EFFECTS OF A SOCIAL-ECOLOGICAL INTERVENTION ON PHYSICAL ACTIVITY KNOWLEDGE LEVEL AND BEHAVIORS OF STUDENTS IN RURAL SETTINGS

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF SOCIAL SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY
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IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR OF PHILISOPHY
IN
THE DEPARTMENT OF PHYSICAL EDUCATION AND SPORTS

JUNE, 2011

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ABSTRACT

EFFECTS OF A SOCIAL-ECOLOGICAL INTERVENTION ON PHYSICAL ACTIVITY KNOWLEDGE LEVEL AND BEHAVIORS OF STUDENTS IN RURAL SETTINGS

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June 2011, 199 pages

This study examined the effects of social-ecological intervention on physical activity (PA) knowledge level and behaviors of rural middle school students. A pre-test post-test control group design was constructed. In addition, qualitative data was collected by focus group discussions after the post-test in experimental group. Two schools from similar rural settings were identified as experimental and control schools. In total 62 students from 6, 7, 8 grades of these schools participated in this study. Experimental school PA environment was changed based on the social-ecological model (SEM) with a focus on intrapersonal, interpersonal, community level, organizational factors, and public policies related with PA. Turkish version of health related fitness (HRF) knowledge test,

pedometer, exercise stages of change, PA self-efficacy, social support, and PA enjoyment questionnaires were used to gather information for the dependent variables for the present study. A focus group discussion was implemented in experimental school. Repeated Measures ANOVA was used for the numerical data analysis. Focus group transcriptions were analyzed by content analysis method. According to HRF knowledge and PA analysis, experimental school students significantly improved their HRF knowledge scores, PA levels, social support compared to the control group students (p<0.05). Focus groups results supported the quantitative findings. In conclusion, this study indicated the value of SEM in improving the health related fitness knowledge, PA level and social support of students in rural context. Improving the rural school context for PA promotion by SEM is strongly recommended.

Keywords: Social-ecological intervention, health related fitness, physical activity level, exercise behavior, rural primary school

ÖZ

SOSYO-EKOLOJİK UYGULAMANIN KIRSAL ALANDAKİ
ÖĞRENCİLERİN FİZİKSEL AKTİVİTE BİLGİSİ
VE DAVRANIŞLARINA ETKİLERİ

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Tez Danışmanı: Doç. Dr. M. Levent İnce

Haziran 2011, 199 sayfa

Bu çalışmada, sosyo-ekolojik uygulamanın (SEU) kırsal alandaki öğrencilerin fizksel aktivite (FA) bilgi düzeyleri ve FA davranışlarına olan etkileri incelenmiştir. Araştırmada, kontrol gruplu ön test ve son testin bulunduğu bir çalışma deseni kullanılmıştır. Ayrıca, son test sonrasında çalışma grubunda odak grup görüşmeleri ile nitel veri toplanılmıştır. Benzer kırsal özellikleri taşıyan iki ilköğretim okulu çalışma ve kontrol grubu olarak belirlenmiştir. 6., 7., ve 8. sınıflardan oluşan toplam 62 öğrenci çalışmaya katılmışlardır. Çalışma grubu çevresi sosyo-ekolojik modelin alt boyutları olan davranışsal, kişiler arası, yerel yönetim, organizasyon ve ulusal politikalar temel alınarak değiştirilmiştir. Araştırmada kullanılan bağımlı değişkenler hakkında bilgi toplamak için Türkçe fiziksel uygunluk testi, adımsayar, egzersiz davranışı değişim basamakları, FA

öz-yeterlik, sosyal destek ve FA hoşlanma anketleri kullanılmıştır. Çalışma okulunda odak grup görüşmeleri yapılmıştır. Sayısal veriler için Tekrarlı Ölçümlerde Tek Yönlü Varyans Analizi (ANOVA) kullanılmıştır. Odak grup görüşmeleri ise içerik analizi yöntemi ile değerlendirilmiştir. Elde edilen bulgulara göre çalışma grubu öğrencileri istatiksel olarak anlamlı düzeyde fiziksel uygunluk bilgi düzeyi, fiziksel aktivite ve sosyal destek skorlarını kontrol grubu öğrencilerine göre arttırmışlardır (p<0.05). Odak grup görüşmeleri de nicel bulguları desteklemektedir. Sonuç olarak, kırsal alanda okuyan öğrencilerle yapılan bu çalışma ile sosyo-ekolojik uygulama fiziksel uygunluk bilgi, FA ve sosyal destek düzeyinin geliştirilmesinde etkili olduğu saptanmıştır. Kırsal alandaki okul ortamlarının sosyo-ekolojik uygulama ile fiziksel aktivitenin geliştirilmesi önerilmektedir.

Anahtar Kelimeler: Sosyo-Ekolojik uygulama, fiziksel uygunluk, fiziksel aktivite düzeyi, egzersiz davranışı, kırsal ilköğretim okulu.

TO MY WIFE and SONS

ACKNOWLEDGEMENTS

First of all, I would like to express sincere appreciation and gratitude to Dr. M. Levent İnce for serving as mentor and for providing continuous direction, guidance, and encouragement throughout the process. His expertise and assistance has been fundamental to the completion of this project and to the professional growth of this author.

The author also acknowledges the valuable contributions and support provided by committee members; Dr. Gıyasettin Demirhan, Dr. M. Settar Koçak, Dr. Ayşe Kin-İşler and Dr. Yeşim Çapa Aydın for valuable help in statistics. Additionally, the author would like to express appreciation to his family for their encouragement and tolerance throughout the process. Also, thanks to his parents for serving as wonderful role models and encouragers of education.

The author wishes to express appreciation to her fellow classmates for their unconditional support and encouragement and a special thanks to Deniz Hünük and Dr. Özer Yıldız. In addition, appreciation is extended to Ahmet Yapar, Mine Müftüler, Alan Helmer and İclal Şahin for the words of encouragement, support, and friendship. Also, a special thanks to the principals, teachers, and students that assisted and participated in the project. All of these listed have been instrumental in achieving this accomplishment and the author extends the utmost appreciation.

Finally, the author would like to express appreciation to Physical Education and Sports Department for support and providing technology to support the continuing education process.

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LIST OF ABBREVIATIONS

ABBREVIATION

ANOVA = Analysis of Variance

ES= Effect Size

HRF = Health Related Fitness

ICC = Intra Class Correlation

MANOVA = Multivariate Analysis of Variance

MoNE = Ministry of National Education

N = Sample Size

NASPE = National Association for Sport and

PA = Physical Activity

PE = Physical Education

SE = Self-Efficacy

SEM = Social-Ecological Model

TTM = Transtheoretical Model

Q = Questionnaire

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

The importance of regular physical activity (PA) and good health association in children has been very well documented. The benefits of regular PA are diverse and play an important role in the prevention of primary and secondary chronic diseases and obesity (Centers for Disease Control and Prevention [CDC], 1997; Turkish National Burden of Disease, 2004; United States Department of Health and Human Services [USDHHS], 2000). American College of Sports Medicine (ACSM, 2000) and CDC (1997) recommended for children and adolescents on daily basis 60 minutes of moderate to vigorous PA and preferably all days of the week. Unfortunately, children are not sufficiently active to prevent chronic health diseases and obesity (Janssen, Katzmarzyk, Boyce and Pickett, 2004; Hedley, Ogden, Johnson, Carroll, Curtin and Flegal, 2004; USDHHS, 2000).

Related to PA behavior, studies indicate that pupils are mainly affected by various settings around them such as peer, family, class, school, physical and social environments (Dobbins, DeCorby, Robeson, Husson, and Tirilis, 2009; Jago and Baranowski, 2004; Kahn et al., 2002; Strong et al., 2005). Therefore, current PA literature recommends the use of a broader social-ecological framework to understand the PA behavior of different populations instead of focusing only on

well-studied intrapersonal variables such as knowledge, attitudes, beliefs and skills of the individual (Sallis, Owen, and Fisher, 2008). In line with this recommendation, there has been an increase in the application of ecological models among researchers to fully understand and change the PA behavior of participants in the last two decades (Sallis, Cervero, Asher, Henderson, Kraft, and Kerr, 2006; Kok, Nell, Gottlieb, Commers, and Smerecnik, 2008).

The social-ecological model (SEM) aims to develop various levels of both individual and environmental variables (e.g., physical, social environment). Multilevel variables in the SEM are focusing on intrapersonal, interpersonal, organizational, community, physical environment, and policy variables (Sallis et al., 2008; WHO, 2002). Mainly, SEM has four main assumptions: (a) health behavior is influenced by physical environments, social environment, and personal characteristics; (b) environments are multidimensional, such as physical or social, actual or perceived constructs (social climate, self-efficacy); (c) human-environment associations occur at different levels of combination (individuals, families, community, whole population); and (d) people affect their conditions, and the changed settings then influence health behavior. There is also interdependency among the levels in the model (Stokols, 1992; Stokols, 1996; Stokols, Allen, and Bellingham, 1996).

School physical education (PE) has been accepted as the central place for an individuals' enculturation related with the PA behaviors because an average pupil spends 50% of his or her time in school (Fox, Cooper, and McKenna, 2004).

Therefore, it is crucial that school PE programs offer high quality opportunities (e.g., PA knowledge, motor abilities, sport abilities) to provide PA to all children at schools and teach pupils the necessary skills and knowledge for an active lifestyle. Considering the use of social-ecological framework in PA activity, contemporary school PE programs also recommend connecting formal school curricula with the extracurricular environment effectively (NASPE, 2004; Ministry of National Education [MoNE], 2007). Gauvin, Levesque, and Richard (2001) proposed strategies to apply socio- ecological approach into the school PE and extracurricular activities (see Table 1). According to these strategies, application of SEM into the PE class environment and school organization would be generative in changing the psychosocial factors, self-efficacy, stages of change, enjoyment, social support, family support, peer support, and student-school interaction variables related with PA and HRF.

Table 1.
Inventory of potential strategies to include in a social-ecological approach to increase physical activity knowledge and behavior.

Target	Strategy	Type	Strategy for a School PE and ECA
Individual	HP → IND	D	Activities designed to change students' knowledge,
	HP → [IND-IND]	N	Attitudes, self-efficacy and motor abilities. Activities designed to create relationships between students to encourage support or mutual activity to improve student PA behavior
Interpersonal	HP → INT → IND	D	Activities designed to change parents or others in the students' interpersonal environment
	HP → [INT–INT] → IND	N	Activities designed to create relationships between those in the students' interpersonal environment to improve student PA behavior
Organizational	HP → ORG → IND	D	Activities designed to change the pupils' physical or social organizational school
	HP → [ORG–ORG] → IND	N	environment. This can include facilities, programs, and teachers. Activities designed to create relationships between schools organizations to improve student PA behavior
Community and Physical Environment	HP → COM → IND	D	Activities designed to change aspects of the students' physical or social community environment to improve student PA behavior
	HP → [COM–COM] → IND	N	Activities designed to create relationships between communities to improve student PA behavior

SOURCE: Adapted from Richard et al. (1996) and Gauvin et al. (2001).
Note: PE = physical education, ECA = extracurricular activity, HP = health promotion practitioner, IND = individual, INT = persons or small groups in the interpersonal environment ORG = school organization, CPE = community and physical environment, D = direct intervention strategy, N = network intervention strategy.

The current school PE standards of Turkey (MoNE, 2007) as well as the other international and national school PE standards (NASPE, 2004) include two specific goals that are directly related with PA and HRF. These are 1) participation in regular physical activities, and 2) participation in health enhancing activities. Based on the above mentioned social-ecological framework, acquiring these two standards entail improving different levels such as; individual, family, school and organizational modifications and supportive environments. Firstly, PE course content need to be structured on HRF knowledge about importance of PA according to the standards. As a second dimension, pupils' environment needs to be supportive in terms of changing their PA behavior and providing PA opportunities. Especially students' families, social environment, school environment as an organization and physical environment of schools should be encouraging behavioral change and active participation.

However, related to the SEM and school PE connection there are limited studies (Casey, Eime, Payne, and Harvey, 2009). In literature, studies in an urban setting related to the PA behavior of students are more common than rural context studies (Hanlon, Simon, O'Grady, Carswell, and Callaman, 2009; Gortmaker et al., 1999; Monge-Rojas, Garita-Arce, Sanchez-Lopez, and Colon-Ramos, 2009). Only limited research has examined middle school students in rural settings and their PA behavior so far (Bathrellou, Lazarou, Panagiotakos, and Sidossis, 2007; Casey et al., 2009; Özdirenç, Özcan, Akın, and Gelecek, 2005). Rural physical environments that support PA behavior is highly restricted and students have

limited accesses to organized PA opportunities (Eime, Payne, Casey, and Harvey, 2008) in their living environment. Therefore, testing the social-ecological framework in a rural setting is required.

1.2 Statement of the Problem

The literature of PE interventions that are focusing on HRF knowledge, PA level and behavioral change is sparse and limited to individual level research with cross-sectional design (Kahn et al., 2002; Stone, McKenzie, Welk, and Booth, 1998). There is a need for well-designed experimental studies that empirically investigates the relationship of HRF knowledge, PA level and behavioral variables especially among middle school students with a social ecological perspective in a rural context in relation to PE standards. Investigating multilevel components of HRF knowledge among pupils would provide substantial evidence about increasing their knowledge, changing exercise behavior and understanding the effects of HRF knowledge on behavioral change of middle school students. In addition, this study focused on low SES (Turkish Statistical Institute [TSI], 2010) group living in rural areas that were not investigated frequently in their limited settings. In the Turkish context, middle school students' HRF knowledge and environmental association with an ecological framework has not been studied yet.

1.3 Purpose of the Study

Purpose of this research was to examine the effects of social-ecological approach on HRF knowledge, PA level and PA behaviors of middle school students living in rural areas.

1.4 Research Questions

Main research question of this study is "what are the effects of social-ecological approach on HRF knowledge level and PA behaviors of middle school students living in rural areas." Specifically this research question will be examined through quantitative and qualitative methodologies among 6th., 7th., and 8th. graders in a middle school sample. The answers to this question are pursued via examination of the following sub research questions:

1. Does social-ecological intervention increase the HRF knowledge level of middle school students?

2. Does social-ecological intervention increase the PA levels of middle school students?

3. Does social-ecological intervention increase the exercise stages of change level of middle school students?

4. Does social-ecological intervention increase the perceived self-efficacy of middle school students?

5. Does social-ecological intervention increase the perceived social support of middle school students?

6. Does social-ecological intervention increase the enjoyment of middle school students in PA?

7. What are the students' perceptions of social-ecological intervention?

1.5 Hypothesis

The alternative hypotheses for the research questions related to the quantitative part of the study were listed below;

1. The social-ecological intervention will increase the HRF knowledge level of middle school students.

2. The social-ecological intervention will increase the PA levels of middle school students.

3. The social-ecological intervention will increase the exercise stages of change level of middle school students.

4. The social-ecological intervention will increase the perceived self-efficacy of middle school students.

5. The social-ecological intervention will increase the perceived social support of middle school students.

6. The social-ecological intervention will increase the enjoyment of middle school students in physical activity.

1.6 Definitions of Terms

Physical Activity: It is any bodily movement produced by skeletal muscles and results in energy expenditure (Caspersen, Powell, and Christenson, 1985).

Health Related Fitness Knowledge: Described as the knowledge about individuals' ability to perform PA and protect themselves from chronic disease (Keating, Harrison, Chen, Xiang, Lambdin, Dauenhauer, Rotich, and Pinero, 2009).

Extracurricular Sport Activity: Extracurricular sport activities are those organized and non-organized sports played out of the school curriculum and form as a choice of children's physical activity (Cleland, Venn, Fryer, Dwyer, and Blizzard, 2005).

Social-Ecological Model: Academic unit characterized by an interdisciplinary approach to the study of social and environmental problems. The problems are analyzed at multiple levels (social, institutional, and cultural) and viewed from an ecological perspective (Stokols, 1992).

Exercise Stage of Change: It is the stage of readiness to change of individuals' physical activity behavior (Nigg, 2002). Exercise stages were classified according to the readiness to change. There are five stages: pre-contemplation, contemplation, preparation, action, and maintenance in this construct.

Perceived Self-Efficacy: Individuals beliefs in their capabilities to produce a given types of performance (Bandura, 2006).

Perceived Social Support: Defined as the cognitive appraisal of being reliably connected to others (Barrera, 1986).

Physical Activity Enjoyment: It is the positive affective state that reflects positive feelings such as pleasure, liking, and fun from physical activity (Wankel, 1993).

CHAPTER 2

LITERATURE REVIEW

The purpose of this study was to examine the effects of social-ecological intervention on HRF knowledge and PA behaviors of middle school students living in rural areas. With the intention of providing extensive analysis of SEM and PA behavior issues literature review was divided into 9 main parts: a) social-ecological model, b) PA behavior, c) exercise stages of change behavior, d) HRF knowledge about PA, e) perceived PA self-efficacy, f) perceived social support of PA, g) social support of PA in children and adolescents, h) PA enjoyment, i) general considerations of urban and rural context and summary of the chapter.

2.1 Social-Ecological Model

Over the past two decades, there has been a dramatic increase of the ecological model research related to health and health related behavior change (Sallis et al., 2006). The term ecology was defined as the interrelations between organisms and their environment (Sallis et al., 2008). One of the basic definitions of human ecology was defined by Bronfenbrenner (p.514, 1977)

" *is the scientific study of the progressive, mutual accommodation, throughout the life span, between a growing human organism and the changing immediate*

environments in which it lives, as this process is affected by relations obtaining within and between these immediate settings, as well as the larger social contexts, both formal and informal, in which the settings are embedded"

Mainly, ecological approaches have evolved from the idea that an individual's health behavior was influenced by his or her near surroundings. This approach in health focused on people's interactions with their physical and socio-cultural surroundings – including environmental and policy factors. In addition, the ecology of individuals consisted of schools, teacher, students, physical and social environments of students.

School environment and youth health behavior can be studied with a social ecological-framework. Unlike traditional health behavior theories, social-ecological approach referred to models, frameworks or perspectives, rather than to specific constructs or variables. While different social-ecological models have been recommended and various typologies have been used [e.g., Bronfenbrenner (1979), Stokols (1992, 1996)], these models all share common features such as intra-individual (person) and extra-individual (environment) level of influences. The environment consisted of both the social and physical environment including multiple levels of environmental influences. Social-ecological approaches were indeed broad, more importantly other models and theories can be integrated to develop or improve specific constructs and health related variables (Sallis et al., 2006; Stokols, 1996; Stokols et al., 1996).

One main theoretical ecological approach was the Ecological Systems Theory, developed by Bronfenbrenner (1979) and it was accepted among ecological models as umbrella concept for a number of interrelated theoretical perspectives. In this theory a person's behavior was thought to be a function of the developmental status of that person within his environment (Duerden and Witt, 2010; Weisner, 2008). Ecological models of health behavior suggested that health behavior was affected by different levels of influence namely; personal, sociocultural, policy, and physical-environmental factors (Bronfenbrenner, 1979; McLeroy, Bibeau, Steckler, Glanz, 1988). In the study of Stokols (1996), the social ecological theory was adapted into health and PA behavior. Different levels of influences related to health behavior were described by the model.

The basic features specific to each level of influence of the SEM were identified by Sallis and colleagues (2008). Four basic concepts related to health behavior were defined below:

1. Specific health behaviors have multiple influences such as intrapersonal, interpersonal, organizational, community, and public policy level factors.

2. Influences related to health behaviors interact across these multiple levels.

3. Ecological approaches should be behavior specific, targeting the most relevant potential influences at each level.

4. In changing health behavior multi-level intervention should be most effective

We can conclude that social ecological models can be used for comprehensive and effective intervention research. Specifically, targeting each level of change mechanism related to PA behavior might increase the acquisitions and effectiveness of the treatment. Recently, these models were applied in different subject areas, samples and purposes (Casey et al., 2009; Elder et al., 2007; Higgins, Begoray, and MacDonald, 2009; Kok et al., 2008; Martin, Moeti, and Pullen-Seufert, 2009; Robinson, 2008; Sallis et al., 2008). The reasons were different from individual based models and social ecological models which were more comprehensive, population wide and multilevel approach. In this respect, they provide combination of environmental, political, social and individual intervention strategies to many health problems. Generally, model based research required multiple disciplines to combine their concepts and methods to create new transdisciplinary approaches. The application of multilevel models and transdisciplinary methods to promote active living is in its early stages but is expanding rapidly (Sallis et al., 2006; Sallis et al., 2008). Interventions combining several target levels will be the most effective in changing health behavior of the participants (Elder et al., 2007; Van Sluijs, McMinn, and Griffin, 2007). Davison and Birch (2001) pointed that PA behavior of youth studies need to include multiple influences on exercise behavior of the participants.

In addition, effective intervention strategies were needed for understanding environmental factors associated with PA and health behavior in youth. In the semi-quantitative review of Ferreira and his friends' (2006) studies the past 25

years related to PA and environmental correlated variables were summarized. Specifically, home and school environment were associated with children's PA behavior. Furthermore, positive correlation was found between father's PA, time spent outdoors and school PA related policies (in children), support from important figures, mother's education level, family income, non-vocational school attendance and PA. Similarly, Sallis, Conway, Prochaska, McKenzie, Marshall, and Brown (2001) examined the association of school environment with youth PA. They also concluded that high level of supervised school environments and improvement of the school environment related to PA opportunities resulted in higher PA levels among girls and boys. Overall, environmental influences might be relevant to youth because pupils at that age have less autonomy in their behavioral choices. Therefore, the need for interventions that aim at environmental changes with social variables emerged. Moreover, ecological models can be used to guide effective interventions in health behavior of children and target mechanisms of change at each level of influence.

In the late 1980's, McLeroy and his colleagues developed the ecological model in health by introducing five levels which were intrapersonal factors, interpersonal processes and primary groups, institutional factors, communal factors and public policy. Similarly, the social-ecological approach focused on personal, interpersonal, physical environment, social, organizational, community and public policy level factors to affect an individual's PA behavior (Stokols, 1992; Stokols, 1996).

According to Sallis, Prochaska, and Taylor's (2000) review study PA associations among adolescents aged 13-18 were summarized under the categories demographic and biological, psychological, behavioral, social and physical environment (Haug, Torsheim, and Samdal, 2008). The most reported finding was that boys were more active than girls. Psychological variables were perceived as the benefits of PA; barriers and other variables were self-efficacy, body image, attitudes, knowledge, and enjoyment of PE. As behavioral variables, previous PA and participation in community sports were positively associated to PA. In addition to this, social variables were parental support and direct help from others. On the contrary, teacher or coach support and modeling were unrelated variables and last variable was physical environment category. Opportunities to exercise variable was the consistently reported variable for PA. In general, PA participation is correlated or mediators indicated the importance of ecological variables and the need for ecological model based interventions (Bauman, Sallis, Dzewaltowski, and Owen, 2002) for the development of PA behavior (Table 2).

Table 2.
Correlates and examples of children's physical activity

Groups of correlates of physical activity	Examples
Demographic and biological	Age, race, body mass index
Psychosocial, cognitive, and emotional	Self-esteem, attitude, self-efficacy
Behavioral attributes and skills	Previous PA, watching television, PE in school
Social and cultural	Parental encouragement, parental PA, peer groups preferences
Physical environment	Access to facilities

Main purpose of utilizing the ecological model was to investigate PA patterns, dietary intake, family and society's influences on child's behavior. Sallis and his colleagues (2008) also supported the usage of the ecological model to promote positive individual, social-environmental, and physical-environmental factors. Health behaviors such as exercising regularly, eating and smoking seemed as the individual choices at first. However, understanding health behavior required looking beyond an individual's cognitive, social, and affective resources. The SEM aimed at understanding and developing multiple levels of health behavior of participants (Elder et al., 2007).

Different researchers defined SEM and McLeroy and his colleagues (1988) described it as the interaction and interdependence among multiple levels of influence to support behavioral change. Mainly, using SEM in a school context can provide a framework in terms of developing and improving students' PA knowledge and health behavior. Unlike traditional theories of health behavior, SEM focuses on multiple levels of health behavior with frameworks, approaches, and perspectives rather than specific constructs or variables. Because social-ecological approach was very broad, other models and theories can be integrated to provide and develop specific constructs and variables (Sallis et al., 2006) related to health behavior of participants.

Five levels of influence (Figure 1) related to SEM were explained as follows: (1) Intrapersonal factors that are characteristics of the individual, such as knowledge, attitudes, beliefs and skills. (2) Interpersonal factors; primary groups are formal and informal social networks and social support systems, such as family, friends, peers and work groups. (3) Institutional processes are characteristics of organizations such as formal and informal rules, and regulations and policies for operation. Examples of organizations include day care settings, primary, middle and secondary schools, universities and work settings. (4) Community processes are social networks and norms or standards, which exist formally or informally among individuals, groups and organizations. (5) Public policy includes local, provincial and federal policies and laws. Factors at each level may constrain or promote PA behavior of the individuals (McLeroy et al., 1988; Stokols, 1996).

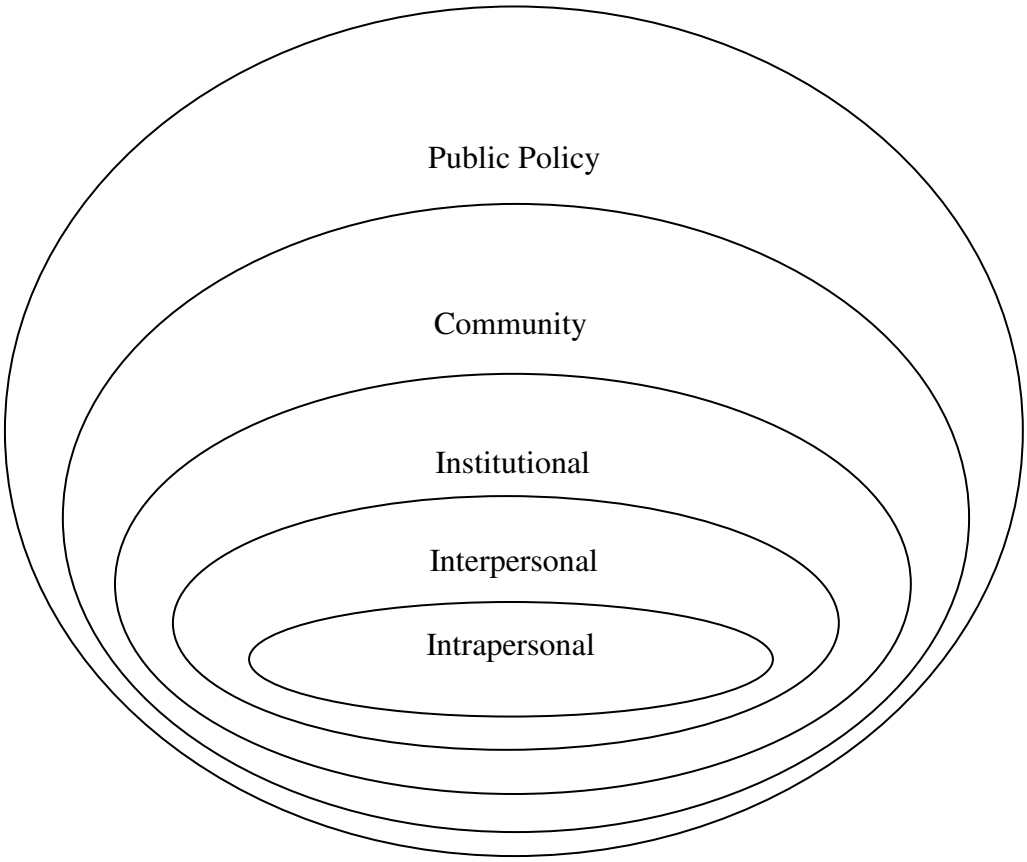


Figure 1 Five levels of influences of social-ecological model adapted from Sallis et al., (2006) "An Ecological Approach to Creating More Physically Active Communities." *Annual Review of Public Health*, 297-322.

Currently in Turkey, the social-ecological framework is not used in any sample and it depends on our knowledge.

2.2 Physical Activity Behavior

Health benefits of PA on prevention of mortality and disease were summarized in the United States Department of Health and Human Services (USDHHS, 2000) and World Health Organization (WHO, 2003). Similarly, PA in children was also

well documented and widely recognized as a crucial component of healthy lifestyle. Low level of PA and sedentary living among children were highly common. The Center for Disease Control (2004) reports indicated that 65% of adults and 16% of children and adolescents were overweight or obese in United States (Hedley et al., 2004).

Recently researchers, physical educators and media intensively focused on the development of youth PA behavior (Cale and Harris, 2006; Kahn et al., 2002; Stone et al., 1998). Main reasons were the low level of PA and increasing rate of sedentary behavior. Decreasing rate of PA among youth increased the interest in development and implementation of PA interventions. Therefore, schools and PE gained a key area for the promotion of PA. Stone and his colleagues (1998) reported that school-based PA interventions were critical because programs can become easily institutionalized into regular school curriculum, staff development and other infrastructure such as school gym, sport equipment, PA environment.

School age children's PA levels were decreasing in the last three decades continually (Kimm et al., 2002; Riddoch et al., 2004; Sallis, 2000) as they grew older. This increase in physical inactivity was associated with various health problems such as increased risk of cardiovascular mortality, Type 2 diabetes (Goran, Ball, and Cruz, 2003), overweight and obesity (Janssen et al., 2004), heart diseases, stroke, osteoporosis, and numerous life-threatening illnesses (USDHHS, 2000). Inactivity also caused stress and anxiety when compared to active peers (Calfas and Taylor, 1994). Emotional well-being and participation in vigorous

recreation and sport were positively associated among adolescents (Steptoe and Butler, 1996).

The recommended level of PA for health benefits changed over years. Basically, different organizations and health services recommend that children should "participate daily in 60 minutes or more of moderate to vigorous PA that is developmentally appropriate, enjoyable, and involves a variety of activities." (Strong et al., 2005, p.732). Preventing childhood obesity publication recommended that 6 to 19 years old should participate in at least 60 minutes of moderate-vigorous intensity PA most, if not all, days of the week (Academies IoMotN, 2004).

PA behavior of children was established at early ages (Ebbeling, Pawlak, and Ludwig, 2002; Kelder, Perry, Klepp, and Lytle, 1994). Childhood experiences with PA had significant impacts on lifelong health behavior. In this respect, school PE and after school opportunities were critical in developing exercise behavior of children. The NASPE (1998, 2004), a leading professional organization of health and fitness researchers and experts in United States, listed their PA recommendations for children ages 5 through 12 years. Minimal suggestions of PA accumulation were that children should participate in at least the proposed amount of PA for health benefits in Table 3.

Table 3.
NASPE Physical activity guidelines for children

Guideline 1.	Children should accumulate at least 60 minutes, and up to several hours, of age-appropriate PA on all, or most days of the week. This daily accumulation should include moderate and vigorous PA with the majority of the time being spent in activity that is intermittent in nature.
Guideline 2.	Children should participate in several bouts of PA lasting 15 minutes or more each day.
Guideline 3.	Children should participate each day in a variety of age-appropriate physical activities designed to achieve optimal health, wellness, fitness, and performance benefits.
Guideline 4.	Extended periods (periods of two hours or more) of inactivity are discouraged for children, especially during the daytime hours.

Schools were the most commonly used settings in developing PA behavior (Tammelin, 2005; Van Sluijs et al., 2007) and PA promotion (CDC, 1997; USDHHS, 2000). Moreover, they provided unique opportunities and ideal "micro-environment" for transdisciplinary interventions to increase PA level of participants in school days (Cale and Harris, 2006; Wechsler, Deveraux, Davis,

and Collins, 2000). School settings also aimed at developing positive health behavior at early ages and maintaining them through adolescence (Fox, 2004).

Currently schools called for increase and elaboration in activity-related opportunities (Pate, Davis, Robinson, Stone, McKenzie, and Young, 2006). Pupils spent around 40% to 45% of their awake hours at school (Fox, Cooper, and McKenna, 2004). More specifically, school PE considered as having a key role in developing healthy behavior of pupils (McBride, Midford, and Cameron, 1999). PE may be significant for students to engage in regular and developmentally appropriate PA. Time periods throughout the school day are PE, recess, and after school in which PA is most likely to occur. Therefore, schools and school PE course drew growing interest of health educators, health agencies and professional organizations in recent years (Cale and Harris, 2006; Kahn et al., 2002). Another researcher McKenzie (2001) considered PE as the most suitable course for the promotion of active lifestyle among students. Similarly, in the review study of Dobbins and his colleagues (2009) it was indicated that 104 of the studies related to school-based PA interventions had positive outcomes on PA related behaviors. Significant improvements were observed for duration of PA, television watching, VO_2 max, and blood cholesterol.

School PE and after-school programs appeared to be appropriate in prevention and changing health behaviors of school children because recent studies indicated that many youth are unsupervised during after-school hours that increased unwanted health behaviors of students (Luiselli, Putnam, Handler, and Feinberg, 2005;

Vreeman and Carroll, 2007). This period of time after school needed to be structured with effective strategies. One of the effective strategies would be implementing interventions that focus on PA and behaviors. In the review article of Cale and Harris (2006), they commented on the effectiveness of school-based PA interventions and highlights key trends. Three categories related to the intervention effectiveness were listed in their research; experimental studies cause PA increase, improvements in knowledge, attitude and self-efficacy about exercise.

After school context was also drawing attention of health educators. Studies demonstrated that most children and adolescents were physically active during non-school hours (Simons-Morton, O'Hara, Parcel, Huang, Baranowski, and Wilson, 1990). In the study of Tudor-Locke, Lee, Morgan, Beighle, and Pangrazi, (2006) it was indicated that 50% of a child's daily PA was accumulated in after-school period. In their study, school days were evaluated through pedometers and recess accounted for 8-9% of children's daily steps, lunchtime recess accounted for 15-16%, PE class accounted for 8-11% and the rest of steps were performed after-school time (61-64%). Although pupils spent most of their time at school, they still accumulated more PA in after school in community or at home settings (Pate, Saunders, Ward, Felton, Trost, and Dowda, 2003; Tudor-Locke et al., 2006).

Despite numerous health benefits of regular PA and health-enhancing opportunities at schools, they still had limitations. One of the most preventing

conditions that restrict PA at school was time constraints. Demand for schools to improve the academic achievement of students resulted in decreased amounts of time for PE, recess, lunch, classroom-based PA, and other chances of school-based PA promotion in different nations (Hardman, 2004; Hardman and Marshall, 2005; NASPE, 2004). In addition, PE was the only form of activity pupils received at school curriculum. Leading health and fitness organizations such as NASPE, ACSM, and the WHO, recommended that pupils utilized their after-school times (typically from 3:00 p.m. to 6:00 p.m.) for PA (Jago et al., 2005). Research data showed that after-school programs could be used to supplement PA time at schools. These programs provided safe environments for pupils to participate in physical activities and developed lifelong PA behavior (Beets, Beighle, Erwin, and Huberty, 2009).

Currently motivating pupils for active lifestyle has become a challenging topic. In this respect, pedometers were mostly used to quantify PA level of children; to increase pupils PA level and to improve health behavior (Bravata et al., 2007; Hardman, Horne, and Rowlands, 2009). These instruments have various advantages; such as small, inexpensive when compared to accelerometers, easy to use, which were motivating factors for participants (Bassett and Strath, 2002; Kang, Marshall, Barreira, and Lee, 2009) and pedometer based data provide adequate reliable information on PA level compared to PA questionnaires (Bassett, Cureton, and Ainsworth, 2000; De Cocker, De Bourdeaudhuij, and Cardon, 2008).

In the recent review study of Beets, Bornstein, Beighle, Cardinal, and Morgan (2010), 13 country reviews related to pedometer studies among youth (aged 5-18) were examined. Forty-three studies were analyzed (n=14,200) from various regions including North America, Europe, and Western Pacific. Results indicated significant differences in the levels of PA recorded by pedometer among young people from certain countries and regions. Western Pacific countries and several European countries were physically more active than other countries. Boys from Australia and New Zealand performed some of the highest steps weekly values (daily 1839 steps) in comparison to the ones in all other countries (Europe=1210, other=1209 steps). Similarly girls were the highest group in Western Pacific region. The Western Pacific region had, on average, 1839 and 1604 steps than boys and girls from the U.S. and Canada respectively. There was a remarkable decrease after aged 9-13 years old students.

Hardman and colleagues (2009) analyzed British students aged 7-11 years during school and leisure time on weekdays and at weekends. 104 students (58% girls) participated in the study and used sealed pedometers during 4 weekdays and 2 weekends. Results were categorized as high, mid and low active group. Both gender accumulated more steps in weekday leisure time comparing to high-active groups with the mid- and low-active groups ($p<0.001$). Girls were more active during leisure-time than during school time ($p=0.001$) in the high- and mid-active groups on weekdays. Boys accumulated more steps in all groups during leisure-

time (p<0.001). In general, girls had lower steps at weekends than weekdays, whereas boys' steps did not differ by type of day.

The review article of Tudor-Locke, McClain, Hart, Sisson, and Washington (2009) summarized expected values for habitual, school day, PE class, recess, lunch break, out-of-school, weekend, and vacation activity of youth (aged 6-18). Boys had higher steps taken per day than girls at all ages. Another finding was that boys took nearly 42% to 49% of daily steps during the school days whereas girls took 41% to 47%. Highest rate of PA was performed during after-school activities, approximately 47% to 56% of total steps per day for boys and 47% to 59% for girls. For the weekdays, boys had 12,000-16,000 steps taken per day and 10,000 to 14,000 steps per day for girls. Weekends ranged from approximately 12,000-13,000 steps for boys and 10,000-12,000 steps per day for girls.

Another way of measuring PA level of young people was using accelerometer. In the study of Jago, Anderson, Baranowski, and Watson (2005) 8th graders' PA levels were examined throughout the day by means of accelerometer. Results demonstrated that boys were more active than girls during the day, specifically between 3.00 p.m and 7.00 p.m time period. Boys played more electronic games and watched television more than girls and still they accumulated more moderate to vigorous activity when compared to girls. Fairclough, Butcher, and Stratton (2007) examined pupils' PA by means of accelerometers and found that children were more active immediately after school period than at later time throughout the evening.

PA levels of middle school students were compared by Kien and Chiodo (2003) on days when they participate in an after-school PA programs (e.g., noncompetitive, recreation, on days program). Pupils' PA levels were significantly higher on the days when they participate in after-school program than on days when they stayed at home. In another study, the trial of activity for adolescent girls' research evaluated the policies and opportunities for the same school sample to engage in school and after school physical activities. There were six middle school students from six different states of the United States and an average of 5% of girls participated to the after school PA program. Results showed that most students in the research group established policies and practices for PA opportunities. On the contrary, students were not using the provided resources (Young, Felton, Grieser, Elder, Johnson, Lee, and Kubik, 2007).

In the Turkish context, middle school students' PA levels were studied by a few researchers. Koçak, Harris, Kin-İşler, and Çiçek (2002) evaluated PA level, sport participation, and parental education level of middle school students (n=692) through questionnaires. Boys had higher participation when compared to girls. Specifically, boys had a mean of 66 Metabolic Equivalent (MET) (SD=53) and girls had a mean of 50 METs (SD=40). In another study, body mass index concerning to HRF components were analyzed in a middle school sample (n=1019) by Çolak and Kaya (2007). Results indicated that all values of girls increased through age whereas only weight, height and lean body mass changed among boys. Özdirenç and his colleagues (2005) examined rural urban physical

fitness differences among 172 students (rural=98, urban=74) aged 9-11. For the physical fitness characteristics EUROFIT (Meredith and Welk, 2004) test battery was used. Findings showed that body mass index and skinfold thickness were higher in the urban children ($p< 0.05$). Children living in urban areas were more inactive and obese, which resulted in a decrease in their flexibility and muscle endurance fitness. Another recent study was conducted by Kin-İşler, Aşcı, Altıntaş, and Güven-Karahan (2009) for Turkish adolescents. Age and gender differences in PA levels and various PA patterns of 11-14 year old students (650 girls and 666 boys) were examined by self-reported weekly PA checklist. Results indicated that age was related to the decline in PA level, a decrease in participation in moderate and vigorous activities, and lower PA participation in girls when compared to boys.

Intervention studies that focused on PA were diverse and different variables were used that were associated with health behavior. Most research used PA questionnaires and pedometers. However, recent studies demonstrated that accelerometer usage was also a common way of examining the PA levels of participants. PA interventions focusing on PA level and PA related behaviors of middle school students were listed and findings of each study were summarized below (Table 4, 5, 6).

Table 4.
Recent studies on the PA level of middle school students

Author (year)	Participants	Data collection instruments	Findings
Jurg et al., 2006	510 pupils from grades 4,5, and 6 of 4 intervention (n=369) and 2 control (n=141) schools	Changes during 1 year period in PA and social cognitive determinants were measured by questionnaires.	The program was effective in influencing PA. Pupils in control group decreased their PA level, while intervention group 6th. graders' PA level remained stable. Social cognitive determinants were not explained by the intervention group. On the contrary, process information showed differences in intervention effects between the participating elementary schools.
Patrick et al., 2006	878 pupils aged 11 to 15, randomized two intervention groups participated in the study	Accelerometer and self-reported PA questionnaire, sedentary behavior, percentage of energy from fat, fruit, and body mass index (BMI) were taken.	Boys reported more active days per week considerably, and the number of servings of fruits and vegetables for girls indicated significance. No intervention effects were detected with percentage of calories from fat or minutes of PA weekly. No between-group differences were seen in BMI.
Verstraete et al., 2006	122 children in 7 schools were randomly assigned to the intervention (4 schools) and 3 schools to control group	Children's PA level was measured before and after 12 weeks, later providing game equipment, using accelerometer.	During lunch break, pupil's moderate and vigorous PA improved significantly in the intervention group, while decreased slightly in control group (moderate: from 44 to 39%, vigorous: from 11 to 5%). Providing game equipment in the morning recess was effective in increasing moderate PA (from 41 to 45%) while decreased in control group (from 41 to 34%).

Table 5.
Recent studies on the PA level of middle school students

Author (year)	Participants	Data collection instruments	Findings
Fairclough and Stratton, 2005	2 year seven classes aged 11 and 12 years old pupils randomly assigned to experimental, control group	Both groups followed the same six-lesson unit of gymnastics. Moderate-to-vigorous PA (MVPA) measured by heart rate monitoring and all lessons examined by systematic observation and questionnaires.	Experimental group increased their MVPA level comparing to control group and had the most opportunities for skill practice. Intrinsic motivation and perceived competence levels were similar in both groups for each lesson. Objectives of each lesson was satisfactorily achieved by teachers.
Haerens et al., 2007	A random sample of 15 schools with 7^{th}., 8^{th}. graders (n=2840) were assigned randomly to one of the three conditions	Flemish PA questionnaire and in a sub sample of 258 pupils' PA evaluated by accelerometers. Fat intake was examined by self-administered questionnaire and food frequency questionnaire.	Results indicated significant positive intervention effects (1 year) on physical activity levels related to self-report school-related and accelerometer instrument in both genders and on fat intake in girls. In addition, parental involvement did not increase intervention effects of students.
Sallis et al., 2003	48 public middle schools (grades 6 to 8) were randomly assigned as intervention and control group	Pupils' PA was evaluated in a random sample of PE class with System for Observing Fitness Instruction Time (SOFIT) and System for Observing Play and Leisure Activity of Youth. Nutrition Data System software was used for existing records.	Randomized regression model results indicated significant intervention effect for all students' PA. However, the intervention was not effective in decreasing fat intake or saturated fat at school. Demographic data indicated that the interventions reduced BMI values among boys.

Table 6.
Recent studies on the PA level of middle school students

Author (year)	Participants	Data collection instruments	Findings
Gortmaker et al., 1999	Longitudinal data collected from 479 students. Survey data was collected from all 5th. grade students (n=2103)	Dietary intake and PA was collected through 24-hour recalls and student food and activity survey. Dietary and PA knowledge scale was also administered.	The 24-hour recall instruments showed percentages of total energy from fat reduced among students in intervention group. There was an increase in fruit, vegetable intake, and vitamin C intake and fiber consumption. TV viewings were also significantly reduced.
Sallis et al., 1997	Seven schools were assigned to three conditions. Complete data were 955 students.	Self-reported PA checklist and accelerometer were used for measuring PA level. Fitness and anthropometric measures and observation of PE classes were conducted.	Pupils spent more minutes per week in specialist led PE classes than control group. At the end of two year, girls in the specialist led classes were superior to girls in control group on abdominal strength and endurance and cardio-respiratory endurance. There were no differences on PA level outside of school.
Dishman et al., 2004	24 high school (12 experimental=1041, control group=1038)	Self-efficacy and development of behavioral skills and PA by using extra-curricular activities were used.	The intervention focused on self-efficacy resulted increase in PA among black and white adolescent girls.
Kin-İşler et al., (2009)	650 girls and 666 boys between the ages of 11 and 14 years old	Self-reported PA levels and patterns were determined by a Weekly Activity Checklist.	Age-related decline in PA level, increase in participation of low PA, and decrease in participation in moderate and vigorous PA among Turkish students (11-14-year-old).
Koçak et al., (2002)	Turkish middle school students (333 girls and 359 boys)	Questionnaires related PA level, sport participation, and parental education level of middle school students were collected.	Boys had higher participation when compared to girls. Specifically, boys had a mean of 66 Metabolic Equivalent (MET) (SD=53) and girls had a mean of 50 METs (SD=40).

To sum up, studies indicating PA interventions had limited evidence of an effect of interventions targeting disadvantagous populations such as living in rural areas, ethnic minorities, girls or low socio-economic populations. Moreover, multi-component interventions that specifically focused on PA knowledge, PA levels and behavior were limited among middle school students. Mainly, PA interventions achieved important changes in increasing level of PA among students. However, there is a need of multilevel interventions based on interpersonal, family, organizational, communal or political level.

2.3 Health Related Fitness Knowledge

Fitness levels of students and health related fitness (HRF) knowledge were studied in different samples with various research designs (Carrel, Clark, Peterson, Nemeth, Sullivan, and Allen, 2005; Engels, Gretebeck, Gretebeck, and Jimenez, 2005; Sallis, McKenzie, Alcarez, Kolody, Faucette, and Hovell, 1997). Recently, HRF research is growing in PE, and teachers as well as students understood the importance and benefits of conceptual knowledge (Verstraete, Cardon, De Clercq, and De Bourdeaudhuij, 2007). However, there is limited investigation of pupils' knowledge related to HRF. In the past ten years serious attempts were made to improve PE at all educational levels (i.e., elementary, secondary, and high school) (American College Health Association, 2002; USDHHS, 2000). More efforts from the field of PE are needed to develop sedentary behavior, knowledge and decrease health problems of pupils (Pate, Davis, Robinson, Stone, McKenzie, and Young, 2006). The time allocated for fitness instruction in PE lessons seems to be an

effective way of increasing the level of PA among students. Time in PE needs to be used efficiently that students can learn about HRF components. At the same time different opportunities to perform in a variety of activities should be provided by the PE teacher during the course (Kulinna and Krause, 2001).

Mostly PE curriculum have three domains; cognitive, psychomotor and affective. As for the each domain there are specific standards that need to be developed and achieved in Turkish PE curriculum by the teachers. One of the important areas that needs improvement is the student HRF knowledge (Keating, 2003; Keating et al., 2009; Kulinna and Krause, 2001; Ministry of National Education [MoNE], 2007; National Center for Chronic Disease Prevention and Health Promotion [CDC], 2000). Knowledge about PA is probably not sufficient for behavioral change but improving and developing of HRF knowledge might be the first step for the establishment of healthy PA behaviors (Keating et al., 2009; Keating, Pinero, Centeio, Harrison, Ramirez, and Chen, 2010).

HRF knowledge assessment in studies was mostly problematic and conducted with inadequate designs. NASPE national PE standards or standardized conceptual knowledge tests were rarely used to guide the assessments in literature. Even though HRF knowledge was important and generally included in the PE curriculum the assessment was poorly examined by limited questions in studies. Besides, different grades of HRF knowledge were rarely examined. Moreover, the relationship between HRF knowledge and fitness behaviors of students remained unclear. Therefore, more research on this topic was needed for PA promotion. For these purposes, Turkish PE curriculum standards related

to HRF knowledge were used in this study. Furthermore, a well-known HRF knowledge test (Mott, Virgilio, Warren, and Berenson, 1991) based on Turkish PE standards was adapted for Turkish middle school students. Students at different grade levels should have different amounts of HRF knowledge and its assessment should reflect the progressive increase of such knowledge.

Professional associations in PE such as NASPE (2004, 2006), MoNE (2007) have pointed the importance of HRF knowledge for many years. However, limited research was carried out on this topic among the students from all educational levels (Keating et al., 2009). Intervention studies in PE mostly did not include pupils' HRF knowledge as an intervention component (Kahn et al., 2002; Tammelin, 2005) and as a variable at all (e.g., Biddle, Gorely, and Stensel, 2004; Van Sluijs et al., 2007). As a result, there was a need for studies focusing on the HRF knowledge dimension and how it contributed to the establishment of healthy lifestyle among children.

In Turkish context Hünük and İnce (2010) studied the HRF knowledge test development. The researchers developed the HRF knowledge for Turkish middle school students adapting from "Superkids-Superfit Knowledge Test" (Mott et al., 1991). Participants were 420 middle school students (121 sixth grade, 111 seventh grade and 188 eight grade) from two schools. Findings revealed that HRF knowledge is a valid measure of Turkish middle school students' conceptual HRF knowledge. The term HRF knowledge used in this study is defined as knowledge about participants' ability to perform PA and protect them from chronic disease.

2.4 Exercise Stages of Change

Exercise stages of change construct was one of the main dimension that originated from Transtheoretical Model (TTM) developed by Prochaska, DiClemente, and Norcross (1994). The model was one of the main stage models in health psychology that attempted to determine the structure of change. The earlier usages were based on smoking cessation and alcoholism treatment. Recently, wide variety of health behaviors, including exercise problems was analyzed by the model in different populations (Cengiz, İnce, and Çiçek, 2009; Nigg and Courneya, 1998; Prapavessis, Maddison, and Brading, 2004; Riebe, Garber, Rossi, Greaney, Nigg, Lees, Burbank, and Clark, 2005; Wakui, Shimomitsu, Odagiri, Inoue, Takamiya, and Ohya, 2002).

TTM considerably distinguished from many other individually oriented models of health behavior. Different from other models TTM focuses more on changes in behavior and less on cognitive variables (such as perceived barriers or perceived risks). The model can be a useful framework to understand exercise behavior of participants. Mainly, there were three dimensions; temporal (i.e., temporal), mechanistic (i.e., self-efficacy, processes of change, decisional balance, and temptation), and contextual (i.e., interrelated levels of psychological problems) that may take place in treatment (Dannecker, Hausenblas, Connaughton, and Lovins, 2003) of the related health problem.

TTM was effective in the adoption and maintenance of exercise behavior of participants. According to this model, individuals move through a series of stages as they attempt to eliminate unwanted behavior and adopt a desired behavior such as exercising regularly, stopping smoking, and eating fruits.

Individuals were positioned in one of the five stages according to the model (Prochaska, DiClemente, and Norcross, 1994) by choosing yes/no responses. Reed, Velicer, Prochaska, Rossi, and Marcus (1997) recommended that staging algorithm was a valid and reliable staging method. According to Prochaska, DiClemente, and Norcross (1992) five stages were;

(1) Pre-contemplation stage: Individual has no intention to change behavior in the near future. Studies indicated that many individuals were unaware of their problems. For behavioral change pre-contemplators need pressure from others.

(2) Contemplation stage: Individuals in this stage are aware of the problem and seriously thinking about overcoming it. However, they have not made any commitment to take action. People intend to change within the next six months. They appeared to struggle with their positive evaluations of the problem behavior and the amount of energy and effort.

(3) Preparation stage: Individuals in this stage combine intentions and behavioral criteria. They intend to take action in the next month and unsuccessfully take action in previous year. This stage is sometimes conceptualized as the early steps of the next stage and actually is called as decision making.

(4) Action stage: Individuals change their behavior, experiences, or environment to overcome their problems. Action stage requires considerable commitment of time and energy and also involves behavioral changes. The modification of the problem behavior receives the most external recognition. Individuals are accepted in this stage if they successfully change the problem behavior for a period up to six months.

(5) Maintenance stage: Individuals in this stage work to prevent relapse and stabilize the gains attained during action. It is a static stage but a continuation, not an absence of change. Action stage lasts from six months to an indeterminate period after the beginning of the stage and can be considered to last for a lifetime period.

One of the sub questions of the current study was based on exercise stages of change; therefore following parts of the literature review only address this dimension. More detailed explanation of the TTM and other two dimensions (mechanistic and contextual) of TTM can be found in Prochaska and his colleagues (1994).

Haas and Nigg (2009) conceptualized the five stages of changes for the exercise among children. This instrument was used as a basis for understanding and changing the lifestyle exercise behavior of children. In this context Prapavessis et al. (2004) indicated three advantages of using the exercise stages of change in understanding the components of exercise behavior. First, using a stage view could provide interventions to specific motivational needs of participants in each stage. Second advantage was discovering target sample that were at least likely to act to PA programs. Finally, finding the readiness of an individual could help adopting and maintaining of the exercise program.

Exercise stages of the change construct was studied in different populations (Cengiz et al., 2009; Juniper, Oman, Hamm, and Kerby, 2004; Nigg and Courneya, 1998; Prapavessis et al., 2004; Wakui et al., 2002; Walton, Hoerr, Heine, Frost, Roisen, and Berkimer, 1999). Thus, very few studies focused on children's exercise stages of change dimension. Hausenblas, Nigg, Downs, and

Connaughton (2002) studied perceptions of exercise stages of change, barrier self-efficacy, and decisional balance constructs of TTM among middle school students. Results indicated that 236 children were in the maintenance stage, 108 in the action stage, 25 in the preparation stage, and lastly 18 children in the contemplation and pre-contemplation stage. Results of the study showed that there was no significant difference between decisional balance and exercise stages of change of students. However, students were classified as regularly active; the majority (88% of students) was in active stages namely action and maintenance.

Cardinal, Engels, and Zhu (1998) reported similar findings as Nigg and Courneya (1998) among children and adolescents. Cardinal et al. (1998) criticized that those results were due to restrictive sample of a suburban middle school where after-school programs were encouraged. Another reason might be voluntary participation and requiring parental consent. Previous research studies also defined boys exercise more than girls do and that exercise behavior decreased with age (Sallis, 2000). This decline was highest between the ages of 13-18 years and higher decline was observed among boys compared to girls. The critical period might be the transition from middle school to high school years.

Recently, Cengiz, Hünük and İnce (2010) analyzed Turkish middle school students' exercise behavior. Participants were 334 middle school students (n_{male} =161 and n_{female} = 173) from 3 different schools in Ankara. Data was collected by means of Physical Activity Stages of Change Questionnaire" (PA-SOCQ) (Haas and Nigg, 2009) and "One-Week Physical Activity Recall" questionnaire

(Sallis, Condon, Goggin, Kolody, and Alcares, 1993; Koçak et al., 2002). Findings from the study showed similar results and significant difference between gender and exercise stages of change ($X^2(4, n=334) = 12.60$, $p < 0.05$) was observed. Boys were more in active stages (action and maintenance = 75 boys) compared to girls (action and maintenance = 54 girls). Similar findings were also observed in lower stages (inactive group = pre-contemplation, contemplation and preparation); girls were more inactive (girls = 119) compared to boys (boys = 86).

2.5 Perceived Self-Efficacy

The PA self-efficacy derived from Bandura's Social Cognitive Theory and is defined by Bandura (1986) as "people's judgments of their capabilities to organize and execute courses of action required to attaining designated types of performances" (p.391). According to Bandura (1977), self-efficacy was related to the level of confidence or efficiency one feels regarding a situation or skill. It was accepted as being one of the most influential correlates of PA (Dishman, Motl, Saunders, Felton, Ward, Dowda, and Pate, 2004, Sallis, Prochaska, Taylor, Hill, and Geraci, 1999). We can conclude that self-efficacy was a child's confidence that he or she can be physically active. Literature revealed that high levels of PA were associated with increased levels of self-efficacy in children aged 10 to 16 years (Strauss, Rodzilsky, Burack, and Colin, 2001). On the contrary, low levels of self-efficacy and confidence were linked to the lower levels of PA in overweight adolescents (Melnyk et al., 2006). Another perspective of self-efficacy was that it was an important construct to maintain a physically active lifestyle (Bandura, 1997).

The children's self-efficacy and proxy efficacy for after school PA questionnaire was developed by Dzewaltowski, Geller, Rosenkranz, and Karteroliotis (2009). This instrument was shown to be valid and reliable for use in children (Dzewaltowski et al., 2009). This scale consisted of three separate constructs; self-efficacy to be physically active (SEPA), proxy efficacy to influence parents to provide PA opportunities (PEPA-P), and proxy efficacy to influence after-school staff to provide PA opportunities (PEPA-S). In the first construct, there were 5 items that assessed children's self-efficacy to be physically active. Second construct consisted of six items assessing children's proxy efficacy for PA from the parent, which was defined as children's confidence in their skills and abilities to get their families to provide PA opportunities. The last construct consisted of 4 items and used to assess children's proxy efficacy for PA from the after-school staff, which was defined as their confidence to get the after-school program teachers or staff members to provide PA opportunities. Participants responded to a three-point scale, choosing from ''not agree at all,'' ''somewhat agree,'' and ''completely agree.'' Turkish version of the scale was used to measure self-efficacy for PA behavior for middle school students (Cengiz and İnce, 2010). In this research, Turkish middle school students (n_{female} =226 and n_{male} = 204) from two different schools were examined by means of "Children's Self-Efficacy and Proxy Efficacy for After-School Physical Activity" questionnaire. Results indicated that school was statistically significant with all dependent variables. However, gender of student was not related to any dependent variables.

PA intervention programs used self-efficacy concept in improving PA levels. One research analyzed the impact of Lifestyle Education for Activity Program

(LEAP) on self-efficacy in adolescent females (Dishman et al., 2004). School based intervention program mainly found that increased self efficacy levels were correlated with increased PA levels in adolescent girls. Annesi (2006) also studied the relations of physical self-concept and self-efficacy with voluntarily PA. Results of the study showed that improvements in voluntary PA were seen at the end of the 12-week intervention period. Statistically, 7% to 28% of the variance in voluntary PA was explained by changes among the independent variables.

Limited research was conducted in Turkish context related to self-efficacy and PA level of children. In the study of Cengiz and İnce (2010) the self-efficacy of 430 middle school students' was examined in two different school contexts. Findings indicated that higher self-efficacy and proxy efficacy for after-school PA in middle school children who were living in a better physical and social environment were observed.

2.6 Perceived Social Support

PA behavior of youth was associated with parental support especially for girls (Dowda, Dishman, Pfeiffer, and Pate, 2007) it was considered to be an important influence on health-related behaviors in different settings (e.g., outdoor play, exercise, extracurricular activity) including PA (Sallis et al., 2000). Social support was accepted as functional characteristics related to the interaction between a parent and his/her children. Specifically social support played an important role in participating, discussing, and providing activity related opportunities (Beets, Cardinal, and Alderman, 2010).

Experimental studies supported the important role of social support within the context of behavioral intention for PA behavior (Courneya, Plotnikoff, Hotz, and Birkett, 2000; Beets, Vogel, Forlaw, Pitetti, and Cardinal, 2006; Green, Furrer, and McAllister, 2007). Parents have the capability of changing sedentary behavior of children by being a model and a supporter (USDHHS, 2000). It was accepted that most adolescents spent nearly 18 years of their life in close relation with their families (Goldscheider, Thornton, and Young-Demarco, 1993). This period of time was effective on health-related behaviors of children (Perry, Crocket, and Pirie, 1987) and primary sources of health knowledge and education (Hopper, Munoz, Gruber, MacConnie, Schonfeldt, and Shunk, 1996).

Currently, in the review article of Beets, Cardinal, and Alderman (2010) social support was identified under four categories, namely as tangible and intangible. Tangible social support is divided into two categories, (1) instrumental, purchasing equipment/payment of fees and providing transportation and (2) conditional, performing the activity with and watching/supervision. Second category of social support intangible was also divided under two categories: (1) motivational, encouragement and praise and (2) informational, discussing benefits of PA.

In a recent research of Troiano and his colleagues (2008), it was showed that nearly 42% of 6 to 11-years old United States children and only 8% of 12 to 17-years old youth met daily recommended PA level. One effective strategy of improving PA behavior of children was fostering parental support for active lifestyle. Experimental studies support the significant role of social support

benefits within the context of behavioral intention for PA (Courneya, Plotnikoff, Hotz, and Birkett, 2000) or the behavior directly (Beets et al., 2007; Green et al., 2007) among children and youths.

Rhodes, Jones, and Courneya (2002) examined that social support was significantly associated with both intention and vigorous exercise behavior ($p < .05$). Briefly, social support for intended behavior increased the likelihood that behavior would continue in the future to be performed. However, factors that were important for social support examined as a behavior were less understood. Social support occurs through relationships and interpersonal relations in which some types of support were provided.

2.7 Social Support and Physical Activity in Children and Adolescents

A child's exposure to PA can occur in many different contexts, including home, school, community, etc; however, it is likely that first experiences with PA begin at home (Lindsay et al., 2006). Saunders, Motl, Dowda, Dishman, and Pate (2004) informed that family support showed significant direct effect with moderate-to-vigorous PA and team sport involvement ($p = .001$) for adolescent girls (n=1979). However, parent support was the highest in predicting team sport involvement among girls. Other researchers documented similar findings (Duncan, Duncan, and Strycker, 2005; Hoefer, McKenzie, Sallis, Marshall, and Conway, 2001).

During the young adolescence parents might have a greater role in providing specific types of social support that influences exercise behavior. On the contrary, different studies showed that peer support was demonstrated to have greater influence among adolescents (Jackson, Crawford, Campbell, and

Salmon, 2008; Prochaska, Rodgers, and Sallis, 2002). When children or adolescent becomes less dependent on parental support their effects were not well established. For example, Trost, Sallis, Pate, Freedson, Taylor, and Dowda (2003) summarized that parental support directly influenced PA for older adolescents (14-15 years old).

Literature related to social support and PA research was mostly cross-sectional (Biddle and Goudas, 1996; Courneya et al., 2000; Hohepa, Scragg, Schofield, Kolt, and Schaaf, 2007; Jackson et al., 2008). However, Dowda and her colleagues (2007) analyzed the impact of parent support for girls' PA in a longitudinal study implemented in United States. Findings revealed that changes in girls' PA levels were significantly correlated with changes in perceived family support, independent of race, perceived behavioral control, and self-efficacy for PA. Although total Metabolic Equivalents (METs) or energy expenditure decreased over time, increased parent support was found to be positively associated with an increase in overall METs. The findings showed that the more supportive a family was perceived to be, the more active girls were found over time.

Adult encouragement was significantly related to adolescents' (mean age = 13.5 years) PA ($p < .05$) level reported by Biddle and Goudas (1996). Similarly, Hoefer et al. (2001) concluded that among adolescents (n = 1678) families' providing transportation to places where they could be active contributed to a significant increase particularly in girls' total PA level and both genders' participation in sports/activity classes ($p = .001$).

Different types of social support of PA might differ by source and there were mainly three types; mothers, fathers, and child's peer support for the PA behavior (Beets et al., 2006; Duncan et al., 2005). Beets et al. (2006) reported that encouragement (i.e. praise) from families and peers was associated with an increase in overall PA among children (n = 363) in the middle school grades. Similarly, students were more physically active when families provide transportation and watch them be active (Beets et al., 2006; Duncan et al., 2005; Saunders et al., 2004).

Types of social support differed depending on situations; most commonly used two variables to assess family support within the PA literature were emotional and instrumental support provided by parents (Beets et al., 2006; Sallis et al., 2000; Saunders et al., 2004). Sallis and his colleagues (2000) described PA correlates and the importance of companion support in which families or other adults are physically active with young people. The literature related to the social support also indicates that the source of social or parent support would vary depending on several physical and psychosocial variables including age, maturity level, gender, race, and family income (Beets et al., 2006; Duncan et al. 2005; Trost et al., 2003). For example, Beets and his colleagues (2006) examined 5^{th}, 6^{th}, 7^{th}, and 8^{th} grade students (n = 363) and found that PA in younger children was associated with praise, father support, and doing PA with a child. Duncan et al. (2005) reported that children had higher participation in PA when peers, parents, and siblings watched them do physical activities. The majority of research in social support and behavior often involved the use of theoretical constructs to verify results (Biddle and Goudas, 1996; Saunders et al., 2004). The uses of theoretical models in health behavior were

recommended to identify target populations, inform evaluation of health programs, and help to identify health benefits (Glanz, Rimer, and Viswanath, 2008). The theory of planned behavior revealed empirical results for explaining behavior (Armitage and Conner, 2001). Therefore, it was reasonable that the model of socio-ecology might be useful in improving PA behavior of pupils' PA behavior.

Saunders et al. (2004) examined the association between parent and child on PA behavior; specifically the relationship between parental supports for the child's PA and the child's perception of family support. Sallis et al. (2000) analyzed parental influences on children's PA through focus group discussions and results showed that families felt guilty when their sedentary children (aged 9-12) were not more physically active.

Sallis and his colleagues (2000) reported that access to PA opportunities was a contributor of increasing PA. Similarly, children who had access to programs and facilities where they could be physically active were more active than children who had limited access to these resources. In addition, the more frequently a child used a recreational facility, the more active he or she was. Children who were from low SES families might not have access to PA opportunities or facilities (Gidlow, Johnston, Crone, Ellis, and James, 2007).

In Turkish context one study can be found which was conducted by Hünük, Özdemir, Yıldırım, and Aşçı (2008). 121 middle school students completed PA and social support questionnaire. In addition, qualitative data was collected through focus group discussion. Results indicated that perceived social support

from mother was significantly differed among physically active and inactive adolescents while peer and father support were not significantly effective.

2.8 Physical Activity Enjoyment

Enjoyment was an important construct in PE and students' continuing participation in PA beyond school (Sallis, Prochaska, Taylor, Hill and Geraci, 1999). Researcher's findings indicated that enjoyment correlated highly with perceived competence (Cairney, Hay, Mandigo, Wade and Flouris, 2007; Carroll and Loumidis, 2001) in PA behavior. Moreover, researchers discussed that enjoyment was the initial motivator for elementary and middle school students engaging in PA (Woods, Bolton, Graber and Crull, 2007). Graber and Locke (2007) reported that enjoyment was directly related to the active engagement in PA.

American Psychological Association (APA) defined enjoyment as the use or possession of something beneficial or pleasurable in a person's life; the pleasure felt when having a good time (APA, 2010). Enjoyment and fun might be used interchangeably by young adolescents to express feelings. However, they do have partly differences. While fun is something that is confronted at a specific time, enjoyment was something experienced for a longer period of time (APA, 2010). Thus students' searching enjoyment in PA seemed to be ideal, since ongoing participation in PA beyond school PE was an objective of physical educators (NASPE, 2004; Sallis et al., 1999).

Therefore, increasing enjoyment and PA levels among all pupils in PE was important for active participation (NASPE, 2004). Verstraete and his colleagues (2007) reported that teachers and students beginning to understand

the importance of HRF knowledge and benefits in PE. With regard to the increasing PA, the time allocated for different sports and fitness instruction in PE lessons was an important strategy. More importantly, using this time effectively on learning different activities and HRF components according to the age group was extremely critical (Kulinna and Krause, 2001). Participating in different sport activities and learning about PA might result in the likelihood of students' enjoyment in, and encourage ongoing participation in PA.

Limited research was implemented related to enjoyment in PA, exercise and PE. In the study of Hagberg, Lindahl, Nyberg and Hellenius (2009) the importance of enjoyment of exercise was analyzed in a health care-based intervention in primary health care patients (treatment group=72, control group=48). Treatment period was 12 months and baseline measurements consisted of exercise level, health related quality of life (HRQL), and body mass index (BMI) (weight in kg/m²). Enjoyment of exercise was measured using a graphic rating scale (a modified Visual Analog Scale). Results of the study showed that there was an association between enjoyment and exercises as well as between changes in enjoyment and changes in exercise level ($p < 0.01$). After the intervention, follow-up assessment also indicated that enjoyment of exercise was 25% higher in the treatment group when compared to control group.

In one of the few longitudinal studies, carried out by Prochaska, Sallis, Slymen, and McKenzie (2003) 414 elementary students (51% female, 77% Caucasian) were analyzed in a 3-year period related to PE enjoyment in schools. Participants completed PE enjoyment survey, descriptor items, anthropometric

measures and a mile-run test. Findings showed that PE enjoyment decreased linearly over time and body mass index (BMI) increased over time. Sports participation of pupils was lower in the spring term than in the fall (4^{th} grade=34%-47%, 5^{th} grade=40%-50%, 6^{th} grade=36%-52%). Another finding was ethnicity and BMI were not significant characteristics PE enjoyment. Particularly girls, older children, and those who were not in sports teams had low PE enjoyment; and new strategies were needed to increase their enjoyment. Regarding to PA and PE enjoyment in sport was not studied in any context in Turkish population.

2.9 General Considerations of Urban and Rural Context

Different studies related to urban and rural areas focusing on PA levels showed spectacular results (Martin, Kirkner, Mayo, Matthews, Durstine, and Herbert, 2005; Patterson, Moore, Probst, and Shinogle, 2004). Research findings indicated that urban and rural contexts had different impacts on PA level depending on age, country, geographical location, climate and socio-economic status (Posner and Vandell, 1999).

PA patterns and sedentary behaviors of children (N=1140) aged 10-12 years old living in rural and urban areas of Cyprus were examined by Bathrellou and his colleagues (2007). Pupils completed a semi-quantitative, PA questionnaire during school hours. The instrument had the purpose of classifying each sport activities depending on the duration and type of the activity. Different types of sports were counted as moderate to vigorous according to metabolic equivalent (MET) based on Ainsworth et al. (2000). In addition to this, questions about PA lifestyle and behaviors (e.g. commuting to school) were also asked.

According to the results, rural children were more active after school compared to urban children. However, average weekly time spent on vigorous or moderate to vigorous PA were not different in rural or urban areas. There were no substantial differences in the PA habits and sedentary behaviors of rural and urban children.

Martin and his colleagues (2005) examined the United States' urban, rural and regional variations in PA of adults. The participants (N=178.161) of the study completed the 2000 Behavioral Risk Factor Surveillance System (BRFSS) in 49 states. Most states showed higher PA levels living in urban areas than in rural areas. Physical inactivity rate were higher in most rural regions with lowest percentage (43.1%) in South regions of US. Findings were consistent with the related ecological approach describing the environmental (e.g., degree or urbanization and climate) and individual factors (McLeroy et al., 1988).

PA correlates of urban and rural area also indicated different aspects in different cultures. In the study of Loucaides, Plotnikoff and Bercovitz (2007) Canadian youths were analyzed. Their sample consisted of 4 rural (n=1290) and 4 urban (n=1398) schools in Ontario and Central Alberta, Canada. Godin Leisure-Time Exercise Questionnaire to assess PA and a number of variables from demographic/biological, psychological, behavioral, and social domains to assess PA correlates were completed by the pupils. Mainly gender (girls were less active than boys), perceptions of athletic/physical ability, self-efficacy, interest in organized group activities, and use of recreation time were listed.

Güler and Günay (2004) examined the impact of socio-economic level on the physical fitness of boys. American Alliance For Health, Physical Education,

Recreation and Dance (AAHPERD) test battery was used to evaluate physical fitness of 8-10 years old boys. The order of battery was measurement of weight, height, sit-and-reach test, skin-fold measurement, sit-up test, pull-up test and 1 mile run-and-walk test. A state school (N=295) students were compared with a private school students (N=271). Socio-economic level of pupils were identified by level of education of parents, the number of the children in the family, the living environment, whether the children had their own rooms in at home, and the level of income of the family. Correlational analyses indicated that the socio-economic level had an impact on physical fitness of the student. Boys from 8 to 10 year-olds who were in higher levels of the sum of skinfold values and the strength of sit-up were higher compared to those obtained from the boys who were in lower levels. Furthermore, the boys in higher levels yielded higher values of flexibility, strength in pull-up and cardiovascular endurance.

Summary

The review of the literature presented in this chapter provided an overview of the social-ecological intervention on HRF knowledge, PA level and behaviors of middle school students living in rural settings. Children's PA behavior, level and knowledge were framed and supported within the SEM. The presentation of this model, levels of influence and PA behavior constructs were included to further design, implementation, and evaluation, thus promote, children's PA participation, knowledge and levels in middle school context.

CHAPTER 3

METHOD

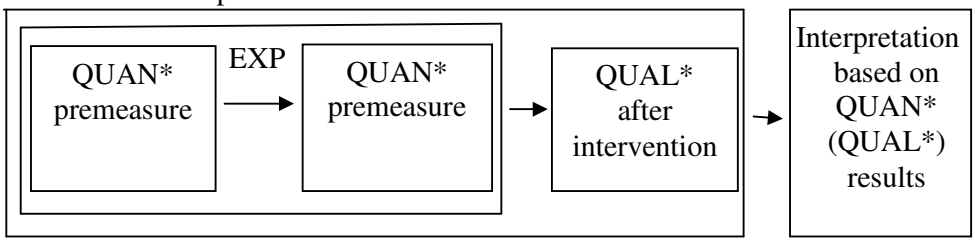
In this section, the method used throughout the study and reasons for the appropriateness of these methods are described. The chapter begins with the purpose and overall design of the study, description of participants, intervention, data collection instruments, data collection procedure, and ethical concerns. Finally, data analysis procedure, assumptions, and limitations of the study are explained.

3.1 Research Design

Mixed method design was used in this study. Creswell and Clark (2007) explains that mixed methods research is a procedure for collecting data, analyzing, and "mixing" both quantitative and qualitative data in a single study to fully understand a research problem. The four types of mixed methods design are the Triangulation Design, the Embedded Design, the Explanatory Design, and the Exploratory Design. In the current study, mixed method embedded experimental design consisting of two distinct phases including quantitative followed by qualitative, was used (Creswell and Clark, 2007). In this design, the researcher firstly collects and analyzes the quantitative (numeric) data. Secondly, the qualitative (text) data are collected and analyzed and help to explain, or elaborate on, the treatment results obtained in the first phase. The second, qualitative, phase explains the first, quantitative, phase and two phases are connected in the final stage in the study. The rationale for this

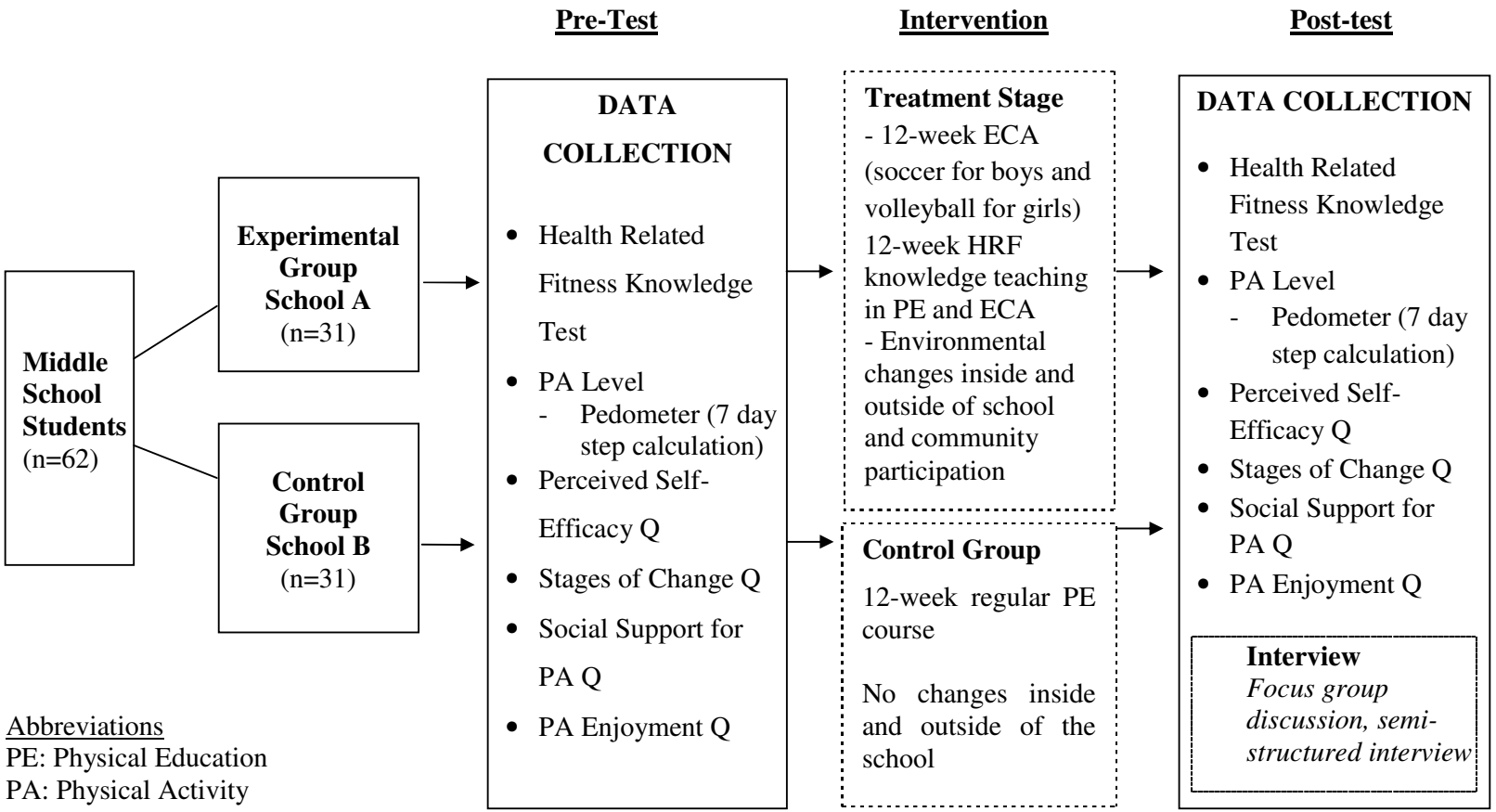
approach is that the quantitative data and their subsequent analysis provide a general understanding of the research problem. The qualitative data after treatment is collected and their analyses explain the treatment results by exploring participants' views in more depth. Table 7 summarizes the Embedded Experimental Model in detail.

Table 7.
The embedded experimental model



*QUAN = Quantitative
*QUAL = Qualitative

In the quantitative part of the research, pre-test post-test control groups (see Figure 2), experimental design (Fraenkel and Wallen, 2003) was used (see Table 7). In the qualitative part, focus group discussions were implemented with only experimental group students in order to fully understand the effects of after school sport activities and environmental modification with a SEM in a rural context



Abbreviations
PE: Physical Education
PA: Physical Activity
ECA: Extracurricular Activity
HRF: Health Related Fitness
Q: Questionnaire

Figure 2 Overall designs of the study and data collection methods

3.2 Participants of the Study

Study conducted in two rural school settings namely Çağa (EXP: Experimental) and Oltan (CON: Control) village schools. Çağa and Oltan villages were approximately 56 km and 90 km away from the Ankara City, respectively. These villages and their schools were identified based on the Turkish Statistics Institute (TSI) report as indicating economically disadvantageous situation in the region (TSI, 2009). Both villages' TSI statistics on education (numbers of schools and teachers), employment in the labor force, health indicators, and crime rates were similar. Their schools tend to accept students from agricultural laborer families or from families with no adult employed in full-time paid work.

EXP and CON schools had very limited PA opportunities at schools and at close neighborhood. 62 students (31 in EXP, 31 in CON) who were in 6^{th}, 7^{th} and 8^{th} grades and volunteer to participate in the study (see Table 8) were chosen for this study. As a demographic variable BMI values calculated for each gender before and after the intervention (see Appendix Q).

Table 8.
Characteristics of participants, enrollment rate of experimental (EXP) and control (CON) groups

Variables	Grade	N / %	n / %	M	SD
EXP	Grade 6	19 (100)	13 (68.42)	12.00	.00
	Grade 7	20 (100)	10 (50.00)	13.00	.00
	Grade 8	13 (100)	8 (61.54)	13.87	.35
CON	Grade 6	29 (100)	13 (44.83)	12.08	.28
	Grade 7	27 (100)	10 (37.04)	13.00	.00
	Grade 8	30 (100)	8 (26.67)	14.00	.00

3.3 Intervention

SEM framework was used for the interventional protocol in the Experimental school settings. Intrapersonal level, interpersonal level, organizational and community level and public policy level improvements or works were performed. The intervention lasted for 12 weeks. In the CON school setting, except pre-test and post-test data collection, nothing was performed during 12-week period of time.

3.3.1 Intrapersonal Level of Influence

Students' intention about exercise behavior, HRF knowledge, PA level, perceived self-efficacy and PA enjoyment levels were identified and they were used as the needs analysis data for the school PE classes and extracurricular PA settings arrangements in general.

More specifically, HRF content knowledge was discussed once a week with pupils at the beginning of PE classes according to the PE curriculum. School PE notice board was prepared according to the HRF knowledge content for the

students. PA and its health related benefits were posted regularly on these notice boards.

In addition to these, physical environment of the school was improved and new PA facilities were provided to the students. These facilities included new climbing iron, horizontal bars, volleyball court, table tennis room, sandbox for long jump and soccer goalposts. Previous facilities were improved; basketball irons were painted, volleyball net was changed and volleyball court lines were painted.

Two trainers were hired to support the extracurricular PA participation of the girls and boys based on the students PA and sport preferences. A female coach trained girls for volleyball, a male coach trained boys for soccer in after school hours for three months, three times per week. PE teacher encouraged the students to participate in the extracurricular activities. Students were coming to school with buses, therefore permission was granted from the provincial education manager for the students participating in extracurricular activities and transportation was provided by school services (see Appendix B).

3.3.2 Interpersonal Level of Influence

Firstly, participants were examined through perceived social support for PA. Social support questionnaire had three sub dimensions related to peer, mother and father support. In this level of SEM, health bulletins (see Appendix O) were sent to each student's family in every three week. Main focus of the health bulletins were mostly related with PE classes, extracurricular activities and health related PA knowledge. Problems related to the study and questions from families were also answered. In addition to these, peer support for

participation was expected through the extracurricular volleyball and soccer activities.

3.3.3 Organizational and Community Level of Influence

This level of SEM included rules, regulation, policies, and informal structures, which might constraint or promote PA behavior of participants. Support and active participation of the school principals for the PE and PA related arrangements were obtained at organizational level. Community level focused on social networks and norms, or standards, which exist as formally/informally among individuals, groups and organizations. PE teacher asked help from the local municipality (see Appendix C) prior to and during the intervention. For example, sand was provided for the sandbox in the school garden from the local governmental authorities

3.3.4 Public Level of Influence

Public policy drivers related with PA participation and sport were interpreted and underlined for the students, PE teacher, school principals, families and the local municipality authorities. The study setting was supported by two main policy drivers: (1) improving HRF knowledge of all, and (2) education through PA.

Ministry of Health was supporting PA based health promotion programs for all ages including school aged children (e.g., educational materials, informational bulletins). In line with this public health priority, HRF was reflected on School PE Curriculum by MoNE. Primary PE curriculum was updated by MoNE (2007) and mainly rooted on two main learning areas, development of psychomotor skills and HRF. Main roles of PA and PE were emphasized not

only for psychomotor development but also for affective social and cognitive development of students in the curricular documents. In general, another crucial document was established by the office of Prime Minister as a circular note (Appendix D) for every governmental institution in Turkey.

The application of the aforementioned intrapersonal, interpersonal, organizational, community and public policy level SEM activity examples within the 12-week intervention is presented in Table 9.

Table 9.
Treatment conditions of applying social-ecological model

Period	Description of activities
Week 1	- Health permission from the village health center was provided for all participants in the experimental group (n=35) - Pre test questionnaires were applied by independent researcher - One girls' mother was called and the study was explained in detail - One of girls' father came and asked questions about the study
Week 2	- Horizontal bars and basketball irons were painted - One girl would like to drop the after school program due to insufficient physical ability. The focus of the study explained in detail, purpose is participation and increasing knowledge.

Week 3	-	School notice board arranged for the students
	-	Physical activity and health benefits were posted
	-	Volleyball court lines were painted
	-	Informational bulletin – 1 was sent to families
Week 4	-	Climbing iron was prepared for use
Week 5	-	Table tennis room was prepared
Week 6	-	Informational health bulletin – 2 was sent to families
	-	Volleyball instructor for girls started
Week 7	-	School notice board were arranged
	-	Two boys participated to soccer from school
Week 8	-	Sand pool for long jump was prepared
	-	One teacher participated to the activities from school
	-	Soccer game was played between another middle school students
Week 9	-	Informational health bulletin – 3 was sent to families
Week 10	-	School staff participated to soccer and school service driver participated to volleyball activity
Week 11	-	Informational health bulletin – 4 was sent to families
Week 12	-	Post test questionnaires were applied
	-	Pedometers were given to students and PA level was assessed in both schools

3.4 Data Collection Instruments

Data collection instruments were “Health Related Fitness Knowledge Test”, “Exercise Stages of Change Questionnaire”, “Children Self-Efficacy and Proxy

Efficacy for After-School PA", "PA Enjoyment Questionnaire", "Perceived Social Support for PA Questionnaire", and "Pedometers". In addition to these, "Focus Group Interviews" were performed by the experimental group participants.

3.4.1 Health Related Fitness Knowledge Test

HRF knowledge was examined through an adapted version of Super Kids-Superfit questionnaire (Mott et al., 1991). The aim of this instrument was to examine pupils' HRF knowledge in relation to PA and PE standards. The instrument was validated in a study by Hünük and İnce (2010) in Turkish language for middle school students (Appendix I). Turkish version included 36 items. According to the validation study, item difficulty values were ranging from 0.24 to 0.90, average p-value of the test was 0.60, and discrimination value range was 0.04-0.54. The reliability value of the test was 0.68. Based on these findings, the test was reported as valid measure of Turkish middle school students' conceptual HRF knowledge by Hünük and İnce (2010).

3.4.2 Exercise Stages of Change Questionnaire

Participants' intention about their exercise behavior was assessed by the exercise stages of change questionnaire for children. The original instrument was validated by Haas and Nigg (2009). The questionnaire consisted of 5 questions related to exercise behavior intention of individual. According to the response to one of the five questions, the participants were assigned to one of the five stages; pre-contemplation, contemplation, preparation, action and maintenance. Instrument was translated and validated into Turkish by Cengiz, İnce and Hünük (2010) (Appendix J). In the validation study, test-retest value

was reported as ICC=.92. Construct validity was also reported as good with an indication of significant difference between PA level and exercise stages of participants (X^2 (4, n=334) = 10.99, p <0.05).

3.4.3 Children Self-Efficacy and Proxy Efficacy for After-School PA

Children proxy efficacy was defined as children's confidence in their skills and abilities to get parents to respond in their interest to provide PA opportunities. Self-efficacy and proxy efficacy for after-school PA scale was originally developed by Dzewaltowski et al. (2009) and was shown to be valid and reliable for the use in children. The scale measured efficacy under four major processes consisting of 15 items: 5 items self-efficacy for PA (SEPA), 6 items proxy efficacy for PA parent (PEPA-P), 4 items proxy efficacy for PA staff (PEPA-S) and perceived school PA opportunity items related to after-school environment. The questions were assessed using three Point Likert-type scales. Turkish version of the instrument (Appendix L) was validated by Cengiz and İnce (2010) in a middle schools sample (n_{female} =224 and n_{male} = 206). Following reliability evindence was reported in the validation study: Self-efficacy for PA (Cronbach's alpha=0.73, test-retest reliability=0.91); Proxy efficacy for PA parent (Cronbach's alpha=0.80, test-retest reliability=0.89); and Proxy efficacy for PA staff (Cronbach's alpha=0.74, test-retest reliability= .88).

3.4.4 PA Enjoyment Questionnaire

PA enjoyment was assessed by 7 items on a 5-point Likert-type scale ranging from 1 (completely disagree) to 5 (completely agree) (Grieser, Neumark-Sztainer, Saksvig, Lee, Felton, and Kubik, 2008). The Turkish version

(Appendix M) was validated by the researcher in a middle school sample (N=420) for the current study. Cronbach's Alpha values was (.72) at an acceptable value. Each scale had also valid correlation values for girls (r=.60) and for boys (r=.59).

3.4.5 Perceived Social Support for PA

The scale was developed by Sallis, Hovell, Hofstetter, and Barrington (1992) which consisted of 14 items on a 5-point Likert-type scale. Purpose of the questionnaire was to evaluate mother, father and peer's opinions about social support related to participating in PA. Turkish version of Social Support questionnaire was validated by Hünük et al. (2008) (Appendix K). Test-retest reliability was reported as ICC=.73 with correlation for mother (r=.72), father (r=.81) and peer (r=.78) (Hünük et al., 2008).

3.4.6 Pedometer

Pedometers (SILVA, Sweden AB) were used to identify PA levels of students. Students were informed to wear the pedometers at all times with the exception of sleeping and bathing for the next 7 days. Seven days of walking was collected in order to see the differences between weekdays and weekends PA level of participants. Each day, before sleeping, they recorded the total steps in the pedometer on a recording sheet and then reset the pedometer for the next day.

3.4.7 Focus Groups

Four focus group interviews with the experimental group were performed. Each group included six to seven participants in order to ensure the students comfort to share their feelings and experiences freely (Krueger and Casey,

2000). Groups were composed of only girls and boys. The focus group was conducted by experts in physical education in the experimental school during a regular school day in May 2010, following the 12 week intervention. No incentives were promised to students only water and fruits were given during the focus groups. Focus groups were conducted in an empty classroom either during lunch breaks or class time. Each session lasted between 30 and 45 minutes and was audio taped by granting permission from the pupils. The focus group interview questions are presented in Appendix P.

3.5 Data Collection Procedure

Data was collected between late February and mid May 2010. All questionnaires were applied during school hours by an expert in physical education during the lunch break or after school time. The project goals and methods were explained by the expert to the participants. Data collection instruments were applied to participants before and at the end of the intervention respectively.

3.6 Ethical Concerns

Approval of the Institutional Human Research Ethical Committee from the Middle East Technical University was provided before the study (Appendix A). Permission from the school administration and District National Education was obtained (Appendix B). Written informed parental consent, children written assent and debriefing consent form was obtained prior to the study (Appendix E, F, G). Medical health report for every pupil was provided from the dispensary before the study (Appendix S).

3.7 Data Analysis

All data obtained from the questionnaires were examined by parametric and nonparametric statistical methods. Two types of statistical analysis, descriptive and inferential, were mainly performed in this study. Descriptive statistics were used to describe the basic features of the variables used in the research. The descriptive approach involved frequencies, percentages and cross-tabulation. Assumption check for every dependent variable was also examined before examining the research questions.

The inferential statistics used in this study was nonparametric method; Pearson chi-square. There was one condition that necessitated the use of nonparametric statistics in this study, which is the presence of nominal data (e.g. exercise stages of change levels) in research question 3.

Analyses of other dependent variables such as HRF knowledge test, PA level, self-efficacy, perceived social support, and PA enjoyment were performed by Repeated Measures Univariate Analysis of Variance (ANOVA). Statistical Package for the Social Sciences (SPSS, version 15.0) was used for all analyses.

Focus group discussions were analyzed with content analysis method (Creswell, 2008; Denzin and Lincoln, 2003). Firstly, qualitative data was recorded and verbatim descriptions were done. In addition to these, thick descriptions were developed by the researcher and descriptions of expressions

that took place during the interviews were reviewed and themes were determined. These themes were provided by reviewing the transcribed notes and listening to the audio tapes. Independent reaseracher from the field of PE and Sport area also examined the expressions and formed the themes that were collected by the focus group discussions. Finally, triangulation techniques were employed in order to provide the trustworthiness including member check, peer debriefing and a comparison of qualitative themes with quantitative findings.

3.8 Assumptions of the Study

It was assumed that subjects of this study completed "HRF Knowledge Questionnaire", "Exercise Stages of Change Questionnaire", "PA Self-Efficacy and Proxy-Efficacy for After-school PA Questionnaire", "Perceived Social Support for PA Questionnaire" and "PA Enjoyment Questionnaire" truthfully and they completed the "Pedometer" data collection procedures according to the study protocol. It was also assumed that the participants responded to the focus group interview questions unbiased and truthfully.

3.9 Limitations of the Study

This research was subject to several limitations that might have affected the findings reported herein. Firstly, the study sample consisted of only middle school students from two rural schools. Thus, generalizability of this study was limited to similar educational contexts. The self-reported nature of the questionnaires related perceived social support, HRF knowledge, exercise stages of change, self-efficacy, and PA enjoyment in this study might have been effective. Data analysis of transcribed focus group discussions might be

subjected to investigator bias in interpretation. In order to minimize this bias, triangulation and quantitative data were used in order to establish consistency. Finally, the extracurricular sport activities in the experimental school were limited to a 12-week period.

CHAPTER 4

RESULTS

This chapter presents the findings on the effect of SEM on HRF knowledge and PA behaviors of middle school students who were living in rural context. Findings related to each research question are presented in order.

4.1 Research Question 1: Does social-ecological intervention increase the HRF knowledge level of middle school students?

"Health Related Fitness Knowledge Test" (Hünük and İnce, 2010) was used for data collection. Multivariate and univariate assumptions were checked before applying the analyses (see Appendix N).

Table 10.
Descriptive statistics of HRF knowledge test

	Pre-Test		Post-Test	
School	M	SD	M	SD
EXP*	20.67	4.92	27.71	4.92
CON	20.84	3.26	19.74	4.19
Total	20.77	4.14	23.73	5.87

*significant increase, $p < 0.05$

According to the Repeated Measures ANOVA results, there was a significant main effect for school, Wilks' $\Lambda = .84$, $F_{(1,60)} = 59.83$, $p < .05$. The

Multivariate η^2 based on Wilks' Λ was quite strong (.50) (Cohen, 1988). Descriptive statistics are presented in Table 10.

4.2 Research Question 2: Does social-ecological intervention increase the PA levels of middle schools students?

PA level of the students were calculated by using "Pedometers". Multivariate and Univariate assumptions were checked before applying the analyses (see Appendix N). Descriptive statistic of PA levels based on gender for each school was presented in Table 11.

Table 11.
Descriptive statistic of physical activity levels based on gender

Gender	Boys				Girls			
	Pre-Test		Post-Test		Pre-Test		Post-Test	
School	M	SD	M	SD	M	SD	M	SD
EXP	13.633	2419	17.099	2216	11.093	3343	12.552	2.279
CON	11.045	3578	11.425	3590	8.522	2774	9.701	3.381
Total	12.339	3277	14.262	4113	9.808	3292	11.126	3.185

According to the Repeated Measures ANOVA results, there was a statistically significant effect for school, Wilks' Λ = .88, $F_{(1,60)}$ = 7.83, p < .05. The multivariate η^2 based on Wilks' Λ was moderate (η^2=.11) (Cohen, 1988). Descriptive statistics are presented in Table 12.

Table 12.
Descriptive statistic of physical activity levels of students

	Pre-Test		Post-Test	
School	M	SD	M	SD
EXP*	12322.60	3160.23	14752.42	3198.15
CON	9743.30	3386.25	10535.50	3535.62
Total	11032.95	3498.78	12643.96	3961.88

*significant increase, $p < 0.05$

4.3 Research Question 3: Does social-ecological intervention increase the exercise stages of change (ESC) level of middle schools students?

Pupil's exercise behavior intention was collected through "Exercise Stages of Change Questionnaire" (Haas and Nigg, 2009; Cengiz, Hünük, and İnce, 2010). Chi-square analysis indicated that there were statistically no significant difference in the exercise stages of change levels with respect to school of participants in pre-test, [X_4^2(N=62) = 2.81, p>.05] and post-test, [X_4^2(N=62) = 51,35, p>.05]. Students who were in the experimental group did not differ from students who were in the control group with regard to ESC.

Table 13.
Exercise stages of change (ESC) based on school

	EXP				CON			
	Pre-Test		Post-Test		Pre-Test		Post-Test	
ESC Levels	n	(%)	n	(%)	n	(%)	n	(%)
P	1	(3.23)	-		4	(12.90)	10	(32.26)
C	13	(41.93)	-		15	(48.39)	5	(16.13)
P	10	(32.26)	-		7	(22.58)	13	(41.93)
TA	7	(22.58)	27	(87.10)	5	(16.13)	2	(6.45)
M	-		4	(12.90)	-		1	(3.23)

PC = Pre-contemplation, C = Contemplation, P = Preparation,
TA = Taking Action, M = Maintenance

However, descriptive statistics indicated that participants were in higher stages namely in action and maintenance stages in the treatment group comparing to control group participants (Table 13).

4.4 Research Question 4: Does social-ecological intervention increase the perceived self-efficacy of middle school students?

"Self-efficacy and Proxy Self-efficacy for After School PA Questionnaire", was used for data collection (Cengiz and İnce, 2010). Multivariate and

Univariate assumptions were checked before applying the analysis (Appendix N).

Table 14.
Descriptive statistic of self efficacy, staff efficacy and parent efficacy of students

		Pre-Test		Post-Test	
School	Variables	M	SD	M	SD
EXP	Self Efficacy	10.03	2.01	10.93	2.20
	Staff Efficacy	8.48	1.31	8.97	1.89
	Parent Efficacy	11.97	2.01	13.87	2.36
CON	Self Efficacy	9.74	2.11	9.77	2.23
	Staff Efficacy	7.77	1.76	7.39	1.86
	Parent Efficacy	11.74	3.04	12.42	2.75

According to Repeated Measures ANOVA results, there was no significant main effect for school, Wilks' $\Lambda = .93$, $F_{(3,58)} = 1.50$, $p > .05$. On the contrary, descriptive statistics indicated an increase in the treatment group PA self-efficacy level (Table 14). This increase was not statistically sufficient for a significant effect ($p > 0.05$).

4.5 Research Question 5: Does social-ecological intervention increase the perceived social support of middle school students?

"Perceived Social Support for PA Questionnaire" was used for data collection. Multivariate and univariate assumptions were checked before applying the analysis (Appendix N).

Table 15.
Descriptive statistic of perceived social support of students

		Pre-Test		Post-Test	
School	Variables	M	SD	M	SD
EXP	Mother Support*	7.74	3.57	11.48	4.17
	Father Support*	8.00	3.89	10.93	4.37
	Friend Support	10.74	4.43	11.51	3.59
CON	Mother Support	8.03	3.32	8.64	4.28
	Father Support	8.13	3.72	8.48	4.81
	Friend Support	10.52	3.27	10.23	3.84

*significant increase, $p < 0.05$

According to the Repeated Measures ANOVA results, there was a statistically significant effect for school, Wilks' $\Lambda = .86$, $F_{(3,58)} = 3.08$, $p < .05$. The multivariate η^2 based on Wilks' Λ was moderate effect (η^2=.14) (Cohen, 1988).

Before interpreting the further analysis of paired sample t-test results, it was important to mention that the alpha level was adjusted by using Bonferonni correction method. Alpha level was going to be reduced because of avoiding the risk of making Type II error (Stevens, 2002). Thus, the alpha level in this

step was decreased to .016 because of three subscales of social support. The dependent sample t-test results indicated that students in treatment school made a difference (MD = -3.74, SD = 3.73) for mother, (MD = -2.93, SD = 4.08) for father and (MD = -.77, SD = 4.59) for friend from pre to post test. Except friend support this difference is statistically significant for mother support, t(30) = -5.58, $p < .016$, r = .54 and for father support, t(30) = -4.00, $p < .016$, r = .52. On the other hand control school had no significant effect on the mother support, t(30) = -.76, $p > .016$, father t(30) = -.39, $p > .016$, and friend support, t(30) = -.39, $p > .016$.

4.6 Research Question 6: Does social-ecological intervention increase the enjoyment of middle school students?

"PA Enjoyment Questionnaire" used for the data collection. Univariate assumptions were checked before the analysis (see Appendix K).

According to the Repeated Measures ANOVA results, there was no significant main effect for school, Wilks' $\Lambda = .99$, $F_{(1,60)} = .04$, $p > .05$. Descriptive statistics are presented in Table 16.

Table 16.
Descriptive statistic of physical activity enjoyment

	Pre-Test		Post-Test	
School	M	SD	M	SD
EXP	17.64	7.15	18.61	8.06
CON	17.45	6.05	18.84	6.29
Total	17.55	6.57	18.73	7.17

4.7 Research Question 7: What are the students' perceptions of social-ecological intervention?

This question was answered via focus group discussion in the experimental school. After each topic was discussed by the focus groups, content analysis was implemented to the qualitative data. Following six different themes were formed by content analysis.

Theme I: Increased PA Opportunities by Students PA Preferences and PA Needs

First theme was related to PA opportunities that were improved with social-ecological intervention in the treatment school. Based on students' preferences and needs, different improvements were made during the intervention and students perceived those changes in their environment.

Pupils' ideas were summarized under four patterns which were; (a) School PA opportunities were increased, (b) Physical activities in courses were chosen

according to students' preferences, (c) In after-school context, different PA opportunities were provided for boys and girls, and (d) in after-school settings, PA opportunities were supported.

School PA opportunities were increased and according to the boys *"From the beginning of spring semester we do sport three times a week and we do have facilities since then, the new facilities were; climbing iron, horizontal bar, soccer goalposts, volleyball court, balls, sandbox for long jump, and table tennis."* In addition girls summarized their opinions *"This year we do have soccer goalposts, climbing iron, horizontal bar, volleyball court with net. Other than school there is only one place we can play volleyball that is behind the gas station. However only boys can play there and we go for a walk with mums."*

Secondly, physical activities in courses were chosen according to students' preferences. Erhan stated *" I love soccer most. As a hobby I play table tennis. Because soccer is the most opportunity here (in school) we can play. At the basement there is a table tennis."* İbrahim responded *"I love soccer most. I can run fast, because of that I prefer soccer."* Similarly Fikret stated *"Me too soccer, volleyball and I play table tennis. There is volleyball net that our teacher has made it. The court and 3 meter lines. Girls play volleyball."* Kübra from sixth graders responded *"Volleyball, soccer. I usually play with girls. Rope jumping, overhand pass, and dodge ball."* Havva stated *"I love volleyball, I am able to play it"*.

Thirdly, in after-school context different PA opportunities were provided for boys and girls. The new facilities were; climbing iron, horizontal bar, soccer

goalposts, volleyball court, balls, sandbox for long jump, and table tenis. Havva the girl from sixth grade stated *"I love it, I am able to play it. The sport that was offered was; volleyball for the girls and soccer for the boys."* Erhan stated *"I love soccer most. … soccer is the most opportunity here we can play."*

Lastly, in after-school settings PA opportunities were supported.

Elif from seventh grader girls responded *"… There were only basketball poles. Our teacher made soccer goalposts, then horizontal bar, volleyball court and climbing rope."* Emine stated *"We are playing volleyball, basketball, and skipping rope. For example, there were no lines on the volleyball court. Our teacher drew all the lines. He painted them all."* İbrahim summarized his ideas as *"When our teacher came to the school he provided new PA facilities; climbing bar, horizontal bar, sandbox, goalposts. After then, we started to play soccer in here. 3 days for 80 minutes we play soccer."* Emrah similarly stated *"When our teacher came these facilities were provided. There were even no balls in the school. He provided them when he came."* Süleyman stated, *"We come here and play football."*

Theme 2. Integration of PE Lesson with Extracurricular Activities and Life

Ali responded from sixth grader boys *"We play soccer regularly 3 days a week."* Similarly Muhammet stated *" 5 days. We play soccer on Saturday and Sunday and weekdays 3 times."* Elif from seventh grade girls responded by stating *"PowerPoint presentations, heart rate of our bodies, what should be the recommended daily steps…"* from the same class Emine stated *"I have*

learned a person's daily steps. 10.000 steps." Sadık stated *"…For example, we learned basketball. He gave us information about them. … For example, what causes lifting weight? Increase muscle size."*

Theme 3. Increased PA Participation

Third theme was related to increased PA particpation and boys stated, *"From the beginning of spring semester we do sport three times a week"*. İbrahim stated his ideas, *"When our teacher came to the school he provided new PA facilities; climbing bar, horizontal bar, sandbox, goalposts. After then, we started to play soccer in here. 3 days for 80 minutes we play soccer."* Salih stated *"When he (teacher) came he brought balls, climbing iron. … There was no volleyball net, soccer goalposts he made them. There was no climbing iron he made that too. Because of him we can participate in many physical activities. Previously we could not participate."* Havva stated, *"This year we are able to play soccer. We played volleyball (overhand pass, pass) and basketball. Long jump just came this semester. We performed pull-ups on the horizontal bar."*

Theme 4. Increased Data Sources to Reach Sport and PA Related Knowledge

Pupils reach information from different sources and middle school girls summarized their opinions, *"We were reaching to information via internet, television, school library and encyclopedias. In addition, this year we had an instructor that is specialist in volleyball for 80 minutes in after-school period. We have learned volleyball rules and techniques; passes (overhand pass etc.), attack, spike, service."* Boys summarized their ideas as *"We searched different*

type of sport (Tennis, Gymnastic, Triathlon, Rugby) related to performance work in PE course. Basic sources were internet, school library and teachers." Gamze from sixth graders stated *"There are encyclopedias in the school library. I mostly learn more from encyclopedias. This term, there was a project work which was given by our teacher. Everyone had got a sport branch and I got billiard. I found kinds of billiard and when it was originated from the school library."* Ali stated *" I asked to my big brother and my father."* Salih responded *" I mostly use our library, there are sport books."* Erhan from sixth graders indicated *"… If I do not know it or cannot find it I always asked to my teachers."* Fikret from eighth grader boys stated, *"From the internet and inside the school there was a school notice board which was prepared by the PE teacher and Sport Club members."* Aybüke stated *" I read too. Our teacher announced some information about different sports and I read them. I have learned how to shoot the basket from there. I did not like basketball before but now I do…"* Salih stated *" I search the internet and ask my teachers and also look in the library. I use them all."*

Theme 5. Increased Perceived Support from the Significant Others

Overall pupils indicated *"Our families support our participation in this after-school program to become healthier. They provide transportation. Other than our families my big brother, PE teacher, volleyball instructor support our participation."* Süleyman stated, *"My friends, our teachers, my mother and father."* Mehmet stated *"… My friends, PE teacher, other teachers."* Aybüke from sixth graders girl responded, *"I am supported from my family too, PE teacher and volleyball coach. I said my family because they wanted me to*

become taller, muscular and become healthier." Fatma stated, *"… My family wants me to play volleyball more than other sports. I usually talk to my father about sport. I also come here because my friends are coming."*

Theme 6. Influence of Perceived Stress of Academic Exam for Secondary Schools (AESS) on Extracurricular Activity Participation

Last theme emerged from the girls' focus group discussion that was related to barriers for extracurricular PA participation. Girls summarized their opinions as, *"There is no one or any condition preventing us from this program. The only condition is we do not have much time from the other subjects that are in the middle school curriculum"*. Similarly, Elif from seventh graders summarized her opinions, *"No, there is not. Except our courses. But there is Academic Exam for Secondary School and we must get high scores in the exam so we have to study. We have term projects, performance works therefore we do not have time for sport. Always courses !"* On the other hand Elif responded *"This program did not effect my courses."*

Table 17.
A summary of the Results

Research Question	Data Collection Tool	Participants	Data analysis	Results
1. Does social-ecological intervention increase the PA knowledge level of students?	HRF Knowledge Test	Experimental and Control group participants	Repeated Measures ANOVA	• Significant improvement in HRF knowledge level of students in treatment school
2. Does social-ecological intervention increase the PA levels of students?	Pedometer	Experimental and Control group participants	Repeated Measures ANOVA	• Significant improvement in PA level of students in treatment school
3. Does social-ecological intervention increase the exercise stages of change level of students?	Exercise Stages of Change Q.	Experimental and Control group participants	Descriptive statistics and chi-square	• No significant improvement in exercise stages of change levels of students in treatment school
4. Does social-ecological intervention increase the perceived self-efficacy of students?	PA SE, Staff-Efficacy and Parent-Efficacy Q	Experimental and Control group participants	Repeated Measures ANOVA	• No significant improvement in perceived SE, staff-efficacy and parent-efficacy level of students in treatment school
5. Does social-ecological intervention increase the perceived social support of students?	Perceived Social Support Q.	Experimental and Control group participants	Repeated Measures ANOVA	• Significant improvement in perceived social support of students in treatment school
6. Does social-ecological intervention increase the enjoyment of students in PA?	PA Enjoyment Q.	Experimental and Control group participants	Repeated Measures ANOVA	• No significant improvement in PA enjoyment levels of students in treatment school
7. What are the students' perceptions of social-ecological intervention?	Focus Group Interview	Experimental group participants	Content Analysis	• Six themes emerged. Students perceived most of the SEM based changes in their environment

Abbreviations
SEM: Social-Ecological Model; SE: Self-Efficacy; PA: Physical Activity; MANOVA: Multivariate Analysis of Variance; Q: Questionnaire; ICC: Intra Class Correlation

CHAPTER 5

DISCUSSION

The purpose of this research was to evaluate the effects of social-ecological approach on PA knowledge level and behavior of middle school students who were living in rural context. In this chapter findings of each research question will be discussed.

5.1 Research question 1. Does social-ecological intervention increase the HRF knowledge level of middle school students?

Findings of the present study indicated that 12 week of social-ecological intervention was effective in improving HRF knowledge of rural middle school students. Baseline measurements over 36 items HRF knowledge average test scores showed (experimental school=20.67, control school=20.84) significant improvements at post-test evaluation (experimental=27.71, control school=19.74) in EXP schools. In addition to descriptive statistics inferential statistics were also applied to the HRF knowledge data. Repeated Measure ANOVA results indicated that there was a significant main effect for the intervention school ($p < .05$). Items of Turkish HRF knowledge test (Hünük and İnce, 2010) were constructed according to the elementary school PE curriculum

standards that were updated in 2007 by the Ministry of National Education. This PE curriculum is mainly rooted in two main learning areas, development of movement skills and health related fitness (MoNE, 2007).

Studies related to the assessment of learning domains have been conducted in very sparse research. Similarly, limited research in health related knowledge among middle school or high school students caused difficulties in discussing the topic. Therefore, elementary, secondary school and university level research was included in this section. In one research, Kulinna (2004) summarized that more than 50% of elementary school students were unable to accurately identify different types of fitness activities. In the present study, students improved their fitness knowledge with the social-ecological intervention. Another finding was students were not able to define physical fitness and good looking. They believed that fitness means good looking (Placek, Griffin, Dodds, Raymond, Tremino, and James, 2001). These findings revealed that there was a need for HRF knowledge tests which aims to assess PE standards and more importantly school contexts need to be supported with different environmental and social variables.

Dilorenzo, Stucky-Ropp, Vander Wal and Gotham (1998) noted that middle school students' (5th and 6th graders) HRF knowledge was a determinant of children's exercise behavior. Unfortunately, due to limited research on this

topic, researchers need to take into consideration the following fact when interpreting the relatively low correlation between HRF knowledge and PA behaviors reported in the literature. First, it is unknown how much HRF knowledge level has been taught in schools, even though both NASPE (2004) and most states have provided guidance for student HRF knowledge at all educational levels (NASPE, 2006) in US context. Similarly, the study of Stewart and Mitchell (2003) summarizes that most students (57%) were not able to identify correct fitness components and 26% of them were not able to match the HRF knowledge construct with the Fitnessgram (Meredith and Welk, 2007) test item. In this context, social-ecological intervention was fairly effective and pupils increased their HRF knowledge significantly over 12 week period of time. The improvement was from 20 correct answers to 27 correct answers out of 36 items related to HRF knowledge.

Another study by Placek and associates (2001) used qualitative methods to investigate middle school student HRF knowledge. Mainly, the importance of exercise, exercises that could be used to improve HRF, and exercise principles were analyzed in the study. Researchers found that middle school students had misconceptions concerning fitness because most students thought fitness was the same as being skinny. More importantly, the authors reported pupils had the same erroneous fitness knowledge as those of students more than 20 years earlier (Keating et al., 2009). Similar results and misconceptions were also

founded among high school pupils in fundamental HRF knowledge (Stewart and Mitchell, 2003; Keating et al., 2009).

In the light of these studies, there is an emergent need of research on this topic in Turkish middle school level and other levels of education. The new PE curriculum that was updated in 2007, HRF knowledge standards and their objectives need to be examined in a bigger sample with HRF knowledge tests in elementary and in the new secondary school (MoNE, 2010) based on Turkish PE curriculum standards.

5.2 Research question 2. Does social-ecological intervention increase the PA level of middle school students?

As a second research question, this study aimed to increase PA level of sixth, seventh and eighth grade students living in a rural context with the model of socio-ecology over 12 week period. Findings revealed that SEM had statistically significant effect on PA levels of students in the treatment school. The measurements were taken in 7 consecutive days of a week. Boys (daily 13.633 steps) were more active than girls (daily 11.093 steps) in treatment group at baseline measurement. In control group, similar findings were also identified in both sexes (daily steps for boys= 11.045 and girls=8.522). After 12 week period of intervention based on SEM, treatment school had increased their PA level in both gender (boys=17.099, girls=12.552) compared to control

school (boys=11.425, girls=9.701). Overall, the average steps taken in a week increased significantly in treatment school (pre-test=12.322 steps, post-test=14.752 steps) for both gender. These results raise the possibility that supporting the school environment with multilevel approaches could increase the PA level of students. These findings were also consistent with previous researches that identified significant effect on PA level in children (Beets, Bornstein et al., 2010; Haerens, De Bourdeaudhuij, Cardon, and Deforche, 2007; Hardman, Horne, and Lowe, 2011) with pedometer measurement.

In a review article Beets, Bornstein, and colleagues (2010) evaluated the pedometer measured PA patterns of youth. Average PA levels of youth were listed as daily steps among Western Pacific countries, Australia and New Zealand (weekly lowest 12.873 steps) in comparison to all other countries (Europe=8.470, other=8.463 steps) among boys. The girls in Western Pacific region had, on average 20.223 steps more, respectively, than boys and girls from the U.S. and Canada. There was a remarkable decrease after aged 9-13 years old students. These values showed that average weekly steps of youth change between 12.873 and 20.223, with an average of 16.548 steps. Similarly, 7-11 years old age pupils' weekday school PA level was 13.091 for girls and 17.055 for boys (Hardman et al., 2009). Although gender differences were not the focus of this research, studies examined each gender separately. Our

findings also demonstrated similar results for boys and girls (weekly steps for boys=17.099 and girls=12.552) in the treatment school.

Loucaides, Chedzoy, and Bennett (2004) concluded that PA levels varied by seasons among rural and urban children (aged 11-12) living in Cyprus. Those children in rural areas were most physically active in summer months compared to urban children that were most physically active in winter months. Another study by Riddoch et al. (2007) evaluated levels and patterns of PA in children (aged 11 years). Results indicated that children were most active in the summer months performing different physical activities ranging in intensity.

Pedometer measurement of children's PA level provided a useful indicator of daily step counts (Bassett and Strath, 2002). On the contrary, pedometers are not sensitive to changes in speed, and would under predict PA levels for activities such as bicycling and swimming (Bassett et al., 2000). Therefore, pedometers do not provide valid information as to the intensity of the activity. It may thus be considered that ambulatory activity measured by pedometers could not account for the range and intensity of activities engaged by the children during this study. Nevertheless, because of their low cost (Leenders, Sherman, Nagaraja, and Kien, 2000) and easy to use, pedometers provide reliable and valid data for assessing daily PA patterns (Welk, Corbin, and Dale,

2000). In the present study, using a pedometer as an intervention tool made it is easy to use and cost effective for use in large groups.

5.3 Research question 3. Does social-ecological intervention increase the exercise stages of change level of middle school students?

Exercise stages of change results of the present study revealed no significant effect on PA exercise behavior of pupils in middle school sample. Inferential statistics and chi-square analyses were applied to the data. Due to low number of the participants, analyses indicated that there were no significant relationship between exercise stages of students and schools. However, descriptive statistics showed that participants were in higher stages namely in action and maintenance stages in the treatment group compared to control group participants. Another important finding was the participants in both schools were in the lower stages according to stages of change, namely in pre-contemplation, contemplation and preparation in baseline measurements. However, after the 12 week intervention all students in treatment school changed their stages into higher stages (taking action and maintenance). On the contrary, pupils in the control school showed no change in their stages taken in pre and post-test evaluation. Control school stage distributions were similar in pre-test and post-test measurements, no changes were observed. This result also

supported the positive effects of SEM on physical activity behaviors of students in terms of exercise stages of change in the treatment school.

Findings related to exercise stages of change were consistent with the previous studies (Cengiz et al., 2010; Bourdeaudhuij, Philippaerts, Crombez, Matton, Wijndaele, Balduck, and Lefevre, 2005; Hausenblas et al., 2002; Nigg and Courneya, 1998). However, the findings of Cengiz and colleagues (2010), describing the Turkish middle school students, were undertaken in a limited sample with three middle school students. Stage distributions were equal among the five stages but pupils in action stages sharply decreased in maintenance among girls (action = 37, maintenance = 17) compared to boys (action = 38, maintenance = 37). Although gender differences were not the focus of the present study results indicated that girls had more difficulty in the maintenance stage. There was a need for programs that girls could participate for longer periods of time in and after school.

There were several limitations in this study need to be explained. First, only two middle schools were sampled, and there were few participants in the precontemplation, preparation, taking action, and maintenance stages. As Cardinal (1995) noted, small sample sizes in the early stages of change might be due to limitations with the exercise stages of change questionnaire, the restrictive nature of the sample, or social desirability biases associated with

exercise. Further researches are needed to examine the stages of change questionnaire in larger, more representative samples before the validity and generalization of the findings can be determined for middle-level school children. In addition, the small sample sizes in the precontemplation and taking action stages limited the statistical power of the study (Nigg and Courneya, 1998).

5.4 Research question 4. Does social-ecological intervention increase the perceived self-efficacy of middle school students?

This research question addressed the evaluation of the 12 week intervention based on social-ecological approach on perceived self-efficacy in the treatment school compared to the control school. Statistically, the findings indicated no significant differences between groups. Although there was no statistical significance between groups and subjects, there were small improvements noted between group variables with the greatest improvements noted in the intervention group. For example, perceived self-efficacy scores increased by 0.90 from pre to post testing in the intervention school compared to only 0.03 in the control school participants. Greater mean improvements in parent-efficacy were noted in the intervention group with 2.90 compared to the control schools improvement of 0.68. Improvements in staff-efficacy were smallest in the intervention school with 0.39 compared to control group with a reduction of

0.38. These finding revealed that social-ecological model had an effect on self-efficacy variables but this improvement was not sufficient for statistically significance among the students.

In the present study there were several contributing factors that may have impacted the less than optimal outcomes of the intervention program. Firstly, students' enrollment was a major confounding variable that was unable to be controlled for in the study. Low population of the town and low number of students in the school (middle school=52 pupils) could be an important factor on the outcomes.

Second factor may be pupils' self-efficacy of physical activity levels was already high before the study. We only have the pre-test scores that were (treatment school = 10.03, control school = 9.74) high in self-efficacy, moderate in staff efficacy (treatment school = 8.48, control school = 7.77), and highest in parent efficacy (treatment school = 11.97, control school = 11,74). High parent efficacy also supported that perceived social support of students was statistically significant showing similarities between self-efficacy and parental support. This striking finding was crucial when studies focused on increasing parental support of students. We need to support both dimensions when increasing PA knowledge, level and physical activity behavior of middle school students. Similarly, Shields, Spink, Chad, Muhajarine, Humbert and

Odnokon (2008) examined self-efficacy and parental social influence related to physical activity. Result of this research revealed support for self-regulatory efficacy as a mediator and parental influence effect on youth and adolescent PA.

Another contributing factor could be the activity type that was chosen by the pupils prior the study. One of the main tasks was increasing PA knowledge, level and behaviors. Improving self-efficacy related to the activity type was not the focus of the study. Playing soccer and volleyball may not be effective in increasing self-efficacy as compared to individual sports (e.g., gymnastic, tennis, wrestling or track and field). The focus of the intervention was only playing and teaching some basic skills of the sport activity. Developing PA knowledge, level and PA behavior was more of a focus of the intervention.

5.5 Research question 5. Does social-ecological intervention increase the perceived social support of students?

Perceived social support of the present study revealed significant effect on PA behavior of pupils in middle school sample. There was a statistically significant effect on treatment school PA behavior compared to control school. As the recent literature suggested parental support was one of the key correlations of children's PA behavior (Beets et al., 2006; Green et al., 2007; Sallis et al., 2000). However, little is known what component of parental support was more

effective in promoting PA behavior and how it contributed to the exercise behavior of children. The present study analyzed the perceived social support of parents to PA behavior of pupils living in rural areas. Repeated Measures ANOVA results revealed that social support for PA increased through the social-ecological approach in the intervention group when compared to control group. Further analysis with descriptive statistics defined which variable (mother, father and friend support) was more effective on pupils' PA behavior. Mother and father support values were higher in treatment school related to the PA behavior of students. Notably, we found no evidence of a statistically significant effect on peer support for physical activity behavior of students.

Similar findings were reported by Hünük and colleagues (2008) in a private Turkish middle school sample. Participants received more support for their PA participation from their families compared to their friends. This cross-sectional design was further analyzed in the present study providing stronger design and different sample.

One main reason for significant effect of parental support could be the health bulletins related to the social-ecological intervention were sent to every family and usually mothers or fathers read them or received them. Each family of treatment group received these health bulletins three weeks, health bulletins about the intervention and health benefits of PA (see Appendix O). The rural

families working habits may also affect this result. Generally fathers worked heavy jobs in agriculture and mothers stayed at home and dealt with their kids and house work. Considering this factor would be helpful for further studies when trying to change sedentary behavior of pupils living in a rural context. In addition, this study should be replicated in different socio-economic status and classes.

5.6 Research question 6. Does social-ecological intervention increase the enjoyment of middle school students in physical activity?

This research question addressed the evaluation of the 12 week intervention based on social-ecological intervention on PA enjoyment in the treatment group compared to the control group. Statistically, the findings indicated no significant differences between groups in the two middle schools. Although there was no statistical significance between groups and subjects, small improvements were noted between group variables. For example, PA enjoyment average scores increased by 0.97 from pre to post testing in the intervention school compared to 1.38 in the control school. Greater mean improvements were observed in the control school scores. However, examining the PA enjoyment scores by gender showed that boys had higher improvements (1.07) comparing to girls (0.87) in treatment group whereas in control group boys had also higher scores (4.07) compared to girls with a reduction of (0.88).

It is difficult to comment on the increase in the control group. There might be seasonal effect on boys' choice, type of sport activities or PE teacher effect on pupils.

High level of PA enjoyment of participants was one of the PE objectives and need to be improved by the PE teachers (NASPE, 2004; Sallis et al., 1999). Searching enjoyable activities in PE and PA from the pupils seemed to be an important objective for continuous participation. Participants' responses to PA enjoyment questionnaire was high (Pre-Test M = 17.64 and Post-Test M = 18.61). The average scores were indeed high and for this reason increasing their level of PA enjoyment could be difficult with this intervention. Different sport activities, team sports or athletic sports should be considered and their effects evaluated on PA enjoyment.

Findings indicated that all students preferred physical activities that were enjoyable or fun. They had enjoyment in their physical activities during the intervention. However, a significant effect was not observed and most students reported their reasons for participating in the activities were health reasons. Students learned the importance of participating in physical activities and health benefits in the present study. This result showed the effectiveness of the SEM on HRF knowledge, PA level and PA behavior of rural middle school students. In this respect we may conclude that pupils liked the activities and

gained knowledge about health-related PA otherwise as Prochaska et al. (2003) stated they may decrease their level of PA.

A similar result was reported by Verstraete et al. (2007) HRF knowledge and benefits in PA increased participation of students and their enjoyment. Participating in different sport activities and learning about PA might cause the likelihood of pupils' enjoyment and encourage future participation in physical activities.

Another contributing factor for non-significant group differences on PA enjoyment would be the age and gender factor of the students. Literature related to enjoyment demonstrated that students' level of enjoyment gradually decreases over time (Silverman and Subramaniam, 1999) and girls had low enjoyment in PE. The students' age distribution between 12-14 ages might affect their PA enjoyment from after school sport activities. Gender was not examined in this study but Prochaska and colleagues (2003) examined PE enjoyment in school in a longitudinal study. Their findings showed that girls, older children, and those not on sports teams had low PE enjoyment.

In sum, quantitative results of the present study demonstrated social-ecological intervention was effective on changing HRF knowledge, PA level and PA behavior of treatment school students living in rural settings. In addition, qualitative findings supported that social-ecological approach was productive in

providing PA opportunities, increase PA knowledge, and parental support for PA level among rural middle school students in the treatment school. In addition, new PA opportunities were provided for the pupils.

5.7 Research Question 7. What are the students' perceptions of social-ecological intervention?

Findings indicated that students positively perceived the changes in their environment which were guided by social-ecological framework. Students were able to identify: the increased PA opportunities and facilities in their environment, integration of PE lesson with extracurricular activities and life, increased PA participation of themselves, increased data sources to reach sport and PA related knowledge, and increased perceived support from the significant others for themselves.

These findings from the focus group interviews support the statistically significant findings in the above mentioned quantitative research questions. It is clear that if the learning environment of the students is changed with social-ecological framework, students learning in PE will be stimulated toward the current PE curriculum goals in primary schools.

Primary school curriculum underlines the importance of connecting PE lesson with extracurricular activities and with the life (MoNE, 2007). Focus group

discussion proved that this connection was achieved. In the recent PE literature, integration of PE lessons with life and developing lifelong PA behavior has been the most discussed topic (Kohl and Hobbs, 1998; Sallis, McKenzie, Kolody, Lewis, Marshall, and Rosengard, 1999). However, it has been an unresolved issue. Perceptions of the students in this study present encouraging results toward effective methods to ensure reaching this outcome by SEM.

Students' statements about sport and PE related knowledge and data sources are also important findings in focus group interviews. Findings clearly indicate that students used alternative knowledge sources, including PE lesson, internet data sources, books and magazines, and significant others instead of using very limited sources such as using only PE teachers or friends. This finding imply that teachers role in guiding students to use alternative knowledge sources is important and effective in learning.

Focus group interviews also indicated the some of the students' negative perceptions of Academic Exam for Secondary Schools as a limiting factor in participating in PA. This is a very important public concern in Turkey. There is a need to work on why students perceive this issue as limiting factor for participation. Normally, HRF related PA participation is not requiring as much time as performance or skill related sport participation. Instead, it can be expected that through participation in HRF related PA, students would probably

relax, improve the stress level, and increase their academic performance (Grissom, 2005; Fox, Barr-Anderson, Neumark-Sztainer, and Wall, 2010; Sallis et al., 1999).

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

This chapter aims to summarize the conclusions, implications, and recommendations in physical education for further research studies. This study was the first to examine the effects of social-ecological intervention on physical activity knowledge, level and behaviors of students living in rural settings. As hypothesized, findings illustrated the importance and positive outcomes of SEM in improving HRF knowledge, PA level, and perceived social support of parents for PA.

6.1 Research question 1.

Hypothesis: The social-ecological intervention will increase the HRF knowledge level of middle school students. Accepted

Rural middle school students' HRF knowledge increased through the SEM. It is therefore concluded that intervention, when combined with multilevel SEM, provide an effective educational process for the participants in this study. Statistically significant effect on HRF knowledge of students with the model of

social-ecology was evident. This is further supported by different researchers Gortmaker et al.(1999), Kahn et al. (2002), Manios, Kafatos, and Mamalakos (1998) and in the study of Stewart and Mitchell (2003).

6.2 Research question 2

Hypothesis: The social-ecological intervention will increase the PA levels of middle school students. Accepted

Pupils' daily steps increased with an average of two thousands steps for both sexes. The results showed that supportive school environment with multilevel approaches increased the PA level of students. These findings were also consistent with previous pedometer studies that identified significant effect on PA level in children (Beets, Bornstein et al., 2010; Haerens et al., 2007; Hardman et al., 2009).

6.3 Research question 3

Hypothesis: The social-ecological intervention will increase the exercise stages of change level of middle school students. Rejected

Exercise stages of change results of the present study demonstrated no significant effect on PA exercise behavior of pupils in middle school sample based on SEM. Although descriptive statistics showed that participants were

more prevalent in higher stages namely in action and maintenance stages in the treatment group comparing to control school, there were no statistically significant differences between groups.

6.4 Research question 4

Hypothesis: The social-ecological intervention will increase the perceived self-efficacy of middle school students. Rejected

Statistically, the findings of the study indicated no significant differences between groups. Although there was no statistical significance, small improvements were detected between group variables. Results of the study revealed that social-ecological model had an effect on self-efficacy variables but this improvement was not sufficient for statistically significance among the students.

6.5 Research question 5

Hypothesis: The social-ecological intervention will increase the perceived social support of middle school students. Accepted

According to the findings, 12 week intervention based on SEM was effective in increasing students' perceived parental support. Supportive school environment with multilevel approaches supported family encouragement. These findings

were also consistent with previous parental support studies that identified significant effect on PA level in children (Beets, Cardinal and Alderman, 2010; Hohepa et al., 2007; Robbins et al., 2008).

6.6 Research question 6

Hypothesis: The social-ecological intervention will increase the enjoyment of middle school students in physical activity. Rejected

Findings indicated no significant differences between groups. Although there was no statistical significance, small improvements were detected between group variables. One of the finding was that PA enjoyment scores increased slightly 0.97 pre to post testing in the intervention school compared to 1.17 in the control school participants. Results of the study revealed that social-ecological intervention had an effect on PA enjoyment but this improvement was more in control school. Both results were not sufficient for statistically significance among the students. Reasons behind this improvement should be further evaluated.

6.7 Research question 7

Research Question: What are the students' perceptions of social-ecological intervention?

Results indicated that middle school students positively perceived the changes in their environment which were guided by social-ecological framework. Pupils were able to identify; the increased PA opportunities and facilities in their close environment, integration of PE lesson with extracurricular activities and life, increased PA participation of themselves, increased data sources to reach sport and HRF knowledge, and increased perceived support from the significant others for themselves.

These findings from the focus group interviews support statistically significant findings in the above mentioned quantitative research questions.

6.8 Implications of the Study

6.8.1 Recommendations for PE Teachers

The application of social-ecological intervention in middle school resulted significant improvements in HRF knowledge, PA level and perceived social support. We recommend PE teachers to use SEM and cooperate with various organization, community leaders, school council, teachers and families for positive development of healthy pupils. Using the school boards, PE lessons, discussing HRF knowledge prior the courses and after-school activities were also effective in learning conceptual knowledge standards of PE curriculum. In

addition, PE teachers need to communicate with pupils' families about the need of extracurricular activities for active lifestyle and to reduce sedentary lifestyle.

Second, teachers should teach and evaluate the standard based middle school PE curriculum with standardized conceptual knowledge tests, specifically objectives of HRF knowledge in each grade level of students. During middle school education, students could be measured with standardized HRF knowledge tests at the end of each grade.

Another recommendation would be implementation of the SEM in all educational levels, specifically teachers in secondary schools or high schools should implement the SEM. Literature showed that the decline of PA mostly occurs in transition from middle school to high school (Kimm et al., 2002; Sallis, 2000) and from elementary school to middle school. Therefore, the need for multilevel variables in intervention studies with stronger designs was essential.

Last recommendation would be; PE teachers need to take main responsibility to increase the level of PA, HRF knowledge and improve behavior of adolescence since their PA related behaviors and level decreases sharply during and after middle school (Sallis, 2000). For this purpose action research (Fraenkel and Wallen, 2003) was suggested for the development of school environment and PE context.

6.9 Recommendations for further research

Based on the findings of the present study, the following recommendations were listed for further research.

1. Participants of the study should be measured with follow-up tests for the purpose of the SEM effects on HRF knowledge, PA level and exercise behavior of rural middle school students.

2. The effects of a longer period (at least 1 year) of social-ecological approach on HRF knowledge, PA level, and exercise behavior of rural and urban middle school students should be examined.

3. Different socio-economic status should be studied for the effect of SEM.

4. Rich or poor PA environments should be examined with SEM.

5. Interview with teachers, principals, families and local community managers that supported the study should also examined for the effect of the intervention.

6. I also encourage researchers to replicate the present study with a wider sample size with more PE teachers and more schools from different settings

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APPENDICES

A. APPROVAL OF RESEARCH CENTER FOR APPLIED ETHICS

1956

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25 Şubat 2010

Gönderilen: Yrd. Doç. Dr. M. Levent İnce
Beden Eğitimi ve Spor Bölümü

Gönderen : Prof. Dr. Canan Özgen
IAK Başkan Yardımcısı

İlgi : Etik Onayı

"Sosyo-Ekolojik Uygulamanın Kırsal Ortamdaki Öğrencilerin Fiziksel Aktivite Bilgisi ve Davranışlarına Etkileri" başlığı ile yürüttüğünüz çalışmanız "İnsan Araştırmaları Etik Komitesi" tarafından uygun görülerek gerekli onay verilmiştir.

Bilgilerinize saygılarımla sunarım.

Etik Komite Onayı
Uygundur
25/02/2010
Canan Özgen
Prof.Dr. Canan ÖZGEN
Uygulamalı Etik Araştırma Merkezi
(UEAM) Başkanı
ODTÜ 06531 ANKARA

B. PROVINCE APPROVAL OF THE STUDY

T.C
GÜDÜL KAYMAKAMLIĞI
İlçe Milli Eğitim Müdürlüğü

BÖLÜM : İstatistik

SAYI : B.08.4.MEM.4.06.17.06.010/248 05/02/2010

KONU : Araştırma İzni
Cevdet CENGİZ

..... MÜDÜRLÜĞÜNE
GÜDÜL

Ankara Milli Eğitim Müdürlüğünün 27/01/2010 gün ve 7619 sayılı Araştırma İzni ile ilgili yazısı ve eki ilişikte gönderilmiştir.

Gereğini rica ederim.

Y.[illegible] ÜSTÜN
İlçe M.E.Müdür V.

EKLER:
Ek-1 Yazı ve eki (2 adet-2 Sayfa)

DAĞITIM:
Gereği :
Tüm Okul ve Kurum Md.ne

05/02/2010 VHKİ : M.KOÇ
05/02/2010 Şef : İ.AKÇA

Adres : İlçe Milli Eğitim Müdürlüğü GÜDÜL/ANKARA Tel : (0 312) 728 11 44
E-Posta : gudul06@meb.gov.tr

C. SUPPORT FROM LOCAL MUNICIPALITY

T.C.
GÜDÜL KAYMAKAMLIĞI
Güneyce İlköğretim Okulu Müdürlüğü

SAYI : 300 / 494 03/12/2009
KONU: Yeni Spor Alanları
Oluşturma

BELEDİYE BAŞKANLIĞI'NA
ÇAĞA

Okulumuz Beden Eğitimi Öğretmeni Cevdet GİNGİZ'in belediyenizden yardım isteği ekte sunulmuştur. Okulumuzda yeni spor alanları oluşturma konusunda yapacağınız yardımlar için şimdiden teşekkür eder gereğini bilgilerinize arz ederim.

Mustafa UYSAL
Okul Müdür V.

EKLER:
Ek-1: 1 Adet Dilekçe
Ek-2: 1 Adet Okul Krokisi

Adres : Çağa Kasabası Güneyce Mahallesi Güdül/ANKARA Tel&Fax: 0 312 7227058
http://guneyce06.meb.k12.tr E-Posta: guneyceilkogretim@gmail.com

GÜNEYCE İLKÖĞRETİM OKULU MÜDÜRLÜĞÜNE

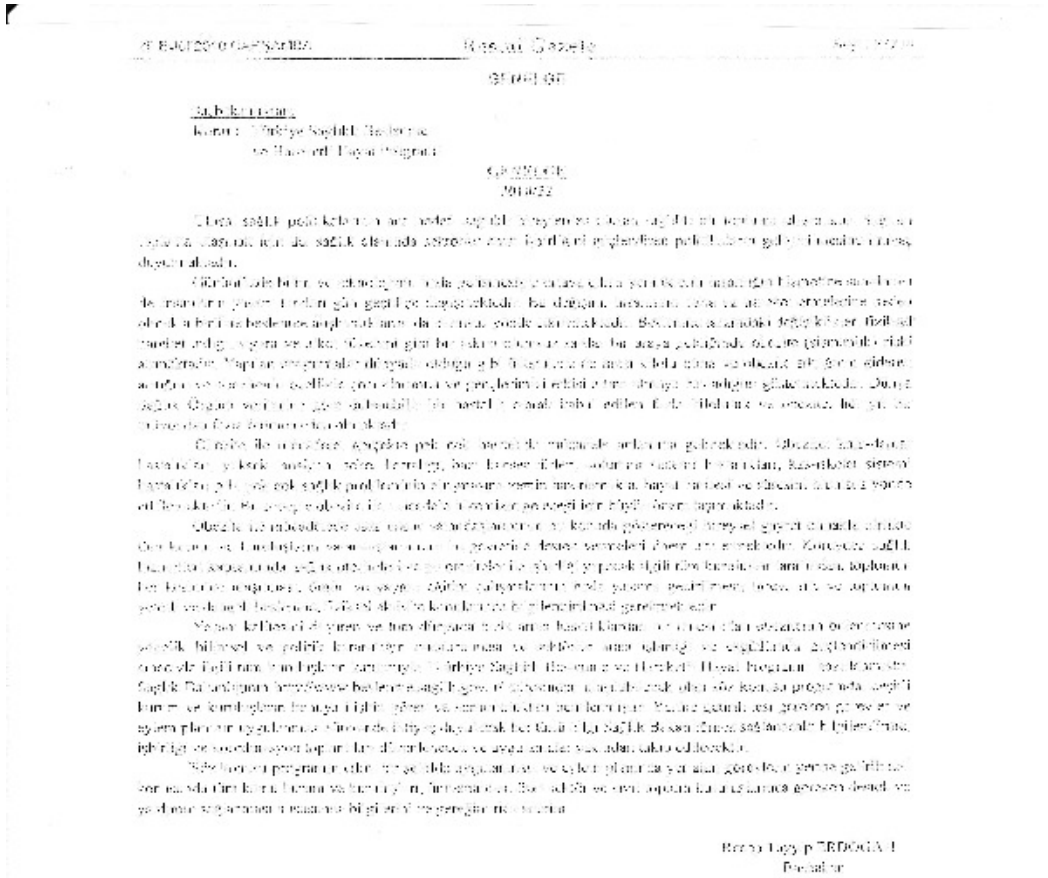
Okulumuz çevresinde spor alanlarının sınırlı olması öğrencilerimizin yeterli düzeyde fiziksel etkinliklere katılımını azaltmaktadır. Bilindiği üzere Belediyelerin halkın, gençlere ve çocuklara fiziksel etkinlik ve spor amaçlı tesislerin, imkânların sağlanması hususunda görevli olduğu bilinmektedir. Bu kapsamda Çağa Belediye Başkanlığı imkânları ve desteği ile okulumuz bahçesine basketbol sahası ile basketbol panoları ve içine voleybol sahası ile direklerinin yapılması düşünülmektedir. Bu konuda Belediyemizin vereceği her türlü desteğe ihtiyacımız olup gereğinin yapılması hususunda bilgilerinize arz ederim.

02/12/2009
Cevdet CENGİZ

Adres: Güneyce İ.Ö.O
Çağa/Gölcü

Ek: Okul Bahçesi Kroksi

D. **CIRCULAR NOTE OF PRIME MINISTER**



E. FAMILY INFORMED CONSENT FORM

ORTA DOĞU TEKNİK ÜNİVERSİTESİ
06531 ANKARA - TÜRKİYE

1956

Beden Eğitimi ve Spor Bölümü **Tel: 90 (312) 210 40 16**
Faks:90 (312) 210 79 68

Veli Onay Mektubu

Tarih: …/…/2010

Sayın Veli,

Orta Doğu Teknik Üniversitesi (ODTÜ), Beden Eğitimi ve Spor Bölümünde doktora öğrencisi olarak eğitim almaktayım. ODTÜ Etik Kurulu tarafından onaylanan 12-16 yaş-grubu çocuklarında Sosyo-ekolojik model ile öğrencilerin fiziksel aktivite sağlık bilgilerini arttırmayı ve egzersiz davranışlarını geliştirmeyi hedeflemekteyim. Bu mektubun yollanış amacı sizleri çalışma hakkında bilgilendirmek ve tarafınızdan izin verilmesi amacını içermektedir.

Çalışmanın amacı beden eğitimi dersinde yer alan kazanımları gerçekleştirmek üzere öğrencilerin fiziksel aktivite bilgilerini ve fiziksel aktivite davranışlarını geliştirmektir. Bu sayede sağlıklı yaşam için gerekli olan fiziksel aktivite bilgisi ve davranış değişikliği gerçekleşecektir. Velisi olduğunuz öğrencimizin çalışmaya katılımı okul sonrasında 12 hafta süre ile haftada üç kez iki ders saati olacak şekilde tasarlanmıştır. Araştırmanın başında ve sonunda anketler aracılığıyla ve pedometre (adımsayar) ile fiziksel aktivite düzeyleri, fiziksel aktivite bilgi düzeyleri ve fiziksel aktivite davranışları ile ilgili bilgiler toplanacaktır. Ayrıca çalışma sonunda 4'er kişilik öğrenci grupları ile odak grup görüşmesi ses kaydı yapılarak çalışmanın etkileri hakkında bilgi sağlanacaktır.

Katılım sonunda, öğrencilerin beden eğitimi ders programında yer alan kazanımların elde edileceği öngörülmektedir. Ayrıca öğrencilerin düzenli olarak fiziksel etkinliklere katılmaları sağlıklı yaşam için gerekli olan fiziksel aktivite düzeyine ulaşmalarını sağlayacaktır. Araştırma sonunda elde edilen tüm veriler gizliliği korunarak araştırmacı tarafından kilitli bir dolapta saklanacaktır. Çalışma süresince hiçbir şekilde öğrencilerin kimlikleri ile ilgili bilgi alınmayacaktır. Tüm veriler sadece bilimsel yayınlarda kullanılmak üzere araştırmacının kullanımına açık olacaktır.

Bu çalışmaya öğrencilerin, katılımı gönüllü olup arzu edildiği takdirde, herhangi bir yaptırıma maruz kalmadan katılımdan vazgeçme hakkına sahiptirler. Veli onayının yanı sıra, çocuğun kendi gönüllülüğü de bir ön şarttır. Çalışmaya ya da çocuğunuzun katılımına yönelik daha fazla bilgi için başvurulacak kişi/kişilerin adresi, telefon numarası ve e-posta adresleri aşağıdadır.

Saygılarımla
Teşekkür ederiz,

Araştırmacı: Cevdet CENGİZ
Güneyce İlköğretim Okulu,
Çağa / Güdül
Tel. 312 722 7058
mince@metu.edu.tr
E-posta: cevdetcengiz@gmail.com

Danışman: Orta Doğu Teknik Üniversitesi,
Beden Eğitimi ve Spor Bölümü
Öğretim Üyesi Yard. Doç. Dr. M. Levent İNCE
(Tel:312 210 4020; E-posta:

Yukarıda açıklamasını okuduğum çalışmaya, oğlum/kızım _____'nin katılımına izin veriyorum. Ebeveynin:

Adı, soyadı: _____ İmzası: _____Tarih: _____

İmzalanan bu formu lütfen öğrencimiz aracılığı ile beden eğitimi öğretmeni Cevdet Cengiz'e ulaştırın.

Çocuğunuzun katılımı ya da haklarının korunmasına yönelik sorularınız varsa ya da çocuğunuz herhangi bir şekilde risk altında olabileceğine, strese maruz kalacağına inanıyorsanız Orta Doğu Teknik Üniversitesi Etik Kuruluna (312) 210-37 29 telefon numarasından ulaşabilirsiniz.

F. CONSENT FORM PARTICIPANTS

Gönüllü Katılım Formu

Bu çalışma, Orta Doğu Teknik Üniversitesi, Eğitim Fakültesi, Beden Eğitimi ve Spor Bölümü doktora öğrencilerinden Cevdet Cengiz tarafından "Sosyo-Ekolojik Uygulamanın Kırsal Ortamdaki Öğrencilerin Fiziksel Aktivite Bilgisi ve Davranışlarına Etkileri" üzerine yürütülen bir çalışmadır. Çalışmanın amacı, katılımcıların beden eğitimi dersinde hedeflenen kazanımlardan olan fiziksel aktivite bilgi düzeyi ve fiziksel aktivite davranışları hakkında bilgi toplamaktır. Çalışmaya katılım tamamiyle gönüllülük temelinde olacaktır. Ankette, sizden kimlik belirleyici hiçbir bilgi istenmemektedir. Cevaplarınız tamamiyle gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir; elde edilecek bilgiler bilimsel yayınlarda kullanılacaktır.

Anketlerde sorulan hiçbir soruda kişisel rahatsızlık verecek sorular bulunmamaktadır. Ancak, katılım sırasında sorulardan ya da herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz cevaplama işini yarıda bırakıp çıkmakta serbestsiniz. Böyle bir durumda anketi uygulayan kişiye, anketi tamamlamadığınızı söylemek yeterli olacaktır. Anket sonunda, bu çalışmayla ilgili sorularınız cevaplanacaktır. Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz. Çalışma hakkında daha fazla bilgi almak için araştırmayı yürüten doktora öğrencisi Cevdet Cengiz (Tel: 312 722 7058; E-posta: cevdetcengiz@gmail.com) ya da Orta Doğu Teknik Üniversitesi, Beden Eğitimi ve Spor Bölümü öğretim üyelerinden Yard. Doç. Dr. M. Levent İNCE (Tel: 312 210 4020; E-posta: mince@metu.edu.tr) ile iletişim kurabilirsiniz.

Bu çalışmaya tamamen gönüllü olarak katılıyorum ve istediğim zaman yarıda kesip çıkabileceğimi biliyorum. Verdiğim bilgilerin bilimsel amaçlı yayımlarda kullanılmasını kabul ediyorum. (Formu doldurup imzaladıktan sonra uygulayıcıya geri veriniz).

İsim Soyad Tarih: ----/----/-----

İmza

G. DEBRIEFING FORM AFTER DATA COLLECTION

KATILIM SONRASI BİLGİ FORMU

Bu çalışma daha önce de belirtildiği gibi Orta Doğu Teknik Üniversitesi Beden Eğitimi ve Spor Bölümü doktora öğrencilerinden Cevdet Cengiz tarafından yürütülmektedir. Danışmanlığını yine aynı üniversitenin öğretim üyelerinden olan Yard. Doç. Dr. M. Levent İnce yapmaktadır. Araştırmanın amacı Sosyo-Ekolojik modelin beden eğitimi alanına uygulanması ile ilgilidir. Milli Eğitim Bakanlığı, ilköğretim programında yer alan beden eğitim dersi, etkin katılım ve sağlıklı yaşam ile ilişkili kazanımların gerçekleştirilmesi hedeflenmektedir.

Sosyo-ekolojik modelin ilköğretim öğrencilerine uygulanmasıyla yenilenen beden eğitimi ders programının kazanımları elde edilecektir. Modelin birçok boyutta bireyin kendisinden başlayarak yakın çevresini, ailesini ve okul çevresini desteklemesi çalışmanın başarısını arttırmaktadır. Yapılan birçok araştırma ile modelin hedeflenen davranış değişikliğini sağlamada etkin çözümler sunduğu ve başarılı olduğu bulunmuştur. Bu sebeple modelin sağlıklı yaşam için istenen davranış değişikliğini sağlaması beklenmektedir.

Bu çalışmadan alınacak ilk verilerin Haziran 2010 sonunda elde edilmesi amaçlanmaktadır. Elde edilen bilgiler sadece bilimsel araştırma ve yazılarda kullanılacaktır. Çalışmanın sonuçlarını öğrenmek ya da bu araştırma hakkında daha fazla bilgi almak için aşağıdaki isimlere başvurabilirsiniz. Bu araştırmaya katıldığınız için tekrar teşekkür ederiz.

Araştırmacı: Cevdet Cengiz
Güneyce İlköğretim Okulu,
Çağa / Güdül
Tel.312 722 7058;
E-posta: cevdetc@yahoo.com

Danışman: Orta Doğu Teknik Üniversitesi,
Eğitim Fakültesi, Beden Eğitimi ve Spor Bölümü,
Öğretim Üyesi Yard. Doç. Dr. M. Levent İNCE
Tel: 312 210 4020; E-posta: mince@metu.edu.tr

DATA COLLECTION INSTRUMENTS

H. DEMOGRAPHIC VARIABLES

Sevgili öğrenciler,

Bu bölümde sizinle ilgili kişisel bilgilere ve fiziksel aktivite düzeyi, fiziksel aktivite bilgisi, egzersiz davranışı değişim basamakları, algılanan sosyal destek, öz-yeterlik, fiziksel etkinlik ve beden eğitimi dersinden hoşlanma, okul iklimi ve fiziksel aktivite okul çevresi ile ilgili düşüncelerinize ihtiyaç duymaktayız. Sizlerden aldığımız bilgiler kesinlikle gizli tutulacaktır. Gösterdiğiniz ilgiden dolayı şimdiden teşekkür ederiz.

Boy: ..... Kilo:..... Yaş:.....

KİŞİSEL BİLGİLER

1. Her gün okula nasıl gidersiniz?	Bisiklet ( ) Yürüyerek ( ) Otobüs ( ) Araba ( )
2. Sınıfınız	6. sınıf ( ) 7. sınıf ( ) 8. Sınıf ( )
3. Cinsiyetiniz	Kız ( ) Erkek ( )
4. Herhangi bir spor dalıyla uğraşıyor musunuz? **EVET ( ) HAYIR ( )**	**Evet** ise branşınız ..... Haftada ..... gün antrenman yapıyorum. Düzeyiniz: Okul takımı ( ) Kulüp takımı ( ) Diğer .....

I. ÇOCUKLAR İÇİN FİZİKSEL UYGUNLUK BİLGİ TESTİ

Sevgili öğrenci,

Bu çalışmanın amacı, sizin sağlıkla ilgili fiziksel aktivite bilgi düzeyinizi gözden geçirmenize yardımcı olmaktır. Testi doldurmanız yaklaşık 25-30 dakikanızı alacaktır. Vereceğiniz bilgiler bu çalışma dışında hiçbir yerde kullanılmayacaktır. Bilgi düzeyinizin doğru ve güvenilir bir şekilde değerlendirilebilmesi için tüm soruların eksiksiz cevaplandırılması gerekmektedir. Göstereceğiniz özenden dolayı şimdiden teşekkür ederiz.

Yönerge: Her bir ifadeyi dikkatlice okuyunuz. Şıklardan en uygun olduğunu düşündüğünüz ifadeyi işaretleyiniz.

1. Kalp bir .....
   a) kemiktir.
   b) kastır.
   c) ciğerdir.
2. Isınma (enetme,açma-germe) ..... olmana yardımcı olur.
   a) daha esnek
   b) daha az esnek
   c) kaslı
3. Kalp atımı .....
   a) Kalbin büyüklüğüdür.
   b) Kalbinin ne kadar sağlıklı olduğudur.
   c) Kalbinin bir dakikada ne kadar attığıdır.
4. Mekik, barfiks ve şınav çekmek ..... geliştirir.
   a) Kas dayanıklılığını
   b) Kalp-dolaşım sistemi dayanıklılığını
   c) Esnekliğini
5. Aşağıdakilerden hangisi aerobik bir aktivitedir?
   a) Bowling
   b) İp atlamak
   c) Golf
6. Yürüyüş sırasında ayağının hangi kısmı ilk olarak yerle temas etmelidir?
   a) Ayak ucu
   b) Yan tarafı
   c) Topuk
7. Aerobik çalışmada amaç ..... ulaşmaktır.
   a) En düşük ağırlığa
   b) Parmak uçlarına
   c) Hedeflenen kalp-atım hızına
8. Kendi kendinize yapabileceğiniz en iyi fiziksel uygunluk etkinliği aşağıdakilerden hangisidir?
   a) Evinizin çevresinde bir tur bisiklete binmek
   b) 1.6 km yürüyüş yapmak
   c) Bilgisayar oyunları oynamak

Arka sayfaya geçiniz.

9. Bir egzersiz programını devam ettirebilmek için ihtiyacım olan şey..... .
    a) Özel bir plana sahip olmamaktır.
    b) Yapmaktan zevk aldığım aktiviteleri seçmektir.
    c) Arkadaşlarımdan kaçmaktır.

10. Aerobik bir aktivitenin sonunda önemli olan .....
    a) Soğuma yapmaktır.
    b) Oturmaktır.
    c) Isınma yapmaktır.
11. Mekik hareketi ..... güçlendirmek için iyidir.
    Karın kaslarımı
    a) Bacak kaslarımı
    b) Kol kaslarımı

12. Fiziksel olarak fit olmak istiyorsanız …….. egzersiz yapmalısınız.
    a) Haftada bir defa
    b) Düzenli olarak
    c) Sadece bir arkadaşınızla
13. Kalp-dolaşım sistemi ..... için önemlidir.
    a) Sadece çocuklar için
    b) Sadece büyükler için
    c) Herkes için
14. Yürüyüş sırasında nefes alışverişi .....
    a) Rahat olmalıdır.
    b) Hızlı olmalıdır.
    c) Durmalıdır.
15. Aerobik ..... demektir.
    a) Oksijensiz
    b) Oksijenli
    c) Güçlendirme
16. Aşağıdakilerden hangisi egzersizin faydalarından biri **değildir?**
    a) Stresi azaltır.
    b) Kan basıncını azaltır.
    c) Kan yağı değerini yükseltir.
17. 100m sürat koşusu ne tür bir etkinliktir?
    a) Aerobik
    b) Anaerobik
    c) Kas dayanıklılığı
18. Gerdirme yaparken ..... .
    a) Yavaş hareketler kullanmalısın.
    b) Sıçramalısın.
    c) Daima ayakta olmalısın.

Sonraki sayfaya geçiniz.

19. Fiziksel uygunluğun en önemli parçası .....
    a) Kassal kuvvetdir.
    b) Kalp-dolaşım sistemi dayanıklılığıdır.
    c) Esnekliktir.
20. Soğuma egzersizleri önemlidir çünkü kalbin .....
    a) Daha hızlı atmasını sağlar.
    b) Daha güçlü olmasını sağlar.
    c) Yavaşça toparlanmasını sağlar.
21. Kalp-dolaşım sistemi dayanıklılığının gelişmesini sağlayan en iyi aktivite .....
    a) Yürüyüştür.
    b) Futboldur.
    c) Ağırlık kaldırmaktır.
22. Aerobik dansın en **öncelikli** amacı .....
    a) İyi bir dansçı olmaktır.
    b) Kalp-dolaşım sistemi dayanıklılığını arttırmaktır.
    c) Dans rutinlerini öğrenmektir.
23. Doğru jogging (hafif tempo koşu) formunda, vücut .....
    a) Kusursuz derecede düz olmalıdır.
    b) Yavaşça öne doğru eğilmelidir.
    c) Geriye, bele doğru yaslanır.
24. Aerobik dayanıklılığı geliştirebilmek için, ... egzersiz yapılmalıdır.
    a) Haftada üç kez veya daha fazla
    b) Haftada iki kez
    c) Haftada bir kez
25. Bireysel fiziksel uygunluk programında .....
    a) İhtiyaçlarına uygun olan egzersizleri kullanmalısın.
    b) Sadece kolay olan egzersizleri yapmalısın.
    c) Daima aynı egzersizleri kullanmalısın.
26. Uzmanların önerilerine göre fiziksel olarak sağlıklı kalabilmek için günde kaç adım atmalıyız?
    a) 1000
    b) 5000
    c) 10000
27. Barış okulun atletizm takımındadır. Her antrenman öncesinde ısınma egzersizleri yapmaktadır. Aşağıdakilerden hangisi Barış'ın her anrenman öncesinde ısınma egzersizleri yapmasının **<u>nedeni/nedenlerindendir</u>?**
    a) Ortaya çıkabilecek sakatlıkları önlemek
    b) Vücudu fiziksel olarak yapılacak egzersize hazırlamak
    c) Hepsi

Arka sayfaya geçiniz.

28. Düzenli ağırlık antrenmanı yapan bir kişide belirli bir süre sonrasında kişinin kas yapısında ..... meydana gelir.
    a) Kasın sayısında artış
    b) Kasın büyüklüğünde artış
    c) Kasın boyunda uzama
29. Fiziksel etkinlik sonrası soğuma için ..... **<u>en uygundur.</u>**
    a) Basketbol oynamak
    b) Yüksek tempoda bisiklet sürmek
    c) Yürüme, yavaş tempoda koşu ve esnetme

30. ve 31. soruları aşağıdaki paragrafa göre cevaplayınız.

Nurdan'ın annesi sırt ağrısı problemi çekmektedir. Doktorları yaptığı testler sonucunda annesinin bel ve sırt esnekliklerinin düşük olduğunu ve bunu geliştirmesi gerektiğini söylemiştir. Nurdan annesi için egzersiz planı hazırlamak istemektedir.

30.Nurdan'a aşağıdaki esneklik hareketlerinden hangilerini mutlaka seçmesini önerirsiniz?

A)  B) 

C)  D) 

    a) A ve B
    b) B ve C
    c) C ve D
31. Nurdan'ın annesi haftada en az ..... gün esneklik çalışması yapmalıdır.
    a) 1 gün
    b) 3 gün
    c) 5 gün
32 . ..... sporcularının kaslarının daha esnek olması beklenir?
    a) Cimnastik
    b) Futbol
    c) Voleybol
33. ..... kas dayanıklılığının geliştirilmesinde **<u>daha etkili</u>** olacaktır.
    a) Yavaş tempoda koşu
    b) Ağırlık kaldırma: 1-5 tekrarlı ağır yüklerle yapılan etkinlikler
    c) Ağırlık kaldırma : 20-30 tekrarlı düşük yüklerle yapılan etkinlikler

Sonraki sayfaya geçiniz.

34., 35. ve 36. soruları aşağıdaki paragrafa göre cevaplayınız.

Selçuk 13 yaşındadır ve kilo vermesi gerekmektedir. Bunun için fiziksel aktivite düzeyini artırmak istemektedir.

34. Selçuk ..... türde fiziksel etkinlikler seçmelidir.
    a) Takım oyunları (futbol, basketbol vb)
    b) Hızlı yürüyüş, yavaş koşu, bisiklet sürme, yüzme vb.
    c) Ağırlık kaldırma
35. Egzersiz yaparken dakikadaki kalp atım hızı hedefi nasıl olmalıdır?
    a) 100 atım/ dk dan düşük olmalıdır
    b) En az 20 dk egzersiz sürdürebilecek kadar olmalıdır
    c) 180 atım/ dk dan daha yüksek olmalıdır
36. Selçuk, ... sıklıkta egzersiz yapmalıdır.
    a) Tercihen hergün
    b) Haftada 2 gün
    c) Haftada 3 gün

J. EGZERSİZ DAVRANIŞI DEĞİŞİM BASAMAKLARI ANKETİ

Bu bölümde sorulan sorular sizin düzenli olarak yaptığınız fiziksel etkinlik ile ilgilidir.

Düzenli fiziksel etkinlik:
- Bir (ya da daha çok) günde bir defada en az 30 dakika sürdürülebilen,
- Haftada en az 5 gün yapılan,
- Kalp atımındaki artışı hızlandıran ve/veya nefes alımını hızlandıran tempolu yürüme, bisiklete binme, yüzme, aerobik yapmak gibi etkinliklerdir.

Lütfen aşağıdaki soruları yukarıda belirtilen tanım doğrultusunda düşünerek **BİR SEÇENEĞİ** işaretleyiniz.

Düzenli fiziksel etkinliğe katılıyor musunuz?

☐ Hayır düzenli fiziksel etkinliğe katılmıyorum ve önümüzdeki 6 ay içinde de katılmayı planlamıyorum.

☐ Hayır düzenli fiziksel etkinliğe katılmıyorum fakat önümüzdeki 6 ay içinde katılmayı planlıyorum.

☐ Hayır düzenli fiziksel etkinliğe katılmıyorum fakat gelecek 30 günde planlıyorum.

☐ Evet düzenli fiziksel etkinliğe katılıyorum fakat son 6 aydan az bir süredir yapıyorum.

☐ Evet düzenli fiziksel etkinliğe katılıyorum fakat son 6 aydan uzun bir süredir yapıyorum.

K. ALGILANAN SOSYAL DESTEK ÖLÇEĞİ

Bu ankette, sizlerin fiziksel aktivite ya da spora katılımınızda anne, baba ve arkadaşlarınızdan aldığınız sosyal destek ile ilgili bir takım ifadeler yer almaktadır. İfadeleri okuduktan sonra size en uygun olduğunu düşündüğünüz seçeneği işaretleyiniz.

SIRADAN BİR HAFTADA, ***ANNENİZ*** NE SIKLIKTA:

		Hiç	Çok nadir	Bazen	Hemen hemen her gün	Hergün
1.	Fiziksel aktivite ya da spor yapmanız konusunda sizi teşvik eder?					
2.	Sizinle birlikte fiziksel etkinlik ya da spor yapar?					
3.	Fiziksel etkinlik ya da spor yaptığınız yere ulaşımınızı sağlar?					
4.	Katıldığınız fiziksel etkinlik ya da sporu izler?					
5.	Katıldığınız fiziksel aktivite ya da sporda iyi yaptığınızı söyler?					

SIRADAN BİR HAFTADA, ***BABANIZ*** NE SIKLIKTA:

		Hiç	Çok nadir	Bazen	Hemen hemen her gün	Hergün
6.	Fiziksel aktivite ya da spor yapmanız konusunda sizi teşvik eder?					
7.	Sizinle birlikte fiziksel etkinlik ya da spor yapar?					
8.	Fiziksel etkinlik ya da spor yaptığınız yere ulaşımınızı sağlar?					
9.	Katıldığınız fiziksel etkinlik ya da sporu izler?					
10.	Katıldığınız fiziksel aktivite ya da sporda iyi yaptığınızı söyler?					

SIRADAN BİR HAFTADA, ***ARKADAŞ/ARKADAŞLARINIZ*** NE SIKLIKTA:

		Hiç	Çok nadir	Bazen	Hemen hemen her gün	Hergün
11.	Arkadaşlarınızı fiziksel aktivite ya da spor yapmaları için teşvik edersiniz?					
12.	Arkadaşlarınız sizi fiziksel aktivite ya da spora katılmanız için teşvik eder?					
13.	Arkadaşlarınız sizinle birlikte fiziksel aktivite ya da spor yapar?					
14.	Arkadaşlarınız fiziksel aktivite ya da sporda iyi yaptığınızı söyler?					

L. FİZİKSEL AKTİVİTE ÖZ-YETERLİK ANKETİ

Fiziksel etkinlik (FE) "hareket etmenizi, daha hızlı nefes alıp vermenizi ve kalbinizin daha hızlı atmasını sağlayacak her türlü oyun, spor veya egzersizdir. Fiziksel etkinlik spor yaparken, arkadaşlarınızla oynarken veya okula yürürken yapılabilir. Fiziksel etkinliğe bazı örnekler koşma, hafif tempolu yürüyüş, tekerlikli paten, bisiklet sürme, kaykay, dans etme, yüzme, futbol, basketbol, Amerikan futbolu ve voleyboldur."

Fiziksel Etkinlik için Öz-Yeterlik (FEÖ)

……ne kadar eminsiniz	Hiç emin değilim	Biraz eminim	Kesinlikle eminim
1.Her gün 60 dakika fiziksel etkinlik yapabilirim			
2.Günüm ne kadar yoğun olursa olsun fiziksel olarak aktif olabilirim			
3.Kendimi ne kadar yorgun hissedersem hissedeyim fiziksel olarak aktif (hareketli) olabilirim			
4.Dışarısı sıcak veya soğuk olduğunda bile fiziksel olarak aktif olabilirim			
5.Çok fazla ev ödevim olduğunda bile fiziksel olarak aktif olabilirim			

Yakın Çevre Fiziksel Etkinlik için Öz-Yeterlik – Görevli (FEYÖ-G)

…...…ne kadar eminsiniz	Hiç emin değilim	Biraz eminim	Kesinlikle eminim
6.Sevdiğin fiziksel etkinlikleri planlamanda yardımcı olması için okul sonrası görevlilerini ikna edeceğine			
7.Okul sonrası katıldığın fiziksel etkinlik programından sonra eve gitmek için görevlilerin sana araç bulmanda yardımcı olacağına			
8.Okul sonrasında görevlilerin fiziksel olarak aktif olabileceğin bir yer sağlamada yardım edeceğine			
9.Okul sonrasında yapabileceğin farklı türlerdeki fiziksel etkinlikleri bulmanda görevlilerin sana yardım edeceğine			

Yakın Çevre Fiziksel Etkinlik için Öz-Yeterlik – Ebeveyn (FEYÖ-E)

……....ne kadar eminsiniz	Hiç emin değilim	Biraz eminim	Kesinlikle eminim
10. Sevdiğin fiziksel etkinliği planlamanda ailenin sana yardımcı olacağına			
11.Okul sonrası katıldığın programdan sonra ailenin seni eve götürmek için araç sağlayacağına			
12.Ailenin sana fiziksel olarak aktif olabileceğin bir yer bulmada yardımcı olacağına			
13.Senin yapabileceğin farklı türde etkinlikler bulmada ailenin sana yardımcı olacağına			
14.Ailenin dışarıda seninle oynayacağına veya fiziksel etkinlik/spor yapacağına			
15.Ailenin seninle birlikte fiziksel olarak aktif olmak için zaman ayıracağına			

M. **Fiziksel Aktivite Hoşlanma Anketi**

Fiziksel Aktivite Hoşlanma	Tamamen Katılmıyorum	Biraz Katılmıyorum	Kararsızım	Biraz Katılıyorum	Tamamen Katılıyorum
1. Aktif olduğumda sıkıldığımı hissederim					
2. Aktif olduğumda dersten hoşlanmam					
3. Aktif olmak kesinlikle eğlenceli değildir					
4. Aktif olmak beni karamsar yapar					
5. Aktif olduğumda hayal kırıklığına uğrarım					
6. Aktif olmak kesinlikle ilginç değildir					
7. Aktif olduğumda başka bir şeyler yapmalıymışım gibi hissederim					

N. **Assumption Checks for Research Questions**

In this part each research question was analyzed related to the analyses assumption checks. Related to the 6 research question each assumption checks were answered accordingly.

4.1 Research Question 1.

Assumption Checks for Repeated Measures ANOVA

1. The observations within each sample must be independent:

There is no relationship between groups therefore they are independent. It can be concluded that independent observation assumption has not been violated. The sample size was determined by power analysis. Power of the study was 0.80 and effect size determined as medium effect (0.42).

2. Normality:

In order to check the normality assumption of the dependent measures, Kolmogorov-Smirnov, skewness and kurtosis values were used. Kolmogorov-Smirnov test indicated that normality assumption has been violated in post-tests whereas not in pre-test scores of students according to Kolmogorov-Smirnov test see Table 1.

Table 1.
Test of normality for the dependent variable

School	Variables	Kolmogorow-Smirnov			
		Pre-Test		Post-Test	
		Statistic	df	Statistic	df
EXP	PA Knowledge	.13	31	.17*	31
CON	PA Knowledge	.19	31	.10*	31

*significant difference ($p < .05$)

On the other hand, skewness and kurtosis values were close to zero for all levels (between ±3) therefore the dependent variables were distributed normally and acceptable. Moreover, there were no problems in scatterplots and histograms since they were normally distributed. Therefore, it can be concluded that the normality assumption has not been violated.

Table 2.
Skewness and kurtosis values of the dependent variables

School	Variables	Skewness		Kurtosis	
		Pre-test	Post-test	Pre-test	Post-test
EXP	PA Knowledge	-.21	-.94	-1.06	.38
CON	PA Knowledge	.08	-.05	-1.20	-.59
Total	PA Knowledge	-.15	-.14	-.15	-.14

*significant difference ($p < .05$)

3. Homogeneity of population covariance matrix for DVs:

Box's M test was used to check this assumption. According to Box's M test, non-significant value represents the homogeneity of population covariance matrices assumption has not been violated (Table 3).

Table 3.
Box'M test of DVs

Box's M	5.42
F	1.74
df1	3
df2	648000
Sig.	.16

According to Levene's Test, homogeneity of variance assumption has not been violated in post-test PA knowledge whereas it has been violated in pre-test PA knowledge test (Table 4).

Table 4.
Levene's test of equality of error variance

	F	*df1*	*df2*	*p*
PA Knowledge Pre-Test	4.44	1	60	.04*
PA Knowledge Post-Test	.00	1	60	.99

*significant difference ($p < .05$)

Dependent variables of the research question 1, physical activity knowledge was interval therefore interval/ratio scale on dependent variables assumption has not been violated.

4.2 Research Question 2

Assumption Checks for Repeated Measures ANOVA

1. The observations within each sample must be independent:

There is no relationship between groups therefore they are independent. It can be concluded that independent observation assumption has not been violated.

2. Normality:

In order to check the normality assumption of the dependent measures, Kolmogorov-Smirnov, skewness and kurtosis values were used. Kolmogorov-Smirnov test indicated that normality assumption has been violated in post-tests whereas not in pre-test scores of students according to Kolmogorov-Smirnov test see Table 5.

Table 5.
Test of normality for the dependent variable

School	Variables	Kolmogorow-Smirnov			
		Pre-Test		Post-Test	
		Statistic	df	Statistic	df
EXP	PA Level	.12*	31	.13*	31
CON	PA Level	.09*	31	.17	31

*significant difference ($p < .05$)

On the other hand, skewness and kurtosis values were close to zero for all levels (between ±3) therefore the dependent variables were distributed normally and acceptable (Tabachnick and Fidell, 2007). Moreover, there were no problems in scatterplots and histograms since they were normally distributed. Therefore, it can be concluded that the normality assumption has not been violated.

Table 6.
Skewness and kurtosis values of the dependent variables

School	Variables	Skewness		Kurtosis	
		Pre-test	Post-test	Pre-test	Post-test
EXP	PA Level	.77	.04	1.58	-.93
CON	PA Level	.77	.59	.79	-.92
Total	PA Level	.53	.09	.53	.09

*significant difference ($p < .05$)

3. Homogeneity of population covariance matrix for DVs:

Box's M test was used to check this assumption. According to Box's M test, non-significant value represents the homogeneity of population covariance matrices assumption has not been violated (Table 7).

Table 7.
Box'M test of DVs

Box's M	4,83
F	1.55
df1	3
df2	648000
Sig.	.20

According to Levene's Test, homogeneity of variance assumption has not been violated in both groups' PA levels (Table 8).

Table 8.
Levene's test of equality of error variance of physical activity level

	F	*df1*	*df2*	*p*
PA Level Pre-Test	.27	1	60	.60
PA Level Post-Test	.59	1	60	.44

*significant difference ($p < .05$)

Dependent variables of the research question 2, physical activity level was interval therefore interval/ratio scale on dependent variables assumption has not been violated.

4.3 Research Question 3

Assumption Checks for Pearson Chi-Square

1. Independence of Observation

There is no relationship between groups therefore they are independent. It can be concluded that independent observation assumption has not been violated. The scores obtained from the questionnaire are independent of each other.

2. Normality

In order to check the normality assumption of the dependent measures, Kolmogorov-Smirnov, skewness and kurtosis values were used. Kolmogorov-Smirnov test indicated that normality assumption has been violated in pre-test and post-test exercise stages of change.

3. Size of Expected Value

Due to small sample size of the study observed values were less than expected values in pre-test and post-test. This assumption therefore has been violated in both data collection of the research.

Table 9.
Results of exercise stages of change in pre-test

	Observed N	Expected N	Residual
Precontemplation	5	15,5	-10,5
Contemplation	28	15,5	12,5
Preparation	17	15,5	1,5
Action	12	15,5	-3,5
Total	62		

Table 10.
Results of exercise stages of change in post-test

	Observed N	Expected N	Residual
Precontemplation	10	12,4	-2,4
Contemplation	5	12,4	-7,4
Preparation	13	12,4	,6
Action	29	12,4	16,6
Maintenance	5	12,4	-7,4
Total	62		

4.4 Research Question 4

Assumption Checks for Repeated Measures ANOVA

1. The observations within each sample must be independent:

There is no relationship between groups therefore they are independent. It can be concluded that independent observation assumption has not been violated.

2. Normality:

In order to check the normality assumption of the dependent measures, Kolmogorov-Smirnov, skewness and kurtosis values were used. Kolmogorov-Smirnov test indicated that normality assumption has been violated only in physical activity self efficacy post-tests and pre-test parent efficacy whereas not in other scores of students according to Kolmogorov-Smirnov test see Table 11.

Table 11.
Test of normality for the dependent variable

School	Variables	Kolmogorow-Smirnov			
		Pre-Test		Post-Test	
		Statistic	df	Statistic	df
EXP	PA Self Efficacy	.17*	31	.14	31
	Staff Efficacy	.22*	31	.18*	31
	Parent Efficacy	.17*	31	.20*	31
CON	PA Self Efficacy	.13*	31	.14	31
	Staff Efficacy	.12*	31	.13*	31
	Parent Efficacy	.15	31	.12*	31

*significant difference ($p < .05$)

On the other hand, skewness and kurtosis values were close to zero for all levels (between ±3) therefore the dependent variables were distributed normally and acceptable. Moreover, there were no problems in scatterplots and histograms since they were normally distributed. Therefore, it can be concluded that the normality assumption has not been violated.

Table 12.
Skewness and kurtosis values of the dependent variables

		Skewness		Kurtosis	
School	Variables	Pre-test	Post-test	Pre-test	Post-test
EXP	PA Self Efficacy	-.42	-.39	-.65	-.16
	Staff Efficacy	.79	-.17	.88	-.65
	Parent Efficacy	.57	-.68	-.16	-.32
CON	PA Self Efficacy	-.04	-.27	-.68	.23
	Staff Efficacy	.21	-.01	.10	-.47
	Parent Efficacy	-.50	-.26	-.78	-.38
Total	PA Self Efficacy	-.22	-.30	-.22	-.30
	Staff Efficacy	.16	-.05	.16	-.05
	Parent Efficacy	-.32	-.49	-.32	-.49

*significant difference ($p < .05$)

3. Homogeneity of population covariance matrix for DVs:

Box's M test was used to check this assumption. According to Box's M test, non-significant value represents the homogeneity of population covariance matrices assumption has not been violated (Table 13).

Table 13.
Box'M test of DVs

Box's M	25.85
F	1.10
df1	21
df2	13240.79
Sig.	.34

According to Levene's Test, homogeneity of variance assumption has not been violated in self efficacy, staff efficacy whereas in parent efficacy pre-test violation has been detected (Table 14).

Table 14.
Levene's test of equality of error variance

	F	*df1*	*df2*	*p*
Self Efficacy Pre-Test	.06	1	60	.80
Self Efficacy Post-Test	.00	1	60	.98
Staff Efficacy Pre-Test	2.81	1	60	.10
Staff Efficacy Pre-Test	.11	1	60	.74
Parent Efficacy Pre-Test	5.10*	1	60	.03
Parent Efficacy Post-Test	.58	1	60	.45

*significant difference ($p < .05$)

Dependent variables of the research question 4, self efficacy, staff efficacy and parent efficacy were interval therefore interval/ratio scale on dependent variables assumption has not been violated.

4.5 Research Question 5

Assumption Checks for Repeated Measures ANOVA

1. The observations within each sample must be independent:

There is no relationship between groups therefore they are independent. It can be concluded that independent observation assumption has not been violated.

2. Normality:

In order to check the normality assumption of the dependent measures, Kolmogorov-Smirnov, skewness and kurtosis values were used. Kolmogorov-Smirnov test indicated that normality assumption has been violated only in Güneyce friend support post-tests, pre-test friend and Oltan friend support pre-test whereas not in other scores of students according to Kolmogorov-Smirnov test see Table 15.

Table 15.
Test of normality for the dependent variable

		Kolmogorow-Smirnov			
School	Variables	Pre-Test		Post-Test	
		Statistic	df	Statistic	df
EXP	Mother Support	.17*	31	.16*	31
	Father Support	.12*	31	.09*	31
	Friend Support	.14	31	.14	31
CON	Mother Support	.17*	31	.11*	31
	Father Support	.17*	31	.11*	31
	Friend Support	.15	31	.13*	31

*significant difference ($p < .05$)

On the other hand, skewness and kurtosis values were close to zero for all levels (between ±3) therefore the dependent variables were distributed normally and

acceptable. Moreover, there were no problems in scatterplots and histograms since they were normally distributed. Therefore, it can be concluded that the normality assumption has not been violated.

Table 16.
Skewness and kurtosis values of the dependent variables

		Skewness		Kurtosis	
School	Variables	Pre-test	Post-test	Pre-test	Post-test
EXP	Mother Support	.63	-.55	.43	-.37
	Father Support	-.02	-.30	-.52	.20
	Friend Support	-.60	-.52	-.55	-.71
CON	Mother Support	1.57	-.14	4.75	-.02
	Father Support	-.12	-.14	.24	-.60
	Friend Support	-.37	-.30	-.12	-.90
Total	Mother Support	1.01	-.30	1.01	-.30
	Father Support	-.06	-.26	-.06	-.26
	Friend Support	-.51	-.41	-.51	-.41

3. Homogeneity of population covariance matrix for DVs:

Box's M test was used to check this assumption. According to Box's M test, non-siginificant value represents the homogeneity of population covariance matrices assumption has not been violated (Table 17).

Table 17.
Box'M test of DVs

Box's M	29.43
F	1.25
df1	21
df2	13240.79
Sig.	.20

According to Levene's Test, homogeneity of variance assumption has not been violated in mother support, father support pre-test, post-test values whereas in friend support pre-test violation has been detected (Table 18).

Table 18.
Levene's test of equality of error variance

	F	*df1*	*df2*	*p*
Mother Support Pre-Test	.70	1	60	.40
Mother Support Post-Test	.00	1	60	.98
Father Support Pre-Test	.15	1	60	.70
Father Support Pre-Test	.65	1	60	.42
Friend Support Pre-Test	4.12*	1	60	.04
Friend support Post-Test	.14	1	60	.71

*significant difference ($p < .05$)

Dependent variables of the research question 4, mother support, father support and friend support scores were interval therefore interval/ratio scale on dependent variables assumption has not been violated.

4.6 Research Question 6

Assumption Checks for Repeated Measures ANOVA

1. The observations within each sample must be independent:

There is no relationship between groups therefore they are independent. It can be concluded that independent observation assumption has not been violated.

2. Normality:

In order to check the normality assumption of the dependent measures, Kolmogorov-Smirnov, skewness and kurtosis values were used. Kolmogorov-Smirnov test indicated that normality assumption has not been violated in both test scores according to Kolmogorov-Smirnov test see Table 19.

Table 19.
Test of normality for the dependent variable

School	Variables	Kolmogorow-Smirnov			
		Pre-Test		Post-Test	
		Statistic	df	Statistic	df
EXP	PA Enjoyment	.08*	31	.14	31
CON	PA Enjoyment	.11*	31	.11*	31

*significant difference ($p < .05$)

On the other hand, skewness and kurtosis values were close to zero for all levels (between ±3) therefore the dependent variables were distributed normally and acceptable. Moreover, there were no problems in scatterplots and histograms since they were normally distributed. Therefore, it can be concluded that the normality assumption has not been violated.

Table 20.
Skewness and kurtosis values of the dependent variables

School	Variables	Skewness		Kurtosis	
		Pre-test	Post-test	Pre-test	Post-test
EXP	PA Enjoyment	.26	.60	-.62	-.75
CON	PA Enjoyment	.37	.39	.23	.66
Total	PA Enjoyment	.30	.52	.30	.52

*significant difference ($p < .05$)

3. Homogeneity of population covariance matrix for DVs:

Box's M test was used to check this assumption. According to Box's M test, non-siginificant value represents the homogeneity of population covariance matrices assumption has not been violated (Table 21).

Table 21.
Box'M test of DVs

Box's M	2.86
F	.92
df1	3
df2	648000
Sig.	.43

According to Levene's Test, homogeneity of variance assumption has not been violated in both PA enjoyment scores (Table 22).

Table 22.
Levene's test of equality of error variance of physical activity (PA) level

	F	*df1*	*df2*	*p*
PA Enjoyment Pre-Test	.94	1	60	.33
PA Enjoyment Post-Test	3.22	1	60	.08

*significant difference ($p < .05$)

Dependent variables of the research question 6, PA enjoyment scores were interval therefore interval/ratio scale on dependent variables assumption has not been violated.

O. HEALTH BULLETINS (1, 2, 3)

Yaşam Boyu Sağlık - 1

Öncelikle öğrencimizin ders dışı zamanda (14.40-16.10) yapılacak olan spor etkinliklerine katılması için verdiğiniz desteğe teşekkür etmek istiyoruz.

Çağımızın en büyük hastalığı olarak kabul edilen aşırı kilololuluk (obezite) ve sağlıksız yaşam kültürü gelişmiş ve gelişmekte olan ülkelerin başlıca sorunu olmuştur (Dünya Sağlık Örgütü, 2004). Bu nedenle amacımız gençlerin yaşam kalitesini artırmak, huzur ve mutluluğunu sağlamak, yaşam boyu kullanabileceği sağlık bilgilerini ve davranışlarını kazandırmaktır.

Bireyin sağlıklı yaşam için gerekli olan bilgi ve becerileri elde etmesi çocukluk çağlarından başlamaktadır. Düzenli spor etkinliklerine katılım, vücudunu doğru kullanma, doğal beslenme, hareketli yaşam tarzı, doğru değerleri yaşam felsefesi olarak benimsemek temel hedeflerimizdir.

Öğrencilerin zamanlarının %50'sini okullarda geçirdiğini düşünürsek, okullar biz öğretmenler için istediğimiz kazanımları ve özellikleri geliştirmede çok değerli olmaktadır.

Öğrencilerin akademik sınavlarda başarılı olması için fiziksel etkinliklere (fiziksel etkinlik=hareket etmenizi, daha hızlı nefes alıp vermenizi ve kalbinizin daha hızlı atmasını sağlayacak her türlü oyun, spor veya egzersizdir) zaman ayırmadığı bilinen bir gerçektir. Ancak yapılan çalışmalarda fiziksel etkinliklere ayrılan zamanın akademik başarıyı olumsuz yönde etkilemediği tespit edilmiştir. Fiziksel etkinliklerin ve spor imkânlarının okul ortamında sağlanması daha iyi bir öğrenmeyi, odaklanmayı ve akademik hazır bulunmayı sağladığı bilinmektedir. Öğrencilerin fiziksel etkinliklere katılımlarını arttırmak için ailelerin bu konuda yapabilecekleri ise şunlardır:

- Öğrencinin okulda ne kadar fiziksel etkinlikte bulunduğunu okul yönetiminden veya öğretmenlerinden öğrenebilirsiniz.

- Okulda var olan fiziksel etkinliklerin neler olduğunu ve ne tür sporların yapılabildiğini sorabilirsiniz.
- Fiziksel etkinlikleri sağlamada ve arttırmada öğretmenlere destek sağlayacağınızı belirtebilirsiniz.
- Okulda açılan ders dışı spor faaliyetlerini destekleyeceğinizi hem öğrenciye hem okul yönetimine söyleyebilirsiniz.

Sağlıklı spor olanakları ile hedeflenen özelliklerin sadece okullarda alınan eğitim ile sağlamak tabi ki zordur. Bu nedenle okullarda öğrencilere sunulan imkânlar sadece beden eğitimi dersi ile sınırlandırılmayıp; ders dışı etkinlikler, boş zamanlarda spor olanaklarının sağlanması, farklı etkinliklerin düzenlenmesi ve okul çevresinde spor olanaklarının sağlanması gereklidir. Ailenin ve bireyin yakın çevresinin etkisi bu nedenle çok önemlidir. Sizlerin desteğine ihtiyacımız bu yüzden gerekli ve önemlidir. Sağlıklı hayata atılan bu adımı devam ettirelim...

Yaşam Boyu Sağlık – 2

Öğrencilerimizin ders dışı zamanlarda yapılan spor etkinliklerine katılımı beklenen düzeyden fazla olmuştur. Onların bu katılımlarını en iyi şekilde değerlendirmek bizim görevimizdir. Bu kapsamda okulumuzun spor olanaklarını arttırmaya devam ediyoruz. Tırmanma demirine halat alınmış ve voleybol sahasının filesi takılmıştır. Saha çizgileri de boyanarak işler hale getirilmiştir. Ayrıca, depo olarak kullanılan bir odamız düzenlenerek hem masa tenisi hem de beden eğitimi dersi için giyinme odası haline getirilmiştir. Gelecek haftalarda okulumuzun bahçesinde uzun atlama için kum havuzu yapılması da planlanmaktadır.

Önümüzdeki haftalarda voleybol alanında uzman bir öğretmen ile ders dışı etkinliklerimiz devam edecektir. Futbol etkinliğine de ilgi duyan tüm velileri ders dışı zamanda okulumuza bekliyoruz. Öğrencilerimiz ile aileleri buluşturarak spor yapmak istiyoruz.

Çocuklar bilindiği gibi ergenlik çağında hızlı bir gelişme ve büyüme dönemi içindedirler. Bu dönemde genç çocukların bilişsel, psikomotor (hareketsel), duyuşsal ve sosyal becerileri yaşlarına uygun olarak geliştirilmelidir. Bireyin erken yaşlardan itibaren fiziksel etkinlik çevresinin zengin seçeneklerden oluşması, farklı spor deneyimlerini yaşaması ve temel hareket becerilerini öğrenmesi çok önemlidir. Bu sayede fiziksel etkinliklerde güven duygusunun geliştiği görülmektedir. Sağlanan bu güven ve farklı deneyimler ile çocukların ileriki yaşlarda düzenli fiziksel etkinliklere katılacaklarını araştırmalar göstermektedir (Bocarro ve ark., 2008).

Burada bilinmesi gereken ergenlik çağında fiziksel etkinlikler; yaşa uygun ve her öğrenme alanı hedef alınarak etkinliklerin düzenlenmesidir. Bu sebeplerle erken yaşlarda düzenli olarak fiziksel etkinliklere katılım ile zengin spor deneyimlerinin sağlanması beden eğitimi dersinin öncelikli amaçlarındandır.

Bilinen birçok yararına rağmen şu anda ilköğretim ikinci kademe müfredatında beden eğitimi dersi haftada 1 ders saatidir (40 dakika). Bu sebeple okul sonrası ders dışı zamanda yaşa ve öğrenme alanlarına uygun spor etkinlikleri düzenlenmelidir. Sonuç olarak öğrencilerin sağlıklı gelişimlerini ders dışı zamanı verimli bir şekilde kullanarak gerçekleştirmek mümkündür. Bizler de bu amacı gerçekleştirmek için nitelikli spor olanaklarını geliştirmeyi, bilgiyi ve spor yapmayı hedeflemekteyiz.

Okul olanaklarını zenginleştirmek için sizlerin desteği ve belediyemizin katkılarıyla arttırmak bizlerin görevi olmuştur. Tüm okul çalışanları da bu konuda gerekli özveriyi göstermektedir. Sizlerin desteği bu nedenlerle her zaman olduğu gibi çok önemli ve gereklidir. Göstermiş olduğunuz ilgiye teşekkür ediyoruz. Sağlıklı bir yaşam için düzenli spor etkinliklerine katılalım ve spor yapalım...

Yaşam Boyu Sağlık – 3

Okul sonrası zamanlarda yaptığımız futbol ve voleybol etkinliklerine öğrencilerimizin katılımı artarak devam etmektedir. Onların bu artan isteklerine cevap vermek de bizi mutlu etmektedir. Okulumuzun spor olanaklarını bu kapsamda arttırmaya devam ediyoruz. Uzun atlama için kum havuzumuz tamamlanmış, futbol etkinliği için kaleler yapılmış ve boyanmıştır. Masa tenisi odamız da etkin bir şekilde kullanılmaya başlanmıştır.

Kız öğrencilerimiz için voleybol alanında uzman bir antrenör bulunarak ders dışı etkinliklerimiz daha da verimli hale getirilmiştir. Toplam 6 haftadan oluşan bu süreçte 3 haftamız geride kalmıştır. Öğrencilerimiz bu kısa sürede bile istenilen düzeye ulaşmaya başlamışlardır. Futbol etkinliğinde ise Çağa İlköğretim Okulu ile 22 Nisan tarihinde okullar arası maç yapılmıştır. Tüm öğrencilerimizin gönüllü katılımı ve destekleri olmuştur.

Çocuklarda temel hareket becerilerinin küçük yaşlardan itibaren geliştirilmesi çok önemlidir. Bu beceriler sayesinde çocuklar verimli bir şekilde düzenli fiziksel etkinliklere katılabilir. Diğer yandan bu gelişimi sağlayamayan bireyler hareketsiz bir yaşam tarzını seçebilir. Özellikle 4 ana temel çevrede bu becerilerin geliştirilmesi gereklidir. Yer hareketleri, su içinde yapılan hareketler, kar veya buzda ve son olarak havada yapılan (cimnastik, atlama vb.) hareketlerdir. Görüldüğü gibi her ortamda çocuğun fiziksel becerilerini geliştirmesi gerekmektedir. Bu sayede çocukların fiziksel etkinliklerde başarılı olması ve hareketli bir yaşam tarzını seçmesi daha kolay olacaktır.

Ayrıca, bu becerilerin yanında fiziksel ve bilişsel yeterliliklerinin artırılması ve geliştirilmesi beden eğitimi dersinin amaçlarındandır.

Beden eğitimi dersinin haftada 1 ders saati olması bu becerilerin gelişimi için yetersiz olmaktadır. Bu nedenle okul sonrası ders dışı zamanda, yaşa ve öğrenme alanlarına uygun spor etkinlikleri oluşturulmalıdır. Ayrıca, okulun, ailenin, spor kulüplerinin, öğretmenlerin de katılımlarıyla desteklenmelidir. Sonuç olarak öğrencilerin sağlıklı gelişimlerini sağlamak sadece okulda değil, okul dışında da geliştirilmesi gerekmektedir. Bizler de bu amacı gerçekleştirmek için çocukların spor becerilerini, temel hareket becerilerini geliştirmeyi, bilgili olmalarını ve düzenli spora katılmalarını sağlamayı hedeflemekteyiz.

Her gün düzenli spor yapmak için çocukların en az 60 dakika zaman ayırması ve her çocuğa eşit olanak sağlanması ana hedeflerimiz arasındadır. Göstermiş olduğunuz ilgiye teşekkür ediyoruz. Sağlıklı bir yaşam için düzenli spor etkinliklerine katılalım ve spor yapalım...

P. FOCUS GROUP INTERVIEW QUESTIONS

1. Sport/PA preferences and reasons
   a. What sport activities do you prefer? and Why?
   b. How long have you been participating in these activities? How many days have you been participating in these activities?
2. Physical Education lesson content and applications
   a. What topics have you learned this term?
   b. What are the differences of PE course that you are taking this term from the previous PE courses?
   c. What has attracted you most in the PE course that you are taking this term, What are the activities you are enjoying most?
3. Sport/PA opportunities in school/out of school
   a. What are the sport opportunities at school other than PE course?
   b. Since when has been these opportunities here?
   c. What are the sport opportunities in the neighborhood other than school? If there is since when has been here?
4. Sources or accessing sport/PA knowledge
   a. How do you reach to the knowledge about sport/physical activity?
   b. What do you learn from these sources? (Individuals, teachers, family, friends etc. …, book, journals-TV etc.)
5. Who is supporting or preventing from performing Sport/PA
   a. Who is mostly supporting you to participate in sport? (Teachers, trainers, family, friends etc.) Why?
   b. Are there any situations that preventing you to participate in sport? Why?

Q. BODY MASS INDEX OF SCHOOLS

Body mass indexes of EXP school

Table 1.
Body weight, height and body mass index (BMI) of school EXP

School	Class	Weight 1	Height 1	BMI 1	Weight 2	Height 2	BMI 2
EXP	Class 6	34	1,41	17,10	36	1,45	17,12
		32	1,40	16,33	32	1,41	16,10
		38	1,46	17,83	38	1,48	17,35
		32	1,36	17,30	34	1,39	17,60
		32	1,42	15,87	32	1,45	15,22
		34	1,54	14,34	35	1,55	14,57
		35	1,46	16,42	35	1,48	15,98
		39	1,47	18,05	39	1,47	18,05
		38	1,45	18,07	39	1,46	18,30
		29	1,41	14,59	30	1,45	14,27
	Class 7	41	1,53	17,51	42	1,56	17,26
		31	1,45	14,74	32	1,48	14,61
		40	1,47	18,51	42	1,49	18,92
		50	1,62	19,05	49	1,64	18,22
		40	1,48	18,26	41	1,53	17,51
		44	1,60	17,19	44	1,61	16,97

	46	1,54	19,40	45	1,57	18,26
	55	1,60	21,48	54	1,60	21,09
	35	1,47	16,20	38	1,48	17,35
	45	1,48	20,54	47	1,51	20,61
	45	1,53	19,22	47	1,54	19,82
	51	1,59	20,17	50	1,60	19,53
	46	1,58	18,43	46	1,60	17,97
Class 8	48	1,64	17,85	49	1,67	17,57
	54	1,64	20,08	55	1,67	19,72
	51	1,68	18,07	50	1,70	17,30
	32	1,47	14,81	33	1,48	15,07
	51	1,59	20,17	52	1,61	20,06
	50	1,59	19,78	52	1,60	20,31
	49	1,56	20,13	53	1,58	21,23
	53	1,55	22,06	48	1,58	19,23

Body mass indexes of CON school

Table 2.
Body weight, height and body mass index (BMI) of school CON

School	Class	Weight 1	Height 1	BMI 1	Weight 2	Height 2	BMI 2
CON	Class 6	35	1,35	19,20	36	1,36	19,46
		36	1,49	16,22	37	1,50	16,44
		38	1,40	19,39	40	1,41	20,12
		40	1,53	17,09	43	1,55	17,90
		32	1,42	15,87	35	1,43	17,12
		39	1,51	17,10	40	1,52	17,31
		30	1,38	15,75	30	1,40	15,31
		32	1,41	16,10	33	1,42	16,37
		40	1,44	19,29	40	1,45	19,02
		42	1,49	18,92	43	1,51	18,86
		47	1,53	20,08	48	1,55	19,98
		39	1,49	17,57	39	1,50	17,33
		40	1,47	18,51	40	1,48	18,26
	Class 7	39	1,46	18,30	41	1,47	18,97
		48	1,62	18,29	47	1,63	17,69
		45	1,62	17,15	46	1,64	17,10
		37	1,47	17,12	39	1,48	17,80

	59	1,63	22,21	61	1,64	22,68
	47	1,69	16,46	46	1,70	15,92
	40	1,48	18,26	40	1,48	18,26
	40	1,52	17,31	40	1,53	17,09
	38	1,51	16,67	39	1,51	17,10
	48	1,57	19,47	50	1,58	20,03
Class 8	59	1,68	20,90	62	1,70	21,45
	45	1,56	18,49	46	1,57	18,66
	40	1,53	17,09	41	1,54	17,29
	45	1,53	19,22	45	1,54	18,97
	55	1,64	20,45	56	1,65	20,57
	48	1,58	19,23	48	1,60	18,75
	50	1,63	18,82	51	1,63	19,20
	51	1,70	17,65	52	1,72	17,58

R. MEDICAL HEALTH REPORT

Ders Dışı Egzersiz Faaliyetine Katılan Öğrenciler Listesi

Adı Soyadı	Numara	Sınıf
1. Salih Duran	79	6 A
2. Ali Eroğlu	33	''
3. Kübra Algün	34	''
4. Aybüke Duran	67	''
5. Erhan Gözütok	68	''
6. Ayşegül Özer	69	''
7. Fatma Başal	71	''
8. Samet Yalabık	78	''
9. İbrahim Üresin	105	''
10. Kübra Öztürk	126	''
11. Havanur Akça	128	''
12. Hamza Özer	129	''
13. Bahar Satılmış	174	''
14. Muhammet Çakır	178	''
15. Nuh Bülbül	1	7-A
16. Azize Özer	2	''
17. Nazmiye Şahin	4	''
18. Elif Başal	19	''
19. Emine Çınar	20	''
20. Sadık Öztürk	21	''
21. Samet Başal	29	''
22. Elif Ak	43	''
23. Emine Çınar	44	''
24. Yusuf Erkan	63	''
25. A. Can Yalabık	74	''
26. Süleyman Mert	75	''
27. Olcay Algün	39	8 A
28. Emrah [illegible]	102	''
29. Büşra [illegible]	122	''
30. Elif Özer	123	''
31. Fikret Yalabık	183	''
32. Rukiye Özyürek	189	''
33. Emine Yıldırım	197	''
34. Emrah Yıldırım	198	''
35. Mehmet Kılıç	191	''

Yukarıda isimleri geçen öğrencilerin okul sonrasında açılan ders-dışı spor egzersizine katılmalarında bir sakınca yoktur.

Dr. [illegible]OĞLU

S. TÜRKÇE ÖZET

Giriş

Fiziksel aktivitenin sağlık üzerindeki olumlu etkileri alan yazında sıkça yer almaktadır. Özellikle obezite ve hareketsiz yaşam alışkanlıklarına bağlı kronik sağlık problemlerinin çözümünde etkili olduğu birçok sağlık örgütü tarafından belirtilmiştir (Hastalık Kontrol Merkezi, Centers for Disease Control and Prevention [CDC], 1997; Amerika Birleşik Devletleri İnsan Sağlığı Servisleri Bölümü, United States Department of Health and Human Services [USDHHS], 2000; Turkish National Burden of Disease, 2004). Amerikan Spor Hekimliği Koleji [American College of Sports Medicine (ACSM), 2000] ve Hastalık Kontrol Merkezi (1997) çocuklar için orta ve yoğun şiddette 60 dakika ve tercihen haftanın 7 günü fiziksel aktivite (FA) önermektedir. Bununla birlikte yakın zamanda yapılan çalışmalar, önerilen düzeyde FA'ya katılan çocuk oranının oldukça düşük olduğunu göstermektedir (Janssen, Katzmarzyk, Boyce ve Pickett, 2004; Hedley, Ogden, Johnson, Carroll, Curtin ve Flegal, 2004; Amerika Birleşik Devletleri İnsan Sağlığı Servisleri Bölümü, 2000).

Çocuklarda fiziksel aktivite davranışı ile ilgili yapılan derleme çalışmalarında bu grubun birçok etmenden etkilendikleri görülmektedir. Bu etmenlerin başında arkadaş, aile, sınıf, okul, fiziksel ve sosyal çevre gelmektedir (Dobbins, DeCorby, Robeson, Husson ve Tirilis, 2009; Jago ve Baranowski, 2004; Kahn

ve ark., 2002; Strong ve ark., 2005). Bu nedenle güncel alan yazın bireyde sadece bilgi, davranışsal, devinişsel gibi kişisel özelliklerin yanında daha geniş yapıları barındıran sosyo-ekolojik yaklaşımların kullanımını önermektedir (Sallis, Owen ve Fisher, 2008).

Bu öneriler ışığında, FA davranışını daha iyi anlamak ve geliştirmek için ekolojik temelli çalışmaların son 20 yılda arttığı söylenebilir. (Kok, Nell, Gottlieb, Commers ve Smerecnik, 2008; Kraft ve Kerr, 2006; McLeroy, Bibeau, Steckler ve Glanz, 1988; Sallis, Cervero, Asher, Henderson). Günümüzde, sağlık alanında sosyo-ekolojik model (SEM) ekolojik modeller arasında en çok kullanılan modellerden biri olmuştur. Bu modelin temel amacı bireysel ve çevresel faktörlerin farklı düzeylerini (örneğin; fiziksel, sosyal çevre) geliştirmektir (McLeroy ve ark., 1988; Stokols, 1996). Modelin birden fazla alt boyutu olup bireyin davranışsal, kişiler arası, kurumsal, yerel yönetim, fiziksel çevre ve devlet politikalarını hedef almaktadır (Dünya Sağlık Örgütü [WHO], 2002; Sallis ve ark., 2008;).

İlköğretim müfredatında yer alan beden eğitimi (BE), bireyin FA davranışını geliştirmesinde ve benimsemesinde etkin rol oynayan önemli bir derstir. Öğrencilerin ortalama zamanlarının %50'sini okulda geçirdikleri düşünüldüğünde, okulda geçen bu sürenin nasıl değerlendirildiğinin önemi daha da artmaktadır (Fox, Cooper ve McKenna, 2004). Bu nedenle okul BE

derslerinde öğrencilerin sağlıkla ilgili fiziksel uygunlukları ve FA düzeylerini hedef alan kazanımlar öne çıkmaktadır. Bu derslerde hedeflenen bu kazanımlar tüm öğrencilere aktarılarak etkin yaşam tarzı için gerekli davranış değişikliği sağlanmalıdır.

Güncel BE müfredatında ders dışı etkinliklerin ve çevrenin desteklenmesi FA davranışını kazanmada etkili olacağı vurgulanmıştır (MEB, 2007; Ulusal Beden Eğitimi Birliği [NASPE], 2004). Sosyo-ekolojik çerçeveyle bu gelişimi sağlamak en etkin çözümlerden biri olarak görünmektedir. Gauvin, Levesque ve Richard (2001) modelin okullarda BE dersi ve ders dışı etkinliklerde uygulanması için öneriler sunmaktadır. Bu modelin uygulanması ile BE ders çevresi, okul iklimi ve okul yönetiminin değişeceği, buna bağlı olarak öğrencilerin FA öz-yeterlik, egzersiz davranışı, FA hoşlanma, sosyal destek ve fiziksel uygunluk bilgi düzeyinin gelişeceği öngörülmektedir.

Türkiye'de uygulanmakta olan güncel BE müfredatı (MEB, 2007) ABD gibi gelişmiş ülkelerde (NASPE, 2004) uygulanmakta olan BE müfredatı ile benzerlik göstermekte ve kazanım temelli bir yaklaşım uygulanmaktadır. Müfredatta yer alan FA ile ilgili en önemli iki amaç: 1) düzenli FA katılım ve 2) sağlığı geliştirecek etkinliklere katılımdır. Yukarıda bahsedilen SEM çerçevesinde bu iki hedefi gerçekleştirmek için bireysel, aile, okul ve kurumsal değişimler ile FA olanaklarını destekleyici çevreye ihtiyaç duyulmaktadır.

Bu amaçları gerçekleştirmek için BE ders içerikleri, BE kazanımları temelinde fiziksel uygunluk bilgileri ve FA yararlarını içermelidir. İkinci olarak, öğrencilerin fiziksel çevrelerinde olması gereken FA olanakları arttırılarak desteklenmelidir. Bu sayede FA davranışını değiştirmek mümkün olacaktır. Özellikle de aileler, sosyal çevre, bir kurum olarak okul çevresi ve fiziksel çevre davranış değişikliğini desteklemeli ve etkin katılımı cesaretlendirici nitelikte olmalıdır.

SEM ile okul BE dersinin birlikte ele alındığı çalışma sayısı azdır (Casey, Eime, Payne ve Harvey, 2009). Ayrıca, kırsal alanda yaşayan öğrenciler üzerine yapılan çalışma sayısı şehirlerde yaşayan öğrencilere göre daha az gerçekleşmiştir (Gortmaker ve ark., 1999; Hanlon, Simon, O'Grady, Carswell ve Callaman, 2009; Monge-Rojas, Garita-Arce, Sanchez-Lopez ve Colon-Ramos, 2009). Çok az sayıda araştırma ilköğretim ikinci kademe öğrencileri ve yaşadıkları kırsal alanı FA davranışı yönünden incelemiştir (Bathrellou, Lazarou, Panagiotakos ve Sidossis, 2007; Casey ve ark., 2009; Özdirenç, Özcan, Akın ve Gelecek, 2005). Ayrıca, kırsal alanda yaşayan bireylerin fiziksel aktiviteyi destekleyen çevre olanakları ve organize spor seçeneklerine katılımı sınırlıdır (Eime, Payne, Casey ve Harvey, 2008). Bu nedenle kırsal alanda SEM ile FA davranışını geliştirmek çalışmanın genel amacı olmuştur.

Yöntem

Araştırmada, nitel ve nicel yöntemlerin birlikte kullanıldığı karma yöntem yaklaşımı (Creswell ve Clark, 2007) uygulanmıştır. Nicel bölümde kontrol gruplu ön test ve son testin bulunduğu bir çalışma deseni kullanılmıştır. Araştırmada bir adet çalışma grubu ve bir adet kontrol grubu bulunmaktadır. Her iki grubun bulunduğu okullarda ön testler uygulanmış, sosyo-ekolojik temelli uygulama ile 12 hafta süresince beden eğitimi dersi, ders dışı zaman, ve okul çevresinde yapılan değişimler ile çalışma grubunda işlenmiş ve yarıyıl sonunda son testler uygulanmıştır. Nitel bölümde ise yarıyıl sonunda çalışma grubundan seçilen 14 kız ve 12 erkek öğrenci ile odak grup görüşmesi bağımsız araştırmacılar tarafından yapılmıştır. Kontrol grubuna ise yarıyıl başında ve sonunda sadece ön ve son testler uygulanmıştır.

Çalışmada kullanılan anketlerin geçerlik ve güvenirliklerini test etmek amacıyla 2009-2010 eğitim-öğretim yılının birinci döneminde FA öz-yeterlik, egzersiz davranışı değişim basamakları ve FA hoşlanma anketleri için ön çalışma yapılmıştır.

Bulgular

Araştırma sorularını cevaplandırmak için elde edilen sayısal veriler Tekrarlı Ölçümlerde Tek Yönlü Varyans Analizi (Repeated Measures ANOVA),

Pearson Ki-Kare ve sözel veriler içerik analizi yapılarak incelenmiştir. Her bir araştırma sorusu için uygulanan analizler ve elde edilen bulgular aşağıda sıralanmıştır. Ayrıca, her bir soru için uygulanan istatistiksel analizlerin (ANOVA) varsayımları kontrol edilmiştir (Ek N).

Araştırma Sorusu 1. Sosyo-ekolojik uygulama kırsal alanda yaşayan ilköğretim öğrencilerin FA uygunluk bilgi düzeylerini arttırır mı?

"Fiziksel Uygunluk Bilgi Testi" (Hünük ve İnce, 2010) tarafından geliştirilen test kullanılmıştır. Tekrarlı Ölçümlerde ANOVA sonuçlarına göre okul bazında istatistiksel olarak anlamlı fark ortaya çıkmıştır, Wilks' $\Lambda = .84$, $F_{(1,60)} = 59.83$, $p < .05$. Çok yönlü Wilks' Λ analizinden elde edilen η^2 *(eta kare)* değerine göre yapılan uygulamanın etki değeri oldukça yüksek çıkmıştır (.50) (Cohen, 1988).

Araştırma Sorusu 2. Sosyo-ekolojik uygulama kırsal alanda yaşayan ilköğretim öğrencilerin FA düzeylerini arttırır mı?

Öğrencilerin FA düzeylerini belirlemek için adımsayar kullanılmıştır. Yapılan Tekrarlı Ölçümlerde ANOVA analizi bulgularına, göre okullar arasında istatistiksel olarak anlamlı düzeyde fark ortaya çıkmıştır ,Wilks' $\Lambda = .88$, $F_{(1,60)} = 7.83$, $p < .05$. Wilks' Λ değerine göre eta kare ($\eta^2 = .11$), 12 haftalık uygulamanın çalışma okulundaki etkisi orta düzeyde çıkmıştır (Cohen, 1988).

Araştırma Sorusu 3. Sosyo-ekolojik uygulama kırsal alanda yaşayan ilköğretim öğrencilerin egzersiz davranışı değişim basamakları düzeylerini arttırır mı?

Öğrencilerin egzersiz davranışı Cengiz ve arkadaşları (2010) tarafından Türkçe'ye uyarlanan "Egzersiz Davranışı Değişim Basamakları Anketi" (Haas ve Nigg, 2009) ile değerlendirilmiştir. Ki-kare sonuçlarına göre istatistiksel olarak anlamlı fark gruplar arasında ilk test [$X_4{}^2$(N=62) = 2.81, p>.05] ve son test [$X_4{}^2$(N=62) = 51,35, p>.05] analizlerinde bulunamamıştır. Ancak yapılan tanımlayıcı istatistik bulgularına göre çalışma grubu okulunda yer alan öğrenciler son test ölçümlerinde kontrol grubuna göre daha üst egzersiz basamaklarında (Hareket ve Devamlılık) yer almıştır.

Araştırma Sorusu 4. Sosyo-ekolojik uygulama kırsal alanda yaşayan ilköğretim öğrencilerin fiziksel aktivite öz-yeterlik düzeylerini arttırır mı?

Araştırmanın bu sorusu için veriler "Okul sonrası FA için Çocuklarda Fiziksel Öz-Yeterlik ve Yakın Çevre Öz-Yeterlik Anketi" (Cengiz ve İnce, 2010; Dzewaltowski ve ark., 2009) ile toplanmıştır. Tekrarlı Ölçümlerde ANOVA analizine göre, okullar arasında anlamlı fark bulunamamıştır, Wilks' Λ = .93, $F_{(3,58)}$ = 1.50, p > .05. Diğer yandan tanımlayıcı istatistik sonuçlarına göre FA öz-yeterlik değerleri çalışma grubunda artış göstermiş ancak anlamlı düzeyde fark gözlenmemiştir (p > 0.05).

Araştırma Sorusu 5. Sosyo-ekolojik uygulama kırsal alanda yaşayan ilköğretim öğrencilerin fiziksel aktivite sosyal destek düzeylerini arttırır mı?

"FA için Algılanan Sosyal Destek Anketi" ile veriler toplanmış ve Tekrarlı Ölçümlerde ANOVA analizi uygulanmıştır. Analiz sonuçlarına göre çalışma grubu lehine istatistiksel olarak anlamlı fark tespit edilmiştir, Wilks' $\Lambda = .86$, $F_{(3,58)} = 3.08$, $p < .05$. Wilks' Λ değerine göre $(\eta^2=.14)$ eta kare uygulamanın çalışma okulundaki etkisi orta düzeyde çıkmıştır (Cohen, 1988).

İleri analiz tekniği olan eşleştirilmiş t-testi (paired sample t-test) analizini yapmadan önce alfa seviyesi (3 alt boyut nedeniyle) bonferoni uyarlaması yapılarak tekrar düzenlenmiştir. Tip II hatayı (Stevens, 2002) engellemek için (p<.016) seviyesine çekilmiştir. Bağımlı t-testi sonuçlarına göre çalışma grubunda bulunan öğrencilerin ortalama değerleri (ilk ve son test) kontrol grubu öğrencilerine göre daha yüksek çıkmıştır, anne için (Ort=-3.74, SS = 3.73), baba için (Ort=-2.93, SS=4.08), ve arkadaş için (Ort=-.77, SS=4.59) (p<.05).

Araştırma Sorusu 6. Sosyo-ekolojik uygulama kırsal alanda yaşayan ilköğretim öğrencilerin fiziksel aktivite hoşlanma düzeylerini arttırır mı?

12 haftalık sosyo-ekolojik uygulamanın verileri her iki okulda "FA Hoşlanma Anketi" kullanılarak toplanmıştır. Tekrarlı Ölçümlerde ANOVA sonuçlarına

göre istatistiksel olarak anlamlı fark okullar arasında bulunamamıştır, Wilks' $\Lambda = .99$, $F_{(1,60)} = .04$, $p > .05$.

Araştırma Sorusu 7. Öğrencilerin sosyo-ekolojik uygulamayla ilgili algıları nelerdir?

Bu araştırma sorusunun sözel verileri çalışma grubu okulunda odak grup görüşmeleri yapılarak elde edilmiştir. Bağımsız araştırmacılar tarafından her bir grupla (n=4) yapılan odak grup görüşmeleri sonrasında tüm verilere içerik analizi yapılmıştır. İçerik analiz ile altı farklı tema ortaya çıkmıştır. Temalar aşağıda verilmiştir.

Tema I: Öğrencilerin FA ihtiyaçları ve tercihlerine göre geliştirilen FA olanakları.

Tema II. Beden eğitimi dersinin ders dışı faaliyetler ile hayata entegre edilmesi.

Tema III. FA katılımının artması.

Tema IV. FA ve spor bilgilerine erişim için bilgi kaynaklarının artması.

Tema V. Algılanan sosyal desteğin artması.

Tema VI. Seviye belirleme sınavı stresi ve ders dışı etkinliklere katılım.

Tartışma

Bu tezde her bir araştırma sorusu için tartışma yapılmış ve aşağıda sıralanmıştır.

Araştırma Sorusu 1. Sosyo-ekolojik uygulama kırsal alanda yaşayan ilköğretim öğrencilerin FA uygunluk bilgi düzeylerini arttırır mı?

Araştırmanın sonuçları 12 haftalık sosyo-ekolojik uygulamanın kırsal alanda yaşayan öğrencilerde fiziksel uygunluk bilgi düzeyini geliştirmede etkili olduğunu göstermektedir. Yapılan ilk ölçümlerde 36 soruluk fiziksel uygunluk bilgi testinden öğrenciler ortalama 20 doğru cevap verirken uygulama sonrasında 27 doğru cevaba ulaşmışlardır (ilk test çalışma grubu=20.67 ve kontrol okulu=20.84, son test çalışma grubu=27.71 ve kontrol okulu=19.74). Fiziksel uygunluk bilgi testinde yer alan sorular yenilenen BE müfredatındaki kazanımlar ve amaçlar hedeflenerek yapılandırılmıştır (Hünük ve İnce, 2010). 2007 yılında yenilenen BE müfredatı temelde iki öğrenme alanını kapsamaktadır, hareket becerilerinin öğrenimi ve sağlıkla ilgili fiziksel uygunluk gelişimi (MEB, 2007).

BE öğrenme alanları ile ilgili yapılan çalışmalar sınırlı olmakla birlikte az sayıda araştırma ilköğretim ikinci kademesindeki veya ortaöğretimdeki öğrencilerin fiziksel uygunluk bilgi düzeylerini irdelemiştir. Kulinna (2004) tarafından yapılan çalışmada ilköğretim öğrencilerinin %50'sinden fazlası farklı

fiziksel uygunluk aktivitelerin türünü ayırt edememiştir. Öğrenciler bu çalışmada sosyo-ekolojik model ile fiziksel uygunluk bilgi düzeylerini arttırmış olmasına rağmen bu konuda eksikliğin olduğu ve BE kazanımların testler ile değerlendirilmesi gerektiği öne çıkmaktadır.

Yapılan araştırmalar neticesinde diğer okul seviyelerinde de modelin uygulanma ihtiyacı vardır. Yenilenen ilköğretim müfredatında yer alan kazanımların ve amaçların daha büyük bir örneklemde gerçekleşme düzeyleri testler aracılığıyla denenmelidir. Ayrıca, ilköğretim ikinci kademe düzeyinde fiziksel uygunluk bilgi düzeyine yönelik standardize testler geliştirilerek yeni müfredatta (MEB, 2010) yer alan amaç ve kazanımlar değerlendirilmelidir.

Araştırma Sorusu 2. Sosyo-ekolojik uygulama kırsal alanda yaşayan ilköğretim öğrencilerin FA düzeylerini arttırır mı?

FA düzeyi modelin uygulanmasıyla çalışma grubu okulunda istatistiksel olarak anlamlı düzeyde artmıştır. Çalışma grubundaki erkekler (günlük 13.633 adım) kızlara göre daha etkin (günlük 11.093 adım) çıkmıştır. Kontrol okulunda da erkekler daha etkin çıkmıştır (günlük adım sayısı erkekler = 11.045 ve kızlar = 8.522). 12 haftalık eğitim sonrasında çalışma grubu öğrencileri SEM ile her iki cinsiyette (erkekler = 17.099, kızlar = 12.552) kontrol okulu öğrencilerine (erkekler = 11.425, kızlar = 9.701) göre artış sağlamıştır. Okul çevresi çok yönlü yaklaşımlar ile desteklendiğinde katılımcıların FA düzeylerinin arttığı

görülmektedir. Elde edilen bulgular daha önce yapılan adımsayar çalışmaları ile de benzerlik göstermektedir (Beets, Bornstein ve ark., 2010; Haerens, De Bourdeaudhuij, Cardon ve Deforche, 2007; Hardman, Horne ve Lowe, 2011).

Araştırma Sorusu 3. Sosyo-ekolojik uygulama kırsal alanda yaşayan ilköğretim öğrencilerin egzersiz davranışı değişim basamakları düzeylerini arttırır mı?

Egzersiz davranışı değişim basamakları anketine uygulanan ki-kare sonuçlarına göre okullar arasında anlamlı düzeyde fark ortaya çıkmamıştır. Az sayıda katılımcının olması ve her basamağa eşit katılımcının dağılmayışı fark oluşmamasının sebeplerinden biri olarak kabul edilmiştir. Fakat tanımlayıcı istatistik verilerine göre çalışma grubunda yer alan öğrencilerin daha üst basamaklarda (Hareket ve Devamlılık) yer alması önemli bir bulgu olarak durmaktadır. Başlangıçta yapılan ölçümlerde ise tüm öğrenciler alt basamaklara (Eğilim Öncesi, Eğilim, Hazırlık) dağılırken çalışma sonrasında bu dağılım çalışma grubunda üst basamaklara doğru bir dağılım ile değişmiştir. Basamak dağılımında kontrol okulundaki öğrenciler ise her iki değerlendirmede de değişiklik göstermemiştir. Öğrencilerin egzersiz davranışı değişim basamakları çalışma grubunda 12 haftalık SEM ile olumlu yönde değişmiştir. Sonuçta yer alan dağılım, modelin başarılı olduğunu ve ilerlemenin sağlandığını ortaya koymuştur.

Araştırma Sorusu 4. Sosyo-ekolojik uygulama kırsal alanda yaşayan ilköğretim öğrencilerin fiziksel aktivite öz-yeterlik düzeylerini arttırır mı?

Algılanan FA öz-yeterlik değişkeni 12 haftalık sosyo-ekolojik uygulama ile her iki okulda değerlendirilmiştir. Elde edilen veriler istatiksel olarak anlamlı fark yaratmazken tanımlayıcı bulgular değişimin az da olsa çalışma grubunda oluştuğunu göstermektedir. Örneğin çalışma okulunda FA öz-yeterlik değeri 0.90 artarken bu değişim kontrol okulunda 0.03 düzeyinde olmuştur. Ebeveyn öz-yeterlik değerleri daha fazla gelişirken (çalışma grubu = 2.90, kontrol grubu = 0.68) personel öz-yeterlik (çalışma grubu = 0.39, kontrol grubu = 0.38) değerlerinde düşük seviyede artış kaydedilmiştir. Örneklem sayısının azlığı istatistiksel olarak anlamlı düzeyde fark bulunmamasının nedenlerinden olabilir.

Araştırma Sorusu 5. Sosyo-ekolojik uygulama kırsal alanda yaşayan ilköğretim öğrencilerin fiziksel aktivite sosyal destek düzeylerini arttırır mı?

12 haftalık SEM temelli eğitim, algılanan sosyal desteği istatistiksel olarak anlamlı düzeyde çalışma grubunda arttırmıştır. Güncel alan yazında benzer bulgular elde edilmiş ve ailelerin desteği önemli bir değişken olarak yer almıştır (Beets ve ark., 2006; Green ve ark., 2007; Sallis ve ark., 2000). Ancak çocukların egzersiz davranışında aile desteğinin alt boyutlarının yapılarının ne kadar etkili olduğu ile ilgili bulgu çok azdır. Tekrarlı Ölçümlerde ANOVA

sonuçları, kırsal alanda yaşayan çalışma grubu öğrencilerinin SEM ile sosyal destek algılarını geliştirdiklerini göstermiştir. İleri analiz ve tanımlayıcı istatistik verileri de hangi alt boyutun (anne, baba ve arkadaş) daha etkili olduğunu belirtmiştir. Çalışma grubu öğrencilerinde algılanan sosyal destek anne ve baba yapıları için artmıştır. Ancak katılımcıların FA davranışı için arkadaş desteğinde bir ilerleme tespit edilmemiştir.

Benzer bulgular Hünük ve ark. (2008) tarafından özel bir ilköğretim okulunda ikinci kademe öğrencilerinde saptanmıştır. Katılımcıların anne ve baba FA sosyal destek düzeyleri arkadaş desteğine göre daha yüksek olmuştur.

Araştırma sorusu 6. Sosyo-ekolojik uygulama kırsal alanda yaşayan ilköğretim öğrencilerin fiziksel aktiviteden hoşlanma düzeylerini arttırır mı?

FA'den hoşlanma anketi bulgularına göre sosyo-ekolojik uygulama bu boyutta istatistiksel olarak anlamlı bir değişime yol açmamıştır. İstatistiksel olarak anlamlı olmamakla birlikte, çalışma grubu öğrencilerinde ilk ve son test ölçümlerine göre 0.97 değerinde bir artış görülürken, kontrol grubu öğrencilerinde 1.38 değerinde değişim tespit edilmiştir. Kontrol okulunda görülen bu artışın sebepleri nitel yöntemler ile araştırılmalıdır. Bu değişimin sebebi iklimsel etkiler olabileceği gibi öğrencilerin veya öğretmenlerin FA tercihleri bu sonuçta etkili olabilir.

Yüksek düzeyde FA hoşlanma düzeyi BE dersinin öncelikli amaçlarından ve öğretmenler tarafından geliştirilmesi gereken bir yapıdır (NASPE, 2004; Sallis ve ark., 1999). Etkin katılım yönünden BE ve FA etkinliklerinde hoşlanma duygusunun geliştirilmesi önemli bir amaçtır. Katılımcıların FA hoşlanma düzeyleri ortalama değerlerin üzerindedir (ilk-test ort. = 17.64 ve son-test ort. = öğrencilerin 18.61). Bu nedenle zaten yüksek olan hoşlanma değerleri gelişmemiş olabilir.

Özetle, nicel analiz bulguları kırsal alanda yaşayan ilköğretim ikinci kademe öğrencilerinde sosyo-ekolojik yaklaşımın fiziksel uygunluk bilgi düzeyini, FA düzeyini ve algılanan sosyal destek yapılarını değiştirmede etkili olacağını göstermiştir. Nitel verilerde çalışma okulunda sosyo-ekolojik modelin FA olanaklarını arttırmada, fiziksel uygunluk bilgi düzeyini ve aile desteğini geliştirmede etkin olduğunu desteklemektedir.

Araştırma Sorusu 7. Öğrencilerin sosyo-ekolojik uygulamayla ilgili algıları nelerdir?

Nitel veriler öğrencilerin SEM ile çevrelerinde olan değişiklikleri algıladıklarını göstermektedir. Odak grup görüşmeleri ile çevrelerinde artan FA olanaklarını, araçlarını, ders dışı FA etkinliklerin yaşam ve BE dersiyle birleştirildiğini, sosyal desteğin, FA katılımın ve bilgi kaynaklarına erişimin arttığını algılamışlardır.

Odak grup görüşmeleri nicel bölümde elde edilen istatistiksel olarak anlamlı farkları desteklemektedir. Ayrıca, öğrenme ortamı çok yönlü değişkenler (sosyo-ekolojik model vb.) ile desteklendiğinde öğrencinin müfredatta yer alan BE hedeflerini ve etkin yaşam tarzını benimseyeceği açıkça görülmektedir.

Yenilenen ilköğretim BE müfredatı, BE dersinin ders dışı etkinlikler ile gerçek yaşamın birleştirilmesi gerektiğine vurgu yapmaktadır (MEB, 2007). Odak grup görüşmeleri bu amacın gerçekleştirildiğini göstermiştir. Ayrıca, bu sayede FA davranışının kazanılacağı ve etkin bir yöntem olduğu araştırmacılar tarafından sıkça tartışılmaktadır (Kohl ve Hobbs, 1998; Sallis, McKenzie, Kolody, Lewis, Marshall ve Rosengard, 1999). Öğrenciler bu çalışmada SEM ile ilgili algılarını ifade ederken gelecek çalışmalar için etkin ve verimli sonuçların elde edildiğini vurgulamışlardır.

Öğrencilerin beden eğitimi ve sporla ilgili bilgilere nasıl ulaşacakları hakkında verdikleri yanıtlar diğer önemli bir bulgudur. Öğrenciler bu bilgilere ulaşırken alternatif kaynakları; BE dersi, internet kaynakları, kitap ve dergi ve diğer kaynakları kullanmışlardır. Bilgiye ulaşırken sadece BE öğretmeni veya arkadaşlardan faydalanmak yerine farklı bilgi kaynaklarına yönlendirmek öğrenmede etkin rol oynamıştır.

Öneriler

Araştırmada elde edilen bulgular ışığında yapılan öneriler aşağıda sunulmuştur.

1. Beden eğitimi öğretmenleri sosyo-ekolojik modeli kullanmalı ve yerel yönetimler, okul aile birlikleri, diğer öğretmenler ve aileler ile sürekli iletişim halinde olmalıdır. Bu sayede öğrencilerin FA davranışı ve katılımı daha etkili şekilde desteklenebilir.

2. BE dersi müfredatında yer alan fiziksel uygunluk bilgi kazanımlarını öğrencilere aktarmak için okul panoları, BE dersi ve okul dışı zamanlar verimli bir şekilde kullanılmalıdır.

3. BE öğretmenleri aileler ile iletişim kurduklarında ders dışı zamanda FA'nın çocukları ve kendileri için önemini vurgulamalıdır.

4. Araştırmaya katılan kırsal alanda yaşayan ilköğretim öğrencilerinde devamlılık testleri uygulanarak SEM fiziksel uygunluk bilgi düzeyine ve FA davranışlarına olan etkileri incelenmelidir.

5. Sosyo-ekolojik modeli temel alan, daha uzun süreli (en az 1 yıl) bir çalışma ile kırsal alanda yaşayan öğrencilerde fiziksel uygunluk bilgi düzeyi ve FA davranışlarına olan etkileri araştırılmalıdır.

6. Farklı sosyo-ekonomik düzeylerde sosyo-ekolojik modelin etkileri incelenmelidir.

7. Uygulamanın etkilerini daha iyi anlayabilmek için araştırmayı destekleyen okul öğretmenleri, idarecileri, aileler ve yerel yöneticiler ile görüşme yapılmalıdır.

8. Ayrıca, daha büyük bir örneklem seçilerek birden fazla beden eğitimi öğretmeni ve farklı özelliklere sahip okulun katılımıyla çalışmanın tekrar edilmesi önerilir.

CURRICULUM VITAE

PERSONAL INFORMATION

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EDUCATION

Degree	Institution	Year of Graduation
MS	METU Physical Education and Sports	2007
BS	METU Physical Education and Sports	1999
High School	Akhisar High School, Akhisar/Manisa	1991

WORK EXPERIENCE

Year	Place	Enrollment
2000 - Present	Ministry of National Education (MoNE)	Physical Education Teacher
2007 - 2008	General Directory of Secondary Education, MoNE	Specialist Teacher

FOREIGN LANGUAGES

Advanced English

PUBLICATIONS

Journal Paper

1. Cengiz, C., İnce, M.L., & Çiçek, Ş. (2009) Exercise stages of change in Turkish university students by sex, residence, and department, *Perceptual and Motor Skills*, 108, 411-421.

2. Cengiz, C., İnce, M.L., & Çiçek, Ş. (2009) University Students' Physical Activity Levels and Physical Activity Preferences, *Gazi Üniversitesi Spor Bilimleri Dergisi*, 14 (2), 23-31.

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Conference Presentation

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2. **Cengiz, C**., İnce, M.L., & Çiçek Ş. (2007) Üniversite Öğrencilerinin Egzersiz Davranışlarının İncelenmesi, 4. Uluslarası Akdeniz Spor Bilimleri Kongresi Bildiri Özetleri Kitabı, s. 283, November, Antalya, Türkiye.
3. **Cengiz, C.,** Miçooğulları, B.O., Aşçı, F.H., & Kirazcı, S. (2008) "Egzersiz davranışına karar verme envanteri"nin psikometrik özelliklerinin Türk öğrenciler için test edilmesi. 11th International Sport Science Congress, Book of Abstracts, p. 137-139, October, Bolu, Türkiye.
4. **Cengiz, C.**, Aşcı, F.H., & İnce, M.L. (2008) "Physical activity stages of change questionnaire" its reliability and validity. 10th International Sport Science Congress, Book of Abstracts, p. 498-500, 23-25 October, Bolu, Türkiye.
5. Miçooğulları, B.O., **Cengiz, C.,** Aşçı, F.H., & Kirazcı, S. (2009) "Egzersiz öz-yeterlik envanteri'nin psikometrik özelliklerinin Türk öğrenciler için test edilmesi. 1. Fiziksel Aktivite Beslenme ve Sağlık Kongresi Bildiri Kitabı, s.75, November, Ankara, Türkiye.
6. **Cengiz, C**., İnce, M.L. (2010) Children:'s self-efficacy and proxy efficacy for after-school physical activity in two different school context, 15th Annual Congress of the European College of Sport Science, Book of Abstracts, p 662, June, Antalya, Türkiye.
7. **Cengiz, C**., Hünük, D., & İnce, M.L. (2010) Psychometric properties and initial findings of physical activity stages of change questionnaire in Turkish middle school students, 15th Annual Congress of the European College of Sport Science, Book of Abstracts, p. 272-273, 23-26 June, Antalya, Türkiye.

8. **Cengiz, C.,** & İnce, M.L. (2010) Sosyo-ekolojik uygulamanın kırsal alandaki öğrencilerin fiziksel aktivite bilgisi ve davranışlarına etkisi. *Spor Pedagojisi Bilimsel Bilgi Paylaşımı Çalıştayı – I*. Hacettepe Universitesi, Spor Bilimleri ve Teknolojisi Yüksekokulu, s. 13, October, Ankara.

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Chapter in a Book

1. İnce, M.L., **Cengiz, C**., Ebem, Z., Hünük, D., Kangalgil, M., Saçlı, F., Saraç, L., & Yapar, A. (2010). Spor Eğitimi Modeli. *Öğretim Modelleri ve Güncel Araştırmalar. Beden Eğitimi ve Spor Öğretiminde Yeni Yaklaşımlar SEG Dizisi:1* (Editörler: Gıyasettin Demirhan, M. Levent İnce, Canan Koca, Sadettin Kirazcı) Ankara: Spor Yayınevi ve Kitabevi. ISBN: 978-9944-379-15-1, s.47-88.

2. Demirhan, G., Saçlı, F., **Cengiz, C.,** & Çiçek, Ş. (2010) Türkiye'de beden eğitimi öğretmeni eğitiminde (BEÖE) yapılan araştırmaların incelenmesi. *Öğretim Modelleri ve Güncel Araştırmalar. Beden Eğitimi ve Spor Öğretiminde Yeni Yaklaşımlar SEG Dizisi:1* (Editörler: Gıyasettin Demirhan, M. Levent İnce, Canan Koca, Sadettin Kirazcı) Ankara: Spor Yayınevi ve Kitabevi. ISBN: 978-9944-379-15-1, s.116-174.

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Projects:

2010 İnce, M.L., & Cengiz, C. Sosyo-Ekolojik Uygulamanın Kırsal Alanda Yaşayan Öğrencilerin Fiziksel Aktivite Bilgi Düzeyleri ve Davranışlarına Etkileri. BAP-05-04-2010-03.

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