

THE PERCEIVED INFLUENCE OF PHYSICAL ACTIVITY ON QUEEN'S MBA  
STUDENTS' PERSONAL, PROFESSIONAL, AND ACADEMIC LIVES

By

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## ABSTRACT

This thesis reports on a mixed method study investigating the perceived influence of physical activity on Queen's School of Business (QSB) Master of Business Administration (MBA) students' personal, professional, and academic lives. Specifically, the research examined how Queen's MBA students believed physical activity impacted these three areas of their lives considering gender, program, level of physical activity, and importance of physical activity.

The first stage of the research consisted of an online survey, collecting both qualitative and quantitative data where 208 MBA students at Queen's participated, 139 male and 65 female. This data collection began in January 2012 and was conducted over a two-month period. Second, eight students participated in an online focus group, lasting a period of two weeks in March 2012. Queen's MBA students noted a significantly positive perceived value of physical activity across all three dimensions of life, with each area showing only minor variances. Focus, stress, energy, productivity, confidence, networking, and mood were all discussed as noteworthy implications of physical activity. Gender was not related to students' views on physical activity; however, program, level of physical activity, and importance of physical activity all were related to these views.

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## CHAPTER 1: INTRODUCTION

*“If physical activity were a prescribed drug, it would be the most widely prescribed drug in the history of the world” (Author unknown).*

Is physical activity a miracle drug? Do Queen’s University Masters of Business Administration (MBA) students buy it? Queen’s MBA students are tasked with a difficult challenge in trying to balance life, career, and school and are striving for ways to help them perform better, achieve more, and gain successes in their personal, professional, and academic lives. Physical activity may be one solution. Research has highlighted numerous positive implications of physical activity: reducing the risk of long-term disease (Canadian Society for Exercise Professionals [CSEP], 2008), improving work performance (Pronk & Kottke, 2009), increasing success as a leader (McDowell-Larson, Kearney, & Campbell, 2001), promoting higher academic achievement scores (Taras, 2005), and providing numerous additional psychological (Scully, Kremer, Meade, Graham, & Dudgeon, 1998), physiological (Hillman, Erickson, & Kramer, 2008), and psychosocial benefits. Could physical activity be MBA students’ magic pill?

The primary purpose of this research was to explore the relationship among physical activity and the personal, academic, and professional pursuits of MBA students at Queen’s University. Three research questions guided the study:

1. What is the perceived impact of physical activity on the personal, professional, and academic aspects of Queen’s MBA students?
2. What level of importance do Queen’s MBA students place on physical activity and how active are they?

3. How do variables of gender, program, physical activity level, and importance of physical activity influence these three factors?

This research employed a mixed-method to explore these questions utilizing two different data collection techniques: a survey and a bulletin board focus group.

### **Rationale**

The overall benefits of physical activity are well documented. There is strong scientific evidence based on a large number of well-designed studies indicating that physically active people demonstrate higher levels of health-related fitness, lower risk profiles for the development of numerous medical conditions, and lower rates of chronic disease as compared with their less active counterparts (CSEP, 2008). In addition to the personal health benefits of physical activity, physical activity tends to enhance the overall quality of life and improve quality of social interactions (Scully et al., 1998). However, the implications of physical activity are not limited to disease prevention and lowering risk rates with positive performance implications shown in personal, professional, and academic areas of life.

From a professional perspective, research has demonstrated both an individual and organizational benefit. For instance, the health and wellness of teachers has been shown to affect their own personal performance, productivity, and motivation (Eckles as cited in Pithers & Soden, 1999), while Pronk, and associates (2004) demonstrated a positive correlation among moderate physical activity and quality of work performed, quantity of work performed, and overall job performance. McDowell-Larsen, Kearny, and Campbell (2001) discussed how executives who exercised regularly rated more positively as leaders than those who did not exercise, while Lovelace, Manz, and Alves

(2007) demonstrated that physically fit leaders tended to have increased stamina and mental focus. Potential organizational benefits, such as reduced absenteeism, decreased health insurance costs, and lower turnover rates, have encouraged organizations to invest in employee wellness.

The potential impact of these behaviours can be discussed in the academic scenario as well. This research finds physical activity to be a critical element related to individual performance measures. For example, Hillman, Erickson, and Kramer (2008) reviewed the molecular, cellular, and behavioural research on how physical activity positively influences brain activity, with both psychological (Scully et al., 1998) and psychosocial (Biddle, 1995) benefits. However, although physical activity has been linked to personal, professional, and academic measures, no research has discussed its connection with the demands of an MBA student.

MBA students need to deal with the many challenges of business leadership from general management to organizational behaviour to marketing and finance. Schools that successfully prepare their graduates often find their alumni in senior roles in the most influential and largest organizations worldwide. MBA students are often pushed hard, to their limits, with heavy workloads, long hours, and challenging assignments to mimic these potential future challenges.<sup>1</sup>

MBA students at Queen's are not only expected to balance their personal and professional lives but their academic commitments as well. Since 2006, Queen's School of Business has balanced these realistic and stressful atmospheres by including the health and wellness program, Fit to Lead, into their service and curriculum offerings. The goal

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<sup>1</sup> The researcher has first-hand knowledge of the demands and experience of MBA students, working closely in this capacity for over 10 years (see Appendix A).

of the program is simple: to assist students in remaining productive in stressful times with a desire that some of these developed skills will be translated into future success in the business world, in the sense that the graduates will be “Fit to Lead.” A review conducted at Queen’s School of Business in 2012 of the top 200 MBA programs worldwide revealed that Queen’s is the only school providing a program such as Fit to Lead as a supplement to its curriculum. Despite these statistics and the significant positive qualitative feedback provided by Queen’s MBA students on the program, we know very little about the actual quantifiable difference that Fit to Lead might be making in the lives of Queen’s MBA students, or for that matter, how physical activity might influence the success of any MBA student. The relationship among physical activity and the personal, academic, and professional successes of MBA students at Queen’s is a complex one. The goal of this research is to explore this relationship and gain some understanding of the value of physical activity to Queen’s MBA students.<sup>2</sup>

### **Overview of Thesis**

This thesis contains six chapters. Chapter 1 provided an introduction, purpose, and rationale for the study. In Chapter 2, I review the literature on the impacts of physical activity in professional, academic, and personal settings as well as explore the effects discussed in the research (focus, stress, energy, productivity, confidence, mood, and networking). Physical activity determinants and MBA students are also examined in this chapter. Chapter 3 provides the context of the research, the method of participant selection, and the data collection and data analysis methods that were used. In Chapter 4, the qualitative results are presented, which includes three sections on students’

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<sup>2</sup> This information is taken from the researcher’s intimate knowledge of the QSB Fit to Lead program, having designed and led the program for the last 7 years (see Appendix A).

perceptions: (1) the influences of physical activity, (2) the effects of physical activity, and (3) students' relationships with physical activity. In Chapter 5, the quantitative results are presented by summarizing the descriptive statistics and statistical analyses. Lastly, in Chapter 6, I present a discussion of the findings, implications for research and practice, and my final thoughts and reflections on the current study.

## **CHAPTER 2: LITERATURE REVIEW**

This chapter presents an overview of the literature that guided the research conducted on physical activity's perceived effects on MBA students. First, I discuss the physical activity determinants used to help model the first section of my research survey, specifically answering the question of what does it mean to be physically active. Second, I examine the literature on the implications of physical activity for professional, personal, and academic spheres. Third, I investigate the perceived effects of physical activity on factors influencing these three spheres, such as focus, stress, energy, productivity, confidence, networking, and mood. Lastly, I explore the small body of literature discussing MBA students and physical fitness programs.

### **Physical Activity Determinants**

What does it mean to be physical active? Although any physical activity is believed to provide both long-term health and short-term performance benefits, the Canadian Society of Exercise Professionals (CSEP) has developed activity guidelines to help individuals maximize these benefits. These guidelines suggest that participating in strength training and aerobic exercise in regular amounts at high enough intensities provides individuals with significant health benefits. The Canadian Physical Activity Guidelines recommend that adults aged 18-64 years old should accumulate at least 150 minutes of moderate to vigorous intensity aerobic physical activity per week in bouts of 10 minutes or more, and muscle and bone strengthening activities using major muscle groups at least 2 days per week (CSEP, 2008). Participating in additional physical

activity provides greater health benefits, but these are the recommended minimum standards. The guidelines classify moderate intensity activities to be those that make persons sweat a little and breathe harder, whereas vigorous intensity activities cause individuals to sweat and be out of breath. By attaining these standards, individuals can reduce the risk of premature death, heart disease, stroke, high blood pressure, cancer, diabetes, osteoporosis, and obesity. These Canadian Physical Activity Guidelines provided the framework to determine MBA students' self-reported physical activity levels and to gain a better understanding of what it means for them to be physically active.

### **Spheres of Life Potentially Affected by Physical Activity**

This section presents an overview of the literature on the implications of physical activity for personal, professional, and academic dimensions of life. First, I examine the literature investigating physical activity in the professional setting, specifically the implications for both the individual and the organization. Next I describe the literature as it relates to physical activity and personal implications, specifically general health, and psychological, physiological, and psychosocial implications. Third, I highlight the literature that discusses the implications of physical activity in the academic setting and on performance measures such as concentration, memory, and overall academic performance.

#### **Physical Activity and Professional Pursuits**

For Queen's MBA students, professional pursuits may encompass a diverse range of activities. For some, these pursuits may simply refer to their current job or profession,

while others may be looking for growth or transitional career-related activities, such as interviews, networking, job searches, or even clarity in possible career paths. Adding complexity to this issue, the research on how physical activity impacts professional pursuits targets two specific areas: individual performance within the workplace and organizational benefits. Individual benefits to physical activity at work include increasing one's leadership profile and influencing both the quality and quantity of work performed. Additionally, physically active employees are thought to provide the organization with benefits, such as, decreased health care cost, turnover, and absenteeism rates.

**Individual benefits to physical activity at work.** Physical activity can have significant benefits to workplace behaviour and performance through developing one's leadership skills and profiles and by increasing specific work performance measures. For example, McDowell-Larson, Kearney, and Campbell (2001) set out to determine how regular exercise impacted leadership scores on two multi-rater leadership assessment instruments for senior level executives. Over 700 executives across a large number of organizations had peers, supervisors, and employees evaluate their leadership profile using the assessment instruments. Regular exercise was examined by a self-profile in combination with fitness expert evaluations. The results demonstrated a significant positive correlation between regular exercise and leadership scores for the executives. The average scores on all leadership profiles were higher for exercisers, including the following profiles: visionary thinking, seasoned judgment, influencing abilities, adaptability, business versatility, and high impact delivery. Neck, Mitchell, Manz, Cooper, and Thompson (2000) also highlighted the professional benefits of regular exercise. In their view, fitness can contribute to stamina, mental clarity, ability to cope

with stress, and a variety of other factors that can affect an executive's ability to lead. Similarly, Lovelace, Manz, and Alves (2007) found physically fit leaders to have increased stamina and mental focus. Their research suggests that fitness supports healthful regeneration and increased engagement and is vital to a leader's ability to manage work stress.

In addition to improving one's leadership profile, physical activity may enhance performance measures. In a study of 683 workers considering the association among work performance and physical activity, cardio respiratory fitness, and obesity, Pronk et al. (2004) found that higher levels of physical activity related to higher quality and quantity of work performed and overall job performance, while obesity related to more difficulty in getting along with coworkers and increased work loss days. A meta-analysis review of organizational wellness programs showed that these programs had positive implications on absenteeism and job satisfaction (Parks & Steelman, 2008); this finding also being supported by Ur (2001) with additional positive effects of physical activity including workplace attention and job satisfaction (Dewhurst-Savellis, Parker, & Wilhelm, 2000). In a review of such research, Pronk and Kottke (2009) suggested that, at the least, physical activity could measurably improve worker health and enhance business performance. Although outside the traditional corporate world in which much of this research is conducted, a study of American educators highlighted the positive effects of physical activity. Teachers' health and wellness, including their level of regular physical activity, affected their personal performance, productivity, and motivation in the workplace (Pithers & Soden, 1999).

**Organizational benefits of physical activity.** While the evidence demonstrating that physical activity is related to employees performing better and demonstrating better leadership certainly indicates organizational benefits, there are other organizational benefits, such as reduced health care costs and turnover rates, that should be considered in this equation. Physical activity levels are just one way to demonstrate employee health; however, in a review of 20 studies, there was strong evidence indicating a positive association between physical activity and employee health (Brown, Gilson, Burton, & Brown, 2011). A healthy employee may well provide such organizational benefits.

Large organizations can lose a significant amount of money when employees are not physically active and are not healthy. Organizations spend more on unhealthy employees, specifically on health insurance, increased turnover, and absenteeism (Greene, 2011), in addition to reduced worker productivity (Kumar, McCalla, & Lybeck, 2009). Historically, data have shown us that companies lose millions of working days each year due to unhealthy employees (Gebhardt & Crump, 1990).

These same employees continue to drive up company health insurance costs and reduce organizational productivity. Helping employees improve their health through organizational wellness programs appears to be one way organizations are battling these costs. Overall, these programs tend to improve both employee health and a healthy bottom line by providing such organizational benefits as reduced turnover costs, improved productivity, and increased company morale (Kumar, McCalla, & Lybeck, 2009); reduced employee stress (Ganster & Schaubroek, 1991; Gibson & Raw, 1980; Lupien, Maheu, Tu, Fiocco, & Schramek, 2007); and less absenteeism by those who participate frequently in a corporate fitness program (Ur, 2001). Furthermore, wellness

programs may save companies millions of dollars. Through such programs, McLeod Health in Florence, South Carolina has saved over 1.5 million dollars, and Sentara Health System in Norfolk, Virginia has saved \$3.4 million in health care costs over three years, with an estimate of \$6 saved for every dollar spent (Greene, 2011). New York Telephone estimated savings of \$2.7 million in absence and treatment costs in just one year, while General Motors reported a 40% decrease in lost time and 60% decrease in accident and sickness benefits (Gebhardt & Crump, 1990). Estimates of cost-to-benefit ratios of wellness programming have ranged from 3:1 to 15:1 (Gebhardt & Crump, 1990).

Stress in the workplace is a related dilemma for organizations. Over 75% of researched business executives felt that they had great stress at least one day a week (Wright, 2007). Cooper and Cartwright (2004) discussed the direct and indirect costs of occupational stress and suggested that financially healthy organizations were likely to be those that were successful in maintaining and retaining a workforce characterized by good physical, psychological, and mental health. Elkin and Rosch (as cited in Gebhardt & Crump, 1990) reported that the US industry loses more than 550 million working days due to absenteeism and that 54% of these absences were in some way stress-related. Sigman (as cited in Gebhardt & Crump, 1990) reported similar numbers for the UK: 360 million working days resulting in over eight billion pounds of lost income. Copper (as cited in Gebhardt & Crump, 1990) reported that, in 20 years, individual health insurance costs had risen by over 50% with employers' contributions increasing by over 140%. Although these are not the most current data sets, we know that organizations continue to be concerned with the high stress levels of their employees.

A final organizational benefit to physical activity appears to be group work. A study examining the implications of physical activity to group goal setting and group performance in a workplace setting (Burke, Shapcott, Carron, Bradshaw, & Estabrooks, 2010) highlighted the positive relationship that physical activity had to both of these outcomes. This line of research is very new but would certainly be interesting to those organizations that employ a great deal of teamwork in their organizational structure.

### **Physical Activity and Personal Pursuits**

The quantity and quality of time with family and friends, opportunities to enjoy life outside of school or work with leisure pursuits, and a general sense of health and wellbeing are all relevant to the MBA student body. There is strong scientific evidence based on a large number of well-designed studies indicating that physically active people show higher levels of health-related fitness, lower risk profiles for the development of numerous medical conditions, and lower rates of chronic disease as compared with their less active counterparts (Pronk & Kotte, 2009). However, the benefits of physical activity are not limited to disease prevention and lowering risk rates, but can be extended to psychological and physiological implications.

Scully et al. (1998) reviewed the psychological benefits to participating in physical exercise. Their article discussed research that demonstrated positive correlations among exercise and self-esteem, self-efficacy, and psychological well being. Similarly, negative correlations were found among exercise and anxiety, stress, and depression. The study highlighted significant benefits of physical activity to women suffering Premenstrual Syndrome and to patients with mental health disorders. Biddle (1995) also reviewed similar literature. Biddle's research highlighted exercise as having positive

effects on state and trait measures of anxiety, depression, mood, and self-esteem. In addition, positive changes in personality and psychological adjustment, cognitive functioning, and “prosocial” behaviours, such as networking, were observed. Physical activity may also increase understanding and respect for differences among people, such as culture, ethnicity, motor performance, disabilities, gender, and socioeconomic status (Doolittle & Demas, 2001). Furthermore, molecular, cellular, and behavioural research on how physical activity influences brain activity and various functions indicates that physical activity participation is beneficial to cognition, including executive, spatial, and speed tasks (Hillman, Erickson, & Kramer, 2008), while aerobic exercise seems to lead to improved performance across various tests, such as reaction time and flexibility (Kozman, Stones, & Hannah, 1991).

### **Physical Activity and Academic Pursuits**

Undertaking an MBA is primarily an academic pursuit. Regardless of the personal and professional aspects of life that may accompany enrolling in an MBA program, completing the assignments, succeeding with the teamwork, learning the material, and studying for and writing exams are mandatory components of completing an MBA. The ability to receive desired grades, perform successfully in work teams, think creatively on assignments, concentrate and focus on school, and develop high quality academic work are important academic endeavours for MBA students.

Physical activity may well have significant academic benefits. *Physical activity and student performance at school* is a review of the state of research on the association between physical activity and student performance (Taras, 2005). The review summarized the methodology and outcomes of 14 published research studies that

discussed how physical activity might influence various academic outcomes. These studies suggested that physical activity leads to physiological improvements, such as improved circulation and blood flow, as well as having positive psychological implications, such as reducing stress and improving mood, which may impact student performance at school through memory, achievement scores, and concentration. In addition, psychosocial benefits, such as cooperation, challenging themselves, and a sense of belonging to a team, school, or community, showed improvement with higher levels of physical activity.

Hillman, Erickson, and Kramer (2008) reviewed close to 100 human and non-human animal research studies, ranging from physiological determinants to behavioural performance outcomes. The research was summarized into four relative research bodies: the effects of physical activity on cognition during childhood and young adulthood; the effects of physical activity on cognition during older adulthood; the results of neuro-imaging studies of physical activity in humans; and the related non-human animal research on brain functioning and physical activity. All four research areas showed evidence that physical activity participation was beneficial to cognition. This relationship exists at both a physiological and behavioural level, thereby suggesting that physical activity might be beneficial to cognition at all stages of life. The authors concluded that physical activity positively influences a wide range of cognitive tasks, including executive, spatial, and speed tasks.

Most of the support for positive implications of physical activity on academic achievement to date has been provided via school-aged children or within the college setting. The study *Jump rope for heart may improve student achievement* discusses the

positive connections between physical fitness and student achievement and academic standards (Blaydes, 2004). In *Closing the achievement gap*, physical activity was an important factor in the prevention of obesity and beneficial to the cognitive performance of children, especially minority youth at risk (Burton & VanHeest, 2007). Additionally, physical activity can influence the growth, maturation, and academic performance of school-aged children (Beune et al., 1992); for instance, in regards to standardized testing, students who met cardio fitness standards were 6 times more likely to reach reading standards, and 2.5 times more likely to meet math standards. Additional research has shown that physical activity tends to reduce risky behaviours in youth (Castelli & Hillman, 2007), improve academic achievement scores (Castelli & Hillman, 2007; Coe, 2004), and help students learn successfully (Gaus & Simpson, 2009). Furthermore, Dwyer, Sallis, Blizzard, Lazarus, and Dean (2001) and Linder (1999) supported the notion of physical activity improving academic scores in studies in Australia and Hong Kong, respectively, of school-aged children. These studies demonstrated a significant positive relationship between academic scores and increased physical activity levels. Likewise, in the association between school-based physical activity, including physical education, and academic performance (Centers for Disease Control and Prevention, 2010), a review of over 50 studies revealed that over 50% of the associations (such as cognitive skills and academic performance) were positive with only 1.5% of the studies highlighting a negative association between physical activity and academic successes.

Other significant findings support the positive connection of various health- and wellness-related variables with academic performance measures at the college level. An examination of various health behaviours with respect to college student grade point

averages (GPA) found that studying spiritually-oriented material, eating breakfast, weight training, and quality of sleep all positively influenced GPA scores (Trockel, Barnes, & Egget, 2000), and that physical activity reduced test anxiety (Edwards, 1999) and increased cognitive performance and information processing (Davranche & Audiffern, 2003). A case study of wellness programs in an academic setting reported that, to help improve students' academic progress and success, a program needed to meet the following priorities: (a) improve staff member wellness, (b) increase student fitness, and (c) enhance the nutritional value of foods and beverages served on campus (Jones, 2007). Brown, Roney, and Anfara (2003) found that organizational health had direct influences on student performance. Additionally, college students engaged in 20 minutes or more of physical activity daily showed higher GPA scores (Anonymous, 2010).

### **Effects of Physical Activity**

The physical health effects of physical activity are well documented in reviews of the literature (Kravitz, 2006): reduction in cardiovascular disease and diabetes, improvements to insulin sensitivity and glucose metabolism, hypertension improvements, improvements to blood triglycerides, lower cholesterol and LDL cholesterol levels, reduction of risk of stroke and several types of cancers (colon, breast, lung), improvements to musculoskeletal health and body composition, and reduction in arthritis. While the physical health benefits of activity are numerous, they do not represent the focus of this research. Physical activity additionally is linked to improved emotional and mental health (Kravitz, 2006), as exemplified through better focus, lower levels of stress, higher energy levels, greater productivity, higher self-confidence, better networking skills, and elevated mood.

**Focus**

The ability to focus is critical to the success of MBA students. In a study of middle-aged workers (Singh-Manoux, Hillsdon, Brunner, & Marmot, 2005), low levels of physical activity were found to be a risk factor for decreased concentration, especially for highly intelligent workers, that is, those workers most congruent with Queen's MBA students. Similarly, submaximal aerobic exercises performed for periods of up to 60 minutes assisted in the facilitation of particular aspects of adults' information processing, specifically memory (Tomporski, 2003). Older women who participated in regular walking routines not only slowed the decline of cognitive function associated with aging, but actually improved general cognitive functioning (Weuve et al., 2004). Stamina and mental clarity of business executives have shown improvement with physical activity (Neck et al., 2000), while physically fit leaders tend to have increased stamina and mental focus (Lovelace, Manz, & Alves, 2007).

Much research has looked at how students respond to physical activity. In a study of high school-aged students (Raviv & Low, 1990), study participants' concentration was tested both before and after physical education classes. Although other factors might have been in play, the children's concentration tested much higher immediately after the physical activity regardless of subject matter. Likewise, physical activity appears to positively impact school-aged students' memory and concentration (Taras, 2005), as well as cognitive tasks, such as executive, spatial, and speed tasks at all stages of life (Hillman et al., 2008). Although the research still does not clearly define how physical activity impacts concentration and focus, it appears to have positive implications at all stages of

life, both immediately after bouts of physical activity and longer-term general improvements.

### **Stress**

Just as focus and concentration are critical to the success of MBA students, managing or reducing stress levels is equally significant. With the demands placed on MBA students, high stress levels are commonplace (Wright, 2007). The concept of “stress” not being well understood makes it difficult to fully explore the extent of the relationship between stress and physical activity. Stress at times is looked at in a positive manner, specifically when considering high performance athletes. However, most research explores the relationship between physical activity and reducing stress levels, thereby viewing stress negatively.

In a critical review of the literature considering stress and physical activity in adults, Scully et al. (1998) discussed how physical activity could improve one’s ability to deal with stress. The review highlighted physical exercise’s positive influence in the reduction of anxiety and chronic work stress. Salmon (2001), building on the Scully et al. study, reviewed the intensive body of literature combining physical activity, stress, and depression in adults. The review discussed that, although the effects of exercise on stress remain unclear, a positive relationship to reducing stress has generally been found. Physical activity had antidepressant and anxiolytic effects that protected against the harmful consequences of stress and offered an effective treatment for stress-related social and psychological symptoms.

The impact of physical activity on stress is often explored in the workplace setting. High employee stress has negative implications on overall health and wellness

levels and therefore organizational bottom lines (Ganster & Schaubroek, 1991).

However, workplace wellness programs that include physical activity programming have success in reducing employee stress levels (Gibson & Raw, 1980; Lupien, Maheu, Tu, Fiocco, & Schramek, 2007). More recently, Cooper and Carwright (2004) highlighted the direct and indirect costs of occupational stress to organizations and determined that financially healthy organizations were likely to be those that were successful in maintaining and retaining a workforce characterized by good physical health. The study considered the significant amount of financial burden organizations might suffer from unhealthy employees, including high health insurance costs, lack of productivity, and increased absenteeism.

The relationship between stress and physical activity has also been examined in the academic setting. Nguyen-Michel, Unger, Hamilton, and Spruijt-Metz (2006) conducted a study with over 800 male and female college students across three large American institutions to explore the relationship between stress and physical activity. Study participants completed surveys that explored health behaviours such as physical activity, psychological constructs such as perceived stress, and demographic information such as age, gender, and ethnicity. The study determined that physical activity could be a viable means of reducing stress across age, gender, and ethnic differences. A comparable study by Haugland, Wold, and Torsheim (2003) investigated the relationship between stress and physical activity in 15-year-old students in Norway and came to similar conclusions. High stress levels were associated with lower levels of physical activity and lower stress levels with higher levels of physical activity, leading to the conclusion that physical activity played a role in moderating the negative effects of school-related stress.

Although these studies are not directly relevant to MBA students because of the associated age categories, they provide us with an understanding of how stress and physical activity might influence a “learner” in an academic setting.

### **Energy**

Energy has a unique and complex relationship with physical activity. Physical activity, similar to any bodily function (e.g., digestion, speaking, or cellular repair), requires us to expend energy, yet research has begun to report physical activity to have a positive influence on energy levels and fatigue. A research study conducted at the University of Georgia (Puetz, 2006) explored this relationship. In reviewing over 70 randomized control trials and close to 7000 adult subjects, there was strong support for the role of exercise to reduce fatigue. In over 90% of the studies reviewed, sedentary people who completed a regular exercise program reported reduced fatigue compared to groups that did not exercise. The effects of the exercise on fatigue was determined to be more beneficial than the benefits of fatigue-reducing drugs, specifically finding exercise to increase energy and reduce fatigue by 0.37 standard deviations when compared to control groups. In the review, for nearly all groups examined, including healthy adults, cancer patients, and those suffering from conditions such as diabetes, those participants who exercised had improved energy levels and lessened fatigue. MBA students could certainly benefit from the knowledge that regular physical activity increased energy levels and reduced fatigue. Although it is still unclear as to why physical activity might increase energy levels, one theory highlights an increase in levels of neurotransmitters (dopamine, norepinephrine, and serotonin), which are believed to be mood-enhancing and energy-promoting (Puetz, 2006).

## **Productivity**

The concept of productivity can be described as the amount of work that can be accomplished in a set amount of time by making use of available resources such as time management and energy. For MBA students, time and energy are often limited so making the best out of what they have becomes increasingly important.

The ability of our brain to read and respond to stimuli, cognitive functioning, is one aspect of productivity. Weuve et al. (2004) explored the relationship between physical activity and cognitive functioning in adult women. The two-year study of nearly 20,000 women in the United States reported an increase in physical activity (specifically walking) was associated with better cognitive performance including memory, fluency, and attention. The study also noted that physical activity reduced the risk for cognitive decline as the women aged. Similarly, Lovelace, Manz, and Alves (2007) found physically fit leaders to have increased stamina and mental focus, while Pronk et al. (2004) found that higher levels of physical activity related to higher quality and quantity of work performed and overall job performance. In a study of adult teachers, Pithers and Soden (1999) reported that regular physical activity affected the teachers' personal performance, productivity, and motivation in the workplace, with Pronk and Kottke (2009) extending this idea to business performance.

Trudeau and Shepard (2008) reviewed the research examining the relationship between physical activity and academic productivity. The review concluded that spending up to an additional hour/day on physical activity and reducing time on other subject matter had no negative influence on academic scores. Likewise, they concluded that, taking time away from physical activity and spending more time on other subject

matter, did not increase academic scores. Likewise, Taras (2005) summarized the research of 14 published studies that discussed the positive implications that physical activity provided to academic outcomes and student productivity across various academic settings and age groups. Although these reviews generally consider school-aged children, the relationships between academic outputs and physical activity could be relevant to Queen's MBA students, especially students who are concerned about giving up study time to engage in physical activity.

### **Confidence**

Confidence and self-esteem are often noted as important ingredients to success, and have been shown to have a positive relationship with participation in any type of physical activity (Bridges & Madlem, 2007). In business, including the MBA program, the value of confidence is an important building block for both academic program and future professional success. Physical activity has been known to improve one's confidence; for instance, the Canadian Association for the Advancement of Women and Sport and Physical Activity (CAAWS) stated about physical activity and self-esteem, "There is good evidence to suggest that sport, active living and physical education can have a positive effect on self-esteem in women" (CAAWS, 2003). Although confidence and self-esteem are important for adults, in this case, MBA students, a majority of the research discussing confidence or self-esteem and physical activity has been conducted with youth.

A Canadian study of 12-year-old children (Tremblay, Inman, & Willms, 2000) explored the relationship between physical activity and self-esteem for 7,000 students. Both boys and girls who participated in physical activity had higher levels of self-esteem.

Similarly, in a study of just under 200 adolescent females, Schmalz, Deane, Birch, and Davison (2008) determined that, after controlling for social and economic factors, participating in physical activity could lead to positive self-esteem, especially among those with the greatest risk of being overweight. Another study (Raustrop, 2005) explored this relationship in close to 800, 7-14 year olds in Sweden. By comparing Body Mass Index (BMI), daily physical activity, and self-esteem scores, it was determined that self-esteem increased with physical activity level, especially as BMI decreased into healthy zones.

Physical activity can provide many physical health benefits, including improved metabolism, body composition, and energy systems enhancements (Kravitz, 2007) that may impact one's image; however, caution must be placed on the complex relationship between image and physical activity and the emotional and mental health concerns that may override the possible benefits (Scully et al., 1998). Regardless, the relationship between physical activity and confidence appears to be a positive one from which MBA students may be able to benefit.

### **Networking**

From an MBA student perspective, networking is viewed as primarily a professional pursuit to move forward in business. In that networking can also be thought of from a personal perspective—the role of creating positive social relations with others, and physical activity is believed to positively influence social relationships, examining the role of physical activity in enhancing social relationships may give an insight into possible benefits for networking.

In a review of 38 studies, McAuley and Rudolph (1995) explored the links between physical activity and social relations in adults, finding that improvements in exercise frequency positively influenced social relations and satisfaction with life for adults. In one study, McAuley et al. (2000) examined 174 adults considering demographics, health history, exercise frequency, well-being, life satisfaction, and social support. Participants were put in one of two groups: a walking control group or a stretching control group. Both forms of physical activity, walking and stretching, had positive effects on social and life satisfaction scores. In a review of the social influences of physical activity (Lutz, Linder, & Greenword, 2012), the authors concluded that, although further clarity is still required, physical activity positively impacts self-presentation, social influence, social support, and group cohesion, critical components of networking. MBA students can benefit from an understanding that physical activity could therefore play a role in advancing social relations and networking capabilities.

### **Mood**

People who are physically active often report increased feelings of happiness or life satisfaction (Huang & Humphreys, 2012); this connection is true both immediately after participating in physical activity and throughout one's life (Wang et al., 2012). Peluso and Guerra de Andrade (2005), for example, reviewed research released between 1990 and 2002 examining the relationship between physical activity and mood in adults. Individuals who participated in regular physical activity tended to experience better moods than those who did not. Physical activity was found to be related to improvements in self-esteem, vitality, general well being, and satisfaction with physical appearance. Additionally, it was suggested physical activity could be a beneficial treatment for

various psychiatric mood-related diseases such as depression. Similarly, in a review of literature conducted by Penedoa and Dahna (2005), physical activity had beneficial effects across several physical and mental health outcomes, such as, better general and health-related quality of life, better functional capacity, and better mood states. Another literature review of physical activity's impact on mental well being (Scully et al., 1998) highlighted a positive relationship between physical activity and mood state.

In a study of 42 Mexican-American women (Bartholomew, Laffrey, Kilpatrick, & Spina, 2004), the researchers explored the relationship between mood and exercise. Study participants were enlisted in either the control group or the exercise group—the exercise group having women walk on the treadmill for 20 minutes at 70% of their heart rate reserve. A 20-minute bout on the treadmill completed in small groups was enough to increase positive responses in revitalization and tranquility.

### **MBA Students**

Regardless of knowing very little about the relationship between MBA students and physical activity, research has been conducted examining MBA students and success. Four studies (Fish & Wilson, 2007; McClure, 1986; Naik & Ragothaiman, 2004; Sulaiman & Mohezar, 2006) were designed to predict academic and future business successes of MBA students. The studies factored age, gender, graduate entrance test scores, and work experiences in helping to predict future successes, yet all four studies failed to include any discussion relating to balance, health, wellness, or physical activity.

Although research to demonstrate specific connections to physical activity and MBA student success may not currently exist, these ideas have certainly been explored

recently. In the article, *This summer, give your Blackberry a vacation* (Canada Newswire, 2008), Desjardins Financial Security's National Health Survey advised entrepreneurs to take better care of their mental health to improve performance, management, and creativity at work. In the survey, 31% of business leaders reported high stress levels and, of those, 42% believed they were depressed, while 65% believed that they were on the path to burnout (as cited in Canada Newswire, 2008). In another article (Kernel, Kerenge, & Jauneaud, 2008), an MBA candidate speaks about the factors affecting work-life balance, specifically the need for physical activity. Two articles, *Queen's Makes Strides for Work Life Balance* (Canada Newswire, 2006) and *Chicken Soup for MBA's Soul* (Sutherland, 2006), have been published specifically highlighting the Fit to Lead program at Queen's and the need for health and balance of MBA students. Despite some media interest, we still know very little about how physical activity might influence MBA student success.

### **Summary**

Any one individual rarely tackles professional, personal, and academic pursuits simultaneously, yet the demanding features of the MBA program force students to confront all three. The research discussed shows how physical activity can contribute positively to each of these aspects of one's life; professionally in improving leadership profiles and work productivity; personally, in reducing health risks and gaining psychological and physiological benefits; and academically, in improving cognition, memory, concentration, and hence academic achievement scores. Although the research on how physical activity impacts focus, stress, energy, productivity, confidence,

networking, and mood has not been as clearly defined as the physical health benefits research, these topics were examined to help provide a framework for the current research. In many of these instances, it was difficult to provide a clear relationship between physical activity and its effects but, in a review of similar literature, Fox (1999) suggests that physical activity has a positive influence on stress reduction, confidence, mood, and cognitive functioning. It appears that physical activity has many positive implications to various aspects and across all spheres of one's life; however, continued research as in the current thesis is required to better understand these relationships.

## CHAPTER 3: METHOD

This chapter presents the methods used in conducting the current study. These methods were selected to meet the needs of the research and to maximize research validity. I first describe the context in which the research was conducted including the community and the researcher. Next I explain participant selection techniques for each stage of the research. This section is followed by a description of the data collection techniques, which used a multi-method examination including surveys and the analysis of the transcriptions of an online bulletin focus group. Lastly, I highlight the data analysis strategies that were used.

### Context of Research

#### Community<sup>3</sup>

The study was conducted at Queen's School of Business, Queen's University, located in Kingston Ontario. The Master's of Business Administration (MBA) program at Queen's is highlighted by four specific program options: Accelerated MBA (AMBA), Executive MBA (EMBA), Full Time MBA (FTMBA), and Cornell-Queen's Executive MBA (CQEMBA), each program providing students with different content delivery methods and slight differences in curriculum. These programs are competitive and highly ranked and require a great deal of dedication to be successful. The purpose of these programs is to prepare graduates to become successful business managers in a wide range of career paths with a diverse skill set providing key knowledge bases in strategy,

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<sup>3</sup> Information in the following section has been taken from personal communications with Queen's MBA administration and personal knowledge in working closely with the MBA programs.

leadership, financial management, global management, creativity and innovation, marketing, and general management. Each year, although these programs all start and end at different time frames, Queen's accepts approximately 340 MBA students (85 AMBA; 120 FTMBA; 85 EMBA; 50 CQEMBA), with about another 80 American students registered through Cornell University in the CQEMBA program. At any one time of year, there are approximately 500 current MBA students. The average age and work experience of each program differs significantly; AMBA and FTMBA students average just under 30 years old with 7 years' work experience, while CQEMBA and EMBA students average just under 40 years old with over 15 years' work experience. The programs have about 25% female students.

### **Researcher**

As the researcher, I am the primary tool for data collection and analysis. As such, my development of the community and my role as a researcher may influence others' interpretations of the phenomenon being studied.

For the last 12 years, I have been in the health and wellness field, as a personal trainer, a nutrition and wellness specialist, a lifestyle coach, and physical and health education teacher. I am currently on the management team of the coaching group at Queen's School of Business. My responsibilities include the management of a program called Fit to Lead—a program that delivers health and wellness education, coaching, assessments, and activities to MBA students at Queen's. Fit to Lead is designed for Queen's students to embrace the Queen's experience but, more importantly, consider how health and wellness practices can influence their performance and health. In addition to my management role at Queen's School of Business, I currently pursue other

professional interests. I am a small business owner and avid athlete, and sit on a Board of Directors of a local charitable organization. I enrolled in this part-time Master's of Education program 6 years ago with the purpose of expanding my knowledge in the education, coaching, and health and wellness fields. In doing so, not only have I learned a great deal about these subjects, but like our MBA students have had consistent struggles with balancing academic, personal, and professional interests. As such, the perceptions of how health and wellness behaviours impact professional, personal, and academic dimensions of one's life are an important topic to me.

### **Participant Selection**

Queen's MBA students were chosen as the participants in this study for three primary reasons. First, Queen's MBA students have to work towards balancing professional, academic, and personal lives, a situation in which very few others find themselves. Second, Queen's School of Business is currently one of only a handful of business schools in the world that strongly promotes the importance of a healthy lifestyle alongside their business-based curriculum. Third, Queen's MBA students can be considered to be high performing individuals based on the extremely high entrance requirements.

Once permission to conduct the study was obtained from the School of Business and the Graduate Research Ethics Board (GREB) at Queen's University in January 2012 (see Appendix B), all current MBA students were approached in either their live classroom or via an email announcement with a brief introduction to the study (see Appendix C). This introduction described the nature of the proposed research including opportunities for involvement and potential time commitments. Within 24 hours of this

introduction, all current MBA students received an email providing an opportunity to engage in the first stage of this research, the online survey. The link to the survey was included in this email and, by completing the survey, students gave consent for participation in the research. Another email approximately one week after the first email was sent to all current MBA students reminding them of this opportunity. Three weeks after the first email, I closed the survey section of the research; by this time, 208 current MBA students had completed the survey.

At the conclusion of the survey in February 2012, study participants had an opportunity to volunteer for one of two opportunities: first, an online bulletin board discussion group over a one-week period, and second, an in-person one-hour focus group in Ottawa. To be considered a participant in the bulletin board focus group, participants needed regular internet access and basic computer navigation skills. It can be assumed based on entrance and academic requirements of the MBA program that all study participants met these requirements. To be considered for the in-person focus group, study participants had to agree to travel to Ottawa at the time of the focus group. All individuals who completed the survey were given the opportunity to participate in this second stage of research.

All individuals who showed interest in this stage of the research were contacted by email and provided the details of the online focus group and live focus group. Individuals who did not show interest in participating in the next stage of the research via the online survey were not asked to participate. Of those receiving emails, three MBA students showed some interest in participating in the live focus group in Ottawa. Trying to coordinate a date and time for these three study participants proved to be difficult.

After failing on successive occasions, never having more than one individual being able to attend any one session, and a conversation with my thesis supervisor, it was decided, rather than adapt to a 1-on-1 interview format, to cancel this aspect of my research. These three study participants were invited to participate in the online focus group. After receiving emails, approximately 15 MBA students showed interest in participating in the online focus group. Approximately two weeks in advance of the start date, all of these MBA students were provided with specific details of this online focus group including start and end dates and login information. The day prior to the start of the online focus group, each student was sent a reminder email; no other emails or contact was made to the group. Eight MBA students ended up participating to some degree in the online focus group research.

### **Participant Description**

Two hundred eight (208) MBA students enrolled in the online survey: 139 or 68.1 percent reported to be male and 65 or 31.9 percent reported to be female (4 students did not indicate their gender). Of these participants, 64 reported to be enrolled in the AMBA program, 53 in the CQEMBA program, 63 in the EMBA program, and 27 in the FT MBA program (one student did not respond to this question). No data were collected from the eight individuals in the online focus group as to gender or program. All participants gave free and informed consent (see Appendix D).

### **Data Collection**

Data collection began in late January 2012 and continued to March 2012. Two forms of data collection were used to enhance the reliability of the research: (a) group

online survey and (b) online bulletin board focus group. The originally planned live focus group was cancelled.

Using surveys as a form of data collection allows the researcher to collect from a large audience in both qualitative and quantitative forms (McMillan & Schumacher, 2005). For select populations who are connected and technologically savvy, the cost, ease, speed of delivery and response, and ease of data cleaning and analysis all weigh in favour of online surveys as a method for data collection (Sills & Song, 2002). Additionally, if conducted properly, online surveys have significant advantages over other formats, such as increased global reach, greater flexibility, and more convenience for participants (Mathur & Evans, 2005).

The final draft of the survey was developed and presented to the administrative team of the Queen's executive MBA programs to ensure maximum support in this research process. The questions were designed for a short time commitment from survey participants, with both closed and open-ended questions. The survey explored students' physical activity level over a set period of time and asked them to reflect on what they believed the implications were of this physical activity. Closed questions focused on demographic (e.g., gender, work experience) and physical activity behaviours, and open-ended questions on perceptions of how these behaviours might impact professional, academic, and personal successes (see Appendix E). Prior to launching the survey, a small test, including 3 respondents, was conducted to ensure clarity in questioning. The surveys were delivered using an online tool, Questback, which is commonly used by participants of the MBA programs at Queen's. The survey was sent to all current MBA students, one class at a time for a total of four classes. Survey respondents remained

anonymous. The first page of the survey provided all the necessary information on the research. Information from the surveys was analyzed to help guide and develop questioning and sequencing of questions for the online focus group. The focus groups aimed to explore these potential implications in further detail, ideally elaborating with qualitative data much of the quantitative information collected from the surveys.

Wilkinson (1998) demonstrated focus groups lead to improved access to participants' own language and concepts and a better understanding of their own agendas, hence suggesting that focus groups are an ideal method for exploring people's own meanings and concepts surrounding health. Bulletin board focus groups are designed for an online moderator to provide daily questioning to a medium-sized group of participants (10-30). Linhorst (2002) suggests that focus groups lead to successful results in social based research. Participants are able to respond to the questions and the posts from other participants on their own timeline. The moderator has several options to control the software and hence the quality of the online discussion, such as private sessions and smaller group feedback. Bulletin board focus groups have been shown to be successful with participants who are time-constrained or geographically dispersed or with a topic sensitive in nature (Blount, 2009). Bulletin board groups eliminate many of the potential issues with live focus groups, such as a dominant personality, as well as providing an inexpensive, data-rich, anonymous, and flexible environment (Blount, 2009). A somewhat new research method, bulletin board focus groups lack a significant research base supporting their use (see Appendix F for questions). Bulletin board focus groups provided an opportunity for this research to study individuals with time and geographic issues, who make up a majority of our MBA participants. According to Walston and

Lissitz (2000), posing questions and monitoring daily over a one-week period and asking study participants to respond to questions and comments as frequently as possible is beneficial to manage online discussions with these suggestions followed for this stage of the research.

In addition to the data collection techniques described above, a fieldwork journal was used to record my issues, insights, and reflections that emerged throughout all steps of the research. The journal allowed for the inclusion of these reflections into my research discussions.

### **Data Analysis**

At the completion of the survey, descriptive statistics were used to summarize, organize, and reduce large numbers of quantitative observations, allowing each question to be reported as frequencies or percentages. The qualitative responses from the survey were carefully read, and notes were recorded on possible codes and themes that might have occurred. The knowledge collected from this stage of the research allowed for the formation of questioning and sequencing for the online focus group. At the completion of the online focus group, the data analysis was split between the quantitative and qualitative data.

Qualitative data analysis is primarily an inductive process of organizing data into categories (McMillan & Schumacher, 2006). The qualitative data from the survey and focus groups were first examined by developing common themes in the data, separately for each survey or focus group question. As suggested by McMillan and Schumacher (2006), the process of inductive analysis requires several steps in developing themes and

coding of data, but follows no standard processes and depends largely on the researcher. Although no codes and themes were set in advance, the researcher, having completed an intensive literature review on the subject, had general categories into which results might be sorted. These categories proved to be useful, but it was also critical to remain open to emerging themes that the research presented. Each question was examined separately a second time before considering combining the qualitative research across the two data sources. Next the data sets were examined together, comparing similar codes, which led to the development of like themes throughout the entire data set, several of which the researcher presented prior to analyzing the data. Using these themes, the entire data set was re-analyzed and coded appropriately using three categories, professional, personal, and academic, to explore perceived connections with physical activity behaviours. The occurrences of these themes were additionally presented as percentages to understand their frequencies in the qualitative data sets.

For the quantitative data, a correlation matrix was first calculated to determine the suitability of the eligible survey questions for further factor analysis. Pearson correlation coefficients and associated p-values were calculated between the groups' responses to each pair of questions (Qx- Qz) of the survey to indicate whether or not the answers to the two questions were associated. P-values less than 0.05 were considered statistically significant. Another pre-factor analysis test was performed to assess the suitability of the questions. The Kaiser's Measure of Sampling Adequacy (MSA) statistic was calculated. The results from both of these tests provided evidence to suggest moving forward. An exploratory factor analysis was then performed, using the principal components method with rotated factor adjustment. Items were considered to load on a factor at  $>0.5$ . Lastly,

the relationships between the identified factors and participant sex, program, and reported physical activity scores were individually explored univariately using linear regression. Again, p-values of less than 0.05 were considered statistically significant.

When considering the programs, the CQEMBA and EMBA classes were combined because of the similarities in program structure forming the program variable of CQ/EMBA. Additionally, when considering the importance of physical activity, survey responses of “not important at all,” “not very important,” and “somewhat important” have been grouped to form variable 1 “not important,” leaving variable 2, “important” and variable 3 “very important.”

## CHAPTER 4: QUALITATIVE RESULTS

The quantitative results from the online survey and the qualitative results from the online survey and online focus group are presented in two separate chapters; this chapter highlights the qualitative results.

Four distinct qualitative questions were asked in the survey. The first three questions asked respondents about the perceived influence of physical activity on personal, professional, or academic spheres of their lives, respectively. The fourth question focused on how physical activity behaviours might have changed during students' MBA experience. The qualitative results from the online focus group have been combined with the perceived influence questions (personal, professional, and academic), as there were too few online focus group responses to report separately.

The results from the first three sections were combined to present the reader a logical flow of similar information. First, the questions were analyzed to see whether or not physical activity demonstrated positive, negative, or neutral influences, as viewed by the participants. An overview is provided in Table 1 with the results expanded using passages from the responses in the section, Influences. Second, when analysing the responses, seven common themes emerged. These themes, highlighted as Effects, are on the chart below and discussed in corresponding independent sub-sections. Lastly, the responses from the fourth question, "how has your relationship with physical activity changed since entering the MBA program?" are presented in a separate section. Quotations from all of these sections are identified from survey and online focus group transcripts by parentheses where the first character represents the sex of the respondent, either male (M) or female (F). The second set of characters represents the question theme, personal

(PER), professional (PR), academic (AC), or relationship with (R). In the case of the online focus group comments, FG has been added to this second set of characters, but the sex of these respondents was not collected so no “M” or “F” was used to code these responses. The third set of characters represents the respondent number (1). For example, in a passage identified as (MPERFG8) the “M” represents male, the “PERFG” represents personal focus group question, and the “8” represents respondent number 8.

**Table 1: Summary of Personal, Professional, and Academic Influences and Effects**

	Personal	Professional	Academic	Total	Percentage
Responses	169	184	177	530	-
<b>INFLUENCES</b>					
Positive	81	65	80	226	42.6%
Negative	-	3	6	9	1.7%
No Influence	28	37	35	100	18.9%
Lack of Activity	38	13	14	65	12.3%
Previously Active	6	1	3	10	1.9%
<b>EFFECTS</b>					
Focus	14	20	44	78	14.7%
Stress	27	16	25	68	12.8%
Energy	25	26	16	67	12.6%
Productivity	-	17	29	46	8.7%
Confidence	13	23	5	41	7.7%
Networking	16	11	-	27	5.1%
Mood	20	6	-	26	4.9%

## **Influences of Physical Activity**

This section presents the findings from the online focus group and survey questions discussing the influences (positive, negative, or neutral) or reasoning of influence (lack of physical activity, previously active) of physical activity on personal, professional, and academic spheres of life. Approximately 80% of the overall responses fit into one of the listed categories; however, many, about 20% ,were coded as “other,” represented by comments such as “not applicable” (MAC92) or “mmmmm” (FPR51) thought not to contribute to the overall research and therefore not further analyzed. The numbers presented in this section represent percentages based on the total number of responses.

### **Positive Influence**

Unequivocally yes. The professional world is one where the levels of competition among peers are at a very high level. The strong balance and connection between a healthy body and a healthy mind should be something that any professional who is looking for that extra "edge" should be paying attention to. If I can get up earlier in the morning, have my body and mind ready and willing to take on the day, take fewer coffee breaks throughout the day than my colleagues, and attack issues with fervor and a quicker mind than my competition, then I'm doing the right things to differentiate myself. Your body is your machine, in order to pilot your way through the professional world, it needs to be in tip-top shape in order to be better than the rest; your tools (mind and body) need to be taken care of and in prime condition. (PRFG4)

Just over 40% of all responses emphasized that physical activity had a positive influence on participants’ personal, professional, or academic life. Positive influences were listed most frequently in all three spheres.

MBA students highlighted that physical activity played an important role in their lives and “definitely has a positive influence on my personal life” (FPER13). Positive

implications were noted professionally (“it has influenced my professional life in a positive way” [MPR115]) and academically (“it helped me to gain back some energy and focus during the busy class days” [FAC125]). Students reported positive influences of physical activity on each of the research themes, for example, confidence (“By maintaining an active lifestyle, it was one less concern that had to be addressed and adds confidence-it has a positive influence” [FPER2]) and energy (“I have more energy, have lost weight and have greater confidence in my physical appearance” [MPER35]). Positive influence comments ranged from providing the ability to face the program (“My physical activity has given me the strength to face the challenges of this program” [FPER51]) to reducing stress levels (“physical activity has a very positive influence in maintaining a good mood under stress” [MAC78]).

### **Neutral Influence**

Over 17 percent of the overall responses to these questions were coded to demonstrate physical activity as having a neutral influence in one or more aspect of respondents’ lives, as in “physical activity has not influenced professional life” (FPR159). A vast majority of these responses offered no real depth, through comments such as “no change” (MPER42), “remains the same” (MPER55), and “no real impact” (MPER24). Part of this neutral influence related to lack of physical activity: “It hasn’t since I hardly exercised during this time” (FPR26) and “no influence, as I have not participated in any physical activity” (MPR69). Similarly, those participants living active lifestyles prior to undertaking their MBA reported “no change, I was very active prior to the program” (MAC15) and “No impact, being active has been part of my academic successes since grade school” (MAC82). A common question amongst those who lived

this busy lifestyle was making a choice between “Do I sleep, or do I exercise,” choosing “not much influence, as I’ve chosen to sleep rather than exercise, which is what I needed more during my MBA” (FAC53).

### **Negative Influence**

Probably a slight negative influence as I make time to work out and am rushed to get work completed. Probably costs me 0.2 on my GPA. (MAC74)

Very few MBA participants believed that physical activity had a negative influence on any sphere of their lives, with just over one percent of the overall comments emphasising this negative relationship. Even for the individuals who believed that physical activity had a negative influence, this influence was small, as “it has impacted the amount of time I could be spending on studies/job search, albeit marginally” (MAC139). Physical activity was believed to influence time for studies because “It has taken time away from my studies” (MAC118) and “less exercise = more time for studying” (MAC100). Performance was impacted “in a negative way due to sacrifices and not getting the job done” (MPR39).

### **Lack of Activity**

The lack of physical activity in order to complete course requirements on-time (in conjunction with work and home) means stress has built (evidenced in increase in blood pressure, increase in cholesterol, irregular sleep patterns). As the course progressed, I am not at my sharpest mentally, physically, and emotionally. (MPER63)

Many participants, just over 12%, discussed how a lack of physical activity, “little time to exercise as priority has changed” (MPER56), has influenced them: “higher stress, less patience, more fatigue, less concentration from less activity” (MPR49). MBA students noted an impact in their professional lives, “Lack of physical activity has diminished my patience with colleagues, resulted in a sluggish feeling, and simply no

longer have the energy to take-on newly-assigned work” (MPR63), as well as in their personal lives. “The lack of physical activity has had a negative impact as I don't feel good about myself” (MPER132). The academic impacts of less physical activity by some were thought to provide “more time for studying” (MAC69), whereas others believed that physical activity had “Little influence on my professional life because of the decline of physical activities performed” (MPR50). While very few students noted physical activity as a negative influence, certainly a lack thereof had a negative effect for some students who “gain weight and feel tired” (MPER100) and showed signs of “Higher stress, less patience, more fatigue, less concentration” (MAC31).

### **Previously Active**

A very small percentage (under 2%) of overall responses highlighted participants' previous dedication to physical activity as a reason for not emphasizing a positive or negative influence to various aspects of their lives; “physical activity has always been a part of my life so its hard to say how it has impacted it since being a student” (FPER47). MBA students believed that when previously active there was “No change, was already active before the start of school” (FAC53) especially because “being active has been a part of my academic success since grade school” (MAC58).

### **Themes Related to Physical Activity**

The next section outlines themes demonstrated in the responses to the question “How has physical activity influenced your personal, professional, or academic life?” A summary of these themes are listed in Table 1, with approximately 20% of overall

responses not coded to a theme because of lack of significant information, for example, comments such as “none” and “ no influence.”

### **Focus**

As well, if I'm stumped on an assignment or problem, no good comes from sitting and struggling on the same issues. I do some physical activity, then come back to the issue at hand , it's almost as if I see things in a different light. (ACFG4)

The concept of focus is an important one for MBA students. This theme occurred in just under 15% of the comments and was the most commonly occurring theme.

Although focus was most relevant in the discussion of the academic sphere, it was also relevant in both the professional and personal spheres. Students commonly noted an increased focus level through physical activity: “If I am in balance physically and mentally, I sleep better and think better. It’s easier to concentrate and read for longer periods of time” (FAC98). They experienced “more energy, higher concentration level” (MAC141) in that physical activity “helps me think clearly and blow off steam” (MPR149) and “keeps me more focused at work” (FPR147).

MBA students saw that by participating in physical activity, their focus was enhanced in all three dimensions of their lives. In the personal setting, they found increased focus “helps me focus on my work and I notice a difference when I get to exercise” (FPER9). They also noticed increased concentration [“Physical activity makes me feel more energetic and it easier to concentrate” (FPER41)] and increased clarity [“physical activity helps to clear my mind and is a good break between my job and MBA tasks” (MPER74)]. In the professional setting, increased focus was reported, as “the times when I was physically active, I felt sharper and more focused at work” (MPR119) and “I am better able to focus at work when I have a consistent exercise routine”

(FPR129). Clarity improvements were also noted. “I know that I gain insight and clarity after running so if I need to mull something over in my head, a run is the perfect place to do that” (FPR67). In the academic setting, MBA students discussed concentration, indicating that, “after going to the gym and doing some cardio, I feel energized, I get a second wind and am ready to sit and study” (ACFG3), as it was “easier to concentrate after a workout” (FAC160). Creativity could be enhanced as well: “for many years, when I have worked on projects that require innovation, or a new way of thinking, I have come up with great ideas while on my treadmill” (ACFG11).

When discussing the academic setting, students had an easier time expanding on the relationship between physical activity and focus.

This morning I was getting agitated (perhaps too much coffee!). After a 30 minute run, I was able to sit down and complete an assignment with ease. It could be because I thought about the assignment while running-but I also think that my thoughts were able to process clearer after physical activity. (FAC140)

Physical activity may additionally influence focus, along with mood and problem solving. “Being active allows me to vent my frustrations and think through certain problems as they arise. Reflecting and getting away from ‘mind-first’ activities allows me to garner a new perspective on issues and ideas as they form” (MAC165). When an increase in focus is present, “Professionally I feel that individuals in leadership positions are taken more seriously when they are physically fit” (FPR113). This MBA student goes so far as to include a financial icon’s view to help justify his or her beliefs in the value of physical activity on focus.

After exercising at the gym or playing sports, my mental focus increases greatly. Even Kevin O’Leary, Chair of O’Leary Funds, says that he needs to play a game of squash in the morning before he has a big meeting. The benefits that I personally experience after working out are increased focus and mental acuity, physical comfort (posture is better as I sit in a chair and study for a few hours)

and my confidence in myself increases. Some of the best work I have done either during the MBA or at work have come after a good workout or sports game. (ACFG9)

Unfortunately, not all MBA students reported enhanced focus. For a student undertaking the MBA program, time is a very valuable commodity and hence physical activity cannot always fit into the equation. These MBA students discussed the concept of a lack of physical activity influencing focus negatively: “Higher stress, less patience, more fatigue, less concentration from less activity” (MPER49) and “when I had more time to work out, I felt that my personal life was better. Now that I have less time to work out, I feel the negative effects on my mental capacity” (MPER128). This student expands on this concept by highlighting the choices MBA students need to make with their time on an everyday basis.

Lack of physical activity has had a negative impact: ability to concentrate, efficiency at work, all negatively affected. But again, there are only so many hours in a day! You got to prioritize. Can’t cut work hours, can’t cut time with wife and kids, work out time had to go. (MPR31)

## **Stress**

Physical activity has allowed me to manage my stress better, to sleep better and to evacuate negative feelings such as anger and anxiety. When I am angry, I just bike faster until I am exhausted mentally and physically. Doing sports has also helped curtail the weight gain from the school/work challenge. (FPER98)

Stress was an important consideration in the lives of MBA students, presenting itself in over 12% of the comments, appearing almost equally in all three spheres: personal, academic, and professional. MBA students discussed physical activity as a way to manage stress (“helps me manage stress better” [MPR25]), promote relaxation (“Intense physical activity relaxes me, removes stress, anxiety and helps me think more clearly” [MPER8]), and reduce stress (“it helps to relieve the stress when I take the time

to do it” [FPER48]). They especially highlighted how “physical activity has acted as a stress release activity when things got really busy” (MAC89).

Stress management is the concept of finding ways to ensure that the stress that comes into your life does not affect you in a negative capacity. MBA students used “physical activity as a break in the midst of all the madness between working and completing an MBA. It was a must when it came to maintaining my sanity!” (FAC2) and discussed how “the stressful periods could have been worse for me” (MAC88) if not for physical activity. Indeed, managing the demands of life while undergoing your MBA was a difficult task,

As I'm so busy and have so many things to manage, I would not be able to cope with the demands if I didn't de-stress with running. Plus I'd potentially gain weight, which would add to my stress and unhappiness. (FPER67)

One common stress management strategy was ensuring ample time for relaxation. MBA students noted that physical activity provided both time to relax (“I treasure the opportunity to get out and fill my lungs with fresh air after being inside at my desk reading for hours” [FAC67]) and the ability to do so (“In my opinion, mild physical activity helps to put my mind and body in a relaxation stage” [ACFG1]). Both the time and ability provided opportunities for students to “to clear my mind and take a good break between my job and MBA tasks” (MPER74). Additionally, students felt physical activity had “a very positive influence” and allowed one to “maintain a good mood under stress” (MAC78). Physical activity was commonly discussed as “an outlet, me time, relax and unwind” (FPR107) and as “a great mental break!” (FAC103). In addition, physical activity was seen as being a “stress buster” to help you “enjoy a better quality of life” (PERFG1).

MBA students believed that physical activity was a great way to reduce stress: “I use physical activity as a stress relief” (MPER60) and “I need it in order to function! It reduces stress” (FPER147). From a career perspective, physical activity was used as “a way to decrease stress and anxiety before an important job interview, and a way for me to decrease stress when I re-enter the workforce” (MPR128) and provided students with “reduced fatigue and help relieve stress, both have beneficial effects on work” (FPR95). Additionally, a reduction in stress helped MBA students to become “a happier person and more at peace” (FPER53) and “easier to work around” (MPR74). Overall, “lack of it has contributed to my stress level at work” (FPR93). Academically, students suggested that physical activity was a stress relief “when things got really busy” (MAC89) and “during periods of high stress during the program” (MAC6). The themes of focus and stress were often connected, given that “it’s important as I use exercise to keep my mind clear and reduce stress” (MAC142) and “exercise keeps the stress level down and improves focus” (MAC29). A change of mindset might have occurred through participating in physical activity: “I sweat the details less and I’m able to focus on the larger picture” (FAC96), as well as an improved quality of work:

Working out, regardless of how much effort I am putting in, helps my academic performance. For me it reduces my stress levels, which enhances my focus and concentration. With good focus and concentration I am able to do provide more quality work. (ACFG7)

### **Energy**

Less activity gives me less energy. I do not think as clearly, and find I have a difficult time being imaginative and innovative. The increased anxiety experienced as a result of less exercise keeps me back from participating more, and interferes with my motivation. (MPR8)

The connection between physical activity and energy is not an uncommon one and with the significant demands placed on MBA students, energy is an important concept for them. The theme of energy occurred in just over 12% of the comments and was found nearly equally in the responses to all three questions. Students discussed two important relationships between physical activity and energy. They stated first how reduced physical activity reduced energy and, second, how participating in physical activity increased energy levels.

Not all Queen's MBA students could report energy gains by participating in physical activity. While no comments were presented that physical activity took energy away from other tasks, many reported on the lack of energy in connection to a lack of physical activity, for instance, "I have less energy" (MPER28) "more fatigue" (MPER49), and "I don't feel as fit and feel sluggish" (MPR19). They found that "Lack of physical activity has negatively impacted my energy level at work" (MPR33) and that "less energy made it more difficult to complete all the required tasks" (MPR23). MBA students demonstrated a clear understanding of the physical activity energy relationship, but were not always able to capitalize on it.

I know that physical activity keeps me alert, gives me energy and helps me sleep. During the program, I was not able to maintain a solid level of physical activity. For this reason, it has not had an influence on my professional life. I learned so many things through Fit to Lead and Queen's MBA program really brought home the importance of maintaining a balance in life including regular fitness. This will be a positive influence in the long run. (MPR73)

Other Queen's MBA students believed that physical activity provided them with increased energy. In their academic studies, they "had more energy and more clarity to complete my studies" (MAC35), as physical activity "allowed me to feel more invigorated and ready to take on assigned tasks" (FAC120) and stay focused while in

class, in that they were “definitely more energetic on days that I have worked out which helped for staying awake in class” (FAC124). In their professional lives, physical activity gave them “a little more energy, a little less stress” (MPR60). Energy benefits included improved health (“I have more energy to devote to projects, as well my work colleagues have noticed my improved health and physique” [MPR35]) and increased confidence (“I used to get tired easily and lacked energy, now I have lot of enthusiasm and higher self esteem” [MPR34]). Similarly, MBA students found a positive connection between physical activity and energy in their personal lives, in that “Physical activity makes me feel more energetic and it easier to concentrate” (FPER41) and “Keeps my energy levels up” (FPER16).

Many of the comments surrounding energy connected energy to other themes, such as, networking, “Staying active gives a lot of positive energy to my demeanour, and it allows me to interact in favorable ways with my friends and family” (MPER165); productivity, “Since I managed to maintain the routine with added load of MBA work, now it is much easier to sustain it with MBA coming to a close. It has helped my general fitness level as well as energy throughout the day” (MPER89); and confidence, “more physical activity has lead to weight loss, which equals more energy and confidence, subsequently more opportunity” (FPR28). One individual linked energy gains to confidence and mood.

I do a lot of yoga, in addition to cardio activities and have lost about 10 lb over the course of the program. It has had a huge positive impact on my personal life. I feel much happier with the way I look and am much more confident, in addition to generally having more energy. This has allowed me to take on opportunities I may not have otherwise. (FPER28)

## **Productivity**

Balancing a full-time career, MBA studies, and some degree of a personal life is difficult. During this time, being productive is critical. MBA students raised the issue of productivity when discussing both academic and professional lives in just under 9 percent of the total comments. These comments ranged from discussing efficiency, specifically the ability to manage time, “increased productivity in a shorter time frame” (FAC44) to effectiveness, improving the quality of one’s output, as “I continue to use physical activity to improve my academic performance. I recognize the connection between activity and quality academic output” (FAC117).

First, the concept of efficiency was common among the comments of MBA students, such as “it has somewhat improved my productivity at work” (FPR53). They believed that physical activity could help “balance the increased workload” (MAC22), and help in “finding time for it all makes me better at time management” (MPR70). Concentration and sleep were improved so “I concentrate and sleep better which helps me to learn more efficiently” (FAC122). Professionally, “being physically active has certainly had some impacts on my professional life. I am more productive and engaged on days when I go for a morning run. I also feel better (mental, physical) and am in a better mood” (PRFG1).

MBA students noted a lack of productivity in relation to a lack of physical activity: “lack of physical activity probably makes me less efficient than I could be” (MAC31). Weight gain from lack of physical activity tended to reduce efficiency: “it allowed me to maintain my weight during the program, if I had gained weight (which I would have easily without activity), I would have been much less productive” (FAC95).

Physical activity additionally was believed to improve effectiveness. “I always perform better academically when I maintain physical activity” (MAC14). MBA students elaborated on how activity could improve the quality of their work, from the concept of grades (“I would have more energy to complete assignments and achieve the desired grades more easily” [MAC23]) to the benefits of relaxation (“by being more relaxed, I believe I was able to perform better on tests, assignments and teamwork” [MAC126]) to the ability to be more creative (“I am often able to come up with ideas during workouts/runs/games etc” [MAC61]).

### **Confidence**

The theme of confidence was noted in close to 8% of the total responses and occurred in all three spheres, most notably in the professional sphere, “The self-confidence definitely plays a big part in my professional life” (PRFG17). Where MBA students reported to be “self-assured (a lot having come from physical activity)” (PRFG18) and better prepared to “face the challenges of this program” (FPER51), they believed that they were “more confident about myself and my ability to perform and achieve” (FPER45). As well, physical activity influenced their passion for life in that “I think physical activity gives you a certain confidence. You feel like you've worked hard training, practicing, or just going to the gym. You have a passion outside work, family, and friends” (PRFG15). In contrast, lack of physical activity “has had a negative impact as I don't feel good about myself” (MPER132).

Image was an important consideration for MBA students in regards to confidence. It was noted that “you look better as well” (PRFG16) and “being fit leads to a better first impression” (MPR106) when physically active. Looking better meant feeling better (“It

has been a positive influence. I have more energy, have lost weight and have greater confidence in my physical appearance” [MPER35]) and provided confidence in body image (“given me more confidence and allowed for a relatively positive self image” [FPR120]). The true value of the relationship among image, confidence, physical activity, and MBA students was captured in this quote: “being fit makes me have a more positive view of how I fit in my suit” (MPR86).

### **Networking**

Participating in new physical activities allows me to meet new people and learn about different industries and also makes me a more well rounded person. (MPR13)

Networking is an important concept in the business world, especially for MBA students who may be looking for career shifts or opportunities to move up the corporate ladder. The theme of networking was present in just over 5% of the total comments from MBA students and prevalent in both personal and professional sections. MBA students discussed how physical activity advanced their personal and professional networks and “used physical activity as a way to meet other MBA students” (FPER140). They found that going “to the gym at work is a great place to network” (FPR152). Sports participation was another valuable route to networking, whether it was taking “up golfing this year, which will help professionally when I return to the office” (FPR116) or “networking as I and my colleagues at work play tennis once a week” (MPR59).

However, for many MBA students, their lack of physical activity negatively influenced the quality or quantity of their networking as “I have had to cut down on my team sports which means socializing less and being less physically active” (FPER10). They discovered that, “as a student, I did less physical activity for the 15 months I was in

the program than I have in years. As a result, I lost touch with friends” (FPER83). They put themselves in positions where they had to sacrifice physical activity, creating “an imbalance between career and physical activity. Career advancements tend to come before health in a lot of cases” (PRFG6). They changed their focus away from physical activity and became “more focused on getting recognition and moving up the corporate ladder in the early stage” (PRFG6).

### **Other Effects**

General health, mood, and family relationships were also related to physical activity. First, MBA students reported that physical activity “has had a positive influence of overall health” (MPER43), increased their fitness level, “I look better, feel better and am in better shape” (MPER86), and improved mental health “it makes me feel good about myself that I am doing something healthy for my mind and body” (FPER127). As a result of an increase in physical activity, “Earlier, I did minimal physical exercise and ate like a horse. Now that I have taken the former up and latter down, I see a lot of changes in my mood, temperament and general health” (MPER135). Similarly, as a result of a decrease in physical activity, “My lack thereof has left me feeling like I'm aging faster” (MPER118) and “stress has built (evidenced in increase in blood pressure, increase in cholesterol, irregular sleep patterns). As the course progressed, I am not the sharpest mentally, physically, and emotionally” (MPER163).

The theme of mood was noted in just below 5% of the total responses and was prevalent in both the personal and professional sections with participants indicating “I'm in a better mood if I work out” (FPER126). Comments highlighted both a positive and negative connection between physical activity and mood. Physical activity provided

MBA students with a “Greater sense of well-being, optimism, happy-factor” (FPER96) in their personal lives. Professionally, participants noted being “calmer at work and I have better self-control” (FPR98). A reduction in physical activity “affected my stamina and made me a less tolerant person” (MPER26) and “diminished my patience with colleagues, resulted in a sluggish feeling and simply no longer having the energy to take on newly assigned work” (MPR63).

With reduced time for activity and competing family events. It was hard to balance. So in one respect my family was frustrated when physical activity conflicted with their time but in another respect without the physical activity the stress would have affected my personal relationships even more negatively. (MPER88)

Physical activity proved to be a double-edged sword with respect to family. The average age for the students in many of the Queen’s University MBA programs is in the mid 30’s, and, as a result, a theme of family arose in responses to discussions surrounding personal lives. On the one hand, certain individuals saw real benefits of increased physical activity when it came to family, in that “during the program it gave me an opportunity to spend quality time with my spouse and gave him the sense that some time/attention was being given to him” (FPER95) as they could “keep up with the kids and spouse” (FPER101). On the other hand, others highlighted how reduced physical activity strained the family relationship “because my energy levels were lower I was not spending as much time with my family and spouse” (FPER18).

### Students' Relationships with Physical Activity

This section presents the results from the question, “Has your relationship with physical activity changed since becoming a Queen’s MBA student”? Table 2 provides a summary of the responses from this question.

**Table 2: MBA Students' Relationships with Physical Activity**

	Total Responses	Percentage
Total Responses	171	100.0%
Worsened Relationship	85	49.7%
Improved Relationship	68	39.8%
No Change in Relationship	18	10.5%

#### Worsened Relationship

Has diminished to non-existent. By design, an executive MBA program is unbalanced. Working full-time, university full-time, and domestic relationships full-time; simply means that sleep patterns and physical activity are adversely affected. (MR63)

Just under 50 percent of the respondents suggested that their relationship with physical activity worsened since entering the Queen’s MBA program, in that it “Dropped off significantly. I cannot stress that enough. It has gone from very physically active to not really active” (MR33). Most of these responses provided reasons for this lack of activity, including “I didn’t have time for physical activity” (MR30) or “decreased due to time pressures” (FR26). Other respondents expanded on their answers by providing an understanding of the clear benefits of physical activity, despite their not participating in it (“it has decreased slightly in the actual amount of time I get to spend working out,

however, the amount of importance I place on exercise has not decreased” [MR128]). No responses suggested that physical activity was not important or had no value.

Many MBA students entered the program in excellent physical shape and simply could not keep up with their current routines: “I was very physical prior to the MBA program. I was doing triathlons and other competitions. I now only workout 1-2 days a week” (MR19). Significant fitness routines had to be reduced: “before entering the program I was able to train one hour plus at four times per week. Due to a large academic workload, a full-time position and a busy family I had to cut back on training (down to as little as one session or one hour per week)” (FR96).

Time was the most significant reason given why MBA students had not kept up fitness routines, in that their “relationship with physical activity has been strained. When work, combined with school deadlines, loom physical activity is the first thing that gets bumped” (MR6). Other demands seemed to always take first priority over physical activity. “Although I had good intentions at the start of my program, maintaining the activity was challenging. It was the first thing that was sacrificed in trying to balance everything else” (MR23). The lack of physical activity was disappointing for many students:

Personally I was not able to be as active during the MBA program as I would have liked. There was simply too much to manage, and something had to give. I certainly wanted to exercise more, as I have experienced previously how it helps with mental clarity, and energy levels. (FR18)

Despite the worsened relationship, MBA students did emphasize their understanding of the positive influences physical activity could have, as “I have acknowledged the great benefits that physical activity provides to an individual since entering the MBA program. However, I have not been as physically active as I was in

previous years due to pressures from academics and career/work” (MR119). The benefits for stress were additionally noted: “Physical activity has dropped due to time constraints relating to assignments. When intense physical activity was obtained, it significantly helped to reduce stress and anxiety levels” (FR8). Focus was an additional benefit (“The EMBA has significantly increased the demands on my time. My aim now is to take 20-30 minutes here and there and perform some form of exercise to maintain a reasonable level of fitness and keep myself from going to mush!” [MR13]). However, the demands on the students continued to get in the way of their desire to do physical activity, so that “It has reduced significantly. As much as I'd like to exercise, it falls to the bottom of the list, after work, school and personal life. Despite all its benefits” (FR40).

### **Improved Relationship**

Since entering the MBA program my relationship with physical activity has improved. I started being more committed to exercise midway through the program, since then I have exercised consistently for almost a year with great benefit. (MR23)

Just under 40 percent of the respondents suggested that they had an improved relationship with physical activity after entering the MBA program. MBA students provided many reasons for an improved relationship with physical activity, for instance, increased energy levels (“I am being a lot more active. It helps me to stay in shape and continue to be energized” [MR59]) and staying focused (“I am spending more time and focus on staying fit and active” [MR76]). Many believed physical activity to be part of the strategy to manage their MBA experience, such that “It's become an absolute necessity” (FR96) and “Physical activity was part of my life before the MBA. When I started the MBA, it became an important part of my survival toolkit, which helped me balance work, school and my sanity” (FR98). Some MBA students took things into their

own hands, as they “knew that this course would be stressful so I found a personal trainer so I could make sure my health did not suffer” (FR51).

After the fitness assessment, I am more aware of my fitness levels and areas for improvements. My relationship with physical activity has improved since entering the MBA program and continues to improve, so I can meet the fitness goals I have set for myself. (FR98)

The Fit to Lead program provided MBA participants with learning opportunities, including fitness assessments in the health and wellness field. MBA students believed that this program positively impacted their relationship with physical activity. “I was very active before the MBA, however, the MBA further emphasized how important it is to make physical activity a priority and how it adds positive structure to your daily routines and organization” (FR2). Students discussed how Fit to Lead “Increased awareness; desire to incorporate into regular schedule” (MR154) and “was instrumental in helping me establish a routine. And with the academic demands of the program, it made me put more structure to my life” (FR35). Fit to Lead influenced body weight: “Since joining MBA-I have become more active than I ever was. Lost 4 inches of waist and about 12 kilograms using portion control through Fit to Lead exercises” (MR161).

### **No Change**

A majority of respondents highlighted either a greater or lesser relationship with physical activity since starting their MBA at Queen’s but just over 10 percent of respondents thought no change had taken place through phrases such as, “No change” (FR131) and “Same as before” (MR142). Some MBA students who were not active prior to the program remained inactive during the program: “Unfortunately, my relationship with physical activity has remained the same, which is none. I was not working out prior to and am not working out now” (MR69). Others who were active remained active: “It

has not changed. I continue to work out consistently at a moderate to high level of intensity” (MR126).

### **Summary**

The results of the qualitative data provide an interesting framework for discussion. Overall, MBA students believed that physical activity had positive influences (42%) rather than negative influences (2%) and that only a lack of physical activity (12%) had negative influences on routines and behaviours. Themes, such as focus, stress, energy, and confidence were relevant to all three dimensions (personal, professional, and academic) of one’s life, and other themes, productivity, networking, and mood displayed relevancy in two of the three dimensions. A clear split existed between MBA students highlighting a worsening relationship with physical activity (50%) since beginning their MBA and an improved (40%) or equal relationship (10%). The Fit to Lead program was mentioned as inspiration for the improved or equal relationship.

## CHAPTER 5: QUANTITATIVE RESULTS

This chapter presents the quantitative results collected in the survey. The first section highlights the descriptive statistics for each survey item. The second section describes the results of factor analysis and the exploration of the relationships between gender, program, self-reported physical activity level, and physical activity importance and: (a) professional/academic activities, (b) personal quality of life, and (c) personal social interactions.

### Item Descriptive Statistics

Before undertaking in-depth analyses, all quantitative data from survey questions 1 to 9 were summarized on a per-item basis. First, the questionnaires were scanned for missing responses. Between 450-500 surveys were sent to MBA students (the exact number was not recorded), and, of those, 208 participants started the survey, with 168 surveys containing no missing data. The survey thus had a 40-45% enrolment uptake and a completion rate of 80.8%. Responses per questionnaire item ranged from 175 to 207 individuals, as shown by different “n” values. Any number of reasons, including unclear or poorly worded statements or questions not being applicable, could have caused individuals not to respond to certain questions.

The distribution of completed questionnaires is presented in Table 3 and Table 4. Table 3 presents survey participants by gender, which aligns closely with gender ratios in Queen’s MBA programs, with 68.1% of the respondents being male.

**Table 3: Distribution of Participants by Gender (n=204)**

Sex	Male	Female

Frequency	139	65
Percentage	68.1%	31.9%

Table 4 presents the distribution of survey participants by enrolled MBA program. The survey was sent to seven different MBA classes. The Accelerated Masters of Business Program (AMBA) classes of 2012 and 2013 had 30.9% of the responses, the Cornell-Queen's Executive (CQEMBA) classes of 2012 and 2013 had 25.6% of the responses, and the Executive (EMBA) classes of 2012 and 2013 had 30.4% of the responses. At the time the survey was conducted, the full-time Queen's (QMBA) program only had one class in session, QMBA 2012, and hence the survey was sent to only one QMBA class, which constituted 13.0% of survey respondents.

**Table 4: Distribution of Participants by Program (n=207)**

Program	AMBA 2012/2013	CQEMBA 2012/2013	EMBA 2012/2013	QMBA 2012
Frequency	64	53	63	27
Percentage	30.9%	25.6%	30.4%	13.0%

Survey questions #3-#8 focused on MBA students' personal physical fitness level according to the Canadian Physical Activity Guidelines and over the course of the past six months. Table 5 and Table 6 present participants' responses to aerobic training behaviours. Table 5 considers the number of weeks in the last 6 months MBA students had met the Canadian Physical Activity Guidelines of more than 150 minutes of exercise. About one third of the class, the 12.2% who selected 13-18 weeks and the 21.4% who selected 19 or more weeks (total 33.6%) were meeting these activity guidelines at least

half the time. In addition, 16.3% of the respondents responded that they had never met the recommendations in the last 6 months. Similarly, in Table 6, 15.3% of the respondents did not do any aerobic exercise on a weekly basis. Exercise was part of the weekly routine for the other respondents with 33.2% reporting they performed aerobic exercise at least 1-2 days a week and the rest of the respondents even more.

**Table 5: Weeks in Last 6 Months Meeting Aerobic Exercise Standards (n=196)**

Weeks	None	1-6 Weeks	7-12 Weeks	13-18 Weeks	19+ Weeks
Frequency	32	53	45	24	42
Percentage	16.3%	27.0%	23.0%	12.2%	21.4%

**Table 6: Number of Days a Week Aerobic Exercise is Typically Performed (n=196)**

Days	None	1-2 Days	3 Days	4-5 Days	6-7 Days
Frequency	30	65	51	35	15
Percentage	15.3%	33.2%	26.0%	17.9%	7.7%

Table 7 and Table 8 present the frequency of muscle and bone strengthening exercises that MBA students reported performing. Table 7 summarizes the responses for the number of weeks in the last 6 months MBA students believed that they were meeting the Canadian Physical Activity Guidelines. Just under one-quarter of the respondents reported they were meeting these objectives at least half the time, with 7.2% selecting 13-18 weeks and 16.4% selecting more than 19 weeks (total 23.6%). In contrast, 31.8% suggested that they never met these recommendations. Likewise, in Table 8, 32.8% of the respondents selected that they did no regular muscle and bone strengthening exercise on a weekly basis. Furthermore, 38.5% of the respondents stated that they typically did 1 or 2

sessions of strength training on a weekly basis, with just under one-third (28.7%) doing more than this amount: 17.9% for 3 days, 8.7% for 4-5 days, and 2.1% for 6-7 days.

**Table 7: Number of Weeks in Last 6 Months Meeting Strength Standards (n=196)**

Weeks	None	1-6 Weeks	7-12 Weeks	13-18 Weeks	19+ Weeks
Frequency	62	56	31	14	32
Percentage	31.8%	28.7%	15.9%	7.2%	16.4%

**Table 8: Number of Days a Week Strength Training Typically Performed (n=195)**

Days	None	1-2 Days	3 Days	4-5 Days	6-7 Days
Frequency	64	75	35	17	4
Percentage	32.8%	38.5%	17.9%	8.7%	2.1%

The results to the question, “According to the Canadian Physical Activity Guidelines, how would you generally categorize your level of physical activity?” are recorded in Table 9. A majority of respondents (51.8%) selected either a little bit active at 24.4% or somewhat active at 27.4%. More respondents were active (26.9%) or very active (11.7%; total 38.6%) than not active at all (9.6%).

**Table 9: Perceived level of physical activity (n=197)**

Level of Activity	Not at all	A little bit Active	Somewhat Active	Active	Very Active
Frequency	19	48	54	53	23
Percentage	9.6%	24.4%	27.4%	26.9%	11.7%

As highlighted in Table 10, 87.8% of the respondents selected that physical activity was either important (33.0%) or very important (54.8%) to them. These responses do not necessarily align with actual physical activity levels.

**Table 10: Importance of physical activity (n=197)**

Importance	Not at all	Not Very	Somewhat	Important	Very Important
Frequency	1	4	19	65	108
Percentage	0.5%	2.0%	9.6%	33.0%	54.8%

Tables 5-10 provide an understanding of the frequency and regularity of various forms of physical activity among Queen's MBA students who responded to the survey. Most MBA students were regularly not meeting either the aerobic or muscle strengthening guidelines with only 33.6% of the respondents meeting the aerobic training guidelines in at least one half of the weeks in the last six months and only 23.6% meeting the strength training guidelines in the same period. Even though most MBA students were fitting in some exercise, 9.6% were not doing any. Furthermore, while a majority (87.8%) believed physical activity was important to them, the participants as a group were still falling well short of Canadian Physical Activity Guidelines. Additionally, 15.3% of respondents reported they did no regular aerobic training, while 32.8% indicated they did no regular muscle and bone strengthening exercises, with 84.7% engaging in some aerobic training and 67.2% engaging in some muscle and bone strengthening exercises. Only 21.4% of MBA students were meeting the aerobic and

16.4% the muscle strengthening recommendations from the Canadian Physical Activity Guidelines on most weeks.

Table 11 presents the results collected from the survey question “*To what extent do you feel physical activity has impacted the following areas of your life in the past 6 months?*” Twenty-one variables were included representing the personal, academic, and professional spheres of life applicable to Queen’s MBA students. A majority of MBA students felt that overall physical activity either had a positive influence (30.8%) or very positive influence (22.2%). Very few reported a very negative (0.8%) or negative influence (5.6%), but many reported that physical activity had little to no influence (31.5%). While 9.1% of the total respondents selected not applicable, a majority of these respondents selected that option on questions regarding children or spouses. If we eliminate those three questions from the survey, only approximately 3.0% of overall respondents selected “not applicable.”

With the exception of one question “*quality of time with children*” in which a majority of respondents (66.9%) selected “not applicable,” the highest response rate for all 20 other questions was either in the “little to no influence” category (8 questions), the “positive influence” category (9 questions), or the “very positive influence” category (3 questions). Under no circumstances did “very negative” or “negative influence” provide the top response. In only three questions did those two categories provide more than 10% of the responses: “the quantity of time with partner and children” (13.4%), “the quantity of time with family and friends” (11.7%), and “your ability to rest and reflect” (10.7%), all within the “personal” sphere of life.

Whereas most questions had respondents select either “positive influence” or “very positive influence” at a response rate of over 50%, 6 questions did not reach this mark. Survey participants were less confident in the positive effects of physical activity when asked these 5 questions: “*the quantity of time with friends/family*” (38.3% positive), “*quantity of time with children/spouse*” (27.4% positive), “*the ability to network professionally*” (33.4% positive), “*the ability to advance your career*” 34.4% positive), and “*the ability to receive desired grades in your studies*” (45.4% positive). In all five of these questions, little to no influence was the most common response. The sixth question that did not meet the 50% positive response rate, was “*the quality of time with children*” (18.0% positive) because of the 66.9% “not applicable” responses. Three questions received an over 75% positive response rate including; “*your general health and how you feel*” (84.9%), “*the overall quality of your life outside of school and work*” (80.6%), and “*your ability to rest and reflect*” (78.7%). The other questions' positive response rate ranged from 50.2% to 66.1%.

When considering the average response rate of the questions in each sphere of life, we find that the personal sphere (7 questions, excluding “time with children”) had an average positive response rate of 59.8% (with questions ranging from 27.4% to 80.6%) and an average negative response rate of 9.5% (with questions ranging from 2.8% to 13.4%). The academic sphere had an average positive response rate of 51.3% (with questions ranging from 33.4% to 64.6%) and an average negative response rate of 4.8% (with questions ranging from 2.8% to 6.2%). Lastly, the professional sphere had an average positive response rate of 56.6% (with questions ranging from 45.5% to 66.1%) and a negative response rate of 6.5% (with questions ranging from 5.7% to 9.0%). All

three dimensions of life showed a positive response rate of over 50% and a negative response rate under 10%. The most deviation in both the positive response rate and the negative response rate from question to question occurred in the personal sphere.

**Table 11: How physical activity impacts various areas of life**

Responses		Very Negative Influence	Negative Influence	Little to No Influence	Positive Influence	Very Positive Influence	Not Applicable
The Quality of Time with Your Children (n=178)	Frequency	1	4	22	19	13	119
	Percentage	0.6%	2.2%	12.4%	10.7%	7.3%	66.9%
The Quality of Time with Spouse or Partner (n=179)	Frequency	1	13	31	57	33	44
	Percentage	0.6%	7.3%	17.3%	31.8%	18.4%	24.6%
The Quality of Time with Family/Friends (n=178)	Frequency	1	6	57	64	40	10
	Percentage	0.6%	3.4%	32.0%	36.0%	22.5%	5.6%
The Quantity of Time with Family/Friends (n=180)	Frequency	2	19	81	47	22	9
	Percentage	1.1%	10.6%	45.0%	26.1%	12.2%	5.0%
The Quantity of Time with Spouse/Children (n=179)	Frequency	2	22	54	34	15	52
	Percentage	1.1%	12.3%	30.2%	19.0%	8.4%	29.1%
General Health (n=179)	Frequency	7	11	6	51	101	3
	Percentage	3.9%	6.1%	3.4%	28.5%	56.4%	1.7%
Ability to Rest and Reflect (n=178)	Frequency	3	16	16	69	71	3
	Percentage	1.7%	9.0%	9.0%	38.8%	39.9%	1.7%
Overall Quality of Life outside Work and School (n=175)	Frequency	4	11	16	59	82	3
	Percentage	2.3%	6.3%	9.1%	33.7%	46.9%	1.7%
Ability to Network Professionally (n=177)	Frequency	2	8	102	32	27	6
	Percentage	1.1%	4.5%	57.6%	18.1%	15.3%	3.4%
Ability to Advance Your Career (n=177)	Frequency	2	6	99	39	22	9
	Percentage	1.1%	3.4%	55.9%	22.0%	12.4%	5.1%
Ability to Perform in Your Current Job (n=178)	Frequency	0	5	61	68	37	7
	Percentage	0.0%	2.8%	34.3%	38.2%	20.8%	3.9%
Motivation in Your Working Environment (n=178)	Frequency	1	9	49	77	38	4
	Percentage	0.6%	5.1%	27.5%	43.3%	21.3%	2.2%
Ability to Perform successfully in your work team (n=176)	Frequency	1	9	65	57	38	6
	Percentage	0.6%	5.1%	36.9%	32.4%	21.6%	3.4%
Ability to successfully manage people/projects (n=177)	Frequency	0	5	69	60	38	5
	Percentage	0.0%	2.8%	39.0%	33.9%	21.5%	2.8%
Ability to get work completed (n=178)	Frequency	0	11	58	67	37	5
	Percentage	0.0%	6.2%	32.6%	37.6%	20.8%	2.8%
Ability to receive desired grades (n=176)	Frequency	1	11	76	59	21	9
	Percentage	0.6%	6.3%	43.2%	33.5%	11.9%	4.5%

Ability to perform successfully as a member of your MBA team (n=179)	Frequency	1	10	62	72	27	7
	Percentage	0.6%	5.6%	34.4%	40.2%	15.1%	3.9%
Ability to think creatively on a school assignment (n=177)	Frequency	0	10	66	64	31	6
	Percentage	0.0%	5.6%	37.3%	36.2%	17.5%	3.4%
Ability to concentrate/focus on academic priorities (n=177)	Frequency	0	16	47	68	42	4
	Percentage	0.0%	9.0%	26.6%	38.4%	23.7%	2.3%
Ability to perform overall as an MBA student (n=177)	Frequency	1	9	45	79	38	5
	Percentage	0.6%	5.1%	25.4%	44.6%	21.5%	2.8%
Ability to produce high quality academic work (n=177)	Frequency	1	9	61	67	34	5
	Percentage	0.6%	5.1%	34.5%	37.9%	19.2%	2.8%
Total	Frequency	29	202	1143	1118	807	329
	Percentage	0.8%	5.6%	31.5%	30.8%	22.2%	9.1%

### Factor Analysis

Of the 208 surveys started, 168 were fully completed and analyzed in this section. This in-depth analysis considers the results from survey question 9 (Table 9) “*To what extent do you feel that physical activity has impacted the following areas of your life in the past six months,*” featuring 21 questions from the personal, academic, and professional spheres of life (herein designated as 9.1, 9.2, 9.3 ... 9.21). Question 9.1 “*the quality of time with your children*” was dropped from further analysis as 66.9% of the respondents selected “not applicable.”

In advance of starting factor analysis, a correlation matrix was calculated to determine the suitability of the eligible survey questions for further factor analysis using the software SAS. Pearson correlation coefficients and associated p-values were calculated between the responses to each pair of questions from 9.2 through 9.21. The results from this test provided two values for each set of questions compared, first a correlation coefficient, which gives the strength and direction of the relationship and second, the p-value, which tells whether or not the relationship is statistically significant.

A significance level of 0.05 was used; all compared data provided p-values of less than 0.05. To ensure that factor analysis was the right data analysis method, another pre-factor analysis test was performed to assess suitability. The Kaiser's Measure of Sampling Adequacy (MSA) statistic was calculated to be 0.913. On this test, values close to 1 indicate that factor analysis is appropriate. The results from both the MSA and Pearson correlation coefficients tests provided sufficient evidence to move forward with exploratory factor analysis.

An exploratory factor analysis using the principal components methods produced a scree plot of Eigen values resulting in a significant elbow at three in the graph. Based on the results from the scree plot, as well as the knowledge that the survey was originally designed with three factors, a rotated factor adjustment using three factors was performed. Values of  $>0.5$  were considered to load on the relevant factor. All 20 questions loaded uniquely onto one of the three factors. The results are shown in Table 12. Although the results did not align completely with survey set-up of professional, academic, and personal related questions, the factors split as follows. Factor 1 contained questions 9.9 through 9.21, with factor loadings from 0.517 (Question 9.11) to 0.900 (Question 9.16). These questions all originally related to the academic and professional aspects of life and are named the Professional/Academic factor. Factor 2 had questions 9.6, 9.7, and 9.8 loading onto it with corresponding values of 0.854, 0.840, and 0.865. These three questions all originally referenced the "personal" sphere, but, on further analysis, specifically reference personal quality of life. Factor 2 was therefore named the Personal Quality of Life factor. The third factor had questions 9.2 through 9.5 loading onto it, with values ranging from 0.659 (question 9.3) to 0.860 (question 9.5). These four

questions also originally referenced the “personal” sphere but focus specifically on the quality of personal interactions with others. Factor 3 is named the Personal Interaction factor.

**Table 12: Rotated Factor Pattern**

Question	Factor 1	Factor 2	Factor 3
9.2	0.055	0.290	<b>0.774</b>
9.3	0.233	0.441	<b>0.659</b>
9.4	0.277	0.188	<b>0.747</b>
9.5	0.048	-0.034	<b>0.860</b>
9.6	0.252	<b>0.854</b>	0.210
9.7	0.298	<b>0.840</b>	0.215
9.8	0.296	<b>0.865</b>	0.216
9.9	<b>0.576</b>	0.271	0.467
9.10	<b>0.713</b>	0.143	0.287
9.11	<b>0.517</b>	0.355	0.377
9.12	<b>0.640</b>	0.511	0.236
9.13	<b>0.853</b>	0.193	0.154
9.14	<b>0.741</b>	0.369	0.260
9.15	<b>0.732</b>	0.426	0.231
9.16	<b>0.900</b>	0.026	0.104
9.17	<b>0.876</b>	0.081	0.096
9.18	<b>0.792</b>	0.330	0.126
9.19	<b>0.767</b>	0.428	0.069
9.20	<b>0.812</b>	0.280	0.111

Next scales were created using the items loading onto each factor. The reliability of a scale based on the items loading on Factor 1 was .900, those items loading on Factor 2 was 0.565, and those items loading on Factor 3 was -0.107. These scales were created to test the possibility of using scales rather than factors in the subsequent analyses. As the scale reliabilities were low for Factors 2 and 3, factor scores were used in subsequent analyses.

**Table 13: Factor 1 Reliability Scores**

	Deleting Question 16	Deleting Questions 13+16
<b>OVERALL</b>	<b>0.921</b>	<b>0.944</b>
Q9	0.914	0.942
Q10	0.912	0.941
Q11	0.916	0.943
Q12	0.909	0.937
Q13	0.944	x
Q14	0.907	0.935
Q15	0.909	0.936
Q16	x	x
Q17	0.911	0.940
Q18	0.908	0.936
Q19	0.907	0.936
Q20	0.909	0.938

Based on results, Factor 1 was the only factor that demonstrated a high reliability score. The same reliability analysis was repeated for Factor 1 removing questions 13 and 16 to determine if overall reliability would increase as these questions had indices indicating greater reliability with their removal. As demonstrated in Table 13, Factor 1 had a marked improvement in reliability after removing both question 13 and question 16. A new rotated factor pattern was produced, not including Q13 or Q16, which was used to conduct the remaining portion of the statistical analysis (Table 14).

**Table 14: New Factor 1 Loadings, After Removing Q's 13 and 16**

	<b>Factor1</b>
<b>Q2</b>	0.083
<b>Q3</b>	0.259
<b>Q4</b>	0.272
<b>Q5</b>	0.049
<b>Q6</b>	0.283
<b>Q7</b>	0.341
<b>Q8</b>	0.332
<b>Q9</b>	0.611
<b>Q10</b>	0.749
<b>Q11</b>	0.557
<b>Q12</b>	0.675
<b>Q14</b>	0.764
<b>Q15</b>	0.755
<b>Q17</b>	0.850
<b>Q18</b>	0.829
<b>Q19</b>	0.807
<b>Q20</b>	0.818
<b>Q21</b>	0.866

### **Analyses by Group**

The next set of results are organized to provide an understanding of how the three described factors, “Academic/Professional,” “Personal Quality of Life,” and “Personal Interactions” relate to the following four variables: gender, program, reported physical activity levels, and importance of physical activity. These results provide an understanding of the following research sub-questions related to research question 3: First, to what extent do males and females feel differently about the role of physical activity in their lives? Second, to what extent do MBA students in different programs feel differently about the role of physical activity in their lives? Third, to what extent do individuals who reported different physical activity levels feel differently about the role

of physical activity in their lives? Finally, to what extent do MBA students who feel differently about the importance of physical activity feel differently about the role of physical activity in their lives? The following tables provide statistical summaries of these results, including the Tukey tests. P-values of less than 0.05 were considered statistically significant.

**Table 15: Gender**

GENDER	MALE N=108	FEMALE N=57	SIGNIFICANCE LEVEL
FACTOR 1 (Prof/ACA)	0.02 (1.06)	-0.67 (0.88)	0.61
FACTOR 2 (QUAL of LIFE)	-0.02 (1.06)	0.03 (0.91)	0.75
FACTOR 3 (Social Interactions)	-0.12 (1.02)	0.19 (0.94)	0.06

As demonstrated in Table 15, gender was not significantly related to any of the three factors.

**Table 16: Program**

PROGRAM	AMBA N=55	CQ/EMBA N=90	QMBA N=22	F-value
FACTOR 1 (Prof/ACA)	0.22 <sub>b</sub> (0.93)	-0.04 <sub>a</sub> (1.05)	-0.39 <sub>ab</sub> (0.89)	3.21*
FACTOR 2 (QUAL of LIFE)	-0.08 (0.97)	0.05 (1.05)	0.02 (0.87)	0.28
FACTOR 3 (Social Interactions)	-0.03 <sub>b</sub> (0.93)	-0.20 <sub>b</sub> (0.99)	0.76 <sub>a</sub> (0.87)	9.03**

\* p < .05      \*\* p < .01      \*\*\* p < .001

Note: Means with different subscripts are significantly different at the .05 level.

Table 16 highlights how the program variable was significant for both Factor 1 and Factor 3. For the Professional/Academic factor (1), the difference was significant between AMBA and CQ/EMBA, whereas, in the Social Interactions factor (3), the difference was significant between the QMBA program and both the AMBA and CQ/EMBA programs.

**Table 17: Physical Activity Levels**

Self-Reported Physical Activity Scores	Not at all Active N=16	A little bit Active N=41	Somewhat Active N=46	Active N=44	Very Active N=21	F-value
FACTOR 1 (Prof/ACA)	-0.19 (1.18)	0.10 (1.21)	-0.17 (0.90)	-0.01 (0.83)	0.36 (0.90)	1.26
FACTOR 2 (QUAL of LIFE)	-0.79 <sub>a</sub> (1.39)	-0.43 <sub>a</sub> (1.23)	0.15 <sub>b</sub> (0.75)	0.36 <sub>b</sub> (0.58)	0.32 <sub>b</sub> (0.80)	7.11***
FACTOR 3 (Social Interactions)	-0.24 (1.24)	0 (1.00)	0 (0.86)	0 (0.95)	0.20 (1.24)	0.43

\*  $p < .05$       \*\*  $p < .01$       \*\*\*  $p < .001$

Note: Means with different subscripts are significantly different at the .05 level.

The relationship of self-reported physical activity scores to the factors is highlighted in Table 17, which demonstrates a group effect in the Quality of Life factor (2). Participants who reported being “very active,” “active,” and “somewhat active” reported significantly higher Quality of Life than those participants reporting “not at all active” and “a little bit active.” No other between-group differences were significant.

**Table 18: Importance of Physical Activity**

Importance of Physical Activity	All Other Answers N=18	Important N=57	Very Important N=93	F-value
FACTOR 1 (Prof/ACA)	-0.42 <sub>b</sub> (1.18)	-0.27 <sub>b</sub> (0.84)	0.25 <sub>a</sub> (1.00)	7.05**
FACTOR 2 (QUAL of LIFE)	-0.22 <sub>ab</sub> (0.81)	-0.27 <sub>b</sub> (1.16)	0.21 <sub>a</sub> (0.88)	4.78*
FACTOR 3 (Social Interactions)	-0.06 (0.94)	-0.05 (1.03)	0.04 (1.00)	0.19

\* p < .05      \*\* p < .01      \*\*\* p < .001

Note: Means with different subscripts are significantly different at the .05 level.

Table 18, which highlights the importance of physical activity in relationship to the three factors, shows significant between-group differences for both Factor 1 and Factor 2. For Professional/Academic (Factor 1), participants who saw physical activity as "very important" had higher scores than the other two groups, which did not significantly differ from each other. For Quality of Life (Factor 2), the "very important" group was significantly higher than the "important" group.

### Summary

The quantitative results provide some interesting information for further discussion. First, we gain an understanding of how active MBA students reported they were compared to the Canadian Physical Activity Guidelines. More MBA students engaged in aerobic training than in strength training, and, although most did not meet the recommended guidelines on a weekly basis in either, a majority of MBA students did fit some physical activity into their regular routines. Second, by an overwhelming majority of 87.8%, MBA students in this study believed that physical activity was either

“important” or “very important” to them. Furthermore, a majority of MBA students felt that physical activity had either a “positive” or a “very positive” influence on most personal, academic, and professional aspects of lives, while less than 10% of responses suggested that physical activity might have a “negative” or “very negative” influence. Finally, MBA students’ gender had no influence on how physical activity influenced their lives, but the other variables of program, importance of physical activity, and physical activity level all influenced at least one factor. Although the statistical analyses performed do not allow us to understand why these variances exist, they help us gain greater clarity on our research data.

## **CHAPTER 6: DISCUSSION**

The focus of this research was to explore the perceived impact of physical activity on Queen's MBA students' personal, academic, and professional lives. In particular, it was designed to explore three specific research questions. First, what is the perceived impact of physical activity on the personal, professional, and academic aspects of Queen's MBA students? Second, what level of importance do Queen's MBA students place on physical activity and how active they are? Third, how do the variables of gender, program, physical activity level, and importance of physical activity influence these three factors?

In this chapter, I provide a more in-depth understanding of how the results relate to each of the three research questions. Next I discuss the limitations of the study and the possible implications for future research. I conclude with final thoughts about the research.

### **Exploring the Three Research Questions**

#### **Perceived Impact of Physical Activity**

Much like the research that overwhelmingly demonstrates the many benefits of physical activity, for example, reduced fatigue (Puetz, 2006), improved social relations (McAuley et al., 2000), and improved confidence (Bridges & Madlem, 2007), a large majority of MBA students in the current study believed physical activity provided significant positive implications. For the qualitative results, 42.6% of the overall comments were coded as demonstrating a positive effect of physical activity compared with only 1.7% of the comments suggesting a negative influence. Likewise, the

quantitative data were summarized to show that 53% of the respondents selected either “positive” or “very positive” influences, while only 6.4% selected a “negative” or “very negative” influence of physical activity

With the large percentage of MBA students believing physical activity had positive implications and the small numbers of students suggesting a negative influence, the remainder of the students reported physical activity to have a neutral influence or no influence whatsoever. Similarly, many research studies exploring physical activity demonstrated either no positive relationship or only a very minor positive influence. For instance, in Taras’ (2005) review of physical activity and student performance, just over one half of the studies reviewed demonstrated a clear positive benefit of physical activity, while the remaining studies were inconclusive. Additionally, the complex relationship between physical activity and several of the factors examined in this research might have been difficult for students to comprehend with respect to the potential impact of physical activity.

It appears from the data collected that MBA students did not believe the influences of physical activity varied significantly across the three spheres of life discussed in this research: personal, professional, and academic. A significant positive influence of physical activity was noted in all three spheres in both the qualitative and quantitative data sets. Likewise, only a small percentage of overall comments in both data sets demonstrated a negative influence of physical activity, with neither the positive or negative comments varying significantly across spheres. One possible explanation for this result is that MBA students may not actually contextualize their lives in three uniquely different spheres when referring to the positive influences of physical activity;

rather each of these three spheres morphs together producing one singular life dimension. Using this possible explanation, we could draw an understanding to these results that, if physical activity positively influences one aspect of participants' lives, it should influence all aspects of their lives.

When analyzing the specific effects of physical activity in each sphere, some small differences appeared to exist. Although the three most heavily reported effects of physical activity, namely, focus, stress, and energy, were reported fairly equally across all three spheres, the lesser reported effects were often not reported in one of the three spheres. For instance, the effect of productivity was reported heavily in the academic sphere, but was not recorded in the personal sphere. Similarly, mood was reported regularly in the personal sphere, but barely reported in the professional sphere, and not reported in the academic sphere at all. Therefore, although MBA students might not distinguish a difference in overall positive or negative influences across spheres, they did comprehend an understanding of how physical activity could influence each sphere. Unfortunately, not enough information was gathered to fully explain the unique differences across spheres. We can, however, draw a conclusion that some minor differences in how MBA students perceived the specific effects of physical activity to influence them existed. Most importantly, we can conclude that, in all three spheres, MBA students overwhelmingly believed physical activity provided positive effects.

Queen's MBA students perceived their physical activity to influence a wide range of elements within their regular personal, professional, or academic routines. Focus, stress, energy, productivity, confidence, networking, and mood were all reported by

MBA students to be positively influenced by physical activity. The literature supports each of these elements in having a positive influence from physical activity.

Each of the elements that physical activity positively influences can also be critically important to the success of an MBA student. MBA students reported an increased ability to focus in just under 15% of the total survey responses. Concentration in classroom and private reading sessions and during assignments or professional work settings should allow for greater information uptake, reduced time spent on tasks, and likely increased success on deliverables or amount of work completed (Singh-Manoux, Hillsdon, Brunner, & Marmot, 2005). A reduction of stress was noted as an effect of physical activity in about 12% of the overall research studies. Stress reduction is associated with improved workplace productivity (Cooper & Cartwright, 2004) Likewise, maintaining high levels of energy is critical for MBA students. Puetz's (2006) research demonstrated a significant impact in fatigue reduction from physical activity, and MBA students noted the same in about 12% of the overall comments. Productivity, which was also noted commonly, clearly impacts overall time management and efficiency (Pronk et al., 2004).

The connection between MBA student success and the elements that physical activity was shown to positively impact might be a little less clear for less frequently discussed elements. However, confidence in research is often linked to life success, networking holds professional career advancement benefits, and positive mood improvements should make you a more tolerable teammate. Regardless of any of these specific connections with MBA student success, one of the most interesting and valuable pieces of information to come out of this research is that the elements that MBA students

reported physical activity to positively influence all seemed to additionally have links to their own success.

From reviewing the data collected from this research, several important pieces of information surrounding Queen's MBA students' perceived influence of physical activity may be deduced. First, we can conclude that MBA students' perceived physical activity had positive influences in all aspects of their lives, but that they might not conceptualize their lives in three different spheres (personal, professional, academic) as it was described in the research. Second, we learned that Queen's MBA students believed that physical activity influenced focus, stress, energy, productivity, confidence, networking, and mood, which all in turn likely influenced program success. Third, while those MBA students rarely believed physical activity to have any negative implications, a significant percentage of the population believed physical activity to have no impact or had difficulty expressing that potential impact. Lastly, all three of the above findings seem to align closely with research discussed in this project. All of the research studies explored expressed physical activity to have a positive or neutral impact and to influence such factors as focus (Singh-Manoux, Hillson, Brunner, & Marmot, 2005), stress (Salmon, 2001), energy (Puetz, 2006), productivity (Weuve et al., 2004), confidence (Bridges & Madlem, 2007), networking (McAuley et al., 2000), and mood (Huang & Humphreys, 2012).

### **Queen's MBA Students and Physical Activity**

One of the secondary areas of interests this research set out to understand was how physically active Queen's MBA students were and how important they perceived physical activity to be. In this section, I first explore MBA students' physical activity

levels and compare these levels to those of the general Canadian population. Second, I explore the importance MBA students placed on physical activity.

Since no research on the activity levels of MBA students had been conducted previously, we have no specific comparable data set; we can, however, consider the general Canadian adult population. In 2009, an estimated 15% of the Canadian adult population accumulated the recommended 150 minutes of moderate-to-vigorous physical activity per week; 52.5% reported that they were at least moderately active but at least 25% of the population was considered obese (Colley et al., 2011). Unfortunately, no data considering strength-training frequencies of the general Canadian population could be located.

When considering the data collected on Queen's MBA students in this research, 21.4 % accumulated the 150 recommended minutes of aerobic exercise weekly, and 83.7% reported at least moderate levels of aerobic exercise. The results for those participating in strength exercises dropped, with 16.4% meeting the standards each week and 68.2% participating in exercises regularly. Only 9.6% of the Queen's MBA students reported they did no exercise at all. Data provided from the Queen's School of Business Fit to Lead program,<sup>4</sup> which conducts Fitness Assessments on close to 90% of the MBA student population as they enter the program, suggests that, by the standards they use for measurement, approximately 11% of the last 300 Fitness Assessment tests conducted showed that students would be considered obese, compared to 25% of the general Canadian population.

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<sup>4</sup> Fit to Lead provides an opportunity for all MBA students to undergo a personal Fitness assessment within the first week of joining the MBA program.

Although self-reported physical activity levels are simply an estimate of actual activity levels, both sets of results used these measures to consider overall activity levels. Based on these results, Queen's MBA students reported higher activity levels when compared to the general Canadian adult population. Two possible reasons might help to explain this variance. First, the small specific population of the Canadian survey represented by MBA students might in general have a higher physical activity level. Age, education levels, and location would all be of influence here. Second, the general Canadian public is not provided an exclusive health and wellness coaching program, Fit to Lead, as Queen's MBA students are. To truly understand if this exclusive program was influencing behaviours, we would have to consider activity levels of other MBA students in programs that do not provide such a program. In the absence of those data, we could infer that both factors might influence and help to explain the higher physical activity scores of Queen's MBA students when compared to the general Canadian population.

Despite higher physical activity levels than the general Canadian population, Queen's MBA students were still not participating sufficiently in regular physical activity as suggested by the Canadian Physical Activity guidelines discussed in the literature review. The Queen's MBA program places significant academic demands on their students, possibly to the detriment of physical activity. One Queen's MBA student suggested "less exercise = more time for studying" (MAC100), referring to the continuous battle students face with prioritizing their time. Data released from Fit to Lead program<sup>5</sup> evaluations demonstrate that over 10% of the comments collected in the last several years highlight scheduling conflicts as a major barrier to participation in the various Fit to Lead activities provided to the students. MBA students in these evaluations

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<sup>5</sup> Fit to Lead evaluation data collected over last two years of programming across all MBA programs.

cited, “The biggest challenge to the program for me was having time to fit in sessions with the course work requirements” and “Great idea, but we don't have enough time to benefit from it,” highlighting their consistent struggle between physical activity and academic demands.

In the current study, 16.3% of MBA students were not doing any regular aerobic activity, and 31.8% were not doing any strength training activities. Ideally, the most benefit could be found by reducing both of these numbers to as close to zero as possible, with a particular emphasis on strength training.

In recent research studies, strength training has demonstrated significant short- and long-term benefits, equivalent or potentially more fundamentally important than cardio-vascular training. Barriers to strength training versus aerobic training could be considered much more difficult to overcome. Most individuals do not require a significant amount of knowledge to successfully engage in aerobic training opportunities such as walking, running, swimming, or biking, but might be much more intimidated or limited in opportunity to consider lifting weights or to engage in strength training exercises. Based on this research, one opportunity for program development would be to find a way to reduce the barriers of strength training programs for MBA students.

When MBA students were asked about the importance of physical activity to themselves, 87.8% of students responded with either “important” or “very important,” while only one individual suggested that physical activity was not important at all. Although Queen’s MBA students might not be as active as recommended, they placed a significant positive value on physical activity.

In addition to exploring how active Queen's MBA students were, and how they valued the importance of physical activity, the survey investigated how their relationship with physical activity might have changed since entering the MBA program. The demands of the MBA program caused many students (49.7%) to suggest they had a worsened relationship with physical activity since beginning their MBA journey. Many cited time "I didn't have time for physical activity" (MR30) or stress "decreased due to time pressures" (FR26) as reasons for this weakening relationship. However, many of the students reported displeasure with this worsening relationship in that "personally I was not able to be as active during the MBA program as I would have liked" (FR18). In contrast, 39.8% of the responses suggested an improved relationship with physical activity since the respondents began the MBA program. Students highlighted Fit to Lead as a significant reason for this improved relationship, saying "it was instrumental in helping me establish a routine" (FR35).

Many individuals discussed how a lack of physical activity was negatively influencing them. Over 12% of the overall comments across all three spectrums highlighted this trend. MBA students highlighted "higher stress, less patience, more fatigue, less concentration" from a lack of physical activity, quoting the very same elements of stress, mood, energy, and focus for which other students suggested a positive relationship with physical activity. MBA students who were not getting the exercise they desired clearly understood the positive benefits that they were missing.

### **Gender, Program, Physical Activity Level, and Importance of Physical Activity**

The survey variables of gender, program, physical activity level, and importance of physical activity were examined to explore their relationship with the three developed

factors: professional/academic, personal quality of life, and personal interactions. This analysis was done to determine if any of these variables influenced how MBA students responded to the questions of perceived influence of physical activity. The analysis highlighted several significant relationships. First, gender had no connection with any of the scales. Second, program was linked to both the academic/professional and personal interaction scales. Third, self-reported physical activity level was related to the personal quality of life scale. Lastly, importance of physical activity was connected to the personal quality of life and the professional/academic scale.

None of the studies discussed in the literature reviewed measured the impact of physical activity specifically on males or females and compared or highlighted differences between the sexes on how physical activity influenced them. Although the Canadian physical activity statistics highlight that men are generally slightly more active than women (Colley et al., 2012), mostly because of family responsibilities, the results of the current research did not note any significant variances in responses from males or females. No significant variance in gender was expected in this research as both genders would have extremely high demands on their time.

Program was one of two variables found to be linked with more than one scale. The spectrum of ages and experiences across program options vary significantly. Of the three program choices “AMBA,” “QMBA,” and “CQ/EMBA,” the “AMBA – QMBA.” relationship was demonstrated to influence the professional/academic scale, and both the “AMBA-QMBA” and “CQ-EMBA – QMBA” were found to influence the quality of life scale. Several factors might be responsible for these variances. First, QMBA is the only full-time program and hence students are not working simultaneously while taking part in

this schooling. Second, many students of the QMBA program are international, and this might be their first time living in Canada. This adjustment period may influence how they perceive the value or influence of physical activity in that they are balancing even more demands, including physical activity, than would students who have lived longer in Canada. Third, because of the full-time nature of this program, students might be leaving careers, moving cities, and uprooting, or leaving family behind. AMBA, on the other hand, is being completed at the same time as a career in the form of distance education from students' current cities across Canada. Lastly, it is important to consider that each of the programs has a different start date and therefore participants were surveyed at different stages of their MBA program experience. Stage of program might be an additional factor related to cross-program differences.

From an age and experience factor, QMBA and AMBA programs are actually quite similar; however, Queen's AMBA students are all former business undergraduate students, whereas both QMBA and CQ-EMBA students have a diverse educational background. The CQ-EMBA program engages students who are mostly in senior positions in their career. Specifically considering the "professional" element, QMBA students are likely considering networking, job applications, and interviews as their major professional undertakings throughout the year, whereas AMBA and CQ-EMBA students are all currently employed full-time so would not be focused on finding a position. It was, however, surprising that the "QMBA-CQ-EMBA" relationship did not also extend to the professional/academic scale.

Self-reported physical activity levels provided variances for nearly all responses in the personal quality of life scale. Generally, individuals who responded that they were

physically active (no matter how physically active) responded to the questions differently than those who reported that they were not physically active. Additionally, to some degree, those who were very physically active responded differently than those who were just a little bit active.

The professional/academic and personal quality of life scales were both influenced by the importance of physical activity. Individuals who responded “very important” or “important” differed significantly in how they responded to each scale. On the professional/academic scale, a significant difference was also shown between the “very important” and “not important” responses. The lack of more significant findings with respect to the “not important” group may be the result of limited statistical power in that there were only 18 students in this group.

### **Limitations of Current Research**

There are four significant limitations to this research. Each of these limitations should be addressed in future research. A significant limitation of this research was the depth of the literature review. No research studies could be found discussing MBA students and physical activity. Even as the core of the literature search expanded to analogous research, few studies had many direct connections to the current study. Most of the research discussed in the review was several aspects removed from the core topic of MBA students and physical activity. For instance, research investigated students and physical activity, or adults in the workplace and physical activity but never adult learners and physical activity. Conversely, one of the central interests in the research was to explore how physical activity impacted the various aspects of life an MBA student

experiences (professional, personal, academic) where an abundance of research existed, making it challenging to go into any of these areas in great detail. One improvement to the research that might have been made without sacrificing the breadth would have been a clearer definition of the three spheres (professional, personal, academic), which were not as distinct as originally believed. For instance, professional and academic questions loaded onto the same scale and on many of the survey responses had MBA students responding with a “same as previous question” when asked to report differences between the spheres. It is possible that the spheres could have been eliminated and the discussion limited to how physical activity influenced MBA students’, “lives.”

Second, the survey did not uncover rationales for students’ responses. For instance, using a bivariate analysis does not allow for a further understanding of why a variable or how a variable is related to an outcome factor or scale. For instance, the program variable, specifically between the AMBA and QMBA programs, influenced how individuals answered questions on the both the professional/academic scale and the personal interaction scale but we can only infer how or why this influence existed. This comment could equally be applied to the impact of physical activity level and importance of physical activity. If we wanted to be able to explain the reasons, we would have had to do further analyses in these areas, either through more survey questions or a qualitative follow-up.

Another major limitation related to participation, most particularly with the focus groups. Although 208 students completed the survey, it is possible that some self-selection took place whereby students with certain profiles (for example, those not engaged in physical activity) might have chosen not to take part. With respect to the live

focus groups, after several unsuccessful efforts in trying to gather enough individuals interested in participating in such a group and, in consultation with my thesis supervisor, it was decided that, rather than to proceed with 1-on-1 interviews (which could have easily been arranged), we would cancel this stage of the research. Armed with the knowledge of the great participation level of the survey and the solid qualitative feedback received in this stage of the research, it really was not necessary to collect further data for the depth I intended to go.

The online focus group stage of the research proved to be difficult to generate ongoing discussion and regular feedback. Most of the posters responded to either only one or two of the posed questions and rarely interacted with each other's posts. This lack of success from this element of the research could have been because of my lack of experience in moderating this type of group or because of the low engagement level of MBA students. It's quite possible that if I undertook this research a second time, I would have explored not using an online focus group at all as it did not particularly add value to the conversation. At least in the future, a different research method would be explored for this stage of the research.

Lastly, the timing of the survey and self-reported physical activity levels represented another limitation. Each of the MBA program participants surveyed was at a different stage of MBA completion; some had just started; others had nearly completed. It is believed that students' perceptions of physical activity could vary significantly throughout the duration of an MBA program. This factor was not considered in this research. In future research, program start and end times should be considered and a shorter time frame for recent physical activity levels should be explored.

### **Directions for Future Research**

This research laid a brick very close to the ground. No other research studies have explored the relationship between physical activity and MBA students. Although the limited number of studies creates numerous possible directions for future research, I summarize these directions in three specific areas: (a) the specific relationship between physical activity and MBA student performance; (b) implications for the QSB Fit to Lead program; and (c) extensions beyond physical activity.

Many opportunities exist to extend this current study and further explore the relationship between physical activity and MBA students. This current study explored perceived impact. It would also be possible to examine the actual impact of physical activity by examining a comparison of grades, team success, or future career success. Additionally, it would be interesting to consider MBA students' success on a presentation or exam after participating in physical activity versus not participating in any physical activity or investigating how MBA students perceived physical activity to influence them at different times in their program. Another opportunity exists in measuring actual physical activity and fitness levels at different program entrance points rather than self-reported scores. For instance, at the time of this research, a personal opt-out strength training session had been introduced as part of the services provided by Fit to Lead. Future research could examine the extent to which these sessions increase the numbers of students participating in regular strength training exercises or how this component impacts perceived value.

This research did provide an opportunity for me as the researcher to show the value of a program such as Fit to Lead, but this direction certainly was not the primary

focus of the research. New research with a focus on measuring program success creates a great opportunity to elaborate in these fields. The current research provided an understanding of current activity levels of MBA students and the perceived value of physical activity; further research could be done to extend both of these knowledge bases. For instance, a comparison study between a Queen's MBA program and another similar MBA program not embracing a program philosophy such as Fit to Lead could provide some worthwhile information and only then would we have a real understanding of the potential value Fit to Lead provides Queen's MBA students.

Lastly, future research could explore in much greater detail the discussed effects of physical activity and how they truly influence MBA students. Not enough time was placed in the areas of stress, energy, focus, and productivity to have an in-depth understanding of how each of these areas was affected by physical activity and played a role in MBA students' lives. Each one of the noted effects could play host to its own research study.

### **Final Thoughts**

We have learned from this research that physical activity certainly is seen to influence the lives of Queen's MBA students by the students themselves. A positive relationship in all three spheres of life with physical activity was noted, as was its impact on focus, stress, energy, productivity, confidence, networking capabilities, and moods. We learned that program, importance of physical activity, and self-reported physical activity level did influence how individuals perceived physical activity to influence them, but that gender had no influence. We additionally learned that it appears that the Queen's

MBA student population is more active than the overall Canadian population, but that still a great number of Queen's MBA students are not meeting the Canadian Physical Activity guidelines on a regular basis.

One challenge in this research was using myself as the primary investigator. In my professional capacity with the Queen's School of Business Fit to Lead program, it was difficult to limit bias while analyzing and discussing data. I have a dual interest in this research; as a researcher, my goal is to understand and explore the depth and scope of physical activity behaviours on performance, but, as a practitioner, I want to learn new strategies and ideas that we can integrate into our programming at Queen's. This role at times proved to be advantageous, for example, understanding the complex challenges of MBA students and gaining data to support certain aspects of the research. However, although specific processes were used to reduce bias for quantitative and qualitative data analyses, it was impossible to control for all of my possible bias.

Conducting this research provided a significant academic and professional growth opportunity for myself personally. As an academic, I can now fully understand and appreciate the comprehensive nature of research projects, while professionally this research has given the QSB Fit to Lead program some interesting data to explore further. I believe when you conduct any research or undertake any new significant opportunity in life, it is important to learn lessons along the way. If I pressed "repeat" and had the opportunity to do this all over again, I certainly would make many changes. I would have learned a way to be more efficient and effective with my research and writing, tried to maintain focus for longer periods of time ... perhaps even by participating in more physical activity! I would have made many changes to my research, writing, and data

collection as highlighted in sections of the discussion, but that is what writing a research paper is all about: learning, growing, and improving; making mistakes and fixing as many as you can along the way. Mistakes are how we grow, and I am happy to say with great pride, this thesis produced many great mistakes and an amazing opportunity to learn, grow, and improve!

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## APPENDIX A: CURRICULUM VITAE

Name: Ryan Stoness

Education: Queen's University, 2008-2013, M.Ed. 2013  
 Queen's University, 2000-2001, B.Ed. 2001  
 Queen's University, 1996-2000, B.A. 2000  
 Queen's University, 1996-2000, B.PHE. 2000

Related Experience: Queen's School of Business, Manager Fit to Lead, 2005-2013  
 RYATT, Owner, Chief Volleyball Officer, 2004-2013  
 BFO, Executive Board Member, 2009-2013  
 Queen's Nursing Science Program, Guest Lecturer, 2008-2013  
 Queen's School of Business Lifestyle Coordinator, 2003-2005  
 Martello Enrichment School, PHE Teacher, 2005-2007  
 Columbia International College, Kinesiology Instructor and Athletics and Recreation Manager, 2001-2003  
 Queen's Physical and Health Education Society, President, 1999-2000

Related Certifications: Executive Leadership, Centre for Creative Leadership, 2011  
 Corporate Athlete Certification, Human Performance Institute, 2008  
 Nutrition and Wellness Specialist Certification, CanFitPro, 2007  
 Business Management Certification, St. Lawrence College, 2004  
 Intrinsic Lifestyle Coaching Certification, Totally Coached, 2005  
 Personal Training Specialist Certification, CanFitPro, 2004  
 Motivational Interviewing Certificate, National Wellness Institute, 2004  
 Coaching Certification Level 2, NCCP, 2000

Awards: Stephan Hobbes, Macintosh Shield, Edwards Trophy and Randy Riel Shield,  
 Queen's University, 2000

## APPENDIX B: QUEEN'S UNIVERSITY ETHICAL CLEARANCE LETTER



Mr. Ryan Stoness, Master's Student  
 Faculty of Education  
 Duncan McArthur Hall  
 Queen's University  
 511 Union Street  
 Kingston, ON K7M 5R7

November 21, 2011

**GREB Ref #: GEDUC-582-11; Romeo # 6006352**

**Title: "GEDUC-582-11 The Exploration of the Perceived Relationship between Physical Activity and the Personal, Professional, and Academic Pursuits of Executive MBA Students at Queen's University"**

Dear Mr. Stoness:

The General Research Ethics Board (GREB), by means of a delegated board review, has cleared your proposal entitled "**GEDUC-582-11 The Exploration of the Perceived Relationship between Physical Activity and the Personal, Professional, and Academic Pursuits of Executive MBA Students at Queen's University**" for ethical compliance with the Tri-Council Guidelines (TCPS) and Queen's ethics policies. In accordance with the Tri-Council Guidelines (article D.1.6) and Senate Terms of Reference (article G), your project has been cleared for one year. At the end of each year, the GREB will ask if your project has been completed and if not, what changes have occurred or will occur in the next year.

You are reminded of your obligation to advise the GREB, with a copy to your unit REB, of any adverse event(s) that occur during this one year period (access this form at [https://eservices.queensu.ca/romeo\\_researcher/](https://eservices.queensu.ca/romeo_researcher/) and click Events - GREB Adverse Event Report). An adverse event includes, but is not limited to, a complaint, a change or unexpected event that alters the level of risk for the researcher or participants or situation that requires a substantial change in approach to a participant(s). You are also advised that all adverse events must be reported to the GREB within 48 hours.

You are also reminded that all changes that might affect human participants must be cleared by the GREB. For example you must report changes to the level of risk, applicant characteristics, and implementation of new procedures. To make an amendment, access the application at [https://eservices.queensu.ca/romeo\\_researcher/](https://eservices.queensu.ca/romeo_researcher/) and click Events - GREB Amendment to Approved Study Form. These changes will automatically be sent to the Ethics Coordinator, Gail Irving, at the Office of Research Services or [irvingg@queensu.ca](mailto:irvingg@queensu.ca) for further review and clearance by the GREB or GREB Chair.

On behalf of the General Research Ethics Board, I wish you continued success in your research.

Yours sincerely,

A handwritten signature in black ink that reads "Joan Stevenson".

Joan Stevenson, Ph.D. Professor and Chair  
 General Research Ethics Board  
 cc: Dr. John Freeman, Faculty Supervisor  
 Dr. Lesly Wade-Woolley, Chair, Unit REB  
 Erin Wicklam, c/o Graduate Studies and Bureau of Research

## APPENDIX C: LETTER OF INFORMATION – SURVEY

### **The exploration of the perceived relationship between physical activity and the personal, professional, and academic pursuits of executive MBA students at Queen’s University.**

This research study is being conducted by Ryan Stoness, a graduate student working with Dr. John Freeman in the Faculty of Education at Queen’s University in Kingston, Ontario, Canada. This study has been granted clearance according to the recommended principles of Canadian ethics guidelines and Queen’s policies.

This study will examine the perceived relationship of physical activity on personal, professional, and academic pursuits. You will be asked to fill in the attached survey asking for items such as your physical activity behaviors and your perceptions on their relationship to your performance in personal, professional, and academic pursuits. The survey will take you about 20 minutes to complete. Completion of the survey constitutes consent to participate.

There are no known risks associated with your participation in this study. Participation is completely voluntary. You are not obliged to answer any questions that you find objectionable. You will not be identified in any way if the results are published and nothing will connect you to your responses. You will be informed if your identity as a research participant becomes known to those outside of this study. The researcher will maintain confidentiality to the extent possible. You are free to withdraw at any time for whatever reason without penalty by just exiting the survey before the end. All data will be stored in a secure computer file accessible only to Ryan Stoness and in 5 years in accordance to Queen’s policy the files will be erased from the computer.

The data will be used in my master’s thesis and may be published in professional journals or presented at scientific conferences, but any such presentations will be of general findings and confidentiality will be maintained to the extent possible. Should you be interested, you are entitled to a copy of the findings. No compensation is provided for this study.

Any questions about study participation may be directed to Ryan Stoness at [rstoness@business.queensu.ca](mailto:rstoness@business.queensu.ca) or Dr. John Freeman, at [freemanj@queensu.ca](mailto:freemanj@queensu.ca) or 613.533.6000 ext. 77298. Any ethical concerns about the study may be directed to the Chair of the General Research Ethics Board at [chair.GREB@queensu.ca](mailto:chair.GREB@queensu.ca) or 613-533-6081.

Thank you again for your participation,

Ryan Stoness

If you consent to participate in this study, click “Continue.” Otherwise, you may exit the study.

If you would like to receive results of the study please indicate here.

X
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## **APPENDIX D: LETTER OF INFORMATION – FOCUS GROUPS**

### **The exploration of the perceived relationship between physical activity and the personal, professional, and academic pursuits of executive MBA students at Queen’s University.**

This research study is being conducted by Ryan Stoness, a graduate student working with Dr. John Freeman in the Faculty of Education at Queen’s University in Kingston, Ontario, Canada. This study has been granted clearance according to the recommended principles of Canadian ethics guidelines and Queen’s policies.

This study will examine the perceived relationship of physical activity on personal, professional and academic pursuits. The study is looking for volunteers to participate in one of two options. Each aspect of this study will require approximately 1 hour of your time. We are looking for volunteers to participate in one or the other aspect of this research. No compensation will be provided to participate in either of these focus groups.

Option 1: The face-to-face focus group will take place in Ottawa in the late fall and you will be required to be present in Ottawa. This focus group will last approximately 1 hour.

Option 2: The on-line focus group will take place over the course of 1 week and you will be able to participate in the study remotely. Study participants will be asked to spend 10-15 mins for 3 to 5 visits throughout the week.

There are no known physical, psychological, economic, or social risks associated with this study. Participation is completely voluntary. You are free to withdraw at any time for whatever reason without penalty by just exiting the group before the end. You are not obliged to answer any questions that you find objectionable. You will not be identified in any way if the results are published and nothing will connect you to your responses. You will be informed if your identity as a research participant becomes known to those outside of this study. The researcher will maintain confidentiality to the extent possible. A recording device will be used to collect information during the live focus group. All data will be stored in a secure computer file accessible only to Ryan Stoness and in accordance with Queen’s policy will be erased from the computer in 5 years.

The data will be used in my master’s thesis and may be published in professional journals or presented at scientific conferences, but any such presentations will be of general findings and confidentiality will be maintained to the extent possible. Should you be interested, you are entitled to a copy of the findings. No compensation is provided for this study.

Any questions about study participation may be directed to Ryan Stoness at [rstoness@business.queensu.ca](mailto:rstoness@business.queensu.ca) or Dr. John Freeman, at [freemanj@queensu.ca](mailto:freemanj@queensu.ca) or 613.533.6000 ext. 77298. Any ethical concerns about the study may be directed to the Chair of the General Research Ethics Board at [chair.GREB@queensu.ca](mailto:chair.GREB@queensu.ca) or 613-533-6081.

Thank you,  
Ryan Stoness

## APPENDIX E: ONLINE SURVEY QUESTIONS

### Necessary Participant Information

1. Please select your sex? (M or F)

MALE	FEMALE
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2. What Queen's MBA program are you enrolled in?

AMBA	CQEMBA	EMBA	QMBA
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### Physical Activity Behaviours

As of January 2011 Canadian Physical Activity Guidelines suggest that adults aged 18-64 perform 150 minutes of moderate to vigorous intensity aerobic physical activity in bouts of 10 minutes or more a week.

In addition it is suggested that adults perform muscle and bone strengthening activities using major muscle groups at least 2 days/week

- Moderate physical activity suggesting participants "sweat a little and breathe harder"  
(bike riding or brisk walking)
- Vigorous physical activity suggesting participants "sweat and be out of breath"  
(jogging or cross country skiing)

3. How many weeks in the last 6 months did you meet the Canadian Physical Activity Guidelines of 150 minutes of moderate to vigorous intensity aerobic physical activity in bouts of 10 minutes or more?

None	1-6 weeks	7-12 weeks	13-16 weeks	19+ weeks
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4. How many days a week do you typically perform moderate to vigorous aerobic physical activity for 10 minutes or longer at one time?

None	1-2 days	3 days	4-5 days	6-7 days
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5. How many weeks in the last 6 months did you meet the Canadian Physical Activity Guidelines of performing muscle and bone strengthening activities using major muscle groups at least 2 days/week?

None	1-6 weeks	7-12 weeks	13-18 weeks	19+ weeks
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6. How many days a week do you typically perform muscle and bone strengthening activities?

None	1-2 days	3 days	4-5 days	6-7 days
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7. According to the Canadian Physical Activity Guidelines how would you generally categorize your level of physical activity?

Not at all Active	Somewhat Active	Active	Very Active	Extremely Active
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8. How important is physical activity to you?

Not important at all	Not very important	Somewhat Important	Important	Very Important
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9. Physical Activity Impact.

To what extent do you feel physical activity has impacted the following areas of your life in the last 6 months?

9.1 Quality of time with your children	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.2 Quality of time with spouse/partner	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.3 Quality of time with other family/friends	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.4 Quantity of time with friends/family	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.5 Quantity of time with partner/children	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.6 Your general health and how you feel	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.7 Your ability to rest and reflect	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.8 The overall quality of your life outside of work and school	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.9 Your ability to network professionally	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.10 Your ability to advance your career	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.11 Your ability to perform successfully in your current career/role	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.12 Your degree of motivation in the work environment	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.13 Your ability to perform successfully in your work team	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable

9.14 Your ability to be a successfully manage people/projects	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.15 Your ability to get work completed	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.16 Your ability to receive desired grades/marks in your studies	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.17 Your ability to perform successfully as a member of your MBA team	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.18 Your ability to think creativity on a school assignment	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.19 Your ability to concentrate/focus on academic priorities during intense periods	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.20 Your ability to perform overall as a Queen's MBA student	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable
9.21 Your ability to produce high quality of academic work	Very negative influence	Negative influence	Little to no influence	Positive influence	Extremely positive influence	Not Applicable

### Physical Activity Impact Open Ended

Have you changed your relationship with physical activity since entering the MBA program?

How do you feel physical activity has influenced your personal life since becoming a Queen's MBA student?

How do you feel physical activity has influenced your professional life since becoming a Queen's MBA student?

How do you feel physical activity has influenced your academic life since becoming a Queen's MBA student?

Would you like to add any comments or questions?

**APPENDIX F: ONLINE FOCUS GROUP QUESTIONS**

How do you feel physical activity has influenced your personal life since becoming a Queen's MBA student?

How do you feel physical activity has influenced your professional life since becoming a Queen's MBA student?

How do you feel physical activity has influenced your academic life since becoming a Queen's MBA student?

What other areas of your life might physical activity influence?

How important is it to you to fit physical activity into your life?

Do you have any further comments that have not been addressed?