

MASTER'S THESIS

Physical activity in school environment for students with mental retardation

Ma, Oi Yee Regine

Date of Award:
2002

[Link to publication](#)

General rights

Copyright and intellectual property rights for the publications made accessible in HKBU Scholars are retained by the authors and/or other copyright owners. In addition to the restrictions prescribed by the Copyright Ordinance of Hong Kong, all users and readers must also observe the following terms of use:

- Users may download and print one copy of any publication from HKBU Scholars for the purpose of private study or research
- Users cannot further distribute the material or use it for any profit-making activity or commercial gain
- To share publications in HKBU Scholars with others, users are welcome to freely distribute the permanent URL assigned to the publication

Physical Activity in School Environment
for Students with Mental Retardation

MA Oi Yee, Regine

A thesis submitted in partial fulfillment of the requirements
for the degree of
Master of Philosophy

Principal Supervisor: Dr. Bik C. CHOW

Hong Kong Baptist University

September 2002

ABSTRACT

The purpose of this study was to investigate the amount of physical activity for primary 4 to 6 students with mental retardation (MR) in special education school environment. Eighty-seven children (55 children with mild MR and 32 children with moderate MR) were randomly selected from 3 schools with different open-space physical sizes. The TriTrac-RT3 accelerometers were utilized to collect activity data of the subjects on 5 consecutive school days from 9:00 a.m. to 3:30 p.m. A 2 (mild, moderate of MR) X 3 (3 schools environment) ANOVA on the mean amount of activity for five school days without structural physical activity setting indicated that there was no interaction effect in physical activity between the types of MR and three school environments. However, there was significant main effect on three different school environments but there was no main effect on the types of MR. Results showed that the amount of students' physical activity was highest with the school with larger open space area and more fitness facilities offered for students under unstructured setting. Moreover, the school days with structural physical activity setting (PE lessons and extra curricula activity) had higher mean amount of physical activity than those without structured physical activity setting. Lastly, System for Observing Fitness Instruction Time (SOFIT) was used to categorize the physical behavior of the students for 30 physical education (PE) lessons and to validate observation data with the criterion variable of Tritrac activity counts. SOFIT scores correlated positively and significantly (r ranged from 0.42 to 0.75) with the Tritrac activity counts, which suggested that the SOFIT was a valid tool to measure the amount of physical activity during PE lessons of students with mild and moderate MR. The results by SOFIT revealed that students' physical activity time on moderate to vigorous physical activity (MVPA) at the PE lessons was relatively short. Suggestions were made on ways to increase the time on MVPA during PE lesson and recess as well as ways to increase physical activity opportunity in schools.

Keywords: physical activity, students, mental retardation

TABLE OF CONTENTS

Chapter	Page
DECLARATION	i
ABSTRACT	ii
ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS	iv
1. INTRODUCTION	1
Statement of the Problem	3
Hypotheses	3
Definition of Terms	5
Delimitations	7
Limitations	7
Significance of the Study	8
2. REVIEW OF LITERATURE	9
Physical Activity, Fitness and Health	9
Physical Activity Pattern in Children	12
Physical Fitness and Activity in Person with Mental Retardation . . .	15
Pathophysiology of Metal Retardation	15
Determining Classification Levels of Mental Retardation	15
Physical Fitness and Mental Retardation	16
Body Composition	18
Muscular Strength and Endurance	19
Cardiovascular Fitness	20
Physical Activity and Pattern for Persons with Mental Retardation	21

The Comparison of the Physical Fitness and Activity Pattern between People with Mental Retardation and without Mental Retardation	25
Determinant of Physical Activity in Children and Adolescents	28
Demographic Factors	28
Physiological Factors	29
Psychosocial Factors	29
Environmental Factors	30
School Environment and Physical Activity for Students	31
Physical Education and Physical Activity Level	32
Assessment for Physical Activity	34
Methods of Assessment	35
Dietary Measures	36
Mechanical and Electronic Monitoring	37
Heart Rate Monitoring	37
Motion Sensors	37
Behavioral Observation	41
The System for Fitness Instruction Time (SOFIT)	41
3. METHODOLOGY	43
Subjects	43
Description of the Three Schools' Environment	43
Description of Physical Education Lessons	45
Instrumentation	46
Triaxial Accelerometer	46
System for Observing Fitness Instruction Time (SOFIT)	47

Intra-observer Reliability	48
Data Collection Procedures	48
Daily Physical Activity	48
Observation on PE Lesson	49
Statistical Data Analysis	49
4. ANALYSIS OF DATA	51
Results	51
Subject Information	51
Physical Activity During School Days	56
Time Distribution on Five School Days	56
Amount of Physical Activity of the Five Target Schools Days .	57
Amount of Physical Activity of the Days with Different	
Physical Activity Settings	60
Differences in the Amount of Physical Activity Among Type	
of MR, Three Schools Environment and Setting in School	
Days	63
Differences in the Amount of Physical Activity Between	
Types of MR by Three Schools Environment over Five School	
Days	67
Physical Activity During PE Lessons	70
Descriptive Data for Students in Two PE Lessons	70
Correlation Coefficient between Tritrac and SOFIT.	72
Pattern of Students' Physical Behavior During PE Lessons ...	75
Discussions	79
Result of Physical Activity on School days	79

Time Distribution Total on Five Days	79
Amount of Physical Activity on the Day with Different Physical Activity Setting	80
Physical Activity on Three Different Types of Physical Activity Setting over Five Schools Days	80
Structured Physical Activity Setting in School Days	80
Factors Influencing Physical Activity Levels in School	81
Structured Physical Activity on Five School Days without the Periods of Structured Activity Setting	82
School Factor on Physical Activity	82
Type of MR on Physical Activity without the Period of Structured Setting	84
The Amount of Physical Activity for Students without MR ...	84
Result of Physical Activity during PE Lessons	85
Students' Physical Activity during PE Lessons.	85
Correlation Coefficient between Tritrac and SOFIT	85
Physical Activity on PE Lesson	86
5. SUMMARY AND CONCLUSION	88
Summary	88
SOFIT Observation on PE Lessons	92
Conclusions	93
Overall Results	93
Recommendations	95
Recommendations for Further Studies	96
BIBLIOGRAPHY	97

APPENDIX A: Informed Consent Form	110
APPENDIX B: Schools' Time Table	112
APPENDIX C: Schools Area	114
CURRICULUM VITAE	118