

**A SELF DETERMINATION THEORY  
BASED EXERCISE INTERVENTION IN A  
GROUP OF ADULT EXERCISERS: A CONTEXTUAL EVALUATION**  
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Master's Thesis in Sport and  
Exercise Psychology  
Spring 2010  
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## ABSTRACT

Karoline Kaminski. 2010. A Self-Determination Theory Based Exercise Intervention in a Group of Adult Exercisers; a Contextual Evaluation. University of Jyväskylä. Department of Sport Sciences, Master's thesis in Sport and Exercise Psychology, 71 pages.

According to the Self-determination theory, when the social context is autonomy supportive, people are motivated to internalize the regulation of important activities, and whereas when the context is controlling, self-determined motivation is undermined. Exercise is one of those important activities which when internalized would result in persistent engagement leading people to positive psychological and physiological outcomes (improved health, affect, self esteem). Although much experimental work has been done in these field examining the exercise context at all angles, no study to date has implemented and intervention based on tenets of the self-determination theory and reported its dynamic processes qualitatively.

With the use of in-depth open interviews, ethnographic participant observation and supplemental questionnaires, this study aimed to investigate and evaluate the contextual environment in which the dynamic process of internalization occurs in a summer fitness program. 29 participants signed up to partake in this program. Using case studies to construct motivational profiles of each participant, motivational orientations are the subject of exploration as are the processes in the program that work in their gradual development. The last aim of this study is to evaluate SDT's contention (Deci & Ryan, 1985, Ryan & Deci, 2000) that autonomous regulations (identified and intrinsic) are transgressed into more positive motivational consequences in the exercise domain, in this case, participation in activity outside the program, intentions to continue and persistence in exercise related behaviour.

Results describe the implementation of the program and the process involved in providing an autonomy supportive environment. This environment combined with the use of intrinsic goal framing revealed conditions supportive of the basic psychological needs which facilitated internalization and integration within participants. Specifically, feeling important to the exercise leader, and relating to the exercise group facilitated internalization of values and behaviours endorsed in the program. Feeling competent showed the greatest influence of fully internalizing the regulation of exercise behaviours valued in the program. Whereas autonomous support resulted in the internalization of nutritional behaviours. In terms of goal setting, encouragement and support to think about the value of the behaviour to oneself facilitated identifying with and integrating the behavior's value and regulation as well as resulting in positive psychological outcomes related to well-being, effort, intentions and persistence. This study also adds to current literature by addressing the often continuous report (Edmunds et al, 2008) of introjected regulations among female exercisers despite high internalization.

Keywords: autonomy support, internalization, exercise, behavioral interventions, maintenance,

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## INTRODUCTION

Many health campaigns and exercise programs advocate continuous physical activity based on many years of research consistently supporting the benefits of exercise both physically and psychologically (World Health Organization, 2004). Exercise interventions however, cannot remain omnipotent, and even those who adopt exercise programs drop out at high rates and return to sedentary lifestyles. This indicates that current attempts at lifestyle change of these programs maybe succeeding in short term adoption of active lifestyles, yet fail to succeed in persistent exercise behaviour.

Knowledge of the relationship between disease reduction and regular exercise is not sufficient to support long term commitment to exercise (Baranowski et al, 1998).

Neither are external rewards as at some point they diminish and also fail to motivate exercisers in the long term. Kimiecik (2002) believes this to be attributable to exercise programs taking an outside-in approach. People typically start to exercise because of some external reason, like losing weight or decreasing the chance of disease yet it is rare for people to continue long-term behaviors for these extrinsic reasons. In order to keep exercising, there is a need to maintain motivation levels throughout the lifetime.

Without successfully maintaining these motivation levels, people will fail to persist in regular exercise and ultimately drop out.

To date, numerous empirical studies of motivation have surfaced to explain exercise behaviour; a majority of these theoretical models have presented self-determination theory, which has received much attention in the literature on exercise behaviour (SDT; Deci & Ryan, 2000; Ryan & Deci, 2000; see Hagger & Chatzisarantis, 2007, for exercise-specific reviews). Self-Determination Theory has been used in order to explain motivation and consequent behaviour based on individual differences in motivational orientations, contextual influences, and interpersonal perceptions (Hagger and Chatzisarantis, 2008). Deci and Ryan's theory has consequently shown to be useful in explaining the cognitive processes that determine exercise behaviour. Its uses experimentally have been successful in identifying the psychological predictors or antecedents of exercise behaviour; identifying the processes or mechanisms by which the predictors influence exercise behaviour; and developing interventions to change or modify people's exercise behaviour based on the antecedents and mechanisms. From a public health perspective, extending and applying recent advancements grounded in

SDT theory to assess cognitions and estimate behaviour in exercise and/or physical activity is an exciting and promising avenue of work.

Drawing from current research, this review aims to briefly explore the tenets of the SDT theory; more specifically the role of autonomy in exercise motivation, explore the concepts of the organismic integration theory, SDT's role in Hagger's trans-contextual model, and finally how these concepts work together to demonstrate considerable efficacy in explaining behaviours in exercise motivation and adherence. Following this, recent experimental studies will be critically examined in their effectiveness in producing lasting motivations that result in persistence of exercise behaviours. Finally it will draw inferences and conclusions in order to further assess a need for more accurately predictive intervention research. Based on the evidence outlined in this review, recommendations offered will work to use these results to aid in establishing the role that health practitioners, exercise leaders, fitness professionals, teachers, can play in enhancing autonomous motivation to enable persistence in exercise.

### *1.1 Self Determination Theory*

The SDT theory has the advantage and complexity of considering motivation from a multidimensional framework. Its main tenets are that motivation is a multidimensional construct and that different types of motivation have different effects on cognitive, affective, and behavioral outcomes. SDT assumes that people by their very own nature are active and self-motivated, eager to learn and succeed because the satisfaction is itself rewarding (Deci & Ryan, 2000). At the same time, this theory acknowledges that people can also be thwarted away in the other direction as a result of the social environment. The degree to which social contexts facilitate optimal motivation, depends on it's satisfaction of the three psychological needs mentioned earlier, the need to feel competent, autonomous, and related to others (Deci & Ryan, 2000).

#### *Basic Psychological Needs*

According to Deci and Ryan (1991) the need for autonomy is met when people feel like they are their own agents of the origins of their own behavior. This instigates feelings of volition which are necessary for sustained motivated behaviour (Deci & Ryan, 1985). Competence needs are satisfied when people feel effective at interacting with the social environment and achieving desired outcomes. Feelings of competence are necessary for individuals to approach optimal challenges that allow them to learn and develop (Deci

& Ryan, 1985). Lastly, the need for relatedness is satisfied when people authentically connect with others and feel involved in the social context (Deci & Ryan, 1991). Autonomy, competence, and relatedness are all considered basic needs because each of their fulfillments is necessary for optimal psychological well-being and development (Ryan & Deci, 2002); they in turn have also showed to be necessary requirements in the exercise domain. In other words, like the name implies, the more self-determined the motivation, the greater the effect on the behavior. These types of motivation experienced are influenced by how well a person's basic psychological needs for autonomy, competence, and relatedness are met in a particular context (Deci & Ryan, 1991).

### *Intrinsic and External Motivational Regulations*

Motivational orientations can consist of both intrinsic and extrinsic motivations. Intrinsic being inherent in the individual resulting in positive behavioural consequences such as persistent engagement or a desire to learn new skills in the absence of external rewards or punishments. Intrinsic motivation is a result of enjoyment or satisfaction inherent in the activity itself. In terms of this theory, it is the highest form of motivation. In this review, we have been saying that extrinsic motivators control and thereby undermine autonomy and hence motivation. An additional proposition of the SDT is that motivation does not need to be solely intrinsic to guide certain behaviours. Extrinsic motivation also contributes to motivation and the extent to which it does depends on how much it stems from oneself or others. It maybe that certain forms are highly volitional or autonomous in nature but controlling counterparts may be just as motivating. SDT explains through the organismic integration theory that people can still be autonomous in their motivations while being extrinsically motivated (Deci and Ryan, 2000). However, extrinsic motivation may still result in positive outcomes if they are located towards the self-determined extreme of the organismic integration continuum will be presented just below. As motivation becomes more self-endorsed, the external regulations driving behaviour are accepted as personally valued and meaningful (Deci, Eghrari, Patrick, & Leone, 1994). Intrinsic and External Motivations can therefore be additive in total motivation and consequence.

### *Internalization*

The SDT theory proposes that these two forms of motivations can be additive because if all basic psychological needs are being met within a certain context, then an individual will be inclined to internalize and integrate within themselves the external regulations that prompted to engage in an activity in the first place (Deci & Ryan, 2000). This stems from the proposal that people have an innate tendency to integrate themselves within their environment, such that behaviour that is initiated through external regulations can become autonomous if they are identified with or develop personal meaning. This suggests that behaviours can change if regulations, even if external, are accepted into a person's own identity. According to SDT, this movement through the motivational continuum towards more self-determined regulations is called internalization (Ryan & Deci, 2000). However, in order for internalization to occur an individual's psychological needs need to be met. The more effectively an exerciser's basic psychological needs are met, the greater the extent to which they internalize and integrate exercise behaviours. SDT proposes that internalization can occur on three different levels in terms of the degree to which the regulations become integrated within a person's own identity which is offered in the Organismic Integration Theory.

### *Organismic Integration Theory*

SDT proposes, three categories of motivation: amotivation, extrinsic motivation, which consists of four different types of regulation: external, introjected, identified and integrated) and intrinsic motivation (Deci & Ryan, 1985). These motivations differ in the amount of autonomy regulating them, that is, the amount to which they are self-determined. On the least motivated side of the continuum, there is amotivation. Amotivation means the person sees no point in exercise and this usually means there is no consequent behaviour. In between we have four different types of external regulations. Ranging from the least autonomous or most controlling (External and introjected) to more autonomous or self-determined regulations (identified and integrated). Introjected regulations are controlled by the desire to obtain referenced approval (e.g., pride) or to avoid external sources of disapproval (e.g., guilt or shame) (Ryan & Deci, 2000). External regulations are contingent upon obtaining external rewards or avoid punishments (Ryan & Deci, 2000). For example, a person might exercise because their doctor frowns upon them if they don't.



Identified and integrated regulations represent the more autonomous forms of extrinsic motivation in regards to external motivation. Identified regulation refers to being motivated to behave in a certain way because it is personally valued by the individual and hold importance. (Ryan & Deci, 2000). For example, individuals might skip because they know that cardiovascular fitness makes a stronger heart and weight bearing aspect of skipping keeps their bones strong. Integrated regulations guide behaviours when the values and behaviours become fully internalized into the belief system of the individual and their sense of identity (Ryan & Deci, 2000). An individual who is integrated exerciser believe that being active is a part of who they are and their lifestyle. On the most self determined end of the continuum is intrinsic motivation. This involved motivation for the inherent pleasure and satisfaction derived from the behaviour itself. For instance, an exerciser who loves running through the sand as they play beach volleyball is intrinsically motivated. This motivation is completely self-determined and shows the most positive psychological outcomes.

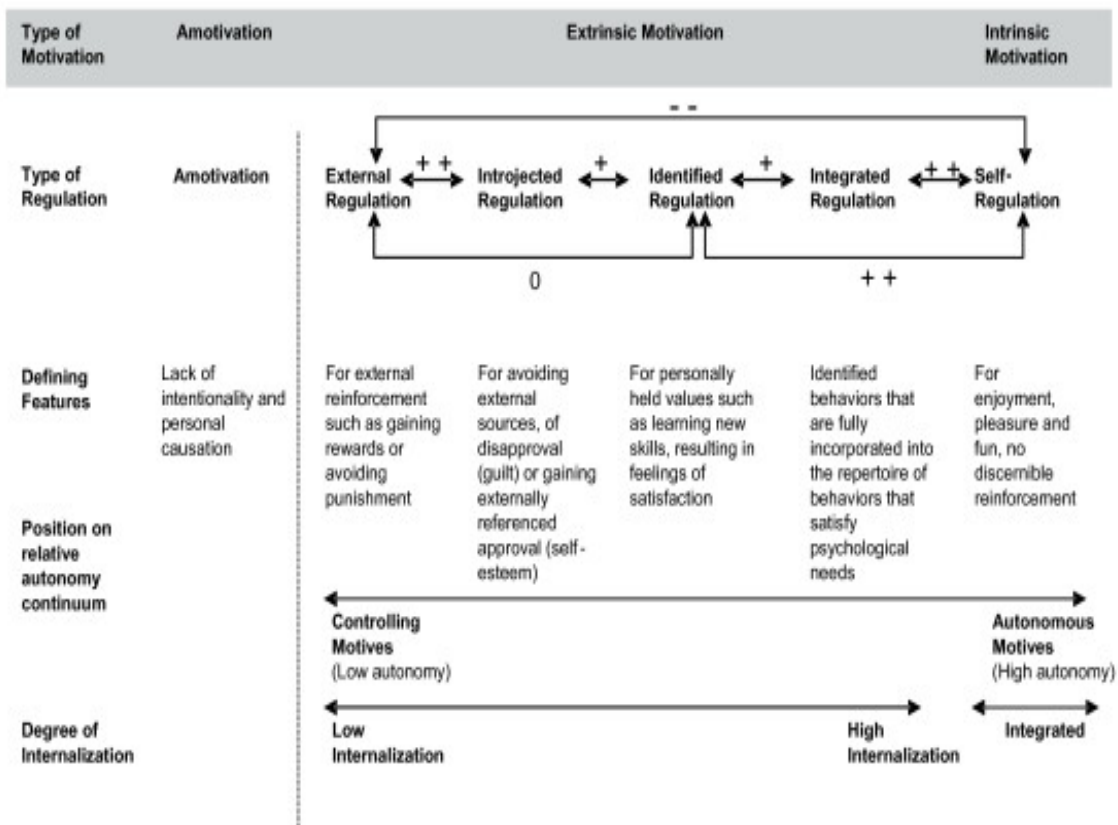


Figure 1. The organismic integration Continuum (Ryan & Deci, 2000).

Degree of motivation here differs when it comes to affecting adherence to these behaviours. In the long term, it has been shown that intrinsic motivation translates into the longest persistence (McDonough & Crocker, 2007 ) followed by more autonomous forms of extrinsic motivation (Vallerand 1997 ) whereby controlling motivational orientations show the least promise for persistence in exercise behaviour ( Pelletier, Fortier, Vallerand, Briere, 2001). Controlling regulations (introjected and external) occupy the less self-determined end of the motivational continuum. Exercisers do not necessarily start on one side of the continuum and move to the other, rather depending on the conditions and context of the situation, may acquire new regulations that are more autonomously or controlling in nature. This may or may not result in a loss of prior regulations, again depending on the social context and their satisfaction of psychological needs. In an exercise setting, for example a female may start working out at the local gym because she likes the attention she receives from the other male members (introjected regulation). After experiencing higher cognitive functioning at her high stress job, she realizes that she works more efficiently after her workouts, therefore values her work outs because they enable her to be more successful in her career (identified regulation). One may not result in the dissipation of the other although one is more autonomous in nature and will more likely translate into her persisting in the behaviour. Specifically, more self-determined motivation is hypothesized to link to affect and activity behavior because participating for personally valued reasons under one's own control is expected to be a more satisfying, positive experience, and participation in activity should be higher if it is internally and volitionally driven (Deci & Ryan, 1985).

#### *Social Context and Interpersonal involvements*

Of important notes is that what Ryan and Deci are trying to convey in this *organismic integration theory* is that individual differences in motivation do not only depend on motivational orientations, but largely as a function of the social climate (Ryan and Deci 2000). Social Contexts that incorporate the satisfaction of these needs will support optimal motivation and positive psychological, developmental, and behavioural outcomes (Ryan & Deci, 2000). Social Climates that feel supportive and informational enhance intrinsic motivation (Vansteenkiste, Simons, Lens, Sheldon & Deci, 2004). The

implication in this is that there are ways the social environment can be manipulated to optimize a person's development, performance, and well-being (Ryan & Deci, 2000).

### *1.2 Autonomy*

The one need that has brought about the most recent and greatest attention is autonomy. Self-determination theory proposes that when individuals are autonomously motivated in their actions, as opposed to being controlled to act, they will experience more interest, excitement, and confidence that will be manifested as enhanced performance and persistence (Ryan & Deci, 2000). Of interest to this paper are the numerous studies in the exercise domain that support the links between competence and autonomy and self-determined motivation (Gagne, Ryan, & Bargmann, 2003; Kowal & Fortier, 1999, 2000; Sarrazin, Vallerand, Guillet, Pelletier, & Cury, 2002; Wilson, Rodgers, & Fraser, 2002). In order for autonomy to thrive, there needs to be a perception of support for coming from persons involved in the context. Perceived autonomy support in the exercise domain has been shown to be positively related to psychological need satisfaction, autonomous regulation and/or adaptive behavioral, cognitive and affective outcomes.

#### *Perceived Autonomy Support*

Perceived Autonomy Support stems from an interpersonal style delivered by the exercise leader that is characterized as providing positive feedback, scientifically sound rationale and acknowledgement of difficulties as well as participant focused point of view (Deci et al, 1994). The degree to which these fundamentals are perceived by the exercisers is the level of autonomy support. Perceived autonomy support in the exercise domain has been shown to be positively related to psychological need satisfaction, autonomous regulation and/or adaptive behavioral, cognitive and affective outcomes (Edmunds, Ntoussamis, & Duda, 2006 and Wilson & Rodgers, 2004.). In addition, studies in a number of contexts have shown that perceived autonomy support is an influential variable in the prediction of autonomous forms of motivation, and that these forms of motivation influence behavioural engagement and persistence (e.g., Williams, Frankel, Campbell, & Deci, 2000; Williams, Freedman, & Deci, 1998; Williams, Rodin, Ryan, Grolnick, & Deci, 1998).

### *Autonomy and Persistence*

Many studies done over the years now support autonomous motivation and its ability to predict persistence and adherence within exercise contexts. Experimental work has generally shown that individuals who are induced to participate in tasks for internal or autonomous reasons persist longer in free-choice behavior than those motivated by extrinsic factors (Deci, Koestner, & Ryan, 1999; Deci & Ryan, 1985). Similarly, field-based studies in education (e.g., Vallerand & Bissonnette, 1992) and sport (e.g., Pelletier, Fortier, Vallerand, & Brière, 2001) have shown autonomous forms of motivation to positively predict behavioral persistence. Although past work has supported the positive behavioral outcomes of autonomous motivation, past research using SDT has failed to use accurate and precise objective measures of exercise activity/behavior (Standage & Vallerand, 2008). One very recent study (Standage, Sebire & Loney, 2008) employed behavioral persistence as a field-based alternative to assessing free-choice behavior and permits the testing of the utility of autonomous versus controlled motivation in predicting purposeful exercise behavior. This study objectively assessed 7 days of energy expenditure in free living conditions to obtain assessments of the participants' behavioral persistence, intensity, and frequency of exercise behavior. Results showed autonomous motivation to positively predict moderate-intensity exercise bouts of =10 min, =20 min, and an accumulation needed to meet public health recommendations for moderate intensity activity.

### 1.3 Trans-Contextual Model

It is important to note that motivational orientations are hypothesized to mediate the effect of perceived autonomy support on behavioural outcomes, suggesting that motivational orientation is necessary to translate perceptions regarding autonomy support from significant others into behaviour. This becomes more evident and clear in Hagger and Chatzisarantis' Trans-contextual model (2005, 2007b). The central hypothesis in Hagger's Trans-contextual model (2007b) involves a cross-contextual interaction between motivations at the contextual level. This implies that certain motives in one context have the ability to affect motivation in others. To see this model, see below, figure 2. Central to this model is the effect of perceived autonomy support on autonomous motivation in terms of physical activity contexts and the effect of perceived autonomy in physical activity on autonomous motivation in a leisure-time physical activity contexts via as you can see in the chart, autonomous motivations. It

must be noted that this model has mainly been used in physical education settings however, this is very much applicable to exercise related contexts as research has shown that perceived autonomy support is cultivated within motivational exercise contexts that provide autonomy support (Reeve, 2002; Reeve, Bolt, & Cai, 1999).

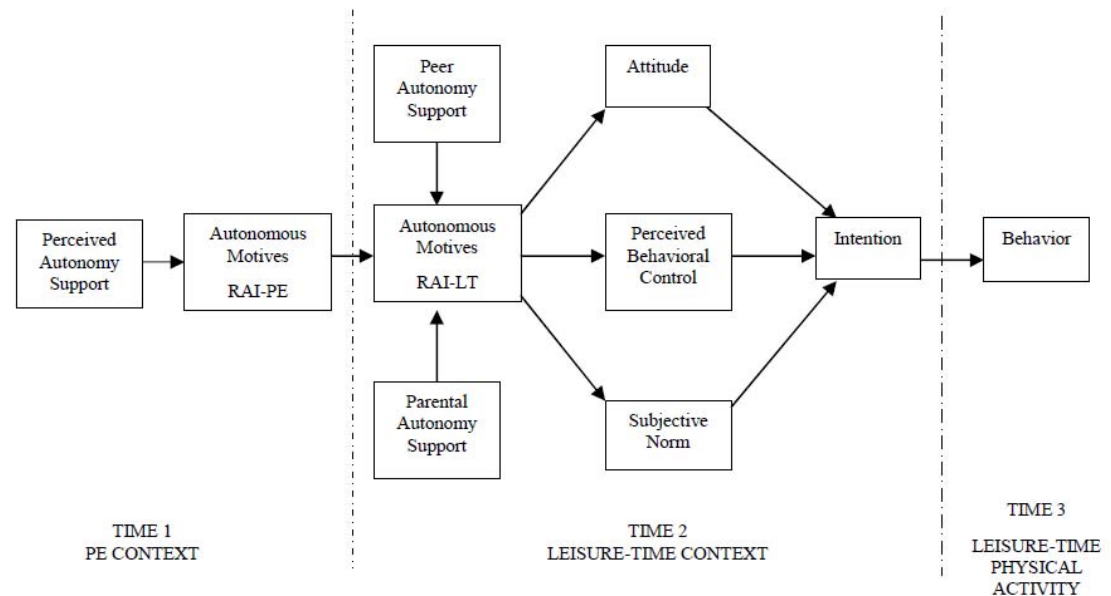


Figure 1. The trans-contextual model of autonomous motives in physical education and leisure time contexts.

The trans-contextual model uses a unique multi-theory approach, adopting constructs from two social cognitive models of motivation: the self determination theory by Deci & Ryan (1985, 1995, and 2000) and the theory of planned behaviour by Ajzen (1985, 1988, and 1991). The research supporting this theory will not be discussed here.

#### 1.4 Exercise Adherence and Recent Intervention studies

As mentioned in the beginning of this review, predictors of current exercise behaviour may not predict adherence to exercise as evident in the 50% dropout rate from exercise programs. Current research in long term adherence is minimal and an understanding of the underlying motivations in those who have persisted in exercise is needed. Successful maintenance has been unofficially established in intervention studies as engaging in regular physical activity for at least 6 months after cessation of intervention (Dunn et al., 1999); similarly, individuals who increase their activity on their own and perform regular physical activity for at least 6 months are viewed as successful maintainers (Marcus et al, 2000). Haase & Kinnafick (2007) conducted a qualitative study in an

attempt to understand individuals who maintained exercise behaviour. This particular study ran focus groups whose topics were derived from aspects of self-determination, self-efficacy and theory of planned behaviour. In all groups, with a total of 12 participants; results revealed key factors including intrinsic motivation to exercise, value of exercise, commitment to exercise, structure, and planning are present. A very promising study of intrinsic motivation and exercise found intrinsic motivation to be associated with attendance in an eight-week aerobic fitness program and in confidence toward continuing exercising after the end of the program (Oman & McAuley, 1993). A post intervention analysis testing this association would have been beneficial. In more longitudinal work Edmunds et al., (2006), identified a difference between identified regulations, and not intrinsic motivation on self-reported exercise behaviour. They suggest assessing objective exercise behavior coupled with an index of behavioral persistence to test whether identified regulation represents the principal motivation governing immediate behavior while intrinsic motivation permits the inherent satisfaction needed for behavioral persistence. Therefore current emphasis in research suggests that extrinsic factors peak during earlier stages of motivational readiness, whereas the presences of intrinsic factors (e.g., enjoyment) are essential to prompt progression and maintenance (Ingledeu, Markland, & Medley, 1998). Adherence determinants have been used to denote a reproducible relationship rather than imply cause and effect because many studies in this area have been only co relational (Buckworth & Dishman, 1999).

In order to understand our limited success in getting people to adhere and maintain exercise, we need to take a closer look at how interventions have been developed and implemented. Many interventions have sought to adopt the recommendations from the Self-determination Theory to changing behaviour (Williams et al., 1996, 1998a,b, 1999, 2002, 2004), including exercise (Wallhead & Ntoumanis, 2004; Edmunds et al., 2007; Edmunds et al., 2008). These interventions have shown that the Self-determination Theory is viable and effective in producing increases in exercise behaviour among numerous population groups. The most recent intervention based on the self-determination theory published by Chatzisarantis and Hagger (2009) examined promotion of physical activity and self reported leisure time behaviour in students (Age=14.84). Students who were taught by an autonomy-supportive teacher reported stronger intentions to exercise during leisure time and subsequently participated in more

leisure time activities than the control group. This study contributes to longer term interventions by using a relatively long period; however the study only used student's perceptions of autonomy support. Recent developments in Vansteenkiste et al. (2004, 2005) indicated that the type of the goals people pursue (extrinsic vs. intrinsic) exerted large effects on health behaviour in addition to perceived autonomy support. It is suggested that future interventions should examine whether goal orientations in addition to perceptions of autonomy support have stronger effects on participation levels (Chatzisarantis and Hagger, 2009). These studies also used students as a population within a school environment, whereas Edmunds, Ntoumanis & Duda (2008) performed the first comprehensive test of an SDT-based intervention in a real life exercise setting. Ntoumanis and Duda (2008) drew from the SDT theory to examine the effect of an autonomy supportive teaching style on the psychological needs of exercise class participants. A 10 week exercise program was employed where participants were exposed to either a SDT based or typical group instruction class. The manipulated environment was found to have impacted changes in psychological need satisfaction, autonomous motivational regulations for exercise and behavioral, cognitive and affective exercise outcomes. These findings suggest that an autonomy supportive environment and interpersonal involvement provided by exercise leaders can indeed positively influence behavioral, cognitive and affective responses regarding exercise by participants. The generalizability of these findings is limited by the inclusion of participants from a university setting, again, also students. The findings from this study warrant an intervention involving males and/or taking place outside of a University setting such as a fitness club with a more general adult population. An intervention with this design will be more informational if underlying motivational processes were congruently examined. This study mentioned involved female exercise participants enrolled in a 10 week program where they were exposed to an SDT style or a typical teaching style. Attendance levels were higher in the group exposed to the SDT teaching style versus the typical teaching style. This research still needs to be replicated and expanded for longer periods to test long term adherence. There is a clear need for more long term intervention studies and repeated follow-up assessments to track the process of adherence and relapse. Further development and replication of this study exploring these underlying motivational processes is necessary. Many current interventions have been developed without a theoretical model or with only selected components of the model. Even when they have been tested with theory, the amount of variability has

failed to be explained (Baranowski, Anderson and Carmack 1998). Only one study to date, has qualitatively examined the process of Internalization in through a cross sectional study of students in a PE setting (Gillison et al, 2009). However, Internalization is a dynamic process, and as such, is best studied over periods of change rather than the snapshot provided by their cross-sectional study.

In Summary, the present study aims to use past and present research in designing, implementing and evaluating an SDT based intervention for an adult population in an exercise context. In the evaluation, assessment of prevalence of external regulations and their subsequent internalization will be explored. Secondly, it aims to examine the psychological processes aligned with SDT that are linked to leisure time physical activity followed by a review of a post program questionnaire to examine persistence six months after the program.



## 2 THE PROGRAM

The program described below has been created based on theory with the intention of improving exercise adoption and adherence. This intervention was implemented in a way that incorporated all the components needed to involve an autonomy supportive environment. The program is designed and delivered in an autonomy supportive way, both structurally and interpersonally. The intent of the designers and implementers of this program is to empower the participants to adhere and persist in exercise behaviours through their own volition and values so that they may enjoy the countless benefits of a healthy active lifestyle.

### *JQ Fitness Summer Bootcamp Overview*

The Program was run by jq fitness, an independent fitness training company located in the Greater Toronto Area ([www.jqfitness.com](http://www.jqfitness.com)). The philosophy of the program is to help you achieve and maintain total body fitness and an overall healthy lifestyle. This is achieved through a 10 week cross-training program incorporating a blend of circuit training, nutritional knowledge and goal setting strategies. This is incorporating strength training, cardio work, core training, kickboxing, circuit training, short distance running, calisthenics, nutrition tips, goal setting and behaviour modification strategies. The program was marketed as results-oriented. This was to stimulate participation as research shows that the primary motivations for adopting an exercise regime are external such as weight loss/gain (Silva et al, 2008). To realize this aspect of the program, individual fitness assessments are taken at the beginning, midway and at the end of each 10-week session to keep track of participant's progression and goals.

### *Program Components*

To effectively construct a program needed to support active lifestyles the psychological constructs of the SDT theory are used the underlying basis theory as mentioned above in the literature review. Much of this program has been designed in congruence with the practical examples of SDT-based psychological strategies and techniques suggested in a recent article published by Edmunds, Ntoumanis and Duda (2009) which is aimed at helping fitness professionals in aiding clients in fostering exercise Adoption, Adherence, and associated well being as well (refer to figure 4). The current program is divided into two areas, training and nutritional education for which the exercise leader is responsible, and, goal setting and behaviour modification which the exercise

psychology consultant is accountable for. The exercise psychology consultant is also the investigator as well as current author. Both areas involve two components; structural and interpersonal for which each of the leaders are responsible for in their associated areas (Refer to diagram 3).

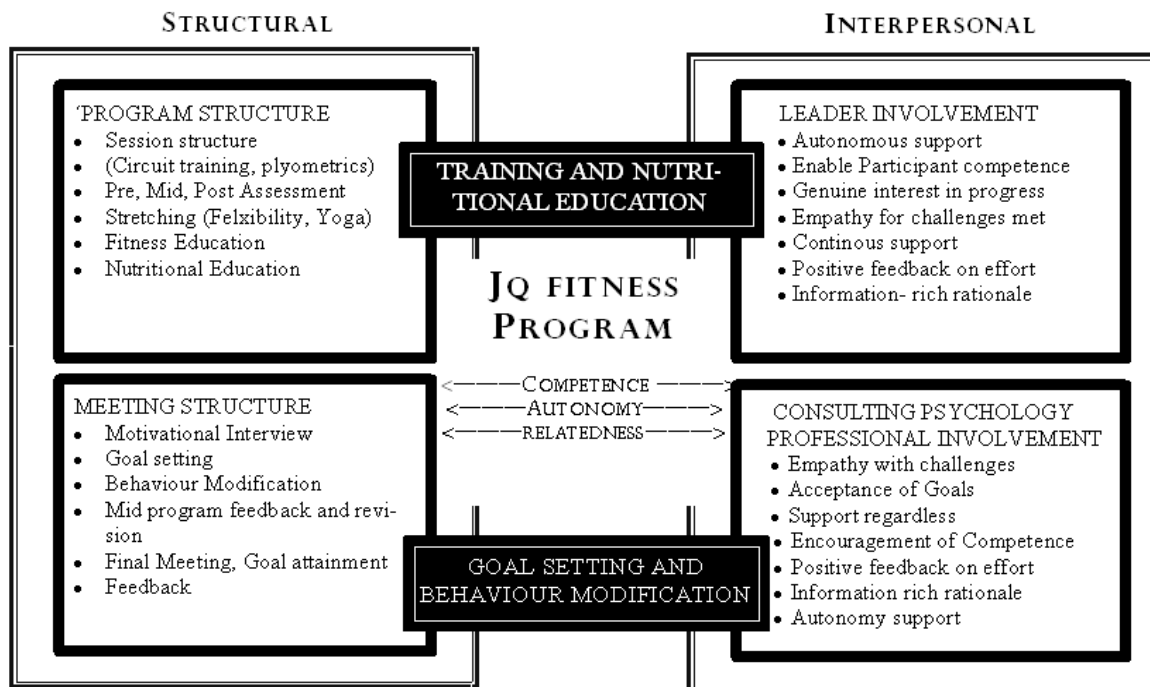


Figure 3. Structure of the current program.

### *Structural component*

This component involves the actual structure of the program in enabling an environment that supports the psychological needs of competence and autonomy. It works to support participant's perceptions of their own competence and their autonomous orientations. This is incorporated into the organization of the sessions and the goal setting meeting (motivational interview). Both sessions and meetings are delivered in an autonomy supportive way by both the exercise leader and exercise psychology consultant. Sessions are designed with achievable tasks that are progressive in difficulty and intensity. Program is lead with the perspective in mind of the participants and their perceptions of planned exercises. Therefore, all exercises are presented in a way that is non-intimidating, that looks doable and is offered with variations that they can start with to build their confidence and competence. The basis of this lies in enabling competence in participants and building their fitness gradually. Competence will be fostered by selecting tasks that are possible for everyone to complete. This includes exercises that

may appear tough so that when attempted and successful, participants experience more competence. This will also be reinforced by positive feedback from both the leader and consultant. In the instance of this program, all exercises are task based with focus on the achievement of personal bests. Feedback will be linked to positive affect in competence for example, 'you beat your 2 min run time by 35 seconds, and doesn't that feel great?' Sessions are varied in design with a circuit training base to enable participant autonomous decision making. Sessions involve unthreatening warm ups, interval training drills, plyometrics, calisthenics, Yoga, Flexibility education, fitness education and nutritional education. This part of the program also includes the pre, mid and post assessments physical assessments.

Goal setting and behaviour modification meeting is implemented with the aim of helping participants formulate realistic achievable goals, adopt clear realistic expectations about aspects of their behaviour they can change, encouraging them to believe that they are capable of the desired change, and enabling them with a tool to help them make these changes. This is followed by positive feedback regarding their progress in these goals and behaviours.

#### *Interpersonal Component*

The interpersonal component of the program is vital to avoid the undermining of participant's views and to avoid a coercive and controlling environment. This component involves the exercise leader showing genuine interest in the progress of participants as well as a degree of empathy for the challenges met in the sessions. This involvement requires continuous support of effort and emphasis on personal challenge to avoid support in a controlling fashion. Largely this is done by providing information-rich rationale for the selected choice of training as well as educationally sound nutritional advice that enables participants to actively engage in their own choices regarding their fitness and nutrition.

In terms of the goal setting meeting, the consultant is empathetic towards the challenges the participant presents, supportive and accepting of their goals and desired behaviour changes. These meetings are also educationally high in nature where the consultant may offer information that leads the participant to make their own choices about their current and desired behaviour regarding health, fitness and nutrition. Reflective listening is an effective way of showing empathy.

*Autonomy Support within the Structure and Interpersonal Relationships in the program*

The program has been developed ensuring maximal complacency with the social contextual characteristics of the SDT theory as displayed in the chart below published by Edmunds, Ntoumanis and Duda (2008, p.23).

<b>Characteristic</b>	<b>Dimension</b>	<b>An Example of Application</b>
<b>Autonomy Support</b>	1. Provide Choice	1. Provide options about the type of exercise when possible
	2. Be supportive and praise improvement	2. Praise improvement in techniques and fitness
	3. Acknowledge and take into account exercisers feelings and perspectives	3. Be open to communicate and respond to them in a positive manner
	4. Provide meaningful rationale	4. Explain why each activity is beneficial and what areas of fitness it will improve
<b>Structure</b>	1. Demonstrate good leadership	1. Negotiate goals at the start of the class
	2. Answer questions well and directly	2. As stated
	3. Provide Optimal challenge	3. Work at a level that pushes participants to the maximum but accommodate for those less able, provide easy and hard options
<b>Interpersonal Involvement</b>	1. Dedicate resources to participants	1. Spend time chatting at the start of class, learn exercisers names and show enjoyment
	2. Ensure Close proximity	2. Mix with the class, do not dominate at the front
	3. Recognize Interest and disinterest	3. If a problem arises, discuss and amend it, try and re-engage with the class.

Figure 4. The different social-contextual characteristics proposed by SDT and examples of how they can be incorporated into a health and fitness professional's instructional style.

In line with the suggestions in the exercise contexts, participants are often given the choice about type of exercise, more importantly rationale is provided as to why the participants will be engaging in certain behaviours. For example, bringing the heart rate up and then down in interval training will allow us to put a stress on our heart in a way that helps it become stronger faster, and then followed by an explanation. Expectations of participants are made clear and all informational feedback in terms of exercise execution is offered in private with supportive recommendations. For example, "Great core work in that plank, see if you can lower your hips slightly if you want to make it a little more challenging."

The exercise leader displays a high level of interpersonal involvement with each participant to make them feel like a valued member of the program by listening to all feedback, comments and even jokes. In order to further create an autonomy rich environment, participants are constantly offered choices. For example, in which station they wish to start at for the circuit training, or during the warm up, allow the participants to decide to which point they would like to run today for the warm up.

Participants can choose whether they want to partake in the A.M or P.M sessions.

Whether they feel it is too hot to exercise in the sun, and would prefer the shade.

Whether they want to do more running or more muscular based exercises. Whether they want to stretch sitting down or standing up. This way the program works to create the environment needed in which exercisers feel like they have the choice to decide among options, so that when they execute their decisions, they feel like they are doing so under their own volition, increasing the task oriented motivational climate in which they are working out in. By Goal setting, this allows the participants to have more say in which aspects they want to improve, for example if a majority of participant's goals is to increase upper body strength and more specifically to be able to do 'guy-pushups', then the exercise leader can use this information to tailor the program to meet the individuals needs. This also improves the interpersonal relationship between the participants and the exercise leader as, now the leader is aware of each of the participant's goals, instead of setting vague and ambiguous ones such as weight loss. This also may draw the participants to feel like their personal needs are being met and as a result they are being effective in reaching their goals. In the instance of this program, where weight loss and improved muscular fitness were a goal. Circuit training needed to include combinations of exercises that were not entirely enjoyable to many, such as running, and or "mountain climbers". This was always preceded by rationale or as Edmunds et al (2009) put, communications that are information rich and delivered in a non-controlled manner. Further examples will be provided in the results section of this paper. During the goal setting meeting, the exercise psychology consultant/ investigator takes into account the participant's personal history, this includes medical, psychological, and well as physical. The meeting uses as much as Wilson's motivational interviewing script as possible to foster self-determination.

*Motivational Interviewing in the Goal setting meeting.*

Markland et al (2005) offer guidelines state that these programs should enable all participants to become more autonomous with regards to the physical aspects of their lifestyles. " Furthermore, the guidelines stipulate that health and exercise professionals working in referral schemes should employ an accepted model of behaviour change and have the necessary motivational counselling skills to deliver behaviour change objectives." (p. 88).

The aims of a motivational interview are listed in the table below (Rollnick & Miller 1995).

- 1) Seeking to understand the person's frame of reference, particularly via reflective listening
- 2) Expressing acceptance and affirmation
- 3) Eliciting and selectively reinforcing the client's own self motivational statements expressions of problem recognition, concern, desire and intention to change, and ability to change
- 4) Monitoring the client's degree of readiness to change, and ensuring that resistance is not generated by jumping ahead of the client.
- 5) Affirming the client's freedom of choice and self-direction

In a very non-controlling and information rich way, the consultant will explain to the participant how taking part in exercise would actually benefit them according to individual cases. Fostering autonomous motivation may come under the forms of 'why not try, or, it might help if...' as well as help the participants to make the links to certain actions to aid them in endorsing actions themselves as well as internalizing them so that they value them on their own terms.

*Intrinsic Goal Setting*

Meetings will involve the climate stated above as well support for clients to choose goals that are intrinsic, focusing on health and physical fitness, rather than extrinsic goals pertaining to weight loss and physical appearance. Framing goals in exercise contexts using future intrinsic goal attainment has shown a positive effect on effort expenditure, autonomous exercise motivation, performance, long-term persistence (Vansteenkiste et al, 2004).

*Relatedness in an Exercise Environment*

All participants who signed up before a deadline were given a sweat resistance t-shirt, (see appendix 9) these t-shirts are made and are considered popular on the market in terms of workout gear. T-shirt included “exercise” related words in order to educate the participants in exercise “lingo”. Such words included; iso, glycemic index, rep, plyometrics, mountain climbers. The attempt here was to add inclusivity and a sense of belonging in order to meet the needs of relatedness of the participants. This was also to eliminate the effect of work out gear comparisons within the group.

*Trans-Contextual Model and Leisure-time exercise*

According to this model, the participants in the program should partake in exercise related behaviour in their spare time. For the weekends, an online video was produced by the exercise leaders that participants can stream right into the comfort of their own homes. Easy to do at home exercises using minimal equipment were provided at no expense to the participant but their own time and energy.

*The Program and Persistence.*

The program will be re-offered in the fall of 2010 should participants desire to continue.

### 3 PURPOSES AND AIMS OF THE STUDY

#### 3.1 Purposes of study

The recent research supporting Autonomy support in fostering autonomously oriented motivations is well supported. However, research on how well such an environment is designed and implemented are much needed in order to place these programs in effect. The purpose of this study was then to plan and implement and evaluate a 10 week circuit training program based on the social context needed for a self-determined fostering environment according to Deci and Ryan's SDT. Another aim was to understand both how the processes of the program were experienced by participants and how the participants subjectively viewed the program. More importantly, this study wanted to understand the processes of internalization that took place in regards to participant's regulations along the SDT self-determined continuum. In addition to this, we wanted to also explore the participants their intention to exercise outside the program, and their resulting persistence post program.

#### 3.2 Aims of the study:

1. To successfully design and implement a 10 week intervention program based on the social contextual characteristics proposed in the Self-Determination Theory (Deci and Ryan, 2000).
2. To conduct a contextual evaluation of the program in order to evaluate the implementation of the program and to explore participants subjective experiences to program processes.
3. To further describe in detail particular case studies of some of the participants involved in an attempt to construct a motivational profile describing their motivational orientations
4. To reveal the processes involved in the internalization of motivational regulations by participants in an autonomously supportive environment. According to Ryan and Deci's Organismic Integration theory, participants internalize as they move along the continuum to more autonomously ruled motivations or self determined motivations versus controlling reasons to engage in exercise.



5. To reveal whether autonomous motivation in this intervention is related to participant's intentions to exercise during non scheduled contexts such as leisure time. As according to Hagger Trans-contextual model.
6. To reveal whether, participant's persistence in exercise engaging behaviours continued post intervention.

## 4 METHODS

### 4.1 Participants and Program Solicitation

Participants are healthy adult males (2) and females (27). Age of the participants range from 18-54 ( $M$  age = 22.36). All participants signed up for the program via an internet site or on-site prior to program start date. The program solicited participants using referrals, word of mouth, internet advertising and billboards on the side of the roads using the program slogan “iluvthis.ca”. Program was paid by participants as it has been shown that monetary involvement contributes to program attendance as stated in Edmunds, Duda, Ntousmanis (2009). No prejudice was used to discriminate any signing up participants. Monetary commitment was the only binding contract. However, all participants must have checked ‘no’ in all boxes as required by the Par-Q (<http://fitness.cornell.edu/docs/par-q.pdf>) in order to assure that participants safety and that of the programs from any health related concerns. Participants ranged from all levels of fitness from new exercisers to those already maintaining exercise for years, with a majority that fell somewhere in between often starting up exercise frequently but lacking persistence in activity.

### 4.2 Procedure

This structural program was delivered by two exercise leaders, one female exercise leader who implemented the suggested strategies (Edmunds, Duda, Ntousmanis, 2009) in her teaching style for a 10-week period of time and one male assistant (26<age<28). The exercise leaders were not instructed to do so, however they were picked on the criteria needed to fit all the requirements of an autonomy supportive leader. (See below for 4.4) Delivery of an autonomy supportive environment lasted the whole intervention study of 10 weeks. Measurements of variables were made at 3 points, at the start of the study, at the end and with follow-up six months post program. At baseline, all participants completed questionnaires as well as an interview collection concerning passed exercise behaviour, current perceptions of autonomy support and motivational orientations. Near the end of the study, participants were required to complete this process again in order to examine the intervention’s effectiveness in shifting and creating new orientations of their motivations towards more autonomous regulations. Secondary to this, using interviews to collect participant’s intentions to exercise during leisure time and their actual activity during this time was investigated. The first and

only follow up, followed in the next six months, participants were requested to answer a questionnaire pertaining to their current exercise behaviours.

#### 4.3 Exercise Leader

Classes were run on Tuesdays and Thursdays by the same instructor (a 28 year old white Canadian female, certified by Canadian Association of Fitness Professionals, with 8 years of teaching experience). The instructor carries certifications in personal training, group fitness, nutrition and wellness, martial arts, advanced stability ball training, core board training, power pacing and carries a current CPR and First Aid certification. The instructor aimed to be consistent and effective at organizing, implementing and delivering autonomy supportive sessions. This was assessed prior to the program start. The exercise leader was chosen according to an evaluation incorporating the characteristics of an autonomy supportive leader as listed in the table by Edmunds, Duda & Ntoumanis (2008). Refer to previous figure 4. The exercise leader was not informed that their leadership style was essential in the implementation of the program. This was to allow for her natural leadership style and not to allow for the principle investigators participation in the program to change her behaviour.

#### 4.4 Venue

The classes took place in a vast open parking lot of a local church (which had no affiliation with the project). The classes were supplemented by an online video which you could find on the program's website which was up to the participants to partake in. Participants had the option of coming before hand to not participate but observe how the program was run before making the commitment to sign up. Anyone who did choose this option did sign up. The first session was an assessment session; therefore, clients were given certain tasks to do with variations depending on ability and were asked to do their personal best.

#### 4.5 Research procedure and Data Collection

During the first week of regularly scheduled training sessions, participants were introduced to the investigator by the exercise leader as the on-site exercise psychology consultant. The investigator explained that they would be meeting the participants one-on-one to discuss goal setting strategies for the term as well as partaking in the sessions. Participants were informed that meeting with the consultant was voluntary and that if

they chose not to do so, this would result in no penalization. Two clients chose not to set up a meeting due to heavy work schedules. The remaining 29 participants gladly set up their appointments. Participants then each signed up for one on one goal setting meetings. During these meetings, participants were invited to participate in a study examining motivations in exercise. Confidentiality and uses of the information were clarified prior to each participant giving informed consent before completing the questionnaires and continuing with the meeting. All subsequent data was collected via note taking by the investigator. Notes were taken in point form on site then typed out into more detailed account post session or meeting. Data was held on the investigator's personal computer which only the investigator had access to.

#### 4.6 Interviews (meetings)

All initial interviews were held at a local coffee shop near the program site. This was to ensure comfort and privacy of the participants. The comfort of a locale known to them placed the participants more at ease and the knowledge that they were not in ear shot of the other participants. Participants were informed about the true nature of the meeting, that is that part of it would involve goal setting and behaviour modification, yet at the same time motivations will be noted as well as a questionnaire filled out that pertains to these motivations. The participants all agreed to sign the consent form for full participation in the study. Participants were blind as to the reason and or actual purpose of the study. They were not informed that the environment was manipulated in order to provide an autonomously lead exercising atmosphere which also fulfills their need for competence and relatedness. It was deemed safe to withhold this information as it would not put participants in harm's way. Interviews then ranged from 60 to 75 minutes in length. Information was taken by note taking by the investigator as only relevant information was needed from the participants. The interview was open ended allowing for a more easy flowing conversation between investigator and participant. See Appendix 3. All final interviews followed the same structure as the initial interviews however ranged shorter in length from 30-45 minutes as time was no longer needed to build rapport with the participants.

#### 4.7 Measures

All participants completed the same 15-item BREQ-2 and EMI-2, two self-report questionnaires assessing the reasons why people exercise (see Appendix 4, 5). The

purpose of using both these questionnaires was to supplement the interviews. The answers provided in the questionnaires was used to assess congruency between responses reported in the interviews. The Behavioural Regulation In Exercise Questionnaire -2 (BREQ-2) places exercise motivation along a graded self-determination continuum (Markland & Tobin, 2004) and includes scales assessing external, introjected, identified, and intrinsic regulations (. Following the stem, “Why do you exercise?” participants respond to each item on a 5-point Likert scale ranging from 1 (*not true for me*) to 5 (*very true for me*). The BREQ-2 does not include an integrated regulation subscale its original did and as such is not examined in the context of this study. The second addition which used in this study, the EMI-2 (Markland and Ingledew, 1997) is used as a means of assessing participation motives and their influence from the perspective of Deci and Ryan’s (1985) self-determination theory. For the purposes of this study it will allow us to view whether there are individual differences in stage change in the 10 weeks and is also used to supplement the qualitative data. The first and only follow up, followed in the next six months, participants were requested to answer a questionnaire pertaining to their current exercise behaviours adding to Godin and Shephard’s (1985) Leisure Time Exercise Questionnaire which only assesses leisure time exercise. The follow up questionnaire is attached (see Appendix 5). However this questionnaire does not account for scheduled exercise, therefore modifications have been made to allow for a more accurate representation of the participants follow up exercise behaviours.

#### 4.8 Closure and Data Review

At the end of the study, the investigator explained that they must return abroad to write their thesis. The participants were asked to respond to any follow-up emails and explained a modified debriefing of the study. They were then explained that following the post program questionnaire, they would receive via email, the true debriefing form and information on where or how they can contact the researcher or information relevant to the study in the future. See appendix 2 for debriefing.

#### 4.9 Program Evaluation

In order to evaluate the program, a contextual evaluation was used. This is an ethnographic approach to program assessment in order to describe implementations and

evaluate impact. In this current study, a new methodological approach was used. To understand the complexity of this program and its participants, contextual evaluation was evaluated to be the best approach. Due to the nature of the SDT theory and its multidimensional framework, contextual evaluation encroaches the idea that interventions may have several facets and dimensions that may result or relate to multiple outcomes (Britan, 1981). This evaluation seeks to determine how the program works and its related effect on participants. It examines how the settings work to foster the environment needed for internalization. While experimental evaluations seek to validate cause and effect through controlled comparisons, contextual evaluations seek to understand program complexity in particular settings (Patton, 1990). Although experimental evaluations try to advance the “science” of policy theory, contextual studies seek to improve understanding the phenomenon in case and practice of program intervention. This permits an inductive evaluation that allows for a description of program implementation, how Autonomy is provided, how program structure adds to this environment, formal as well as formal goals, participant interpretations and understandings as well as social surroundings. Due to the vast encompassing of observations and interviews, as well as a great deal of participant observation, ethnography is essential to understand the broader patterns of participation. Even more so as participants stated goals ranged greatly, the application of an autonomy supportive environment is complex, proved even more useful to perform a contextual evaluation. Observation, recording and analysis of behaviour took place in context. This included systematic descriptions of social systems between exercise leader and participants, and Participants themselves.

#### 4.10 Case studies

Previous studies have only focused on quantitative data to examine motivations in exercise whereas a case study presents many advantages as stated by House (1980, p.183) which include; rich and persuasive information based on program participants; representation of diverse mentalities, fitness levels, etc; and a large potential for accurate and coherent data. By using the case study model, effects of program processes on motivational orientations are an essential result which can be adequately assessed as well as used to depict the program to those involved in it. This model enables the researcher to gain an understanding of the participants’ beliefs, thoughts, and motivations through their descriptions. In this way, the researcher is able to explore how

the participant interprets their surroundings and can reveal their underlying motivations by matching it to their own experience. All parts of the program are observed from beginning to end before conclusions are drawn. These conclusions are based on the tenets of the Self Determination Theory (Deci and Ryan, 1985) as this to date has been the most promising model in terms of exercise persistence in a healthy adult population.

#### 4.11 Data analysis

Data analysis consisted of grouping results according to both the investigator's participant observations and thematically categorizing subjective experiences of the participants. Interviews were reviewed several times by only the primary investigator. The interviews were reviewed until very familiar with the accounts. The investigator then segregated the data into two different streams; themes, and case studies. For themes, key phrases or content were first independently coded into preliminary low-level themes. The investigator then conferred on their interpretations of the principal emergent themes after a one week post re-examination. Following coding of themes, the investigator constructed individual case study profiles for each participant. Case studies themes were compared individually to the EMI-2 and BREQ-2 questionnaire results. The investigator matched key meaning units extracted for each individual, and contextual data relating to the experience of the program from the interviews (e.g., the participant's reactions to the program, attitude, reactions to leader, changes in feelings, and competitiveness) to the reported motivations and regulations to both the pre and post questionnaire results in order to examine the underlying motivations and subjective experiences. Variables in the program that were not rated by use of questionnaire were rated in latent form in the interview. *Perceived autonomy support* was constructed by collection of responses to open ended questions. The *autonomous motivation*, *perceptions of interpersonal environment*, *perceived competence* latent variables were constructed using the interview question responses as indicators. The participant profiles were additionally used as in (Gillison et al, 2008) to ensure that the final themes reported were a representative account both within and across participants. Like in Gillison et al, no attempt was made to conduct formal comparisons between naturally occurring groups of participants leaving this sample heterogeneous to a wide range of participants.

## 5.0 RESULTS

### 5.1 Program Implementation

Upon registration, each participant received a jq fitness bootcamp Food & Activity Journal to help keep them accountable. Inside are meal and snack ideas, easy to track daily food intake tables and recommended exercises for non-bootcamp days. This was followed by a full physical assessment measuring body mass, fat free mass, body fat percentage, total body water, caloric expenditure, as well as girth measurements of arms, chest, waist, hips and both legs. The first session involved a fitness assessment with a focus on performing personal bests. At the start of the program, participants also underwent one meeting with the exercise psychology professional lasting sixty to ninety minutes. This included Goal setting and behaviour modification strategies. Participants were taught to hold themselves accountable as well as plan for success. The fitness portion of the program ran twice a week, Tuesday's and Thursdays with the option of following a training video online during the weekend, or partaking in activity of participant choice. Participants chose to attend from any of the AM or PM sessions offered during the week in case they had to change their schedule. Offer of flexibility was essential in the summer months when work and holiday schedules may vary. Training Sessions ran for one hour from start to finish. First 10 minutes included the warm up, then 40 minutes of circuit training, followed by 10 minutes of education and stretching. Equipment was already set up prior to the sessions and organization is marked out in chalk on the asphalt.

The motto of the program is "I luv this!" encouraging a positive attitude towards the training and living life healthily. Participants received a new sweat resistant graphic workout shirt with this slogan printed on it. See Appendix 9. The back of the shirt included relevant exercise lingo to educate the participants with regards to terms used in the environment. Mid Assessments involved only measurements being taken while goal setting progress is tracked halfway via self-monitoring. The final assessment involved a final fitness assessment; measurements were taken, followed by a final meeting in which goal attainment discussion took place as well as new goals and/or revision of prior goals. The purpose of this meeting was also to generate discussion of program, participant's experiences as well as generation of feedback and intentions to continue.





Figure 5. JQ Fitness Program Timeline

Refer to Appendix for Program Schedule as well as examples of detailed sessions. The program is a copyright of *jq fitness* and any reproduction requires the permission of *jq fitness*.

### Completion

Of the 30 participants who started the program, 28 completed the 10 weeks. One participant left on an extended vacation and the other could not be contacted as to why they did not return to the program. Of the 28 participants who did complete the program, all of them averaged a 93 % attendance rate. Of all participants, 24 (86%) of them signed up for the following fall session, including the participant who had departed for vacation. Of all program participants, only 8 responded to the post-bootcamp questionnaire in the following 6 months. Of these 8 participants, 7 reported continuation in exercise while 6 reported continuous participation within the program.

## 5.2 Program Session Description

### *Session 3*

Upon arriving to the session in the morning, the leader was there spreading her energy and a positive attitude. “2<sup>nd</sup> week in! The focus this week will be on flexibility, get ready to learn some new ways to let your muscles feel good.” After the warm-up, the leader explained that today’s session will involve a superset circuit. “We often feel intimidated by the word superset; it is actually just a fancy word for doing a different exercise using a similar muscle group.” The leader demonstrated all the exercises at the stations and provided variations. The 2 subsequent exercises would then be repeated three times at each station. One station for example would involve mountain climbers followed by squat press-ups. The squat press ups used different resistances for different levels. The leader was very thorough in explaining how to use them and which colour to choose depending on where you think you are at. She urged participants not to be too hard on them yet suggested the participants take the challenge if they found it too easy.

The leader would repeat the names of the exercisers to help them with exercise “lingo”. Participants chose which station they wished to start at. Even though the intensity of the exercise was demanding, participants continued to show sheer determination with constant smiles on their faces. Each exercise would last 45 seconds, yet to make it through right to the end participants would joke “Are you sure your timer isn’t broken?” “Johanna, keep your eyes on the clock” and everyone would laugh. Upon completion of the circuit, participants declared satisfaction in themselves, and others, “yes, we made it through” “wooh, really feel that one today.” The circuit was followed by a guided stretch. During the stretch, the leader read a nutrition excerpt to the participants. It was meant to be inspirational in terms of making healthy food choices.

### *Session 10*

The Mid session assessment was a re-evaluation of all the tests done at the start of the program. This included the fitness testing and the measurements. The measurements took place first as participants were told to stream in at different times, the leader and the assistant were getting participants onto the scale and measuring their inches using a tape measure. Knowing what was required of them during the assessment seemed to lessen the tension as participants seemed more eager to see where they were at in terms of their fitness. Every participant managed to reduce the 1 km run time as well as see improvements in all other aspects of testing. “I luv this, its always fun.” One participant noted after she doubled her wall sit time, “I have stronger legs!” the same participant noted “before I worked out at the gym by myself, but this is different, I luv this!” After the assessment was over, the leader excited the participants with the explanations of how to play “Baseball Raleigh” followed by “its going to be fun.” At this point participants seemed very motivated by their fitness test results.

### *Session 13*

Participants were greeted with an already set out obstacle course. “*You can never tell what you’re going to do just by looking at what equipment is available, it makes it exciting.*” The leader explained each exercise, not as clearly as in the beginning however when participants started the course, observations revealed that the participants seemed to know what was already expected of them and no one looked confused as to any aspect of the course. Exercises in the course included crab walking with a resistance band, frog hog with swimming noodles, sand bag pulls, and bear walks. “awesome, that’s it.” From the exercise leader. At this point, the leader was still supportive, but

more withdrawn from giving feedback. Feedback was still consistent upon the execution of movements and on the process followed by praise, “Yes! Keep it up!” Even though the workout is challenging in intensity, participants are observed to draw more energy instead of deplete it. One participant even looks vibrant, more energetic and youthful. “Its work, but I still luv this, I enjoy the challenge, makes me feel strong.” Participants also seem to keep the focus on themselves and the tasks in front of them. Social competitiveness seems to be absent here as no one is looking around at others. The air is humid, but the participants do not complain. The course is achievable by everybody yet challenging even for the fittest in the group. “You know, I like it, its not something I’d do in the gym, that’s probably why I like it, it’s a different workout for me, keeps me from plateauing, ing..can u say that?” After the course, the leader guides the stretch and does a random check to see if participants have brought their nutrition books. Only 2 participants have. “What happens when you don’t bring your books?” she asks, “Burpies.” Participants rarely ever bring their books and as a result are punished with an exercise that is achievable yet very demanding. The leader then hands out a paper explaining the Glycemic Index. She then goes on to explain how insulin levels are affected by the choices we make in food. The explanation is very scientifically sound and followed by choices you can make to “to keep you even keel”. Participants actively engage in the discussion asking about different foods and acknowledging the info, “I didn’t know all these foods raise my insulin levels,” Participants then matched certain foods themselves to allow for this “even keel”.

#### *Session# 14*

The warm-up today involved a game of tag with Noodles followed by freeze tag. The boundaries were marked in such a way to make them small enough for everybody to be incorporated and successful in tagging someone else. “I prefer this to the run to Dundas and back.” Everyone seemed pleased with the warm-up as a game of tag. Many participants do not like the run to Dundas as a warm up although some participants have stated that they do. Once warmed up the session involved a circuit training workout using resistance exercises coupled with anaerobic exercises.

Circuit: (Bicep Curls, Leg Curl-ins, Suicides) x 2

(Push-ups, split push ups, ab burls, skipping rope) x 2

Lat Raise, hip squeezes on stability ball, legs ups) x 2

Half of each set was performed on the comfort of a mat on the grass with the higher intensity exercises (suicides, skipping) on the gravel. Even though the workout was

perceived as hard, the participants share the positive up-beat attitude as the leader. Leader used sympathetic statements, “I know it’s hard, keep it up.” And maintained support through-out. Different variations were offered throughout both easier and more challenging. The leader had a way of making everyone feel capable through her offered variations and her phrasing did not undermine anyone. After the session, One participant that had just come back from holidays and noted that she was making more conscious food decisions, “signing up for this program, I thought it was going to be just someone pushing me to work hard, but no, I’m surprised how much food knowledge is included, It’s like a 2 in 1, I like that.”

#### *Goal Setting and Behaviour Modification Meetings*

Meetings would usually start out informally, over coffee or tea at a local coffee shop. The participant was usually eager to discover what the session would involve as most participants had stated either never engaging in this sort of meeting or never setting goals for themselves. The consultant would start with some very open ended questions about the participant about their exercise history and current participation, and then would listen as to what the clients felt were there motivations to exercise.

#### *Example of Exercise Psychology consultant and participant Meeting*

Participant M and the consultant started by going over some personal exercise history which revealed much about her life and her progression in her motivations in exercise. M started x amount pounds heavier x years ago attending the leader’s classes. She would go over the ups and downs in her life, at this point she would identify periods of her life that were associated with lifestyle changes and consequently weight changes, (i.e. child birth, deaths in the family). Identification with what has worked in the past what hasn’t would usually reveal certain behaviours. In M’s case, she was a very adamant of her nutritional intake. It came to light that M’s happiness was contingent on the number on the scale, lower numbers usually equalled better days, and higher ones resulted in self-destructive talk and blame. When it came to goals, M was ready to throw out numbers that she wanted to achieve in order to be happy. Through understanding of the situation then autonomy supportive guidance, the consultant worked with M to help her see that this behaviour was not sustainable and would lead her to an unattainable happiness, and that essentially she was setting herself up for failure as water retention, hormonal changes, all natural aspects of her body were going

to influence the scale of her happiness. The future intrinsic goals that she would choose for herself to focus on was the next step. M was ready to try a different approach that involved personal happiness and development. We approached the 3 goal reward behaviour strategy. In which M would set herself 3 attainable goals for each day, and after 7 days of successful behaviours, she could reward herself. M was leaving for a summer vacation to which she mentioned that she often guilted herself on these trips because she would fall off of her exercise regime, over eat, and come back feeling fat and right where she started. To attempt to combat this, we came to a strategy that will empower her and lead to positive reinforcing feelings of success. For each day that M was on this trip, she had 3 behaviours that she was required to meet,

1. Push ups and squats, morning and evening.
2. Eat till satisfied, not overfull
3. Drink lots of fluids (which she tended to forget to do when travelling)

Now, because M was on vacation, every day that she would complete all 3 goals, the subsequent day, she would reward herself with something of her choice. M believed herself to be competent in achieving these goals, and instead of dreading the future guilt associated with all you can eat buffets, was optimistic in the goals set out before her and looked forward to her trip. The consultant and participant then agreed to discuss her physical goals when she got back. Any other participant however, would set physical goals that had personal value to the themselves, for example; being able to do one man push up, running the 1 km warm up without having to walk, being able to complete stability exercises on the ball, and increasing energy! Each one of these goals would follow the consultant trying to grasp why this was important to the participant and whether these goals were being controlled or coming from values within the participants themselves.

### 5.3 Individual Case Studies

#### *Case 1: Participant T*

Participant T is very excited about this program because she already believes she will be successful. We met, after the second session, so she has already undergone two sessions. This is interesting because in this particular instance, the investigator talked with the participant before she signed up for the program when she decided to come “check it out”. T first expressed self-doubt and did not believe she could keep up with the program. The exercise leader explained to her that it was understandable to worry,

but the current exercisers started in exactly the same shoes and have worked their way up to their current levels of fitness, just like she will. T decidedly signed up for the program when she read up on the testimonials on the website and realized that there was merit in these words, and that other exercisers also started not being sure of what they were getting into. She mentioned reading the testimonials of the others and being inspired by them (relatedness). Since starting the program, T feels like the class she is doing well in the class and has developed feelings of competence. Not only has T felt successful, she has developed a desire to learn more about eating healthy, and living an active life.

She is concurrently doing the weight watchers program but finds it monotonous and is curious to develop her recipe repertoire. T has identified areas of her life she wishes to change. She is doing so under her own volition now. T in her post program questionnaire revealed that she is still currently exercising up to 5 times a weeks and believes it to be an important aspect of her life. According to the continuum, T has fully internalized the behaviours associated with exercise and not only has she identified with the values, she has integrated them into her sense of self. This is also evident in her consequent persistent exercise behaviour.

#### *Case 2: Participant V*

Participant V joined the program to support a family member who also signed up. Both V and family member signed up together as a means of getting in shape together. The family member had more externally references goals such as weight loss whereas V who did not have these same regulations, joined in order to appease the family member. V did not report much of a desire to engage in exercise herself, she found her energy levels were low and did not see the point in intense exercise, however could not really see the a desire to engage in light exercise either. V did emphasize wanting to change her poor eating habits. It turns out that V eats a lot of junk to fuel her, especially chocolate. It was revealed that this was also costing her her energy due to the sugar lows that came with them. Halfway through the program, after a session, the investigator asked V about her participation. V reported a sense of being in '*the zone*' during the one hour session. She stated that it was her time to just focus on herself. V reported an acknowledgment that if she exercised, she would make healthier food choices. V feels like she is able to make them with the nutritional knowledge she has acquired. At the end of the program, V declared that she knows how exercise makes her feel and values exercise as a means of getting her fit and making healthier food choices. Her inventory

affirmed this at program end revealing that she values feeling healthy and getting stronger more than any other measure. Further interviewing a second time over the phone revealed that she likes how exercise makes her feel and “*I can see myself almost getting addicted*”. V admits that if she was to stop working out, she would feel icky, flabby, and lethargic. ‘*I was such a couch potato before and I do not want to go back to that.*’ Now she comes home from her workouts with so much energy. She described sessions as being fun and feeling a sense of accomplishment after each session. “*When I was in the shower, I felt good from the workout*”. V reported feeling competent in completing all the exercises and upon returning home each session really enjoyed her sense of well being and energy that followed her through out the day. She feels very confident now in terms of her ability. In terms of her goals, V has reported succeeding in her goal of running 1 km to Dundas St. and back without stopping. For her, she states, ‘*this is quite a feat.*’ She has gotten stronger than she was before, and she is happy about this. She finds herself more active now with more energy. If she does not move in 20 min, she feels restless as a result has been walking her dog more. When asked about intentions to continue, V stated that she has already re-signed up for the fall session, this time for 3 times a week. V has fully internalized her regulations as well as developed intrinsic motivation.

### *Case 3: Participant L*

At the age of 53, Participant L identifies herself as an exerciser. She enjoys exercise and does so out of her own volition. Although she enjoys exercise and the benefits from it she most values how it affects her appearance, therefore not only is she intrinsically motivated, but extrinsically as well. Even though her resulting appearance from fitness guides her motivation, she has internalized it as essential to her values of feeling good and firm in her clothes. This is not participant L’s only value, she values feeling invigorated, exerting herself, managing her stress, getting stronger and having fun being active with other people. Overall L thoroughly enjoys the activity itself. She has a membership with a local club and attends on a very regular basis. During the course of the program, her energy and attitude towards her workouts is somewhat contagious. During sessions L’s consistent smiling and optimism especially when shouting, “*I luv this*” is enough to push anyone to persist in whatever they are doing. L’s regulations are consistent with that of an intrinsic and integrated exerciser. Her responses on the both pre and post surveys also support this as she reports high accord with intrinsic and identified values. Even though external regulations such as Toning and trimming her

body keep L regular with her behaviour, it is her internalization of her values that keep her returning to the gym on a regular basis. Even L acknowledges that in order to keep her form, she must continue with her workouts. This program although would not help her further internalize any regulations; it will aid her in her goals her goals over the next ten weeks is tone and improve her eating. L wants to be more consistent with her nutrition and says that this program gave her the tools to do so. In the program end interview, which was conducted 2 weeks later because L was on a vacation in South America, L reported having lots of energy to travel as her trip was very physically demanding. *“Lots of more energy for my trip, everything improved....including nutrition. I changed things because of what Johanna taught...and I liked it. Actually liked it, not like other crap I’ve put into my body before or where I had to eat this and this at this certain time.”* L also reported enjoyment in variety; *‘Everyday is something new, something fun, or not, but I like it. Always different.’* In terms of other participant’s L stated that, *“It’s easy to get a long with the people.”* In terms of her intentions to continue with her behavioural changes, *For sure, stay with this lifestyle, it was gradual changes, easier to do, and her health really loves this lifestyle. Really hopes she will stick with it for a long time.”* What was interesting in terms of this program is that L stated that she feels like this time around (meaning the program); she was empowered to make the changes she needed that were more permanent. *“Drinking water in the morning was a challenge at first but now it is a must,” and “there is no other way to go about her day.”* In terms of her goals, L said that she is happy with her results; she feels healthier, trimmer, and tighter and will be happy to keep these results. When asked about her intentions to continue, L says that she will stick to it *‘indefinitely’*. She had already signed up for the fall session, 2-3 times a week.

#### Case 4: Participant V

Participant V joined the program already intrinsically motivated with additional health regulations. V has a health condition that requires her to exercise to keep the condition under control although this is not her primary motivation to work out. V states that she *“works out in order to keep in shape, remain fit, live the good life”*. She combines exercise with poor nutritional habits to even out her caloric intake and expenditure. She started the program with the expectations of being held accountable as well as with the self expectation of developing better eating habits. Her current exercise regime before the program consisted of 3days of resistance training and 2 days of cardio in addition to



a group exercise class. She stated that she is happy with results yet they are not the most important thing while measurements are seen as an effective way for her to stay accountable to herself. During the course of the program, V appeared to decrease in intrinsic motivation. Although she stated that she needed accountability through leadership and measurements, this appeared to have a negating affect on her enjoyment of exercise. V started off eating healthy, and as the course of the program went on, *fell off the wagon with the food stuff* and returned to eating processed foods. As the program ended, V returned to independent exercise activities such as swimming and rollerblading which she stated were, *kind of lonely, yet it was time to herself.* She continued spinning classes on the weekends and signed up for a half marathon as well as dance classes in the fall. Although V was already an *exerciser*, this program did not work to keep up her enjoyment in the exercise as a result leading her to return to independent activity.

#### 5.4 Participants Change in Regulations

##### *Motivational Orientations and Regulations prior to the program.*

Coming into the program, the participants stressed increased fitness, weight loss and muscle tone as their primary motivations for joining the program. This was regardless of participant exercise history. This was not unexpected as it was the beginning of the summer, and for many people this means less clothing to hide under. Even though majority of participants reported these external motivations, this did not appear to be the case in the pre BREQ questionnaire examining the source of regulations. However the EMI did reveal that although weight regulation and appearance did bear significant weight on participant motivations, other factors such as Revitalization, Enjoyment and Challenge held higher importance to participants in the program. The results of the EMI-2 and BREQ-2 are used to compare notes from the interview in this study and their subsequent results will be published separately.

Table 3.0 Calculated Frequency of Highest Proportion of Stated Motives

Pre Program	Interlap	Post Program
To lose weight	To lose weight	To lose weight
To stay slim	To stay slim	To stay slim
Because it makes me feel good	Because it makes me feel good	Because it makes me feel good
To feel more healthy	To feel more healthy	To feel more healthy
To improve my appearance	To improve my appearance	To improve my appearance
To build up my strength	To build up my strength	To build up my strength
		To stay / become more agile
		To give me goals to work towards
		Because I find exercise invigorating
Because it helps to reduce tension		To increase my endurance
		Because I find exercising satisfying in and of itself
		To give me personal challenges to face
To help control my weight	To help control my weight	To help control my weight
To get stronger	To get stronger	To get stronger
For enjoyment of the experience of exercising	For enjoyment of the experience of exercising	For enjoyment of the experience of exercising
		Because I feel at my best when exercising
To develop my muscles		To develop my muscles
To help manage stress		

*Examined Motivational Orientations and Regulations post program*

Participant's, who started the program intrinsically motivated with fully internalized external regulations, ended the program with the same motivational orientations. What is of importance here that cannot be shown with the questionnaire is that these participants still left the program with additional internalized values regarding exercise, nutrition and goal framing. In the one instance of the participant who was a fully internalized exerciser with externally referenced goals, shifted in her regulations to

intrinsic goals. This may have not affected her participation in exercise, but it did support her psychological needs and had positive effects on her well-being.

Participant's post program had identified and agreed with more health and well-salient values associated with exercise. In terms of the importance and benefit of introjected regulations were also reported at the end of the program in the female

<i>Participant</i>	<i>Gender</i>	<i>Pre Regulations</i>	<i>Post Regulations</i>
1	F	Intrinsic/Identified	Intrinsic Identified
2	F	External/Identified/ Intrinsic	Identified/ Intrinsic
3	F	Identified	Identified/ Introjected
4	F	External	Intrinsic
5	F	External	Identified/Intrinsic
6	F	Intrinsic/Identified	Intrinsic/Identified
7	F	Intrinsic/Identified/ External	Intrinsic/Identified
8	F	Intrinsic/Identified/ Introjected	Intrinsic/Identified
9	F	Intrinsic/Identified	Intrinsic/Identified/Introjected
10	F	Identified/ External	Identified
11	F	Intrinsic/Identified	Intrinsic/Identified
12	F	Intrinsic/Identified	Intrinsic/Identified
13	F	Identified/Intrinsic	(No Final Measure)
14	F	Intrinsic/Identified	Intrinsic/Identified
15	M	Identified	External/Amotivated
16	F	(No Initial Measure)	Identified/Intrinsic
17	F	External	Identified
18	F	No Initial Measure	Intrinsic/Identified
19	F	Intrinsic/ Identified	(No Final Measure)
20	F	External	Intrinsic/Identified/Introjected
21	M	Intrinsic/ Identified	(no final measure)
22	F	Identified/Intrinsic	Identified/Intrinsic
23	F	Intrinsic/identified	Identified/Intrinsic
24	F	Intrinsic/identified	Identified
25	F	external/introjected/identified	Identified/Intrinsic/introjected
26	F	(No initial Measure)	Identified/intrinsic
27	F	Intrinsic/introjected/identified	Intrinsic/introjected/identified

Table 2 Participants Pre and Post Regulations According to the BREQ-2 and Case

Motivation	Pre	Post
Intrinsic	14	16
Identified	20	22
Introjected	3	4
External	8	1
Amotivated	0	0

Table 3 Calculated Frequency of Motivations Pre and Post program

exercisers. Crossing these results with the participant interviews, introjected regulations did stem from the guilt associated with not exercising. This had to do with the ties the participants made with their values regarding exercise. For example, if participants valued feeling fit, then if they missed a workout, they would feel the opposite of this. They would attribute this as feeling bad or disappointment in themselves and may postulate it as guilt, an introjected regulation in the BREQ-2 questionnaire. If they missed a workout, they would feel the opposite of this. They would attribute this as feeling bad or disappointment in themselves and may postulate it as guilt, an introjected regulation in the BREQ-2 questionnaire.

*“I think the guilt shame thing comes from you knowing what it’s like with or without exercise, why did I feel less guilty when I started, well, because I didn’t know just how good it felt to work your muscles, so now I know if I don’t do anything, my muscles will get all mushy and not as strong, yeah I don’t want that.”*

Upon further investigation, it was revealed that because of the highly identified values participants placed in their workouts, missing a session was unacceptable. However, this was due to their own regulations, and not for controlling reasons such as avoidance of their own guilt or guilt placed on them from an external source

Participants who deemed themselves as regular exercisers (highly integrated) also reported higher introjected regulations. This was attributable to the fact that having an active lifestyle as a personally meaningful identity meant that not being active would go against who they are.

*“I love the way I feel after, I eat, sleep, work and work out. It’s not like I would feel awful if I didn’t, I mean, I would, but just the same as not sleeping, you don’t do it*

*because you know you're going to be tired if you don't, you do it because your body needs it. "*

In terms of amotivation, no participant started with orientations that were amotivated, the post program analysis did not show any reports of amotivation either suggesting every participant at least identifying the importance of exercise. This program therefore does not include an amotivated population and cannot be translated to amotivated exercisers.

## 5.5 Program Processes

### *Providing educationally sound rationale*

When conveying knowledge about a certain topic, the leader educates the group with scientifically sound information. In an understandable way, the leader explains the functions of certain practices and how they work to affect health and fitness. The exercise leader avoids emphasizing how this ties into external goals such as weight loss, yet how it affects the health. Here, it will be called a leading connection as the leader delivers the information needed for the connection however, enables the participant to make the connection themselves regarding how this ties into their own goals and or belief system. To do this, the leader avoids saying, "because of this, you should do this. Instead the connection is left to be made by the participant. So in this instance, it is then the participant who feels that they have made the connection. Not only does this stem understanding on their part, but they also believe that they are the sole creators of this connection. In the instance of this intervention for example, the leader informs the participants that eating food that is deemed "light" or "0" calories, means just that; you are putting food into your body with no energy value. As a result, your body thinks it is getting energy, and what happens when it realizes that there is no energy coming? It stimulates more hunger. This information is then related to how it will translate into participants desired results. Participants make the connection that eating food with no energy value results in them eating more food and sometimes even more food with no energy value. Therefore they are not helping their body in the fuel efficient way it is meant to work. According to their own needs, participants then decide if it is better for their health and diets that they eat energy appropriate food. When it comes time to making a choice in the aspect, it will be participants own and not as a direct result of the leader saying this is what you need to do. This way, instead of just saying that x will

result to y, the participants make the connection themselves that if I want y, and if I do x to help my s, and s leads to y, then I want to do x.

### *Providing Choice*

The effect of providing choice in the classes showed no observable effect on participants to the participant observer's eye. However, in the goal setting meetings, choice resulted in participant's choosing goals that were personally salient to them. This resulted in participants reporting back progress with enthusiasm. One participant approached the consultant halfway through the program, "*I killed my goal! I wanted to do 10 guy pushups by the end, and I just killed 20!*" Participants choosing goals that were of significance to them and that were also intrinsic showed positive reactions, however what was of great interest was those participants who still chose to keep some extrinsic goals, such as losing inches did not report any satisfaction even on achieving their desired goals.

### *Satisfying Need for Competence*

Participants all agreed on issues of competence. When asked about their ability to do tasks, it was interesting that the participants attributed their successes due to their own hard work, effort ability. Although there is much truth to this, participants would not maybe differentiate between what they could do and what they were asked to do. If the program was made challenging with participants failing all the time, participants might attribute this to their own failure or a too demanding course. In this instance, the participants attributed their achievements to themselves in aspects of fitness and goal setting. In one instance, due to her increased feelings of competence in running, one participant with the influence of two others in the program, signed herself up for a marathon as extra incentive to train for a harder run after completing her own smaller goals of running shorter distances.

### *Aspects of Relatedness*

All participants who signed up before a deadline were given a t-shirt, (see appendix 9) T-shirt included "exercise" related words in order to educate the participants in exercise "lingo". Such words included; iso, glycemic index, rep, plyometrics, mountain climbers. This added inclusivity and a sense of belonging (relatedness) into the

participants. Participants didn't feel as much pressure to buy exercise gear because the t-shirt offered them inclusivity into the group without the need for material acceptance. Participants shared a mutually enjoyable environment stating that, "*easy to get a long with the people.*" Wide range of fitness levels did not seem to impact participants as much as expected, "*I dont feel out of place, that im not as fit as everyone*". Although there still seemed to be a competitive atmosphere. "*It was competitive. Yet supportive, but more supportive.*" Among participants there was a general humorous atmosphere, almost a joint conspiracy to joke about Johanna in good nature. When the leader announced she would be away for a day to attend a local conference, the participants joked that; "*I think you should diversify your conferences, you cant only do Toronto people, you have to know the global exercises of the world*". No general negative attitudes among participants was detected.

### *Goal Setting*

Participants were encouraged to actively choose their own fitness goals, no requirements were posed on the fitness goals, just a reminder to choose what the participants felt is important to them or something that they could look back upon with pride. Participants expressed the novelty of goal setting in their exercise history. Having heard of it before, they were not too sure of how to go about it and also unsure if it was applicable to them.

Example of participant's fitness Goals:

- 1) Run 10 K, non stop
  - 2) Increase upper body endurance- 30 guy push ups
  - 3) Tone trim thighs, wants jeans to fit better (5 weeks)
- 1) Improve Posture
  - 1) Increasing Endurance: Being able to run continuously the route around her house
  - 2) Increase Core Strength: wants to be able to hold the plank for longer
  - 3) Weight loss: Better fit in selected piece of clothing
  - 4) More energy: feel more uplifted after work

In the final interview, participants stated that they had achieved at least 2 Of the 3 goals, and some achieving all 3. No participants reported not achieving their own set-goals. Some participants had already achieved their goals half way through the program and set their own new goals. Participants who did not achieve some goals, were not

disappointed as they stated that they had reached other goals that they didn't know they had till now, particularly in muscular strength and increased stamina.

### *Behaviour Modification*

Goal setting meetings were the first instance where the consultant worked with participants to shift away from regulations that were controlled to more self-determined regulations. The resultant effect was participant focus on more intrinsic and identified goal regulations. For example, focusing not on the how many pounds to lose, rather picking an article of clothing that would make the participant happy to feel comfortable in again. Even though the motivation was initially external, and essentially still is, the focus was shifted to internalizing the aspect of how the body felt rather than a number to control motivation.

### *Participant's Reactions to the program*

Participants agreed that the program was empowering and that changes were gradual and expectations clear; One participant says that *“For sure, stay with this lifestyle, it was gradual changes (referring to the program), easier to do, and my health really loves this lifestyle. I really hope I will stick with it for a long time.”* Participants reactions to the program were highly contradictory in the sense that they would complain about the exercises and then say that they enjoy the way they feel after they've done them.

*“Able to do most of things, hard, but u could do them, felt sore but felt good upon completion.”*

*“Wouldn't change anything about the class”*

*“About exercises....I enjoy them, there are a few that I could have done without.*

*Did every thing, hates burpies, suck to do. Felt good, success after the class. Thankful that I did go.”* Many of the participants enjoyed the variation in the program design;

*“Everyday is something new, something fun, or not, but I like it. Always different.”*

*“I will stick to the program indefinitely.”* The overall consensus was satisfaction to the program implementation; *“the only way to improve is to actually do our grocery shopping for us.”*

### *Participant Perceptions of Exercise Leader*



Participants reported feelings that were congruent to an autonomy supportive environment. This included the feeling of being provided support, empathy in feelings, motivation, and also a sense of personal commitment. The leader was reported to show positive support that was non-judgemental. At the same time participants felt that the leader was very motivating. To the participants this meant that she had the ability to push them to work harder both mentally and physically.

#### Participants Reactions to Leader

*"She has a gift, she really does, just when you think you're being pushed to the limit, she shows you that you can do more, or you can't do enough"*

*"She's amazing in terms of being able to transfer her passion into her instruction."*

*"She has vested interest in every person and takes every person's goals seriously."*

*"Johanna is not about trends or fads. She goes for things that work, that make sense. She really does her homework. She knows what's going on in the industry. Even in your body! She is in the back of your mind."*

*"When you're making food choices, it's like having a good conscience there or a good friend. She really has vested interest in your health and success."*

*"Always comes prepared and has a whole repertoire of exercises and knowledge at her disposal"*

*"Makes you feel comfortable, always knows what going on to work you hard, but also what you can do without failing"*

*"1-10, 9 in terms of motivation, she is pushing but not to pushy."*

#### *Changes in Behaviours*

Participants change in behaviour resulted directly and indirectly. The behaviour modification tool was provided as a means of self-monitoring for the participants. They decided on the behaviours they wished to change themselves, given the tool, and were given the option to change. All participants actively chose their own behaviour modification goals.

Examples are given in the box below.

Behavioural Goals set by participants:

- 1) Be in bed by 11 pm
- 2) Did I make healthy food choices today?
- 3) 15 min devoted to learning a new recipe
- 4) Did I eat out today? Yes/no

- 1) Skipping 5 min a day
- 2) complete workout Saturday/ Sunday
- 3) Snack on fruit at work
- 4) 3 bottles of H<sub>2</sub>O, 1 in am, 1 b4 2, 1 after 2
- 5) Decrease coffee intake
- 2) No eating in front of the TV
- 3) Snacking on fruit in the am and veggies at night

Participants were not asked to report their charts, as that would hold the program leaders accountable yet were asked to give feedback on their progress. Participants reported easiness of the tool to use and the goals attainable. The tool was easy to understand and reward contingencies were motivating at first, yet the end effect was a habit that they would incorporate into everyday life. The tool served as a constant reminder of the aspects they wanted to change on a daily basis. Participants noted positive results with their goals, and half way through the program, already set new ones for themselves.

*I've made a point of cooking at home more often with my husband, and when we can't Well let's just say "subway" has been making a lot of business off us"*

*`Everything improved....including nutrition`*

*"Changed things because of what Johanna taught...and I liked it. Actually like it: "not like other cr\*p I've put into my body before or where I had to eat this and this at this certain time."*

*"More conscious decisions, looking at labels."*

#### *Changes in Attitude*

In the final interviews, examined was a shift in attitude. Whereas at the beginning of the program, participants focused their goals on weight loss, toning and trimming, near the end, they were more concentrated on the way they felt. Motivations in weight loss were still there, however the participants picked up new identified regulations. This became apparent when talking about their goals,

One participant gained 2 lbs, but felt like she's toned down. Of course, she is upset about the lack of weight loss but she feels better in her clothes and they fit her better. Since when she started, she has *``not only felt successful, I've developed a desire to learn more about eating healthy, and living an active life. ``*

There were other participants that stated negative outlooks regarding their results despite their efforts, this was understood when participants stated `not sure if I've see the results of weight loss`. Although identification takes place in the program, there is yet to be a way to eliminate external regulators. This is not to say there is a need to eliminate them yet there appears to be a constant expectation for weight loss to occur which results in a confusion among participants when they are not sure if they are meeting the demands expected of them either by themselves or the leader. Further investigation should be made regarding what participants perceive as the expectations their leader has of them if any.

## *5.6 THEMES*

### *Accountability*

One theme that emerged very frequently among participants was that of accountability. For the participants this meant, feeling a sense of commitment to the program and or leader. One participant expressed the monetary commitment as binding. Majority of the other participants reported the leader as holding them to their commitment in the program. Even though none of the participants actually said that they would not be active if it wasn't for the leader, many if not all attributed their participation to this commitment with the leader. Participants did not express this as a controlling regulation however their attachment stemmed from an interpersonal relationship with the leader. They saw the leader as someone who was helping them with their desired results, with vested interest in their success, who also knew when they were not present. The leader to ensure their success would hold them accountable by taking attendance. The effect of this was a 95 % attendance rate in the program. The participants all reported "Johanna holds us accountable." This theme of accountability was experienced as a positive aspect of the program. The leader provided them with information about success and its relevance to participation that they connected to their own goals and internalized the principle as their own. Due to the investigators required presence, participants were asked whether they agreed with this statement. Participants agreed that they had shared this idea with a re-emphasis that this was important in terms of their success.

### *Competitiveness*

Aspects of competition among participants arose even though the actual sessions were designed to focus on personal effort. Participants felt they had to keep up with one another. There was an initial fear of being the least fit. *‘Like when the group is doing things, I don’t want to be the last struggler.’* Other competitive aspects arose when participants were completing their first measurements. One participant complained about one girl losing 21 inches, while she only lost 5. This comparison of the participants with respects to their achievements was an ongoing practice. Although not completely evident in participant’s actions, and not always stated, ego orientations are not completely breakable in a group environment as emerged in other ways. This would indicate a need to increase task orientations to promote mastery and decrease ego oriented competitiveness.

### *5.7 Participation Outside of the Program and Intentions to Continue*

#### *Participants’ self-reported exercise outside the program*

Participants reported an increased desire to be active on their own outside of the program. Participants were given the option to partake in an online video with posted by the exercise leader. Many of the participants stated it was too nice outdoors to stay inside and chose to partake in their own activities.

One participant reported going to a Zumba class twice a week and to a Pilates class on the weekend. Zumba is a fitness dance class that has been reported to be very fun.

Participants who travelled inside the weeks of the program reported increases in activity in their travels due to what they perceived as more energy while travelling. All participants reported doing at least one active activity on their own during the weekends outside the program. These included, walking with the family, skipping rope, bike riding and swimming.

#### *Participants’ participation in the online video.*

Participants were given the option to partake in an online video posted by the exercise leader. 12 of the participants reported trying the online video. Of those who opted to try the video, those participants had the option of posting their personal best on the site to track their own progress. Of those who partook, 7 of them posted their personal bests on the website. Participants stated that although the video option was good to have, it was not used because with the weather being so nice, it was hard to be motivated to stay

inside. Participants also reported not working as hard within the comfort of their own homes.

#### *Intentions to continue*

Upon program completion, participants were asked about their intentions to continue with the program or outside the program in their own endeavours. Participants agreed without a doubt that they would sign up for the fall session. This was consistent with the registration for the fall session, as 94% of the program participants signed on for the next 10 weeks. The remaining participants stated reasons such as going back to school in another city, or going to try it on their own for a while because of logistical reasons. One participant stated that she can't afford to keep doing the group classes but will definitely continue on her own in the gym. Another participant that did sign up stated that she likes the convenience of the class, the fact that it is a group setting, and finds it entertaining. She plans to sign up for 2 times a week in the fall. While a veteran group exerciser said *"I've done two other programs, and I've found this one to be the best."*

#### 5.8 Post Boot-camp Questionnaire

Not all participants responded to the post-boot camp questionnaire (n=6). Follow up with the leader was needed to collect enough information to provide an assessment of participant persistence.

Of those that started in the summer program, six responded to the questionnaire. Of the six, five are exercising in their leisure time outside of the program. Four are still with jq fitness. Of those that are not with jq fitness, one works out on her own and the other does not currently exercise. Of those who responded, all have set their own personal goals. Reasons for exercising currently are *"I sleep better, like a log actually, decreasing stress, Helps me to focus better, it makes me feel good after doing it. To remain active and fit, I like the way it makes me feel. I like looking better. I like competition (working out with my husband), JQ is fun"*. When asked if participants feel like they have to work out or want to, responses revealed a combination of both. *"I feel like I have to exercise or the weight I lost will come back...I love food too much!"* *"I feel I want to because if I don't I feel lazy and I feel like a missed out on something. I feel like if I don't do it, I'll lose the stamina and energy I built up."* *"It depends on the day. Sometimes I want to, and sometimes I feel like I have to. Why? Because my energies vary with the days"*

*“I want to exercise”*

When asked if participants identify themselves as exercisers, six out of seven said *“yes, I am an exerciser.”*

Then when asked what aspects of their exercise they like the most, responses included; *“After I feel good and know that it was worth. ; Putting my thoughts into action; completing what I said I would do. ; The feeling of accomplishment afterwards. ; I like the cardio; I play basketball so it really improves my game. I also enjoy weights b/c I like feeling strong”*

Attitudes towards the exercise leader remained positive; *“Johanna has always inspired me to work hard. For some reason I almost feel accountable to her”*

*“Both Jeff and Johanna are terrific. They push you hard but we still have fun.”*

*“I like Johanna; she is very supportive and encouraging.”*

One participant was even inspired to pursue a career in fitness herself, *“Great, positive. They have made me want to get into the business myself”*

Finally when asked open-endedly on the impact of the program on the participants, feedback was overwhelming;

*“Yes, exercise is a main part of my daily routine since joining bootcamp last year.”*

*“Yes, I feel even more motivated.”*

*“Yes definitely. I feel stronger and more confident in my ability to achieve certain exercises.”*

## 6 DISCUSSION

The current studies first aim was to design and implement ten week circuit training exercise intervention program based on the tenets of the self-determination theory. This intervention design was then explored to examine how the principles of the self-determination theory implemented in an intervention would shape the motivational orientations of the participants involved. We used a multi-methodological approach: primary by interviewing participants, contextual ethnographic evaluation and two measurement scales in order to understand participants underlying motives and the processes involved in their subsequent development. The first way this was displayed was using case studies to construct motivational profiles of the participants involved followed by emergent themes that revealed the programs effect on internalization of external regulations. The final purpose of this present investigation was to evaluate SDT's contention (Deci & Ryan, 1985, Ryan & Deci, 2000) that autonomous regulations (identified and intrinsic) were transgressed into more positive motivational consequences in the exercise domain. We sought to examine participant's motivational orientations in terms of its mediated effect on exercise behaviour in leisure time, intentions to continue, effort as well as values associated with exercise.

### 6.1 Study Design

Unlike previous research who has mainly used objective experimental designs to find patterns in human interaction, this study is one of few interventions designed to subjectively assess the participants engagement in the program. "The perspectives and experiences of those people who are served by applied programs must be grasped, interpreted and understood if solid, effective and applied programs are to be put into place" (Denzin, 1989b, p.105) Ethnographic research in this field may use phenomenological analysis as a means to seek, grasp and elucidate the experiences, meanings structure and essence of the lived experience of the programs processes for the participants involved (Patton, 1990). In this particular contemporary version of qualitative inquiry, the use of this approach is used to reflect a subjectivist, existentialist, and non-critical approach to uncover the subjective experience of participants in an attempt to reveal the genuine objective nature of things (Schwandt 2001:192).

Although this evaluation was exploratory in nature, this study made certain unofficial hypothesis based on background theory and previous research in exercise contexts. We hypothesized that participants who reported high levels of non-self determined regulations or low self determined regulations would show higher levels of self-determined regulations and decreases in more controlling forms of regulations. Moreover, we speculated that participants already high in terms of psychological need satisfaction and self-determined regulations would demonstrate increased enjoyment in the program, as well as higher attendance rates, more effort expended, more self-reported leisure time physical activity as well as future intentions to exercise.

## 6.2 Motivational Orientations and Autonomy Support

Our results found that consistent with self-determination theory, when the social context is autonomy supportive (Ryan & Deci, 2000) people are motivated to internalize the regulation of important activities and suggest that our 10- week intervention programme was successful in enhancing participant's autonomous motivational orientations. Also noted in our study was participants' internal perceived locus of causality which we found was facilitated with an autonomy-supportive style and thus enhanced feelings of autonomy and, consequently, promoted self-determined forms of regulation. This finding should be clear now in explaining why participants attribute success in terms of exercise to themselves rather than their exercise leaders. Should leaders be efficient at providing the adequate autonomous environment needed for basic psychological need fulfillment and internalization, participants would report themselves as agents of their own change. This was evident in Participants reporting high autonomy orientations in which they were oriented toward as aspects of the environment that stimulate intrinsic motivation, are optimally challenging, and provide informational feedback.

A person high in autonomy orientation tends to display greater self-initiation, seek activities that are interesting and challenging, and take greater responsibility for his or her own behaviour (Deci & Ryan, 1985a). If the intervention had fostered controlled orientations to which a person is oriented toward being controlled by rewards, assessments, structures, ego-involvements, and the demands of the leader then we would evaluate it as a miss, miss being a failure to foster a program successful in a positive additive of motivational orientations. In our study at least two of the participants were high in the controlled orientation placing extreme importance on ego-



involvement and other extrinsic factors. These participants were predominantly dependent on rewards or other controls, and were more attuned to external regulations than to what they wanted for themselves. This number is relatively small for the number of participants and even these two participants made small progress towards internalization.

Considering the successful combination of motivational orientations post program, this intervention has been deemed a pass, which means that participant's motivational profiles revealed a combination of intrinsic and extrinsic motivations that were predominantly self-determined and resulted in positive behavioural consequences. When looking at the scope of motivational profiles, participants who started with external and introjected regulations emulated the values of the program into their own meanings and constructs of what it means for them, taking on their own identified regulations. In some instances, participants reported intrinsic motivations related to program enjoyment. This is not surprising considering SDT suggest that social contexts that are autonomy supportive (e.g., offering choices) facilitate intrinsic motivation and self-determination. Those participants who already showed highly identified and intrinsic motivations maintained these orientations throughout, however even in these instances new regulations in these categories emerged that were relevant to the program, for example nutritional habits, and intrinsic goal framing, behavior modification.

Results further specified that perceptions of competence and the satisfaction thereof were most responsible for feelings of enjoyment and satisfaction (intrinsic motivation). This result is similar to previous studies (Koka and Hagger 2010). This suggests that the effects of the exercise leader's supportive style on more self-determined regulation may be mediated through competence need satisfaction. Koka and Hagger reported in their study that this mediation occurs from positive feedback from the leader.

This mediated interpersonal behaviours exhibited by the leader that provides an autonomy supportive environment include motivational strategies, such as providing students with choice their tasks (Hagger, 2002a), avoiding competition and external references for success (Deci & Ryan, 1985; Vallerand, 1997) and providing informational and competence-related feedback (Deci at al., 1994). This is also supported by the SDT (Deci & Ryan 2000). Thereby it is speculated that in our study

these perceptions of competence were mediated through the interpersonal behaviours exhibited by the leader.

Direct questioning of perceptions of leader autonomy support in other studies seems to not grasp the effectiveness of the leader and environment. If the autonomy supportive environment actually does what it is set out to do; enable exercisers to work out of their own volition, then they themselves will believe that they are the catalysts of their behaviours and not the exercise leader. As was revealed in this study, participants state that the exercise leader is wonderful, motivating, supportive, etc yet they still believe they are the agents of change and not the leader. Even though it was the leader that enabled them to fulfill their needs of competence, autonomy and relatedness. This can be demonstrated in all the statements near the end of the program that involve participants referring to their struggle, their conquest, their hard work, their labour, their persistence despite the odds. Participants' perceptions of being their own agents in change will result in an accurate representation of the leader's role. However, if this is the case, then it might be stated that the program has done its part, and that is to create more autonomous regulations in exercise.

### 6.3 Goal Framing

Our study showed results supporting SDT's proposition that intrinsic goal pursuits support positive effects on well-being. Framing goals in exercise contexts using future intrinsic goal attainment (focusing on health and physical fitness) is used as it has shown a positive effect on effort expenditure, autonomous exercise motivation, performance, long-term persistence (Vansteenkiste et al 2004b). Agreeing with previous research, framing activities in terms of extrinsic goal attainment (physical appearance, numbers on the scale) undermined those outcomes. Only one 3 part study has re-affirmed that intrinsic vs. extrinsic goals and autonomy supportive (vs. Controlling) learning climates utilized together improved student's learning performance and persistence (Vansteenkiste et al, 2004a). Among present participants was observed a positive interaction when intrinsic goals are pursued in an autonomy supportive interpersonal context. When people decide on goals for themselves, the connections to that goal are more personally salient and more congruent with their own personal psychological needs. For example, in the case of Matty, when she developed goals that were important to her that she could also control, this satisfied her need for competence and upon goal attainment also resulted in a much more positive

psychological outcome. This would be undermined should she have kept basing her goals on external measures such as a scale. It appeared that consultant and participant's intrinsic goal framing and an autonomy-supportive climate resulted in the participants being more genuinely dedicated to their goals as well as being more positively satisfied with them. This holds much potential for future programs looking to combine autonomy support with intrinsic goal framing in their exercise environments.

Findings in this study also support previous findings that intrinsic goals and autonomy support produced more free-choice persistence (Vansteenkiste et al, 2004b). When asked to choose their own goals on behaviours, many participants chose to participate in additional exercise, not relevant to the program itself, but which involved more of a commitment outside of the program.

What was new to this intervention which has yet to be tested experimentally is the use of the behaviour modification tool in an autonomy supportive context. The tool itself can be seen as an external control however when delivered in an autonomy supportive context can meet psychological needs and thereby can be internalized. In the instance of a person choosing to drink more water in their day, this can start off as external, such as "*this tool tells me I have to drink 8 glasses of water a day*". If the person chooses to work on this behaviour it is out of their own volition. The consultant will help by providing rationale as to why this may be important to them; they may offer that drinking more water helps the body flush excess fat. Should the person have goals pertaining to weight loss, the person then identifies with this behaviour as important to achieving their goals. They set out a realistic amount of water they can drink and soon this behaviour is internalized as their own. The result is a positive behavioural consequence such as more of a desire to drink water. It must be noted, that in this instance if the person does not integrate water drinking into their own belief/behaviour system, should the weight loss no longer be desired, this may result in the cessation of the behaviour. Therefore, values outside of external controls may need to be instilled. Whether these behaviours persisted outside of the study should be explored. In this study, focus was centered on persistence in exercise related behaviour and holds prospect for future examination of its relationship with other health behaviours.

#### 6.4 Case Studies

Due to the rich context in which this investigation took place (ethnographic participant observation, interviews, and questionnaires), an attempt was made to offer an explanation of how underlying motivations affect determination, in relation to the autonomy supportive environment. The relationships were inferred based on previous research and do not offer direct cause-effect relationships.

We explored individual case studies to construct motivational profiles that allowed us to examine the underlying motivational regulations of participants cross sectionally examining them at two points in the program, pre and post as well as their internalization process throughout the course of the program. Internalization concerns all those regulations whose occurrence was originally related to extrinsic incentives (Vansteenkiste et al, 2004b).

Different program participants not only have different perceptions of program success, but also different understandings of what success means and how it can be measured. If the program was successful in this instance, we would use participants' perceptions of their achievements based on more identified and intrinsic values at the end of the program such as enjoyment, satisfaction and an increase in belief systems revolving around exercise importance; and a less importance of external regulations such as weight control and bodily appearance. Using the combination of the results of the questionnaires and the scripts from the pre and post program interviews, the investigation attempted to piece together the collective experience of the participants and their regulations as they understood them. Questionnaires alone limit the investigation by losing considerable amount of information by fitting them into scales and using assumptions.

One participant, who did not see the point in exercising and did not have weight loss as a primary goal, shifted her values in line with the importance of exercise and developed inherent enjoyment from moving. After the program she emphasized how she felt in her own body and how enjoyable the experience was for her. "Its time for yourself, just to get into the zone, you know." Her original motivations to sign up included support of another participant and in turn internalized the workouts as her own time to work on herself. Her regulations shifted from external and amotivated to identified and intrinsic. In the first interview the participant had stated, "exercise will stop me from eating so

much chocolate.” The motivation is externally driven, the participant in this case does not refer any importance on the exercise, however will engage to avoid the ill feeling associated with eating too much chocolate. During the program, when asked about the sessions, this participant responded “Its time for yourself, just to get into the zone, you know.” This statement contains an indicator intrinsic regulation (“‘into the zone”) Such a response suggests that she is in, or has undergone a process of change,

Exchanging extrinsic goals upon the adoption of exercise for intrinsic motivation that puts her in a flow state of mind. As this participants motivation is internalized (self-determined) rather than externally driven (controlled), she would be expected to go on to continue her engagement in sport and exercise .

### 6. 5 Critical Themes

This study adds to current exercise literature by offering alternative explanations to the increase in introjected regulations that occur in females in certain exercise contexts. Previous research has offered introjected regulations as having a predicative role amongst women because these more controlling forms of regulations can facilitate short term initiated behaviour (Deci and Ryan, 1985, Ryan & Deci, 2001). Yet, in this study, these regulations persist and even increase amongst many participants who have internalized most regulations. In this study, introjected regulations of guilt and shame surface which is consistent with other studies showing that introjected regulations of guilt and shame may increase amongst female participants (Edmunds et al, 2008). In this study, a large part of our participants rated this introjected regulation higher except among the men. Duncan et al found in their study that introjected regulations were the most significant predictor of exercise intensity in women. The findings in this study supports former research in that females reported more introjected regulations given the regulated intensity. Edmunds et al found in their SDT intervention study that introjected regulations increased in both control groups whereas this study too would have expected decreases in both as participants identify and internalize these regulations. Edmunds et al attributed this to ego-involvement and an increase in social pressure regarding appearance in exercise environments. However further investigation in this program, enables us to infer that participants increased guilt or shame was a result of the incongruence of missing a workout and their values. This regulation would lead us to believe that participants are motivated to work out because they want to avoid the

associated guilt or shame that comes with missing a workout. However, their motivations are identified and because they hold their values as important, anything going against these values would be not-acceptable to themselves. Like in Gillison et al (2009), girls reported loss of fitness and guilt or failure to adhere with a healthy lifestyle as introjected regulation for exercise and health behaviour. However these also occurred along more self-determined forms of motivation pertaining to identified and integrated regulations which suggests that these regulations have already been internalized or are in the process thereof. This is also found to be applicable to highly integrated exercisers. Participants who deemed themselves as being regular exercisers. This may be especially applicable to women who recognize the importance of intense exercise to other external factors such as weight loss, or health reasons. It should therefore be expected that females who place high importance on these feel negatively or rather controlled when they know they are not acting in congruence with their own internal selves. This is not to say no exercisers partake in order to avoid the guilt and shame. Other regulations take higher priority yet it is becoming more apparent now that these introjected controlling regulations do not dissolve from the person's orientations. It would be interesting for more research to involve how highly integrated and identified exercisers perceive not exercising. In terms of the BREQ-2, this one measure of introjected regulation may not capture the true perception of the participants evaluating this regulation.

What this study does not examine is the extent to which participants have integrated exercise as a personally salient expression of their own identity. Even though many participants in the program have expressed already consistent engagement in exercise, the investigation does not seek to examine whether the orientations surrounding integration are present. Due to this missing information it cannot be said that participants have adapted the characteristic of "exerciser" into their identities post program. However in the post boot camp questionnaire every respondent except one admitted to "yes" when asked whether they consider themselves as an "exerciser." The sample or respondents was not large enough to make a definitive statement. It would be beneficial in future evaluations to explore the participant's constructs of their own identity in terms of integrating the notion of being an exerciser before, during and after the program.

### *Competition*

According to the SDT, an environment would undermine self-determined motivations if it was competitive in nature. Although, the program was not meant to be competitive, some participants' ego-involvements fostered competition, especially when it came to measurements. This was especially seen in those participants that did not internalize health and self-improvement as much as they still were controlled by external measures. In future interventions, to negate this it would be recommended to hold these measurements privately with each participant.

### 6.6 Behavioural Consequences

The final purpose of this present investigation was to evaluate SDT's contention (Deci & Ryan, 1985, Ryan & Deci, 2000) that autonomous regulations were transgressed into more positive motivational consequences in the exercise domain. In particular its role in with exercise behaviour during leisure time, intentions to continue, effort as well as values associated with exercise. Self-determined forms of regulation (intrinsic motivation and identified regulation) are postulated to bring about positive consequences, whereas the least self-determined types of regulation (external regulation and amotivation) are predicted to lead to negative outcomes (Ryan & Deci, 2000). Other research (Wilson et al, 2004) has been consistent in matching identified regulations towards exercise as predictors of exercise behaviour, intentions to continue, the amount of effort as well as importance attached to exercise. This is again supported by another important finding in the present study which is concerned with the effects of the intervention programme on self-reported physical activity participation. Participants reported engagement in physical activities or exercise outside the program if not participation in the online video. Although no direct relationship can be stated a causal relationship can be inferred as participants transfer their self-determination to participation in exercise outside the program. Should the program be in controlling in nature, it would be expected that participation would be limited to the sessions, however, as concept in the trans-contextual model is supported by Hagger (2003) in a physical education context. The model suggests that perceived autonomy support influences internal perceived locus of causality, which affects leisure-time physical activity intentions and behaviour.

This suggests that the internalization of exercise value outcomes may be transferred in leisure time through the exercise sessions themselves if supported autonomously from the leader. Leaders who exhibit teaching styles that are in line with this environment provide appropriate task-related feedback may actually enhance intrinsic motives that result in positive behavioural consequences. Previous research has explored this in PE students (Taylor et al, 2010, Mononen, Spasi, &Spaninks, 2007) however there is a lack of research regarding this model in an exercising adult population.

Not only did the present study replicate previous important findings but it also extended previous research by attempting to examine persistence using a open ended questionnaire 6 months after the end of the program. There were not enough responses to make definitive remarks regarding the participation levels however the number of participants still enrolled in the program gives promise to its effectiveness in its goal of fostering intrinsically motivated and identified persistent exercisers.

#### 6.7 Limitations

The present study is one of few interventions in an exercise context that have been examined qualitatively. Previous research has been experimental in nature therefore this study being in a category of its own is subject to quite a few limitations. These limitations need to be evaluated alongside of the results. No control condition existed to compare and support the provided results. Design studies, evaluation of implementation and a qualitative analysis of individual cases require a significant number of resources, mainly time. Due to this, alongside the need for description of how processes occurred rather than didn't, warranted only one condition. There is also the limitation that deals with self-report measures as they can result in overestimates of activity levels as well as a very surface level report of actual underlying motivations. The main limitation to this study involves the researcher being the sole ethnographer, consultant, investigator, analyzer of data and reporter. A study of this proportion would fare better if there was a possibility of triangulation (drawing on more than one investigator's interpretation of the data) in order to increase the accuracy of data interpretation. There is also the limitation of transferability of results. Even though this study included a heterogeneous sample with varying degrees of motivational orientations, it did not include many populations such as adolescents or children and conclusions cannot be applied thereof.



## 6.8 Conclusion and Future recommendations

Self-determination theory proposes that when individuals are autonomously motivated in their actions, as opposed to being controlled to act, they will experience more interest, excitement, and confidence that will be manifested as enhanced performance and persistence (Ryan & Deci, 2000). Self-determination Theory's autonomous reasons for engaging in exercise, which are personally-salient and viewed as emanating from the self are ideal for this purpose of establishing long term commitments. When individuals self-regulate, they will continue to form intentions to exercise in order to fulfill their autonomous motives. Future research imperatively needs involved multiple follow-up measurements of post-intervention behavior in order to establish the longevity of the effects and the mechanisms involved by measuring key psychological constructs, such as perceived autonomy support and motivational regulations (Chatzisarantis & Hagger, 2008). Current support for this theory is plentiful yet despite these relative hopeful findings, there is still a wide range of scope for further research examining the role of autonomy supportive techniques to change self determined motivation and exercise behavior. Future research is needed to explore the effect of autonomy support on different class contexts. The importance of this lies in the health benefits that can be obtained only by continued participation yet campaigns and interventions cannot be omnipresent, therefore the best hope for continued adherence is to confer the regulation of exercise behavior to the individual.

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## 8 APPENDIX

### 8.1 Consent Form

#### **University of Jyväskylä CONSENT TO PARTICIPATE IN RESEARCH**

##### *Motivation and Exercise Adherence*

**You are asked to participate in a research study conducted by *Karoline Kaminski* from the University of Jyväskylä. Results will contribute to completing her masters thesis as well as future development for programs run by JQ Fitness.**

**If you have any questions or concerns about the research, please feel free to contact Karoline Kaminski at 647-839-7332 or [karoline.k.Kaminski@jyu.fi](mailto:karoline.k.Kaminski@jyu.fi)**

#### **PURPOSE OF THE STUDY**

This study is designed to establish motivations toward exercise in a 10 week exercise program. This is important in order to facilitate the improvement of programs for the participants themselves. Exercise adherence is not an easy feat, and since you as the participant are committing to this 10 week program, we would like explore your personal reasons for participation.

#### **PROCEDURES**

**If you volunteer to participate in this study, we would ask you to do the following things:**

In order to help with this study we ask for your full participation. This includes meeting with the researcher on two or more separate occasions. Responding to all questions in an open and honest manner. Filling out two questionnaires regarding motivations and behaviours concerning exercise at the beginning and at the end of the program.

During the course of the program, the researcher will note your participation and subsequent attitudes toward the program as well your progress.

The researcher may also be contacting you via email once following the program for additional exercise information.

Research notes and findings will be held in the strictest of confidentiality. Researcher's notes will not be disclosed to anyone but the researcher. However, results will be shared with the program leaders but will be anonymous.

Should the participant wish to know the research findings, they will be sent a copy of the final thesis upon publication.

#### **POTENTIAL RISKS AND DISCOMFORTS**

You are at no risk in this study however should you at any time feel discomfort, inconvenience, please let the researcher know and steps will be taken to best manage these.

#### **POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY**

The potential benefits of this study include realization of your goals! This includes, personal, fitness and nutritional.

The results of this study will be used to better gauge what can be done to make you successful with your goals.

### CONFIDENTIALITY

Every effort will be made to ensure confidentiality of any identifying information that is obtained in connection with this study.

### PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may exercise the option of removing your data from the study. You may also refuse to answer any questions you don't want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise that warrant doing so.

### RIGHTS OF RESEARCH PARTICIPANTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study.

### CONSENT STATEMENT

#### SIGNATURE OF RESEARCH PARTICIPANT/LEGALLY-AUTHORIZED REPRESENTATIVE\*

I have read the preceding information thoroughly. I have had the opportunity to ask questions, and all of my questions have been answered to my satisfaction. I agree to participate in this study. I understand that I will receive a signed copy of this form.

\_\_\_\_\_  
Name of Participant

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

**Consent form administered and explained in person by:**

\_\_\_\_\_  
Name and title

\_\_\_\_\_  
Signature Date

#### SIGNATURE OF INVESTIGATOR:

**In my judgement, the participant is voluntarily and knowingly giving informed consent and possesses the legal Capacity to give informed consent to participate in this research study.**

\_\_\_\_\_  
Signature of Investigator Date



## 8.2 Written Debriefing

### *Written Debriefing Form*

#### **Exercise Motivation and Persistence in an Autonomy Supportive Exercise Environment**

First of all, thank you for participating and contributing to this master's thesis research. Secondly, let me explain what I was taking all those notes for.

Staying motivated to keep active is not only tough on the exerciser, but also on the researcher trying to keep that exerciser motivated! A lot of really smart people have found that people stay active if they like to and want to. Sounds pretty simple no? Not quite.

Apparently there are a lot of factors that actually control us to work out. Like when you pull yourself out of bed to exercise because “you have to... doctor's orders”. This program was actually designed and constructed to have you saying “I love this, see you next Tuesday!” How was that so? Using a supportive environment, where the exercise leader made sure you felt able to complete all the exercises, educated you to make your own decisions about your work outs, in a socially accepting environment that was fun and filled with variety. All these aspects come together to increase your motivation to keep with the exercise. What I didn't tell you before was that I was examining how these variables were changing the way you thought about exercise over the course of the 10 week program. More importantly, how the exercise leader was influencing these factors on you and how you received them. Sorry I didn't let you know this in the beginning. I hope you can understand that if I told you about these factors you might attribute your successes to controlling factors, which would not give me the results I was hoping for. Instead, you attributed your successes to yourselves! This is fantastic! In the end, it is you that is putting out all the work! However, this was a result of many factors outside yourselves. More importantly, you wanted to exercise because it was important to you for reasons you valued! Which is the secret ingredient to keeping with programs. (Again, more smart people have found this to be consistently true.)

If you'd be interested in obtaining a copy of the results once the study is complete, you may contact me, Karoline Kaminski, [kakamins@jyu.fi](mailto:kakamins@jyu.fi). If you have a more general interest in this area of research, you may also wish to consult the following references:

Deci, E.L., Eghrari, H., Patrick, B.C., & Leone, D. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality*, 62, 119–142.

Standage, M., Sebire, S., & Loney, T. (2008, August). Does Exercise Motivation Predict Engagement in Objectively Assessed Bouts of Moderate-Intensity Exercise?: A Self-Determination Theory Perspective. *Journal of Sport & Exercise Psychology*, 30(4), 337-352.

### 8.3 Interview Open ended Structure

Intro –

Summary of What to expect (rationale, choices, interpersonal involvement)

Questions about participant

Build rapport

Collect Descriptives

Collect Data pertaining to

- regulations
- behaviours
- attitudes
- Basic psychological need satisfaction
- perceptions of program
- locus of causality

-autonomy vs controlling

Goal Setting

Identification of 3 Physical Goals and 3 Behavioural Goals

Reasons for Goals,( rationale, choices, interpersonal involvement)

Future Intrinsic Goal reframing

Introduction of Behavior Modification tool

Plan for success

Reward system explanation

Explanation of Research Purpose and offer of Participation

Signing of consent form

Filling out the EMI-2 and BREQ-2

Question and Answers period

*Examples of Questions used during the interviews \*note\* not all questions were used in every interview and in no particular order. Questions asked depended on flow of conversation.*

#### *Descriptive Questions*

What activities are you currently involved in? and how often do you do them?

Frequency per week: 1`2      3`5      6 or more

How long do they typically last for you?

Is your job active or sedentary?

#### *Locus of Causality Questions*

What are your reasons for exercising? Personally.

What do you feel are the most important of these reasons to exercise?

How important do you feel exercise is to you?

*Regulation Questions*

Do you enjoy exercising?

Is it something you choose to do freely or do you feel like you ought to.

How do you feel when you don't exercise?

How important is it to you, to exercise regularly? Why?

How do you feel when you exercise? Before? After?

*Perceived Climate Questions*

Do you feel that your exercise leader provides you with choices and options?

Do you feel understood by your exercise leader?

Do you find yourself able to open up with your exercise leader during your sessions?

Does your exercise leader convey confidence in your ability to do well?

Does your exercise leader handle people's emotions well?

How do you feel about how your exercise leader talks to you?

Does your exercise leader try to understand how you see things before suggesting a new way of doing things?

Can you share your feelings with your exercise leader?

Do you feel your exercise leader accepts you?

## 5. Post-Bootcamp Questionnaire

**Post Bootcamp Questionnaire - 6 months later.**

Name: \_\_\_\_\_

Age: \_\_\_\_\_

**Please take the time to answer these questions thoroughly and truthfully. All answers will be kept confidential and only accessible to the primary investigator.**

Are you still participating in programs with JQ fitness?

What are you doing in terms of exercise now? Either with JQ or without.  
Please be as specific as possible: when? Where? What intensity?

How long? How often?

Do you have any specific goals right now? Broad ones?

What are your current reasons for exercising? Not Goals, but reasons (its fun for me)

Do you feel like you have to exercise or do you feel like you want to?

Why?

Do you enjoy your exercise?

Would you label yourself as an exerciser?

What are your feelings and thoughts before exercise? During? And after?

What aspects of your workouts do you enjoy the most?

What are your attitudes toward your exercise leader? If you have one.

What are your reasons for not exercising?

If these reasons did not exist, would you return to exercise?

Do you feel like your attitude towards exercise has changed since the start of the bootcamp half a year ago?

If you are no longer working out with Johanna, and participating in different forms of activity. Explain what you feel the main differences are.

Thank you!



	0	1	2	3	4	5
	<b>Not at all true for me</b>					<b>Very true for me</b>
6 To give me space to think						
<b>Personally, I exercise (or might exercise) ...</b>						
7 To have a healthy body	0	1	2	3	4	5
8 To build up my strength	0	1	2	3	4	5
9 Because I enjoy the feeling of exerting myself	0	1	2	3	4	5
10 To spend time with friends	0	1	2	3	4	5
11 Because my doctor advised me to exercise	0	1	2	3	4	5
12 Because I like trying to win in physical activities	0	1	2	3	4	5
13 To stay/become more agile	0	1	2	3	4	5
14 To give me goals to work towards	0	1	2	3	4	5
15 To lose weight	0	1	2	3	4	5
16 To prevent health problems	0	1	2	3	4	5
17 Because I find exercise invigorating	0	1	2	3	4	5
18 To have a good body	0	1	2	3	4	5
19 To compare my abilities with other peoples'	0	1	2	3	4	5
20 Because it helps to reduce tension	0	1	2	3	4	5
21 Because I want to maintain good health	0	1	2	3	4	5
22 To increase my endurance	0	1	2	3	4	5

23	Because I find exercising satisfying in and of itself	0	1	2	3	4	5
		<b>Not at all true for me</b>				<b>Very true for me</b>	
<b>Personally, I exercise (or might exercise) ...</b>							
24	To enjoy the social aspects of exercising	0	1	2	3	4	5
25	To help prevent an illness that runs in my family	0	1	2	3	4	5
26	Because I enjoy competing	0	1	2	3	4	5
27	To maintain flexibility	0	1	2	3	4	5
28	To give me personal challenges to face	0	1	2	3	4	5
29	To help control my weight	0	1	2	3	4	5
30	To avoid heart disease	0	1	2	3	4	5
31	To recharge my batteries	0	1	2	3	4	5
32	To improve my appearance	0	1	2	3	4	5
33	To gain recognition for my accomplishments	0	1	2	3	4	5
34	To help manage stress	0	1	2	3	4	5
35	To feel more healthy	0	1	2	3	4	5
36	To get stronger	0	1	2	3	4	5
37	For enjoyment of the experience of exercising	0	1	2	3	4	5
38	To have fun being active with other people	0	1	2	3	4	5

**Please Turn Over**

	<b>Not at all true for me</b>					<b>Very true for me</b>
<b>Personally, I exercise (or might exercise) ...</b>						
39	To help recover from an illness/injury	0	1	2	3	4 5
40	Because I enjoy physical competition	0	1	2	3	4 5
41	To stay/become flexible	0	1	2	3	4 5
42	To develop personal skills	0	1	2	3	4 5
43	Because exercise helps me to burn calories	0	1	2	3	4 5
44	To look more attractive	0	1	2	3	4 5
45	To accomplish things that others are incapable of	0	1	2	3	4 5
46	To release tension	0	1	2	3	4 5
47	To develop my muscles	0	1	2	3	4 5
48	Because I feel at my best when exercising	0	1	2	3	4 5
49	To make new friends	0	1	2	3	4 5
50	Because I find physical activities fun, especially when competition is involved	0	1	2	3	4 5
51	To measure myself against personal standards	0	1	2	3	4 5

**Thank you for completing this questionnaire**

David Markland  
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 Email: d.a.markland@bangor.ac.uk  
 January 1997



## 7. Breq-2

## EXERCISE REGULATIONS QUESTIONNAIRE (BREQ-2)

Age: \_\_\_\_\_ years

Sex: male      female (please circle)

*Why do you engage in exercise?*

We are interested in the reasons underlying peoples' decisions to engage, or not engage in physical exercise. Using the scale below, please indicate to what extent each of the following items is true for you. Please note that there are no right or wrong answers and no trick questions. We simply want to know how you personally feel about exercise. Your responses will be held in confidence and only used for our research purposes.

		Not true for me	Sometimes true for me	Very true for me	
1	I exercise because other people say I should	0	1	2	3 4
2	I feel guilty when I don't exercise	0	1	2	3 4
3	I value the benefits of exercise	0	1	2	3 4
4	I exercise because it's fun	0	1	2	3 4
5	I don't see why I should have to exercise	0	1	2	3 4
6	I take part in exercise because my friends/family/partner say I should	0	1	2	3 4
7	I feel ashamed when I miss an exercise session	0	1	2	3 4
8	It's important to me to exercise regularly	0	1	2	3 4
9	I can't see why I should bother exercising	0	1	2	3 4
		<b>Not true for me</b>	<b>Sometimes true for me</b>	<b>Very true for me</b>	

10	I enjoy my exercise sessions	0	1	2	3	4
11	I exercise because others will not be pleased with me if I don't	0	1	2	3	4
12	I don't see the point in exercising	0	1	2	3	4
13	I feel like a failure when I haven't exercised in a while	0	1	2	3	4
14	I think it is important to make the effort to exercise regularly	0	1	2	3	4
15	I find exercise a pleasurable activity	0	1	2	3	4
16	I feel under pressure from my friends/family to exercise	0	1	2	3	4
17	I get restless if I don't exercise regularly	0	1	2	3	4
18	I get pleasure and satisfaction from participating in exercise	0	1	2	3	4
19	I think exercising is a waste of time	0	1	2	3	4

**Thank you for taking part in our research**

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April 2000

## 9. JQ Fitness Summer Bootcamp Sweat Resistant Sportswear

