Chapter 2

REVIEW OF RELATED LITERATURE

The first section of this review will focus upon literature that related to the current worldwide problems in children and the role of school PE class for children's active lifestyle. It is divided into five categories for presentation.

(1) Current worldwide problems in children

(2) Children's physical activity

(3) The role of PE classes for children

(4) Characteristic of Effective/good PE classes

(5) Improving quality of PE classes

2.1. Current worldwide problems in children

Recent WHO studies have shown that children around the world are becoming increasing sedentary—especially in poor urban areas (WHO, 2002b). It is estimated that nearly two-thirds of children in the world, from both develop and developing country, are insufficiently active, with serious implication for their future health (WHO, 2002c). Preliminary data from a World Health Organization (WHO) study on risk factors suggest that inactivity, or sedentarism, is one of the 10 leading global causes of death and disability (WHO, 2002d). Therefore, to benefit fitness and health, the WHO recommended that children and young people participate in at least moderate "physical activity" (PA) for one hour per day. Those

who currently do little activity should begin with at least half an hour per day (WHO, 2002a).

2.2. Children's physical activity

Welk (2002) indicates that over the past 40 years, there has been growing interest in the study of the health benefits of regular physical activity. The 1996 publication of Surgeon General's Report (SGR) on physical activity and health brought further legitimacy to the study of physical activity and increased attention on physical inactivity as a major public health problem.

Physical activity (PA) has been defined by Caspersen (1985) as "any bodily movement produced by skeletal muscles, that results in caloric expenditure" (Caspersen et al., 1985). This definition has become the accepted scientific definition of physical activity and has been widely adopted within the field. It is broadly incorporates all form of movement as physical activity and operationalizes these movements as contributors to overall energy expenditure. The larger the muscle mass involved in movement, the greater the resulting energy expenditure. The related temp of exercise is viewed more narrowly and is defined as "physical activity that is planned, structured, repetitive, and results in improvement or maintenance of one or more facets of physical fitness." Physical fitness, in turn, defined as "a set of outcomes or traits that relate to the ability to perform physical activity" (Caspersen at al., 1985). Thus, physical activity is viewed as a health-related behavior that can influence the development of physical fitness.

McKenzie (2003) indicates that physical fitness (PF), physical activity (PA), health, and wellness are interconnected, but the full relationship remains unclear. PF is typically viewed as one of variables that have an influent of how physical activity affects both health and wellness, which refers to a broad concept of health that includes participation in a positive, active, and healthy lifestyle.

Kaga et al. (1997) reported that physical fitness in Japanese children has been decreasing. It is generally admitted that the amount of daily physical activity has a high influence on physical fitness. To evaluate the effect of physical education class on the amount of daily physical activity of elementary children, the amount of physical activity in a day and in physical education class were measured using a pedometer. Ninety-five healthy children aged 10 to 12 were the subjects. The results were as follows:

(1) According to pedometer, children took 1,936±653 (mean ± SD) steps during the physical education class.

(2) Total pedometer recordings of 13,867±5,009 steps were obtained on a day with physical education class and 12,079±4,148 steps on a day without physical education class. The amount of daily physical activity with physical education class was significantly greater than that without physical education class.

(3) Steps taken during daily physical activity increased linearly as steps in physical education class increased.

(4) Sedentary children whose pedometer step per day was less than 10,000 steps accounted for 23.7%. In sedentary children, 21.9% of daily physical activity was performed in physical education class.

These results indicate that physical education class comprises a large part of the daily physical activity of sedentary children.

McKenzie et al. (1991b) have developed a "System for Observing Fitness Instruction Time" (SOFIT). This instrument was designated to assess variables associated with students' PAL and opportunity to become physically fit in PE class. The SOFIT involves direct observation of classes while simultaneously recording students' PAL, curriculum context variables, and teacher behavior. Three-phase decision system was used in the SOFIT for examines: (1) how active students are, (2) how class time allocated to various tasks and goals, and (3) how teachers spend their time during class. Students' PAL in the SOFIT was categorized in 5 levels (lying down, sitting, standing, walking, and very active). These 5 PAL categories have estimation values of heart rate and energy expenditure (See table 3-4 on page 25), and have been used in other studies such as in BEACHES (McKenzie et al., 1991a), and in CATCH (McKenzie et al., 1994a). Related to students' MV-PAL engagement, McKenzie et al. (1991b) have assessed 88 third-, forth-, and fifth-grade classes using the SOFIT instrument. Data indicated that: (1) Students in fitness classes that the main activities were running or jogging, aerobic dancing, and aerobic fitness circuits were more active than those in non-fitness classes that primary focus on game play and skill drill [engagement rate in MV-PAL was 57.6% vs. 43.8%]; (2) The amount of time students spent engaging in

MV-PAL correlated positively with time allocated to fitness activity, and correlated negatively with time allocated to skill practice, game play, and management.

2.3. The role of PE classes for children

As the country developed and prospered, Martin (2003) indicated that schools assisted children in adjusting to modern life and preparing them for adult life.

Especially in school PE context, there are optimum conditions that enable students to get maximum benefit from school system. Siedentop (2000) indicates the characteristics of learning students in physical education as follow:

(1) Is cooperative student

(2) Is eager to learn and enthusiastic about the opportunity to learn more

(3) Is responsible for his or her own behavior

(4) Enjoys learning and practices purposefully to improve

(5) Is helpful to peers who are similarly engaged in learning.

Therefore, during PE classes, teacher is not only to teach and improve motor skills, but also to teach how to learn effectively in school system.

McKenzie (2003) indicates that by engaging children and adolescents in enjoyable physical activity and teaching them the skills related to developing and maintaining appropriate physical activity, school physical education could help future generations of adults avoid becoming so sedentary.

2.4. Characteristic of Effective/good PE classes

Metzler (1990) lists 16 indicators for effective teaching/ learning process for physical education. The indicators were:

(1) Time management – particularly related to the amount of time pupils are engaged in leaning at an appropriate level of difficulty and success.

(2) Resource management – affecting pupil time engaged in learning.

(3) Task relevance and structure – effective teachers analyze the components of tasks and offer a sequential progression. Task structure involves teachers in designing relevant tasks and maintaining pupil engagement in the task through continues monitoring of pupil progress.

(4) Behavior management and task accountability – effective teachers plan for preventive management and create a business-like class-atmosphere. Effective teachers make task expectations and management procedures clear to pupils with effective communication.

(5) Engagement and success rates – effective teachers take account of pupil developmental characteristics when designing learning experiences, and 'match' ability levels to task to ensure appropriate level of success for pupils. Effective teachers present material and task requirements so that pupils understand concepts to be learned and what is required of them.

(6) Instructional cuing – effective teachers provide appropriate instructional cues to aid leaning (verbal, visual, written, audio, demonstration) and clearly communicate accurate, concise, and

pertinent information in a logical order appropriate to pupils level of learning.

(7) Performance feedback – effective teachers provide high rates of both 'task intrinsic feedback' (the task providing its own feedback), augmented feedback (provided by the teacher or other person) and specific feedback.

(8) Class climate – effective teachers create a positive class climate, plan interesting lessons, allow pupils to share in decision making, are enthusiastic and provide pupils with greater opportunities to learn and achieve in lessons.

(9) Planning – effective teachers have clear idea of what they aim to accomplish and how they are going to achieve their lesson objectives efficiently. Effective teachers reflect on their lesson and in turn modify and adapt later lessons accordingly.

(10) Verbal and non-verbal interaction – whereas there is no research linking interaction patterns with pupil learning, there is evidence to suggest that more effective teachers have higher rates of interaction which is in turn linked to higher rates of appropriate pupil engagement in learning.

(11) Use of questions – effective teachers use clearly, concise questions to establish pupils' understanding to concepts and skills. However, there is little research support related to effective questioning in PE lessons.

(12) Content development – effective teachers design learning experiences for pupils that follow a clear sequence and progression which is based on pupil progress and ability.

(13) Regular evaluation of pupil progress – effective teachers take into account pupil ability and stage of learning when designing learning experiences and assessing levels of achievement in relation to original instructional goals.

(14) Establishment of a save learning environment.

Silverman (1991) lists the following characteristics of effective or experienced teachers of motor skills:

(1) Plan for class management and pupil learning.

(2) Anticipate situations and make contingency plans.

(3) Are aware of pupil skill differences and use the information in planning and monitoring.

(4) Require much information to plan.

(5) Have a repertoire of teaching styles and know when to use them.

(6) Provide accurate and focused explanations and demonstrations.

(7) Provide adequate time for pupil practice.

(8) Maximize appropriate pupil practice and engagement.

(9) Minimize inappropriate pupil practice or engagement.

(10) Minimize pupil waiting.

Siedentop (2000) lists 11 profiles of effective or active teachers as follow:

(1) Believe in their own efficacy – active teachers believe that students can learn and that they have the skills to help them learn.

(2) Time, opportunity to learn, and content covered – active teachers allocate as much time as possible to content coverage and provide all students with sufficient opportunities to learn. Conversely, they seriously limit time devoted to think other than subject-matter objectives.

(3) Expectation and role – active teachers communicate high, realistic expectations to their students and develop a clear, work-oriented class climate. Teacher and student roles are carefully defined, with students being given adequate instruction and practice time to learn their roles.

(4) Class management and student engagement – active teachers establish class routines early in the school year, and manage by using these well-establish structures. Rules are clear and consistently related to equally clear consequences. Management is predominantly positive. The purpose of effective management is to create maximum time for learning the subject matter.

(5) Meaningful tasks and high success – active teachers design instructional-tasks that are meaningful to students and lead to authentic outcomes. Tasks are challenging but also allow students to experience success.

(6) Pacing and momentum – active teachers create and sustain a brisk pace for class activities and prevent events from disrupting the momentum of this pace. The result is a climate of energy and purposefulness.

(7) Appropriate guidance – active teachers communicate content with clear, brief demonstrations and explanations, followed by sufficient guided

practice, with frequent feedback and checking for understanding, to allow students to be able to benefit from independent practice.

(8) Active supervision – when guided practice shows that students understand the tasks and have eliminated major technical errors, they are shifted to independent practice, which is actively supervised by the teacher, who monitor progress and maintains a task-oriented practice session.

(9) Accountability – active teachers hold students accountable for appropriate participation in practice, for task completion, and for performance outcomes.

(10) Clarity, enthusiasm, and equitable support – active teachers communicate clearly, are enthusiastic about their subject matter and their students' achievements, and are supportive of all students in their efforts to learn and improve.

(11) Building from students understanding – active teachers begin by assessing what their students understand about the activities and their meanings, and then use this information in planning and implementing lessons. They frequently solicit student input, with the result that students feel they have a say in class life.

Those characteristics expressed by the experts above were as similar as what have been summarized by Mick Mawer (1995) in his book.

2.5. Improving quality of PE classes

Pieron and Chaffers (1988) indicates 4 variables that seem to play a meaningful role in the success of teaching physical education: time spent

by students in practicing physical activities, augmented feedback provided by teachers to students, the organization, and the climate of the class.

Student motor engagement – it concerns the amount of time effectively spent in practicing physical activities by the school policies. Results of process-product studies tend to show that to be relevant to student outcomes. Time must be devoted to the practice of task related and at high rate of success. These findings are in general agreement with data from the classroom research. Time spent on task is considered as mediator between instruction and teacher intervention on the one hand and on the other hand student, learning gains.

Positive class climate – amongst the many PE teaching objectives, one aims at emphasizing a desire for participation in out-of-school physical activities, especially after the scholarly enterprise has ended. A positive attitude towards PA will develop only if participants have succeeded in acquiring sports skills and if they have enjoyed taking part in PA in a supportive climate created, especially by the PE teacher.

Frequent and quality information on student performance – in motor leaning feedback is considered an important key issue. It is frequently limited to the sole concept of knowledge of results, considered as reinforcement, and provisive of information of the correctness or incorrectness of the student performance. Continuous progress seems to be impossible without more complete information. In teaching, information about performance easily exceeds the simple information limited to success or failure. It intends to provide the student with the means to improve performance. It can help in discovering ways to insure

improvement. Feedback could be considered to be at the crossroads of two complementary phenomena: teaching and learning. Let us add that providing information on student performance correlates with the concern of the student in search for excellence.

The of the class activities–maximizing individual motor engagement, as well as providing frequent good quality of feedback, cannot be envisaged unless the conditions for practicing physical activities are carefully planned and organized. Such an organization facilitates the management of the class and eases discipline problems.

2.6. Summary

This chapter has explained the literature relevant to the sedentary problems and characteristics of effective PE class. The first section focused upon the literature on the role of school PE for children. The second section of this review of literature focused upon the current worldwide problems in children, especially on increasing sedentary children. The third section included literature related to the ongoing effort for improving the quality of PE classes. The forth section explained the literature related the characteristics of effective or active PE classes.

The following chapters of the study will describe the students' formative class evaluation (FCE) score, students' MV-PAL engagement, students' learning behavior (LB) during PE classes, and the relationships among the three variables (LB, FCE, and PAL).