ABSTRACT

ASSESSMENT OF HEALTH-RELATED PHYSICAL ACTIVITY LEVEL, LESSON CONTEXT AND TEACHER BEHAVIOR IN ELEMENTARY SCHOOL PHYSICAL EDUCATION

Hürmeriç, Irmak
M. S., Department of Physical Education and Sports
Supervisor: Assist. Prof. Dr. Sadettin Kirazcı
Co-Supervisor: Dr. Şeref Çiçek

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Physical Education (PE) includes the development of knowledge and positive attitudes toward physical activity. Regular physical activity participation during childhood and adolescence has many beneficial effects on health. The purpose of the study was (a) to describe student physical activity level, lesson context and teacher behavior, (b) to determine the relationships among physical activity, lesson context and teacher behavior, (c) to investigate the differences among these variables in public and private schools. Nineteen PE teachers from public and private schools in Ankara participated to the study. For data collection, 6^{th}, 7^{th} and 8^{th}, (n=144) grade elementary school students were observed systematically by using SOFIT during 36 lessons.

Results showed that students were spending little time in moderate to vigorous physical activity and they were generally standing or sitting in PE lesson. During the active time, they were generally practicing skill in both public and private schools. Teachers spent majority of lesson time on providing instruction for skill practice. However, teachers did not spend time on fitness knowledge and promotion of fitness in PE lessons. The findings of the study showed that there was a significant relationship between student activity level, lesson context and teacher behavior variables. PE teachers in public schools had higher scores of demonstration but teachers in private schools had higher scores of observation. In addition, there were no significant differences in lesson context variable between schools.

Physical Education classes require active participation of students for skill and fitness development. However this study indicated that although students were practicing some forms of skills, there were not spending time on fitness development and fitness promotion during classes. Provision of in service training for teachers and revision in PE teachers' education curriculum might be needed to improve the health-related physical activity levels and knowledge of adults of future.

Key Words: Elementary Physical Education, Health-Related Physical Activity, Systematic Observation

ÖZ

İLKÖĞRETİM BEDEN EĞİTİMİNDE ÖGRENCİLERİN SAĞLIKLA İLGİLİ FİZİKSEL AKTİVİTE SEVİYELERİNİN, DERS İÇERİĞİNİN VE ÖĞRETMEN DAVRANIŞLARININ DEĞERLENDİRİLMESİ

Hürmeriç, Irmak
Yüksek Lisans, Beden Eğitimi ve Spor Bölümü
Tez Yöneticisi: Yrd. Doç. Sadettin Kirazcı
Ortak Tez-Yöneticisi: Dr. Şeref Çiçek

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Beden eğitimi, fiziksel aktivite ile ilgili bilgi ve olumlu davranışları geliştirir. Çocukluk ve gençlik döneminde, düzenli olarak fiziksel aktiviteye katılmanın sağlığa yararlı etkileri vardır. Bu çalışmanın amacı; (a) öğrencilerin fiziksel aktivite seviyelerinin, ders içeriklerinin ve öğretmen davranışlarının tanımlanması, (b) fiziksel aktivite, ders içerikleri ve öğretmen davranışları arasındaki ilişkilerin belirlenmesi, (c) bu değişkenler açısından özel ve devlet okulları arasındaki farklılıklarının araştırılmasıdır. Bu çalışmaya Ankara'daki özel ve devlet okullardan 19 öğretmen katılmıştır. Toplamda 36 ders gözlenmiştir. Altıncı, yedinci ve sekizinci sınıflardan 144 öğrenci sistematik gözlem aracı SOFIT ile gözlenmiştir.

Gözlenen derslerde öğrencilerin çok fazla hareket etmedikleri ve zamanlarını genelde ayakta durarak veya oturarak harcadıkları saptanmıştır. Özel ve devlet

okullarındaki öğrencilerin aktif oldukları zamanda genelde beceri öğrendikleri gözlenmiştir. Fakat, öğretmenler fiziksel uygunluk hakkında genel bilgi ve bunu teşvik edici davranışlarda bulunmamaktadırlar. Çalışmanın bulguları, öğrencilerin aktivite seviyeleri, ders içeriği ve öğretmen davranışları arasında hem pozitif hemde negatif ilişkiler olduğunu göstermektedir. Özel okullarda beden eğitimi öğretmenlerinin derste daha fazla gözlem yaptığı görülmüş, fakat devlet okullarındaki öğretmenlerinde derste fiziksel uygunluk hareketlerini daha çok gösterdikleri saptanmıştır. Ayrıca, özel ve devlet okullarındaki ders içeriklerinde bir fark görülmemiştir.

Beden Eğitimi dersleri öğrencilere beceri ve fiziksel uygunluk gelişimi sağlamaktadır. Gelişim sağlaması ve ileriki yaşlarda bu gelişimi kullanması acısından beden eğitimi dersi yararlıdır. Ancak bu çalışma, derslerde öğrencilerin daha çok beceri öğrendiklerini, fiziksel uygunluğu geliştirmek ve teşvik etmek için zaman harcanmadığını göstermiştir. Geleceğin yetişkinlerinin sağlık ile ilgili fiziksel aktivite seviyelerinin ve bilgi düzeylerinin geliştirilmesi için; hizmet içi eğitimde öğretmenlerin desteklenmesi ve beden eğitimi öğretmeni yetiştiren programların gözden geçirilerek gerekli değişikliklerin yapılması gerekmektedir.

Anahtar Kelimeler: İlköğretim Beden Eğitimi, Sağlıkla İlgili Fiziksel Aktivite, Sistematik Gözlem

TO MY FAMILY

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CHAPTER I

INTRODUCTION

Physical Education (PE) is an integral part of the total process of education. It includes the acquisition and refinement of motor skills, the improvement and maintenance of fitness for optimal health and well-being, the attainment of knowledge and the growth of positive attitudes toward physical activity (Bucher, 1987). It is also the essential link in the chain of health (Harrison & Blakemore, 1992) and has the potential to contribute to health through the provision of physical activity in school and the encouragement of it out of school (Sallis & McKenzie, 1991).

Physical activity especially when performed regularly has been recognized as one of the important components for health (Sallis et al., 1997). Experts recommended that in order to achieve a healthy life-style, one must participate in moderate to vigorous physical activity at least three days per week for a combined 30-minutes duration each day (Corbin & Pangrazzi, 1993). The habit of performing physical activity like other behaviors may be established in childhood period and continued into adulthood (Puhl, Greaves, Hayt & Baranowski, 1990). In this regard physical education programs play an important role. Haywood (1991) indicated that school physical education programs have two important challenges, a) providing

opportunities to be active and b) providing educational experiences to choose active lifestyles as adults for children.

PE curriculum is a continuing process, which has been affected and revised by social, philosophical, economical, and technological changes. These changes play an important role to alter PE curriculum and its main focus as sport related or health related. The majority of physical education programs in the world are sport-related (Everhart et al., 1999) but the trend has been shifted to health-related curriculum recently (Sondag, Curry & Thomas, 1997; Kullinna & Krause, 2001; McKenzie, Alcaraz & Sallis, 1994). Sport related physical education programs focus on developing motor skills relating body, limb and object coordination and specialized sport skills basketball, volleyball, soccer and etc. (McKenzie, Alcaraz & Sallis, 1994). However health related physical education programs include development of knowledge and behavior for an active life-style and development of fitness components, which are muscle strength, muscle endurance, flexibility and cardiovascular endurance (Miller & Housner, 1998).

The Turkish National PE curriculum has both sport related and health related objectives. But it will not be an unfair speculation to call it as a sport related curriculum. Although there are health related objectives in the current PE program stated as “the promotion of a physically active lifestyles” and “the maintaince of physical fitness for students” (MEB, 2000). Studies indicated that health-related objectives were not attained by the current physical education program content (Sönmez & Sunay, 2001; Watson, Christie, Draper, Minniear & Koçak, 1999). These studies also revealed that students were not engaging physical activities

during school time or out of school time. Similarly, the result of other studies revealed that children did not tend to engage physical activities (Curtner-Simith, Chen & Kerr, 1995; McKenzie, Marshall, Sallis & Conway, 2000; Van der Mars, Vogler, Darst & Cusimano, 1998). These investigations demonstrated that physical inactivity is very common in young people and it has become a serious public health issue in most industrialized countries (Daley, 2002). For this reason health related curriculum has become very popular in developing countries in order to increase physical activity level of students.

Health-related curriculum has not been included in physical education programs until 1990's, but it has become more popular for the last ten years (Arnett, 2001). Due to perception that sport based PE curriculum has not provided the recommended components of health promotion, it has replaced by health related PE curriculum (Sallis & McKenzie, 1991). Some studies indicated that students in PE classes with health-related fitness curriculum tend to participate physical activities more than those students in PE with sport-related curriculum (Arnett, 2001; Everhart et al., 1999). The evidence suggests that school physical education programs should adopt health-related curriculum.

Although health-related objectives are important factor for establishing physical activity patterns for students, a number of diverse factors contribute to the effectiveness of health-related physical education curriculum. Availability of facilities, equipment, staff, financial support and time are vital concern for applying health-related programs in schools. It was indicated that in Turkey the numbers of sport facilities and equipment were not adequate in both private and public schools

for supporting health-related programs (Aslan & Hasırcı, 2000; Sönmez & Sunay, 2001). Apart from the lack of facilities, teacher supervision and lesson context are also the most important factors in the promotion of physical activity and the development of knowledge for regular physical activity. Van der Mars and his colleagues (1998) indicated that school based physical education programs that socializes youth into regular physical activity depended, in part, on the effectiveness of instructional strategies chosen by teachers. Lesson context also affected the students' activity level (McKenzie et al., 2000) because the process of the lessons has become context dependent in education (Turner & Meyer, 2000).

Researchers studying the assessment of physical activity either use direct or indirect methods of measurement techniques. The direct measurements like heart-rate monitors and motion sensors have some advantages, but researchers prefer to use systematic observation instruments. That is because while using the indirect measurements, researchers can gather information about not only in terms of the volume or intensity of physical activity but also its associations lesson context and teacher behavior at the same time. Many systematic observation instruments like BEACHES, FATS, SCAN CATS, CPAF and SOFIT exist in PE research area and could generate descriptive information and examine process and the product variables in PE classes (McKenzie, 1991). Among the indirect measurements of physical activity, SOFIT is not only an appropriate instrument for investigating physical activity, lesson context and teacher behavior, it is also one of them that can be easily applied for elementary school settings. For this reasons it has become an

important method in health-related fitness in schools as a valid method for gathering data from classroom settings (McKenzie, 1991).

1.1 Problems of the Study

The problem of the study was to examine physical activity level of students, lesson context and teacher behavior in elementary school physical education classes through observation by using the instrument of System for Observing Fitness Instruction Time (SOFIT). The sub-problem was to analyze the relationships among students' physical activity level, lesson context and teacher behavior and to investigate the differences in these variables between public and private schools.

1.2 Hypotheses

1. In elementary school physical education programs, there were no relationships between;

    a. student physical activity level and lesson context

    b. student physical activity level and teacher behavior

    c. lesson context and teacher behavior

2. There were no significant differences between public and private schools PE classes in terms of;

    a. student physical activity level

    b. physical education lesson context

    c. physical education teacher behavior

1.3 Definitions of Terms

SOFIT: It is an observation system developed to determine physical activity level, lesson context and teacher behavior (McKenzie, Sallis, & Nader, 1991)

Physical activity: It refers to body movement of students in PE lessons (McKenzie, 1991).

Lesson context: It refers to what the class time is allocated for general content and/or motor content (McKenzie, Sallis, Faucette, Roby & Kolody, 1993)

Teacher behavior: It refers to teachers' attitudes related to promotion and demonstration of physical activity during physical education class time (Kullinna & Silverman, 2000).

Health-related fitness: It refers to those aspects of physiological and psychological functioning which are believed to offer some protection against degenerative type diseases such as coronary heart disease, obesity, and various musculoskeletal disorders (Rosato, 1986).

Health-related curriculum: It refers to program that emphasizes physical activity, fitness and lifelong physical activity pattern (Bulger, Mohr, Carson & Wiegand, 2001).

1.4 Assumptions of the Study

The following assumptions were made:

1. Each physical education teacher performed his or her regular PE lessons during the observations.

2. Teachers or students were not affected by video recording and observations during the class.

1.5 Limitations of the Study

The number of observed lessons was thirty-six and therefore the number of observed students (n=144) was limited. For this reason, the result of the study could be generalized only for this group of subjects.

1.6 Significance of the Study

Regular physical activity participation during childhood and adolescence has many beneficial effects on health. School physical education is the major societal institution with the responsibility for promoting physical activity in youth (Sallis et al., 1997). Although the purpose of PE is to develop sport and health related skills, some of the objectives could not be achieved in PE lessons. Health related physical education programs and associated research activities become widespread in developing countries but there are few studies in our country. That's why the purpose of the study was to examine current situation of health related programs related with physical activity, lesson context and teacher behavior in public and private schools through systematic observation. This study helps us to understand the activity level of students in physical education classes. Additionally, this knowledge is important to take the proper precautions for enhancing health-related activities in schools.

CHAPTER II

LITERATURE REVIEW

Physical education has a great potential to improve to public health with the provision of physical activity during school time and the encouragement of physical activity out of school (Sallis & McKenzie, 1991). In this regard the benefits of physical activity, the importance of physical activity promotion and SOFIT categories was explained in detail in following parts.

2.1. The Benefits of Physical Activity

There is an interaction between physical activity and health; however the whole relationship is still unclear (McKenzie, Alcaraz & Sallis, 1994). Studies showed that physical activity is one of the important variables to improve health in many ways (Bar-Or, 1995; Corbin & Pangrazzi, 1993; Raitakari et al., 1997; Suziki et al., 1998).

Bar-Or (1995) indicated that the importance of the health benefits of physical activity during childhood and adolescence. The researcher expressed that physical activity with or without a low-calorie diet decreased the body fat in obese children. Physical activities also have beneficial effects on the blood pressure (Bar-Or, 1995). It helped to reduce blood pressure (Bar-Or, 1995). Some studies showed that physically active children had favorable blood lipid profile. In addition,

physical activity played an important role to improve skeletal health (Bailey & Martin, 1994, as cited in Bar-Or, 1995). In particular, Bar-Or (1995) stated that young people needed to motivate for maintaining an active lifestyle.

Moreover, Corbin and Pangrazi (1993) also expressed the health benefits of physical activity. They summarized the benefits in three parts: physical fitness development, disease prevention and health promotion. Researchers claimed that physical activity built physical fitness. While improving sleep habits, well being and self-esteem, physical activity helped to reduce the level of stress and depression (Corbin & Pangrazi, 1993). The possible effects of physical activity on several diseases were listed in the study. Table 2.1.1 showed some examples of physical activity benefits and major lifestyle disease.

Table 2.1.1 Physical Activity Benefits and Major Lifestyle Disease

Disease	Physical Activity Benefits
Heart Disease	Health heart muscle (Low level of heart rate)
	Healthy arteries (Good cholesterol & Better blood flow
Stroke	Healthy arteries (Low level of blood pressure)
High blood pressure	Reduction of blood pressure
Diabetes	Reduction of body fatness
Cancer	Reduction of the risk of colon cancer
Obesity	Decrease percentage of body fat
	Adjust fat distribution in the body
Depression	Relief from symptoms
Back Pain	Develop flexibility & Develop posture

Note. From "The health benefits of physical activity", by C. B. Corbin and R. P. Pangrazi, 1993, PCPFS Research Digest, S:1, N:1.

Blair (1993) discussed some important studies about physical activity, physical fitness and health. These studies expressed that active lifestyle was indispensable to reduce the risk of overweight, the level of morbidity and mortality and the risk of coronary heart disease. Additionally, an active lifestyle decreased the risk of becoming overweight was reported for a healthy life. Blair (1993), however, claimed that well-designed studies in large population were needed to gather extensive data.

Cohen, Facsm, McMillian and Samuelson (1991) examined long-term effects of a lifestyle modification exercise program on the fitness. The purpose of the study was to increase the awareness of the importance of health and fitness in young children. The general characteristics of participants were physically inactive and obese. A life-style modification program and a physical fitness test were applied for participants. The modification program including 15 min walk/run, swimming, gymnastics, rope jumping, rhythmic activities and game-type activities met three days per week for two hours. Physical fitness test was applied at the beginning and end of the modification program. The results indicated that regular aerobic activity have positive effect on body weight, obesity and hypercholesterolemia (Cohen et al., 1991). Researchers expressed that the life style modification program was useful to help change lifestyle behavior. The program helped to children provides the awareness of the importance of physical activity.

Raitakari and his colleagues (1997) investigated associations between physical activity and risk factors for coronary heart disease (CHD). Children and young adult were the participants of the study in order to indicate the indices of

physical activity and anthropometric characteristics, blood pressure, serum lipids and insulin. The results showed that there were positive relationships between the physical activity and CHD risk factors such as obesity in children and young adults. However findings indicated that there was no relationship between physical activity and blood pressure. Researchers declared that the promotion of physical activity was so important to decrease the CHD risk factors.

Stephard and Bouchard (1995) examined the relationship between perceptions of physical activity and health-related fitness. The participants were sedentary subjects, aged between 14-68 years. Information about intensity and frequency of exercise, habitual activity and perception of fitness was collected by self-report questionnaire. Standard laboratory tests were used to gather data for cardiovascular function and metabolic health. The findings indicated that there was a strong negative relationship between physical activity and age. However physical activity indicated a positive relationship socio-economic status in the study. Heath-related fitness was positively associated with perceptions of fitness and participation in physical activity (Stephard & Bouchard, 1995). The perception of participation in physical activity played very important role to develop the public health. Researchers suggested that the public should be encouraged to participate in physical activities at any age.

According to Morris (1991), the role of school physical education was inevitable for public health. Especially physical activity habits in children affected adult health (Morris, 1991).

Figure 1.1 shows the relationships between childhood exercise and childhood health on adult health

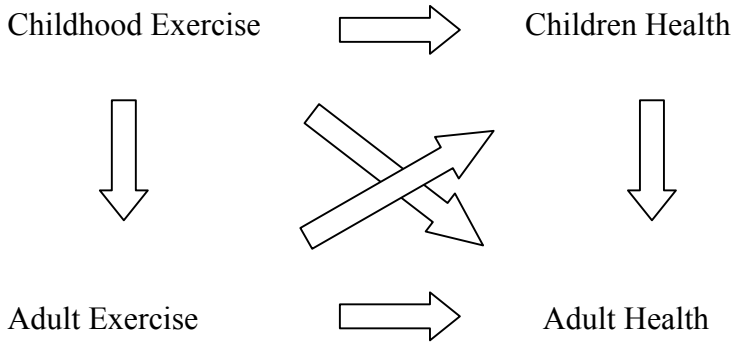

Figure 1.1 The Conceptual Model for Childhood and Adult Health

Note. From "Exercise and Fitness in Childhood: Implications for a Lifetime of Health" by S. N. Blair, D. G. Clark, K. J. Cureton, and K. E. Powell, 1989. In H. H. Morris, 1991, The role of School Physical Education in Public Health, Research Quarterly for Exercise and Sport, 62(2), 143-147.

Morris (1991) pointed that the role of physical education played in developing public health, for this reason professionals of public health must supported to quality of PE programs.

2.2 The Importance of Physical Activity Promotion

The important role of physical education is the promotion of student physical activity level in schools. Physical activity promotion was easily developed in the schools because of its appropriateness (Cale, 2002). There are a lot of studies investigating status of physical activity promotion in schools (Cale, 2002; Corbin, 2002; McKenzie, 2001). These reports emphasized necessities of physical activity for students.

Cale (2000) investigated the promotion of physical activity in secondary schools in central England. A questionnaire including opportunities of physical activity applied to 50 secondary schools. The questionnaire provided information about the curriculum, the informal curriculum, and the environment, community links, school policies and school ethos in secondary schools. Obtained data from questionnaires revealed that according to amount and nature of opportunities of physical activity, schools were different from each other. However, all schools tended to encourage physical activity. Their formal and informal curriculum, the care and support were available to promote physical activity (Cale, 2000). Schools established a link between school environment and community. However schools had not enough sport facilities and equipment and also they were not managed well. The efforts of promotion of physical activity were not coordinated in schools. Cale (2000) also emphasized that school must provide necessary activities and opportunities according to needs and interests of children to develop physical activity level of students. Physical education teachers were seen as a key factor for improving physical activity promotion in this study.

McKenzie (2001) also expressed the importance of promotion of physical activity for youth in middle school environments. In addition, his study focused on the ecological approaches for the promotion of physical activity. Physical education classes, leisure time settings and structured extra curricular programs were observed during four-year middle school physical activity and nutrition project. School activities were interscholastic, intramural and club activities. Results of the study indicated that students received a minimum amount of physical activity in PE

classes, and students did not active in the leisure time unless activities were prepared for students. The findings showed that girls were less active during skill drills and game plays. Refocusing physical education goals, promoting gender equity in opportunities, and linking schools with community agencies were recommended in order to promote physical activity for youth.

Sallis and McKenzie (1991) examined the role of PE in public health. Benefits of physical activity, students' current physical activity level, status of elementary physical education programs, physical activity interventions, and public health role of PE took into consideration in their studies. Like other researchers, Sallis and McKenzie (1991) strongly reported that curriculum could be re-prepared to develop a health-related curriculum for physical education and the interest of the public health community in physical education could be increased.

In his report, Corbin (2002) emphasized importance of promoting lifelong physical activity in schools. The report strongly claimed that schools must develop positive self-perceptions about an active lifestyle. In addition recognizing different physical activity needs of students, providing opportunities for girls, focusing on fitness, providing self-esteem for youth and teaching self-management skills were very crucial to enhance the major point of physical activity (Corbin, 2002).

Haywood (1991) pointed the role of physical education in the development of active lifestyles. She mentioned that childhood period was the most suitable time to gain positive outlook toward physical activity. Elementary physical education with a variety of continuous and vigorous activity, game and dance activities, health-related and lifetime sports focused the maximum participation of physical

activity (Haywood, 1991). For providing high level physical activity, class size, facility size and amount of equipment must be conducive and also exercise and health must be a part of health-related programs (Haywood, 1991).

2.3. Student Physical Activity Level, Lesson Context and Teacher Behavior

The current trend of PE bases on health related or physical fitness curricula (Arnett, 2001). According to the trends, physical education programs can be reassessed and revised for promoting active students and health related fitness.

McKenzie, Sallis and Nader (1991) designed an observation instrument in order to assess fitness instruction time for physical education lessons and was called as System for Observing Fitness Instruction Time, SOFIT. Student activity levels, lesson context and teacher behavior can be observed at the same time in the lessons by means of this instrument. SOFIT was applied for 88 third, fourth, and fifth grade PE lessons by two independent observers to determine the reliability, validity and feasibility of instrument. The instrument detected differences between fitness and non-fitness classes in student activity level and their associations. Results indicated that students were very active in fitness classes. In addition, fitness classes were short; however, they provided a great amount of time for fitness. Non-fitness classes spent more time for management, skill practice and game play. At the end of the research, McKenzie, Sallis and Nader (1991) mentioned “SOFIT is suitable for investigating physical activity and fitness development opportunities for students”. Also they obtained reliable data and the evidence of construct validity in this

sample. Their study guided the other researchers to investigate physical activity levels and their associate variables with SOFIT.

The validity of SOFIT was assessed by heart rate monitors (Rowe, Schuldheisz & Van der Mars, 1997). Students of elementary and middle schools were the participants of the study. The characteristics of subject attending between 1-8 grades were homogenous. A set of activities was designed to determine the validity of instrument. The protocol activities were lying, sitting, standing, walking, running, curl-ups and push-ups. Heart rate scores were used as criteria for concurrent validity. Energy expenditure also was calculated. The findings revealed that physical activity codes of SOFIT were valid to measure physical activity level of students in elementary school.

McKenzie et al. (1995) observed physical activity and associated variables in third-grade students in 95 elementary schools in 4 Children and Adolescent Trial for Cardiovascular Health (CATCH) centers in California, Louisiana, Minnesota and Texas. Total 293 physical education lessons were observed to identify the differences between physical education specialist and teacher (generalist) in activity level and their associations. Moreover, both indoor and outdoor lessons were detected by SOFIT. The findings indicated that boys were more active than girls in observed lessons. Physical education specialist' lessons were more active than that of teacher (generalist). In addition there were significant differences in different study centers in regard to time spent in the lesson context. Results suggested that physical education curriculum could be change to provide the quantity and quality of physical activity for health purposes (McKenzie et al., 1995). Moreover the

findings included that widespread implications for educators responsible for developing and implementing PE with health-related programs as well as for creating and conducting staff development. Researchers pointed that additional research was needed to develop activity level of students.

A descriptive-analytic study was applied for determining students' physical activity level in England. Curther-Smith, Chen and Kerr (1995) reported health-related fitness in secondary school physical education. The participants were twenty physical education teachers and their students in grade 7, 8, and 9. Two lessons of each teacher were observed with SOFIT. The aim of the study was to determine the proportions of lesson time pupils engaging in moderate to vigorous physical activity (MVPA) and teachers engaging in fitness activity or acquiring health related fitness. Researchers find that students spent little time in MVPA. Teachers didn't encourage students to participate physical activities. Researchers suggested that different activities could be assessed to increase physical activity level of students and designed new methods for providing health-related fitness in schools.

Van der Mars, Vogler, Darst and Cusimona (1998) investigated student's physical activity levels and teachers' supervision during fitness instruction. Eighteen elementary PE teachers (K-6) and three target students in one of each of the teacher's classes were subjects of the study. This study was different from other studies because of designated activity areas. Teacher's location and their movements were collected. The results showed that teachers preferred to use peripheral areas of the gymnasium during fitness instruction time. Students' activity level was found 51.9% for MVPA. Teachers promoted and modeled health-related

fitness during active supervision. Van der Mars et al. (1998) reported that physical activity level of students could be developed with health-related fitness curriculum in schools. At the same time, many elements of active supervision by teachers correlated with children's physical activity levels, Active supervision played important role to increase physical activity in PE (Van der Mars et al., 1998).

McKenzie et al. (2000) investigated student activity levels, lesson context and teacher behavior during middle school physical education in 430 lessons included grades 6-8 only. The purpose of the study was to determine the effect of lesson context and teacher behavior on the student activity levels and relationship between class size and student activity levels by using SOFIT. The findings of the study were similar in previous studies. The results showed that boys were more active than girls and students spent more energy in fitness activities. They spent little time during knowledge part of the lesson context. The results also revealed that large classes have a negative effect on the activity levels of the students. Another important finding was that a great amount of time was lost for transition activities. There were no significant differences in teacher gender for providing fitness activities. This study strongly mentioned that teachers must reduce management time, change curriculum program of PE and adjust class size.

Another study was conducted to determine the effects of a curriculum and inservice program on the quantity and quality of elementary physical education classes (McKenzie, Sallis, Faucette, Roby & Kolody, 1993). The study was unique in its use of direct observation of PE classes to evaluate a curriculum and inservice intervention. Classroom teachers (CT), trained classroom teachers (TT), physical

education specialists (PES) and their fourth grade classes (n=28) in the 7 schools were the participants of the study. This study was different in its use of SOFIT to assess a curriculum and inservice program. The purpose of the inservice training program was to develop teachers' commitment to curriculum, to help them understand the curricular parts and to develop their class management skills (McKenzie et al., 1993). The results indicated that children were very active in PES teachers' classes. While PES and TT spent a great amount of class time for physical fitness, classroom teachers spent their time for game play. Results showed that trained classroom teachers equipped by the curriculum and inservice program provided better classes than classroom teachers. However the quality of their classes did not compare with that of the physical education specialists.

Schuldheisz and Van der Mars (2001) examined active supervision and students' physical activity level in middle school physical education during fitness instruction. Eight students in grade 7 and their teacher participated to the study. Both direct and indirect supervision was applied for physical education lessons to describe the effect of active supervision on students' activity level. In active supervision included prompts, feedback, praise, correction and encouragement related with fitness. SOFIT was used in this study just like the previous studies. The results indicated that there was a relationship between the teachers' active supervision behaviors and student activity level during fitness instruction. The results indicate that a teacher's effort to promote physical fitness directly affected the students' MVPA levels (Schuldheiz & Van der Mars, 2001). These findings showed that the importance of active supervision playing a key role in engaging

students in assigned physical fitness tasks during PE classes was useful for improving of lifetime physical activity patterns.

Sallis et al. (1997) studied the effect of 2-years physical education program (SPARK) on physical activity and fitness in elementary school students (fourth and fifth grade). This investigation was a longitudinal study took place two years. Researchers concerned about results of two years of a health-related PE program on activity levels of students during physical education and physical activity out of school. Totally 1538 students were participated from seven elementary schools for this study. Self-reported physical activity, questionnaire, accelerometer, fitness and anthropometric measures and observations were criteria in this study. Observations revealed that children spent their time in physical activity in PE. The results indicated that SPARK health-related PE program-increased students' activity level in PE classes but not out of school. Researchers suggested elementary school administrators and teachers should be encouraged to adopt PE programs with health related programs, which were effective in providing students with a great amount of physical activity. In addition extra-curricular programs, community programs were necessary to get amount of physical activity.

Another SPARK project was conducted to determine long-term effects of a physical education curriculum and staff development program (McKenzie, Sallis, Kolody & Faucette, 1997). Seven elementary schools physical education lessons in fourth grade were observed for 4-year period by SOFIT. The aim of the study included two parts. First part was evaluation of health-related curriculum and inservice program, second part was to describe the effects of class maintenance

program after 1.5 years. TT and PES were trained by a comprehensive PE program. Untrained classroom teachers (CT) were control group for the study. The findings indicated that students of physical education teachers were more active than that of those in CT and TT. Additionally, PES spent more time in fitness activities and drills than that of those in CT and TT. McKenzie et al. (1997) stated that the professional development program helped to maintain the effect of physical activity and teacher behavior. This study also showed that teachers provided necessary opportunities to be physically active for students.

CHAPTER III

METHODS

The focus of this chapter was on methods and procedures of the study and it was divided into the following parts; participants, data collection instrument, data collection procedures and data analysis.

3.1 Participants

The participants of the study were sixth, seventh and eighth grade elementary school students (n=144) and their PE teachers (n=19) from public and private schools in Ankara. They were selected according to convenience sampling method (Fraenkel & Wallen, 2000). In total 36 physical education lessons were observed from public schools and private schools. Detailed information about participants, schools and numbers of observed lessons and numbers of teacher were presented in Table 3.1.1

Table 3.1.1 The Number of Selected Schools, Observed Lessons and Participants

	School		Totals
	Public	Private	
School	7	5	12
Teachers	9	10	19
Students	72	72	144
Observed Lessons	18	18	36

3.2. Data Collection Instrument

SOFIT (System for Observing Fitness Instruction Time) that was developed by McKenzie and his colleagues (1991) was used to determine students' physical activity levels, lesson context and teacher behavior in the physical education classes. Detailed information about SOFIT was described in the following sections.

3.2.1 System for Observing Fitness Instruction Time (SOFIT)

SOFIT is a momentary time sampling and an interval recording system designed specifically to quantify factors believed to promote health-related physical activity and to assess the quality of physical education classes. The instrument consists of three-part decision system that examines a) how active students are, b) how class time is allocated to various tasks and c) how teachers spend their time during class. SOFIT seems most effective in finding answers regarding interest in physical activity, lesson context and teacher behavior. Further, it is a valid and reliable observation instrument. SOFIT activity categories have been validated for elementary school students by energy expenditure estimates, heart rates, and accelerometers (McKenzie et al., 1991; Rowe, Schuldheisz & Van der Mars, 1997). The content validity of lesson context and teacher behavior has been designed from terms used in physical education evaluation research (Siedentop, 1991, as cited in McKenzie et al., 1991). (See Appendix A for a copy of SOFIT record sheet).

3.2.1.1. Student Physical Activity Level

The first part of the decision system includes the assessment of students' physical activity level or engagement level. The learner involvement decision is

made by observing a preselected student and determining their level of physical activity (or active engagement level) periodically (every 20 seconds) throughout the class time. The engagement level provides an estimate of the intensity of the student's physical activity and uses the activity codes from a previously validated system (McKenzie et al., 1991). Codes 1 to 4 describe the body position of the student lying down (1), sitting (2), standing (3), walking (4), and very active (5). Very active category identifies when the student is expending more energy than he or she would during ordinary walking. Student activity is coded for events occurring at the moment the observation interval ends. (See Appendix B for detailed information about SOFIT categories).

3.2.1.2. Lesson Context

The second part of the decision sequence involves coding the curricular lesson context of the class being observed. At the end of each observation interval (20 seconds), a decision is made whether class time is being allocated for general content (management) or for actual subject matter content (physical education). If substantive physical education content is occurring, an additional decision is necessary to describe whether the class focus is on knowledge content (code as either general knowledge or physical fitness knowledge) or on motor content (physical activity). If motor content is occurring, a further decision is necessary to code whether the context is one of fitness, skill practice, or game play. Lesson Context is coded for events occurring at the moment the observation interval ends.

3.2.1.3. Teacher Behavior

The third part of the decision sequence involves coding the teacher's involvement during class. Teacher behavior is classified into one of six categories. The first behavior category, "promotes fitness" is directly related to student involvement in fitness activities and is coded when the teacher prompts or reinforces learners for physical fitness engagement. The second category, "demonstrates fitness", identifies when the teacher models fitness engagement. The remaining four categories, "instructs generally", "manages", "observes", and "off-task", are only indirectly related to student fitness opportunities but provide important information on how teachers spend their time during the class. Teacher Behavior is coded for events occurring during the interval not at the moment the observation interval ends.

3.2.2 Reliability Study for Observer Agreement

Interobserver and intraobserver agreement was assessed both during lesson observations in the field and during videotaped lessons. Randomly selected five lessons were observed for the reliability study. Two independent observers recorded the same students while being paced by a single tape recorder equipped with a y-adapter and two ear jacks for interobserver agreement. One observer recorded the lessons on one day and then came back a later time to observe the same lessons for intraobserver agreement. These agreements were determined by finding the number of agreements divided by the number of agreements and disagreements multiplied by 100 according to interval-by-interval methods (Van der Mars, 1989). It was stated that 80%-85% levels of agreement were sufficiently high for direct

observation data. During videotaped lessons interobserver agreements were calculated 85%, 98% and 93% while intraobserver agreements were calculated 80%, 92% and 84% for student activity, lesson context and teacher behavior respectively, which indicated that the measures were accurate. In addition, interobserver and intraobserver agreement was assessed between lessons with video taped and lessons observed live. The results indicated that agreements were sufficient.

3.3. Data Collections Procedures

Data were collected in spring semester of 2001-2002 academic years between March and June, in elementary schools of Ankara. Before the data collections, primary permission was obtained from school authorities and physical education teachers. Then written official permissions were obtained from Provenience of Ministry of National Education (MONE) to be able to video record during PE classes for the schools. Only the PE teachers who volunteered to the study were video recorded.

Two lessons of each physical education teacher except two teachers were observed during their regular physical education lessons according to SOFIT procedures. Twenty-six observed lessons were video taped by a camera (Sony, CCD-TRV 98 E) and the rest of the lessons were observed live. The observer took a place in the gymnasium or school garden before the lesson begun. When greater than 50% of students reached the class, observation session begun and continued until 50% of the class left the area. A pre-recorded audiotape with a standard 10

second observe and 10-second record format was used with a tape player for observation of the lesson.

As stated in SOFIT procedures four students (two male and two female) were selected and observed till the end of the class. For ease of observation and to limit the possibilities of making mistakes, during live and videotaped recordings, students with some distinct characteristics were chosen for observations. The possible characteristics were the gym suits (the color etc.) they wore or the physical appearances of them. SOFIT procedures consider the selected four students as a representation of the class for observation. They were coded every 20 seconds during a lesson to determine the intensity of their physical activity. The first 10 seconds of the interval was used to observe and the second 10 seconds was used to record the observation on the coding sheet. Four target students were rotated after observing each one for 4-minute blocks. They were observed in sequence for an entire class period. Coding was based on the observed activity of the individual student at the moment when the 10-second observation finished. During each record interval observer entered a code for each of the three parts (student activity level, lesson context and teacher behavior). Student activity level and lesson context were coded at the end of the observe interval. However teacher behavior was coded according to teacher events during the observed interval.

3.4. Data Analysis

Categorical data were transferred to ratio level by a formula. It was the number of total intervals divided by three for total lesson length in minute and the

number of very active category intervals divided by three for total very active category length in minute.

Descriptive statistics, Pearson Product Moment Correlation and multivariate analysis of variance (MANOVA) were used for data analysis. Significance level of .05 was used while testing hypotheses.

A Pearson Product Moment Correlation was conducted to describe the relationships among student activity level, lesson context, and teacher behavior. MANOVA was carried out to find group differences (public and private schools) in student activity, lesson context and teacher behavior. Then pairwise comparisons were conducted to determine the mean differences of SOFIT parts between public and private schools.

CHAPTER IV

RESULTS

The primary purpose of the study was to describe student physical activity level, lesson context and teacher behavior in elementary school physical education programs. The secondary purpose was to determine the relationships among physical activity, lesson context and teacher behavior and to investigate the differences among the variables in public and private schools. The analyses were described in the following sections.

4.1. Student Physical Activity Level, Lesson Context and Teacher Behavior

Student activity level in PE lessons was analyzed into five main categories, namely lying, sitting, standing, walking and running. Findings related to student activity level presented in Table 4.1.1. The results indicated that students in both public (60.31%) and private schools (51.07%) spent a large proportion of their time standing and a small proportion of their time (35.84% for public school and 32.14% for private school) for moderate to vigorous physical activity (walking & running). The results also showed that students in private schools (12.33%) tended to sit than those students in public schools (3.83%).

Table 4.1.1 Mean and Percent Distribution of Student Physical Activity Level Categories in Schools

Student Activity	Public School (n=18 lessons)			Private School (n=18 lessons)		
	M (min)	SD	%	M (min)	SD	%
Lying	0	0	0	0	0	0
Sitting	1.22	2.43	3.83	4.24	5.35	12.33
Standing	19.18	4.71	60.31	17.53	7.33	51.07
Walking	8.37	3.20	26.32	9.27	2.93	26.97
Running	3.03	2.55	9.52	3.33	1.78	5.17

Lesson context were analyzed into six categories, management, general knowledge, fitness knowledge, fitness, skill practice and game play. Findings related to lesson context were presented in Table 4.1.2. The findings showed that class time was mainly allocated for skill practice in both public schools (%47.48) and private schools (51.87%). While teachers spent little time on fitness activities (24.46% for public schools, 18.62% for private schools), they spent no time directly providing fitness knowledge (0%). In addition, moderate time was spent on management and general knowledge.

Table 4.1.2 Mean and Percent Distribution of Lesson Context Categories in Schools

Lesson Context	Public School (n=18 lessons)			Private School (n=18 lessons)		
	M (min)	SD	%	M (min)	SD	%
Management	5.55	3.04	17.43	7.35	4.50	21.38
G.Knowledge	3.03	2.59	9.51	2.46	2.36	7.15
F.Knowledge	0	0	0	0	0	0
Fitness	7.79	4.71	24.46	6.40	4.85	18.62
Skill Practice	15.12	4.97	47.48	17.83	6.15	51.87
Game Play	0.35	.84	1.09	.33	1.18	3.43

Note. G = General, F = Fitness

Teacher behavior were analyzed into five categories, promote fitness, demonstrate fitness, instruct generally, management and observe. Findings related to teacher behavior were presented in Table 4.1.3. The findings demonstrated that teachers spent the majority of lesson time on providing instruction for skill in both public (75.49%) and private school (73.01%). They spent no time on promotion of fitness. Moreover, little lesson time was allocated for demonstration of fitness (in average 2.88%) and observation of the class (in average 3.85%) for schools.

4. 1. Mean and Percent Distribution of Teacher Behavior Categories in Schools

Teacher Behavior	Public School (n=18 lessons)			Private School (n=18 lessons)		
	M (min)	SD	%	M (min)	SD	%
P. Fitness	0	0	0	0	0	0
D. Fitness	1.57	2.67	4.93	.29	.73	0.84
Instruct	24.03	4.84	75.49	25.14	6.59	73.01
Management	5.62	2.95	17.65	7.00	4.23	20.33
Observe	0.61	1.37	1.91	2.00	2.85	5.80

Note. P = Promote, D = Demonstrate

In general the results indicated that in the selected school students were generally standing in classes (55.69%) as activity and practicing skill (49.67%) as the context of lesson. Teachers were generally instructing (74.25%) as behavior during PE classes.

4.2. Relationship among Student Physical Activity Level, Lesson Context and Teacher Behavior.

4.2.1 Relationship between Student Physical Activity Level and Lesson Context

Correlation coefficients were computed between student activity level and lesson context in order to test hypotheses 1a that there were no relationships between student physical activity level and lesson context. The results of the correlation analyses were presented in Table 4.2.1.1. The results indicated that when teacher were managing class, students were generally standing (r=.45) but not walking (r=-.020) and running (r=-12). However, while students were engaging fitness activities, they were walking (r=.49) and running (r=.43) but they were not sitting (r=-.29). The scores of general knowledge tend to correlate significantly with sitting and negatively correlated with walking (r=.37) and running (r=.18). In addition when the context of the lesson was skill practice, students tend to walk (r=.20) and run (r=-.18).

Table 4.2.1.1 Correlations between Student Physical Activity Level and Lesson Context

	Lesson Context					
Student Activity	Management	General Knowledge	Fitness Knowledge	Fitness	Skill Practice	Game
Lying	0	0	0	0	0	0
Sitting	-.07	.37*	0	-.29*	0	-.07
Standing	.45*	.10	0	-.05	.04	.31*
Walking	-.20*	-.37*	0	.49*	.20*	-.11
Running	-.12*	-.18*	0	.43*	.18*	-.02

*p<.05

4.2.2. Relationship between Student Physical Activity Level and Teacher Behavior

Correlation coefficients were computed for the student activity and teacher behavior in order to test hypotheses 1b that there were no relationships between student physical activity level and teacher behavior. Table 4.2.2.1 represented the results of the correlation analyses. The findings of the study indicated that during instruction students were generally either walking (r=.29) or running (r=29). It was also noted that students were standing during management time (r=.48) but the negative correlation was found for walking (r=-.24). In addition, while teachers were observing, students spent their time on running (r=.20) but not on standing (r=-26).

Table 4.2.2.1 Correlations between Student Physical Activity Level and Teacher Behavior

	Teacher Behavior					
Student Activity	Promote Fitness	Demonstration Fitness	Instruct Generally	Management	Observe	Off Task
Lying	0	0	0	0	0	0
Sitting	0	-.15	-.04	.02	.06	0
Standing	0	-.01	.21	.48*	-.26*	0
Walking	0	.21*	.29*	-.24*	.13	0
Running	0	.18*	.29*	-.21	.20*	0

*p<.05

4.2.3 Relationship between Lesson Context and Teacher Behavior

Correlation coefficients were computed between the lesson context and teacher behavior in PE classes for testing hypothesis 1c that there were no

relationships between lesson context and teacher behavior. Table 4.2.3.1. presented the results of the correlation analyses. The results of the study showed that when the context of the lesson was fitness, teachers were generally demonstrating fitness (r=.31) and instructing (r=.38) as behavior but not management (r=.25). While class time was spent for management teachers also managed the class (r=.97). Furthermore, while teachers were giving generally instructing, lesson context tend to be fitness (r=.38) and skill (r=.55), but not management (r=-.44) in classes.

Table 4.2.3.1 Correlations between Lesson Context and Teacher Behavior

	Teacher Behavior					
Lesson Context	Promote Fitness	D. Fitness	Instruct	Management	Observe	O.Task
Management	0	-.14	-.44*	.97*	-.06	0
G.Knowledge	0	-.17*	-.012	.17*	-.13	0
F.Knowledge	0	0	0	0	0	0
Fitness	0	.31*	.38*	-.25*	-.06	0
Skill	0	.50	.55*	-.49*	.11	0
Game	0	-.02	.06	.28*	-.07	0

Note. D = Demonstrate, G = General, F = Fitness, O = Off
*p<.05

4.3 Public and Private School Differences in SOFIT Categories

4.3.1 Public and Private Schools Differences in Student Physical Activity Level

Multivariate Analysis of Variance (MANOVA) was conducted to determine the effect of public and private schools on the student activity variables (lying down, sitting, standing, walking and running) in order to test hypotheses 2a that there were no significant differences between public and private schools in terms of

student physical activity level. MANOVA results demonstrated overall significant differences between the groups (Wilks' Λ =.86 $F_{(5,138)}$=4.26 p<.05).

Follow up univariate analysis indicated significant differences in sitting scores ($F_{(1,142)}$ = 11.30; p< .05) between public and private schools.

Table 4.3.1.1 Multivariate and Univariate Analyses of Variance for Student Physical Activity Scores of Schools

Source	Multivariate		Univariate			
	df	*F*	Sitting	Standing	Walking	Running
Student Activity Level	1	4.26*	11.30*	1.24	.86	.22

*p<.05

Pairwise comparisons results indicated that there were mean differences on the sitting scores of public (M=1.22 min) and private scores (M=4.24 min) in favor of private schools. The means of minutes per lesson for student activity levels in public and private schools in PE classes were shown in Table 4.1.1

4.3.2 Public and Private Schools Differences in Lesson Context

Multivariate Analysis of Variance (MANOVA) was conducted to determine the effect of public and private schools on the lesson context variables (management, physical fitness knowledge, general knowledge, fitness, skill practice and game) in order to test hypotheses 2b that there were no significant differences between public and private schools in terms of lesson context. MANOVA results

demonstrated that there was no statistically significant difference between the variables for public and private schools (Wilks' Λ =.91 $F_{(5,138)}$=2.42).

Table 4.3.2.1 Multivariate and Univariate Analysis of Variance for Lesson Context Scores for Schools

Source	Multivariate		Univariate				
	df	*F*	Management	General Knowledge	Fitness	Skill	Game
Lesson Context	1	2.42	2.41	.67	1.38	3.59	.04

*p<.05

4.3.3 Public and Private Schools Differences in Teacher Behavior

Multivariate Analysis of Variance (MANOVA) was conducted to determine the effect of public and private schools on the teacher behavior variables (promote fitness, demonstrate fitness, instruct generally, management, off-task and observe) in order to test hypotheses 2c that there were no significant differences between public and private schools in terms of teacher behavior. MANOVA results revealed statistically significant differences between the schools (Wilks'Λ=.87 $F_{(5,138)}$=3.91 p<.05). Follow up univariate analysis indicated significant differences in demonstration scores ($F_{(1,142)}$ = 6.67; p< .05) and observation score ($F_{(1,142)}$ = 5.48; p< .05) between public and private schools.

Table 4.3.3.1 Multivariate and Univariate Analyses of Variance for Teacher Behavior Scores for Schools

	Multivariate		Univariate			
Source	*df*	*F*	D. Fitness	Instruct G.	Management	Obs.
Teacher Behavior	1	3.91*	6.67*	5.35	1.42	5.48*

Obs.= observation

*p<.05

Pairwise comparisons results indicated public schools (M=1.57) had higher scores of demonstration than private schools (M=.29) but private schools (M= 2.00) had higher scores of observe category of than public schools. (M=.61). See Table 4.1.3 for the means of observed intervals of teacher behavior in public and private schools.

CHAPTER V

DISCUSSION

The problem of the study was to examine physical activity level of students, lesson context and teacher behavior in elementary school physical education programs and to analyze the relationships among physical activity, lesson context and teacher behavior and, to investigate the differences among the variables in public and private schools. The findings of the study were discussed in the following sections.

5.1. Student Physical Activity Level, Lesson Context and Teacher Behavior

Physical Education has variety of goals as physical, social, and moral development (Sallis & McKenzie, 1991). Especially, PE is an important setting for public health where elementary school students can engage physical activity (McKenzie, 2001). The present study found that students spent little time in moderate to vigorous physical activity in PE classes. The findings indicated that students were generally standing or sitting and spending little time on walking and running in the observed PE lessons. The results were consistent with other studies conducted by the various researchers on similar variables. Curther-Smith et al. (1995) showed that students spent much of their time standing and a small time was recorded as being very active. McKenzie et al., (1991) also revealed that students in

sport-related PE lessons spent significantly more time standing. However, students in fitness oriented PE classes spent significantly more time on walking and being very active and also fitness oriented PE classes had four times the amount of time allocated for fitness activities (McKenzie et al., 1991). Another study in Turkey showed that students' activity level was low in PE lessons (Koçak, Harris, İşler & Çiçek, 2002).

Lesson context and teacher behavior directly influences each other. The findings showed that generally skill practice was observed in PE lessons. In this regard teachers spent the majority of lesson time on providing instruction for skill practice in schools. Rest of the class time was devoted to management, fitness, and general knowledge. Moderate to vigorous activities that tend to fitness improvement was generally observed in warm-up but not during the main part of the lesson. Teachers did not spend their time on fitness knowledge in both public and private schools. Additionally teachers spent no time on promotion of fitness in the PE classes and also they spent a little time on demonstration of fitness. Especially PE teachers spent most of their time on teaching basic skills. McKenzie and his colleagues (1991) supported findings of the study, which indicated that sport related PE lessons were devoted to management and skill practice Similarly, McKenzie et al. (1995) showed that students spent more time receiving general knowledge, general instruction and engaging in skill drills in PE lessons. Curtner-Smith and his colleagues (1995) also supported the results of the study, which that PE teachers did not encourage students to participate physical activities. Teachers in all branches play an important role in shaping students' behavior. They are role models for

students. Studies revealed that teacher behavior including active supervision; promotion and demonstration for fitness were major components for increasing students' activity level (Schuldheisz & Van der Mars, 2001; Van der Mars et al., 1998). In general, these findings indicated that students were generally standing and teachers were spending their time on providing skill practice and instruction in both public and private schools. However health related fitness activities did not occur during PE classes in this study. The findings related with student activity, lesson context and teacher behavior might be due to various factors, such as, curriculum of PE, the size of the space, size of the class, instructional objectives, teachers' attitudes and values toward PE, and aim of school administrators (McKenzie et al., 1995). The results suggest that the strategies might be designed to develop the provision of health-related fitness in schools. Health-related programs have the potential to develop a lifetime of regular physical activity for public health. Proper instruction may encourage children to incorporate regular exercise into their lives and attain those exercises in adulthood (Nelson, 1991)

5.2 Relationship among Student Physical Activity Level, Lesson Context and Teacher Behavior

The findings of the study showed that there was a significant (some positives and some negatives) relationships between student activity variables and lesson context variables. These findings failed to support the hypothesis 1a that there were no relationships between student physical activity level and lesson context. While students were standing, they were generally receiving management. During skill practice, students tended to walk and run, but the correlation coefficient

was low. In addition, students were walking and running but not sitting in fitness. The findings also revealed that when teachers were giving general knowledge, students tended to sit. Meanwhile there was a positive correlation between game play and standing.

The literature supported the results of the study that while receiving general knowledge, students were primarily sitting or standing. Similarly, time spent on physical education knowledge and management was likely to interfere with students' opportunities to be active in class (McKenzie et al., 1995). Unlike the results of the present study, lesson time allocated to skill practice correlated positively with the amount of time children spent standing (McKenzie et al., 1991). McKenzie and his colleagues (1991) also indicated that lesson time allocated to fitness activities correlated positively with the amount of time spent walking and being very active. On the other hand, McKenzie et al. (2000) showed that students were frequently coded as sitting and standing during fitness activities. Moreover, literature supported the relationship between game play and standing where Arnett (2001) concluded that game playing was associated with walking and with lack of involvement, because of produces low level of physical activity.

In general, students' activity levels were reduced during general knowledge, management and game play, whereas it was increased during fitness and skill practice. These findings indicated that activity level of students was affected by lesson context. For improving physical activity level of students, the environment of PE for cognitive learning could be designed on rainy days, snowy days or very hot days (McKenzie et al., 2000). Moreover lecture notes might be given at the

beginning of the semester in order to prevent the loses in time on general knowledge and students might be held responsible for reading these notes before PE lessons. Students were inactive during management time in this study McKenzie et al., (2000) concluded that efficient role taking and students grouping strategies might help decrease some of management time. Different techniques might be designed for efficient role taking such as taking attendance before the lesson by signing attendance sheet (attaching a door or a wall) by the students or during the warm-up and cool-down period and/or at the end of the session. Grouping organizations also might be improved to decrease management time. Teachers might divide students into for different groups according to ability levels, height or weight at the beginning of the semester. Every student might know the groups and easily arrange their groups before practices. Equipment organizations might be planned efficiently before the lessons. All equipment might be prepared and set for the exercises before the lesson. Arnett (2001) indicated that enjoyment was a pivotal factor for participating physical activities. Therefore teachers might increase the number of enjoyable drills and games in order to increase physical activity level of students in their classes.

The findings of the study failed to support the hypothesis 1b that there were no relationships between student physical activity level and teacher behavior. The study revealed that while students were walking and running, teachers were generally instructing, the correlation coefficient was positive but low. When the teacher was managing the class, students were standing, but not walking. It was also noted that students were walking and running when teachers were demonstrating

fitness but low correlation was found. In addition, lesson time allocated to observation positively correlated with the amount of time students spent running.

Van der Mars et al. (1998) also supported the findings that demonstrating fitness engagement by teachers correlated positively with very active behavior while correlating negatively with sitting down. In addition, a functional relationship was found between verbal promotion of fitness and middle school students' activity categories. Unlike the present study, McKenzie et al. (1991) indicated that while class time was allocated for fitness, teachers spent their time on promoting fitness. The importance of the active supervision was well documented in the literature (Schuldheizs & Van der Mars, 2001; Van der Mars et al., 1998) in order to increase physical activity level of students. Teachers' effort in promoting physical fitness directly affected the students' activity levels (Schuldheizs & Van der Mars, 2001). The active supervision of teachers may increase the likelihood that students may not only engage in the assigned tasks but may also maintain this engagement at an appropriate level of intensity, duration and quality (Cale, 2000). In addition, teacher educators could directly contribute to the promotion of students' physical activity by preparing prospective physical educators to address the logistical, social and personnel issues (Bulger, Mohr, Carson & Wiegand, 2001). PE teachers have a direct impact by developing more opportunities for physical activity throughout the class time with promotion and demonstration of physical activity. Furthermore the provision of more supervision, equipment and organized activities during PE lessons might lead to more students being more active (McKenzie et al., 2000).

It was also observed that when the lesson context was fitness, teachers were generally demonstrating fitness and instructing the classes, but not managing. Moreover, teachers were instructing for skill practice. The findings of the study failed to support the hypothesis 1c that there were no relationships between lesson context and teacher behavior. It was demonstrated that there was a positive correlation between fitness context and demonstration of fitness. In addition, low correlation was obtained for general knowledge and game play. Interestingly teachers spent no time for promoting fitness.

As a conclusion, PE teachers might be encouraged to adopt fitness activities in physical education that can be effective in increasing activity level of students. For this reason, PE teacher education departments might develop a training programs and teaching strategies related with fitness activities in order to meet the needs of pre-service and in-service physical education teachers. School administrators and PE teachers might also plan curricular and extra curricular fitness activities such as aerobic activities in order to increase students' activity levels, endurance, strength etc.

5.3 Examination of Differences between Public and Private Schools in Terms of SOFIT Categories

Significant differences were found between physical activity and type of school so hypothesis 2a that there were no significant differences between public and private schools in terms of student physical activity level was rejected. It was found that students in private schools had more sitting scores that those in public schools. While receiving general knowledge, students in private schools had more

opportunities in order to sit because of availability of the facilities. Therefore students in private schools may have a chance to sit while getting knowledge. Some studies indicated that the number and use of sport facilities were found much more in private schools than public schools PE lessons in Turkey (Aslan & Hasırcı, 2000; Sönmez & Sunay, 2001). It was expected that students in private schools were more active than those in public schools. However there was no significant difference in other variables between public and private schools.

Results of the study also showed that there were no significant differences between public and private schools in terms of lesson context. It supported the hypothesis 2b that there were no significant differences between lesson context of public and private schools. The study revealed that the majority of class time was allocated to teach the skills, strategies and the rules of the activities rather than enhancing health-related fitness in both public and private schools. Yıldıran & Yetim (1996) supported the findings that PE focused on psychomotor and social objectives in schools, but physical objectives stressed less in the PE programs. However some studies did not support the findings of the study that PE teachers of private schools taught more motor activities than teachers in public schools because of availability of equipment and facilities in private schools PE classes (Aslan & Hasırcı, 2000). It might be resulted from teacher behavior and PE curriculum applied in both public and private school.

Another result of the study showed that there were significant differences in teacher behavior of PE teachers in public and private schools PE classes. The findings failed to support the hypothesis 2c that there were no significant

differences between public and private schools in terms of teacher behavior. The results revealed that teachers in public schools had higher scores of demonstration and teachers in private schools had higher scores of observation. It might be resulted from that two teachers working in public schools demonstrated warm-up activities to students and one of the teachers working in a private school monitored the lesson.

CHAPTER VI

CONCLUSIONS AND IMPLICATIONS

School physical education programs include a great number of objectives that promote social, mental, spiritual and physical development of students. However, it was seen that students in public and private schools were not active enough in skill practice in this study. Furthermore teachers were generally providing instruction and management. However, they did not promote fitness and provide opportunities for students to maximum participation in physical activity in schools. The findings suggest that modifications and adjustments should be made in PE classes. It is not ignored that PE teachers have a real impact on students' behavior and they need to be supported to adopt a broader view of physical activity promotion and of their role within it (Cale, 2000). It is suggested that teachers can design, implement and research alternative strategies such as preparing competitions in skill related activities for increasing students' physical activity. In addition, the infusion of a health-related physical fitness curricular strands into the physical education teacher education programs can be recommended as a solution to change teachers' behavior related fitness (Bulger et al., 2001). As World Bank in 1998 provided two courses related with health-related fitness for our curriculum, current physical education curriculum can be redefined for providing new skills, knowledge and attitudes regarding the promotion of physical activity in schools.

Information about physical activity level of students might provide necessary information for teachers, school administrators, Physical Education departments and curriculum developers for designing programs for enhancing health-related fitness in elementary schools. The close relationships among physical activity lesson context and teacher behavior could be taken into account of the importance of studying physical activity. Students need to receive fitness knowledge to participate in physical activity in school and out of school as well. In addition, they need to sustain physical activity participation into adulthood period with this knowledge.

This study only questioned physical activity, lesson context and teacher behavior in elementary school programs. Different parameters might be studied in future investigations, for example, gender of teachers, gender of students, lesson length, classroom teachers and prospective teachers. These elements might have directly affected on physical activity level of students. The proper instruction may encourage students to incorporate regular exercise into their daily lives, the quality of physical education classes could be increased and fitness programs could also develop to increase activity levels of students (Nelson, 1991). The results of these studies might help us to understand the reasons of the differences in activity levels of students and to look forward suitable precautions in order to increase activity levels of students.

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APPENDICES

APPENDIX A

SOFIT RECORD SHEET

SCHOOL : _____ OBSERVER: _____ DATE : _____
TEACHER : _____ GRADE : _____ SUBJECT : _____

Student Number	Interval	Student Activity	Lesson Context	Teacher Behavior	Notes
	1	1 2 3 4 5	M K P F S G	P D I M O T	
	2	1 2 3 4 5	M K P F S G	P D I M O T	
ONE	3	1 2 3 4 5	M K P F S G	P D I M O T	
	4	1 2 3 4 5	M K P F S G	P D I M O T	
	5	1 2 3 4 5	M K P F S G	P D I M O T	
	6	1 2 3 4 5	M K P F S G	P D I M O T	
	7	1 2 3 4 5	M K P F S G	P D I M O T	
GENDER	8	1 2 3 4 5	M K P F S G	P D I M O T	
	9	1 2 3 4 5	M K P F S G	P D I M O T	
	10	1 2 3 4 5	M K P F S G	P D I M O T	
M F	11	1 2 3 4 5	M K P F S G	P D I M O T	
	12	1 2 3 4 5	M K P F S G	P D I M O T	
	13	1 2 3 4 5	M K P F S G	P D I M O T	
	14	1 2 3 4 5	M K P F S G	P D I M O T	
	15	1 2 3 4 5	M K P F S G	P D I M O T	
TWO	16	1 2 3 4 5	M K P F S G	P D I M O T	
	17	1 2 3 4 5	M K P F S G	P D I M O T	
	18	1 2 3 4 5	M K P F S G	P D I M O T	
GENDER	19	1 2 3 4 5	M K P F S G	P D I M O T	
	20	1 2 3 4 5	M K P F S G	P D I M O T	
	21	1 2 3 4 5	M K P F S G	P D I M O T	
	22	1 2 3 4 5	M K P F S G	P D I M O T	
M F	23	1 2 3 4 5	M K P F S G	P D I M O T	
	24	1 2 3 4 5	M K P F S G	P D I M O T	
	25	1 2 3 4 5	M K P F S G	P D I M O T	
	26	1 2 3 4 5	M K P F S G	P D I M O T	
THREE	27	1 2 3 4 5	M K P F S G	P D I M O T	
	28	1 2 3 4 5	M K P F S G	P D I M O T	
	29	1 2 3 4 5	M K P F S G	P D I M O T	
	30	1 2 3 4 5	M K P F S G	P D I M O T	
GENDER	31	1 2 3 4 5	M K P F S G	P D I M O T	
	32	1 2 3 4 5	M K P F S G	P D I M O T	
	33	1 2 3 4 5	M K P F S G	P D I M O T	
M F	34	1 2 3 4 5	M K P F S G	P D I M O T	
	35	1 2 3 4 5	M K P F S G	P D I M O T	
	36	1 2 3 4 5	M K P F S G	P D I M O T	
	37	1 2 3 4 5	M K P F S G	P D I M O T	
	38	1 2 3 4 5	M K P F S G	P D I M O T	
FOUR	39	1 2 3 4 5	M K P F S G	P D I M O T	
	40	1 2 3 4 5	M K P F S G	P D I M O T	
	41	1 2 3 4 5	M K P F S G	P D I M O T	
	42	1 2 3 4 5	M K P F S G	P D I M O T	
GENDER	43	1 2 3 4 5	M K P F S G	P D I M O T	
	44	1 2 3 4 5	M K P F S G	P D I M O T	
	45	1 2 3 4 5	M K P F S G	P D I M O T	
M F	46	1 2 3 4 5	M K P F S G	P D I M O T	
	47	1 2 3 4 5	M K P F S G	P D I M O T	
	48	1 2 3 4 5	M K P F S G	P D I M O T	

Weather: _____ **Start Time: _____**

APPENDIX B

DESCRIPTION OF SOFIT INSTRUMENT (STUDENT ACTIVITY, LESSON CONTEXT AND TEACHER BEHAVIOR)

STUDENT ACTIVITY

Lying down (1) : It is coded when students lying down, flat on floor.

Sitting Down (2) : It is coded when students sitting down with butt on floor.

Standing (3) : It is coded when students standing, kneeling, sitting with butt on feet/legs.

Walking (4) : It is coded for all walking activities except for race walking, low impact calisthenics: low impact sit-ups, stretching, arm circles, cherry picker, torso twist, playing on the jungle gym or swing set, dancing in place feet mostly on the ground, including dancing in place, square dancing, disco dancing, and low impact aerobic dancing without jumping and throwing an object such as a Frisbee or football.

Very Active (5) : It is coded for running, jogging, jumping on one or both feet, high impact calisthenics: jumping jacks, running in place, push-ups, pull-ups, playing on the jungle gym when lifting their own body weight or lifting another child or climbing on hands and knees up a steep incline (up slide or rope net) and vigorous dancing such as high impact aerobics with jumping, tap and jazz dancing with foot or arm work.

LESSON CONTEXT

General Content (M) : General content includes transition, management, and break times. Transition includes managerial and organizational activities such as team selection, changing equipment, moving from one space to another, changing stations, teacher explanation of organizational arrangement, and changing activities within a lesson. Management includes taking attendance, discussing a field trip, or collecting money for class picture. Break times includes getting a drink of water, talking about last night's ball game, telling jokes, celebrating the birthday of a class member, or discussing the results of a class section.

PE Knowledge Content : It refers to physical fitness knowledge (P) or general knowledge (K)

Physical fitness (P) : It is coded when the knowledge content includes physical fitness concepts such as strength, endurance and flexibility. For example, having students take a "pulse" and explaining it or explaining how the body works during an activity, explaining the importance of stretching to prevent injury, explaining the benefits of a skill for fitness, flexibility or etc.

General Knowledge (K) : It is coded when the knowledge content relates to areas of physical education such as history, rules, technique, strategy, and social behavior.

P E Motor Content : It includes fitness (F), skill practice (S), game play (G), and other or free play (O).

Fitness (F) ***:*** Activity time is devoted to activities for changing the physical state of the children in terms of cardiovascular endurance, strength, or flexibility. For example; any kind of running or walking for the sake of aerobic fitness such as a mile walk/run, running relays, all calisthenics done during warm-ups and cool downs, any calisthenics such as stretching, touching toes, etc. done during PE for their own sake to improve flexibility or strength.

Skill Practice (S) ***:*** Activity time devoted to skill practices with the main goal of skill development. For example, gymnastics/tumbling except when part of callisthenics, hopping on one or both feet, skipping, sack races, three-legged races, dribbling a basketball, skipping rope, stations with timing for the purpose of developing a skill such as hoolahoop, skipping rope, shooting baskets, tossing the ball in a structured way, throwing a football (not part of a game)

Game Play (G) ***:*** It refers to application of skills in a game or competitive setting such as during volleyball and tag games, balance beam routines, and folk dance performances, jump rope games for example double dutch, running games such as tag, girls chase boys, catch activities that use the parachute, the grid system and passing/kicking balls in a circle or square.

Free Play (O) ***:*** It refers to free play time or other (like recess).

TEACHER BEHAVIOR

Promotes fitness (P) : It is coded when the physical educator promotes fitness by prompting or encouraging fitness related activity. For example, a) attempts to initiate or increase student engagement in a fitness activity or enhance student's perception of their ability to do a fitness task, b) praises or reinforces fitness activity.

Demonstrates fitness (D) : It is coded when the physical educator models fitness engagement such as demonstrates how to do a fitness task or participates with in a fitness activity in the class.

Instructs generally (I) : It refers to lectures, describes, prompts, or provides feedback to children related to all physical education content such as topography, skill development, technique, strategy, rules except physical fitness engagement. Both positive and corrective feedbacks for skill are coded as instructs generally.

Manages (M) : It is coded when the physical educator manages students or the environment by engaging in non-subject matter tasks such as takes roll, sets up equipment, collects papers, and directs students to do management tasks.

Observes (O) : It is coded when physical educator monitors (observes) entire class, group, or an individual. The teacher must observe throughout the entire interval and not be engaged in any other coding category during observation.

Other task (T) : It refers to teacher attends to events not related to his/her responsibilities during class time (e.g., reads newspaper, turn backs on class, leaves instructional area to meet with school personnel or make phone calls.