65
POS_SPE	64.51	21.60	-0.82	0.33	0.32	0.66	59.41	20.7	-0.52	0.33	-0.21	0.65
PRE_SA	2.11	0.93	0.77	0.33	-0.24	0.66	1.97	0.76	0.52	0.33	-0.58	0.65
POS_SA	1.81	0.89	0.98	0.33	-0.13	0.66	2.04	0.89	0.57	0.33	-0.45	0.65
ENJOY	5.87	0.90	-0.74	0.33	0.14	0.66	5.39	0.95	-1.19	0.33	1.68	0.65

Note. TSE = task self-efficacy, ranges 0-100%; INT = intention, ranges 1-7; SPA = social physique anxiety, ranges 1-5; SPE = self-presentational efficacy, ranges 0-100%; SA = social anxiety, ranges 1-5; ENJOY = enjoyment, ranges 1-7; PRE = Pre-test scores; POS = Post-test scores.

4.1.3.2 Homogeneity of Variance. For this present study the sample sizes were approximately equal ($n_{\text{enriched}} = 51$ and $n_{\text{bland}} = 52$). The homogeneity of variance assumption was met as all F_{max} values ranged from 1.12 to 2.15.

4.1.3.3 Linearity. Linearity was assessed by inspection of bivariate scatterplots by group, for all possible combinations of variables. Both variables in the plots were normally distributed and related in a linear fashion, the graphs displayed an oval shape for all possible combinations of variables. After inspection of all plots, all relationships met this assumption.

4.1.3.4 Multicollinearity. Variables that were considered highly correlated ($r = .90$ or higher) were considered potential multicollinear variables (see Table 3 for all correlations by group; correlations reported in the text are for the entire sample). For this study there was no indication of multicollinearity.

4.1.3.5 Independence of Covariate Effects. Because the covariates (pre-task scores) were measured prior to the manipulation this assumption was met. Participants were also randomly assigned to conditions; therefore the condition had no effect on the covariates.

4.1.3.6 Homogeneity of Regression Slopes. The present study met this assumption as all interaction terms were non-significant for all dependent variables, all $ps > 0.05$.

Table 3

Pearson Bivariate Correlations between Study Variables by Group

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. PRE_TSE	1	.532**	.197	.343*	.043	.023	.400**	.350*	-.519**	-.290*	.172	-.090	.343*
2. POS_TSE	.731**	1	.168	.318*	-.109	-.129	.257	.327*	-.154	-.319*	.374**	-.245	.243
3. PRE_INT	.296*	.258	1	.616**	.268	.332*	-.014	.087	.089	.076	.054	.274*	.238
4. POS_INT	.417**	.489**	.674**	1	.224	.176	.087	.408**	-.050	-.225	.457**	.107	.160
5. PRE_SPA	-.214	-.217	.096	.184	1	.870**	.267	-.095	.317*	.326*	.001	.336*	.118
6. POS_SPA	-.329*	-.327*	.081	.129	.899**	1	-.151	-.169	.364**	.495**	-.068	.465**	.222
7. PRE_SPE	.347*	.282*	-.085	-.069	-.576**	-.643**	1	.842**	-.511**	-.229	-.035	-.110	.275*
8. POS_SPE	.387**	.336*	-.118	-.057	-.492**	-.548**	.877**	1	-.381**	-.318*	.137	-.029	.242
9. PRE_SA	-.134	-.294*	.050	.071	.625**	.584**	-.474**	-.490**	1	.457**	-.040	.170	-.179
10. POS_SA	-.357*	-.474**	.088	.014	.607**	.709**	-.473**	-.551**	.749**	1	-.218	.221	-.012
11. ENJOY	.407**	.384**	.356*	.469**	-.130	-.216	.187	.114	-.046	-.198	1	-.108	-.150
12. BMI	.167	.392**	.220	.269	.164	.196	-.406**	-.306*	-.010	-.066	.143	1	-.016
13. PA	.329*	.256	-.034	.198	-.058	-.052	.387**	.399**	-.117	-.147	.068	-.026	1

Note. Enriched trainer values shown below the diagonal; bland trainer values shown above the diagonal. BMI = Body Mass Index; PA = physical activity; TSE = task self-efficacy; INT = intention; SPA = social physique anxiety; SPE = self-presentational efficacy; SA = social anxiety; ENJOY = enjoyment. PRE = Pre-test scores; POS = Post-test scores.

4.1.4 Manipulation Checks

4.1.4.1 Randomization Check. A series of independent sample t-tests were conducted. There were no significant differences between the two groups on any demographic or pre-test dependent variables (all p s > 0.05), indicating randomization was effective.

4.1.4.2 Perceptions of Trainer. A series of independent sample t-tests were performed to compare each item from the perception of trainer measure between the two groups. The results showed that the trainer in the enriched group was perceived as more positive (i.e., good) in comparison to the bland trainer, ($t(100) = -3.65, p = 0.001$). The enriched style was also perceived as more pleasant ($t(100) = -3.67, p < 0.001$), relaxed ($t(100) = -2.58, p = 0.001$), and energetic ($t(100) = -5.70, p = 0.001$) compared to the respective bland trainer (see Table 4 for Perceptions of Trainer by Group).

Table 4

Perceptions of Trainer by Group, Performance & Rating of Perceived Exertion (RPE)

Variable	Enriched Trainer		Bland Trainer	
	Mean	SD	Mean	SD
Bad/good*	2.78	0.42	2.24	0.99
Unpleasant/pleasant*	2.78	0.42	2.23	1.02
Tense/relaxed*	2.69	0.79	2.16	1.24
Flat/energetic*	2.24	0.79	0.84	1.55
Pre-Hand Grip (kg)	26.1	6.4	25.5	5.9
Post-Hand Grip (kg)	26.5	6.9	25.6	5.4
Pre-RPE	5.50	2.29	5.84	2.34
Post-RPE	6.39	2.23	6.99	2.46

Note. Participants were asked by questionnaire: “In regards to the trainer delivering the introductory session today, please rate her on the following attributes: bad/good, unpleasant/pleasant, tense/relaxed, flat/energetic” ranges (-3) to (+3) on a bipolar scale.

* $p < .05$

4.1.4.3 Rating of Perceived Exertion. RPE did not differ on pre-test and post-tests between groups; both groups worked equally as hard ($t(101)_{\text{pre-test}} = 0.74, p > 0.05$) and ($t(101)_{\text{post-test}} = 1.29, p > 0.05$). Means and standard deviations for the ratings of perceived exertion are provided in Table 4.

4.1.4.4 Checklist for Consistency. A percentage correct score ($\# \text{ correct cues/instructions} \div \text{total possible instructions} * 100$) was calculated. The percentages ranged from 96% to 100% (1 to 12 errors respectively). These errors represented missed instructional cues for a single session; these results indicate that the trainer remained consistent from participant to participant. Previous studies using similar checklists have suggested that an accuracy of 90% or higher was adequate to maintain consistency across and within conditions.

4.2 Hypothesis Testing. Upon successful manipulation of the two leadership styles (bland and enriched), the trainers were perceived differently. Hypothesis testing was carried out to see if the manipulation of the trainer's leadership style led to any differences in exercise-related outcomes.

Hypothesis 1. To test the hypothesis that following a training session enjoyment would be higher in the enriched condition than the bland condition, an independent samples t-test was conducted. The condition (enriched or bland) was the independent variable and enjoyment was the dependent variable. Analysis showed that the participants in the enriched group reported significantly higher levels of enjoyment ($t(101) = -2.60, p = 0.01$) compared to participants in the bland leadership style group. Means and standard deviations are provided in Table 2.

Hypothesis 2. To test the hypothesis that SA and SPA would be lower in the enriched condition than the bland condition, two ANCOVAs were conducted. In the first ANCOVA, post-task SPA was the dependent variable and the condition (bland or enriched) was the independent variable. Pre-task SPA and BMI were the covariates respectively. BMI was entered as a covariate as bivariate correlations demonstrated that SPA and BMI were moderately correlated ($r = 0.23, p < 0.05$). The analysis showed no difference between the conditions ($F(1,102) = 0.026, p = 0.87, \eta_p^2 = 0.001$) even after controlling for pre-SPA and BMI.

In the second ANCOVA, post-task SA was the dependent variable and the condition (bland or enriched) was the independent variable. Pre-task SA was entered as a significant covariate ($p < 0.05$). Analysis showed a significant difference between groups; participants in the bland group condition reported higher levels of SA than those in the enriched condition ($F(1,102) = 5.47, p = 0.02, \eta_p^2 = 0.052$; see Table 2 for all means and standard deviations).

Hypothesis 3. To test the hypothesis that TSE, SPE, and intention would be higher in the enriched condition compared to the bland condition, three ANCOVAs were conducted.

In the first ANCOVA post-TSE was the dependent variable and the condition (enriched or bland) was the independent variable. Pre-TSE and physical activity (PA; BMI was not a significant covariate) were the covariates respectively. PA and pre-TSE was added as covariates as bivariate correlations demonstrated that PA was moderately correlated to post-TSE ($r = 0.62, p < 0.05$ respectively). There were no differences

between conditions for TSE ($F(1,102) = 1.23, p = 0.27, \eta_p^2 = 0.012$). PA and pre-TSE were both non-significant covariates ($ps > .05$).

In the second ANCOVA, post-task SPE was the dependent variable and the condition (enriched or bland) was the independent variable. Pre-task SPE, BMI and PA were the covariates respectively. PA and BMI were added as covariates as bivariate correlations demonstrated moderate relationships between: PA and self-presentational efficacy ($r = 0.31, p < 0.05$), BMI and self-presentational efficacy ($r = -0.29, p < 0.05$). Both PA and BMI were non-significant covariates ($p > 0.05$); pre-self-presentational efficacy was a significant covariate ($p < 0.05$). There were no significant differences between conditions, although results approached significance ($F(1,102) = 3.44, p = 0.06, \eta_p^2 = 0.034$).

In the third ANCOVA, post-task intention score was the dependent variable and the condition (bland or enriched) was the independent variable. Pre-task intention and BMI were the covariates. BMI ($r = 0.20, p < 0.05$) was added as a covariate as bivariate correlations indicated a small relationship with post-task intention. BMI was a non-significant covariate ($p > 0.05$), while pre-intention was a significant covariate ($p < 0.05$). Analysis showed that intention was significantly higher in the enriched condition than the bland condition ($F(1,102) = 3.99, p = 0.04, \eta_p^2 = 0.039$; see Table 2 for all means and standard deviations).

Hypothesis 4. To test the hypothesis that handgrip strength would be higher in the enriched condition compared to the bland condition an ANCOVA was conducted. Post-task handgrip was the dependent variable and the condition (bland or enriched) was the independent variable. Pre-task handgrip score was the covariate, and was a significant

covariate ($p < 0.05$). Analysis showed no differences between the groups ($F(1,102) = 0.289, p = 0.59, \eta_p^2 = 0.003$; see Table 4 for group means and standard deviations).

CHAPTER FIVE: DISCUSSION

The goal of the present study was to examine the effect of leadership style (i.e., bland versus enriched) of personal trainers on exercise-related outcomes in novice female weight trainers. More specifically, it was hypothesized that enjoyment, task self-efficacy, self-presentational efficacy, intention and handgrip performance would be higher in participants in the enriched condition than those in the bland condition; and that social anxiety and social physique anxiety would be lower in participants in the enriched condition than those in the bland condition. Upon successful manipulation of the two leadership styles (i.e., the enriched personal trainer was perceived significantly better, more positive, pleasant, relaxed, and energetic compared to the bland trainer), partial support for the hypotheses was found. Specifically, enjoyment and intention were higher in the enriched condition compared to the bland condition; conversely, social anxiety was higher in the bland condition than the enriched condition. Contrary to our hypotheses, other variables (i.e., task self-efficacy, self-presentational efficacy, social physique anxiety, and handgrip performance) were not different between the two leadership style conditions.

5.1 Sample Characteristics

Overall, the participants in the present study represented a typical sample of university women. Mean BMI was in the healthy range for both groups (23.41 for those in the bland condition and 23.77 for those in the enriched condition; Health Canada, 2012). Generally, participants in this study were fairly physically active ($M_{PA} = 32.44$ METs/week for the enriched, $M_{PA} = 34.73$ METs/week for the bland). This is not

surprising, as 43% of participants reported majoring in Kinesiology or Physical Education at school.

5.2 Hypothesis #1: Enjoyment

The present study found that within a personal training (one-on-one) setting, participants in the enriched leadership style condition reported significantly higher levels of enjoyment compared to participants in the bland leadership style condition, consistent with the hypothesis. This finding is consistent with previous research in group fitness settings have found participants in fitness classes with an enriched leadership style instructor reporting higher enjoyment compared to a bland leadership style instructor (Bray et al., 2005; Fox et al., 2000; Raedeke et al., 2007; Turner et al., 1997). Thus, it appears across different fitness settings that the style of the exercise leader can have a positive impact on enjoyment of exercise participants.

For example, Turner et al. (1997) found that participants reported higher levels of enjoyment in the enriched instructor approach to the class compared to the bland instructor approach. Likewise, Fox et al. (2000) also found that participants who experienced an exercise class with an enriched instructor reported higher levels of enjoyment compared to those in the bland instructor condition. Bray et al. (2005) also supported the positive effects of an enriched leadership style on enjoyment. They found that an enriched leadership style paired with varied choreography led to higher levels of enjoyment compared to a bland leadership style, indicating that the findings on enjoyment of the enriched leadership style from previous studies is consistent with the present findings.

Further, this finding appears to be quite robust, as previous studies have varied slightly in how they measured enjoyment. Specifically, some studies measured enjoyment in relation to the exercise session (i.e., exercise group dynamics or leadership styles; Fox et al., 2000; Raedeke et al., 2007), whereas other studies measured enjoyment levels in relation to the required skills *and* how the instructor delivered those skills (Bray et al., 2005; Turner et al., 1997). Regardless of how enjoyment was measured, participants from previous studies reported higher enjoyment in the enriched leadership style condition.

It is perhaps not surprising that the trainer had a significant impact on enjoyment in the present study. Wininger and Pargman (2003) found several factors that contributed to exercise enjoyment. They found that the exercise instructor was one of the top three factors that contributed to overall exercise enjoyment. Specifically, they concluded that the instructor's enthusiasm was one of the most important characteristics for an exercise instructor to demonstrate in order to enhance enjoyment in exercise participants. In the present study, the enriched leadership style condition demonstrated a greater level of enthusiasm than the bland leadership style, which may have led to higher levels of enjoyment.

5.3 Hypothesis #2: Social Anxiety and Social Physique Anxiety

The present study found that participants in the bland leadership style condition reported higher levels of social anxiety compared to those in the enriched leadership style condition. This finding is consistent with Martin and Fox (2001), who found participants tended to have less social anxiety when the instructor used an enriched leadership style compared to when she used a bland leadership style.

One reason for lower social anxiety may have been due to the type of feedback (positive or negative) provided to participants. Specifically, in the enriched leadership style condition, feedback was positively phrased, while in the bland leadership style condition, feedback was negatively phrased (i.e., mistakes were pointed out and corrected). According to Martin and Fox (2001) participants receiving positively phrased feedback may not have worried about receiving negative feedback, and thereby feeling embarrassed about their skill level, lowering their levels of social anxiety.

Further, concern over being evaluated by others (particularly negatively), or even the thought of being evaluated by others (Leary & Kowalski, 1995), can increase social anxiety. Participants in the enriched condition received ample amounts of positive feedback and therefore may not have been concerned about being negatively evaluated by the trainer. By contrast, in the bland condition mistakes were pointed out, perhaps increasing concern over receiving negative evaluations and thus leading to greater social anxiety. The enriched leadership style condition of the present study also addressed questions or concerns the participants may have had and ensured they were comfortable with the assigned exercises. This may have decreased any worry or concerns leading to any possible increases in social anxiety. Further, in the present study, participants in the enriched condition were reassured when more challenging exercises were presented. For example, when the enriched trainer demonstrated the hamstring curl she noted that it was a more difficult exercise to perform for everyone their first time, thus possibly diffusing any possible feelings of social anxiety or worry over evaluation (if the participant was to be unsuccessful). Further, as participants were novices to weight training they may have been concerned that they were doing something incorrectly, leading to social anxiety.

However, in the enriched condition, they received feedback that their technique was proper, so they knew they were doing the exercises correctly, especially within this new exercise setting, and therefore experienced less social anxiety.

In the present study we informally observed that participants in the enriched condition tended to initiate more conversation or were less hesitant to ask questions on technique, or to gain additional information/clarification during the training session. Bland condition participants, by contrast, did not inquire about other training techniques or a specific training schedule like the enriched condition participants. Further, those in the bland condition engaged in behaviours that reflected increases in social anxiety as they left quickly after they were debriefed, which may be a possible protective measure (Leary & Kowalski, 1990).

By contrast, the present study found no significant differences for social physique anxiety between the two groups, even after controlling for pre-test scores. Previous studies to date have not explicitly examined the effects of leadership styles on social physique anxiety. One explanation for the lack of difference in social physique anxiety is that participants were able to self-select their apparel, reducing appearance-related concerns in all participants, regardless of group. Participants were asked by email to “come dressed for physical activity”. Some participants arrived in pants and a t-shirt or a sweatshirt. It is possible that participants used their personal option to wear what they wished as a protective mechanism for body-related concerns (Crawford & Eklund, 1994; Kowalski, Mack, Crocker, Niefer, & Fleming, 2006; Leary & Kowalski, 1995).

It may also be possible that the emphasis on form and technique resulted in a decreased emphasis on physique and appearance in the present study, leading to the lack

of difference between the two groups. Within the present study, it is possible that because in both the enriched and bland conditions, the trainer wore typical personal training attire (i.e., loose fitting t-shirt, shorts or pants) and she did not emphasize physical appearance, or appearance-related outcomes of exercise, participants may not have perceived that their appearance would be evaluated, thus making participants feel more comfortable about their bodies and less likely to experience social physique anxiety.

With this in mind, it is also possible that participants may have had previous experience in an exercise setting (i.e., although they did not weight train, many did engage in other physical activity) and thus were used to wearing gym attire. Similarly, it is also possible that because a large portion of the sample consisted of students who were majoring in Kinesiology or Physical Education at school, they may have been more comfortable with their bodies and physical appearance in an exercise setting, as they may have been exposed to this type of setting previously. It is also possible that participants who are uncomfortable with their bodies (e.g., high body image concerns) were not willing to participate in this type of study; if they were more comfortable, they may have been less likely to experience social physique anxiety in any physical activity setting.

5.4 Hypothesis #3: Task Self-Efficacy, Self-Presentational Efficacy and Intention

The present study found no differences in either task self-efficacy or self-presentational efficacy between the two conditions, even after controlling for pre-task scores, contrary to the hypotheses. For task self-efficacy, this finding is consistent with Raedeke et al.'s (2007) study that investigated the effects of a health versus appearance-focused leadership style (in addition to the presence or absence of mirrors) on task self-efficacy (as well as other variables) in women high in social physique anxiety. They

found no differences in task self-efficacy between groups. Similar to the present study, Raedeke et al.'s (2007) study included participants with relatively high initial task self-efficacy, which may explain the results of the present and previous findings; if participants were high in task self-efficacy prior to the training session, the trainer's leadership style may not have made as great of an impact as if the participants had been low in task self-efficacy. Further, in both conditions, participants were informed in advance that the session was specifically designed for novices. They were also all provided with detailed instruction prior to beginning each exercise as well as a demonstration of how to do the exercise correctly. This information may have been more important in influencing task self-efficacy than the style of instruction.

By contrast, Turner et al. (1997) investigated a bland versus enriched leadership style and its effects on task self-efficacy after a single bout of ballet. Contrary to the present study, the socially enriched leadership style enhanced task self-efficacy for the ballet class. Turner et al. (1997) placed a greater emphasis on a leadership style that maximized effortful learning of a highly skilled behaviour. This high frequency of instruction may have led to the present differences between the studies enriched leadership styles. Further, the present study's participants demonstrated relatively higher levels of task self-efficacy prior to the training session compared to participants in Turner et al.'s (1997) study. The present study demonstrated a mean of 79.45% in the pre-test task self-efficacy measure and 88.12% for the post-test measure, compared to Turner et al. (1997), who had a much lower pre-test mean (54.78%) as well as a post-test mean (61.56%) for task self-efficacy. It is possible that participants in the present study could

have experienced a ceiling effect, where they were already efficacious, and thus it was difficult to increase task self-efficacy further.

In addition, the difference in findings in the present study and Raedeke et al. (2007) versus Turner et al.'s (1997) research may be due to the contextual differences between the exercise settings used. For example Raedeke et al. (2007) used a step aerobic class, and the present study used a weight training orientation, two common activities that participants would be familiar with, or observed previously at a fitness facility. In the weight training setting, movements were discrete and participants were given as much time as they required to complete each exercise correctly – thus all participants in the present study experienced success. By contrast, in the dance class, where movements may flow into one another and participants may not master all the movements, there may be greater opportunities to observe differences in task self-efficacy between the two leadership styles. Further, confident participants could successfully perform all the weight training exercises.

No studies to date have explicitly examined the effects of leadership style on self-presentational efficacy. Contrary to the hypothesis, no difference in self-presentational efficacy between the two groups was found. It is possible that the present study did not use complex enough tasks, or was not demanding enough, to induce any doubt in participants' ability to create an impression of being seen as an exerciser. Participants were also physically active prior to their participation; given that the items measuring self-presentational efficacy reflect outcomes associated with all types of exercise (not just weight training), it is possible that participants may have felt they already portrayed the

impression of being seen as an exerciser to the extent they were capable; and therefore the leadership manipulation had no effect.

However, the present study did find that participants in the enriched leadership style condition reported higher levels of intention to continue the weight training program compared to those in the bland leadership style condition, consistent with the hypothesis. Present findings are similar to previous work by Raedeke et al.'s (2007) study, where participants assigned to the health-oriented condition also reported higher intentions of future participation. In Raedeke et al.'s (2007) study, the leader created a casual atmosphere with an emphasis on health and positive feedback (i.e., the instructor wore gym shorts and a t-shirt and would provide feedback such as 'shoulders back for good posture'). Her positive style of feedback was very similar to the present studies enriched style of leadership.

Contrary to present findings, Bray et al. (2005) examined the effects of exercise leadership style (bland and enriched) and program choreography (varied versus repetitive) on intention to exercise. They found that a socially enriched leadership style and varied choreography were associated with greater enjoyment, but had no effect on exercise intention. However, Bray et al. (2005) noted that the intention measure used in their study was not consistent with the current literature (i.e., not specific enough in terms of time frame and frequency of exercise). Further, they noted their small sample size limited their statistical power. Despite Bray et al.'s (2005) findings, the majority of previous research supports the use of an enriched leadership style to increase positive exercise outcomes like intention (Wininger & Pargman, 2003).

It is possible that the increase in intention to exercise in the present study was due to overall enjoyment of the instructor. Raedeke et al. (2007) found that affective responses, such as enjoyment, and efficacy were related to future intentions and that enjoyment and future intentions were strongly correlated; similar to the present study, enjoyment and post-intention were moderately correlated ($r = 0.47, p = 0.00$). They concluded that effectively creating an atmosphere that maximizes enjoyment through a fitness trainer's leadership style might be a precursor to continued involvement. As previously stated, in the present study, those who were assigned to the enriched leadership style condition reported higher enjoyment compared to those in the bland leadership style condition.

5.5 Hypothesis #4: Handgrip Performance

It was hypothesized that handgrip performance would be higher in the enriched condition than the bland condition; contrary to our hypothesis, there was no difference in handgrip performance between groups. Previous studies to date have examined the effects of leadership styles of instructors on psychological outcomes; they have not yet looked at performance outcomes. There are several possibilities for why the leadership style manipulation failed to impact performance.

Previous work has shown that a variety of factors (e.g., the presence of an audience) can impact performance in a variety of physical activity tasks (Boutcher, Fleischer-Curtain, & Gines, 1998; Rhea, Landers, Alvar, & Arent, 2003; Worringham & Messick, 1983). For example, Worringham and Messick (1983) looked at the influence of the presence of others on running performance in men and women. They found that men running past a female facing them ran faster than men running past a female facing away

from them, or men running without the presence of anyone else. They attributed this finding to social facilitation and the runners' desire to 'look good' to others by increasing their speed. Later, Boutcher et al. (1988) examined the audience-pleasing and self-constructural aspects of self-presentation on perceived exertion. They found that men exercising alone at high intensities in front of female researchers reported lower perceived exertion than those exercising in front of male researchers at the same workloads. However, there were no differences in heart rate reported in any of the conditions.

More recently, Rhea et al. (2003) examined the effects of the presence of an audience and competition on maximal weight lifting performance in university men and women. They examined a one-repetition maximum (1-RM) chest press performance in a recreational sport environment, testing under three social conditions: performing in coaction (where individuals performed along side one another), competitive coaction (rivalry between competitors), and with an audience (as spectators). They found a significant difference between competitive co-action and coaction trials, as well as between audience and coaction trials. Both men and women achieved the highest 1-RM in front of an audience. Similarly, Crozier (2012) examined the impact of the muscularity and expertise of the trainer on 1-RM performance in college men with a minimum of 6 months weight training experience. He found that the group with the muscular expert trainer recorded significantly higher maximal strength values for both the chest press and leg press compared to the group with the lean novice trainer, providing evidence that the trainer can have an impact on performance.

It is possible that the presence of the personal trainer and research assistant during the strength testing in the present study could have served as an audience and thus impacted performance in both groups, consistent with findings by Rhea et al. (2003). It is also possible that the method of strength testing also impacted the findings. A submaximal-test was used for safety; however, participants were unable to visually see the amount of weight being moved (compared to chest-or leg-press machines). It is possible that without feedback on the amount of weight they were moving they might not have tried as hard. Participants also only shared the results with the research assistant (i.e., by showing them the score on the screen), and therefore may not have worried what the trainer would think. For example if they were motivated to impress the trainer or to prove to her their abilities they may have tried harder, but because the trainer had no indication of the scores the participant may have lost interest or motivation to perform.

The nature of task may also have had an influence. The handgrip task is not an inherently rewarding or meaningful task. For example, participants may feel more rewarded if they can visually see a task being accomplished (i.e., moving a large amount of weight from point A to point B). The handgrip is also not a functional type of task. For example, there are few tasks in one's daily activities that require a maximal amount of handgrip strength in order to accomplish the goal (i.e., opening a jar). Therefore, it is possible that participants may not have considered handgrip strength a priority or of great value (as they were novices to weight training); thus, they may have had minimal interest in achieving optimal scores. This suggestion is supported by the relatively low RPE scores reported by participants. Participants were also recruited from a non-weight training population to participate in a weight training orientation, not a 'maximal strength

score test'; therefore participants may have been less motivated to perform well on the strength test as opposed to learning a new skill, or obtaining their course credit that was offered as compensation.

It is also important to note that it is possible that both leadership styles could have motivated participants in different ways. For example, in the enriched leadership style condition, the trainer encouraged participants and she created the impression that she wanted participants to do well; therefore participants may have tried harder to prove to the trainer that they also cared to do well, and show that the trainer was doing a good job. By contrast, in the bland leadership style condition, this effect could have worked in the opposite way, where participants may have adopted a desire to 'show' the trainer what they were capable of, in an attempt to receive better feedback or to possibly 'prove' themselves as capable exercisers. It is also important and interesting to note that when reviewing our manipulation checks for handgrip, participants claimed they were working harder (RPE) post- exercise in both groups, but after comparing scores neither group physically increased.

5.6 Limitations

While the findings of the present study contribute to the current literature on the effects of leadership styles on psychological exercise-related outcomes in physical activity settings, some limitations should be considered. The present study's sample comprised only university students and is therefore generalizable only to university women 17-35 years of age. The participants in this study also had not engaged in weight training within the past year and had never worked with a personal trainer or received an orientation to weight training; therefore, participants were novices to weight training. The

findings may not apply to individuals with greater weight training experience or those who have received weight training orientation previously. Further, this study recruited women to participate in an introductory weight training orientation for novice weight lifters. Therefore, those who were less efficacious or more anxious about exercise settings were likely not as willing to participate in the study. These findings may also only pertain to those with lower body image concerns, as those with poorer body image are likely not willing to volunteer to participate for a study like this. Therefore, these results cannot be applicable to a population who may be high in these concerns. It is also possible that other outcomes could also be influenced by the leadership style of the personal trainer. For example, other self-presentational concerns (e.g., fear of negative evaluation) and exercise-related outcomes (e.g., affect) may also be relevant in this setting, but were not investigated in the present study.

Despite the strong efforts to keep the setting consistent across both conditions except for the leadership style, it is possible that other characteristics of the trainer could have possibly affected other related concerns (i.e., other trainer behaviours). However, this explanation is unlikely. Variables such as clothing worn by the trainer were kept the same across all sessions. Further, the use of the checklist ensured that the trainer kept all other behaviours as consistent as possible. Additionally, the trainer followed the script closely and only offered additional information (as appropriate) in the enriched condition. However, with more curious participants additional information was revealed, which could have changed participants perceptions of the trainer. It is also possible that participants could have acted differently as they were in a novel testing environment.

Further, the length of data collection period required many individuals (approximately 10) to help out as research assistants; it is possible this variability could have affected the results, particularly the post-test scores. For example, if a research assistant's personality was more bland or enriched, compared to the desired neutral approach, it may have altered a participant's scores. However, after comparing the pre-task scores (before participants met the trainer) between the two groups, no differences were found, thus providing evidence that the research assistants had no influence from participant to participant. It is also important to note that the research assistant was blind to the assigned leadership style until the session began. While it is possible that the research assistant could have changed their behaviours once they knew the leadership style, this is unlikely as research assistants were trained to maintain a standardized neutral interaction with the participant. It should also be noted that the student investigator played both leadership styles, one of which was very natural to her (enriched) and one that was more difficult for her to master (bland). However, adding a second trainer (i.e., one who was naturally more bland) would have introduced other environmental and social factors that could have impacted the results.

Finally, the performance task was not the most challenging task. The primary consideration was that it was a safe, sub-maximal test to evaluate overall body strength. Because this task could have been too easy for participants, they could have had higher levels of confidence, or task self-efficacy to complete the task, despite the condition. The trainer was also off to the side of the room during the evaluation, which could have potentially altered the overall outcomes. Also, with self-report measures, there is the concern that they will not be answered correctly or honestly, despite the confidentiality or

reminder that they will not be identified once submitted. We also have to assume that participants were blind to the true purpose of the study.

5.7 Future Directions

The present study has further provided evidence that leadership styles of fitness instructors can alter exercise-related outcomes. However, the present study has extended this finding from a group exercise setting to a personal training setting. Nonetheless, further research is needed and should explore other variables in the exercise environment that could impact psychological and performance outcomes; for example, trainer credentials (i.e., number of certifications, number of clients previously trained, etc.) and other physical activities (i.e., running, or a team or individual sport). It is important to expand our knowledge on ideal training environments to decrease negative psychological impacts for exercisers, while positively increasing intention for exercise.

Future studies should further evaluate the ideal leadership style (i.e., socially enriched, health-oriented, providing positive feedback). More specifically, it should be determined which style is most preferred for various populations (i.e., males versus females, university aged or older adults), especially in various environments (i.e., performance settings, for example fitness consultations, or health tests). This would be important to create a more positive physical activity environment and in turn increase adherence.

Future studies should further examine participants' motivation (i.e., how important increasing their strength is for them) and specific fitness goals. For example, it could be that the current sample may not have been motivated to improve their weight training technique, but rather used participation in the study to fulfill course assignment

requirements. The results may differ in samples highly motivated to begin weight training.

It would also be beneficial for future research to replicate this study but also to examine long-term outcomes such as adherence rates or strength increases over time, to determine whether leadership style has more long-term effects. And lastly, future research should replicate the present study to determine if similar results are found in other populations (i.e., males, youth, middle-age, and older adults), those with various education levels and various demographic variables (i.e., those who are not physically active, to high performance athletes).

5.8 Implications

5.8.1 Implications for Research

Current trends and the ACSM's worldwide survey for 2013, suggested that personal trainers and small group personal training were two of the top 10 trends for the upcoming year (Thompson, 2011). Thus, it is important to further investigate the impact of the personal trainer on exercise-related outcomes. The present study makes a unique contribution to the current field of research on leadership styles in exercise settings, by providing a template for bland and enriched leadership styles in personal training contexts for future researchers to further examine other exercise-related outcomes. It is evident from the results of this study that the personal trainer can have an impact on some psychological outcomes, including social anxiety, enjoyment and intention, much like group fitness instructors can have an impact on their participants. It is important to understand that not only can the experimental manipulation (i.e., leadership style) have an effect on participant's outcomes, so can the exercise session itself.

Secondly, previous studies have demonstrated the short-term effects of a single bout of physical activity on psychological outcomes (i.e., improvements in mood, enjoyment, vigor, and fatigue, as well as decreases in depressive symptoms; Bartholomew, Morrison, & Ciccolo, 2005; Hansen, Stevens, & Coast, 2001; Yeung, 1996). The present study further suggests it is important to let participants actually exercise in research studies examining exercise-related outcomes in response to an experimental manipulation. It is critical that these outcomes are looked at in the context of actual exercise, and not just as a result of imagining or anticipating exercise, as the outcomes may differ. Therefore, future research should take this into account when carrying out similar studies to further control for possible variables (i.e., specific exercises and exercise environments).

5.8.2 Implications for Practice

Weight training is recommended for many reasons, not just to increase strength and functionality. Its benefits include decreased risk for some diseases (e.g., osteoporosis), injury prevention, and improvements in body image and self-image (Doyle et al., 1987; Fahey et al., 2013; Fleck & Kramer, 2004; Pollock et al., 1997). It is important for practitioners to understand the wide range of these benefits, and to optimize training environments that will best foster positive exercise-related outcomes. It is evident from the present study that the enriched leadership style produced more positive outcomes than the bland condition (i.e., greater enjoyment and intention, and lower social anxiety), similar to findings in group exercise settings (Bray et al., 2005; Fox et al., 2000; Martin & Fox, 2001; Raedeke et al. 2007; Turner et al., 1997). In turn, these factors should enhance exercise behavior and adherence (Bray et al., 2005; Fox et al., 2000;

Raedeke et al. 2007). These findings suggest personal trainers should generally adopt a more enriched style of leadership to increase positive outcomes like enjoyment and intention. Current and previous findings both suggest the positive psychological outcomes of the enriched leadership style, which should be further implemented in order to develop a more enjoyable exercise experience, particularly in novice weight trainers. It is important to consider the evidence from both Martin and Fox's (2001) study and the present study findings that a bland leadership style may be anxiety provoking. Females may become more efficacious in their abilities to increase their physical activity with a more socially supportive (enriched) leadership style, and in turn, their social anxiety may decrease. According to McAuley (1995) exposure to even a single bout of physical activity has been shown to have a positive influence on a broad range of psychological outcomes (i.e., positive and negative affect, and energetic arousal), which may ultimately impact future exercise behavior.

Given the consistency of findings of the positive impact of the enriched leadership style in both group exercise and personal trainer settings, it is possible that it may also be beneficial in other physical activity settings (e.g., rehabilitation). Wininger and Pargman (2003) stated that the feelings of enjoyment might replace negative feelings (i.e., depression or anxiety) and that the use of positive reinforcement may increase positive affective states. Therefore, with increases in enjoyment in the enriched condition, participants could experience more positive feeling states, and may have increased intention to complete exercise programs or goal oriented programs (i.e., weight loss or strength training).

Lastly, within the fitness industry it would be beneficial for certifying bodies like Certified Personal Trainers Network (CPTN) to incorporate findings from the present study into their training programs to create a ‘standard of training’. Companies such as CPTN would benefit greatly by implementing the ‘best practice’ within their professional training manual for future instructors and trainers. This section would be helpful to future professionals by providing specific examples (e.g., greeting participants by name, offering a choice of exercise modality, reassuring participants with any questions they may have, and following up with questions, as well as giving them positive performance feedback, etc.) of how to interact with clients most effectively, to ensure a positive exercise experience, especially with novice exercisers.

5.9 Conclusion

In conclusion, the present study examined two distinct leadership styles (i.e., bland and enriched) and their effects on exercise-related outcomes. Consistent with previous studies, the enriched leadership style elicited higher levels of enjoyment and intention while the bland condition participants reported higher levels of social anxiety. There were no significant differences found between conditions for social physique anxiety, task self-efficacy, self-presentational efficacy or handgrip performance. Overall, the results of this study suggest that enriched leadership styles of personal trainers can increase positive psychological outcomes in novice female weight lifters. The results of this study provide us with further understanding of leadership styles that can more specifically apply to personal trainers. The present study will better help us understand the positive approaches, strategies, and leadership styles personal trainers can adopt. Further, researchers can continue to determine a more ideal training setting for those who

may be more hesitant to begin a weight training program. In turn, the results of this study may increase personal trainers' awareness of their leadership style, while further developing an ideal training environment for women to begin a health-benefiting lifestyle, and increase their overall well-being.

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APPENDIX A

Poster

FREE WEIGHT TRAINING ORIENTATION FOR A STUDY INVESTIGATING THE PROCESS OF LEARNING EXERCISE SKILLS IN A WEIGHT TRAINING ENVIRONMENT IN NOVICE FEMALES

WHAT IS THE STUDY ABOUT...?

- The purpose of this research study is to examine responses to learning skills in a weight training orientation for women.

WHO CAN PARTICIPATE...?

- Females, 17-35 years of age who have never worked with a personal trainer before, and haven't weight trained in the past year.
- Able to safely perform physical activity (by passing the physical activity readiness questionnaire, Par-Q).

WHAT DO YOU HAVE TO DO...?

- Fill out several questionnaires and complete a weight training orientation and a strength test.
- Participation will take approximately 1 hour.

WHY GET INVOLVED...?

A FREE opportunity to learn proper weight training technique and receive a free weight training program.

If interested, please contact:

**Dr. Kimberley
Gammage
Associate Professor
Dept. of Kinesiology
Brock University
905-688-5550 (x3772)
kgammage@brocku.ca**

This study has been reviewed and received ethics clearance through Brock University's Research Ethics Board (file #13-117).

APPENDIX B

*Verbal Script***To make announcements around campus**

Research assistant introduces self:

We are doing a study investigating the process of learning exercise skills in a weight training environment for novices. We are looking for females (17-35 years) from the Brock Community to participate in this study. Participation will take approximately 1 hour of your time, and we will ask you to fill out several questionnaires and perform an introductory weight training session and strength test. To thank you for your participation, we hope that you will greatly benefit from a free weight training session and a program from a certified personal trainer. You may also use this study for course credit. This study has been reviewed and received ethics clearance through Brock University's Research Ethics Board (file #13-117).

If you would like to participate in this study or if you have any further questions, please contact Dr. Kimberley Gammage directly at kgammage@brocku.ca. Thank you for your time. I look forward to your participation!

Letter of Invitation

Date: Fall 2013

Title of Study: Learning exercise skills in a weight training orientation in female novice weight lifters

Principal Researcher: Dr. Kimberley Gammage, Associate Professor, Department of Kinesiology, Brock University

Co-Investigator: Dr. David Gabriel, Professor, Department of Kinesiology, Brock University

I, Dr. Kimberley Gammage, Associate Professor in the Department of Kinesiology at Brock University, invite you to participate in a research project entitled “Learning exercise skills in a weight training orientation in female novice weight lifters”.

The purpose of this study is to investigate how women learn exercise skills in a weight training environment. Participation will take approximately 1 hour. During your visit, you will complete an introductory weight training session one-on-one with a personal trainer and be asked to complete a series of questionnaires. You will also complete a test of strength. You will have the opportunity to increase your knowledge on proper exercise technique and safety and receive a copy of a weight training program.

If you have any pertinent questions about your rights as a research participant, please contact the Brock University Research Ethics Officer (905 688-5550 ext 3035, reb@brocku.ca)

If you have any questions, please feel free to contact me.

Thank you

Dr. Kimberley Gammage
Associate Professor
Dept. of Kinesiology
Brock University
905-688-5550 (x3772)
kgammage@brocku.ca

Dr. David Gabriel
Professor
Dept. of Kinesiology
Brock University
905-380-5871 (x4362)
dgabriel@brocku.ca

This study has been reviewed and received ethics clearance through Brock University’s Research Ethics Board (file # 13-117).

APPENDIX C

Baseline Questionnaires

Physical Activity Readiness
Questionnaire - PAR-Q
(revised 2002)

PAR-Q & YOU

(A Questionnaire for People Aged 15 to 69)

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. However, some people should check with their doctor before they start becoming much more physically active.

If you are planning to become much more physically active than you are now, start by answering the seven questions in the box below. If you are between the ages of 15 and 69, the PAR-Q will tell you if you should check with your doctor before you start. If you are over 69 years of age, and you are not used to being very active, check with your doctor.

Common sense is your best guide when you answer these questions. Please read the questions carefully and answer each one honestly: check YES or NO.

YES	NO	
<input type="checkbox"/>	<input type="checkbox"/>	1. Has your doctor ever said that you have a heart condition <u>and</u> that you should only do physical activity recommended by a doctor?
<input type="checkbox"/>	<input type="checkbox"/>	2. Do you feel pain in your chest when you do physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	3. In the past month, have you had chest pain when you were not doing physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	4. Do you lose your balance because of dizziness or do you ever lose consciousness?
<input type="checkbox"/>	<input type="checkbox"/>	5. Do you have a bone or joint problem (for example, back, knee or hip) that could be made worse by a change in your physical activity?
<input type="checkbox"/>	<input type="checkbox"/>	6. Is your doctor currently prescribing drugs (for example, water pills) for your blood pressure or heart condition?
<input type="checkbox"/>	<input type="checkbox"/>	7. Do you know of <u>any other reason</u> why you should not do physical activity?

If
you
answered

YES to one or more questions

Talk with your doctor by phone or in person BEFORE you start becoming much more physically active or BEFORE you have a fitness appraisal. Tell your doctor about the PAR-Q and which questions you answered YES.

- You may be able to do any activity you want — as long as you start slowly and build up gradually. Or, you may need to restrict your activities to those which are safe for you. Talk with your doctor about the kinds of activities you wish to participate in and follow his/her advice.
- Find out which community programs are safe and helpful for you.

NO to all questions

If you answered NO honestly to all PAR-Q questions, you can be reasonably sure that you can:

- start becoming much more physically active — begin slowly and build up gradually. This is the safest and easiest way to go.
- take part in a fitness appraisal — this is an excellent way to determine your basic fitness so that you can plan the best way for you to live actively. It is also highly recommended that you have your blood pressure evaluated. If your reading is over 144/94, talk with your doctor before you start becoming much more physically active.

DELAY BECOMING MUCH MORE ACTIVE:

- if you are not feeling well because of a temporary illness such as a cold or a fever — wait until you feel better; or
- if you are or may be pregnant — talk to your doctor before you start becoming more active.

PLEASE NOTE: If your health changes so that you then answer YES to any of the above questions, tell your fitness or health professional. Ask whether you should change your physical activity plan.

Informed Use of the PAR-Q: The Canadian Society for Exercise Physiology, Health Canada, and their agents assume no liability for persons who undertake physical activity, and if in doubt after completing this questionnaire, consult your doctor prior to physical activity.

No changes permitted. You are encouraged to photocopy the PAR-Q but only if you use the entire form.

NOTE: If the PAR-Q is being given to a person before he or she participates in a physical activity program or a fitness appraisal, this section may be used for legal or administrative purposes.

"I have read, understood and completed this questionnaire. Any questions I had were answered to my full satisfaction."

NAME _____

SIGNATURE _____

DATE _____

SIGNATURE OF PARENT
or GUARDIAN (for participants under the age of majority) _____

WITNESS _____

Note: This physical activity clearance is valid for a maximum of 12 months from the date it is completed and becomes invalid if your condition changes so that you would answer YES to any of the seven questions.

ID: _____

Demographic Questionnaire & Results Sheet

Age: _____

Height: _____ Weight: _____

Program: _____ Year in School: _____

Occupation (if not a student): _____

On average, how many times do you do cardiovascular activity (e.g., running, cycling, etc.) per week? _____On average, how many hours do you do cardiovascular activity (e.g., running, cycling, etc.) per week? _____On average, how many times do you weight train per week? _____

Have you ever received an orientation to weight training before? _____

Have you ever worked with a personal trainer before? _____

Pre	Post
Handgrip	Handgrip
R1: _____ L1: _____	R1: _____ L1: _____
R2: _____ L2: _____	R2: _____ L2: _____
R3: _____ L3: _____	R3: _____ L3: _____
R4: _____ L4: _____	R4: _____ L4: _____
R5: _____ L5: _____	R5: _____ L5: _____
RPE: _____	RPE: _____

ID: _____

GLTEQ

1. Considering a **7-day period** (a week), how many times on the average do you do the following kinds of exercise for **more than 15 minutes** during your **free-time** (write on each line the appropriate number)?

(a) **STRENUOUS EXERCISE (HEART BEATS RAPIDLY)** _____/week

(i.e. running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long distance bicycling)

(b) **MODERATE EXERCISE (NOT EXHAUSTING)** _____/week

(i.e. fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing)

(c) **MILD EXERCISE (MINIMAL EFFORT)** _____/week

(i.e. yoga, archery, fishing from river bank, bowling, horseshoes, golf, snow-mobiling, easy walking)

APPENDIX D

Pre-Test Questionnaires

ID: _____

PR - SSA-WT

Read each of the following statements carefully and indicate the degree to which the statement is characteristic or true of you as you think of **today's** upcoming weight lifting session. Use the following scale for your ratings:

1	2	3	4	5
Not at all a Concern	Slightly a Concern	Average Concern	Above Average Concern	Extreme Concern

1. I am concerned about looking uncoordinated in front of the personal trainer	1	2	3	4	5
2. Throughout the weight training session, I will be worried about embarrassing myself in front of the personal trainer	1	2	3	4	5
3. During the weight training session, I am worried the personal trainer will be evaluating my physique/figure.	1	2	3	4	5
4. I am concerned that the personal trainer will think that I am in poor physical condition	1	2	3	4	5

I.D. _____

PR - SPAS-S

Read each of the following statements carefully and indicate the degree to which the statement is true of you RIGHT NOW, according to the following scale:

- 1 = Not at all true
- 2 = Slightly true
- 3 = Moderately true
- 4 = Very true
- 5 = Extremely true

1. I am uptight about my physique/figure. _____
2. I am bothered by thoughts that other people are evaluating my weight or muscular development negatively. _____
3. I am nervous about unattractive features of my physique/figure. _____
4. Right now, I feel apprehensive about my physique/figure. _____
5. I am comfortable with how fit my body appears to others. _____
6. I am uncomfortable knowing others are evaluating my physique/figure. _____
7. I am shy because I am displaying my physique/figure to others. _____
8. I feel relaxed even though it is obvious that others are looking at my physique/figure. _____
9. _____
Sitting here in my shorts and t-shirt, I feel nervous about the shape of my body. _____

I.D. _____

PR – SPE

Think about the training session that you will be doing today. Using any values from this scale (0 to 100%), please indicate how confident you are for each of the following:

0%-----50%-----100%
Not at all confident Completely Confident

How confident are you that...

1. The trainer will think that you have good physical co-ordination. _____
2. The trainer will think that your body looks fit and toned. _____
3. The trainer will think that you have good stamina. _____
4. The trainer will think that you are someone who works out regularly. _____
5. The trainer will think that you are in good shape. _____

I.D. _____

PR - TS-E

For the following statements please list your level of confidence on a 0% = *no confidence* to 100% = *completely confident* for each of the following during your upcoming training session.

0%-----50%-----100%

How confident are you that you can...

- (1) pace yourself to avoid over-exertion _____%
- (2) perform all the required exercises _____%
- (3) follow directions from a personal trainer _____%
- (4) follow the training program provided at least 2 times /week for the next 4 weeks
_____%

I.D. _____

PR – INT

Please rate the following based on the upcoming training session today by placing a mark on the appropriate line.

I intend to follow my training program at least twice a week for the next 4 weeks.
extremely unlikely : _____ : _____ : _____ : _____ : _____ : _____ : _____ : extremely likely

I will try to follow my training program at least twice a week for the next 4 weeks
extremely unlikely : _____ : _____ : _____ : _____ : _____ : _____ : _____ : extremely likely

I plan to follow my training program at least twice a week for the next 4 weeks
extremely unlikely : _____ : _____ : _____ : _____ : _____ : _____ : _____ : extremely likely

Post-Test Questionnaires

I.D: _____

PS - SA-WT

Read each of the following statements carefully and indicate the degree to which the statement is characteristic or true of you as you think of the weight lifting session you just completed. Use the following scale for your ratings:

1	2	3	4	5
Not at all a Concern	Slightly a Concern	Average Concern	Above Average Concern	Extreme Concern

1. I felt concerned about looking uncoordinated in front of the personal trainer	1	2	3	4	5
2. Throughout the weight training session, I was worried about embarrassing myself in front of the personal trainer	1	2	3	4	5
3. During the weight training session, I was worried the personal trainer was evaluating my physique/figure.	1	2	3	4	5
4. I was concerned that the personal trainer thought that I am in poor physical condition.	1	2	3	4	5

I.D. _____

PS - SPAS-S

Read each of the following statements carefully and indicate the degree to which the statement is true of you RIGHT NOW, according to the following scale:

- 1 = Not at all true
- 2 = Slightly true
- 3 = Moderately true
- 4 = Very true
- 5 = Extremely true

1. I am uptight about my physique/figure. _____
2. I am bothered by thoughts that other people are evaluating my weight or muscular development negatively. _____
3. I am nervous about unattractive features of my physique/figure. _____
4. Right now, I feel apprehensive about my physique/figure. _____
5. I am comfortable with how fit my body appears to others. _____
6. I am uncomfortable knowing others are evaluating my physique/figure. _____
7. I am shy because I am displaying my physique/figure to others. _____
8. I feel relaxed even though it is obvious that others are looking at my physique/figure. _____
9. Sitting here in my shorts and t-shirt, I feel nervous about the shape of my body. _____

I.D. _____

PS – SPE

Think about the training session that you completed today. Using any values from this scale (0 to 100%), please indicate how confident you were for each of the following:

0%-----50%-----100%
Not at all confident Completely Confident

How confident are you that...

1. The trainer thought that you have good physical co-ordination. _____
2. The trainer thought that your body looks fit and toned. _____
3. The trainer thought that you have good stamina. _____
4. The trainer thought that you are someone who works out regularly. _____
5. The trainer thought that you are in good shape. _____

I.D. _____

PS - TS-E

For the following statements please list your level of confidence on a 0% = *no confidence* to 100% = *completely confident based on the weight training session that you just completed*.

0%-----50%-----100%

How confident are you that you...

- (1) paced yourself to avoid over-exertion _____%
- (2) performed all the required exercises _____%
- (3) followed directions from a personal trainer _____%
- (4) followed the training program provided at least 2 times /week for the next 4 weeks
_____%

I.D. _____

PS - INT

Think about the training session you performed today. With that in mind, please indicate your level of agreement for the following statements.

I intend to follow my training program at least twice a week for the next 4 weeks.
extremely unlikely : _____ : _____ : _____ : _____ : _____ : _____ : _____ : extremely likely

I will try to follow my training program at least twice a week for the next 4 weeks
extremely unlikely : _____ : _____ : _____ : _____ : _____ : _____ : _____ : extremely likely

I plan to follow my training program at least twice a week for the next 4 weeks
extremely unlikely : _____ : _____ : _____ : _____ : _____ : _____ : _____ : extremely likely

PACES

Think about the training session you performed today. With that in mind, please indicate your level of agreement for the following statements.

1. "I enjoyed it ..."						
1 NO	2	3	4 NEUTRAL	5	6	7 YES
2. "I felt interested..."						
1 NO	2	3	4 NEUTRAL	5	6	7 YES
3. "I liked it..."						
1 NO	2	3	4 NEUTRAL	5	6	7 YES
4. "I found it pleasurable..."						
1 NO	2	3	4 NEUTRAL	5	6	7 YES
5. "It was a lot of fun..."						
1 NO	2	3	4 NEUTRAL	5	6	7 YES
6. "It was very pleasant..."						
1 NO	2	3	4 NEUTRAL	5	6	7 YES
7. "I felt as though there was nothing else I'd rather be doing..."						
1 NO	2	3	4 NEUTRAL	5	6	7 YES
8. "I was very absorbed in this activity..."						
1 NO	2	3	4 NEUTRAL	5	6	7 YES

APPENDIX E

Manipulation Checks

I.D. _____

POT

In regards to the trainer delivering the introductory session today, please rate her on the following attributes

-----bad/good-----

(-3)	(-2)	(-1)	(0)	(+1)	(+2)	(+3)
Extremely	Moderate	Slightly	Neutral	Slightly	Moderately	Extremely

-----unpleasant/pleasant-----

(-3)	(-2)	(-1)	(0)	(+1)	(+2)	(+3)
Extremely	Moderate	Slightly	Neutral	Slightly	Moderately	Extremely

-----tense/relaxed-----

(-3)	(-2)	(-1)	(0)	(+1)	(+2)	(+3)
Extremely	Moderate	Slightly	Neutral	Slightly	Moderately	Extremely

-----flat/energetic-----

(-3)	(-2)	(-1)	(0)	(+1)	(+2)	(+3)
Extremely	Moderate	Slightly	Neutral	Slightly	Moderately	Extremely

RPE

Using the scale below, which number best describes your level of exertion during the handgrip test?

- 0 nothing at all
- .5 extremely weak (just noticeable)
- 1 very weak
- 2 weak (light)
- 3 moderate
- 4 somewhat strong
- 5 strong (heavy)
- 6
- 7 very strong
- 8
- 9
- 10 extremely strong (almost maximal)

RPE: _____

APPENDIX G

Email for interested participants

Subject: Free weight training orientation research study for beginner females.

Reply: Hello (Participant),

Thank you for your interest in this research study. To be eligible you must: be able to safely do physical activity (by passing a physical activity readiness questionnaire, Par-Q), be a woman aged 17-35 years, not have engaged in weight-trained in the past year, and never have worked with a personal trainer.

Participation takes about one hour of your time. I will ask you to complete a series of questionnaires and complete an introductory weight training orientation and a measure of strength. If you are still interested in this study and eligible, please send me some times/days that work for you and a mutually convenient time will be set. Once we confirm a time I will send you directions to the research lab at Brock. For this visit we ask that you bring appropriate clothes and come dressed for physical activity (i.e., running shoes, shorts/t-shirt).

Let me know if you have questions – I look forward to your participation!

Thanks,

Kimberley Gammage
kgammage@brocku.ca

Reply:

Thank you for getting back to me. I can get you in (date & time). For this visit you will be asked to complete a series of questionnaires and complete an introductory weight training session. Please be sure to bring and come dressed in clothing to do physical activity. We will meet in a lab in Welch Hall 16 (Exercise Intervention Lab). The best way to get there is to go to the lobby of David Howes theatre, go down the stairs, then straight through the black doors, then straight through the grey double doors. It's the first door on your left (WH 16). Follow the pink signs along the way.

Thanks,

Kimberley Gammage
kgammage@brocku.ca

APPENDIX H

Informed Consent

Date: Fall 2013

Project Title: Learning exercise skills in a weight training orientation in female novice weight lifters.

Principal Investigator:

Dr. Kimberley Gammage, Associate Professor
Dept. of Kinesiology
Brock University
905-688-5550 (x3772)
kgammage@brocku.ca

Co-investigator:

Dr. David Gabriel, Professor
Dept. of Kinesiology
Brock University
905-688-5550 (x4362)
dgabriel@brocku.ca

INVITATION

You are invited to participate in a study that involves research. The purpose of this study is to investigate the process of learning exercise skills in a weight training environment.

WHAT'S INVOLVED

As a participant, you will be asked to complete a series of questionnaires, an introductory weight training session and a strength test. Participation will take approximately 1 hour of your time. Women aged 17-35 who have not strength trained in the past year, and who have never worked with a personal trainer are eligible to participate.

POTENTIAL BENEFITS AND RISKS

You will receive a weight training orientation session from a certified personal trainer free-of-charge. You will also receive a copy of the weight training program. You may experience some discomfort due to the nature of the questions being asked; in this event, contact information for Dr. Gammage and student health services is provided (905-688-5550 ext.3243, <http://www.brocku.ca/healthservices>). Some physical risks are related to participation in this study (e.g., pulled muscle) due to physical activity; the trainer is CPR/First Aid, and CPTN certified. She will ensure proper form and safety throughout the entire session.

CONFIDENTIALITY AND ANONYMITY

All data is anonymous. Any information that arises from participants will be treated with confidentiality. Please do not place your name or any identifying information on the questionnaires. Data collected during this study will be stored in a locked filing cabinet of the lab of Dr. Gammage at Brock University and will be shredded 5 years following publication of the study. Access to this data will be restricted to the principal investigator and co-investigators and their research team.

VOLUNTARY PARTICIPATION

Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study. Further, you may decide to withdraw from this study at any time and may do so without any penalty or loss of benefits to which you are entitled. After you submit your completed questionnaires, it will not be possible to withdraw, as your questionnaires will not be identifiable.

PUBLICATION OF RESULTS

Results of this study may be published in professional journals and presented at conferences. Feedback about this study will be available. At your request you may receive a summary of results by completing a request for feedback form from the investigator.

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please contact the Principal Investigator or the Faculty Supervisor (where applicable) using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University (File # 13-117). If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca.

Thank you for your assistance in this project. Please keep a copy of this form for your records.

CONSENT FORM







I agree to participate in this study described above. I have made this decision based on the information I have read in the Information-Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time.

Name: _____

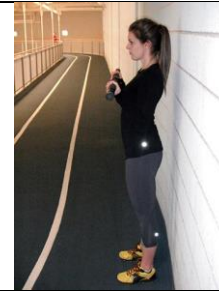
Signature: _____ Date: _____

APPENDIX I

Exercise Protocols

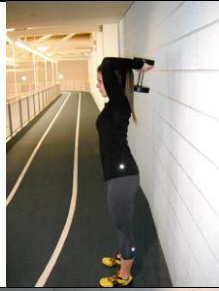
Exercise	A	B	Muscles Worked
Warm-Up/ Cool-down			Warm-up: Purpose to increase blood flow to all muscles for a safe and effective workout.
Dumbbell Bench Press			Pectoralis Major
Seated Row			Rhomboids

Bicep Curl



Biceps

Triceps
Extension



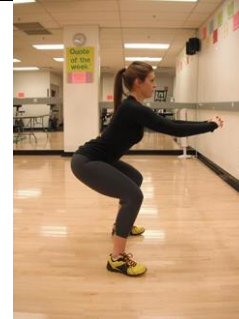
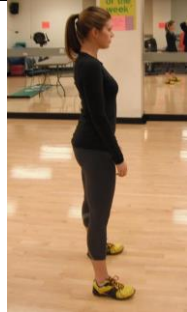
Triceps

Shoulder Press



Deltoids

Body Weight
Squat



Quadriceps
Hamstrings
Glutes
Calves

Hamstring Curl
with Exercise
Ball



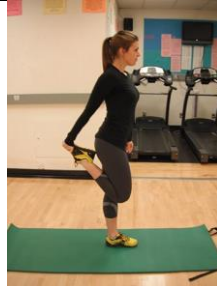
Hamstrings
Calves
Glutes

Leg Press



Quadriceps
Hamstrings
Glutes
Calves

Quadriceps
Stretch



Quadriceps

Hamstring
Stretch



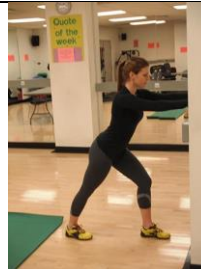
Hamstrings

Glutes Stretch



Glutes

Calf Stretch



Calves

Core Stretch



Core

Lower Back
Stretch



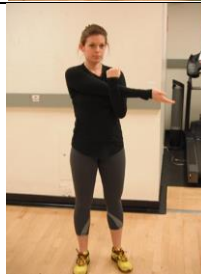
Lower back

Upper Back
Stretch



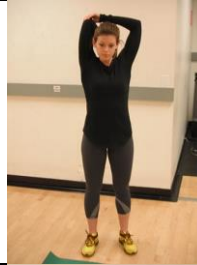
Upper Back

Deltoid Stretch



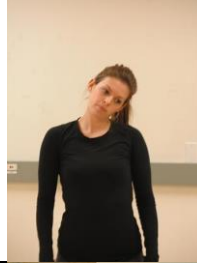
Deltoids

Triceps Stretch



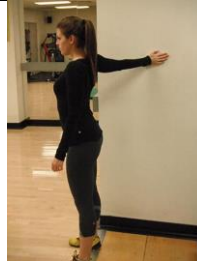
Triceps

Neck Stretch



Trapezius

Chest Stretch



Pectoralis
Major/Minor

Biceps Stretch



Biceps

APPENDIX J

*Debriefing Form***Brock University, Faculty of Applied Health Sciences**

Title of Study:	Learning exercise skills in a weight training orientation in female novice weight lifters
Principal Researcher:	Dr. Kimberley Gammage, Associate Professor, Department of Kinesiology, Brock University
Principal Student Investigator:	Sarah Kennedy, MA Candidate, Faculty of Applied Health Sciences, Brock University
Co-Investigator:	David Gabriel, Professor, Department of Kinesiology, Brock University

Thank you for your participation in this study. For this study, we were looking at the effects of two different styles of personal training on psychological and performance outcomes in a weight training orientation. Your session was conducted by 1 of 2 types of personal trainer leadership styles (bland or enriched). In the bland condition you would have noticed the personal trainer engaged in little social interaction while you completed your introductory session. She also provided corrections to exercise by emphasizing what was being done incorrectly, and provided little positive feedback. If you were in the enriched condition, you would have experienced positive feedback, encouragement, and lots of social interaction. We are particularly interested if these two leadership styles had any significant effects in exercise-related outcomes (e.g., intention to exercise, body image, self-efficacy and performance). In addition we are interested to see if these conditions affected self-presentational concerns while exercising (e.g., social physique anxiety). We did not reveal the true purpose of the study to you, because knowing in advance may have influenced your responses.

Please note, people come in all shapes, sizes and performance abilities, and healthy bodies fall along a continuum – there is not a single normal or healthy body weight or shape. Also please do not hesitate to contact Dr. Gammage if you have concerns after taking part in the study. Student health services, Niagara Distress Center and 211 Niagara are also available, along with (www.nedic.ca and www.bodysense.ca) to provide information regarding any concerns with body image.

If you have any questions, please feel free to contact the researchers (see below for contact information). Thank you again for your help.

Principal Researcher Dr. Kimberley Gammage Associate Professor Dept. of Kinesiology Brock University 905-688-5550 (x3772) kgammage@brocku.ca	Principal Student Investigator Sarah Kennedy (BKin, Honours) MA Candidate Applied Health Sciences Brock University sk08ta@brocku.ca	Co-Investigator David Gabriel Professor Dept. of Kinesiology Brock University 905-380-5871 (x4362) dgabriel@brocku.ca
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Re-Consent/Debriefing Form

Title of Study:	Learning exercise skills in a weight training orientation in female novice weight lifters
Principal Researcher:	Dr. Kimberley Gammage, Associate Professor, Department of Kinesiology, Brock University
Principal Student Investigator:	Sarah Kennedy, MA Candidate, Faculty of Applied Health Sciences, Brock University
Co-Investigator:	David Gabriel, Professor, Department of Kinesiology, Brock University

During the debriefing session, I was given an explanation as to why the researchers had to disguise the true purpose of this study. The true purpose of this study was to examine physiological (i.e., handgrip strength performance) and psychological (i.e., social anxiety, social physique anxiety, task self-efficacy) responses to a one-on-one weight training session with an enriched or a bland personal trainer. In this study, I was informed that having full knowledge of the true purpose of the study may have influenced the way in which I completed the questionnaires and responded physiologically to the assessments, and this would have invalidated the results. Therefore, to ensure this would not happen, some details about the true nature of this study were initially not provided (or were provided in a manner that slightly misrepresented the real purpose of the study). However, I am now informed of the true purpose of this study. In addition, I have had the opportunity to ask questions about this and to receive acceptable answers to my questions.

Re-Consent:

I have been asked to give permission for the researchers to use my data in their study, and agree to this request. I am aware I may contact Brock University (905-688-5550 ext. 3035 or reb@brocku.ca).










Date: _____

Participant name (please print): _____

Participant signature: _____

APPENDIX L

Introductory Weight Training Program

Name: _____									
Trainer: _____ Date: _____									
#	Exercise	Muscle Group	Start	Finish	Notes	Weight (lbs)	Repetitions	Sets	<input checked="" type="checkbox"/>
1.	Bench Press	Pectoralis Major							
2.	Seated Row	Rhomboids							
3.	Bicep Curl	Biceps							
4.	Triceps Extension	Triceps							
5.	Shoulder Press	Deltoids							
7.	Body Weight Squat	Quads, Hamstrings, Glutes, Calves							
8.	Hamstring Curl with Exercise Ball	Hamstrings, Calves							
9.	Leg Press	Quads, Hamstrings, Glutes, Calves							

APPENDIX M

Checklist for Consistency

Item	Enriched Condition	Comp.
<p>Researcher: Trainer in back room</p>	<ol style="list-style-type: none"> 1. Greet participant, assign "ID" number 2. Informed consent 3. Demographic questionnaire 4. Baseline questionnaire 5. Pre-test Questionnaire (SSA, SPAS, SPE, TSE, Intention) 6. Introduce personal trainer once questionnaires are complete. 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/>
<p>Introduction: Trainer Introduced</p>	<ol style="list-style-type: none"> 1. "Hi my name is Sarah. 2. Shake hand "Nice to meet you (Participants Name)!" 3. I will be running your introductory weight training session today. I'm a master student, and a CPTN certified personal trainer here at Brock; I have trained various clients for the past 4 years. Currently I am completing my Masters of Applied Health Science. 4. "Are you ready to get started (Participants Name)?" 5. "How are you feeling?" 6. "I will need your height and weight before we get started." 7. "Now your handgrip strength." 8. "Awesome good job. Way to go!" 9. The trainer will use the introductory time to get to know the participant (i.e., asking questions: "what do you do to stay active, did you play any sports growing up, what are some hobbies you have, do you have any children" etc.). This trainer will generate simple conversation and encourage social interaction during the pre-testing phase. 10. "Next we will perform a warm-up. Are you ready to get started?" 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/> 10. <input type="checkbox"/>
<p>Warm-Up</p>	<ol style="list-style-type: none"> 1. "For the warm-up we will get you on a treadmill or bike to start, do you have a preference? Okay, great!" 2. Show how to adjust seat settings to hip height for bike (if applicable). 3. Demonstrate first then allow participant to try. 4. "I will get you to warm-up for 10 minutes at 3.0 mph, just walking (or cycling at a speed of 70 rpm level 5)." 5. "How is that pace for you? Good! The purpose of a warm-up is to avoid injury and get your muscles ready for exercise. A good warm-up will cause a light sweat; you should be 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/>

	<p>working at about a 7 out of 10. A good way to judge this is if you can maintain a conversation while warming-up.”</p> <p>6. Continue to encourage social interaction: Bring up a previously mentioned hobby, ask the participant where she works, how long she has been working there, etc.</p> <p>7. “Following our warm-up we will start our introductory weight training session. During this time the trainer will ensure the participant is comfortable. She may say: “remember this is not a performance test, you are new at this so just try your best, let me know if you have any questions throughout the session”</p>	
Weight Training	<p>1. “For the weight training exercises I will show you the exercise first, then you may try 10-12 repetitions, and then I will help you with your form if needed.”</p> <p>2. “Please feel free to use a weight you feel comfortable using. You want to be in control of the movement at all times.”</p> <p>3. “Is the weight okay?”</p> <p>4. “Can you do 10 more repetitions?”</p> <p>5. “Good! Can you feel the muscles being worked?”</p> <p>6. Incorrect movement: Correct in a positive manner (i.e. “try to squeeze your shoulder blades together like you are crushing a pop can, keep a nice proud posture, move the bar in a banana like motion.”</p> <p>7. Correct movement: “Great form, you are doing great!”</p> <p>8. “Today I will teach you 8 exercises to work the major muscle groups in your body.”</p> <p>9. “It is important to work from the largest muscle groups down the smaller muscle groups.”</p> <p>10. “We also want to make sure that we are performing the movement in a full range of motion.”</p> <p>11. “This is important to fully develop the muscles.”</p>	<p>1. <input type="checkbox"/></p> <p>2. <input type="checkbox"/></p> <p>3. <input type="checkbox"/></p> <p>4. <input type="checkbox"/></p> <p>5. <input type="checkbox"/></p> <p>6. <input type="checkbox"/></p> <p>7. <input type="checkbox"/></p> <p>8. <input type="checkbox"/></p> <p>9. <input type="checkbox"/></p> <p>10. <input type="checkbox"/></p> <p>11. <input type="checkbox"/></p>
Dumbbell Bench Press	<p>1. “First we will be performing a bench press.”</p> <p>2. “This exercise targets our chest muscles.”</p> <p>3. Point to muscle group and show.</p> <p>4. Teach the exercise:</p> <p>5. Start: Demonstrate with the 5 points of contact (two feet, butt, back, and head).</p> <p>6. Dumbbells to chest.</p> <p>7. Keep elbows in.</p> <p>8. Exhale push out above eyes.</p> <p>9. Inhale lower dumbbells to start position</p> <p>10. Allow participant to try.</p> <p>11. Correct movement: You are a natural, good job!</p> <p>12. Incorrect movement: Great try! This time I want you to pretend like you are pushing the dumbbells in a banana like motion (from your chest to just at eye level). Keep the dumbbells inline like they are attached by a string. Great!</p>	<p>1. <input type="checkbox"/></p> <p>2. <input type="checkbox"/></p> <p>3. <input type="checkbox"/></p> <p>4. <input type="checkbox"/></p> <p>5. <input type="checkbox"/></p> <p>6. <input type="checkbox"/></p> <p>7. <input type="checkbox"/></p> <p>8. <input type="checkbox"/></p> <p>9. <input type="checkbox"/></p> <p>10. <input type="checkbox"/></p> <p>11. <input type="checkbox"/></p> <p>12. <input type="checkbox"/></p> <p>13. <input type="checkbox"/></p>

	13. Once correct movement: "Excellent, good form".	
Seated Row	<ol style="list-style-type: none"> 1. For our next exercise it is good to move in the opposite direction. 2. This will give our chest muscles a break if we were to perform more chest exercises. 3. After we pushed now were going to pull (show the motion). 4. "Start with a proud posture (eyes forward sitting up straight, squeezing the shoulder blades together)." 5. "Pull back and exhale like you are rowing" 6. "Keep your elbows close to your body through the entire movement." 7. Allow your arms to extend in a controlled manner to their starting position while inhaling." 8. Correct movement: "Excellent you've got it! We are just going to breeze right through today!" 9. Incorrect movement: "Good try! Next repetitions keep squeezing your shoulder blades together. Keep your elbows close to your sides. Show me that proud posture you have." 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/>
Bicep Curl	<ol style="list-style-type: none"> 1. "Next we will perform the bicep curl." 2. "This exercise works our bicep muscles" 3. Point to biceps 4. "To start, have feet shoulder width apart with a slight bend in your knees. 5. "Keep the shoulders back and head up." 6. "Grasp the bar with supinated grip (palms facing to the sky). Hands should be placed slightly wider than hip width. 7. "Tuck your elbows into your sides" 8. "While exhaling flex at the elbow and curl the bar towards the chest – pause and lower the bar back to the starting position while inhaling. 9. Correct movement: "Awesome, that was perfect!" 10. Incorrect movement: "Good try! This time try to keep those elbow close to your bodyline. You are so close. Keep that proud posture. Great!" 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/> 10. <input type="checkbox"/>
Triceps Extension	<ol style="list-style-type: none"> 1. "Awesome we are almost halfway! How do you feel about the exercises so far?" 2. "Ready to conquer the triceps extension next" 3. Point to the muscle being worked 4. Demonstrate: 5. "We will have the same stance as we did for the bicep curl, so as you demonstrated perfectly before: feet are shoulder width apart knees slightly bent." 6. "Grasp the dumbbell using a closed grip with both hands." 7. "Bring the dumbbell over head and point your elbows towards the front keeping your arms close to your ears." 8. "Exhale and extend your arms above your head in this same controlled manner." 11. Correct movement: "Great job! You have great form (Participant Name)!" 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/>

Shoulder Press	<ol style="list-style-type: none"> 1. "Alright we are halfway – great job so far!" 2. "This next exercise is called the shoulder press, it works our deltoids" 3. Point to the muscles being worked 4. "To start: we want to sit on the end of the bench, still using our proud posture." 5. "While keeping your abdominal muscles tight, grasp the dumbbells shoulder width apart." 6. "The forearms should be perpendicular to the dumbbells" 7. "Looking straight ahead, exhale as you push the dumbbells overhead. 8. "Inhale and lower the dumbbells under control to the front upper chest. 9. Correct movement: "Great you've got it! Do you feel the muscles in your shoulder being worked? Awesome!" 9. Incorrect movement: "Pretend like you are pushing up the garage door, push towards the sky, and control the dumbbells on the way down. Keeping the dumbbells in the same line." 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/> 10. <input type="checkbox"/>
Body-weight Squat	<ol style="list-style-type: none"> 1. "Now that your upper body is feeling pretty tired we can move to the lower body exercises." 2. "For the next exercise we will just be using our body weight." 3. "This exercise can be performed anywhere!" 4. "This exercise works the major muscle groups of our lower body such as the quadriceps, hamstrings, glutes, and calves." 5. Point to muscles groups. 6. "To start: feet are positioned side-by-side, approximately hip-width apart and directly under the shoulders. Good!" 7. "Keep your proud posture. Great!" 8. "We are going to pretend like we are going to sit on a chair – begin the descent at the hips by pushing the buttocks backwards." 9. "Inhale and lower until the thighs are parallel with the ground." 10. "Knees remain behind the toes." 11. Pause slightly in the lowest position and exhale on the way up. 12. "Push through the heels to the top" 13. Correct movement: "That is perfect good job" 14. Incorrect: "Try one more, this time ensure your knees stay behind your toes, good! Keep your head up now, excellent, keep sticking the buttocks back and down. You've got it!" 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/> 10. <input type="checkbox"/> 11. <input type="checkbox"/> 12. <input type="checkbox"/> 13. <input type="checkbox"/>
Hamstring Curl with Exercise Ball	<ol style="list-style-type: none"> 1. "Next we are going to focus on the hamstring muscle group." 2. "We are going to use an exercise ball to roll in and out. This is one of my favorite exercises." 3. To start: "Lie on your back, with both heels on the exercise ball and push your hips up into a bridge position." 4. "Your shoulders and hands should be the three points of contact with the ground." 5. "Keep lifting hips to the ceiling." 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/>

	<p>6. "Once you are stable in this position, bring your heels towards your buttocks while exhaling."</p> <p>7. "Inhale as you roll the ball out to the starting position."</p> <p>8. "Maintain the bridge and proper breathing throughout the entire movement and each repetition."</p> <p>9. Correct movement: "Great job! Your form is great!"</p> <p>10. Incorrect movement: "Keep pushing those hips towards the ceiling! Good!"</p>	<p>8. <input type="checkbox"/></p> <p>9. <input type="checkbox"/></p> <p>10. <input type="checkbox"/></p>
Leg Press	<p>1. "Last exercise! You have made it. How are you feeling?"</p> <p>2. "Let's complete this last exercise then you are almost done! Great job so far!"</p> <p>3. "This last exercise is called the leg press. This works similar muscles as the squat."</p> <p>4. To start: "You can adjust the seat depth of the movement so that your thigh meets a 90-degree angle with your shin."</p> <p>5. Adjust weight accordingly</p> <p>6. "Have your feet shoulder width apart, and ensure your knees remain behind your toes"</p> <p>7. "Focus on pushing through the heels of your feet."</p> <p>8. "Exhale as you push away from the platform, so your legs extend with a slight bend."</p> <p>9. "Inhale as you bend your knees back to the starting position"</p> <p>10. "Maintain a stable core throughout the entire movement"</p> <p>11. Correct movement: "Great! You did excellent (Participants Name)!"</p>	<p>1. <input type="checkbox"/></p> <p>2. <input type="checkbox"/></p> <p>3. <input type="checkbox"/></p> <p>4. <input type="checkbox"/></p> <p>5. <input type="checkbox"/></p> <p>6. <input type="checkbox"/></p> <p>7. <input type="checkbox"/></p> <p>8. <input type="checkbox"/></p> <p>9. <input type="checkbox"/></p> <p>10. <input type="checkbox"/></p> <p>11. <input type="checkbox"/></p>
Cool-Down	<p>1. "Lastly, the cool-down. Then stretching, a couple questionnaires, and then you are all done. You have done a great job today!"</p> <p>2. "The cool-down will help ensure your breathing levels and heart rate have returned to normal."</p> <p>3. To start: "I will get you to just walk or cycle for approximately 5-10 minutes."</p> <p>4. "Similar to the warm up only at an easy/slow pace."</p> <p>5. "Did you enjoy the exercises today? What was your favorite?"</p>	<p>1. <input type="checkbox"/></p> <p>2. <input type="checkbox"/></p> <p>3. <input type="checkbox"/></p> <p>4. <input type="checkbox"/></p>
Flexibility Training	<p>1. "To finish off, we will continue with the most relaxing part of the training session."</p> <p>2. "I will lead you through a full-body stretch, targeting the major muscles worked today."</p> <p>3. "This type of exercise will allow you to increase your range of motion."</p> <p>4. To start: "We are going to sit on the mats, hinging at the hips, reaching out towards our toes, when you feel the stretch in your hamstrings (back of your leg) pause and hold for 20 seconds."</p> <p>5. Continue stretches for: quadriceps, glutes, calves, core, lower back, triceps, biceps, chest, back, shoulders, and neck.</p> <p>6. Continue to discuss hobbies, interests, etc.</p>	<p>1. <input type="checkbox"/></p> <p>2. <input type="checkbox"/></p> <p>3. <input type="checkbox"/></p> <p>4. <input type="checkbox"/></p> <p>5. <input type="checkbox"/></p> <p>6. <input type="checkbox"/></p>
Closing Remarks	<p>1. We just need one last measure of your handgrip strength if that is okay with you?"</p> <p>2. Give participant program to take home.</p>	<p>1. <input type="checkbox"/></p> <p>2. <input type="checkbox"/></p>

	<ol style="list-style-type: none"> 3. "You did an amazing job today (Participants Name)! It was a pleasure teaching you. You were so great at all the exercises!" 4. Ask how they are feeling. 5. "Do you have any questions?" 6. "If you think of anything once you have left feel free to email me." 7. "If you are a bit sore tomorrow, do the stretches we did today <i>after</i> a light warm up." 8. Thank participant for coming. 9. "I hope you had a good time and learned some new exercises!" 10. Allow participant to complete questionnaires. 11. Thank again for participation. 	<ol style="list-style-type: none"> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/> 10. <input type="checkbox"/> 11. <input type="checkbox"/>
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Item	Bland Condition	Comp.
Researcher: Trainer in back room	<ol style="list-style-type: none"> 1. Greet participant, assign "ID" number 2. Informed consent 3. Demographic questionnaire 4. Baseline questionnaire 5. Pre-test Questionnaire (SSA, SPAS, SPE, TSE, Intention) 6. Introduce personal trainer once questionnaires are complete. 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/>
Introduction: Trainer Introduced	<ol style="list-style-type: none"> 1. Hi I'm Sarah, are you ready to start? 2. We will need your height, weight, and handgrip strength before we start. 3. Now we will warm up. 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/>
Warm-Up	<ol style="list-style-type: none"> 1. "For the warm-up we will get you on a treadmill to start. 2. Show how to start/stop and safety precautions. 3. Demonstrate first then allow participant to try. 4. "I will get you to warm-up for 10 minutes at 3.0 mph, just walking while I go fill out some paperwork." 5. The purpose of a warm-up is to avoid injury and get your muscles ready for exercise. It should cause a light sweat; you should be working at about a 7 out of 10. 6. "When you are done the 10 minutes we will start the weight training session." 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/>
Weight Training	<ol style="list-style-type: none"> 1. "For the weight training exercises I will show you first, then you may try, and then I will correct your form." 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/>

	<ol style="list-style-type: none"> 2. "You may choose your weights but want to be in control of the movement at all times." 3. Incorrect movement: Correct in a negative manner (i.e. "Don't let your shoulders round.") 4. Correct movement: "Good. That's fine. That is correct." 5. "Today I will teach you 8 exercises." 6. "It is important to work from the largest muscle groups down to the smallest muscle groups." 7. "Make sure that you are performing the movement in a full range of motion." 8. "This is important to fully develop the muscles." 	<ol style="list-style-type: none"> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/>
Dumbbell Bench Press	<ol style="list-style-type: none"> 1. "To begin we want to start with the largest muscle groups and work towards the smallest muscle groups." 2. "First we will be performing a bench press." 3. "This exercise targets our chest muscles." 4. Point to muscle group and show. 5. Teach the exercise: 6. Start: Demonstrate with the 5 points of contact (two feet, butt, back, and head). 7. Dumbbells to chest. 8. Keep elbows in. 9. Exhale push out above eyes. 10. Inhale lower dumbbells to start position 11. Allow participant to try. 12. Correct movement: Good. That is correct. 13. Incorrect movement: Don't let the dumbbells come to far apart. Don't push the dumbbells straight out." 14. Once correct movement: Okay, next exercise is the seated row." 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/> 10. <input type="checkbox"/> 11. <input type="checkbox"/> 12. <input type="checkbox"/> 13. <input type="checkbox"/> 14. <input type="checkbox"/>
Seated Row	<ol style="list-style-type: none"> 1. After we pushed now were going to pull. 2. Start with a proud posture (eyes forward sitting up straight, squeezing the shoulder blades together). 3. "Pull back and exhale." 4. "Keep your elbows close to your body through the entire movement." 5. Allow your arms to extend in a controlled manner to their starting position while inhaling." 6. Correct movement: "Good. That is correct." 7. Incorrect movement: "Don't let your arms flare out. Don't slouch over." 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/>
Bicep Curl	<ol style="list-style-type: none"> 1. "Next we will perform the bicep curl." 2. "This exercise works our bicep muscles" 3. Point to biceps 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/>

	<ol style="list-style-type: none"> 4. "To start, have feet shoulder width apart with a slight bend in your knees. 5. "Keep the shoulders back and head up." 6. "Grasp the bar with supinated grip (palms facing to the sky). Hands should be placed slightly wider than hip width. 7. "Tuck your elbows into your sides" 8. "While exhaling flex at the elbow and curl the bar towards the chest – pause and lower the bar back to the starting position while inhaling. 9. Correct movement: "Good. That is fine." 10. Incorrect movement: "Don't sway your back to bring the bar to your chest. Don't curl your wrists." 	<ol style="list-style-type: none"> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/> 10. <input type="checkbox"/>
Triceps Extension	<ol style="list-style-type: none"> 1. "We will try the triceps extension next" 2. Point to the muscle being worked 3. Demonstrate: 4. "We will have the same stance as we did for the bicep curl: feet are shoulder width apart knees slightly bent." 5. "Grasp the dumbbell using a closed grip with both hands." 6. "Bring the dumbbell over head and point your elbows towards the front keeping your arms close to your ears." 7. "Exhale and extend your arms above your head in this same controlled manner." 8. Correct movement: "Good. That's fine." 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/>
Shoulder Press	<ol style="list-style-type: none"> 1. "The next exercise is the shoulder press, it works our deltoids" 2. Point to muscles being worked 3. "To start: sit on the end of the bench, keep a proud posture." 4. "While keeping your abdominal muscles tight, grasp the dumbbells shoulder width apart." 5. "The forearms should be perpendicular to the dumbbells." 6. "Looking straight ahead, exhale as you push the dumbbells overhead. 7. "Inhale and lower the dumbbells under control to the front upper chest." 8. Correct movement: "That is correct." 9. Incorrect movement: "Don't let your shoulders round, you need to push the dumbbells at the same time." 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/>
Body-weight Squat	<ol style="list-style-type: none"> 1. "For the next exercise we will use our body weight." 2. "This exercise works the major muscle groups of our lower body such as the quadriceps, hamstrings, glutes, and calves." 3. Point to muscles groups. 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/>

	<ol style="list-style-type: none"> 4. "To start: feet are positioned side-by-side, approximately hip-width apart and directly under the shoulders." 5. "Keep your proud posture." 6. "Begin the descent at the hips by pushing the buttocks backwards." 7. "Inhale and lower until the thighs are parallel with the ground." 8. "Knees remain behind the toes." 9. "Pause slightly in the lowest position and exhale on the way up." 10. "Push through the heels to the top" 11. Correct movement: "Good." 12. Incorrect: "Don't let your knees cross over your toes." 	<ol style="list-style-type: none"> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/> 10. <input type="checkbox"/> 11. <input type="checkbox"/>
Hamstring Curl with Exercise Ball	<ol style="list-style-type: none"> 1. "Next is the hamstring curl." 2. "We are going to use an exercise ball to complete the exercise." 3. To start: "Lie on your back, with both heels on an exercise ball and push your hips up into a bridge position." 4. "Your shoulders and hands should be the three points of contact with the ground." 5. Keep lifting hips to the ceiling." 6. "Once you are stable in this position, bring your heels towards your buttocks while exhaling." 7. "Inhale as you roll the ball out to the starting position." 8. "Maintain the bridge and proper breathing throughout the entire movement and each repetition." 9. Correct movement: "Yes. That is correct." 10. Incorrect movement: "Don't let your hips drop. Don't loose your balance on the ball." 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/> 10. <input type="checkbox"/>
Leg Press	<ol style="list-style-type: none"> 1. "The last exercise is called the leg press. This works similar muscles as the squat." 2. To start: "You can adjust the seat depth of the movement so that your thigh meets a 90-degree angle with your shin." 3. Adjust weight accordingly 4. "Have your feet should width apart, and ensure your knees remain behind your toes" 5. "Focus on pushing through the heels of your feet." 6. "Exhale as you push away from the platform, so your legs extend with a slight bend." 7. "Inhale as your bend your knees back to the starting position" 8. "Maintain a stable core throughout the entire movement" 9. Correct Movement: "Correct that is good." 10. Incorrect movement: Don't let the weight slam down. Don't lock your knees." 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/> 7. <input type="checkbox"/> 8. <input type="checkbox"/> 9. <input type="checkbox"/> 10. <input type="checkbox"/>
Cool-Down	<ol style="list-style-type: none"> 1. "Lastly, the cool-down. Then stretching, a couple questionnaires, and then you are done." 2. "The cool-down will help ensure your breathing levels and heart rate have returned to normal." 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/>

	<ol style="list-style-type: none"> 3. To start: "Just walk for approximately 5-10 minutes." 4. "Similar to the warm up only at an easy/slow pace." 5. Leave participants side to 'fill-out some paper-work' continue supervision. 	<ol style="list-style-type: none"> 4. <input type="checkbox"/> 5. <input type="checkbox"/>
Flexibility Training	<ol style="list-style-type: none"> 1. "I will now lead you through a full-body stretch, targeting the major muscles worked today." 2. "This type of exercise will allow you to increase your range of motion." 3. To start: "We are going to sit on the mats, hinging at the hips, reaching out towards our toes, when you feel the stretch in your hamstrings (back of your leg) pause and hold for 20 seconds." 4. Continue stretches for: quadriceps, glutes, calves, core, lower back, triceps, biceps, chest, back, shoulders, and neck. 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input type="checkbox"/>
Closing Remarks	<ol style="list-style-type: none"> 1. "We just need your handgrip strength one last time." 2. Give program 3. Thank you for coming in in today. 4. "You may now see the researcher for the rest of your questionnaires." 	<ol style="list-style-type: none"> 1. <input type="checkbox"/> 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/>