

CHAPTER 6 CONCLUSION

Conclusion

Recommendations

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6.1 CONCLUSION

The case study among the Portuguese middle school children were primarily designed 1) to determine if middle school children participate in aerobic exercise during physical education classes; 2) to determine the children's physical activity levels and health-related physical fitness; 3) to determine the effects of aerobic exercise on children's health-related physical fitness; and 4) to evaluate if aerobic exercise can be institutionalized in Portuguese middle school physical education programs.

Prior to this one-year intervention on aerobic exercise and behavioural modification during their school physical education classes, subjects completed a health-related physical fitness test - FITNESSGRAM and a lifestyle questionnaire on their physical activities. Variables that were expected to change were also measured immediately after the program. The intervention lasted one year and introduced an aerobic exercise model and education about health, health-enhancing activity, nutrition and healthy diets into traditional school physical education programs.

The following are the most significant findings that emerged from our study:

- 1) While traditional Portuguese school physical education classes involve many skill-related and sport-related programs, most students are not sufficiently physical active during physical education classes. Moreover, students are not encouraged to perform enough continuous physical activity (MVPA) during their school physical education.
- 2) Many students know little about health, health-related physical fitness and the difference between aerobic and anaerobic exercise.
- 3) More than half of the children are not physically active - 19.2% of the study subjects (264 children) do not participate in any physical activity beyond school physical education classes. Most physically inactive children of them are girls (girls: 27.6%; boys: 10.3%). Girls were found to be significantly less active than boys ($r = -0.36$, $p < 0.001$).

- 4) Results in health-related physical fitness testing show that more than 82.6% of the subjects failed to meet all minimum standards in the health-related physical fitness test FITNESSGRAM. More than 20% of the children are overweight and about 7% of the children suffer from obesity, as measured by comparing their BMI with the standards of the International Obesity Task Force.
- 5) Children who regularly participate in moderate-to-vigorous physical activity had a moderate correlation with children's physical fitness ($r=0.30$, $p<0.001$) and cardiovascular fitness ($r=0.41$, $p<0.001$).
- 6) Our intervention included an aerobic exercise model and education about health, nutrition and balanced diets. Although the intervention occurred twice a week (a total of 135 minutes per normal week) and lasted to one school year, it did not significantly improve children's all items in health-related physical fitness. However, the intervention resulted in some improvements, especially among older girl students, who improved significantly in their aerobic capacity, upper body strength, abdominal strength and endurance. These girls also increased their leisure physical activity.
- 7) Aerobic exercise is a health-enhancing exercise model which is seldom carefully introduced to children in Portuguese middle schools. This finding is supported by a review of school physical education programs policies and national curricula published by the Ministry of Education.
- 8) According to this study, girls prefer aerobic exercise, in particular, aerobic dance and modern dance; Boys prefer ball games. Swimming is the favorite aerobic exercise for both boys and girls, but most public schools do not have swimming pools or can not be able to make use of the public pools in physical education classes. Dance classes are now on the list of school physical education programs, but they are often cancelled or decreased by many schools for the lack of appropriate conditions.
- 9) Sufficient playground and sports facilities, more effective management and training of school physical educators and improved students discipline would contribute significantly to improved physical activity levels during school physical education classes.
- 10) Enhancing the coordination of school management by combining physical education, health education, health service, teacher and staff's training on health issues would contribute to improved healthy lifestyles among children.

6.2 RECOMMENDATIONS

The school is seen as a critical venue in which to establish and develop behavioral patterns in children that include an appreciation for health and a sense of physical and psychological well-being. We recommend that:

- 1) Government educational policies should encourage school environments that provide student with the knowledge, skills, and attitudes that lead to enjoyable, lifelong physical activity. Governmental education policies should require daily physical education classes for children of all ages.
- 2) Educational programs in all schools should provide all children the opportunity to exercise at a level that is conducive to establishing life-long healthy lifestyle. Schools should provide health and physical education programs that promote health. School counsellors and physical teachers can play an active role in the development of lifelong fitness for children by implementing more creative classes in the schools, for example, by institutionalizing aerobic exercises in physical education programs to enhance health-related physical fitness.
- 3) Schools can not promote children's health alone. They need the support of their communities, which should stress more lifelong physical activities in their recreational policies and design playgrounds, sports facilities, and programs so as to attract more children and adolescents. Schools also need the support of families, which can provide their children with a healthy diet and encourage their children exercise regularly.