

CHAPTER 1 INTRODUCTION

CHAPTER 1: INTRODUCTION

Our human ancestors have been on this planet for perhaps 2 million years. For 99.5 percent of that time, they existed as hunters and gatherers. The development of agriculture began some 10,000 years ago, we have had cities for about 8,000 years and our dependence on fossil fuel occurred only within the past few hundred years. Today's modern technological society, complete with nuclear energy and computers, has developed within our short lifetimes. The lifestyle of modern people is so different from that of our hunting and gathering ancestors that we can scarcely comprehend it (Blair, 1978, p.1). Modern scientific and technological advances have resulted in a substantial decrease in the number of tasks that require a significant expenditure of energy.

Since the start of the industrial revolution in the 19th century, the need for men and women to be physically active in order to earn a living and manage households has continued to decrease. Farmers no longer walk behind plows and driving has replaced walking; many, if not most, of our daily work or household tasks have been mechanized. During the past 30 years, advances in computer and communication technology have continued to reduce daily energy expenditure during the execution of occupational tasks. Many jobs simply require people to sit at their desks, stroke keys on the computer keyboard and punch buttons on a telephone (Haskell, 1996). The majority of people now work in positions requiring mental rather than physical work. The result is that the tasks of daily life no longer provide sufficient vigorous exercise to develop and maintain adequate levels of physical fitness.

Technological progress resulting in an increasingly sedentary lifestyle has not only changed the way in which the majority of people live, but also how they die. A century ago, the leading causes of death in the most countries of the world were infectious diseases. Because of vaccine and antibiotics, these diseases are no longer life-threatening. While advances in modern medicine can prolong people's lives, physical activity can help make these additional years' healthy ones (Jackson, Morrow, Hill & Dishman, 1999, p.8). Yet while advances in medical care and diet over the past century have diminished the problems

of infection and malnutrition, these advances have been counterbalanced by what Mayer (1963) termed the “civilisation disease.” Many health problems that were common a century ago do not exist today, but they have been replaced by conditions associated with hypokinesia and an affluent lifestyle, such as high blood pressure, obesity, and coronary heart disease. Worldwide, rapid changes in diets and lifestyles have occurred, along with industrialization, urbanization, economic development, and market globalisation (WHO, 2003a, p.1). The prevalence of obesity and overweight is increasing in both adult and child populations throughout the world (WHO, 1997). The major problems associated with child obesity are its persistence into adult life and these obese children will most likely become obese adults and carry all the extra risks for diseases such as heart attacks, strokes, high blood pressure, and diabetes (Wright, Parker, Lamont & Craft, 2001). Research has also found that childhood obesity is both an immediate and future health problem. 60 percent of overweight children already suffer from hypertension, and hyperlipidemia (Freedman, Dietz, Srinivasan & Berenson, 1999). Type 2 diabetes, previously considered an adult disease, has increased dramatically in children and adolescents. Overweight and obesity are closely linked to type II diabetes (USDHHS, 2001). Increased obesity has led to a new epidemic of type 2 diabetes mellitus in children and adolescents (Pinhas-Hamiel et al., 1996). Today worldwide, with the exception of sub-Saharan Africa, chronic diseases are now the leading causes of death. Non-communicable diseases (NCDs) such as cardiovascular disease, hypertension, obesity, diabetes, chronic respiratory diseases, and some types of cancer—are increasingly significant causes of disability and premature death in both developing and newly developed countries, placing additional burdens on already overtaxed national health budgets (WHO, 2003a, p.1).

There is a growing international interest in disease prevention and the recognized link between physical activity and health. In North America it is recognized that physical inactivity is a major health problem (Blair et. al., 1989a; Pate et. al., 1995). Research clearly shows that physical inactivity is an independent risk factor for CHD (Berlin & Colditz, 1990). Moreover, as many as one third of the deaths in the United States come from CHD, colon cancer, and type-2 diabetes can be attributed to sedentary living (Blair & Morrow, 1998).

Children now have become less physically active in recent decades, with children today expending approximately 600 kcal per day less than their counterparts 50 years ago (Boreham & Riddoch, 2001). Today's young people have many choices for the use of their leisure time that discourage physical activity. Playing video games, watching television and surfing the internet all take children's time away from physical activity (Sallis et al., 1992; Trost, Pate, Dowda et al., 1996). The decrease in physical education classes in schools also increases the prevalence of sedentary lifestyles among young people (Sallis & Owen, 1999). A meta-analysis comparing 55 reports on aerobic fitness of children and adolescents in 11 countries in the period 1981-2000, also confirmed that children's aerobic fitness is declining (Tomkinson, Leger, Olds, Cazorla, 2003).

The poor physical fitness levels and rise in obesity have already become a national concern in United States (USDHHS, 1996). The U.S. Surgeon General's Report on Physical Activity and Health highlights the health benefits of regular physical activity. The report also stresses in the strongest terms that regular moderate physical activity can substantially reduce the risk of developing chronic illnesses like heart disease, diabetes and high blood pressure. Likewise, regular physical activity can improve emotional health by reducing symptoms of depression and anxiety and by improving mood. As we enter the new century, the importance and value of regular physical activity has been recognized as never before. Accompanying this recognition is the awareness that childhood is the time to begin the development of active and healthy lifestyles. Preventive strategies also need to begin as early in life as possible. But children do not automatically develop the skills, knowledge, attitudes, and behaviors that lead to regular and enjoyable participation in health-enhancing physical activity. They must be taught.

Since virtually all young people attend school, the school is the logical place for the development of healthier exercise and lifestyle patterns. Since school physical education programs have been acknowledged for decades as an integral component of comprehensive school education, these existing programs can play a valuable role in national physical activity promotion efforts. School physical education programs offer many benefits: development of motor skills needed for enjoyable and effective participation in physical activities; promotion of physical fitness; increased energy expenditure; and promotion of

positive attitudes toward an active lifestyle. Evidence also exists that physical education may enhance academic performance, self-concept, and mental health (Allensworth, Lawson, Nicholson & Wyche, 1997). School physical education programs are an ideal way to encourage activity and develop fitness among children (Sallis & McKenzie, 1991).

In the United States, daily physical education for children has been recommended from kindergarten to senior high school children (USDHHS, 2000). But experts note that the quality of physical education programs is uneven and diminishing in its potential health and educational benefits. Health promotion professionals recommend increasing both the quantity and quality of school physical education, and conclude that students need to spend more physical education class time being genuinely physical active (Pate & Hohn, 1994; USDHHS, 2000b). Physical education programs should be taught by physical education specialists and more physical education programs should promote lifetime physical activities, i.e., activities, such as walking, cycling and swimming that can be conducted throughout an individual's lifetime. (Nader et al., 1999; Sallis et al., 1992; USDHHS, 2000).

A comprehensive survey in 25 European countries has revealed that no European country has school that offer a daily period of physical education (Armstrong & Åstrand, 1997). Mckenzie et al. (2000) indicated that even in schools that conduct daily physical education classes, students were not receiving adequate amounts of physical activity. This situation was likely to be worse in many other schools, where the physical education was not offered daily. In Portuguese primary schools, physical education classes are taught by classroom teachers who are not specialists in physical education. In most Portuguese middle schools, physical education classes are offered only twice a week. It has also been found that too much physical education class time is in changing clothes and taking shower (Wang, Pereira & Mota, 2004).

Traditional physical education programs have been heavily influenced by Swedish gymnastics and military drill, which emphasize rhythmic callisthenics. Many students heartily detest such programs, fail to develop a healthy attitude toward exercise, and often adopt very sedentary lifestyles immediately after leaving school (Ilmarinen & Rutenfranz, 1980). At the beginning of the 20th century, the physical fitness philosophy began to

emphasize athletics and team sports, which were referred to as the motor fitness philosophy (Pate, 1983). While these programs may develop team and school spirit, they also have a high dropout rate during adolescence and early adulthood. Defections from athletics and team sports begin with students who fail to develop an appropriate body build for their chosen sport in adolescence (Shephard, Lavallée & Jéquier, 1978). Defections continue because it is difficult to replicate school team sports in adult life.

In recent years many school physical education programs have placed greater emphasis on health-related exercise or conceptual physical education, which focuses on the knowledge, skills and attitudes required to promote health and well-being and to encourage active lifestyles (Harris, 1994). Physical educators have shifted their emphasis to teaching health-enhancing physical activities that are likely to improve immediate health and to carry over into adult life (Shephard 1982, Bouchard & Shephard, 1994).

Theoretically, physical education is shifting from skills-related to health-related fitness activities. But on the practical level, the actual implementation of appropriate physical activities has been slow to be adopted. The traditional form of exercising to improve athletics or team sports skills continues; physical education programs have not changed significantly (Pate, 1983). Blair and Meredith (1994) reported that what usually occurs in physical education was an emphasis on sports skills rather than fitness promotion. Although federal agencies and national organizations are promoting a greater emphasis upon health-related fitness, physical educators have not yet implemented the appropriate curriculum into their programs to a significant degree (Pate, 1983).

The U.S. National Children and Youth Fitness Study I (NCYFS) found that callisthenic exercise, jogging, basketball, kickball, dodgeball, and relays consume the largest portion of time in physical education class. Many of these activities are not aerobic in nature (Ross & Gilhert 1985). Lacy and LaMaster (1990) report that junior high school students spent 86.9% of physical education class time on non-fitness activities. Specifically, aerobic activities accounted for only 4.4% of total class time. It is apparent that these traditional fitness activities may lack the duration necessary to improve children's cardiorespiratory endurance. While aerobic exercise has proven to be very popular among adults population

and aerobic classes in universities in China also had been found successfully among the undergraduate students during their physical education classes (Wang, 1997; Huang, Deng & Guo, 2000). School physical education programs have potential for the promotion of regular physical activity (Sallis & McKenzie, 1991). Yet regular physical education classes do not provide enough aerobic exercise (Flores, 1995). In order to increase the strength of the argument in favor of aerobic exercise, there is a need to codify the benefits of school-based aerobic exercise.

The purposes of this study were designed to determine the effects of school-based aerobic exercise intervention on children's health-related physical fitness; we also studied the Portuguese middle school children's health-related physical fitness, physical activity levels, and the relationship between these two.

The study includes introduction, review of literature, method, results, discussion, conclusion and etc. We concentrate on the effects of the aerobic exercise intervention on the Portuguese children's health-related physical fitness, and we also explore the children's physical activity levels during school physical education classes and recess, health-related physical fitness, and we want to explore the issue involved in institutionalizing aerobic exercise in as an integrate part of school physical education programs.