

**HIGH SCHOOL PHYS-ED IN VANCOUVER, BRITISH
COLUMBIA: BARRIERS AND OPPORTUNITIES TO
ADOLESCENT PHYSICAL ACTIVITY**

by

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Abstract

Rates of physical activity among adolescents in Vancouver, British Columbia are among the lowest in the province. This study examines ways in which public high schools can act as agents of public health to increase physical activity through physical education programs. A mixed method employs student focus groups, interviews with physical education department heads and secondary data from a provincial adolescent health survey. Results identify intrinsic and external barriers to physical activity for students who do not currently take physical education. Policies recommend actions to address students' perceived lack of skill, the perceived low value of physical education in school, and the current structure of physical education classes. The research concludes that increasing physical activity in high schools depends on a collaborative effort between government, elementary schools, community recreation facilities, colleges and universities, and high school physical education departments.

Executive Summary

- Physical inactivity is a major risk factor for chronic disease among Canadians. It is a public policy concern due to the high costs it imposes on Canada's publicly delivered health care system and the unrealized contribution of workers to the economy due to lost wages. Policies that target adolescents are crucial since physical activity habits developed in adolescence are likely to continue into adulthood. Contrary to the belief that British Columbia's citizens are extremely active, this research builds upon recent reports that indicate children and adolescents in British Columbia are not much different than their peers in other parts of Canada.
- The policy problem states that the lack of regular physical activity among adolescents in Vancouver is not sufficient to realize immediate and future optimal health outcomes. This research targets senior high school students in Vancouver for several reasons. First, Vancouver is the largest city in British Columbia, which presents an opportunity to study a large number of students within one school district. Second, students in Vancouver are the least active in the province. Third, phys-ed classes are optional in grades 11 & 12, which presents an opportunity to observe how students balance physical activity with other priorities. By talking with these students, researchers can develop an understanding of motivations and barriers that affect participation in school phys-ed.
- A mixed method is used to collect and analyze data. Secondary data from a provincial adolescent health survey and phys-ed enrolment statistics from public high schools in Vancouver and Richmond describe current physical activity trends. A total of 32 students, 18 males and 14 females who do not take grades 11 & 12 phys-ed participate in six focus groups at four different high schools in Vancouver. Key stakeholder interviews are conducted with six phys-ed department heads in Vancouver.
- Key findings are consistent with existing research, including constraints on students' time, lack of motivation, lack of self-confidence and peer influences as barriers to participating in phys-ed class. The structure of phys-ed class, its perceived low value compared to academic subjects and the lack of opportunities and facilities emerge as specific issues within the Vancouver School District.

- I propose eight policy options aimed at strengthening the role of high schools to increase physical activity among adolescents. The policy options target the structure of class, ways of increasing physical literacy and changing the incentives for students to participate in phys-ed classes. Using four criteria: cost, effectiveness, political feasibility and administrative operability, I analyse each policy option for its ability to develop graduates who feel motivated and capable of incorporating physical activity into their lives.
- Policy recommendations include a leadership development approach that involves all types of athletes and provides skills that are transferable to other parts of their lives; a shift in teaching philosophy away from skill-based testing toward one based upon effort and participation; and, a District Coordinator that promotes physical activity initiatives in high school students. In order to develop the physical literacy of students entering high school, eight physical education specialists need to be placed in the district's elementary schools. Community funding for enrichment activities needs to be restored. Universities and colleges can help improve the value of phys-ed classes by offering preferential admissions treatment and/or scholarships for individuals who are physically active in schools. Schools should attempt to offer classes that are streamed according to activity rather than skill level.

Dedication

To all the coaches, teachers and fellow athletes who continue to give unselfishly of themselves to inspire, teach and support others to reach their dreams and become better people through a love of sport.

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Glossary

Exercise	A form of leisure-time physical activity that is planned, structured, and repetitive. Its main objective is to improve or maintain physical fitness (PHAC, 2003b).
Interscholastic	Individual and team sports played between schools.
Intramurals	Organized sports played within a school.
Physical activity	All leisure and non-leisure body movement produced by the skeletal muscles and resulting in an increase in energy expenditure (PHAC, 2003b).
Physical education	An educational process that uses physical activity as a means to help people acquire skills, fitness, knowledge and attitudes that contribute to their optimal development and well-being (B.C. Ministry of Tourism, Sport & the Arts, 2007).
Physical fitness	The ability to carry out daily tasks with vigour and without undue fatigue, and with sufficient energy to engage in leisure-time pursuits and the vitality to perform at one's fullest capacity (B.C. Ministry of Tourism, Sport & the Arts, 2007).
Physical literacy	Physical literacy can be described as the ability and motivation to capitalize on our motile potential to make a significant contribution to the quality of life (Whitehead, 2005, p.5).
Recreation	Activities generally done during an individual's leisure time and for non-competitive, non compensatory reasons (B.C. Ministry of Tourism, Sport & the Arts, 2007).
Self-confidence	Belief in one's personal worth and likelihood of succeeding based upon one's self-esteem and general self-efficacy (Neill, 2005).
Self-efficacy	Belief in one's capacity to handle and succeed at tasks (Neill, 2005).
Self-esteem	General feelings of self-worth or self-value (Neill, 2005).
Screen time	Time spent in front of a TV screen, playing video games or using a computer.
Sedentary lifestyle	Loosely defined as low levels of physical activity over extended periods of time. Individuals may be considered physically inactive or 'sedentary' if they reported a usual daily leisure-time energy expenditure of less than 1.5 kcal/kg/day (PHAC, 2003a).
Sport	A form of leisure-time physical activity that is planned, structured and competitive (PHAC, 2003b).

1 Introduction

Physical inactivity is a major risk factor for various types of chronic disease and premature death (Biddle et al., 2004; Sallis & Owen, 1998). It is a burden on the health care systems and economies of major industrialized economies, including British Columbia (Colman & Walker, 2004). Unlike other risk factors for disease, physical inactivity is a modifiable behaviour. In recent decades, the issue of physical inactivity among adolescents has become commonplace among all modern industrialized countries (Janssen et al., 2004). It is largely a by-product of Western society's shift from a labour-intensive agrarian society to one based on the use of computers and mechanized processes. The primacy of the automobile in daily activities reduces the opportunities for individuals to be physically active. Instead of walking to school, large numbers of students are likely to commute to and from school by automobile or the bus (Legislative Assembly of British Columbia, 2006).

Contrary to the healthy image most people have about British Columbians, a large numbers of its adolescent population are physically inactive. According to the 2003 Adolescent Health Survey (Poon, 2006), only 24% of boys and 11% of girls in British Columbia of high schools age engage in 20 minutes of vigorous exercise daily. Adolescents' participation in physical activity is a complex interaction between individual and environmental factors. Frequently cited individual factors are socioeconomic status, sex, ethnicity and age (Janssen et al., 2006). Common environmental factors include neighbourhoods and schools. This research explores several of these relationships, most notably the environment of the high school and the influence of income and gender on patterns of physical activity. While the determinants of physical activity play an important role in shaping behaviour, they are not the primary focus of this research.

The goal of this research is to develop recommendations for physical activity in British Columbia's high schools that will improve the health of adolescents and the health of the province. The objectives of the research are as follows:

- 1) Develop an understanding of students' motivations for participating in physical education;

- 2) Develop an understanding of the barriers that limit students' participation in phys-ed classes and physical activity; and,
- 3) Identify constraints faced by schools and physical education leaders.

This study focuses on high school students from Vancouver who are in grades 11 & 12 for three reasons: phys-ed is optional in B.C. in these grades, decisions to take phys-ed are based on previous experiences in school, and present behaviour is likely indicative of future behaviour. Students from Vancouver provide an excellent target group since they are among the least active in the province (Poon, 2006). With a population of 600,000 residents, targeting one school district can have a measurable effect on overall physical activity levels in the province. The lack of available data at the neighbourhood level in Greater Vancouver is a challenge for researchers and policy makers. This research paper seeks to fill in some gaps by describing differences in physical activity participation by neighbourhoods in the Greater Vancouver region.

A brief review of the literature on benefits, costs, barriers and trends in physical activity will inform development of the policy issue as well as the policy goals and objectives. The study then proceeds with a discussion of the determinants of physical activity followed by a review of the current state of physical education curriculum in B.C. A discussion of the methodology explains why mixed methods are best suited to research in the education environment. The findings from the focus groups, interviews and regression analysis are discussed and summarized in section 7. Based upon these findings, eight policy alternatives are described and evaluated in sections 8 and 9. The following section lays out the recommended course of action followed by a discussion of the policy implications in section 12. Section 13 concludes the study by returning to the research goals and discussing how the policy recommendations can affect physical inactivity in British Columbia.

2 Background

2.1 Benefits of physical activity

The medical community now generally accepts the link between moderate physical activity and health (U.S. Department of Health and Human Services, 1996; Warburton, 2006). Regularly active individuals can improve their quality of life as they age by reducing the risk of developing a host of chronic diseases and avoid premature mortality. In recent years, research that looks specifically at the health benefits for children and adolescents has increased (Biddle et al., 2004; Hallal et al., 2006; Sallis, Prochaska & Taylor., 2000; Sothorn et al., 1999). Physical activity helps to build and maintain healthy bones, muscles and joints. Weight-bearing physical activity is important for normal skeletal development, especially in children and adolescents (MacKelvie et al., 2003). Perhaps most important, physical activity habits developed in childhood and adolescence may continue into adulthood (Hallal et al., 2006; Trudeau & Shephard, 2005).

In an era of overweight and obese youth, physical activity has the potential to help children and adolescents maintain healthy body weights (Flynn et al., 2006). Regular physical activity can increase energy levels that may improve students' concentration during class (Taras, 2005). Physical activity develops coordination, motor skills and increased cognitive skills such as problem solving, cooperation and goal setting (Sibley, 2003). While the link between physical activity and healthy mental development is uncertain (Scully et al., 1998), it is likely that being successful in physical activity can increase an individual's self-efficacy and self-esteem (Hallal et al., 2006).

2.2 Costs of physical inactivity

Physical inactivity is a major burden on the Canadian public health system (Katzmarzyk, Gledhill & Shephard, 2000). Given all of the different environmental, genetic and behavioural factors (e.g. physical inactivity, smoking, excess alcohol use, poor diet) that interact to influence health outcomes, it is necessary to isolate the contribution of physical inactivity to negative health outcomes. Epidemiological approaches allow researchers to ascertain how much of a particular disease (e.g. heart disease) can be attributable to a certain exposure (i.e. physical inactivity).

Using data from the 2001/02 Canadian Community Health Survey for British Columbia, it is estimated that 15% of heart disease, 19% of stroke, 10% of hypertension, 14% of colon cancer, 11% of breast cancer, 16% of Type II diabetes and 18% of osteoporosis cases are attributable to physical inactivity (Colman & Walker, 2004). These percentages represent the proportion of each disease that could be prevented by reducing or eliminating physical inactivity.

A 2004 report commissioned by the B.C. Ministry of Health estimated annual direct costs to the provincial health system of \$211 million and indirect costs of \$362 million (Colman & Walker, 2004). The total economic burden of physical inactivity in British Columbia is \$573 million annually. The direct costs of physical inactivity include physician visits, hospital care, pharmaceuticals, institutional care and temporary and permanent disability claims. Indirect costs are the estimated present value of lost production to society resulting from premature death and disability. Since mortality rates are higher among tobacco users, physical inactivity may even impose higher costs on the health system than tobacco use. Inactive individuals are more likely to develop chronic diseases that require costly medical treatment over time (Hulyk and Aikman, 2006). It is estimated that increasing the number of people in B.C. who are physical active by ten percent (or decreasing the physically inactive population by ten percent) could save the provincial economy \$50 million annually (Colman & Walker, 2004).

2.3 Physical activity recommendations for adolescents

There is continuous debate over the dose-response relationship between physical activity and health (Twisk, 2001). *Canada's Physical Activity Guides for Youth* encourages adolescents to gradually (over a period of months) increase their daily physical activity to 90 minutes and decrease sedentary activities by the same amount (Health Canada, 2002). Included in the 90 minutes is 30 minutes of vigorous activity that PHAC describes as an activity that makes individuals sweat or breathe hard. A more rigorous definition of vigorous physical activity comes from the US Surgeon General's 1996 Report on Physical Activity and Health. It states:

Vigorous physical activity is rhythmic, repetitive physical activities that use large muscle groups at 70 percent or more of maximum heart rate for age. An exercise heart rate of 70 percent of maximum heart rate for age is about 60 percent of maximal cardiorespiratory capacity and is sufficient for cardiorespiratory conditioning. (US Department of Health and Human Services, 1996).

In order to obtain the optimal benefits from physical activity, the Public Health Agency of Canada (PHAC) recommends that adolescents expend greater than eight kilocalories per kilogram of body weight daily (PHAC, 2002). For a child or adolescent of normal body weight,

an expenditure of eight kilocalories is approximately 30 minutes of running, swimming, martial arts or racquet sports and 60 minutes of walking or cycling per day. In *Canada's Physical Activity Guides for Youth*, PHAC stresses three types of physical activity necessary to maximize the benefits of physical activity: endurance (increased breathing, increased heart rate and increased body temperature), flexibility (bending and stretching) and strength (resistance work). Physical education teaches students how to incorporate these three types of physical activity into their exercise.

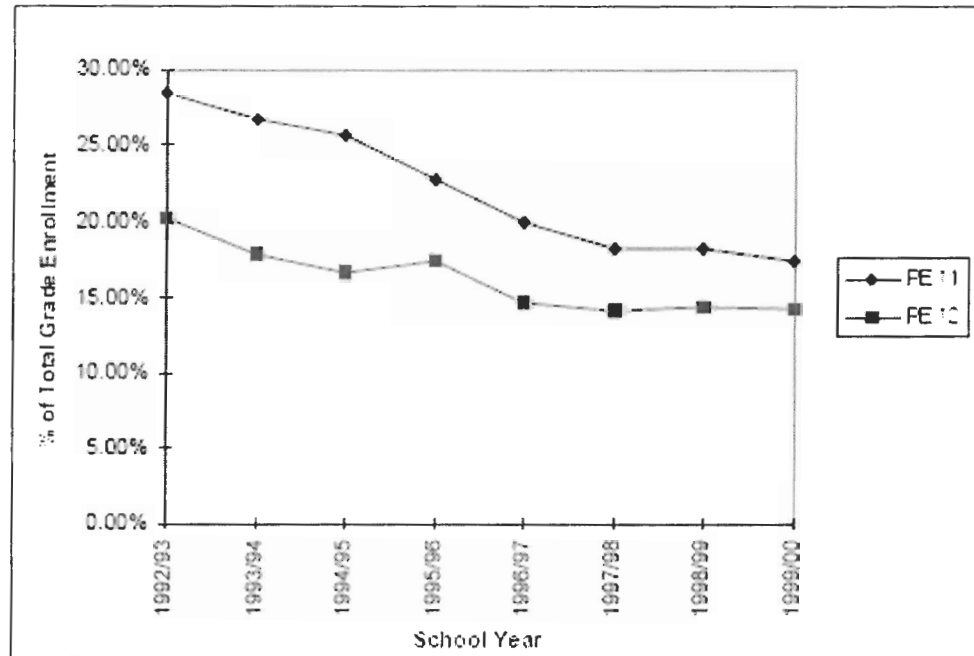
2.4 Adolescent physical inactivity trends

British Columbians have a reputation for being among the most physically active citizens in Canada (Cameron et al., 2005). In British Columbia, 36.8 percent of males and 29.3 percent of females report being physically active compared to national averages of 29.3 percent and 23.2 percent of Canadian males and females respectively (B.C. Ministry of Health Services, 2004). One source of data for physical activity among adolescents in British Columbia is the McCreary Centre Society's *Adolescent Health Surveys*. They provide a snapshot of British Columbia high school students' self-reported physical activity levels every five to six years.

Across the province, the participation in physical activity is relatively unchanged between the testing periods of 1992, 1998 and 2003. On average, 18 percent of students participate in 20 minutes of daily physical activity¹ (Poon, 2006). Greater Vancouver is the only geographic region in B.C. where the number of students participating in daily physical activity increases between 1992 and 2003. In spite of the increase from 12 percent to 15 percent, Greater Vancouver is below all other regions in the province including the Capital region, which is the most active at 22 percent daily participation (Poon, 2006). The table on the following page illustrates enrolment trends in high school physical education in British Columbia during the 1990s. Enrolment in grade 11 physical education steadily declines from slightly under 30 percent in 1992/93 to slightly under 20 percent in 1999/00 (Deacon, 2001). Enrolment in grade 12 physical education classed falls from around 20 percent to 15 percent of grade 12 students during the period under observation.

¹ Physical activity is defined here by the question asked on the *Adolescent Health Surveys* as follows: "On how many of the past seven days did you exercise or participate in physical activities for at least 20 minutes that made you sweat and breathe hard, such as soccer, jogging, dancing, swimming, tennis, bicycling, or similar aerobic activities?" (Poon, 2006, p.23).

Figure 2-1 Percentage of senior secondary students enrolled in grades 11 & 12 PE classes in British Columbia: 1992/93 to 1999/00



Source: Deacon, 2001

2.5 Motivation and barriers to physical activity

A useful approach to thinking about barriers to physical activity classifies obstacles according to internal and external categories. Internal barriers refer to individual qualities that are either real or perceived but prevent adolescents from engaging in optimal levels of physical activity. One reason that children and adolescents do not engage in physical activity is due to a lack of motivation where individuals do not perceive any benefits resulting from their actions (Ryan & Deci, 2000). An individual's feelings of competence, autonomy, enjoyment and their ability to affect outcomes shapes his or her motivation (Whitehead, 1993). Where individuals feel they lack the skills or coordination to be competent in an activity, their intrinsic motivation declines and they are less likely to engage in physical activities. For many adolescents, self-perceived competence is a significant predictor of physical activity (Crocker et al., 2000).

To understand better what determines adolescents' perceptions of competence in physical activities, it is necessary to examine the external barriers to physical activity. Whereas the focus of this research concerns adolescents in high schools, experiences at a younger age in physical activity may create barriers for high schools students (Sallis, Prochaska & Taylor, 2000). In high school, time demands for homework and sometimes part-time jobs can limit the amount of time

spent on physical activity (Dwyer et al., 2006; Tergerson & King, 2002). Access to facilities, the cost of equipment and facilities, and safety pose barriers to regular physical activity (Allison et al., 2005; Fein et al., 2004; Sallis, Prochaska and Taylor, 2000). Competition with technology (television, video games, the internet and cell phones) is also a leading cause of physical inactivity among high school students (Bryant et al., 2006; Janssen et al., 2004).

2.6 Government initiatives to increase physical activity

The federal government has boosted its efforts to increase physical activity among children and adolescents. In 2004, the federal Liberal government increased annual funding for amateur sport by \$30 million to a total of \$120 million per year (CBC News Online, 2006). In May 2006, the new Conservative government led by Mr. Harper increased annual funding to \$147 million. Under the *Children's Fitness Tax Credit*, parents can claim up to \$500 on their tax return for fees paid to eligible athletic programs (for children under the age of 16) up to an annual maximum return of \$78.50 per child (Canada, Department of Finance, 2006). It is difficult to think that \$80 per child per year will increase physical activity; it is more likely a windfall gain for families who already have children enrolled in organized sports. The credit is estimated to cost taxpayers \$160 million per year. The programs eligible for the tax credit place an emphasis on activities that increase cardio-respiratory fitness (Leitch, Bassett & Weil, 2006). The federal government's Standing Committee on Health are currently conducting hearings on childhood obesity to study the relationship with eating habits, levels of physical activity and screen time.

Several jurisdictions in Canada create health promotion initiatives and goals to increase the level of physical activity among its population (Deacon, 2001). The B.C. government is no different, publicly supporting several initiatives that promote healthy living. The current administration outlines five overarching goals including *Great Goal 2*: "Lead the way in North America in healthy living and physical fitness" (B.C. Ministry of Health Services, 2006). In order to achieve this goal, the Province of B.C. is increasing its investment in health promotion initiatives. The Select Standing Committee on Health for the Provincial government recently published a report entitled *A Strategy for Combating Childhood Obesity and Physical Inactivity in British Columbia*. In the report, the Committee proposed 36 recommendations calling on several government ministries to work collaboratively with community partners to tackle these problems. Two recommendations on physical activity infrastructure specifically relate to the current research:

No. 24: The government, school boards and municipalities continue to work to develop and expand joint-use agreements between school boards and municipalities to maximum utilization of education and physical activity facilities.

No. 25: The government — in partnership with school boards, municipalities, and other funding agencies — formulate intermediate-term plans for the aggressive maintenance, replacement, and expansion of physical activity infrastructure; including, but not limited to gymnasias, weight rooms, sports fields and physical activity studios. (Select Standing Committee on Health, 2006).

These recommendations recognize the barriers created when facilities do not meet the needs of its school age population.

Act Now BC is the current administration's key initiative to provide education and raise awareness by encouraging people to be more physically active, eat better foods, live tobacco free and make healthier choices (Government of B.C., 2006a). Using the 2010 Olympics in Vancouver as a landmark date, *Act Now BC* sets targets for B.C. citizens. The targets include increasing by 20 percent B.C.'s population who are physically active and reducing by 20 percent the B.C. population classified as overweight or obese (B.C. Ministry of Education, 2006c). In order to reach these goals, the Province will commit \$15 million between 2006 and 2010 for the implementation of *Action Schools! BC (AS!BC)*, a physical activity program for students from kindergarten to grade nine (B.C. Ministry of Education, 2006a). In 2006, the Province invested \$1.3 million in new physical activity equipment for schools: each elementary school received \$850 and each high school received \$1000 (B.C. Ministry of Education, 2006b).

2.7 Nutrition

Physical activity is only one of many factors that contribute to adolescent health. An equally if not more important contributor to health outcomes is the quality and quantity of food that individuals consume (Janssen et al., 2006). Like physical activity, proper nutrition in childhood and adolescence can also reduce the risk of developing chronic disease and is important for optimal development. Research indicates that children and adolescents are not meeting recommended guidelines for fruit and vegetable intake (Janssen et al., 2006; Kubik et al., 2003). This age group is consuming large quantities of soft drinks and fast foods that are high in calories and low in nutrients (Dehghan et al., 2005). Recent years have witnessed an increase in rates of obesity and overweight among Canadian adolescents resulting from changing patterns of physical activity and diet (Janssen et al., 2004; Willms et al., 2003; Vanasse et al., 2006).

This research chooses to focus solely on physical activity among adolescents in order to provide a more in-depth analysis of this one factor. This decision does not imply that physical

activity is more important or independent of nutrition. When reviewing the current literature on physical activity and nutrition in British Columbia and Vancouver, there appeared to be a gap in policy specifically targeting physical activity in high schools. The author perceived that more attention was focused on nutrition, especially targeting the type of foods available in schools. There has been less focus on physical education in schools, despite the Province's focus on youth and the importance of physical activity. This research can be used in combination with existing research on nutrition to strengthen the Province's Healthy Schools Initiatives, as schools are viewed as settings for health promotion (Kendall, 2003).

2.8 Summary

The research literature provides convincing evidence that the burden of illness attributable to physical inactivity in British Columbia is a drain on the Province's resources. The estimated annual total cost in 2004 is \$573 million. Even though British Columbians are among the most active individuals in the country, more people still choose sedentary activities rather than being physically active on a regular basis. Among adolescents in British Columbia, high school students from Greater Vancouver are the least active on a regular basis. As in most jurisdictions, females in British Columbia are significantly less active than males. In order to understand the barriers to physical activity, several themes emerge from the research literature. Barriers can originate from both intrinsic sources and external sources.

Health promotion initiatives are currently a major priority of both the federal and B.C. provincial governments. Evidence suggests that reducing the inactive population by ten percent can save the provincial economy \$50 million annually. Regular physical activity has immediate benefits and can also reduce the long-term risk of developing chronic disease. In order to reduce levels of physical inactivity among the population, adolescents are a logical focus of research and policy. Adolescence is a crucial time in the development of an individual's relationship with physical activity. Research demonstrates a tracking effect where skills and habits developed in one's youth continue into adulthood. By further understanding the barriers to physical activity, policy intervention can further strengthen current programs or target underserved groups.

3 Policy Issue

3.1 Policy Issue

The lack of regular physical activity among a majority of adolescents in Vancouver is not sufficient to realize immediate and future optimal health outcomes. More specifically, the current approach to physical education in British Columbia's schools does not fulfil its potential to maximize social welfare.

3.1.1 Policy Goal

The policy goal is to strengthen the ability of high schools in Vancouver to graduate a majority of students who they are motivated and capable of incorporating physical activity into their lives.

3.1.2 Policy Objectives

1. Increase the enrolment of students in PE11 & PE12 classes.
2. Increase the level of activity (movement) by students in all grades' phys-ed classes.
3. Increase the physical literacy of students graduating from B.C.'s high schools.²
4. Increase the value of physical education.
5. Increase the enjoyment of physical education.

² Physical literacy refers to an individual's ability and motivation to capitalise on their movement potential to make a significant contribution to their quality of life (Whitehead, 2005)

4 Determinants of physical activity

Ecological models of health behaviour focus on the individual but also on the social and environmental factors that facilitate or inhibit behaviour (Fein et al., 2004; Sallis & Owen, 1997). Research indicates that these individual traits explain 20 to 40 percent of the variation in levels of physical activity (Spence et al., 2003). The 'neighbourhood effect' reflects the potential for neighbours to influence behaviour, attitudes, values and opportunities for measurable outcomes including physical activity (Brooks Gunn et al. 1993). It is likely that the effect of individual determinants of physical activity (e.g. income, sex, age and ethnicity) can be overcome by living in a neighbourhood with more favourable conditions for physical activity (Spence et al., 2003).

Based upon existing literature, Spence proposes an ecological model of physical activity with several hypotheses to guide future research:

- (1) Factors that are more distal are buffered by proximal factors. For example, household factors such as income or education are less important than factors such as the quality of physical education programs in a child's school.
- (2) The environment exerts a direct effect on physical activity.
- (3) Psychological factors mediate most of the relationship between the environment and physical activity.
- (4) Biological and genetic factors influence physical activity.
- (5) The physical environment modifies the influence of biological and environmental factors on physical activity. (Spence et al., 2003, p. 16)

While there are many determinants of physical activity, the most prominent determinants in the literature on adolescents in Canada are socioeconomic status (SES), sex, age and ethnicity. This section examines how SES, sex, age and ethnicity influence the individual, environmental and social norms that in turn affect participation in physical activity.

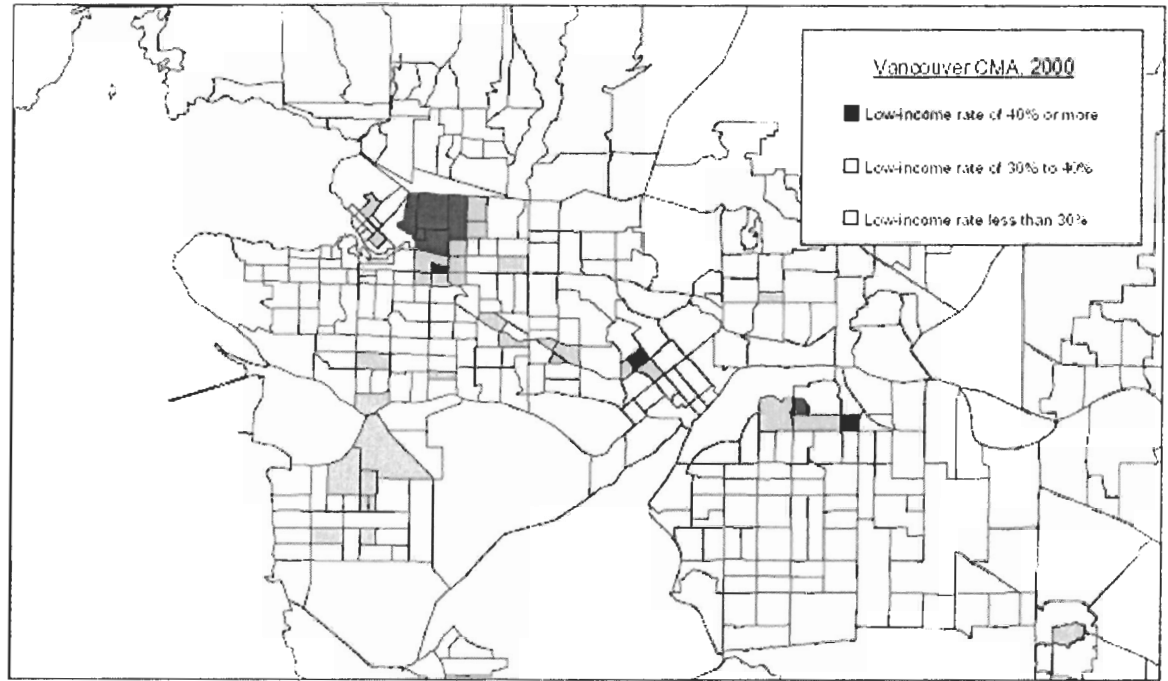
4.1 Socioeconomic status and physical activity

Concern over sedentary behaviour in adolescents has sparked an interest in the relationship between socioeconomic status (SES) and physical activity among adolescents (Humbert et al., 2006; Janssen et al., 2006; Romero, 2005). The most direct way that income affects participation occurs where less disposable income results in fewer opportunities to engage in physical activity. Low average neighbourhood income can negatively affect physical activity levels where there are fewer available recreation facilities or programs (indoor and outdoor), fewer safe areas to play and lower quality equipment or facilities (Kumanyika & Grier, 2006; Romero, 2005). Research indicates that access to green spaces and the quality of parks is worse in low-income neighbourhoods (Coen & Ross, 2006; Estabrooks, Lee & Gyurcsik, 2003). At the individual or household level, quantitative studies find a positive relationship between income and physical activity (Gidlow, 2006; Mo et al., 2005).

4.1.1 Low income in Vancouver

The residents of Vancouver rank among the wealthiest citizens in the country. In 2001, median after-tax income for two-parent families with children was \$65,600 in Vancouver compared to \$62,000 in Canada and \$61,900 in all of British Columbia (Statistics Canada, 2006a). Vancouver is a city couched in extremes. The Greater Vancouver region encompasses the country's richest and poorest postal codes within its borders. The figure below illustrates the geographic concentration of low-income in Vancouver. Most of the low-income areas are east of the downtown alongside the southern shores of Burrard Inlet.

Figure 4-1 Census Tracts in Vancouver, by low income rate, 2000



Source: Heisz & McLeod. Statistics Canada – Catalogue No. 89-613-MIE, No.001, April 2004

The percentage of two-parent families with children living below the after-tax low-income cut-off (LICO) (1992 base) is slightly higher in Vancouver (8.7%) than the average in B.C. (7.3%) and Canada (6.9%) due to the city's high cost of living. Families headed by single-mothers are especially likely to endure greater economic instability than two-parent families or those headed by single-fathers. In 2001, the percentage of female lone-parent families living below the after-tax LICO was much higher in Vancouver (40.1%) than the Canadian average (33.8%) and slightly higher than the average for B.C. (38.8%) (Statistics Canada, 2006a). In British Columbia, the estimated number of children living below the after-tax LICO in 2004 was 196,000 (Statistics Canada, 2006c).

4.2 Sex and physical activity

Male adolescents are significantly more likely than females to participate in regular physical activity (Poon, 2006; Sallis et al., 1996). In order to understand this phenomenon, it is necessary to examine the different role physical activity plays in the lives of males and females during and beyond adolescence. Whereas sex usually refers to biology and anatomy, gender is a socially determined construct that refers to behaviours and qualities expected from a male or female by society. Gender roles and stereotypes have a large influence over the discrepancies

between male and female participation in physical activity. Even in Canadian society, physical activity is seen as a masculine endeavour; females who participate in physical activity can be perceived as not acting feminine (Reid et al., 2000). Girls who are very physically active often receive derogatory treatment from their male and female peers, sometimes referred to as tomboys or aggressive (Vu et al, 2006). Some female adolescents feel that they have to make a choice between physical activity and being feminine (Dwyer et al., 2006).

Social expectations place different pressures on males and females. Girls learn at a very young age what activities are appropriate and how diet and exercise can enhance their feminine qualities (Reid et al., 2000). Adolescent females are more likely to have negative views of their physical appearance and self-efficacy (Reid et al., 2000). Their self-consciousness about their appearance usually increases when boys are present during physical activity (Dwyer et al, 2006). Females may have fewer opportunities and less encouragement than males to engage in physical activity (Gibbons et al., 1999). Parental influence can reinforce or overcome gender stereotypes about physical activity. Protective parents may not want their daughters to participate in phys-ed classes for fear of them getting hurt. Other parents will prohibit girls from engaging in activities or sports considered the domain of males (Vu et al, 2006). Older females can also act as role models for girls and female adolescents.

Male physical activity is more likely to stress competition, dominance and sanctioned violence (Allison et al, 2005). The motto 'no pain, no gain' encourages the acceptability of physical pain in exercise and sport. Social constructs of masculinity in physical activity places higher values on characteristics such as size and strength. While some males thrive on this aspect of physical activity, others are likely to be excluded in both the short- and long- term. Motivation to exercise differs between male and female adolescents. Whereas common motivations for adolescent females are to stay in shape, lose weight or increase energy levels, males view exercise as a way to become strong, stay in shape and be competitive (Tergerson & King, 2002). This study will analyse physical activity differences between the sexes, while taking into account the role that gender may play in shaping such differences.

4.3 Ethnicity, culture and physical activity

In the research literature on physical activity, ethnicity and culture often appear to be used interchangeable by researchers. For the purposes of this study, ethnicity is defined as follows:

[Ethnicity] includes aspects such as race, origin or ancestry, identity, language and religion. It may also include more subtle dimensions such as culture, the arts, customs and beliefs and even practices such as dress and food preparation. It is also dynamic and in a constant state of flux (Statistics Canada, 2006b).

UNESCO defines culture as follows: "...distinctive spiritual, material, intellectual and emotional features of society or a social group...[that] encompasses ways of living together, value systems, traditions and beliefs" (UNESCO, 2002). Culture is a socially constructed phenomenon that may affect physical activity according to a group's behaviours, traditions and beliefs (Spence & Lee, 2003). The composition of Vancouver's ethnic population is unique within Canada. In 2003, 49% of high school students in Vancouver and 47% in Richmond identified their background as East Asian (Poon, 2006).

While ethnicity and culture are important determinants of adolescent health and physical activity, this study does not attempt to address them in the final policy recommendations. Given the above definition of culture, there may even be differences within the same ethnic group, depending on how long they have resided in Canada. Within the same ethnic group that has spent the same amount of time living in Canada, the approach taken by phys-ed departments is likely to have the greatest effect on physical activity outcomes. In order to design policy that targets differences in culture or ethnicity, much greater detail is required than would be possible given the time and resources afforded to this study. It is possible, however, to be sensitive to differences in culture and ethnicity and make observations where future research could be effective.

4.4 Age and physical activity

Research indicates that participation in physical activity declines with age among adolescents, especially females (Sallis, Prochaska & Taylor, 2000). Based upon earlier research, Sallis finds that after entering school, daily physical activity decreases at an average annual rate of about 2.7% per year in males and 7.4% per year in females (Sallis, 1993). The rate of decline in physical activity over time is unusually high during the teenage years. The most recent data on self-reported physical activity among high school students in British Columbia supports this trend over time, as seen below in Table 4-3. The decrease in physical activity over time is largely influenced by external, modifiable factors. High schools need to focus on changing factors within their sphere of influence, such as the balance between academic achievement, athletics, the arts and civic responsibility.

Table 4-1 Percentage of high school students who exercise every day of the week, by age: British Columbia, 2003

	13 yrs	14 yrs	15 yrs	16 yrs	17 yrs	18+ yrs	Average
Males	32%	27%	26%	19%	16%	16%	24%
Females	16%	13%	11%	9%	6%	6%	11%

Source: Poon, 2006 Physical Education in Schools

There are many competing demands on time as individuals get older. Studies that track physical activity through time find that individuals who are least active in early adolescence are least likely to change their behaviour through their teenage years (Anderssen, Wold & Torsheim, 2005). As independence increases throughout adolescence, social activities may displace physical activity. Both television and computer use increases dramatically during adolescence (Nelson, 2006). Students in focus groups indicated the amount of time required for homework during high school to be an obstacle to physical activity (Allison et al., 2005; Dwyer et al., 2006). These same students also cite part-time jobs as a barrier to exercise. While there may be a natural progression toward less physical activity throughout time, the sharp drop among certain individuals or groups during adolescence is cause for concern. Different approaches may be required that recognize the unique characteristics of individuals as they enter high school.

5 Curriculum

Physical education is taught in B.C.'s public schools from kindergarten until grade twelve; however, it is only mandatory until grade ten. As set out in the Integrated Resource Package for high school students, the aim of physical education is: "to enable all learners to enhance their quality of life through active living" (Province of British Columbia, 1997). The curriculum for physical education in British Columbia states: "through participation in physical education, students will develop the knowledge, skills, and attitudes necessary to incorporate physical activity into regular routines and leisure pursuits to live an active, healthy lifestyle" (Province of British Columbia, 1997).

The Ministry of Education's *Physical Education Curriculum Review Report* (Deacon, 2001) concludes that while the provincial curriculum is respected domestically and internationally, its implementation within British Columbia falls below expectations. The review summarized the following key barriers that limit the effectiveness of schools in British Columbia to increase student performance and increase levels of physical activity:

- 1) A lack of teacher and administrator priority is given to physical education;
- 2) A significant number of schools do not appear to be allocating the Ministry recommended 10% of instructional time to physical education;
- 3) Significant portions of the curriculum are not being taught;
- 4) Facilities and equipment provide implementation challenges for some schools;
- 5) Elementary generalist teacher expertise is a barrier to curriculum implementation;
- 6) There is no provincial measurement tool to measure student achievement and to encourage curriculum implementation. (Deacon, 2001, p. 5)

Deacon reported on an informal Ministry survey that found 74 percent of surveyed classes in B.C.'s public elementary schools did not receive the recommended 10 percent of instructional time devoted to phys-ed. Of the five movement categories required by the elementary school curriculum, gymnastics, dance and the alternate environment activities (out-of-school enrichment

opportunities) presented challenges for teachers and schools due to lack of expertise and a lack of funding.

In the 2004/05 school year, the provincial government included 80 hours of physical activity in the high school graduation portfolio for grades 11 & 12 students. Students who take PE11 or PE12 are able to fulfil the 80 hour requirement in the classroom. It is likely that the portfolio requirement increased enrolment in physical education classes in grade 11 and/or 12. The portfolio is currently suspended due to concerns from students and teachers. Students who did not take phys-ed felt that 80 hours of physical activity was too onerous given the time demands on senior students. According to an interview with one phys-ed department head, some teachers were not very enthusiastic about the portfolio since no additional time was allocated to prepare, authenticate or evaluate the students' contributions (Interviewee A, 2007, Interview).

Most of the criticism levelled by Deacon's report is aimed specifically at the elementary school level. High schools are more able to meet the requirements set out in the curriculum given the specialization of high school phys-ed teachers³ and specific time periods allocated for phys-ed. The research objectives set out in this paper include developing an understanding of barriers and motivations for students to participate in physical activity in high schools. Whereas Deacon's report bases its evaluation upon the opinions of teachers and administrators, this research paper goes a step further by speaking directly with the students affected by the current approach to physical education. In light of the Ministry of Education's curriculum review, this research develops a more detailed understanding of how the actions of elementary schools affect physical activity behaviour among high school students.

5.1 Funding

In high schools, funds are allocated to departments at the discretion of a school's administration. Based upon information acquired in interviews with phys-ed department heads, it appears that phys-ed departments typically receive approximately \$1-2 per student per year for operating and maintenance expenses such as equipment, activities and extracurricular programs. Most phys-ed departments devote substantial time and energy to fundraising efforts to operate their athletics programs and provide enrichment opportunities such as field trips or guest lecturers/teachers. Another common source of revenue is soft drink machines located within

³ In British Columbia, in order to teach physical education in high school, teachers must have a major or minor degree in physical education or kinesiology from a recognized university (British Columbia College of Teachers, 2007, section 2J).

schools. Proceeds from fundraising, soft drinks and other confectionary items sold at the school store are far greater than the funds provided by the school board (Interviewee D, 2007, Interview). The Parents Advisory Council raises money through various events including casinos that can provide phys-ed departments with money for extracurricular activities (Interviewee A, 2007, Interview).

In 2000, the Vancouver Board of School Trustees eliminated \$200,000 in annual funding for a swim program for grade four students to go swimming at community centres (O'Connor, 2005). The Board of School Trustees voted to eliminate \$100,000 in annual funding for the use of community facilities for high schools from the 2004/05 school budget. Depending on a school's enrolment, the impact on high schools' phys-ed budgets ranged from \$3,000 to \$11,000 (O'Connor, 2005). Although the funding was officially referred to as the swim program, it was used for community facilities at the discretion of the physical education department heads (Interviewee E, 2007, Interview). The swim program gave high schools an opportunity to take its students away from the school and expose them to different types of activities in the community. It also alleviated some pressure on overcrowded facilities by freeing gymnasium space.

Until recently, the practice of charging fees for courses or field trips in British Columbia's schools was widespread in most school districts; however, on September 29th, 2006 the B.C. Supreme Court ruled that school fees were a violation of the B.C. School Act. According to Section 82(1) of the B.C. School Act:

A board must provide free of charge to every student of age (ages 5 to 19) resident in British Columbia and enrolled in an educational program in a school operated by the board, (a) instruction in an educational program sufficient to meet the general requirements for graduation, and (c) educational resource materials necessary to participate in the educational program. (Province of British Columbia, 2006).

User fees, ranging from \$20 to \$150 per student were a major source of revenue for phys-ed enrichment opportunities (Interviewee A, 2007, Interview; Interviewee C, 2007, Interview). The individuals who brought the case before the B.C. Supreme Court believe that public schools are institutions where all opportunities for physical activity should be publicly financed. They believe that user fees may create barriers for students from low-income families. Because of the court's decision, field trips are now optional and students cannot be penalized if they do not wish to pay. If the court's decision is strictly enforced, it is likely that more physical education classes will be based at school instead of exposing students to athletic excursions in the community.

Budgetary shortfalls characterized the greater part of the past decade. The deficits peaked in the 2002/03 school year when the VSB faced a \$21 million shortfall (ESL Advisory Committee, 2006). During this period, funding provided from Government did not match the increase in teachers' salaries. The VSB made funding cuts to many programs and avoided making new investment in areas such as physical education. For 2006/07, the VSB projected a budgetary shortfall of \$3.22 million (Vancouver School Board, 2006). Any additional policy recommendations must consider these restrictions on available finances.

6 Methodology

The research presented in this study uses mixed methods, a type of research where the researcher combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study (Johnson & Onwuegbuzie, 2004). Mixed methods are being used more frequently to provide a holistic understanding of complex phenomena to better inform social policy (Creswell, 2003). The mixed methods approach is meant to be complementary, drawing upon the strengths of qualitative and quantitative methods while overcoming the weakness of a singular approach (Johnson & Onwuegbuzie, 2004). The mixed methods used in this study are descriptive statistics for total physical activity and within phys-ed classes, focus groups with high school students and stakeholder interviews with physical education department heads.

As mentioned earlier, adolescents' participation in physical activity is a complex interaction between individual and environmental factors. In this study, quantitative methods provide an overview of current participation rates in physical activity and phys-ed classes. Particular attention is devoted to discrepancies in students that occur between neighbourhoods, sex and age groups. In order to meet the research goals and objectives, focus groups with students and key stakeholder interviews with phys-ed department heads provide a more detailed examination of adolescent behaviour. Content analysis organizes the conversations from focus groups and stakeholder interviews into themes. By consulting students and teachers, and combining those results with quantitative data, this methodological approach is the most appropriate way to achieve the policy goal to strengthen the role of high schools.

Simon Fraser University, the Vancouver School Board and the McCreary Centre Society approved the research protocol. Parental consent forms and adolescent informed consent forms were obtained from all focus group participants. Informed consent forms were collected for all key stakeholder interviews.

6.1 Quantitative data

The *Adolescent Health Survey III (AHSIII)* provides data on the health behaviours of students enrolled in grades 7 through 12 in public schools in British Columbia during the 2002/03 school year. The Adolescent Health Survey is a project of the McCreary Centre Society, a non-government, non-profit organization committed to improving the health of B.C.'s youth through research, education, and youth leadership projects (Poon et al, 2006). In 2006, the McCreary Centre Society published a report entitled "*Promoting healthy bodies: Physical activity, weight and tobacco use among B.C. youth*" that described the frequency of individuals' physical activity according to age, sex and geographic location. Permission was granted by the McCreary Centre Society to use data from the *AHSIII* to examine the effect of environmental factors such as income on physical activity.

More than 30,500 students filled out the *AHSIII*, which was administered by public health nurses to 45 of the province's 59 school districts. In order to provide statistically reliable estimates of the 290,000 high school students enrolled in B.C. in 2002/03, the sampling frame was stratified geographically by regional Health Service Delivery Areas (HSDA) and by grade. Within each region, the required sample was apportioned to each school district in proportion to the district's enrolment. Sampling of classrooms from a district's schools was roughly proportional to the school's enrolment. In order to account for the school districts that did not agree to participate in the survey, classrooms were randomly selected from participating schools in the same region, with the exception of the Fraser Valley (Green, 2006).

The McCreary Centre Society has an agreement with survey participants that no schools be identified when using its data. In order to avoid naming schools directly, schools were combined into the following groups: low-SES (less than \$52,000), mid-SES (\$52,000 - \$68,000) and high-SES (greater than \$68,000) according to average neighbourhood income levels. The confidentiality requirement necessitated including high schools from the Richmond School Board in order to develop a large enough sample of schools that were surveyed. Table 6-1 presents a list of all 29 schools in Vancouver and Richmond according to income category.

Table 6-1 Low-, mid- and high-SES categories for schools

Low-SES		Mid-SES		High-SES	
Templeton	\$51,292	Boyd	\$67,188	Point Grey	\$123,447
Richmond	\$50,893	London	\$66,735	Prince of Wales	\$117,220
Tupper	\$49,867	Kitsilano	\$65,876	Lord Byng	\$108,466
Windermere	\$49,845	Burnett	\$65,566	Magee	\$87,081
King George	\$48,716	Eric Hamber	\$61,572	Steveston	\$77,361
MacNeill	\$47,445	David Thompson	\$56,991	University Hill	\$74,692
Vancouver	\$41,536	McRoberts	\$56,174	McMath	\$68,540
Technical					
Britannia	\$29,203	Cambie	\$55,918	McNair	\$68,167
		Killarney	\$54,812		
		John Oliver	\$54,443		
		Gladstone	\$53,420		
		Churchill	\$52,920		
		Palmer	\$52,677		
Median	\$49,281		\$56,174		\$82,221
Average	\$46,101		\$58,792		\$90,622

Dr. Colleen Poon, a McCreary Centre Society research associate created a special dataset with low, mid and high-income variables. It was then possible to ascertain the income category a school belonged without revealing information if that school participated in the *AHSIII*. In 2002/03, Richmond and Vancouver's school districts boundaries were also the boundaries of distinct HSDA. This distinction enabled relatively easy stratification of sample data from the *AHSIII*.

The dataset compiled by Dr. Poon contained 1975 unweighted cases. When weighting was applied, the total number of cases increased to 14,323. Quantitative analysis tested whether there were differences in physical activity between the three income groups. A limitation of this approach was the inability to identify individual schools in the *AHSIII*, which did not allow for the direct comparison of variation between schools on physical activity levels. The quantitative data collected from the high schools was more useful as it strengthened observations made through focus groups or stakeholder interviews. It also provided insight into areas that would otherwise not receive consideration.

6.2 Descriptive data

Every high school in the Vancouver and Richmond school districts was contacted by fax with a request to provide male and female enrolment data for physical education classes in grades

11 and 12 as a percentage of each grade's total enrolment. The response rate was higher than expected as 76 percent of all schools provided data. Each high school in Vancouver and Richmond has a catchment area that delineates the neighbourhoods in which the majority of its students reside. The Planning and Facilities Department at the Vancouver School Board provided data that linked each high school's catchment areas to selected statistics from the 2001 Census of Canada. Descriptive statistics were collected including average household income, the percentage of female lone-parent families and the incidence of low-income families in each catchment area.

6.3 Student focus groups

6.3.1 Sample

Six semi-structured focus group interviews were used to collect data. A total of 32 students (18 males and 14 females) participated. All focus groups were conducted on school property. Participants were grade 11 or 12 students from public high schools in Vancouver. Approximately two-thirds of the students were Asian, which is slightly higher than the actual proportion in Vancouver's high schools. Schools were selected according to average income levels in order to provide representation from low, middle and high socioeconomic categories. Focus groups ranged between four to seven participants. Five of the groups were segregated according to sex; however, due to low turnout at one school, one focus group consisted of 4 males and 3 females. The students who participated in the focus groups differed from one another both within and between focus groups. Most of the high-SES males were extremely physically active. The high-SES females varied from low to very active. In the mid-SES groups, most of the participants were low to moderately active. In the low-SES group, the males were moderate to very active.

During preliminary discussions with teachers and principals, the researcher was advised that posters recruiting students for focus groups were found to be ineffective. Instead of directly contacting students, participants were recruited by a teacher or principal within each school. Students who were not currently taking a phys-ed class were selected to take part in focus groups. This approach is unique from other studies that use focus groups to describe adolescent physical activity patterns. Many studies are concerned with total physical activity (Allison et al., 2005; Dwyer et al., 2006; Robbins et al., 2003) and recruit students based upon levels of physical activity in general. Another study recruits students from phys-ed class (Vu, 2006) with the aim to improve participation within these classes. Since the policy recommendations in this study target

the marginal student who consciously makes a decision whether or not to take phys-ed, it was assumed that more could be learned from students who did not take phys-ed classes at school.

One limitation of this research was the relatively small number of individuals in each focus group, reducing the generalizability of findings to Vancouver's student population. The original design called for each focus group to contain six to eight students; however, recruiting students proved to be very difficult. Two high-SES category schools were contacted but declined to participate due to lack of student response. It was only possible to arrange a focus group with males in the low-SES category due to an insufficient response rate from female students. An additional focus group was conducted in the mid-SES category to provide a larger sample size.

6.3.2 Schedule and Analysis

Focus groups were led by a member of the same sex as the group's participants on the assumption that it would allow participants to feel more comfortable discussing issues related to their physical or emotional beings. It is possible that students' responses would be different if moderators were a different sex than a group's participants. The primary researcher moderated each male focus group. Female groups were led by female graduate students in the Public Policy Program. One male and one female moderator alternated asking questions in the focus group consisting of males and females. Each session used a standard set of key questions and prompts (see Appendix B for focus group questions). Questions were guided by the research goals outlined in the introduction. After the initial focus group, the wording of some questions was altered but the purpose of each question remained intact. General areas for discussion included (1) the role of physical activity in adolescent health, (2) perceived benefits of physical activity, (3) motivation to be physically active, (4) perceived barriers to physical activity, and (5) perceptions of high school physical education classes. Each focus group was approximately forty to sixty minutes in duration.

All sessions were digitally recorded and transcribed verbatim. The long table approach (Krueger, 2000) was used to analyze the transcripts by developing themes and then electronically organizing selected passages under each of these headings. Where possible, each theme corresponded to an area covered in detail by the research literature. Each theme provided valuable insight for researchers and policy makers to examine ways in which high schools could facilitate opportunities for adolescents to become more physically active. The results are presented in Appendix D and described in the Section 7. While the small sample size cannot claim to be representative of the general population, responses have been organized according to each

socioeconomic category, allowing the researcher to compare and contrast opinions between groups.

6.4 Key stakeholders' semi-structured interviews

Semi-structured interviews were conducted with six heads of physical education departments within the Vancouver School District. Each interview was 15 to 20 minutes in duration. Two department heads were selected from each of the average neighbourhood income categories (i.e. low-SES, mid-SES and high-SES). All interviews were recorded, transcribed and analyzed using the long table approach employed for the focus groups. Results are presented below in Section 7. The purpose of the interviews was to assess department heads' perceptions of students' barriers to physical activity and physical education. The interviews also provided insights into the economic and structural barriers that influence program delivery across different neighbourhoods. Interviews draw upon the observational expertise of a group of professionals who spend large amounts of time with adolescents. Since this group will be directly affected by any policy recommendations, consultation may increase the success of implementing change.

7 Description of Findings

7.1 Determinants of physical activity

In order to estimate current enrolment in phys-ed classes in Vancouver and Richmond, all high schools were contacted in October and November 2006 and asked to provide data for PE11 and PE12 classes. In total, 29 public high schools were contacted (18 from the Vancouver School Board and 11 from the Richmond School Board). The response rate was 76 percent with 16 out of 18 high schools reporting from the Vancouver School Board and 6 out of 11 high schools reporting from the Richmond School Board. The Ministry of Education was originally contacted but they did not have any data on phys-ed class enrolment beyond grade ten. They indicated that schools do not have to report on subjects for which standardized tests are not required.

7.1.1 Socioeconomic status

The following table illustrates the wide discrepancies in income and family structure within selected high school neighbourhoods in Vancouver. The average household income in Point Grey's neighbourhood is over four times that of Britannia's neighbourhood. Table 7-1 includes a comparison of the percentage of female lone-parent families and low-income families within Vancouver. The percentage of female lone-parent families tends to increase as neighbourhood income decreases. With a maximum of only one income per family, many single-mothers reside in areas where housing or rental costs tend to be lower. Female lone-parent families would expect to have less disposable income and time to spend with children. Both factors may affect resources for children to engage in physical activity. The percentage of low-income families in a neighbourhood also has an inverse relationship with neighbourhood income. Although low-income families live in all neighbourhoods, there are specific neighbourhoods where low-income families are more concentrated.

Table 7-1 Selected indicators of income and family structure in Vancouver's high school neighbourhoods, 2001

High School	Average 2001 household income	Percentage of female lone-parent families	Incidence of low-income families
Point Grey	\$123,447	9%	11%
Prince of Wales	\$117,220	10%	15%
University Hill	\$74,692	13%	24%
David Thompson	\$56,991	15%	26%
Churchill	\$52,920	12%	28%
Vancouver Technical	\$41,536	20%	29%
Britannia	\$29,203	20%	27%

The figures on the following page examine the relationship between the neighbourhood income of individual schools and enrolment in phys-ed classes. In the low-SES category, 70 percent of grade 11 students at Windermere Secondary enrolled in phys-ed classes. Since this enrolment total differs dramatically from other schools, it is treated as an outlier and not included in the calculation for grade 11. Overall, students from low-income neighbourhoods were slightly more likely to enrol in an elective phys-ed class. On average, 38 percent of students in low-SES schools participated in grade 11 phys-ed class compared to 33 percent of mid-SES and 26 percent of high-SES schools (see Appendix F for school enrolment raw data). There were only two low-SES schools with enrolment below 30 percent. The mid income category was very similar to the low-SES category, with slightly lower enrolment figures. In contrast, the high-SES category had two schools with grade 11 enrolment close to 10 percent.

Figure 7-1 Enrolment in grades 11 & 12 physical education classes by neighbourhood income

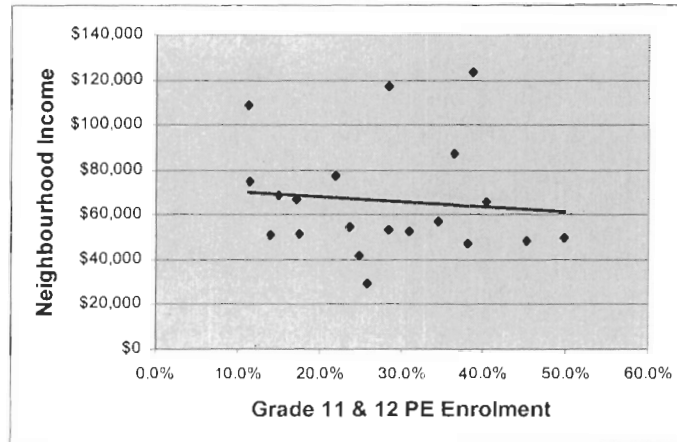


Figure 7-2 Enrolment in grade 11 physical education classes by neighbourhood income

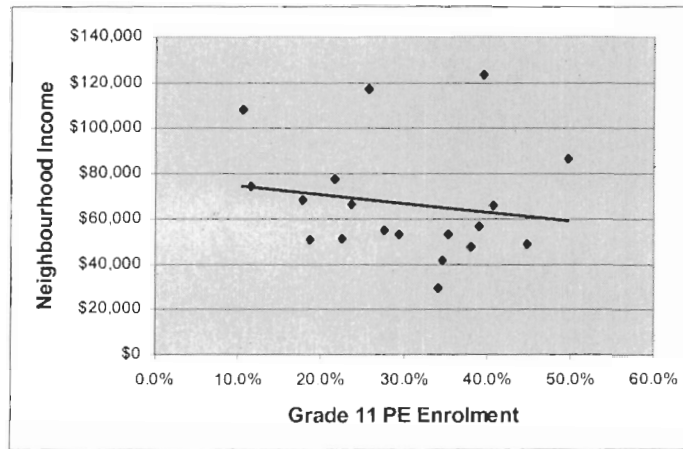
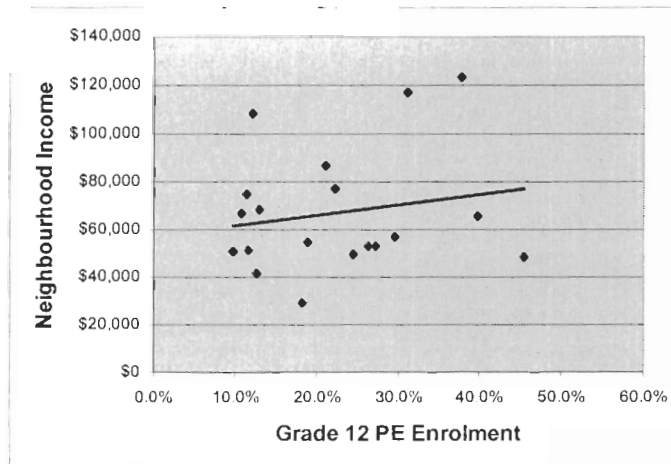


Figure 7-3 Enrolment in grade 12 physical education classes by neighbourhood income



The observations are too small to infer any causal relationship between school-SES and phys-ed enrolment. Research suggests that schools that are more affluent can provide better equipment, facilities and more classes to attract phys-ed students. Schools that are more affluent may also prioritize academics over athletics, which would lead to lower phys-ed enrolment (Cawley, Meyerhoefer & Newhouse, 2006). Phys-ed enrolment is likely a result of school-level factors such as teacher/department quality or a school's emphasis on physical education.

7.1.2 Age

The trend across income categories is for less enrolment in phys-ed classes in grade 12 than in grade 11. Table 7-2 shows a major drop in the percentage of students who take phys-ed in grade 12 compared to grade 11. The change between grade 11 and 12 phys-ed enrolment is as follows: high-SES enrolment drops from 26 to 20 percent, mid-SES declines from 33 to 26 percent and low-SES falls from 38 to 20 percent (see Appendix F for school enrolment raw data). Table 7-2 presents enrolment numbers that include the grade 11 class at Windermere. When Windermere is treated as an outlier, the average percentage of students taking PE11 falls by only one percent to 30.7 percent and the maximum becomes 49.7 percent. Windermere's high enrolment in grade 11 does not skew the results. Even without Windermere, there is a large drop in enrolment between grades 11 and 12 in Vancouver and Richmond.

Table 7-2 Percentage of high school students enrolled in physical education in 2006/07: Vancouver and Richmond school boards

	Percentage of Grade 11 students taking PE11	Percentage of Grade 12 students taking PE12
Average	31.7%	22.3%
Median	31.8%	21.0%
Maximum	70.1%	45.5%
Minimum	10.4%	9.7%

One possible cause is the increase in academic demands on grade 12 students. Another possible explanation is that students do not take PE12 because it is no longer of value to them. Students who have already met the portfolio requirement for physical activity in grade 11 phys-ed class may see no further use for phys-ed class. Finally, students may not like the way that phys-ed is taught in senior grades, based on their experiences in grade 11. While quantitative data can

provide a description of trends over time, focus groups and stakeholder interviews are required to discover which of the previous factors is most likely for the major drop between grade 11 and 12.

7.1.3 Differences between the sexes

Previous reports by the McCreary Centre Society have demonstrated the fact that male adolescents are more physically active than females in British Columbia (Poon et al., 2006). Using our special dataset that isolated grade 11 & 12 students in Richmond and Vancouver, frequency tables were produced using SPSS. The mean number of days of physical activity per week was 3.2 for males and 2.17 for females. The mode indicated that whereas the most common number of days of exercise per week was three for males, the most common number of days of exercise per week for females is zero. Over 1800 female students (26 percent) in grades 11 & 12 do not engage in any vigorous exercise on a regular basis.

The mean number of days of physical activity per week was 3.06 among low-SES schools and 3.32 per week for high-SES schools. Analysis of Variance, or ANOVA, is a statistic designed to examine, basically, if variability between means of groups is significantly greater than variability of scores within groups. For males, an ANOVA of 0.263 between low- and high-SES categories of males indicates a difference of one-quarter of a day. For females, an ANOVA of -0.228 between low- and high-SES categories indicates that low-income females engage in one-fifth of a day more physical activity than high-income female adolescents. The mean among low-SES schools was 2.26 and 2.17 in high-income schools. Both mean differences are significant at the .05 level. Several schools provided enrolment data for phys-ed classes by sex, which allows a comparison of differences between males and females below.

Table 7-3 Gender gap between male and female enrolment in high school Physical Education classes: Vancouver and Richmond, 2006/07

High School	PE11 Male Enrolment	PE11 Female Enrolment	Grade 11 Gender Gap	PE12 Male Enrolment	PE12 Female Enrolment	Grade 12 Gender Gap
Prince of Wales	41.9%	6.7%	35.2%	40.7%	19.5%	21.2%
Vancouver Technical	53.0%	20.1%	32.9%	16.9%	8.8%	8.1%
Churchill	46.7%	22.0%	24.7%	40.7%	11.9%	28.8%
Richmond	26.7%	11.9%	14.8%	19.4%	1.3%	18.1%
David Thompson	46.4%	31.7%	14.7%	34.8%	23.6%	11.2%

Templeton	27.7%	17.5%	10.2%	23.6%	1.8%	21.8%
Windermere	74.1%	66.7%	7.4%	29.2%	20.6%	8.6%

Table 7-3 vividly illustrates the low percentage of females who enrol in senior phys-ed classes. Two schools have less than two percent of grade 12 students enrolled in phys-ed classes. In contrast, Windermere has 67 percent of grade 11 female students enrolled in its phys-ed classes. While schools in grade 11 were organized according to the size of their gap between males and females in grade 11, there was no continuation of the ordering in grade 12 classes. Two factors that may affect enrolment levels in phys-ed classes are the class' reputation and its popularity among students. Females are unlikely to enrol in phys-ed class if many of their peers decide not to take it. Research indicates that the gender gap in participation is greatest between the ages of twelve through twenty (Wharf-Higgins et al., 2003). While these results indicate the persistence of a gender gap, certain schools are more effective at minimizing the gap between males and females.

7.1.4 Ethnicity

While ethnicity is a factor that influences physical activity, the format of available data did not present an opportunity to conduct any quantitative analysis in this area. Instead, observations from key stakeholder interviews touched upon this factor briefly. Ethnicity can be a barrier or a facilitator to physical activity depending on the cultural values or habits of a particular ethnic group. Regular physical activity is an integral part of the culture of some ethnic groups while others view it as a frivolous activity. One department head from a low-SES school explained how his school's ethnic composition had a positive impact on phys-ed enrolment:

We have a high population of Eastern Europeans now, Persians and Koreans. All three of them value physical activity. The families really value it so that makes it easier for us. In the phys-ed classes, you'll have 28 out of 30 that are very active.

In contrast, a mid-SES department head on the East side of Vancouver felt that the composition of his school being predominantly Asian (Chinese and Indian ethnicity) led to academics being prioritized over physical activity. He stated:

Both being cultures that have recently immigrated to Canada, they are groups that are more worried about existence rather than doing these other frivolous activities. Being predominantly Asian, there's not a big emphasis on athletics or sports. It's not important to them. It's play.

It was interesting to discover that at a neighbouring school with similar demographics, participation in phys-ed class was the highest in the city. Some schools are better able to make

connections with their students to increase physical activity levels, regardless of income or ethnic composition.

7.1.5 Summary of determinants of physical activity

An analysis of income, age, sex and ethnicity was conducted to contextualize the environment in which high schools operate. It is apparent that there is a large decrease in phys-ed enrolment between grades 10 & 11 and grades 11 & 12. Females are much less likely to enrol in senior phys-ed classes than males. Many female adolescents do not engage in vigorous physical activity at all in grade 11 or 12. These findings are consistent with previous research within British Columbia, which calls upon policymakers and educators to target the participation of female adolescents (Gibbons et al., 1999). While the research literature suggests that SES may affect overall physical activity levels (Mo et al., 2005; Sallis et al., 1996), the findings from this study found minor differences between schools with different neighbourhood income levels. It is possible that the differences between income groups are attributable to differences in individual phys-ed programs. Based on this observation, focus groups may illuminate characteristics of phys-ed programs that facilitate or hinder physical activity levels among high school students.

7.2 Perceived benefits, motivation and activity guidelines

Even though the focus groups included students that did not take part in phys-ed classes at school, these students did not totally discount the value of physical activity. Most focus groups gave equal weight to the physical and mental benefits achieved through regular physical activity (see Appendix B for a list of questions used in student focus groups). They were much more likely to focus on the benefits that could be realized immediately rather than the long-term health implications such as reducing the risk of chronic disease or premature death. The most important reasons for participating in physical activity were to have fun and take part in social activities with their friends. Some students thrived on competition while others participated in physical activity because it had always been part of their lives. Students were asked to come up with recommendations that they thought were adequate for adolescents to receive the benefits of physical activity. Responses ranged from fifteen minutes per day to one hour a day. Some groups felt that physical activity should be a daily requirement while others thought that three to four days per week was adequate. One female from the high-SES group felt that phys-ed teachers should be more proactive to advertise the guidelines recommended by *Canada's Physical Activity Guide for Youth*.

7.3 Perceived barriers to physical activity

7.3.1 Theme I: Self-confidence and Motivation

Self-confidence

Self-confidence is a belief in one's personal worth and likelihood of succeeding based upon one's self-esteem and general self-efficacy (Neill, 2005). Students cited a lack of self-confidence in their abilities as a major barrier to want to take phys-ed classes or participate in sports. In the mid-SES group, one female stated: "I feel self-conscious playing soccer. When I was younger, I played sports all the time like field hockey and soccer but when I got older I'm not terrible but I'm not really good either, I'm just average." In the same focus group, another female said: "I don't have the experience for phys-ed." Results from the high-SES female group were similar. A member of this group explained her reluctance to be physically active:

I quit soccer when I was six, because I just hated it. If you look around, you're trying to be active and everyone is so much better than you are... You're trying to have fun and you can't so what's the point in doing it?

These findings are consistent with previous research on the barriers to physical activity for female adolescents. A female adolescent's negative perception of her physical self can trap that individual in an invalidating cycle where physical activity is avoided (Gibbons et al., 1999).

In contrast to students who felt limited by their abilities, the group of high-SES males demonstrated an abundance of self-confidence. Three of the four males were very active in athletics with parental support and encouragement from an early age. The research literature suggests that parental support and modelling is a key indicator of physical activity in adolescents (Sallis, Prochaska & Taylor, 2000). One mid-SES student described himself as being hard-wired for exercise. This male student had parents who encouraged and supported him to try many different activities as a child. A few females indicated how parental encouragement helped them to participate in athletics. It appeared that this involvement increased their self-confidence. One mid-SES female played numerous sports throughout her childhood and planned to join her mother's soccer team when she turned 18 years of age. While some males expressed a lack of confidence in their abilities, it was less likely than females to stop them from participating in physical activity. Research indicates that individuals with high self-efficacy and positive attitudes toward physical activity are more likely to pursue athletic opportunities (Hagger, Chatzisarantis & Biddle, 2001).

Most department heads believe that students' self-confidence is low due to the declining emphasis on proper physical education in elementary schools. Five out of six department heads referenced the disparate quality of instruction from teachers at the elementary level. Many of these department heads have taught physical education in Vancouver for many years. A major theme that emerged was the decline in students' physical literacy when they arrive at high school. One high-SES department head stated:

When we get them at secondary school, many of them are conditioned already from what has gone on in the elementary schools. One of the main barriers is the lack of province-wide direction in terms of elementary school physical education. There is a big carryover into the secondary school and then into their habits when they graduate from secondary school because they never picked them up when they were in elementary school.

The low level of physical literacy among students entering high school by itself does not explain the decreasing enrolment in phys-ed class; however, phys-ed department heads feel that low physical literacy compromises their ability to teach phys-ed according to the traditional approach. Based on the sample of phys-ed department heads interviewed in this study, teachers attracted more students to senior phys-ed classes when they focused on enjoyment rather than a skill-based approach. Five out of six teachers felt that the elementary schools require physical education specialists in some capacity to give students the opportunity to improve basic skills and increase their self-confidence.

Lack of motivation

When students feel that they are not successful at an activity, it takes a lot of effort to become better. It is much easier to quit and do something else. What many perceive as a lack of motivation to engage in physical activity can also be viewed as a lack of ability to participate. At different schools, students voiced the same opinion on the effort required to be physically active. A male from a mid-SES school stated: "It's also a big hassle to go to the gym. You have to change, go out of your door, and then when you get home you have to shower. It's a big chunk of time." Another male student from a mid-SES said:

You have to go out of your way to get ready to prepare for a day when you have exercise. I find that I don't have the energy to do that. I just find that I'm not full of energy like I used to.

Many students did not view physical activity as a way to relax between or after their studies. Unless they are very involved in physical activity, the average student is more likely to select a sedentary activity for relaxation. A mid-SES student explained: "Because we are studying and doing so much work, our relaxing is watching TV, just sitting down and turning on the television."

Students were less likely to participate when physical activity was not structured and they had to rely upon themselves to initiate activities. One mid-SES male stated: “If there’s no planning and you’re just kind of on your own, it’s too sporadic. You’ll just find yourself saying...OK, today I don’t want to do that anymore, I want to do something else.” When students are on a team or in a class they stand a much better chance of meeting recommended guidelines for physical activity; however, when they have a choice, students usually opt for sedentary activities. A female from a high-SES school stated: “Motivating yourself to do fitness alone is a lot harder than when you are on a team.” Instead of being physically active for enjoyment, most students perceived solitary activities as being forced to exercise.

7.3.2 Theme II: Time constraints

Homework

All focus groups reported that the amount of homework for high school students interfered with opportunities to be physically active outside of school. A mid-SES male reflected on the difference in spare time from when he was younger: “You would join more lessons or teams because you had lots of time after school but now after school you just go home and do homework or watch TV.” Department heads recognized homework as a significant barrier for extracurricular activities. Due to the unpredictable nature of homework, some students were reluctant to join teams that required a regular commitment. The pressure to get accepted to university required many students to prioritize homework over physical activity in order to study.

Low perceived value of physical activity

Most of the students were very conscientious and articulate in their desire to do well at school and attend university. Some students did not want to take phys-ed because they wanted a spare period to do homework or relax. A male from the mid-SES group stated the trade-off between phys-ed and another course:

People are not going to look at your phys-ed mark and say ‘wow, this guy’s really smart, he got a 100 in phys-ed!’ They’re going to say something like, ‘he got a 100 in math, he’s really smart.’ [Phys-ed] feels like a waste of time if you are trying to get into a prestigious university.

Students decided not to take phys-ed in grade 11 or 12 because it was not a requirement for university or high school graduation. Physical education did not possess the same prestige as other courses. A female from the mid-SES group stated: “[In] grade 12, a community service block looks better than a phys-ed block. A phys-ed block looks like you want to relax. Community service looks like you are trying to help somebody.” When adolescents are thinking about the relative merits of phys-ed classes and community service, they are thinking about the value that universities and employers place on such activities.

A common theme that emerged was that no learning took place in phys-ed classes. Some students did not take phys-ed in grade 11 or 12 because they felt that they could be physically active on their own. Male members of both the low- and high-SES groups expressed their opinion that phys-ed was a waste of their time. Instead, they could take a course that would be more useful to their futures. A female in the high-SES group agreed, stating that cooking and sewing skills would be more beneficial than running around a track. A member of the same group stated:

“The thing that I found in phys-ed is that they don’t teach you how you can help your health later in life.” At one high-SES school, the department head felt that his school’s emphasis on academics pressured students to select academics over physical education.

Timetable conflicts

Scheduling becomes an issue when students must choose between taking phys-ed or other courses required for their futures. The school environment is only one venue for being physically active. Whereas physical activity can be acquired in many different settings, high school accounting is not as flexible. Several students mentioned their desire to take phys-ed but could not because it was only offered at the same time as an elective needed for university. A department head at a low-SES school indicated that schools with small student populations were at a disadvantage to attract students to phys-ed classes because they could not offer as many classes as bigger schools. As a result, most senior classes were mixed between grade 11 and 12 students.

7.3.3 Theme III: Cost

Cost appeared to be a barrier to phys-ed classes for a small number of students. One student from the mid-SES group felt that the price charged for phys-ed was too high, given the other costs associated with being in grade 12. Her logic was that the money could be better spent by purchasing a membership to a local gym and exercising there. Another student in the low-SES group expressed his opinion that course fees for PE11 or PE12 prevented many students from taking phys-ed at school. Britannia Secondary School has the lowest neighbourhood income level in Vancouver. Recognizing the limited resources of its community, Britannia Community Centre provides access to many programs such as skating, swimming and basketball for youth free of charge. Participation in physical activity at this school is actually higher than most due to its proximity and relationship to the community centre.

Several department heads felt that cost was not a major issue. For students enrolled in phys-ed, funding was available if students who could not afford to pay course fees indicated to a teacher that they were unable to pay. While these department heads dismissed the issue rather quickly, it is possible that the stigma attached with asking teachers for funding created a barrier in the students that did not take phys-ed. Since schools subsidized some of the cost of enrichment opportunities, department heads felt that students received excellent value for their investment. Students from high- and low-SES groups pointed out that the cost of being physically active

outside of school limited their choice of activity. Snowboarding and kayaking required a lot of money for equipment and activity fees. Alternatively, soccer and running were sports that did not require a lot of equipment. One female high-SES student explained the trade-off between physical activity and coffee: “I could spend this \$50 to go skiing once or I could use that \$50 to make 10 trips to Starbucks!”

7.3.4 Theme IV: Lack of opportunities for physical activity

Inside Schools

One mid-SES female student remarked how much fun she had playing floor hockey in elementary school and wished that her school could invest in more equipment. Students at that school were unable to play games such as floor hockey due to a lack of equipment. One student at a mid-SES school felt that his school had the equipment but teachers would not let students use the equipment outside of phys-ed class. Students complained that being forced to go outside and run did not increase their enjoyment of phys-ed classes. One department head admitted that a current lack of indoor gymnasium space forced him to send one class of students outside every time period. The alternative was for students to have classroom-based periods or conduct class at facilities outside of the school grounds. Two other department heads insisted that they would have no indoor space for students if enrolment increased.

In contrast, schools that are located in close proximity to community centres have many more options. A department head stated:

At this particular school, there are not a lot of barriers in terms of facilities. Money is not a problem because we are so lucky to have the swimming pool and ice rink here which give us incredible rates. We readily use those facilities for our junior and senior grades.

High schools that are not located close to community centres are at a disadvantage in the opportunities for their students to participate in activities. One department head explained that renting a swimming facility and paying for transportation for his grade eight phys-ed classes cost approximately \$8,500 for eight sessions. In comparison, a department head who had a swimming pool neighbouring his school paid \$8,000 to \$9,000 per year. It appears that the physical limitations on space contribute to keeping current enrolment from expanding.

Outside of Schools

It appears that opportunities for physical activity outside of schools are a contributing factor to skill development. Two department heads spoke directly about the disparities in the number of community programs between the East and West sides of Vancouver. A high-SES

department head indicated that there was twice the number of community teams on the West side than on the East side of Vancouver. A mid-SES department head explained the effect more community opportunities have on students:

We found that in athletics, the best teams are the ones affiliated with clubs. On the West Side, they have things like Night Hoops in basketball. They have the West Side basketball leagues. They have basketball almost all year. The teams and schools that participated on these club teams are obviously much stronger than the East Side schools because they have had more experience playing at a much higher level.

These observations are consistent with research that suggests socioeconomic factors may create barriers to physical activity after school hours (Romero, 2005; Sallis et al., 1996). When students do not have opportunities outside of school to develop their skills, they opt for alternative ways to spend their free time.

Students who want to be physically active but are not good enough to be on one of the school's teams are left without many options. A female from the high-SES group stated: "When I came to this school, this school was way better than my old school so I didn't make the team. So now if I want to play, I have nowhere to go." The school gymnasium is usually reserved for competitive teams before and after school. While intramurals were readily available at most schools, they are usually held at lunchtime, which requires students to rush their lunch or skip eating altogether. The females at a high-SES category school felt that co-ed intramurals did not offer them a chance to be physically active since they had to play against senior guys.

Several department heads painted a much brighter picture of the possibilities available to students to participate in intramurals. Windermere's program in particular stood out as a model that could be used to increase participation. The department head at that school has built a community through the phys-ed and athletics program. Students from the elementary schools (within the high school catchment areas) in grade 6 & 7 attend basketball camps in the years preceding their arrival at high school. Intramurals take place before school, at lunchtime and after school. There are teams of students, teams of teachers and even teams of alumni who participate in the league. At lunch hour, the stands are packed with students watching the games. Success at this school is a reflection of the commitment of teachers, administration and the community.

7.3.5 Theme V: Structure of Phys-ed classes

Time of Day

Having an intense phys-ed class in the middle of a school day can have a detrimental effect on a student's other courses. One male student explained that sometimes he would really exert himself in phys-ed class but would then have a difficult time staying awake in the next class. Classes that were first period in the morning were unappealing to many adolescents, especially those that were tired from a lack of sleep. Some female students indicated that phys-ed classes after lunch were unappealing since it was uncomfortable to exercise with undigested food in their stomachs. Exercising during the day without being able to shower was a deterrent for many students. At many schools, changing in front of peers is awkward for some students. For the most part, showers are not available for students to use. It is not clear whether the lack of showers is related to cost, safety or privacy. Most students were very happy when phys-ed occurred in last period so they could go home and shower.

Marking Schemes

One group of students felt that while they were interested in phys-ed class, the possibility of receiving poor marks discouraged enrolment at the senior level. Students who were focused on pursuing scholarships or other academic recognition such as the Principal's List were not willing to jeopardize their overall average. The possibility of receiving poor grades was a deterrent to taking phys-ed classes. Grading phys-ed based upon student ability discourages participation. Rewarding students who are gifted with athletic abilities is bound to isolate students. One mid-SES student suggested phys-ed teachers re-evaluate their marking strategy:

I don't think that they should actually mark [phys-ed], I think that it should be more of a relaxed down-time course rather than something competitive that you actually have to work in to get a really high mark or something. Some people just aren't capable of running quickly and even if they tried their hardest, they aren't going to beat the guy who is really good at running, so their mark suffers.

Some department heads have had great success in increasing enrolment by moving away from strict marking schemes. One high-SES school in particular managed to convince the school's administration to switch the emphasis from skill-based classes to enjoyment and participation. He stated:

When I came to this school 11 years ago, we had four phys-ed classes. Now we have ten. How did we do that? We do that by refocusing our grade 8, 9 and 10 classes to include no skill testing or very little skill testing.

The emphasis on enjoyment and participation needs to start when students enter elementary school and continue throughout high school in order to influence physical activity patterns in senior phys-ed and later in life. Phys-ed teachers need to adjust to the unequal skill levels of their students and create activities that students will enjoy.

Testing students' athletic abilities in front of one another can be a humiliating experience for some students. One focus group talked about a running test where everyone who finished was able to stand around and watch people behind them finish. One mid-SES female student stated: "I remember doing it once and I actually came back crying. I hated it. It's the main reason that I don't take phys-ed." Some students felt that running was used as a punishment for bad behaviour and were disinclined after that to run for enjoyment. One school deducted points from students' overall marks if they forgot to bring their phys-ed clothes to school. The high-SES department head stated:

[Our approach is] to modify the games, not to change the games but to make them small sided games. So we do a lot of 3-on-3, 4-on-4 and 5-on-5. We'll never play full-sided games; we don't even have the space to play full-sided games.

The department head works hard to create team-based games where no one student can dominate. Students practice their skills and develop their fitness while teachers assign marks based upon their effort.

Lack of engagement/challenge

Students who did not feel engaged or challenged in their phys-ed classes were not likely to enrol in senior phys-ed classes. One of the mid-SES male students felt that phys-ed classes in high school were too juvenile. He thought that phys-ed teachers were more concerned about occupying students' time rather than improving student fitness levels. Students were very restricted in the types of activities they were allowed to play. Another mid-SES male student said: "I didn't really keep in shape while I was doing those things I was forced to." The comments from mid-SES female students were similar: "You felt like it was a drag. You wouldn't go out and put your heart and soul into something that you don't actually feel like doing." Every group of female students complained that phys-ed class involved more standing around than physical activity.

One way that phys-ed teachers were able to overcome this concern was to involve students in the selection of activities and have students help to design their courses. Calls for such an approach are not new in the research literature (Gibbons et al., 1999). Three department heads spoke in great detail how they have seen a large increase in enrolment when teachers give

students input into the activities that are taught in phys-ed classes. One school in Vancouver recently started a yoga class for students and immediately filled two whole classes for females. By giving students leadership roles in phys-ed class and intramurals, students feel ownership over their activities and are more likely to want to participate.

Competition

Some individuals saw competition as desirable while others viewed it as a barrier to participation. A group of males at one mid-SES school who were moderately active felt that phys-ed classes were better with females as their presence created a congenial atmosphere. These same males admitted that all-male classes had a tendency to become too competitive, which they found unattractive. Without females present, they felt that phys-ed classes could escalate to the point where people got hurt. In contrast, one of the reasons that the very active males from the high-SES group did not take senior phys-ed class was the lack of competition. They felt that without competition, there was no reason to participate. In the same group, the one moderately active male felt that field trips and other non-competitive activities were very appealing.

Males were not the only students who enjoyed competition. Some females felt that competition was beneficial and increased the benefit received from physical activity. The common theme that emerged from all female focus groups was that competition between females enabled them to be active. When females competed with males, they felt that they were not able to participate unless the males thought they were very good athletes. Competition works only as a motivation when it is possible to be the victor. One department head admitted that it took a female with exceptional skills and confidence to participate within a class dominated by males. Department heads can attract more students to phys-ed classes when they have an option to offer both types of classes (competitive and non-competitive) and give students the option which class they would like to join.

Co-ed classes

Due to timetable restrictions, limits on facilities and other factors, many high schools offer co-ed classes instead of segregated classes. This approach is not very popular with students who participated in the focus groups. Department heads indicated that it was much more difficult to choose activities that were geared toward both sexes. Females felt more self-conscious when males were present during physical activity. A female from the high-SES group stated: "When guys and girls play co-ed sports, the guys never pass the ball to girls and they never include the girls. And then it feels like a waste of time for us." Offering more classes segregated by sex generally has a positive effect on phys-ed class enrolment. Due to the efforts of one department

head to increase the number of single-sex classes, enrolment increased from roughly four female students in the enriched class to three classes that are entirely female. Another mid-SES department head explained the result of adding more classes for females:

At our school to draw more kids, we've offered more courses specifically for girls. We didn't know what it was going to be like. Bang! We got two classes like that and the kids loved it. The girls signed up for it. We don't have to worry about the boys, worrying about sweating, whatever. We had 2 classes right away.

Another factor that increased the likelihood of retaining female students was to have female instructors teach the classes. The female teachers need to be qualified in specific activities that female students are interested in taking like dance, yoga and Pilates. Increasing the number of segregated classes requires overcoming other barriers mentioned in the preceding sections.

Teaching approach

A study by Ntoumanis and Biddle reviews different motivational approaches in the research literature that teachers and administrators can use to increase physical activity participation (Ntoumanis & Biddle, 1999). The authors summarize four themes in the literature that they feel are most effective in increasing student's levels of motivation. Students will be motivated to participate when they are involved in the choice of activity, when they have the opportunity to improve or master a skill, when they feel supported in mastering a skill and when they perceive an environment that places high expectations or value on physical skills. Based on interviews with phys-ed department heads, most high schools adopt an approach to teaching which emphasize exposing students to a variety of different sports and activities. Within the sample of students from this research project, it appears that some high schools do not adequately address students' motivational needs. A good first step to engaging students is for teachers to talk with students and discover their goals for phys-ed. At this age, two-way communication is an effective way to ensure commitment between students and teachers.

7.3.6 Theme VI: Peers

Within school

For females thinking about taking phys-ed at the senior level, they are likely discouraged by the small enrolment of other females in the class. Three high schools reported having only two female members enrolled in grade 12 phys-ed class. Prior to grade 11, many females felt that so many students did not want to participate in phys-ed classes that it was impossible for classes to function effectively. One female student who took a segregated phys-ed class at another school

bemoaned the lack of athletes in her class. The class mainly went on walks because everyone would complain if they were asked to run. One female expressed her desire to bring back the competitive element in athletics. Without males, the females were either too nice to one another or lacked the motivation to receive any benefits from physical activity. One high-SES male who was very active outside of school found the low level of skill among his peers to be a barrier to his desire to take phys-ed at the senior level.

Outside of school

Students expressed a desire to play sports with their friends but found that they were easily persuaded not to be active if others did not make the effort to be active. Physical activity is a social activity that gives adolescents something to do together. The social aspect of physical activity was appealing to many students as compared to individual activities such as running alone. Such activities require free time that is shared with others which usually requires advanced planning and organization. With busy and unpredictable schedules, physical activity as a group becomes difficult. A student from the mid-SES group stated:

If nobody else is doing it, you're still not going to do it. Like for me, I really do want to play soccer and baseball a lot but none of my friends do it and I don't get to play with anybody, I just feel stupid swinging a bat by myself.

This student was not alone in complaining that there was never anyone with whom to exercise. As a result, students who were not involved in structured physical activity found it easier to watch television or play video games when friends were not available to play sports. These findings are consistent with other studies that indicate the most helpful cue to exercise was having someone to be active with (Tergerson & King, 2002).

7.4 Summary of Findings

Based on the data collected in focus groups, it appears that academic pressures are the biggest factor affecting phys-ed enrolment between grades 10 and 12. The Youth Physical Activity Promotion (YPAP) Model conceives of adolescent behaviour as determined by two questions: (1) Am I able? (i.e. perceived self-competence and self-efficacy); and, (2) Is it worth it (enjoyment, beliefs and attitudes)? (Welk, 1999). This model is a good way to examine students' approaches to physical activity. Students make a conscious decision not to take phys-ed so that they can study for provincial exams or take an elective that will help them with their futures. Many students prioritize academics over physical education because they perceive a higher reward through academic courses. For others, physical activity can be acquired outside of school

whereas some courses are only available in school. Self-confidence emerged as a major theme in focus group discussions. Students' lack of confidence in their abilities translated in a lack of motivation to exert them to be physically active.

Students' physical literacy and confidence appear to be based upon extracurricular experiences, especially at a younger age. Parental involvement helped shape student involvement by exposing them to activities although there was no marked difference according to neighbourhood income. Income appeared to have a noticeable influence on levels of physical activity through the athletic leagues that tended to operate in the more affluent neighbourhoods of Vancouver. These leagues provided youth with the opportunity to develop their physical literacy and improve their confidence. The results indicated that schools and community centres could modify this effect, irrespective of neighbourhood income. Two inner-city schools that had access to parks and/or recreation centres managed to attract large numbers of students to their phys-ed classes. Another low-SES school developed an intramural program with a community focus that attracted large numbers of students.

In order to attract more students to phys-ed classes, students and department heads recognize that changes need to occur in the structure of phys-ed class. Classes that emphasize skills over effort and participation do not meet the needs of the average student in high school. Testing students based upon individual skill levels can damage an individual's interest in physical activity beyond the school setting. Students have diverse needs and reasons for participating in physical education. Physical education classes that fail to acknowledge these differences create negative experiences for students, particularly female students. While ethnicity may affect attitudes toward physical education, schools can moderate the effect with dedicated phys-ed leadership.

8 Policy Options

8.1 Base Case: Maintain the status quo

The current practice among elementary schools in British Columbia and other jurisdictions in Canada is for ‘generalist’ teachers with no specialized training in physical education to teach phys-ed classes. This is in contrast to high school phys-ed instructors who must have specialized training from a recognized post secondary institution in either kinesiology or physical education (British Columbia College of Teachers, 2007, section 2J). A significant number of elementary schools in British Columbia do not allocate the Ministry recommended 10% of instructional time to physical education (Deacon, 2001). Significant portions of the physical education curriculum are not being taught due in part to a lack of teacher knowledge, but also due to a lack of equipment and facilities. As a result, there is a trend toward lower skill levels for all students when they reach high school.

The cornerstone of the provincial government’s approach to combat obesity and physical inactivity in schools is the *Action Schools! BC (AS!BC)* program that provides educational resources for teachers and promotes healthy living (Action Schools! BC, 2006). Funding for implementation of *AS!BC* between 2006 and 2010 will come from the Ministry of Health, Ministry of Education and 2010 Legacies Now. The program is geared toward generalist teachers in an attempt to increase the level of physical activity among children within the classroom. Under the status quo, there is wide variation in senior phys-ed enrolment between schools. While the variation in female participation in phys-ed varies substantially, the overall trend is for far less participation than males. Currently, the average enrolment in grade 11 phys-ed is 32 percent and 22 percent in grade twelve.

Physical education is a mandatory class for all students until the end of grade ten. In grade eleven, physical education is an elective course that the majority of students opt not to take. Fewer students take phys-ed classes in grade twelve. Most high schools are currently operating at full capacity. Indoor space for students to engage in meaningful physical activity is limited but phys-ed departments are coping. The budgets for phys-ed departments are large in comparison to other departments but funding for activities outside of the school has been reduced in recent

years. The student portfolio was a short-lived experiment that required all students in grades 11 & 12 to participate in 80 hours of physical activity. It is currently being reviewed by the Education Ministry and may be reinstated.

8.1.1 Key issues

- Several phys-ed teachers perceive a decline in the physical literacy of students entering high school in recent years.
- Enrolment in phys-ed classes varies considerably between schools.
- The decision to take phys-ed is based upon experiences with phys-ed, opportunities to be physically active outside of class and academic priorities.
- Schools rely heavily on fundraising to provide physical activity opportunities.

8.2 Alternative #1: Increase the number of physical education specialists in elementary schools

The first alternative would reverse the trend that began in the mid-1980s when physical education (PE) specialists were removed from elementary schools and teachers without any training in physical education were given the responsibility to teach phys-ed classes. Prior to the budget cuts that eliminated the PE specialist position, there was a PE specialist in every elementary school. In recognition of budget limitations, this alternative proposes hiring eight full-time PE specialists to float between elementary schools. There would be ten elementary schools for every PE specialist, allowing bi-monthly visits to each school if the PE specialist was to spend a full day at each school. If specialists visited the school only once every two weeks, they would be responsible to set up programs in their absence and support generalist teachers to implement the activities effectively.

A PE specialist is able to teach elementary school students the skills necessary to be proficient at physical activity and enjoy activities more. PE specialists are able to motivate students to be more active as they share their passion with children. The use of one PE specialist in Surrey to support its generalist teachers demonstrates the difference these teachers can make. Surrey's new curriculum concentrates on movement activities such as balance, agility and strength by using state-of-the-art techniques (Government of B.C., 2006b). The same equipment that is used by professional athletes is modified to fit into the classroom. The PE specialist is instrumental in showing teachers and students how to be active at a very low cost. This approach

will develop into a train-the-trainer model where generalist teachers continually receive support from the PE specialists.

8.2.1 Key Issues

- PE specialists can motivate students, develop movement skills and also support teachers to assist with curriculum implementation.
- Having eight PE specialists is fewer than when there was one in every school but substantially more than in other school districts.

8.3 Alternative #2: Create a coordinating position for physical education at the school district level that promotes leadership and best practices

Like the first alternative, this alternative would reinstate a position that was eliminated by budgetary cutbacks during the early 1990s. Surrey, Burnaby and Coquitlam are among the few districts in the province with a Physical Education and Athletic Coordinator position. The coordinator's responsibility includes ensuring that schools have the resources and training to effectively teach the phys-ed curriculum at both elementary and secondary schools. The coordinator position should be similar in nature to the position of a district principal that exists within some school districts across the province in areas where the school district has a special interest or priority. For example, Aboriginal education is a popular district principal position in some school districts. By creating such a position, the Vancouver School District would send a strong message to its citizens that it is serious about promoting physical activity in its schools.

Without a district principal or coordinator to provide leadership within the school district, the quality of physical education across the school district can vary according to individual departments. Department heads remain isolated in their own schools. Communication occurs with one department heads throughout the year at games and tournaments; however, the relationships are informal and ideas for programming occur sporadically. There is currently no formal mechanism for department heads to communicate with their peers. A district principal can increase the quality of teaching by focusing on schools that may have difficulty with enrolment. The district principal could assume responsibilities for major fundraising efforts dedicated to physical activity. At present, fundraising efforts are the responsibility of individual schools and Parents' Advisory Councils. The district principal could centralize sponsorship opportunities that

exist in the community to improve facilities or provide transportation and access for enrichment opportunities.

8.3.1 Key issues

- The Phys-ed & Athletics Coordinator unites the efforts of all schools within the school district to develop inclusive and effective physical education programs.
- The Phys-ed & Athletics Coordinator monitors and evaluates levels across district and provides support where necessary.
- The position increases the profile of physical education and physical activity within the province.

8.4 Alternative #3: Student leadership and decision-making in the development of phys-ed classes and intramural activities

One of the keys to increasing participation in physical activity is to involve students in planning and implementing physical activity initiatives. The program operated in Surrey by the Physical Education and Athletics coordinator captures elementary students' interest by utilizing them as activity leaders. The Surrey program involves rotation of students between fitness stations that concentrate on separate motor skill development. Student leaders are not chosen due to their athletic abilities; rather, all students are given the opportunity to become leaders. Approximately 120 students receive special training and assume responsibility for assisting with younger students. At the end of the year, student leaders are presented with certificates recognizing their contribution to their school community.

At one high school in Vancouver that repeatedly demonstrates high participation among its students, students play an integral part of its intramural program. Through a Phys-Ed Leadership course, students are given responsibility to plan and run tournaments at lunch hour and during special Friday activities. The students are given the opportunity to develop leadership skills that are then transferable to other areas of their lives. The student leaders are responsible for suggesting ideas for special Friday activities that they think their fellow students may enjoy. It is also their responsibility to advertise and recruit students to participate. Leadership should be encouraged among female adolescents so that males do not dominate activities. Grade 12 students could also be utilised to run activities for grade 8 and 9 students.

8.4.1 Key issues

- Leadership develops skills within the context of physical activity.
- Teachers can utilise students selected as leaders to help run programs that engage more students in physical activity.

8.5 Alternative #4: Promote marking schemes that encourage participation in senior Phys-ed classes

This alternative takes the emphasis in phys-ed classes away from testing skill and moving it toward effort, participation and improvement. It does not mean that everyone should get high marks simply for attending class. Teachers have a responsibility to design activities that are fun for everyone. They need to create activities that keep everyone involved instead of isolating individuals. The students who are good at phys-ed and receive the highest marks are probably going to be active outside of class. In contrast, the students who are not as talented are less likely to play on teams or exercise on their own outside of phys-ed class. By punishing these students because they do not possess the ability of the gifted athletes, teachers are discouraging students from enrolling in senior phys-ed classes. Some students are not willing to risk a poor grade in phys-ed that could jeopardize entrance to university and even scholarships. A more sensible approach is to create an atmosphere that is fun and encourages lots of movement by the students. Regardless of whether team or individual-based activities are developed, the key is to focus on activities where movement increases and students do not feel isolated or singled-out.

8.5.1 Key issues

- Switching to a marking scheme based upon effort and participation requires the support of a school's administration.
- This alternative targets students who are not the best athletes in the hope of maintaining their involvement through physical education.
- A marking scheme would need to be implemented at the start of high school so that students knew what grades could be achieved when they participated.

8.6 Alternative #5: Stream students into different classes: competitive and non-competitive and classes segregated by sex

This alternative recognizes the different needs, preferences and skill levels of the different groups of students in high school physical education. Males and females are not homogeneous groups. Within each group there are differences that originate due to prior experiences with phys-ed, different motivations for participating in sport and differences related to SES and culture. Males and females should be given the opportunity to take the type of phys-ed class in which they feel willing to engage in physical activity. Whereas most streaming involves teachers selecting students to enter different groups based upon skill level, streaming in this context involves students selecting which approach to physical education best suits their needs. This alternative requires that three classes be offered per grade. A variation on this alternative that may be more feasible is to provide different activities within classes.

Group one would be a class that stresses high levels of competition. The types of sports played in this group would be traditional sports such as soccer, football, basketball, volleyball and track and field. Specialized coaching could emphasize strength training and conditioning. The second group would have a semi-competitive focus: it would consist of non-traditional games and activities that maximized student activity. Activities in this group could include games like dodgeball, floor hockey and other activities that the students chose as a group. This class could teach dance, yoga or Pilates units, but they would be taught in a co-ed environment. Both groups one and two would be co-ed learning environments. The final class would be a lifestyles class for females only. An all-female class gives females an environment where they are less likely to feel self-conscious about their appearance and more likely to increase participation. Based on the popularity of lifestyle classes that currently exist in the Vancouver School District, females can select activities such as yoga, dance, Pilates or other interests as a group.

8.6.1 Key issues

- By giving students the option how they want to structure their classes, they are much more likely to be active within the classroom.
- In this case, streaming does not imply different skill levels; instead, it targets different motivations for participation in physical activity.

8.7 Alternative #6: Extend mandatory physical education to grades 11 and 12

This policy alternative would make physical education a required course for graduation. In accordance with the Ministry of Education's Graduation Requirement Policy, students must currently earn a minimum of 52 credits, including a minimum of 28 credits in the Foundation Studies category and a minimum of 24 credits in the Selected Studies category (VSB, 1999, IKF Graduation Requirements). Students can take up to eight courses per year and each course is four credits. Each additional semester that phys-ed is mandatory would add 2 credits to the Foundation Studies category. If no changes were made to the courses in the Foundation Studies category, the mandatory requirements would increase to 36 and the electives requirement would be lowered to a minimum of 16 credits. If one semester per year was added as a requirement, the mandatory category would be 32 credits and the electives category would be 20 credits.

The other approach is gradually to remove courses that are currently required in the Foundation Studies category. Some subjects are untouchable such as Language Arts 11 & 12, Social Sciences 11, Mathematics 11 and Science 11. Other courses such as Fine Arts 11 (2 credits), Applied Skills 11 (2 credits) and Career and Personal Planning 11 & 12 (2 credits each) would be possible targets for removal. The removal of any of the above programs would be a political hornet's nest, strongly opposed by the affected department. A compromise would be to establish Physical Education 11 and Physical Education 12 as a required 2-credit Foundation Study. The Vancouver School Board would have to decide if any courses could be removed from the Foundation Skills category.

8.7.1 Key Issues

- Including PE11 and/or PE12 in the mandatory curriculum requires another course or elective to be removed.
- Many of the requirements and goals of Applied Skills 11 can be accomplished through a well-designed physical education program such as problem solving, communication, social responsibility and the use of technology

8.8 Alternative #7: Reward students who meet physical activity targets with a designation that is recognized by universities, colleges and/or employers with an entrance scholarship

The fifth alternative is a slight modification of the 80 hours of physical activity required for the high school portfolio. Instead of being a requirement for high school graduation, this alternative would introduce a designation (like an honours designation with a university degree) to which colleges and universities would accord special consideration for their entrance process. At St. Michael's College, a private school located in Toronto, Ontario, students are required to fulfil a number of hours in community service, physical activity and clubs over the course of a year. In recognition of their accomplishment, the students then graduate with an honours designation. Universities, colleges and employers in the area are all familiar with the additional effort required of these honour students. It demonstrates to the universities and colleges that the students with the honours designation are capable of balancing their studies with leisure time activities.

If the Province wants to accomplish Great Goal #2 and lead North America in healthy living, it needs to offer an incentive for adolescents to participate in physical activity. One option is to establish entrance scholarships to a B.C. college or university for individuals who achieve the physical activity designation. In order to increase the low enrolment in grade 12 phys-ed classes, which is currently around 20 percent of a school's population, the scholarship could be offered to those students who achieve the honours designation in grade twelve. The requirement could also send a strong message about life balance between active lifestyles and work/school commitments as students prepare to leave the public school system.

Building on lessons learned from the portfolio's shortcomings, the program must be as simple as possible. It should attempt to maximize physical activity rather than be overly strict. The easiest way to set up the program is to award the designation for students that complete PE12. Alternatively, a program that includes exercise outside of the classroom may be effective. In this format, as many forms of exercise as possible should be considered to meet the targets. A simple two-step process could be developed where any adult coach, recreation centre supervisor or instructor (other than the student's parent) could verify weekly totals of physical activity. The purpose of having weekly targets instead of term or yearly targets forces students to establish a regular weekly exercise schedule.

8.8.1 Key issues

- Universities and colleges would need to support this program and state clearly to students how the designation would affect their entrance.
- Preferential treatment for college or university entrance targets the motivation of high school students to participate in physical activity.
- Development of a method to monitor and operate this program without being a burden to administrators should be a top priority.

8.9 Alternative #8: Increase funding for community enrichment opportunities

Since the elimination of the elementary school swim program, the physical literacy among students entering high school has dropped significantly. Even though swimming is part of the elementary school curriculum, many students arrive at high school not being able to swim. This alternative would restore funding cuts made by the Board that enhanced student activities through enrichment opportunities in the community. The Vancouver School Board would restore \$100,000 in funding to secondary schools and \$200,000 to elementary schools for the 'swim program'. In the past, funds were allocated on the basis of a school's enrolment; however, not all schools face the same cost structure to leave school property. Schools that have to hire transportation to get to community centres face higher costs than schools that are located next to community centres. Block grants could be created that schools would apply for, stating how and where the money would be used. In this manner, funding would be allocated based upon level of need. It would also introduce accountability into the delivery of physical activity.

Funding can also be used by high school department heads to broaden senior students' exposure to different types of physical activity, especially activities they would not experience on their own. Guest lecturers can come to the school and motivate students to be more active. High calibre athletes or coaches can visit schools and demonstrate effective training methods to enhance the students' skill levels. One teacher used to offer a community-recreation course where he would take weekly outings: sailing, canoeing, snowboarding, horseback riding, etc. but cannot offer this course due to budget constraints. Students in one focus group expressed interest in going on more outings but doubted that they would actually materialize. Since schools are no longer able to charge students to participate in such activities, school boards must invest more money in this area.

8.9.1 Key issues

- Funding cuts have damaged the ability of department heads to maintain physical activity among children and youth and it will probably take years to reverse the trend.
- Restoring funding will broaden students' horizons and alleviate pressure on existing facilities.
- Partnerships within the community need to be fostered to provide preferential rates for schools and take advantage of underutilised capacity during the school day.

9 Evaluation of Policy Alternatives

9.1 Criteria and Measurements

Table 9-1 Criteria, definition and measurements

Criteria	Definition	Measurement
Cost	What are the direct costs required to implement each policy option? Where possible, costs are presented according to fixed and variable costs.	On a scale of 1-5, how much does the alternative cost relative to other alternatives. A score of 1 is the highest cost and 5 is the lowest cost.
Effectiveness	To what extent will the policy alternative meet the policy objectives stated in section 3?	Each alternative receives one point for each of the five policy objectives it is likely to meet.
Political feasibility	Will the policy alternative be acceptable to the relevant power groups? Will decision makers, administrators, teachers, parents and students accept the policy alternative?	Based upon public statements, observation of past behaviour, current trends and interviews, each alternative receives a score of one to five. A score of 1 indicates unanimous opposition, 3 indicates groups equally opposed and in favour, 5 indicates complete support.
Administrative operability	How possible is it to implement the proposed policy alternative? Is the staffing available, will stakeholders cooperate and are there resources available?	Based upon public documents, case studies from other jurisdictions and stakeholder interviews each alternative receives a score of one to five. A score of 1 indicates major changes to current practices, 3 indicates changes to current resources that would not be overly taxing on existing resources, 5 indicates the availability of current resources to implement change.

9.2 Evaluation Matrices

9.2.1 Effectiveness evaluation matrix

Table 9-2 Evaluation of the effectiveness of policy alternatives

	Increase total enrolment ⁴	Increase movement in-class	Increase physical literacy	Increase value	Increase enjoyment	Total
8 PE specialists		X	X		X	3
Phys-ed & Athletics Coordinator	X	X	X			3
Leadership & Decision-making	X	X		X	X	4
Change marking		X		X	X	3
Streamed classes		X		X	X	3
Mandatory Phys-ed	X	X				2
Designation Program	X			X		2
Enrichment funding			X		X	2

⁴ Since it is believed that all policy alternatives will increase enrolment in PE11 & PE12, each alternative meets the standard here only if there is a large increase in total enrolment (i.e. magnitude of $\geq 20\%$)

Table 9-3 Evaluation of the cost, political feasibility and administrative operability of policy alternatives

Alternative	Cost	Political Feasibility	Administrative Operability
BASE CASE	<ul style="list-style-type: none"> \$2 per student plus \$3 million per year for AS!BC 	<ul style="list-style-type: none"> PA remains major priority of government but phys-ed does not receive funding to reflect this fact 	<ul style="list-style-type: none"> Departments strained but manage, facilities are at capacity and need other options
8 PE specialists	<ul style="list-style-type: none"> \$400,000 annually for the VSB 	<ul style="list-style-type: none"> Surrey's example highlighted by Premier but no plans to implement more staff 	<ul style="list-style-type: none"> Short-term shortage but SFU and Douglas College now offer degree program
Phys-ed & Athletics Coordinator	<ul style="list-style-type: none"> \$75,000 annually for the VSB 	<ul style="list-style-type: none"> Possible to fit within Ministry of Education's current plans to create Healthy Schools Coordinator 	<ul style="list-style-type: none"> Ample supply of administrative staff willing to take on responsibility
Leadership & Decision-making	<ul style="list-style-type: none"> \$1500 per school for equipment + training costs for teachers (\$150,000 VSB) 	<ul style="list-style-type: none"> Surrey's programs highlighted at Teachers' Congress 	<ul style="list-style-type: none"> Requires professional development workshops Involving students requires teachers to be accommodating
Change marking	<ul style="list-style-type: none"> No significant cost 	<ul style="list-style-type: none"> Some reluctance to move away from standardized tests 	<ul style="list-style-type: none"> May go against some teachers' philosophy
Streamed classes	<ul style="list-style-type: none"> Varies between schools 	<ul style="list-style-type: none"> Recognition that female participation should be targeted 	<ul style="list-style-type: none"> Not all schools have capacity or teachers
Mandatory Phys-ed	<ul style="list-style-type: none"> High costs to increase facilities 	<ul style="list-style-type: none"> While some phys-ed teachers support, BCTF publicly opposed 	<ul style="list-style-type: none"> Serious lack of space to contain additional students
Designation Program	<ul style="list-style-type: none"> Up to \$2.5+ million for the Province (average cost = \$40,000 per school district) + administrative costs to run program 	<ul style="list-style-type: none"> Not overly interested in increasing funding to higher education 	<ul style="list-style-type: none"> Due to portfolio failure, may meet some resistance. Needs to be simple process
Enrichment funding	<ul style="list-style-type: none"> \$ 300,000 to restore VSB swim programs 	<ul style="list-style-type: none"> Issue raised once unsuccessfully with School Board Trustees 	<ul style="list-style-type: none"> Relieves pressure on class space but time required can interfere with other classes

9.2.2 Summary of Evaluation Matrix

Table 9-4 Summary of evaluation matrix

	Cost ⁵	Effectiveness	Political Feasibility	Administrative Operability	Total
Leadership & Decision-making	5	4	5	5	19
Change marking	5	3	4	5	17
Phys-ed & Athletics Coordinator	4	3	3	4	14
8 PE specialists	2	3	3	4	12
Streamed classes	3	3	3	2	11
Enrichment funding	3	2	3	3	11
Designation Program	4	2	3	2	11
Mandatory phys-ed	2	2	2	2	8

9.3 Evaluation of Status Quo

Public funding for high school phys-ed programs is relatively low on a per capita basis. The Government's recent one-time \$1.3 million contribution to schools for new physical activity equipment works out to be only \$1,000 for each high school. The best estimate of funding for phys-ed budgets in high schools is approximately \$2 per students. Schools are limited in their

⁵ Regarding cost: high (5) indicates a low cost while low (1) indicates a high cost.

ability to charge additional fees to students for enrichment opportunities due to the B.C. Supreme Court's decision to enforce the *School Act*. Last month, the Provincial Government introduced Bill 20 that amends the *School Act* (British Columbia Learn Now B.C., 2007). The legislation will allow school districts to charge fees for courses and materials under specific circumstances, although it is still unclear the effect this will have on phys-ed courses. There is a tacit understanding in schools that phys-ed departments must raise a substantial portion of their budget through fundraising activities. Instead of relying upon public taxes to fund phys-ed classes, communities end up paying indirectly through fundraising. What initially appears to be a small investment turns out to be much larger when all of the societal costs are included.

Whereas some high schools may have quality programs and facilities that encourage its students to enrol in a senior phys-ed class, there remains a great deal of variation between schools. The incentive for students to prioritize a senior phys-ed class over other electives remains elusive to students. Under the status quo, enrolment in phys-ed classes remains low because students are more focused on the short-term benefits of taking a phys-ed class. Phys-ed is not a requirement for graduation and does not favour students when they apply to colleges or universities. Results from focus groups indicate that students feel that other academic courses hold more value for them than phys-ed class. Students feel that phys-ed classes in grades 8 to 10 fail to increase their level of fitness or master skills that they can use outside of the school setting. In some cases, students do not enjoy phys-ed classes due to strict marking schemes, a lack of engagement in class and a lack of self-confidence in their own skill levels.

It is too early to measure the impact of *AS!BC* on students' physical literacy in the elementary grades and the future impact this will have when students enter high school. While the initial impact on physical activity levels appears to be positive, it is uncertain how much the improvements persist over time. If *AS!BC* increases students' physical literacy in addition to their level of physical activity, the Government's investment in the program should be considered an efficient use of resources. The true test will occur where students are able to display the difference the program makes on the level of skill and confidence as they approach phys-ed activities in high school. While funding is a major barrier, there are initiatives that individual schools can implement to make classes more attractive to students. The high school portfolio is currently on hold because it required a large time commitment from teachers on top of their existing workload.

9.4 Evaluation of increasing the number of PE specialists in elementary schools

The cost of hiring eight new teachers for the Vancouver School District is a moderate annual investment (\$400,000) compared to hiring one PE specialist for every school (\$3.75 million). Nonetheless, it is still a high cost compared to the other policy alternatives set forth in this study. Research indicates that students in classes taught by PE specialists spend more time in physical activity and expend more calories in comparison to students in classes led by generalist teachers (Sallis et al., 1997). The anecdotal evidence provided through interviews with phys-ed department heads in the Vancouver School Board suggests that the removal of PE specialists from elementary schools results in a negative effect on physical literacy. PE specialists receive training at university or college to develop appropriate skill progression through activities designed for students of all abilities. In many cases, generalist teachers lack the confidence and knowledge to develop rudimentary skills (DeCorby et al., 2005). Not only can teachers without proper training impede physical development, they can also damage future growth by reinforcing gender stereotypes, failing to provide safe environments and not teaching necessary skills (DeCorby et al., 2005). As elementary teachers retire, boards may want to consider hiring more instructors with special training in physical education.

The current focus on *AS/BC* to increase physical activity on its own may neglect the development of skills necessary to receive the optimal benefits of physical activity. Physical activity is not the same thing as physical education. At the elementary level, when students do not have sufficient numbers of peers to engage in sports or other physical activities, they become bored or frustrated and tend to lose interest (DeCorby et al., 2005). Focus groups indicate that when students enter high school with a peer group that lacks sufficient skill to participate in meaningful physical activity, the quality of phys-ed classes declines as well as opportunities outside the classroom setting. According to the 2001 Ministry of Education Curriculum Review, there was a large demand from teachers to receive more in-service teacher training for phys-ed (Deacon, 2001). While qualified phys-ed teachers operated the best programs, studies indicate that the interventions that target teacher development can also be very successful (Kohl & Hobbs, 1998; Perry et al, 1997).

While the number of available PE specialists in B.C. is low, there are currently two post-graduate diploma programs in physical education offered at Simon Fraser University and Douglas College. PE specialists can support generalist teachers through a train-the-trainer approach to physical education in elementary schools. Glenn Young, a Phys-Ed & Athletics Coordinator from

the Surrey School Board has compared several types of teacher development models. Based upon his observations, embedded professional development (when a qualified PE specialist is able to offer continual support to classroom teachers) works best (Government of British Columbia, 2006b). The decision to hire additional instructors is at the discretion of the Vancouver School Board. While it would appear from current trends that any additional funding for PE specialists would meet opposition from the VSB, the success in Surrey may initiate change. Additional funding from the provincial government is necessary to make this alternative a reality.

9.5 Evaluation of the creation of a coordinating position for physical education and athletics at the school district level

The cost of a full-time position dedicated to coordinating phys-ed and athletics programs in the Vancouver School District would cost approximately \$75,000 per year in salary. Compared to other alternatives, this cost is quite low. By creating such a position, the Vancouver School District would send a strong message to its citizens that it is serious about promoting physical activity in its schools. Without a district principal or coordinator to provide leadership within the school district, the quality of physical education across the school district can vary according to individual departments. Department heads remain isolated in their own schools. Communication occurs between department heads throughout the year at games and tournaments; however, the relationships are informal and ideas for programming occur sporadically. There is currently no formal mechanism for department heads to communicate with their peers.

If the Vancouver School Board was to set a goal of increasing physical activity in senior grades by 25 percent by 2010, the first thing they would need to do is establish a baseline for current levels of physical activity. Glenn Young from the Surrey School Board is currently working toward this goal, which he calls Full Scale Achievement indicators (Government of British Columbia, 2006b). Participation figures would need to be collected for phys-ed classes, intramural activities and school teams. Many of the recommendations in this report could have a sizeable impact on increasing participation in these three areas; however, if there is no centralized or coordinating authority to measure progress, it will be difficult to assess if programs are worthwhile. The Phys-ed & Athletics Coordinator does more than measure progress. He or she will concentrate on increasing quality within schools by sharing knowledge generated by universities and other high schools. Without a position to coordinate the implementation of other recommendations, the effectiveness of the following three recommendations is in jeopardy.

Only Surrey, Burnaby and Coquitlam currently have a position for a Phys-ed & Athletics Coordinator. These positions have been in existence for some time and are not new creations. The existing focus on healthy living within British Columbia makes this alternative moderately feasible from a political standpoint. Currently, the Provincial Government is working on expanding Healthy Schools BC to include coordinators within each school district. It is possible that as part of their positions, these coordinators could assume the tasks and responsibilities outlined in this policy alternative. There are many skilled candidates from within the Vancouver School Board qualified to take on the position. Based on interviews with phys-ed department heads, there would be large support for a coordinator to oversee issues at the school district level.

9.6 Evaluation of promoting student leadership and decision-making roles in the development of phys-ed classes and intramural activities

This policy option requires very little additional investment. Most of the cost of promoting student leadership comes from training teachers how to develop these teaching methodologies. It requires phys-ed teachers and department heads to encourage greater involvement by their students in program planning. Based upon opinions expressed in the focus groups, there are various reasons that students do not participate in phys-ed classes. When students are interested in an activity, they are more likely to apply themselves and increase their participation. There is greater participation, greater health benefits and more student enjoyment. When students are responsible for planning and running an event, they are more likely to feel ownership over that event. According to key stakeholder interviews, Vancouver high schools that offer leadership opportunities see large increases in phys-ed enrolment and participation in intramural programs.

What is especially effective about the leadership program in Surrey is the selection of all types of students to be leaders. The leaders are called ‘fit kid coaches’ and recognized as being important leaders in their classrooms (Government of British Columbia, 2006b). In many athletic cultures, the best athletes are often selected to be leaders; however, this practice often discourages individuals who do not possess high skill levels. If progress is to be made to increase physical activity in schools, policy needs to target students who are average or below average. Teachers need to show all students some value associated with physical activity. Giving all students the opportunity to develop leadership skills develops healthy habits and a positive association with physical activity. This alternative is especially effective in increasing enrolment in phys-ed classes for females, the segment of the high school population with the greatest potential for

improvement. Best practices need to be communicated from schools in the VSB that operate successful programs. There would be few stakeholders opposed to this alternative.

Promoting student involvement requires that phys-ed teachers adopt a more flexible approach to class. A major barrier identified by students is the lack of challenge in phys-ed class either due to lack of peer involvement or activities that do not capture the interest of students. By allowing students to select their activities and get involved at a higher level, this policy alternative addresses barriers highlighted in this research study. Students are more likely to put more effort into activities in which they profess an interest to play or a skill they wish to develop. Instead of providing an overview of several activities, students can interact with teachers to inform them how much time they wish to spend mastering a skill. Based on the experiences of schools that adopt this approach, there is great promise to expand phys-ed enrolment throughout the school board.

9.7 Evaluation of marking schemes that encourage participation in senior Phys-ed classes

Shifting the focus of teaching away from traditional skill-based curriculum to a series of activities that stress movement and team play requires very little funding. It takes the time and effort of phys-ed departments to work creatively together to develop activities that are appropriate for students. If schools implement this philosophy early in high school, students become aware that their marks depend on their ability to be active rather than their ability to excel at an activity. Like the previous alternative, this policy targets students who are average or below-average students. It makes students realize that phys-ed class can benefit their lives in different ways. First, they will feel better about themselves as they see the benefits of regular physical activity. Second, they will develop skills that they can use outside of phys-ed classes (e.g. leadership, teamwork and organization skills). Finally, they will be able to maintain or increase their overall averages since their mark is based on effort rather than skill.

In order for schools to adopt this approach, it requires the support of a school's administration. There will probably be a few schools that resist the shift away from skill-testing toward marks based upon participation and effort. The students who currently benefit from marking schemes based upon skill rather than effort may feel threatened by change; however, it is unlikely that their marks will suffer or that these students will reduce their overall participation in physical activity. This alternative improves the chances that students will develop a positive relationship to physical activity as they learn to have fun while exercising. Instead of activities

that single out individual talent, the emphasis on movement and effort is likely to increase health outcomes without adolescents even realizing they are exerting themselves.

9.8 Evaluation of streaming students into different classes: competitive and non-competitive and female-only lifestyle classes

Where possible, schools should attempt to provide different classes that recognize the different skills and needs of its student population. The results from focus groups indicate that there is no one-size-fits-all approach to meet the needs of every student. Barriers for female students are likely to differ from the barriers for male students, and even within a group of males or females, there are different barriers and motivations for physical activity. By providing students with the choice to select their own style of engaging in physical activity, students are likely to get more enjoyment out of phys-ed classes and put in more effort. Schools that have the physical space and available phys-ed teachers could adopt this alternative in the early years of high school. For other schools, this approach may be more practical only for senior phys-ed classes. Female-only lifestyle classes at Gladstone Secondary are one example of a phys-ed program that has been extremely successful at increasing enrolment (Interviewee A, 2007, Interview).

Implementation poses the biggest obstacle for this alternative. Due to the logistics of the high school timetable in the Vancouver School District, all students in grades 8 to 10 have phys-ed at the same time. In order to offer three styles of class, this alternative would likely require three teachers per time period. For most schools, this would be difficult to implement. In addition, the current shortage of gymnasium space in many high schools may limit the ability of schools to implement this option. In the early years of high school level, it may be more practical for teachers to divide students into the different learning-approaches within the same class. In senior grades, it may be easier to offer electives at different times that emphasize the different learning styles. Students can increase their enjoyment of physical activity, which may influence their desire to continue physical activity beyond high school.

9.9 Evaluation of extending mandatory physical education to grades 11 and 12

The proponents of mandatory phys-ed in every grade include medical associations like the Canadian Medical Association and major health advocacy groups like the Canadian Cancer Society and the Canadian Association for Health and Physical Education, Recreation and Dance.

Expanding physical education to grade 11 & 12 would cost money for additional phys-ed teachers, equipment and facilities. The biggest cost would be to expand current facilities to meet the increased number of students taking phys-ed classes. In 2003, the former Education Minister, Christy Clark floated the idea of expanding mandatory phys-ed classes to grade 11 & 12. The province eventually backed away from the proposal due to strong opposition within schools. Jinny Sims, then B.C. Teachers' Federation Vice-President stated the teachers' opposition to the government's proposal: "[Mandatory phys-ed] is not the answer to the problem of children's physical fitness, and we do not have adequate gym facilities in any event" (BCTF, 2003). For this alternative to be a practical solution, the Province needs to take a serious look at increasing its funding of Vancouver's physical activity infrastructure in its public schools.

In spite of the large costs of expanding the Vancouver School Board's physical education infrastructure, mandatory phys-ed classes have the greatest promise of increasing physical activity levels among this key age group. There is little evidence to indicate that mandatory physical education lowers youth body mass index (BMI) or increases overall physical activity. Research in the United States measures the effect of variation in state laws requiring mandatory phys-ed on youth weight and physical activity (Cawley, Meyerhoefer & Newhouse, 2005). This study pointed out that poor teaching methods and lack of compliance with mandatory requirements were barriers to increasing students' movements within phys-ed class. If phys-ed were to become mandatory, it would need to happen gradually over time to give schools an opportunity to prepare for the change. Interviews with department heads indicated that at the current time, if phys-ed was mandatory in senior grades, teachers would be forced to hold more classes outside or in alternate locations.

9.10 Evaluation of preferable treatment by colleges and universities for students who meet physical activity targets

Preferential treatment by universities will only incur the costs associated with administering the designation program, if high school teachers are expected to keep track of students' hours of physical activity. The introduction of scholarships would increase the cost of this alternative depending on the value of the financial reward. Approximately 40,000 students graduate each year from B.C. high schools, and approximately 50 percent (20,000) enter university or colleges (B.C. Ministry of Education, 2006d). If 50 percent of graduating students achieved the proposed designation (10,000), a \$250 scholarship per student would cost taxpayers \$2.5 million per year. This cost will vary depending on how many students meet the physical

activity guidelines. Assuming that the number of applicants for colleges and universities is roughly equal to Vancouver's population, approximately \$350,000 would be spent on Vancouver's high school students. While this cost is borne by the Province, the opportunity cost that may affect other physical activity initiatives must be considered.

It is difficult to estimate the effect that monetary incentives will have on physical activity levels. Students in almost every focus group indicated that the pressure to achieve high marks for college or university affected their levels of physical activity. Parents of some students find very little value in physical activity and are not supportive of their children's time spent on activities that may interfere with their chance to be accepted to higher education. Increasing the recognition by higher institutions can address this low perceived value. It is likely to prompt students to seek out activities that allow them to achieve the physical activity designation. To some extent, the financial reward may be a windfall benefit for individuals already active; however, grade 12 represents a time when a large number of students sacrifice physical activity for marks at school. The financial incentive will help motivate these students to keep active during their last year of school.

The government currently awards \$1,000 scholarships to the top 5,000 students based on the results from three grade 12 graduation program exams (B.C. Ministry of Education, 2004). Based on the partnership between the Ministries of Education and Health with the *AS!BC* program, it is probable that both ministries would be interested in this policy alternative as a health promotion initiative. Increasing the level of adolescent participation in physical activity has positive economic implications for the Health Ministry. Teachers in schools will support this initiative only if its implementation is well planned. The student portfolio failed to gain the support of teachers because it added additional demands on teachers without providing adequate time for administrative requirements and student evaluation. This policy alternative may be overvalued since the proportion of the high school population that attends college and university is small relative to the overall population.

9.11 Evaluation of increasing funding for community programming

The annual cost to the Vancouver School Board would be \$300,000. In comparison to the investment required to increase facilities within schools, this amount is very low. Eliminating this money from elementary schools' phys-ed budgets diminished the opportunities that children have to gain valuable skills through swimming lessons. With fewer financial resources, high schools may limit students' exposure to enrichment activities in the community. Studies indicate that the

only exposure students from schools with lower average neighbourhood income have to enrichment activities occur in the school setting (Gordon-Larsen, McMurray & Popkin, 2000). By not restoring community funding, the Board of Trustees for the Vancouver School Board are disproportionately penalizing students from lower-SES neighbourhoods who do not have access to community facilities. Childhood and adolescence is a critical time to establish physical activity habits.

The last time the issue was brought to the attention of the Board of Trustees for the Vancouver School Board, the reception was cordial but little action was taken. Budget shortfalls make it unlikely that this alternative would receive the Board's endorsement without an increase in funding from the Province. All eighteen high school physical education department heads signed a letter urging the Board to restore funding. Given the unanimous support of phys-ed departments in Vancouver, this issue will eventually make its way back to the Board of Trustees. Given that the extracurricular activities are part of the Ministry's recommended curriculum for phys-ed, It would be difficult to imagine that funding will not be restored. Reversing the funding cuts will have a positive impact on skill levels and enjoyment in high school physical pursuits. The community funding will allow high school students to experience a wide range of activities that may develop into lifelong hobbies.

10 Recommendations

The policy alternatives presented in the previous two sections are not mutually exclusive options. In fact, several policy options enhance the likelihood that another policy option will successfully meet the policy goals and objectives. It is obvious from the Table 9-4, the summary of evaluation matrix that policy alternative #6, mandatory physical education in its current form is the least desirable method to increase physical activity among adolescents. While it would have the biggest impact on participation in physical activity, several obstacles make it impractical to implement. Most notably, the physical education infrastructure in Vancouver's public schools requires a major investment by the Province before this alternative can be considered. The remaining policy alternatives all have the potential to meet the policy objectives outlined in Section 3. They all are likely to have a positive impact on physical activity levels. Instead of eliminating further alternatives, all remaining policy alternatives are listed in order of priority and should all be considered in the next few years.

Recommendation #1: Integrate student leadership and decision-making into high schools' teaching approach

Starting in the 2007/08 school year, the Vancouver School Board should encourage all public high schools to offer Leadership classes at the senior level. Several schools within the Vancouver School District currently operate these classes. Based upon their experiences, physical education leaders should collaborate in order to share their teaching methods with other schools. Windermere Secondary School appears to be particularly successful at using this approach to increase phys-ed enrolment. Developing a case study of Windermere's program may be useful for other public schools with Vancouver and other schools within the British Columbia. This recommendation is likely to increase skills within phys-ed that students can apply to other areas of their lives. Opportunities for leadership development should be extended to all grades. The model that is being developed by Glenn Young in the Surrey School Board appears to be a good model to emulate.

Recommendation #2: Promote a marking scheme for phys-ed classes based upon effort and participation rather than skill-based learning

Phys-ed teachers should be encouraged to move away from an environment that evaluates students on their physical abilities. Skill-based testing can isolate students that are not high-achievers in phys-ed classes. In today's environment where participation in physical activity is already low, students do not need another reason not to be active. Programs that currently adopt this approach should be asked to present their teaching methods at an upcoming professional development day for phys-ed teachers. The teaching department at Point Grey Secondary School provides one successful example of a marking scheme based upon effort, movement and participation. Point Grey should collaborate with other schools to develop a best practices model that can be used within the Vancouver School District. This approach to marking should be incorporated into phys-ed classes starting in the first year of high school in order to develop a positive relationship with phys-ed.

Recommendation #3: Incorporate the position of Coordinator, Phys-ed & Athletics with current plans for a Healthy Schools Coordinator to promote physical activity in high schools

Hiring a coordinator would help raise the profile of physical activity within the school district, communicate ideas and provide monitoring and evaluation of students' physical literacy. It would make the implementation of several other recommendations more effective. The current political focus on the 2010 Olympics and health promotion suggests a favourable policy window for creating such a position. It is likely that the duties of a Phys-ed & Athletics Coordinator will be included in the Healthy Schools Coordinator. The Vancouver School Board should look at the activities of Glenn Young, the Phys-ed & Athletics Coordinator from the Surrey School Board when designing this position. His research and programs are among the best in Canada.

Recommendation #4: Hire eight PE specialists that will support teachers and students in elementary schools in the Vancouver School Board

In the short-term, it is recommended that funding be approved so that eight PE specialists can be hired for the 2008/09 school year. Eight PE specialists would allow one PE specialist to rotate between ten elementary schools. This would allow one weekly visit to each school. Each PE specialist will provide assistance for classroom teachers as they strive to meet the curriculum goals established by the Province's Physical Education Integrated Resource Packages. PE specialists can make a large impact on the quality of physical education in elementary schools. They will train-the-trainers and ensure that students are meeting the goals established by the

School Board and the Province. They will also help to increase the physical literacy of students entering high school. The Vancouver School District would be seen as a leader in the Province should it choose to implement this approach. It could present an opportunity to highlight Vancouver's emphasis on physical activity when the city hosts the Olympic Winter Games in 2010.

Recommendation #5: Restore enrichment funding to elementary and high schools on a needs-based approach for accessing community-based resources

This alternative requires the Board of Trustees for the Vancouver School Board to restore \$100,000 in community funding for high school enrichment and \$200,000 for the elementary school swim program. Schools cannot be expected to provide quality physical education programs without adequate funding. Opportunities for physical activity in Vancouver's public schools are limited by a lack of public investment. Students from neighbourhoods that do not have strong extracurricular community programs may be denied their only opportunity to participate in certain types of physical activity through phys-ed class. Funding should be prioritized for schools that do not have recreation centres located nearby. A system where schools apply for block funding based upon need deserves examination by the Board of School Trustees.

Recommendation #6: Examine the possibility of providing preferential treatment for Grade 12 students who meet physical activity requirements when they apply to colleges and universities

This alternative creates an increased role for colleges and universities by stressing the importance of physical activity in addition to the academic requirements for entrance to higher education. It requires careful planning and coordination with high schools to ensure that the administrative requirements are straightforward and the time required for teachers is available. It is recommended that an exploratory committee be established with administrative stakeholders from colleges, universities and the Ministry of Education to pursue the details of this alternative. For colleges and universities to entice students to participate in the designation program, they will need to clearly outline to students exactly how the designation would affect their entrance applications. The 2010 Winter Olympics will serve as a springboard to create awareness for the program and to broadcast to the world the province's dedication to the health of its future generations. In 2010/11, the first scholarships for physical activity accomplishment could be awarded for students entering university in British Columbia.

Recommendation #7: Promote phys-ed classes that are streamed according to the style of learning activity

Streaming classes holds a great deal of promise for students to increase their participation in physical activity. It is possible that female adolescents are most likely to increase their participation in physical activity from this option. Due to the physical space and teachers needed to pursue this recommendation, it is unlikely that all schools will be able to create classes that are streamed based upon the style of learning. At the current time, high schools should make an effort to offer courses where possible. For some schools, this may mean dividing students up into groups within the same class. Schools should attempt to stream their classes according to this method in the senior grades. High schools such as Gladstone Secondary or Windermere Secondary should be consulted as resources for examples where streaming has increased phys-ed participation.

11 Policy Implications

All of the policy recommendations have the potential to increase enrolment in senior phys-ed classes in high school. The set of policy recommendations included in this report are not a drastic departure from the current approach to physical education in the Vancouver School District. Many of the recommendations call upon the Provincial Government to increase its funding of Vancouver's physical education infrastructure. The recommendations will create incremental change by strengthening the existing framework that incorporates physical activity in Vancouver's schools from elementary school until graduation. The government of British Columbia has outlined an ambitious goal to lead the way in North America in healthy living and physical fitness. The recommendations in this report can bring about some immediate results but also leave a legacy that will extend into the future.

There is an opportunity cost for the money required to implement each policy alternative. If the Vancouver School Board approves the funding requirements to implement the policy recommendations, it must cut funding to existing programs unless the provincial government increases current transfers to school districts. The first two recommendations do not require additional funds to implement changes in class structure. The enrichment programs and PE specialists would cost the Vancouver School Board \$700,000 per year. There is an opportunity cost for the funds required for the entrance scholarships for colleges and universities. It is likely that funding will have to originate from several ministries, similar to the *Action Schools! BC* project.

The policy recommendations address two questions included in the Youth Physical Activity Participation Model introduced in section 7.4 (Am I able? and, Is it worth it?). After receiving support from PE specialists in elementary schools, male and female students will be more likely to respond that they are more competent to participate in physical activity. Students may be more likely to participate in physical activity when they perceive more value in phys-ed classes. Students want to have fun and enjoy themselves. This enjoyment comes from a greater confidence in their abilities but also from a change in the structure of phys-ed. If colleges and universities decide to offer an incentive for grade 12 students to be physically active, this will increase the number of students that enrol in phys-ed as a way of achieving the designation.

Whereas this study focuses on the Vancouver School Board, such changes will benefit high schools throughout the Province. It should not be the sole responsibility of the VSB to forego other programs in order to afford these recommendations since all citizens will benefit from a healthier population. This report calls upon different ministries with diverse portfolios to concentrate on the health of individuals in order to better the health of the Province. Institutions of higher education will look at ways that they can influence the behaviour of students in high school. The City of Vancouver Parks and Recreation Commission needs to improve their relationship with the city's high schools to increase opportunities for physical education. The recommendations in this report provide several opportunities for different stakeholder to work together to find solutions.

12 Conclusion

The policy recommendations in this research paper establish ways in which schools can have a positive effect on adolescents' participation in physical activity. Behaviour learned in adolescence has a positive effect on behaviour in adulthood that can directly impact an individual's quality of life and reduce costs to the provincial economy. It is recognized that these policy recommendations cannot address everything that affects physical activity because parents, peers and environmental factors also play a large role in physical activity outcomes. It cannot remove the time constraints place on students by academic pressures but they can better support students to make the decision how to balance physical activity with other demands on their time, which will likely increase as they get older. Given the large portion of a student's early life that is spent in school, these public institutions play a large role in the physical and emotional development of children and adolescents.

It is likely that individual factors such as income, sex, age and ethnicity affect physical activity patterns among adolescents. This research study was able to briefly examine gender differences that affect physical activity and incorporate some of these observations into policy recommendations. To a lesser extent, observations regarding income, age and ethnicity were reported but could not be examined in-depth given the broad set of policy objectives this paper attempted to address. Based upon the results from focus groups and quantitative analysis, it is evident that schools that can be flexible in their approach to phys-ed delivery are more likely to be successful at increasing enrolment. Several schools in Vancouver currently operate phys-ed programs that are very successful at attracting large numbers of students and challenging them to be leaders. Programs that develop a sense of community within a school also prove to be effective.

The recommendations stated in this research paper seek to restore programs and positions that will improve the health of adolescents and the health of the province in the long-term. Phys-ed in public schools needs to be envisioned in its totality, and policy needs to reflect that what happens in elementary school and in post-secondary education affects physical activity participation in high school. At the present time, students are more likely to prioritize academics over phys-ed classes. Universities and colleges can become agents of public health by utilising

the influence they hold over students' futures. If physical activity is a quality required for admission to higher education, students and parents will realize that they need to find room for physical activity within their already busy lives. Increasing physical activity among adolescents involves designing incentives that work.

If universities and colleges set the precedent that physical activity is an expectation of citizens of the province, this will put pressure on elementary and secondary schools to improve their programs. Phys-ed departments currently must fight hard to secure funding for programming both inside and outside of their schools. They lobby the school board to restore funding for community activities and facilities that are not overcrowded. Phys-ed departments frame their argument to secure additional funding based upon the health benefits available through physical activity. School boards would be more likely to prioritize funding for phys-ed infrastructure when they can see a direct consequence for their actions, which in this case is programming that will help its students meet the requirements for university. Public pressure from parents and students is likely to influence their decisions. In this case, preferential admissions treatment to universities and colleges creates an incentive for students to participate in physical activity.

Key stakeholder interviews highlighted how decisions by the school board to eliminate programs and specialist positions in elementary schools are affecting participation rates in high schools. The school board's decision to reduce spending in this area is likely to have damaging consequences as the present generation graduates from high school less confident and less capable of their physical abilities. This physical illiteracy is likely to result in increased costs to the health system as this generation ages. At a time when government is looking for ways to decrease health care costs, the decisions by the school boards to eliminate programs that encourage physical literacy seem short-sighted. Funding for health promotion in schools should be a shared responsibility of education and health ministries. The barriers to physical activity participation highlighted by students in focus groups point to the need for more skill development by qualified phys-ed teachers at a younger age.

Physical inactivity is a complex issue that will never be eradicated but can be decreased. By targeting high school students in grades 11 & 12, the policy recommendations set forth in this paper attempt to influence the behaviours of adolescents before they leave the public school system. Phys-ed class can attract more students by showing students its value, emphasizing fun and supporting the development of students' physical literacy. The policy window favours quick action on this issue so that Vancouver can highlight the changes it made to increase physical activity in its schools for the 2010 Olympics.

Appendices

Appendix A – Quantitative Analysis

Frequency Table

Q2 SEX					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MALE	7280	50.8	50.8	50.8
	FEMALE	7043	49.1	49.2	100.0
	Total	14323	99.9	100.0	
Missing	NO RESPONSE	20	.1		
Total		14343	100.0		

GRADE LEVEL					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	11	7076	49.3	49.3	49.3
	12	7267	50.7	50.7	100.0
	Total	14343	100.0	100.0	

Post Hoc Tests

Multiple Comparisons(a)
 Dependent Variable: Q138 PAST WEEK # DAYS DID EXERCISE/PHYSICAL ACTIVITIES
 Scheffe

(I) INCOME	(J) INCOME	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1.00	2.00	-.123	.068	.194	-.29	.04
	3.00	-.263(*)	.075	.002	-.45	-.08
2.00	1.00	.123	.068	.194	-.04	.29
	3.00	-.141	.063	.085	-.30	.01
3.00	1.00	.263(*)	.075	.002	.08	.45
	2.00	.141	.063	.085	-.01	.30

* The mean difference is significant at the .05 level.

a Q2 SEX = MALE

Multiple Comparisons(a)
 Dependent Variable: Q138 PAST WEEK # DAYS DID EXERCISE/PHYSICAL ACTIVITIES
 Scheffe

(I) INCOME	(J) INCOME	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1.00	2.00	.269(*)	.058	.000	.13	.41
	3.00	.228(*)	.067	.003	.06	.39
2.00	1.00	-.269(*)	.058	.000	-.41	-.13
	3.00	-.041	.058	.780	-.18	.10
3.00	1.00	-.228(*)	.067	.003	-.39	-.06
	2.00	.041	.058	.780	-.10	.18

* The mean difference is significant at the .05 level.

a Q2 SEX = FEMALE

Appendix B - Sample Questions for Focus Groups

1. Please introduce yourself (name, grade and favourite thing you do outside of school).
2. Describe a healthy person.
3. What does adequate physical activity mean to you?
4. How many days per week is ideal for people your age to be physically active?
5. What activities are sufficient to be considered physical activities?
6. What are the 'benefits' that you get from physical activity?
7. Why do you participate in physical activity, even if done only occasionally?
8. What role do your friends play in your level of physical activity? Parents?
9. What do you think are the benefits that "experts" say are available for people who participate in regular physical activity?
10. What makes it difficult to be physically active on a regular basis?
11. What do you think about phys-ed classes in high school?
12. What is your main reason for not taking phys-ed in grades 11 and/or 12?
13. How do your parents feel about your decision not to take phys-ed?
14. Are there any aspects of phys-ed in high school that made you feel uncomfortable or disinterested in physical activity?
15. If you were in charge, what kinds of changes would you make to phys-ed classes in high school?
16. What would you say to someone who thinks adolescents are all lazy these days and all they want to do is play video games, surf the internet or watch TV?
17. What role do you see for physical activity in your lives once you leave high school?

Appendix C – Sample questions for key stakeholders

1. What are the biggest barriers for physical activity and physical education?
2. As a department head, what are your biggest barriers?
3. From a school board or provincial standpoint, what funding initiatives could have the biggest impact?
4. Do the characteristics of your school's population affect your ability to engage students in PA?
5. Is there anything we could do differently?

Appendix D - Focus Group Analysis: Long Table Compilation

Benefits and Motivators for physical activity

	Future benefits: Reduce premature death or disease	Present physical health benefits: Increased skill, fitness, coordination, weight control	Present: Mental & emotional	Competition	Fun	Habit, Lifestyle, Parents	Social opportunity
Low SES: Male	<ul style="list-style-type: none"> You will live longer. 	<ul style="list-style-type: none"> You can do more things. You may have trouble if you're not active, like catching the bus. You don't get sick as often. It prevents more injuries b/c your muscles can take more impact. 	<ul style="list-style-type: none"> It can be exhausting but sometimes it might refresh you too. If you are studying all of the time, if you're always in front of the computer, it can refresh the body and give you more of a charge to study a bit more. It's a stress reliever. 	<ul style="list-style-type: none"> Sometimes you just want to hang with those people but other times you just want to beat those people. 	<ul style="list-style-type: none"> Mostly, it's fun. 		<ul style="list-style-type: none"> Sometimes you just want to hang with those people but other times you just want to beat those people.
Mid SES: Mixed	<ul style="list-style-type: none"> Like preventing when you're older, preventing diseases or heart attacks and stuff like that. 	<ul style="list-style-type: none"> Stay in shape. It feels, like it keeps you in shape, you know that you are doing exercise and it's good for yourself and eventually you know that it feels good. Like general, overall fitness, like you can do something you want to. Maybe you have trouble climbing stairs or something after awhile... 	<ul style="list-style-type: none"> Because it feels good. It relieves stress. It makes you happy. 	<ul style="list-style-type: none"> So you can kick some people's butts! I like the competitive nature if it is on a sports team. I used to play soccer and it was good to have that competitiveness and going to tournaments and play your nemesis team. 	<ul style="list-style-type: none"> Because it's fun. I think it depends on the activity, if it's something you are really passionate about, it doesn't matter what your friends are doing because you just want to do it anyways for the sake of the activity. 		<ul style="list-style-type: none"> Like when you are hanging out with friends, it gives you something to do together.
Mid SES Male		<ul style="list-style-type: none"> From a biological point of view, exercise makes your body systems work more, so then when you get 	<ul style="list-style-type: none"> Probably from an academic point of view, your brain works better after you've had exercise. If you need a 	<ul style="list-style-type: none"> I don't know, if you're angry then you want to make someone lose. Or you're forced to. 	<ul style="list-style-type: none"> You can have fun with your friends, so you go and play with them. 	<ul style="list-style-type: none"> I've always done stuff like that. It's not a reflex but something that I'm so used to I don't 	<ul style="list-style-type: none"> You can have fun with your friends, so you go and play with them. If my friends were

Mid SES: Female	<ul style="list-style-type: none"> • It reduces the risk of diseases. • It prevents diabetes and cholesterol. 	<p>back to normal it will just work better, easier for your body.</p> <ul style="list-style-type: none"> • They say generally if you put stress on your body and then you go back to normal, your body is just going to work better overall. • Better shape • It makes you look attractive. 	<p>break or whatever for it, it's constantly doing school work.</p> <ul style="list-style-type: none"> • I think that it acts as a stress reliever. A relief from day-to-day life. 		<ul style="list-style-type: none"> • I think because it's a hobby or it's fun. • I think that enjoyment and friendships is the most important. 	<p>even have to think about. Sometimes I just find that I want to run. And it seems to me like it's a natural thing to want to do. I think it's probably hard-wired into us to exercise.</p>	<p>to play soccer for 15 minutes after school, I would join them even if it takes away from some of my time b/c it would be like friendship</p>	<ul style="list-style-type: none"> • Meeting people and learning a new sport. We get to go to other schools and meet other people. Even though I don't go out after school, at least through basketball, I can meet new students from other schools. • I think that enjoyment and friendships is the most important.
	<ul style="list-style-type: none"> • When you exercise, it releases endorphins. It makes you feel good. • You look good and feel good. • Your mind, if it can't focus on homework, then you can go out and exercise for a little bit come back and usually calm and clear your mind. • It gives you more energy just to deal with everything. Like last night, I was in a really bad mood and I felt like I had so much stuff due and I went out for a run, and it felt like everything was more manageable, everything was simpler. • It takes your mind away from other stuff, especially schoolwork. When I dance it is a little stress relief. 	<ul style="list-style-type: none"> • Well, I don't know, but for dance at least, it just helps you with your normal life, just the way you carry yourself. And flexibility. Like for other sports, like yoga. • It's good for your posture, the way you carry yourself? • Like if you did ballet, it would change the way you look and the way you are in normal life, even if you're not dancing. • Also, in general, after you exercise you don't really want to eat right away, so that makes you eat less and that makes you have less weight. If you are obese, then you get sick more easily. • And cardiovascular exercise makes your heart stronger. 						

<p>High SES Male</p>		<ul style="list-style-type: none"> • It just keeps you fit and happy doing it. • I just want to motivate myself to get in better shape so I can go to nationals and worlds. • If you just eat and eat and eat and don't work out or do any activities, you can get fat. • I just don't want to be fat. 	<ul style="list-style-type: none"> • I think that you feel better. • It gives you a better peace of mind and a better sense of yourself. • You have a sense of accomplishment. • You're able to focus on school and relieve stress. 	<ul style="list-style-type: none"> • 3 out of 4 stated this reason • I started climbing for fun but now it's all about competition. It's all I climb for. • I wouldn't play soccer if it wasn't for games. 	<ul style="list-style-type: none"> • I have fun. 	<ul style="list-style-type: none"> • I've also been doing it for years now, it's been my life. • It's a big part of my family -- sports. • I have to get up every morning at like 4:30am. He's just used to it. 	<ul style="list-style-type: none"> • It was a good experience, you got to meet a whole bunch of people and just play sports.
<p>High SES: Female</p>	<ul style="list-style-type: none"> • I think it can determine how long you live and your lifestyle can determine if you get diabetes or something from not eating the right stuff. 	<ul style="list-style-type: none"> • You have to think about how much PA you can do with it. If you don't use the food you eat, it turns into like sugars and fats and stores and you get big and fat... • I think balance is really important with and you're not just focusing on what you are eating or not just how much exercise you are getting. It's a balance of everything. 	<ul style="list-style-type: none"> • After a workout I always feel happy and good. • If it's something that you enjoy or you feel really disgusting that day and you're like, oh man, I need to go for a run! • You feel better about yourself. • After I come to school from the arena I feel more focused. • And then that (being part of a team) gives you confidence. 	<ul style="list-style-type: none"> • 1 female played school hockey • 1 female was a competitive rock climber • 1 female was a competitive figure skater • 1 females was a competitive dancer 	<ul style="list-style-type: none"> • If you don't have homework, it's a really nice break to do something else that's fun. 		<ul style="list-style-type: none"> • It puts structure in your life and kind of balances out your life as well. If you are constantly working, having physical activity is kind of like a 'me time'. • I think that [being part of a team] gives us a real opportunity to be active... and have the experience of being on a team, the teamwork and all of the other benefits. • You make new friends when you do that, people that you see in the hall but can get to know. • I didn't have to be good at the sport but I could go and be with my friends, be active and be outside instead of

Barriers to Physical Activity

	Self-motivation	Self-confidence	TIME: Grades & homework, school	Cost	Access to facilities	Social interaction with others	Competing demands on time (technology)	Other
Low SES: Male		<ul style="list-style-type: none"> It depends how good you are b/c if you're not good at something then you might not like it. You might stop playing. Your own physical limits. Maybe you won't do something b/c you can't do it or you can't do too many things at once. 	<p>TIME: Grades & homework, school</p> <ul style="list-style-type: none"> When there is a lot of homework, you just can't do [PA]. Sometimes when you play sports you get really tired and you can't get your homework done and it gets really frustrating. I remember when I did track and ultimate in GR10, we had practices and competition every day of the week so I had to skip class virtually every day, like last block for half an hour or so. That really weighed down on my grades. 	<ul style="list-style-type: none"> I actually think that creates a problem b/c for the field trips b/c in order to be in PE11 or 12 you need to pay like \$100. I know a lot of students who can't afford or don't want to miss any classes for a field trip. So you don't take PE just for that reason. I think that it would be good if Britannia had a non-field trip PE so more students could do it. 		<ul style="list-style-type: none"> And you've got to call up people to play sports. You can always go home and log in to play video games but then not everyone is always free to do something. 	<ul style="list-style-type: none"> Technology rules our worlds... It depends on how addictive the [video] game is. It's easier to play video games. They're right there in your house. 	<ul style="list-style-type: none"> Jobs. I work 17 hours a week. 3 out of 6 worked
Mid SES: Mixed	<ul style="list-style-type: none"> Sometime it's the lack of motivation too. It's also a big hassle to go to the gym. You have to change, you have to go out of your door, and then when you go home you have to shower. It's a big chunk of time. 	<ul style="list-style-type: none"> I think that it really depends on what you were doing. I can't hit a birdie if I tried. We cover a huge range of sports. Sometimes someone is really good at one sport but totally incompetent at another sport. 	<ul style="list-style-type: none"> But now I have to focus more on school because like grade 12, you know. Now after school you just go home and do homework or watch TV. Most of my grade is focused on doing well, on getting into post-secondary, so that's why they are not doing any physical activity but they are 	<ul style="list-style-type: none"> Some sports are a lot more expensive than others like snowboarding, you've got to get the equipment and stuff... while other things like soccer you can just get a ball together for like \$20 and you can do that whenever you want. 	<ul style="list-style-type: none"> Currently sometimes when there are full blocks of PE, people have to play table tennis in the hallways. That's why we also had run days, to get people outside an doing stuff instead of having PE in the gym because we don't have enough room. It's fully booked. There are always 	<ul style="list-style-type: none"> If some friends want to do it, then you want to do it too. But if everyone is like "oh that's so lame, or we don't want to go out, it's raining" than you are like, OK, let's sit around and do nothing. If everyone else is doing homework than you don't have anything to do with 	<ul style="list-style-type: none"> I think that as an alternative people would rather watch TV or play video games rather than go to the gym or go outside to play. Because we are studying and doing so much work, 	<ul style="list-style-type: none"> Yes. I work about 12 hours per week 3 out of 7 worked.

<p>Mid SES Male</p>	<ul style="list-style-type: none"> • second is like yourself. You have to force yourself to do it. It's kind of hard. • You have to say to yourself, OK now I'm on a team and certain days of the week I have to put in exercise. Whereas if there's no planning and you're just kind of on your own...it's too sporadic. You'll just find yourself saying on days OK, today I don't want to do that anymore, I want to do something else. It just kind of gets chaotic. • I stopped 	<ul style="list-style-type: none"> • depends on which games you were good at. Like if you sucked... 	<p>still working hard in other areas.</p> <ul style="list-style-type: none"> • Homework is pretty unpredictable; sometimes you don't know when you are going to get a huge load and you can't make a practice or something. 		<p>teams practicing in the gyms after school.</p> <ul style="list-style-type: none"> • Before school, they're locked. • During lunch, Intramurals. They're always booked. It's all taken. 	<p>someone else and you can't really go jogging when it's cold out. If there's nothing to do, you don't have a choice.</p>	<p>our relaxing is watching TV, just sitting down and turning on the television.</p> <ul style="list-style-type: none"> • That's our reward. 	<ul style="list-style-type: none"> • Big Bang Science Journal. Our school's science journal. There's World Vision. I have to work at the school store and there's a whole bunch of stuff. It just takes away from a lot of my activities. Pretty much every day after school.
	<ul style="list-style-type: none"> • I think also the ease of access of places. You don't normally come to school in your shorts, especially in this weather. So you have to go out of your way to get ready to...to prepare for a day when you have exercise. • If you want people to exercise more, it's more of a problem of access to equipment. • Intramurals are at lunch so you can't eat. • You definitely have the equipment and space but we're not allowed to access it. We don't have access to the equipment usually. 	<ul style="list-style-type: none"> • Like for me, I really do want to play soccer and baseball a lot, but none of my friends do it and I don't get to play with anybody, I just feel stupid swinging a bat by myself. 	<p>I try to get off the computer, but there's no time to do it.</p> <ul style="list-style-type: none"> • It always looks like I'm surfing the internet and that I'm constantly on the computer but I'm actually doing some work, doing research. • I know someone in IB who basically has very little time to unwind, and what he'll do is do his homework while he's watching TV. So, he'll probably end up watching 6 hours of TV, but he's 		<p>our relaxing is watching TV, just sitting down and turning on the television.</p> <ul style="list-style-type: none"> • That's our reward. 	<p>our relaxing is watching TV, just sitting down and turning on the television.</p> <ul style="list-style-type: none"> • That's our reward. 	<p>our relaxing is watching TV, just sitting down and turning on the television.</p> <ul style="list-style-type: none"> • That's our reward. 	<ul style="list-style-type: none"> • I try to get off the computer, but there's no time to do it. • It always looks like I'm surfing the internet and that I'm constantly on the computer but I'm actually doing some work, doing research. • I know someone in IB who basically has very little time to unwind, and what he'll do is do his homework while he's watching TV. So, he'll probably end up watching 6 hours of TV, but he's

<p>exercising after PE 10 because I was too lazy. I always thought about exercising. But when you tried to it was kind of hard to force yourself to.</p> <ul style="list-style-type: none"> • And for me personally, energy levels. I find that I don't have the energy to do that. I don't know, b/c I'm doing less exercise w/o PE then I'm more tired more often or in general, I'm still growing I guess...I just find that I'm not full of energy like I used to...run like crazy or something. 	<ul style="list-style-type: none"> • My dad swims everyday, and during the summertime, he tells me to go swim with him, but I'm too lazy. • Laziness, I'm so lazy! • Motivation. 	<ul style="list-style-type: none"> • I don't have the experience for PE. • I feel self-conscious playing soccer, when I was younger, I played sports all the time like field hockey and soccer but when I got older I'm not 	<ul style="list-style-type: none"> • Homework 	<ul style="list-style-type: none"> • Last year, I didn't have the courses that I wanted, so I couldn't take PE. I would have taken it this year but then the price, \$90 just for one course! Grade 12 	<ul style="list-style-type: none"> • I don't exercise because I don't want to go alone and there's no one to go with. 	<p>also doing his homework at the same time so he's kind of multitasking.</p> <ul style="list-style-type: none"> • I watch TV, I am on the computer all of the time. 	<ul style="list-style-type: none"> • Work, if you're working part-time. • 4 out of 4 had PT jobs. • It depends on your religion and practices. In my culture, it's [prayer] five times a day. It's a couple hours and
<p>Mid SES: Female</p>							

	<p>You get distracted with friends or family.</p> <ul style="list-style-type: none"> • For me, if I sleep in and then I sit around, read a book or watch TV, I don't want to get up and go run. I feel sluggish. 	<p>terrible but I'm not really good either, I'm just average. That made it even worse because I'm scared of the ball.</p> <ul style="list-style-type: none"> • And if you're thinking, "Oh my God, I'm so fat", then there's no motivation for you to go out. 	<p>is already pricey. Plus, to pay \$90 for PE, then I'd rather just get a membership at the Y and exercise there.</p>			<p>then you put work on top of that...</p>
<p>High SES Male</p>	<ul style="list-style-type: none"> • Maybe just getting out and doing stuff. • Motivating yourself to do fitness alone is a lot harder than when you are on a team. 	<ul style="list-style-type: none"> • I out of 4 • I'm focusing on my photography career more, so I'm more competitive in that area. PA is just not as important, it's just there. I was just never athletic but I did manage to keep it. • Some people just aren't that social and don't like to join a team. There's a huge social part of being on a team and some people just wouldn't fit into that and they don't want to do team sports. (referring to others) • I quit soccer when I was six, b/c I just hated it. If 	<ul style="list-style-type: none"> • I guess that time is one thing. It's always a factor. • You just don't have time for homework. 		<ul style="list-style-type: none"> • I am so busy that I have no time to go on the computer. • I guess people like us that are active and get out, it takes up the time to do that so it's not a problem. 	
<p>High SES: Female</p>	<ul style="list-style-type: none"> • I think that in your head there are 	<ul style="list-style-type: none"> • Sometimes like during exam time, the chances are that 	<ul style="list-style-type: none"> • If you don't own your own stuff and if you 	<ul style="list-style-type: none"> • When I came to this school and this school was way better 	<ul style="list-style-type: none"> • When guys and girls play co-ed sports, the guys 	<ul style="list-style-type: none"> • With the pressures at school, you have to do well, you have

	<p>some days like, I'm not going to move today, I'm just going to lie on the couch and do nothing!</p>	<p>you look around, you're trying to be active and everyone is so much better than you are, this sucks, I hate it. You're trying to have fun and you can't so what's the point in doing it?</p> <ul style="list-style-type: none"> I used to play basketball on a school team at my old school but I'm not really good at it. I really like to play but I suck. 	<p>I'm not going to take away from my study time to go and run around the block a couple of times.</p> <ul style="list-style-type: none"> Homework. Inside school, you just sit there all day. Not many people realize but standards for universities and college are going up, like 90% averages just to get in and don't have time to do exercise or whatever, you have to spend all of your time studying and obviously you have to sit around to do that a lot. For people of our age, people aren't pressuring you to exercise. People are pressuring you to get good grades and get into university. They're not talking about PA. 	<p>don't like to run, you have to pay a lot to get physical activity. And if you don't really care about working out in the first place, you're not going to spend the money.</p>	<p>than my old school and so I didn't make the team. So now if I want to play, I have nowhere to go.</p> <ul style="list-style-type: none"> Now we have to try out for all of the school teams and if you don't make it, there's nothing. 	<p>never pass the ball to girls and they never include the girls. And then it feels like a waste of time for us.</p> <ul style="list-style-type: none"> (Why don't you play intramurals?) Because you have to play against senior guys. That's really scary. I did TREK last year when we had gym. Everyone participated and it was fun. Whereas I used to go PE and no one would do it. 	<p>to look good and it stops PA. Education stops being about being fit and healthy for yourself as opposed to looking good and trying to make that standard.</p>
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Reasons for not taking PE 11 and/or PE 12

	Structure of classes	Low perceived value of PE	Academic/Schedule conflict	Actions of others	Other interests
Low SES: Male		<ul style="list-style-type: none"> I can do it myself – I can go outside and play basketball or play football or work out. I don't need the school to teach or tell me to do that. I can save that time for another course instead. 	<ul style="list-style-type: none"> I was actually taking PE12 this year but then realized that I needed a study block this year to study for my other courses so I dropped it. Workload. I had a conflict – the course didn't fit. 	<ul style="list-style-type: none"> when we're playing football you had to wait for the girls to catch.... 	<ul style="list-style-type: none"> There's nothing wrong with PE, I just wanted a free block.
Mid SES: Mixed	<ul style="list-style-type: none"> But then sometimes all guys got boring after awhile. There was too much variety, it just got boring. And sometimes you have to write stuff. So that totally doesn't belong in PE class. I would have rather concentrated on a couple rather than so many b/c sometimes you would only go over ...and you never actually got any good, even if you got interested. It was like, you are not good enough to make the team but you kind of want to try it out more and there are still not options to further your skill in that area. We had something called 'run days'; I'm not very fond of run days! Basically you run and then your mark is judged on the time you do it. So, I'd rather if there was just jog as much as you can during that amount of time, then I would be fine. But to say that it was a competition, so that people who ran the fastest got a better 	<ul style="list-style-type: none"> PE is not a requirement to get into university or to graduate. So, instead of taking PE you take academics, so you can get better marks and there are more chances for us to look at. 	<ul style="list-style-type: none"> Can't fit it into your timetable. I want to take all of the courses that I am taking now. So that took all of the space. 	<ul style="list-style-type: none"> When it's not co-ed, the classes become more rough and people become more physical. When people play minor games they become really aggressive. It can be fun but you could be injured. It's the opposite. I feel like it's like people are trying to help each other. If you're on the other team, it's like "It's OK, next time you'll do better!" It's more relaxing instead of when there are guys on the team who are like, when you are on a really aggressive guy team, even if they are really understanding, they say "You can throw better than that" and "Don't throw like a girl", even if you are a girl! It was pretty weird having so many guys and so few girls because guys wouldn't pass to us unless they knew that we were good at a sport. If it is all co-ed they are scared because the guys are aggressive. 	

<p>mark than those who can't.</p> <ul style="list-style-type: none"> • Writing journals. I didn't like that. You had to write about what you learned in PE and what activities you did and then you handed that in. • You never explored anything in-depth enough either, it was always like skimming through everything. Try this sport, try another sport, but you could never actually pursue anything. • Marking 	<p>PE class in grades 8-10 is fine as a class but it gets kind of weird in grade 12 b/c it feels like you are kind of being babysat. It didn't seem like the course was, you're here to be in better shape, it's like you're here to listen to us and we'll tell you to go play a game somewhere and you'll go play it and we have to contain you.</p> <ul style="list-style-type: none"> • I think that it was frustrating for me b/c we could always play games like Frisbee and things that didn't require a lot of equipment but there was a whole safety factor if you wanted to start playing baseball or football. I think a lot of people wanted to start playing football. (not challenging) • It felt like the teachers were holding my hand the entire way, some of the activities, I really didn't want to do. But then I was forced to do it anyways. I didn't really keep in shape while I was doing those things I was forced to. • If I had that third block and 	<p>If I took PE, I knew that I would be missing a lot of classes.</p> <ul style="list-style-type: none"> • Specifically, for me, PE 11 conflicted with Accounting, so, that stopped me from taking grade 11. 	<p>I suppose you can consider kinesiology learning but I associate learning with academic studies. The only things that you learn in PE would be CPR.</p> <ul style="list-style-type: none"> • People aren't going to look at your PE mark and say "Wow, this guy's really smart; he got a 100 in PE." They're going to say something like, "He got a 100 in math; he's really smart." PE is not that academic subject that people are going to look at; it feels like a waste of your time if you are trying to get into a prestigious university. • Because PE is not important, it doesn't count toward university. • And grade 12, a community service block looks better than a PE block. A PE block looks like you want a block to relax; community service looks like you are trying to help somebody. 	<p>There would always be problems with people skipping and not doing what the teacher says.</p> <ul style="list-style-type: none"> • I was lazy and I wanted a study block. • I wanted block instead.
<p>Mid SES Male</p>				

<p>then fourth block I had socials, I would find that I would literally be falling asleep in socials and I was completely exhausted and it was not necessarily that PE was super intense, I think some people were fine after PE, but the way that it is placed in school, it makes it so that it kind of messes you up for other courses.</p> <ul style="list-style-type: none"> Teams are so great b/c the student wants to develop and the student goes to the teacher and says, how can I improve whereas in gym the student just tries to get it over with, usually. Depends on what teacher you get. If you get those real hard ones, you have to run around laps every time – those will keep you in shape. But if you get those nice ones where you can do whatever you want... Students have to be motivated to do what they want to do and I don't think that PE keeps you in shape unless you want it to. 				<ul style="list-style-type: none"> When teachers and students are not very encouraging. I think that it's playing with guys. Some guys are really competitive and they like to play well. Sometimes you're not a good player, then you get discriminated against. If you take PE, and there's a group of guys that are really good and they don't like playing us girls because the girls are slow and they didn't play that well. I didn't go here last year. My school PE class was just girls, and no one really tried. They were all like, whatever, this sucks, none were really athletes. There was no feeling of competition. Basically, all we did was go on walks. I didn't mind that because you got to talk
				<ul style="list-style-type: none"> I didn't take PE because the course that I want, and I'm actually happy with...I would rather, if it was dance, but I guess didn't feel like taking it.
				<ul style="list-style-type: none"> I have other stuff that I'd rather be doing. Other classes. There's nothing that would ever make me take PE this year. I think because we are in CS blocks too, for that, I get hours for that, I'm teaching ESL so I kind of like it and if you're actually teaching, I'm actually learning from it so why would I do PE when actually I'm learning
<p>Mid SES: Female</p>				<ul style="list-style-type: none"> Although it was for an hour or 45 minutes, most of the time we'd only play for 10 minutes and then take a break. I think that you felt that you had to do it, but you felt like it was a drag. You're heart was not into something. You wouldn't go out and put your heart and soul into something that you don't actually feel like

<p>doing.</p> <ul style="list-style-type: none"> • It was the first time ever when she got her 'monthly' and her teacher was a male, and she felt awkward, but she couldn't communicate with that teacher and she felt sick after class. She never took PE again. I don't think that people should be that shy to talk to a teacher, but in our culture, we are brought up that way. • The thing about exercising, it should be something that you enjoy. But in PE you get tested. So, you are doing it for like your own benefits, but at the same time they are testing you. • Every time we forgot our PE strip, we'd get minus 4 percent on the term. 4 per cent is a lot! It's annoying. (penalized easily) • I just didn't like the things that we did in PE, it was kind of bad! I'd like to do dance in PE, but just a few times! • I hate it the most b/c your friends can watch you run and you feel like you don't want to do this. I remember doing it once and I actually came back crying, I hated it. (isolating individuals) • But when you do six laps, you go around once and then you say, Oh God, six of these? I hated that. It's the main reason that I don't take PE. For guys who finish in 11, 10 minutes and it takes you 15 or 17 minutes to run, then for those 7 minutes the guys are staring at your running and it's 	<p>something.</p> <ul style="list-style-type: none"> • I have to take other courses. 	<p>with your friends but it gave you the sense that everything was really easy. When they actually tried to make you run, everyone complained and no one wanted to do that. Well, just no one really cared. Some people did. I'd rather be just with girls definitely because I'd feel even more self-conscious with the guys.</p>	
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<p>High SES Male</p>	<p>uncomfortable and all of these people are staring at you...</p> <ul style="list-style-type: none"> Like for this year, PE 12, each class is only about 30 students and there's less than 5 girls in each class. I know in my fitness class there is only like 2 girls in each class. <ul style="list-style-type: none"> PE 11 & 12, you go and do a lot of field trips and you will go bowling, but I like PE b/c we play a lot of sports like soccer against each other. I don't like the PE11 & 12 class. Like I said, it's not PE. Like can you tell me how bowling will get you in shape? Even though we had to do 6 laps in PE10 and it kind of sucked, it was kind of fun at the same time. You get timed and then you get to see your score improve. I like that but you never do that kind of stuff in PE11 & 12. Didn't really like it mostly b/c the types of sports, I wasn't into at all. I kind of wished that I took PE11 b/c there were a lot of different sports that I'm interested in but PE 9 through 10, it kept me fit but I didn't really enjoy it. 	<ul style="list-style-type: none"> It was a waste of a class for me. I was already active and maybe I could get a spare instead of the PE. 4 out of 4 active outside of school I didn't need to take PE to get the hours. 		<ul style="list-style-type: none"> I wasn't really into it mainly b/c every PE class that I was in, everyone wasn't very active or didn't want to be there. 	<ul style="list-style-type: none"> I'm taking a bunch of acting courses, so it's either acting or PE. There were too many other courses that I wanted to take.
<p>High SES Female</p>	<ul style="list-style-type: none"> I've always been active so I didn't really need to have a ball thrown at my head. At my other school, PE was co-ed from grade 8 all the way but I found that I didn't like it that much b/c everything was based on skill but when I got to this school in grade 10, PE was just girls and I found that it 	<ul style="list-style-type: none"> Basically I don't take it b/c gym is running around a track and if you're not learning anything, it is good for you and your well-being, but I think that sewing and cooking is going to benefit you more in the future. 	<ul style="list-style-type: none"> In school, I think a really big reason a lot of us aren't taking PE is b/c you don't have enough blocks to stuff it in. I take 3 sciences, history and then all of the standards and a language. I don't have time to do it. 	<ul style="list-style-type: none"> One thing I found with my PE class was that not everyone was forced to participate. It makes it less fun for the other people. You can't play a game properly if they are not participating. Then you are not getting active. I think that you should try and make students in the class participate more so that everyone can have a part in doing that and maybe be better at the sport so that they can try out for the teams. When you're on the field, firstly, every team that I've ever played on, nobody ever wanted to do anything. 	<ul style="list-style-type: none"> I'm busy outside of school and inside of school I'm doing student council. My interests are

was more fun when the girls were participating. At my other school most people didn't participate but when people did it was way more fun.

- (don't like) being forced to **run laps**. We could do the same amount of PA doing other activities that we actually enjoy, not just running.
- A lot of the time they say this is just for fun, do your best, but it's pure **competition**. That's the basis of PE. It's all about competition and firstly, I'm not very comfortable competing against some people as opposed to others.
- I actually like competing with my friends, it's just a game but at the same time it gets too much, it gets to a level where it's not funny anymore.
- The thing that I found in PE is that they don't teach you how you can help your health later in life.
- I don't know if it is just in our school but it seems like in every PE class that I've had, the first thing is it's **a lot of waiting**.
- You're being graded on it and it affects your GPA. So why deprive yourself if there's nothing in it for you?
- And why are we **marked on speed**? It drove me nuts! You should be marked less on your skill level and more on your effort.
- It's called physical education and I think it should be more educating that just continuing on what we did in elementary

There would be 3 people running around in circles and then everybody else just standing there.

- I took it at the beginning of the year but then I dropped it b/c there was only one other girl in the class but 20 guys. So it was awkward from the beginning.
- It's hard when some people are really good at something and other people really suck.

fine arts, so in my timetable that's what I am trying to fit in. I like PE but there are other things that I'd rather do.

Recommendations for physical activity, physical education classes and parental involvement in PA & PE

	Per Day/Week Guidelines	Suggestions to improve PE	Parents
Low SES: Male	<ul style="list-style-type: none"> 30 to 60 minutes per day 	<ul style="list-style-type: none"> The school portfolio is 80 hours of PA and that aspect is a pretty good lifestyle for a year. The problem is that they're not really strict about the hours. They even consider walking as an activity. So if they made it more strict like you had to pull on the shorts and do some cardio and only count that, that would make for a better generation. Less homework. 	<ul style="list-style-type: none"> They give encouragement – but they give more to my sister than me. But she's pretty good, I think. My parents actually would rather that I don't do any sports b/c it gets in the way of studying. She actually limits me to doing one sport this year but I'm doing 2 anyways b/c she doesn't need to know about it. I just don't tell her. So, she's not really encouraging me. If I'm not playing anything they tell me to go and study. They wouldn't care anyways.
Mid SES: Mixed	<ul style="list-style-type: none"> 3-4 days per week, 20-45 minutes per day 	<ul style="list-style-type: none"> Get rid of the fitness test. It doesn't test the right things and it's not a very accurate thing for testing fitness. I don't think that they should actually mark PE, I think that it should be more of a relaxed down-time course rather than something competitive that you actually have to work in to get a really high mark or something. Some people just aren't capable of running quickly and even if they try their hardest, they aren't going to beat the guy who is really good at running, so their mark suffers. So, I don't think that's really fair. They are taking it because of the physical activity as opposed to the mark. I don't think that it should count toward your GPA or anything. More field trips! 	<ul style="list-style-type: none"> They just want us to get good marks and study hard and then hopefully let us go out to play. School's first I guess.
Mid SES Male	<ul style="list-style-type: none"> 4-5 days per week minimum 15 minutes per day 	<ul style="list-style-type: none"> More of an emphasis on stretching and a warm-up beforehand. But make sure that students are actually warming-up instead of just having them stand in front of you and just stretch. it's usually a punishment system, like if you swear or something like that you do a lap around the track. 	<ul style="list-style-type: none"> This year, I've been focusing a lot on school work and my parents actually tell me to stop doing school work and go out and get some exercise. But I usually refuse. They don't care. They say: "Don't just sit there, do something."
Mid SES: Female	<ul style="list-style-type: none"> Daily, approximately 30 minutes. 	<ul style="list-style-type: none"> Because guys add that extra little competition but then without guys...it depends, if you mix the athletic girls, then yes maybe, but if all the girls that aren't interested in PE, then it doesn't make it fun. Have a dress code. Everyone feels equal, everyone feels welcome. We did yoga, once, I liked that. giving us enough time to change and get to class. you should change the sports around because it was always the same sports. 	<ul style="list-style-type: none"> They'd probably prefer me to, but it's not that big of a deal. My parents would rather me get better marks. They talk more about marks than they do about PE. My parents want me to take the 80 hours of PE.
High SES Male	<ul style="list-style-type: none"> Daily, 20min - 1 hour, Average 4 to 5 hours per week. 	<ul style="list-style-type: none"> I'd say make a PE 11 & 12 honours class. It was really fun. 	<ul style="list-style-type: none"> My parents really like me playing sports and they always want to come out and watch all of my games. My dad and I will go play tennis once or twice a week. It's a big part of my family – sports.

<p>(very active, acting student)</p> <ul style="list-style-type: none"> • I guess I'd call my parents very supportive. My dad, he'll pay for my competitions and where I'm going like Calgary or Victoria. He's also paying for me to go to World's in Ecuador, so I'd say he supports me. (rock climber) • My parents are totally for it. They pay for all of my competitions and all of the tuitions. They drive me everywhere and they are always there. (very active swimmer) • They didn't want me to take PE. They said you already do enough. • My parents obviously don't care just as long as I maintain a good GPA. A-sian! 			<p>High SES: Female</p>
	<ul style="list-style-type: none"> • Differentiate the skill levels. • More pressure to put effort into class. 	<ul style="list-style-type: none"> • Daily, 20-30minutes. 	

Appendix E - Key Stakeholder Interviews: Long Table Analysis

Physical Education Department Heads' perceived barriers

Key stakeholder	Lack of Skill	Academic	Motivation	Space	Community programs
A (mid SES)	<ul style="list-style-type: none"> In an earlier telephone conversation with PE Head, mentioned students entering high school with such low levels of ability that they had to spend large amounts of time teaching basics in PE 8 & 9. 	<ul style="list-style-type: none"> Cultures that have recently immigrated to Canada, they are groups that are more worried about existence rather than doing these other frivolous activities. Being predominantly Asian, there's not a big emphasis on athletics or sports. It's not important to them. It's play. They don't see that as something really worthwhile. Our PE 11 & 12 is a hard sell to try to get them to come into PE b/c they find that academics is more important 		<ul style="list-style-type: none"> We couldn't go much further based upon physical constraints that we have and the amount of money that we have to go outside to do things outside of our building. Rumour had it at one time that they were going to add a wing to the school and that wing would also include another gym. If we did get that, our enrolment would go up. 	<ul style="list-style-type: none"> In East Side Vancouver there is very little involvement in [community of programs]. There's Asians all over Vancouver, but the rich ones, the ones that can afford it are mostly on the West Side. They can send their kids to these activities, send them to private schools and do all of this extra stuff. We found that in athletics, the best teams are the ones affiliated with clubs. So, on the West Side they have things like Night Hoops in basketball. They have the West Side basketball leagues. They have basketball almost all year. The teams and schools that participated on these club teams are obviously much stronger than the East Side schools b/c they've had more experience playing at a much higher level. So, if they can afford to do it, their background, their skills, their involvement is probably much higher on the West side than it will be on the East Side.
B (high SES)	<ul style="list-style-type: none"> I think primarily that the root of the whole thing is when they removed the PE specialists from the elementary schools. That's evil #1. No the student is not getting a full PE education from K to 7. Some may have good ones, some may have non-existent ones, some may just throw out a ball and say go play. I think the School Board has made 		<ul style="list-style-type: none"> So for some [students], for the ones who love sports, that's great, they're into it. For the ones that never had the build up, it's a zoo! 	<ul style="list-style-type: none"> This school, the numbers at this school at a prime [capacity] should be 800. We have 1300! 	<ul style="list-style-type: none"> [stakeholder] added a comment afterwards that whereas the West side had 40 teams, the East side only had 20 teams. The reason is that there is a lack of community programs to support athletics.

	<p>huge mistakes in the realm of PE in removing the elementary school PE specialists,</p> <ul style="list-style-type: none"> We had an extremely good [PE expert]. Since he's gone, the level of the kids coming into [our school] has diminished greatly. He's a guy that motivated the kids; all his school went on the Sun Run, he did all sorts of programs. He's gone and I can see the difference already. funding cuts to elementary school swimming has major impact on skills entering high school. 				
C (mid SES)	<ul style="list-style-type: none"> I think that there should be more PE in elementary schools. I taught elementary school a number of years ago. A: you don't have teachers who are comfortable teaching PE so there really needs to be a couple of PE teachers so when kids come to PE. They should get PE at least 3 times per week at least. The same as they would get in a high school whereas now sometimes they only get it once a week or some teachers may not even opt to do it or they might just let them outside, which is nice but [ineffective]. It makes a big difference when the kids we are getting in grade 8 are very unfit. Unless it's the kids who are really into athletics. I think that's a bigger disparity now. 			<ul style="list-style-type: none"> [We need] more facilities. We have no room. We often have 5 classes and we only have the 3 gyms and the weight room. 	
D (high SES)		<ul style="list-style-type: none"> A lot of it is the pressure for marks, especially in a school like ours that's really highly academic. I think the priority here for academics here is one factor. A students and you're asking if they're going to take the class next year and they say I'd 		<ul style="list-style-type: none"> Our gym facilities are pretty much stretched to the max anyways. I was thinking that even if we had another 3 classes, where would we put them? There is going to be one block where we have 5 classes on schedule 	

		<p>like to but it's the choice of that or a spare so I can study and they're looking at I've got 4 provincials or 5 provincials. a lot of our parents are really focused academically.</p>	<p>• with the push that is on the marks needed to get into university these days. It's slowly changing where universities are now asking for more than just marks; it's almost going full circle where it used to be like that. Kids have so much pressure to get a certain mark that physical activity takes a back seat to it. Even though we keep telling them that if you stay physically active your mind will be [more efficient] but it's hard for them to believe it, they just don't have the time. Academic pressures are a big one.</p>	<p>• A lot of them are on the computer. We've got a lot of kids that don't have parents here, they're international students. They're on the computer until 3 or 4 in the morning playing games or talking to friends. Then they come to school and you just see it, they're not even awake.</p> <ul style="list-style-type: none"> • We have a high population of Eastern Europeans now, Persians and a lot of Koreans. All three of them value physical activity. The families really value it so that makes it easier for us. In the PE classes, you'll have 28 out of 30 that are very active. 	<p>and we have our main gym, you can break that down into 2 good-size gyms, we have a small gym, we have a weight room that has nice facilities, it has nice machines but it's not very big.</p>	<ul style="list-style-type: none"> • Accessibility to programs beyond the school day whether it's going to fitness classes or facilities is a big one. A lot of them are adult-targeted and adult-oriented
<p>E (low SES)</p>	<ul style="list-style-type: none"> • I also think one other barrier at grade 11 & 12 is that a lot of these students have formed their habits early on; we find that those that did well at PE, or reasonably well will continue on. Those that didn't won't. A lot of their habits are formed in elementary school. That is one of the biggest barriers or hindrances for them when you don't have physical education specialists at the elementary level. That's where all habits are formed. That's the biggest one. 	<ul style="list-style-type: none"> • The biggest barrier at the school level is certainly the time table. There's always the struggle going 	<ul style="list-style-type: none"> • I think variety is a big issue. There's a lot of students who would like more 	<ul style="list-style-type: none"> • At this particular school there are not a lot of barriers in terms of facilities. Money is 		
<p>F (low SES)</p>	<ul style="list-style-type: none"> • think that when we get them at secondary school many of them are conditioned already from what has gone on in the elementary schools. 					

	<p>One of the main barriers is the lack of province wide direction in terms of elementary school physical education. There's a big carryover into the secondary school and then into their habits when they graduate from secondary school because they never picked them up when they were in elementary school. We see a lot of kids that haven't done anything in terms of PA; there's no PE specialist at the school that they came from. Maybe PE happened from them once every two weeks or once a month and they went out and threw a ball around or played hopscotch or something.</p>	<p>on with elective courses. At a school our size we always struggle with being able to run PE classes at the senior level w/o having them mixed. Usually we have to mix the classes instead of having a PE 11 & PE12 class. That's why we don't get the #'s we should get from the kids that want to take PE but can't get it. When the choice becomes whether something required for university entrance or something that isn't, they're going to going to choose the university requirement.</p>	<p>opportunity to do the sports that they enjoy. We go in units and they are typically 6 weeks long so at most you do 6 weeks of a certain sport or PE class. There are a lot of students who love basketball and volleyball but don't like football and rugby. The participation level tends to drop when kids aren't motivated to do something, just like with English or math.</p>	<p>not a problem b/c we are so lucky to have the swimming pool and ice rink here which give us incredible rates. We readily use those facilities for our junior and senior grades.</p>
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Physical Education Heads' initiatives to improve course content

Key stakeholder	Enjoyment	Involvement	Leadership opportunities	Enrichment opportunities	Separate sex classes/Same-sex teachers
A					<ul style="list-style-type: none"> At our school to draw more kids, we've offered more courses specifically for girls. It's the image, body image and competition levels and we didn't know what it was going to be like. Bang! We got two classes like that and the kids loved it. The girls signed up for it – we don't have to worry about the boys, worrying about sweating, whatever...We had 2 classes right away.
B	<ul style="list-style-type: none"> When I came to this school 11 years ago, we had four PE classes. Now we have ten. How did we do that? We do that by refocusing our grade 8, 9 and 10 classes to include no skill testing or very little skill testing. We will incorporate a lot more fun activities in that sense, like dodgeball. But if we tie them to the fact that little Joey can't kick the ball the right way and I have to spend six hours teaching him how to do it even though he hates it, I might as well give him the ball and structure the game in such a way that he's going to learn. Then I've done skill development and the fun and the activity. 	<ul style="list-style-type: none"> [Our approach is] to modify the games, not to change the games but to make them small sided games. So we do a lot of 3-on-3, 4-on-4 and 5-on-5. We'll never play full-sided games; we don't even have the space to play full-sided games. No one signs up on a team. Everybody just shows up and then we pick teams and then we make a tournament out of it. 4 corners game: no dribbling, all passing, everyone involved – no one player can dominate 	<ul style="list-style-type: none"> My PE leadership class develops these programs like intramurals and the Friday afternoon activities for the kids. They're going to organize something that the kids are going to like. It's non-mark and for fun. 	<ul style="list-style-type: none"> PE class, tournaments, intramurals, teams. 	

C

• I think the variety of courses is a good way to overcome those obstacles but it's hard b/c a lot of kids are lazy. They do it until grade 10 and then they think, thank goodness! So we try to make it fun.

• For intramurals, students do everything. They organize it, kids get all of the people to sign up and pay their money, they collect their money. They order the t-shirts and figure out the design. They do a draft and make the teams. The get all the kids who are going to be captains and co-captains. They set up the schedule, so all I have to do is come. They get kids to referee and keep score. They were shown how to do it when they ...and because of that, in the evenings here we have from the beginning of the year up until the end of October, an alumni basketball league that runs Friday evenings, they rent out gym and come with other kids, but a big majority are from this school and they play basketball and on Tuesdays they run an alumni volleyball league and our kids come and keep score and do all of that.

• This year b/c we're getting a new dance program, they've got a little dance studio down at the far end, so we pull out for a month at a time our grade 8s and 9s. They're in the dance studio. And we do our gymnastics and our wrestling units in there. [Its part of] a new district program coming to our school. The Athena Fine Arts Program.

• Right now we're going to be having co-ed volleyball: 3 girls, 3 guys on the court at all times. We run a spring hoop league which is actually huge, there's usually about 12 teams out of the boys and girls can play in the boys' free hoop if they choose to. They play every lunch hour, after school, mornings, they have a huge league and the kids pay \$25, they get there t-shirt and it's 8 through 12 and the stands are packed every lunch hour to watch. The girls do it on Friday mornings b/c I chose it, we have a teachers' team as well and we have the grads come back and we play 3 games happening all at once in the gym. So they come at 7am and we usually have about 80 or 90 girls come and play from April to June. The other thing, basketball is my interest, I ran for 3 years, a little basketball camp for grade 6 & 7 girls here at the school from all of our feeder schools. Because it

• About 4 years ago, I decided to do [a girls' lifestyle class] b/c the co-ed classes, the enriched classes were 90% guys and maybe 4 girls. And I thought that was crazy. So, I thought maybe they don't want to take it with the guys.

• [In the girls' lifestyle class], I took the emphasis off running as the fitness...so we do fast walking, we do running, alternative ways to do fitness and I also am having them help to create the course, they choose activities like yoga, fencing, broomball, kayaking, so we do all of the activities that they say they'd like to do. I've found that b/c there's no stress, they don't have to be competitive, they can be fit, they are, but they don't have to play against the guys. It's made a huge difference and each year I've had another class!

• We have 2 half-year fitness classes, boys only. Fitness for half of the year and games for half of the year. [another teacher] started his fitness class and some boys really love to work out in the weight room and develop their bodies.

				<p>was accessible, we gave them 10 sessions Fridays after school for \$10. They got a t-shirt and a basketball. For our 1st 3 years, we have 65 girls come out. So, if we provide something that doesn't cost too much, like a lot of things nowadays cost a lot for kids to go to and parents don't want to put the money in. And kids want to play. If there's something there for them to do and it's close to home, they'll do it. As long as it's fun.</p>	
D					<ul style="list-style-type: none"> • I think the other thing is that in the last few years we've been a little heavy on the males teaching, myself and another guy. we've had to teach girls' classes. This year, we have 2 younger women on full-time which really helps. • But the last 2 years we've been lucky, we have a young gal who's teaching the course, she's real keen, some dance background, willing to go out and take a course here and there. • All 8, 9 and 10 are all segregated. We did that at the urging of our female PE teachers about maybe 6-8 years ago. and it really hasn't done much to increase our numbers at the senior level.
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- When you get out of school, you tend to do the things that you want to do. If I don't want to play rugby, I don't play rugby anymore. Forcing the kids to do a certain activity tends to be one of the barriers for maximum participation through grade 11s.
- The main philosophy at the junior grades is to expose students to a lot of different activities following along with the IRPs and hitting the movement categories. At the same time, [we're] trying to expose students to as many activities as you can

- They have a lot of opportunity to use the community facilities. I wouldn't say that the community facilities are used a lot. We have free swimming and free skating on certain days after school. All you have to do is bring your 'go card'. The skating one is pretty well attended; there are usually 60 or 70 kids on the ice. The skating attracts only 20 or 25 students. When you have 700 kids in your building, I wouldn't call that a lot, especially when it's free. The opportunities are there. They run a lot of after school and weekend programs for kids to do outdoor education. They go skiing and hiking and snowshoeing and all of that kind of stuff. They also have a night hoops program in the community centre to help keep some of the more at-risk kids involved.

Possible approaches to increase physical education enrolment

Key stakeholder	Cost of programming – funding mechanisms	Mandatory PE
A	<ul style="list-style-type: none"> • We're doing a field trip, we're going swimming in the month of January and we're renting Britannia pool for 8 sessions and we have a chartered bus to take them down there. It's roughly an \$8500 bill. • We're doing a karate unit with our grade 10s now. In the past, we just told them that this in the curriculum, it's one of your combative games and it's going to cost you \$15 to help subsidize the program. Kids go home, get \$15 and come back and they do it. If kids didn't have money b/c of financial reasons, we would usually just cover them. Now I have to send home a form with three stipulations on there: <ol style="list-style-type: none"> a. This is an optional enrichment activity. b. It will not count toward marks b/c it is optional. c. If you choose not to do that activity, I have to find you an alternate activity to do. So, I've told the kids if you are not doing karate, you can do fitness runs, an assignment, written journals, reports or you can work out in the fitness room developing a fitness program, or all three of them. • I used to run course years and years ago at JO called community-rec. We were out sailing, kayaking, canoeing, snowboarding, horseback riding, we were doing like one course a week. We're doing like one course a week. But at the beginning of the year I would charge the kids, that was 20 years ago, something like \$100+ up front. And the kids were allowed to drive back then too where they could take four or five kids. Now, with the new [driving] policy, you can take one person in the car so we have to rent buses or go on public transit, then they're missing other classes. So there are a lot of barriers put in our way now. <ul style="list-style-type: none"> • The driving is a big barrier. You can drive at 16 but you can only put one person in your car. Even for games, our senior boys if we had a tournament or game in Richmond, hop in my car, bang, we were all off there, six guys. Now we have to let them out at 2 o'clock so they can take a bus. They're missing a lot of class time, class work. They have to get an early dismissal b/c it takes longer to travel by transit. • So, if you are asking me to upgrade my facilities? I need a new gym. • We would need more PE teachers. It would cost money. • I coach four teams a year plus UBC, voluntarily. All of those guys that were here just now [other PE teachers], they all coach voluntarily. We're servicing voluntarily 24,000 kids in Vancouver alone without a buck. Start 	<ul style="list-style-type: none"> • Didn't know where he would put the additional students
B		<ul style="list-style-type: none"> • We would manage. We would have run days. We would have a lot of outings. But would some days be crowded? Absolutely. It is now. Just with two-thirds [of the students participating].

	<p>paying us for what we do.</p> <ul style="list-style-type: none"> • I just paid a bill for basketball officials for the month of December, \$1,700! The government gives me \$1 per kid for athletics. I have 1,300 kids so my budget is \$1,300. I blew it all in one month and owe? I can't run [a program] that way. So that's never mind the fact that we've sent the senior girls to two tournaments, the senior boys to two tournaments, the junior boys to one tournament, the volleyball girls went to about six or seven tournaments, each at an average at about an expense of \$200 a piece. • Don't talk to me about removing my pop machine when the pop machine pays for a third of athletics! Right? I mean, take it, but then give me the \$6,000! • Fees. Which they're thinking of taking away as well. 	
C	<ul style="list-style-type: none"> • Well now that we have the "no fees", that's a huge thing. I'm just in the process now of trying to write up how my enriched courses are doing b/c you can't charge these fees. It has to be optional and that's a very difficult thing to do when you're going kayaking or whatever. So that would be the biggest thing. You need, if we didn't have to worry about money to provide those things for the kids, that would...although our kids right now, they pay \$55 if they're in an enriched class and they go kayaking, rock climbing, bowling. They probably get \$150 worth at least of activities. 	<ul style="list-style-type: none"> • I think that it should be compulsory. I don't think that they should be given a choice. I think that they should be taking it all the way until grade 12. If it was my world b/c I don't think that kids get enough activity. A lot of kids don't know enough to choose it or they haven't had a good experience and they might get a good experience later but they need to be active all the way through to grade 12. They're not old enough in grade 10 to really know or to really understand.
D	<ul style="list-style-type: none"> • But even our pool bills, I'm sure we pay \$8K-\$9K a year in pool time. All our sports, even your refereeing costs, depending on how many home games you have, that can run you \$5K-\$6K. • We're pretty able fundraisers, we sell Christmas trees and we usually make anywhere from \$15K to \$20K. We have done vending machines which are often, we get another \$10K out of that. So you're running all of your programs out of that and our flex budget from the school is say in the neighbourhood of \$10K, 	
E	<ul style="list-style-type: none"> • For us to provide activities, funding [is an issue]. • If you talk about funding, the more money that you had you could do more activities especially at the senior PE level. We're trying not to do the same activities; we want to expose them to activities that they will want to do once they leave here like indoor rock climbing, bowling or other social activities that are outside of the school walls. That's where the funding that was cut really upset a lot of people. • The biggest is when funding was cut for PE 11 & 12 funding. They called it the swim program but it wasn't necessarily for swimming it was for the use of community facilities. That was for taking people away from here and exposing them to different types of activities. It was up to the discretion of the department head how they wanted to use that money. Some used that for a swim program for grades 8-12. It is tough for us to 	

	<p>do that at our school b/c we don't have a swimming pool next door. We have the aquatic centre which is a ways away by the Burrard Street Bridge. Schools like Killarney or Templeton will have a pool right next to the school so we used it for other activities where we could. Then [City Council] just cut it.</p> <ul style="list-style-type: none"> • For our school it was minimal compared to other schools. It was \$2500 per year. Because the allocation was on a per-student basis, Killarney would get about \$10K b/c they have 2000 students. 	
F		<ul style="list-style-type: none"> • I was excited to hear the possibility of PE11 being brought back as a mandated course. Then you don't run into the problems of the timetable, you have four blocks of PE11. • mandating PA is one way to get around it. You still run into the motivation problems but at least to some extent kids are getting more physical fitness and activity than they do [currently] than we see with our grade 11s & 12s. They are not all thinking PE and they're not all active.

APPENDIX F – Raw Data of Phys-ed Enrolment Statistics, Vancouver and Richmond Secondary Schools

High School	Avg. 2001 household income	2006/07 GR11 Total Students	PE11 Females	PE11 Females as % of GR11 Females	PE 11 Males	PE11 Males as % of GR11 Males	Overall % GR11 Students in PE	2006/07 GR12 Total Students	PE 12 Females	PE12 Females as % of GR12 Females	PE12 Males	PE12 Males as % of GR12 Males	% GR 12 Male PE Students	Overall% GR12 Students in PE
HIGH-SES														
Point Grey	\$123,447	265					39.6%	297			112			37.7%
Prince of Wales	\$117,220	295	9	6.7%	67	41.9%	25.8%	263	23	19.5%	59		40.7%	31.2%
Lord Byng	\$108,466	250	4		22		10.4%	247	4		26			12.1%
Magee	\$87,081	302	65	41.4%	85	58.6%	49.7%	262	21	14.3%	34	55	29.6%	21.0%
Steveston	\$77,361	175	10		28		21.7%	175	11		28	39		22.3%
University Hill	\$74,692	96					11.5%	114			13	13		11.4%
McMath	\$68,540	249	15	10.8%	29	27.1%	17.7%	310	14	9.3%	14	40	8.8%	12.9%
McNair	\$68,167													
AVERAGE	\$90,622	233	21	19.3%	46	42.5%	25.2%	238	15	14.3%	32	53	26.4%	21.2%
MID-SES														
London	\$66,735	207	9	9.7%	40	35.1%	23.7%	214	2	2.0%	21	23	18.4%	10.7%
Kitsilano	\$65,876	331					40.8%	327				130		39.8%
David Thompson	\$56,991	366	58	31.7%	85	46.4%	39.1%	342	38	23.6%	63	101	34.8%	29.5%
Killarney	\$54,812	456	39	19.7%	87	33.7%	27.6%	375	21	11.9%	50	71	25.1%	18.9%
Gladstone	\$53,420	252	28	25.9%	46	31.9%	29.4%	217	12	10.2%	47	59	43.5%	27.2%
Churchill	\$52,920	482	49	22.0%	121	46.7%	35.3%	440	26	11.9%	90	116	40.7%	26.4%
AVERAGE	\$58,459	349	37	21.8%	76	38.8%	32.6%	319	20	11.9%	54	83	32.5%	25.4%

High School	Avg. 2001 household income	2006/07 GR11 Total Students	PE11 Females	PE11 Females as % of GR11 Females	PE 11 Males	PE11 Males as % of GR11 Males	Overall % GR11 Students in PE	2006/07 GR12 Total Students	PE 12 Females	PE12 Females as % of GR12 Females	PE12 Males	PE12 Males as % of GR12 Males	% GR 12 Male PE Students	Overall% GR12 Students in PE
LOW-SES														
Templeton	\$51,292	232	21	17.5%	31	27.7%	22.4%	198	2	1.8%	21	1.8%	23.6%	11.6%
Richmond	\$50,893	263	17	11.9%	32	26.7%	18.6%	289	2	1.3%	26	1.3%	19.4%	9.7%
Windermere	\$49,845	244	83	74.1%	88	66.7%	70.1%	196	22	20.6%	26	20.6%	29.2%	24.5%
King_George	\$48,716	116	18	30.5%	34	59.6%	44.8%	110	21	35.6%	29	35.6%	56.9%	45.5%
Vancouver Technical	\$41,535	373	42	20.1%	87	53.0%	34.6%	301	14	8.8%	24	8.8%	16.9%	12.6%
Britannia	\$29,203	155	19	25.3%	34	42.5%	34.2%	170	12	14.8%	19	14.8%	21.3%	18.2%
AVERAGE	\$45,248	230.5	33	29.9%	51	46.0%	37.5%	211	12	13.8%	24	13.8%	27.9%	20.4%

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