

THE EFFECT OF PARKOUR INTERVENTION ON FOURTH GRADE
STUDENTS' MOTOR, COGNITIVE AND SOCIAL-EMOTIONAL SKILLS;
A MIXED METHODS STUDY

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A MIXED METHODS STUDY**

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ABSTRACT

THE EFFECT OF PARKOUR INTERVENTION ON FOURTH GRADE STUDENTS' MOTOR, COGNITIVE AND SOCIAL-EMOTIONAL SKILLS; A MIXED METHODS STUDY

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The purpose of this study was to investigate the effects of an eight-week parkour intervention based on the adventure education model on fourth-grade students' 1) motor skills, cognitive skills, and social-emotional skills 2) to explore the students' perceptions of the intervention and their overall thoughts about it. The study involved 55 students from three different village schools, with 28 students (Mage=9.63, SD=.60) in the intervention group and 27 (Mage=9.79, SD=.62) in the comparison group. The mixed-method experimental design was used in the study to answer the research questions. Motor coordination, perceived motor competence, divergent thinking, and motor creativity variables were measured using four quantitative data collection tools. Qualitative data were obtained through field notes, semi-structured and group interviews. The intervention group received an eight-week parkour intervention, while the comparison group continued the regular program. The findings showed that students who received parkour intervention based on the adventure education model improved significantly more in motor coordination ($p<.001$),

perceived motor competence ($p=.009$), fluency in divergent thinking ($p<.001$), originality in divergent thinking ($p=.009$) and motor creativity ($p=.003$) skills after the pre-test data were controlled. The qualitative data from the intervention group supported the quantitative results and provided further insight into the students' experiences. The study concluded that the adventure education model and parkour could be an effective and cost-efficient alternative for achieving physical, social, and cognitive outcomes in physical education and sport, particularly in schools without sports facilities.

Keywords: adventure education, parkour, motor coordination, divergent thinking, motor creativity

ÖZ

PARKUR MÜDAHALESİNİN DÖRDÜNCÜ SINIF ÖĞRENCİLERİNİN MOTOR, BİLİŞSEL VE SOSYAL-DUYGUSAL BECERİLERİ ÜZERİNE ETKİSİ; BİR KARMA YÖNTEM ÇALIŞMASI

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Bu çalışmanın amacı, macera eğitimi modeline dayalı sekiz haftalık bir parkur müdahalesinin dördüncü sınıf öğrencilerinin 1) motor becerileri, bilişsel becerileri ve sosyal-duygusal becerileri üzerindeki etkilerini araştırmak 2) öğrencilerin uygulamaya ilişkin algılarını ve uygulamaya ilişkin genel düşüncelerini incelemektir. Çalışmaya üç farklı köy okulundan 55 öğrenci katılmış, müdahale grubunda 28 (Yaş=9.63, SS=.60), karşılaştırma grubunda ise 27 (Yaş=9.79, SS=.62) öğrenci yer almıştır. Çalışmada araştırma sorularını yanıtlamak için karma yöntem deneysel desen kullanılmıştır. Motor koordinasyon, algılanan motor yeterlilik, ıraksak düşünme ve motor yaratıcılık değişkenleri dört nicel veri toplama aracı kullanılarak ölçülmüştür. Nitel veriler ise saha notları, yarı yapılandırılmış ve grup görüşmeleri yoluyla elde edilmiştir. Müdahale grubu sekiz haftalık bir parkur müdahalesi alırken, karşılaştırma grubu normal programa devam etmiştir. Bulgular, macera eğitimi modeline dayalı parkur müdahalesi alan öğrencilerin, ön test verileri kontrol edildikten sonra motor koordinasyon ($p<.001$), algılanan motor yeterlilik ($p=.009$), ıraksak düşünmede

akıcılık ($p<.001$), ıraksak düşünmede özgünlük ($p=.009$) ve motor yaratıcılık ($p=.003$) becerilerinde anlamlı olarak daha fazla geliştiğini göstermiştir. Müdahale grubundan toplanan nitel veriler nicel sonuçları desteklemiş ve öğrencilerin deneyimleri hakkında daha fazla bilgi sağlamıştır. Çalışma, macera eğitimi modeli ve parkurun, özellikle spor tesisi olmayan okullarda beden eğitimi ve sporda fiziksel, sosyal ve bilişsel çıktılar elde etmek için etkili ve uygun maliyetli bir alternatif olabileceği sonucuna varmıştır.

Anahtar Kelimeler: macera eğitimi, parkur, motor koordinasyon, ıraksak düşünme, motor yaratıcılık

To my dear wife and my beloved family

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LIST OF ABBREVIATIONS

OECD	Organization for Economic Cooperation and Development
WEF	The World Economic Forum
WHO	World Health Organization
UNESCO	United Nations Educational, Scientific and Cultural Organization
EU	European Union
DSKPF	The World Free Running and Parkour Federation
PLAYtools	Physical Literacy Assessment for Youth tools
PMC-C	Perceived Motor Competence in Childhood
KTK	Körperkoordinationstest für Kinder
DT	Divergent Thinking

CHAPTER 1

INTRODUCTION

1.1. Background and Statement of the Problem

Physical education and sports play a crucial role in developing fundamental movement skills, physical competence, and personal and social skills such as problem-solving, peer relations, and leadership throughout primary and secondary school (Opstoel et al., 2020). The literature review examined the benefits and outcomes of physical education and sports in schools and found positive effects across five categories: physical development, lifestyle development, emotional development, social development, and cognitive development (Bailey, 2006). These findings highlight the significance of physical education and sports in shaping students' overall growth and development. In order to achieve the desired educational outcomes and goals of physical education and sports, various curriculum and instruction models are available. These models cater to diverse learning needs and promote physical activity and healthy lifestyles among students. Some notable models include the Sport Education Model, Tactical Game Model, Individual and Social Responsibility Model, and Adventure Education Model (Kirk et al., 2006; Siedentop & Tannehill, 2002). Each model has its unique approach to teaching and learning and can be adapted to suit different age groups and skill levels. By utilizing these models, educators can provide their students with a comprehensive and engaging physical education experience that helps them develop essential skills and habits.

The adventure education model aims to develop risk-taking, decision-making, problem-solving, self-confidence, respect, and cooperation skills by using activities that require overcoming challenges (Bisson, 1999). Activities, games, or sports that

involve risk and challenges in the adventure education model (e.g., rafting, rock climbing); are used as a tool in teaching. In this direction, Dyson (1995) emphasized that adventure activities would be especially useful in achieving the goals of today's student-centered, participatory, and student-focused curriculum. (Hattie et al., 1997) found various improvements in students' academic, leadership, self-concept, personality, interpersonal communication, and adventurism (risk-taking and managing) characteristics in a meta-analysis of studies using the adventure education model. The researchers also concluded that these developments are mostly permanent, highlighting the potential benefits of incorporating adventure-based activities in educational programs. The activity chosen as a tool and the design of this activity is essential in the implementation and success of adventure education model-based interventions. In this direction, there are recent findings that "parkour" can be a valuable educational tool in achieving educational outcomes of this model (Botella et al., 2021; Fernandez-Rio et al., 2017; Fernández-Río & Suarez, 2016).

Parkour is a physical activity in which practitioners choose their own path to overcome physical obstacles in the city or nature as quickly and efficiently as possible (Gerling et al., 2013). Parkour develops and supports speed, power, agility, endurance, flexibility, body control, adaptation to different conditions, and self-confidence (Aynés & Cárceles, 2016; Grosprêtre & Lepers, 2016; Maldonado et al., 2015). Besides having fun, this activity motivates the participants to use their imaginations by challenging themselves to improve their skills (Cabrera Gadea & Jacobs, 2016). With the increasing interest in the track, countries such as Denmark, Finland, England, Poland, France, and the USA have started to open specially designed parks and sports centers for parkour. The World Free Running and Parkour Federation (DSKPF) was established in 2008 with the increase in the number of athletes doing parkour. In our country, the Turkish Gymnastics Federation held a test tournament in 2019, and a parkour tournament is currently held every year. Despite the interest in this activity, it is seen that there are a limited number of studies in literature that are based on a particular teaching model or method and use parkour as a tool to achieve the aims of the study. Especially in Türkiye, there is no intervention study on parkour in education. In addition, the number of studies using mixed research methods in literature is limited.

The primary objectives and guidelines for educational curricula sets by the Ministry of Education in Türkiye. One of the objectives of the fourth-grade physical education and game curriculum regulated by the Ministry of Education (MEB, 2018) includes equipping students with the ability to use their fundamental movement skills confidently and effectively. Fundamental movement skills are the foundation for more complex movements required for physical activities, sports, or games (Goodway et al., 2019). These skills are also crucial for lifelong participation in physical activity. Developing motor coordination is essential for fundamental movement skills and sport-specific movements, as it affects participation in physical activity and body mass index (D'Hondt et al., 2014; Lopes et al., 2012; Lopes et al., 2011). Additionally, perceived motor competence plays an important role in participation in physical activity (Babic et al., 2014). A study by Slykerman et al. (2016) found that children with low perceived motor competence had low motivation to participate in sports. However, the consistency between actual and perceived motor competence increases with age, according to a study by Stodden et al. (2008).

The Ministry of Education in Türkiye's 2019-2023 development plan includes the goal of developing "21st-century skills" through education. These skills are divided into three categories: learning, literacy, and life skills. Learning skills include critical thinking (finding solutions to problems), creative thinking (developing new alternatives), communication, and cooperation (working with others) skills (Gelen, 2017). According to the Organisation for Economic Cooperation and Development (OECD), critical thinking and creativity are increasingly important skills (Vincent-Lancrin, 2022). The World Economic Forum (WEF) reports that creative thinking is the second most required skill by workers and will be the most demanded skill in the next five years (WEF, 2023). Although there is no standard definition due to its multifaceted and dynamic nature, creativity can be defined as the ability to find different, unique, appropriate, and useful solutions to a problem, situation, or event (J. P. Guilford, 1967; Joy Paul Guilford, 1967; Okuda et al., 1991; Runco & Jaeger, 2012). Studies have shown that physical activity can improve children's creativity skills or creative abilities (Ángel Latorre-Román et al., 2021; Tilp et al., 2020). On the other hand, some studies have reported significant improvements in participants with

specific characteristics (Marson et al., 2021; Neville & Makopoulou, 2021). According to Rominger et al. (2022), long-term physical activity had a larger effect size than acute practices on creative behavior. Only a few studies have been done on the impact of adventure education interventions on creativity. However, a study by Richmond et al. (2014) found that participants who underwent the adventure education intervention significantly improved their creative problem-solving skills compared to those who followed the regular curriculum.

The concept of motor creativity pertains to the process of devising novel and innovative movements or sequences of movements that can effectively address various physical challenges, obstacles, and problems (Richard, Aubertin, et al., 2020a; Sturza Milić, 2014; Wyrick, 1968). It seems important to improve overall motor skills and adaptability by using cognitive and physical abilities to develop unique and effective solutions to complex situations. In their study Orth et al. (2017) proposed a dynamical systems approach to understanding motor creativity. According to the study, creative motor actions emerge in the act rather than before and are influenced by individual, task, and environmental constraints that promote exploration and variability of movement solutions (Orth et al., 2017). Some of the studies revealed that motor creativity can be improved by physical activity interventions (Mouratidou & Tsorbatzoudis, 2017; Richard et al., 2018a). Studies also implicated that there is a positive relationship between motor creativity and cognitive creativity (Marinšek & Lukman, 2022; Scibinetti et al., 2011). However, studies on the relationship between motor creativity and competence in children have produced inconsistent results. While some studies have found no association between motor creativity and motor competence (Marinšek & Lukman, 2022; Scibinetti et al., 2011), others have reported a positive relationship between these two constructs (Scibinetti et al., 2011; Sturza Milić, 2014).

In conclusion, the current study aimed to examine the effects of an eight-week physical education intervention based on the adventure education model with using parkour as a tool on children's motor coordination, perceived motor competencies, divergent thinking, and motor creativity skill in holistic manner.

1.2 Significance of the Study

The current and future vision of education in Türkiye emphasizes skills such as fundamental movement skills, self-confidence, lifelong participation in physical activity, creativity, critical thinking, well-being, leadership, and cooperation (MEB, 2018; SBB, 2019). International reports indicate that these skills are essential for preparing societies for the future (Heilmann & Korte, 2010; Vincent-Lancrin, 2022).

Physical education and sports provide opportunities to develop physical, social, emotional and cognitive skills (Bailey, 2006). According to UNESCO, "Quality Physical Education" refers to a child-centered and inclusive approach to developing physical literacy, social-emotional skills, and encouraging lifelong physical activity participation (McLennan & Thompson, 2015). Physical literacy refers to ability to perform various movement skills with confidence, comprehension and motivation to engage regular physical activity (Castelli et al., 2014; Whitehead, 2010). UNESCO and organizations in Canada, the USA, and Australia have established clear definitions and standards for Quality Physical Education (QPE) that incorporate the concept of Physical Literacy (PL) as a crucial component. In recent years, there has been a significant increase in research on physical literacy through the development of measurement tools (Mendoza-Muñoz et. al, 2022). The Physical Literacy Enriched Pedagogy (PLEP) framework connects physical literacy to UNESCO's seven characteristics of QPE, which include frequency, variety, inclusivity, value context, peer-led learning, and rounded skill development (Barnett et al., 2020; Green et al., 2018). While studies have examined the impact of various pedagogical approaches on student motivation and performance (Bevans et al., 2010; Pekrun, 2017), more research still needs to be done on the specific effects of PLEP. By delving deeper into the connection between non-linear pedagogy, ecological dynamics, and physical literacy, valuable knowledge can be gained regarding effective practices that align with UNESCO's QPE principles. Quality physical education provides opportunities to develop critical thinking, problem-solving, creative thinking, and decision-making skills (De Coning & Keim, 2021; McLennan & Thompson, 2015). Physical education is essential part of a quality education (McLennan & Thompson, 2015). It involves

learning about physical activity as well as learning through physical activity, both in and out of the school setting. According to McLennan (2021), with the combination of educational and health outcomes, quality physical education can provide opportunities to develop physical, social-emotional, cognitive and creativity skills at a low cost.

According to the MEB (2021) data, only 17.6% of the institutions providing formal education have a gymnasium. In the 2019 – 2023 strategic plan, it has been emphasized that school gardens are insufficient to support students' social, cultural, personal, and sportive development. The cost of a gymnasium to be built in the specified year was announced as 14.500.000 TL in the government investment program (SBB, 2023). When the cost of construction of parkour parks and the construction and maintenance costs of sports facilities that should be built for formal education institutions are compared, it is seen that parkour parks can be built with much more affordable expenses and can be preferred because they take up less space in school gardens.

There is a need for alternative programs based on curriculum and instructional models other than traditional methods, which can support the physical, social, and cognitive skills development of our students, which are included in the primary school fourth-grade curriculum outcomes through physical education and sports, and which can ensure the use of inadequate school gardens for teaching. Therefore, this study examines the effects of an eight-week parkour intervention based on adventure education on children's physical, social-emotional, and cognitive skills from a holistic perspective through a mixed-method approach.

1.3 Research Questions

This study aimed to address the issues mentioned earlier by asking two research questions. The first research question focused on quantitative data. The second question focused on qualitative data to examine the quantitative results in depth.

1. Is there a significant difference between the fourth-grade students who participated in eight-week adventure education model-based parkour

intervention and those who followed the regular curriculum in terms of the following variables after controlling the pre-test results?

- a. motor competence
 - b. cognitive skills
 - c. social-emotional skills
2. What are the participants' experiences, thoughts, and perceptions regarding parkour intervention based on the adventure education model in terms of motor, cognitive, and social-emotional skills?
 3. How do the qualitative data collected from interviews and observations explain the quantitative results obtained from questionnaire and tests regarding the effects of the adventure education model-based parkour intervention on fourth-grade students' motor, cognitive, and social-emotional skills?

1.4 Definition of terms

Motor coordination: Motor coordination refers to the skill of using different body parts in synchronization to perform a specific movement task (Cech & Martin, 2011).

Perceived motor competence: It refers to an individual's perception of their own ability to perform motor skills. (Morano et al., 2020)

Divergent thinking: It is a cognitive process that involves generating multiple ideas or solutions to a problem or situation (Runco, 1991).

Creativity: It is a complex structure requiring original, functional, and practical ideas or solutions to problems or situations (Runco, 2004).

Motor creativity: Motor creativity refers to one's capacity to generate various, unique, and effective movement reactions in response to a stimulus (Wyrick, 1968).

Social-emotional skills: It is a range of abilities that involve building relationships with others, comprehending and regulating emotions, and gaining knowledge from experiences (Napolitano et al., 2021).

Adventure education: Learning with activities that include risk and challenges (Hodgson & Berry, 2011).

Parkour: It is a movement discipline that involves overcoming obstacles in urban or natural environments as quickly and efficiently as possible (Gerling et al., 2013).

CHAPTER 2

LITERATURE REVIEW

This chapter explains the study's theoretical framework and the theoretical background of the variables that seek to answer the research questions. The current study was designed with a holistic approach, focusing on cognitive, physical, and social-emotional skills. As it has a holistic structure, the adventure education model was chosen as the theoretical framework in this study. The adventure education model uses sports and activities that include risk as tools. Parkour is a physical activity involving physical and mental challenges and was chosen as an educational tool in this study. The following sections examine the literature related to the variables of motor coordination, perceived motor competence, creativity, divergent thinking, and motor creativity. Additionally, the review was limited to studies that included intervention and involved K-12 students. A general summary is provided at the end of this chapter.

2.1 Adventure Education

Kurt Hahn, who created and implemented a one-month course that develops physical and mental survival skills to reduce the loss of life in sinking ships in the Atlantic Ocean, is regarded by many researchers as the originator of adventure education (Hattie et al., 1997). Even though the terms outdoor education, adventure-based education, outdoor adventure education, and adventure education seem different, they are all based on the same theoretical background. Adventure education is a process in which participants engage in adventurous activities that require confidence, initiative, and challenges against difficulties to acquire physical, cognitive, and affective skills (Dort et al., 1996).

Adventure education is a model based on experiential learning theory (Stuhr et al., 2016). The main idea of the experiential learning "being in an activity with hands-on".

However, explaining experiential learning by just "involvement of the direct experience for learning" does not define the core of the theory. In order to reveal the learning by experience, the participants are required to participate physically, emotionally, and mentally in the activities (Priest & Gass, 2017).

Experiential learning, which allows its participants to adapt to new physical and mental situations, cooperate as a group to solve problems, overcome risks, trust themselves, and respect their peers, also constitutes the basis of adventure education (Siedentop & Tannehill, 2002). According to Ritson (2016) defines adventure from an educational point of view as learning outdoors while living in nature. Adventure education can also be conducted in the gymnasium or outside the school (Siedentop & Van der Mars, 2011). Ritson defines the relationship between the words "adventure" and "learning" in terms of education as follows: (2016, p. 17):

"The two apparently incongruous terms come together to define an educative method of experiential, activity-based learning that allows a journey of personal and social inquiry and discovery."

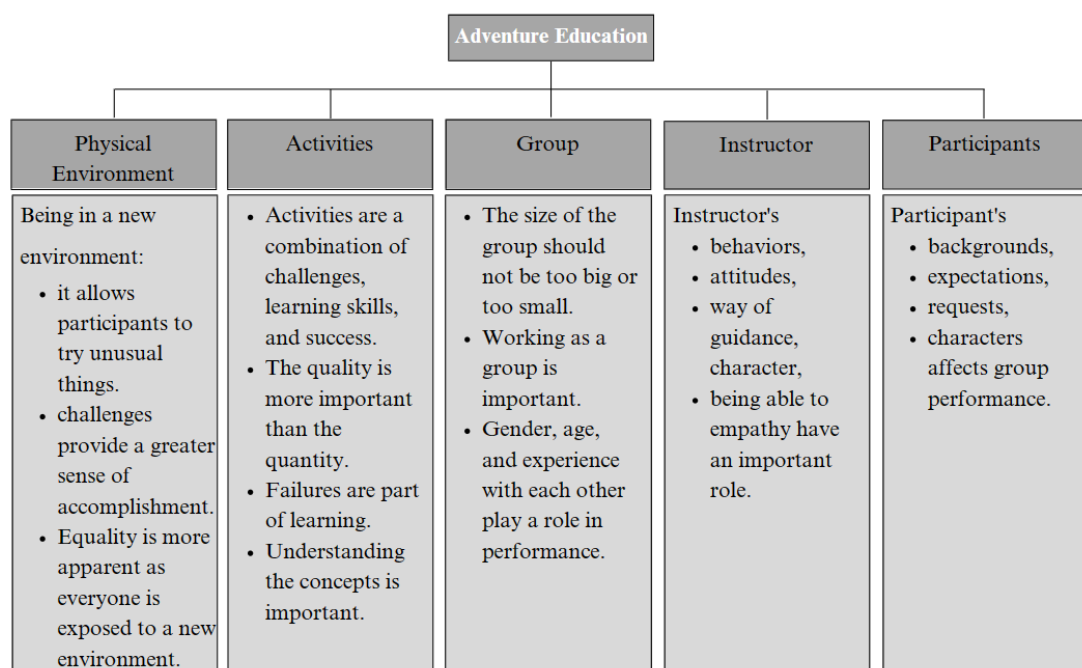
Adventure-based learning uses a student-centered holistic perspective (Ritson, 2016; Stuhr et al., 2016). The activities used in adventure-based learning have an inclusive structure. Adventure enables a person to overcome their fears, discover their abilities while solving problems, make decisions by taking responsibility, and understand themselves better. According to Prouty et al. (2007), a PE curriculum based on adventure learning includes challenges, risks, trust, cooperation, and problem-solving. With the support of the educator, the participants decide for themselves at what level of difficulty they want to do the activity, considering their abilities and fears. The quality of the activities is important to achieve the outcomes of the program (McKenzie, 2000).

McKenzie (2000) analyzed previous research on adventure education programs to determine how these programs achieved their desired outcomes. From this analysis, McKenzie identified six key factors influencing program outcomes: the physical environment, activities, processing, the group, instructors, and participants. These

elements are summarized in Figure 2.1, as outlined by Ritson (2016). McKenzie recommended a mixed-method approach to evaluate the program's impact. Qualitative data from interviews, surveys, and observations would provide a detailed understanding of program outcomes, while quantitative data could be used to develop and test measures of program effectiveness.

Figure 2.1

Elements of Adventure Education Ritson (2016)



In a meta-analysis study by Hattie et al. (1997), 96 articles on adventure education were examined. It was determined that the 40 different outcomes in the studies on adventure programs. Although the age range of the participants was 11 to 42 years in the studies reviewed, most were adults or university students. Despite a varying duration, studies have reported an average intervention period of 24 days. The outcomes of the studies were listed under six categories: academic, leadership, self-concept, personality, interpersonal, and adventurous. One of the major outcomes of the studies was self-concept. Most of the studies indicated that intervention programs positively affect self-concept. Since few studies focused on developing cognitive skills, Hattie et al. (1997) indicated that adventure education programs may develop

general problem-solving skills. The subheadings in the categories included concepts such as self-efficacy, physical ability, physical fitness, and self-understanding. Table 2.1 represents the results of the study conducted by Hattie et al. (1997) on the outcomes of the studies on adventure education till 1997.

Table 2.1
Outcomes of Existing Studies till 1997 (Hattie et al., 1997)

Category	Sub-domain	
Academic	<ul style="list-style-type: none"> • Academic-direct • Academic- general 	
Leadership	<ul style="list-style-type: none"> • Conscientiousness • Decision making • Leadership - general • Leadership – teamwork • Organizational ability 	<ul style="list-style-type: none"> • Time management • Values • Goals
Self-concept	<ul style="list-style-type: none"> • Physical ability • Peer relations • General self • Physical appearance • Academic 	<ul style="list-style-type: none"> • Confidence • Self-efficacy • Family • Self-understanding
Personality	<ul style="list-style-type: none"> • Feminity • Masculinity • Achievement motivation • Emotional stability • Aggression 	<ul style="list-style-type: none"> • Assertiveness • Locus control • Maturity • Neurosis reduction
Interpersonal	<ul style="list-style-type: none"> • Cooperation • Interpersonal Communication • Social competence 	<ul style="list-style-type: none"> • Behavior • Relating skills • Recidivism
Adventuresome	<ul style="list-style-type: none"> • Challengeness • Flexibility (openness to new ideas) • Physical fitness • Environmental awareness 	

Dyson (1995) conducted a qualitative case study on the students' perceptions of a physical education curriculum called Project Adventure which was based on adventure education. The curriculum focused on concepts of trust, challenge, risk, cooperation,

problem-solving, and goal setting. The study was conducted on two alternative schools involving third and fifth-grade students. Interviews were conducted with 14 students from the first school and 15 students from the second school. The findings revealed that students valued getting out of their comfort zone and identified themes such as cooperation, taking risks, having fun, and learning new motor skills. Students also believed that putting in the effort was more important than achieving success and that taking ownership of their goals made the challenges in physical education more meaningful. (Dyson, 1995).

In the same study, one of the themes was "taking risks." Students mentioned that learning to take risks or trying activities they thought were risky is important. They said they overcame their fears (e.g., height) with adventure activities, and after completing the activity, they felt a powerful sense of accomplishment. 'Learning new motor skills' was another theme. Students were allowed to set their own goals during the cooperative unit (Dyson, 1995). While low-skilled students were dealing with fundamental motor skills, the high-skilled ones had set complex sports skills. Additionally, students mentioned that problem-solving on certain motor skills and interpersonal conflicts helped them to reach their goals. Students also mentioned that these adventure education-based classes helped to improve their self-esteem. One of the examples from this theme was Mark. He was one of the low-skilled at the beginning. However, he was able to do the skills with support from the teacher and classmates after a few classes. He even volunteered to demonstrate a skill to the class (Dyson, 1995).

Studies on K-12 students that incorporate adventure education practice tend to focus on the social and psychological outcomes of the participants. In a systematic literature review conducted by Lee and Zhang (2019) on adventure education-based physical education between 1976 – 2018, it was found that nine out of eleven studies focused on the psychological outcomes of physical education. The review concluded that adventure education is beneficial in achieving learning outcomes. The personal, social, and emotional benefits of adventure education are mostly studied by using qualitative data. Scrutton (2015), conducted a study to present quantitative results on the effects

of outdoor adventure education on children's personal and social skills. The experimental group, out of the 360 children aged 11 to 12, participated in a week-long residential outdoor adventure education experience. According to the results of the self-report questionnaire, a small positive effect emerged, but it was lost ten weeks later. However, children who assessed themselves to have relatively low personal and social abilities tended to benefit the most and later least later on.

Gehris et al. (2010) conducted a study that focused on students' ideas for an adventure-physical education program in terms of physical development and physical self-concept. The study participants were 27 tenth-grade students, and the adventure education units lasted 41 minutes for 18 lessons. According to the semi-structured interviews with students, except for two components (appearance and health), students mentioned that body fat, fitness, flexibility, physical activity, sport competence, strength, and coordination components of the physical self-concept were related to adventure education. Additionally, this way of physical education was more fun and attractive than the traditional one.

One of the most recent systematic review studies was conducted by Peng and Lau (2022). The review focused on adventure education interventions' effects on children's physical, social, and psychological development. The review included 18 studies conducted from 2000 to 2021. The results estimated that adventure education contributed to the improvement of physical development of non-healthy children aged 9-16 and 3-7 years. Although there were inconsistent results on self-esteem and self-efficacy, adventure education positively impacted psychological development. Additionally, adventure education improved the social development of healthy and unhealthy 11 – 17-year-old children and unhealthy children aged between 3-7 years. On the other hand, the authors indicated that most of the studies had a poor methodological quality (Peng & Lau, 2022).

Studies on the effects of adventure education on children or young people are very limited in Turkish literature. Gündüz and Dicle (2019) applied out-of-school recreational rock-climbing training based on an eight-weeks adventure education

model to 17 sixth and seventh-grade students. As a result of the qualitative data analysis, the participants stated that they were afraid of climbing at the beginning of the training, but then their desire increased, they had fun, and their self-confidence and strength increased. Vazgeçer and Altınkök (2017) reported that the experimental group with 35 participants, aged 11-12, who participated in 10 weeks of adventure-based physical education activities, had a significantly higher level of problem-solving confidence/avoidance and self-control skills compared to the control group with 31 participants.

Consequently, studies based on the adventure education model showed that it positively affects (varying impact levels) their participants' cognitive, physical, social, and emotional skills. The goals and objectives of the intervention implemented in this study were in parallel with the outcomes of the physical education and play curriculum determined by the Ministry of Education in Türkiye. Considering the outcomes of the studies based on the adventure education model, it was evaluated that it was suitable for the goals and objectives of this research and was determined as the theoretical framework of the current study.

2.2 Parkour

Parkour took the form we know today by David Belle, his cousins, and friends in the suburbs of Paris in the late 1980s (Clegg & Butryn, 2012). According to Gerling et al. (2013) Parkour is a movement discipline by which practitioners choose their way to overcome obstacles as fast and efficiently as possible in urban or nature. Besides having fun, Parkour motivates young people to use their imagination to create challenges to develop their skills (Cabrera Gadea & Jacobs, 2016). Parkour has the potential to be a recreational or mass sport since it combines fundamental movement skills, such as running, jumping, and climbing, with other forms of movement (Gerling et al., 2013). Parkour can be performed anywhere, whether in the presence of artificial or natural obstacles, without requiring any special equipment or space. Following the increasing interest in Parkour, countries such as Denmark, Finland, England, Poland,

France, and the USA have started to open sports centers specifically designed for parkour (Attwood, 2013).

Over the past few years, there has been a rise in academic research on parkour. This research covers various scientific fields, including culture (Ferro, 2015), medicine (Rossheim & Stephenson, 2017), policy (Gilchrist & Wheaton, 2011), and architecture (Brunner, 2011). The following section reviews studies on sports, education, physical activity, and pedagogy, mostly involving K-12 students participating in a parkour intervention.

There are studies that focus on some physical fitness parameters of participants who are interested in parkour. These studies have found that parkour improves the jumping, muscle strength, muscle skills, and cardiorespiratory fitness of the participants (Dvorak et al., 2017; Grosprêtre & Lepers, 2016). It has also been reported that individuals who practice parkour tend to have a low body-fat ratio (Warren et al., 2013) and better dynamic posture control compared to athletes in other sports (Maldonado et al., 2015).

Most participants in parkour studies are either already involved in the sport or evaluated for their sport-specific and health-related skills. For example, Juan et al. (2022) conducted a study on the agility skills of 146 high school students (67 team sports, 77 parkour) who participated in a didactic parkour unit or a team sports unit in five weeks of physical education classes. As a result of the study, students who took the parkour unit significantly improved their agility compared to those who took the team sports unit. In studies involving parkour, it is seen that the effects of children on fundamental movement skills, which are essential for lifelong physical activity participation, are not examined, and most of the participants are adolescents and young adults.

When we look at the literature from the education perspective, a limited number of studies use parkour as a tool in intervention design and whose sample includes children and adolescents. Coolkens et al. (2018) conducted a study on the effects of a parkour

intervention on students' physical activity levels during recess. In the study, 281 children aged 8-10 years participated in a 6-day parkour unit in PE classes. Between every two classes, there were 20 minutes of parkour recess. The recess was divided into two categories: organized and supervised. In organized recess, the teacher provided instructional tasks, while in supervised recess teacher just ensured safety. According to the results, children in organized recess showed less sedentary behavior and more moderate to vigorous physical activity levels than supervised recess. Similar results were found in another study, including parkour intervention on recess (Cheng et al., 2021).

Grabowski and Rasmussen (2017) conducted a study on school-based health promotion using parkour. The study included participants aged between 8 – 16 years. The exact number of participants was not specified. The intervention includes three parts. These were organized and regular parkour training, parkour workshops, and parkour in physical education. It was mentioned that a private parkour organization performed the first two parts, and the last part was conducted by teachers who had previously taken parkour courses. The duration and the content of the intervention were not mentioned clearly. Data were collected through group and personal interviews with students and teachers. According to the study results, the parkour's challenging structure provided opportunities for social inclusion and self-observation for the participants. It forced the participants to reconsider the social role and hierarchies. Since parkour is performed in a non-competitive way, it creates a sense of belonging. The authors concluded that parkour has the potential to promote school-based health promotion and reshape health identities (Grabowski & Thomsen, 2017).

Recent studies on parkour have explored various teaching methods and theoretical frameworks. These studies have provided clear and understandable information regarding the intervention content, duration, and statistical data. Below, we will provide some examples of these studies.

Botella et al. (2021) used the flipped learning method in a didactic unit by using parkour to improve the motivation of the participants, consisting of 100 sixth-grade

students (45 girls and 55 boys) in physical education. The study compared a control group that followed traditional teaching methods to an experimental group that used the flipped learning approach for the same parkour unit. The duration of the intervention was four sessions and nine explanatory videos on the jumps and maneuvers were used. The teacher of the flipped learning group was the main researcher. Both groups were measured at the beginning and end of the intervention using a motivation questionnaire, and 40 personal interviews were conducted for qualitative data. Results showed that the flipped learning group significantly increased intrinsic, identified, and introjected motivation, while external motivation and amotivation decreased. In contrast, the control group experienced significant decreases in intrinsic and identified motivation. Qualitative findings revealed that the students perceived flipped learning as more enjoyable, efficient, and motivating (Botella et al., 2021).

The studies on parkour with a sample of primary school children or similar age groups are quite limited. Fernandez-Rio and Suarez (2016) conducted an intervention study with primary school students (14 boys and 19 girls) and collected their opinions, thoughts, and feelings about a parkour learning unit. The intervention consisted of 12 lessons of 55 minutes each, using an adventure education model-based cooperative learning pedagogy to teach parkour. The instructors were regular schoolteachers who received 10 hours of theoretical and 6 hours of practical training. The intervention was divided into four sections: fundamental movement skills, specific parkour skills, and combinations. Data were gathered through reviews. According to the results, children described their experience as fun. Fear was another major theme. Participants reported that they felt scared of the movements they had to do, but after trying them, they became more confident and less fearful. Participants also mentioned that parkour helped them to develop social skills such as cooperation and helping each other. Problem-solving was one of the frequently mentioned skills. According to participants, they realized that they find different ways to overcome the obstacles. Moreover, the results revealed that both high-skilled and low-skilled children enjoyed parkour. The authors concluded that parkour could be used as educational content since it can

deliver the desired positive outcomes of physical education (Fernández-Río & Suarez, 2016).

In summary, samples of studies using parkour as a tool in an intervention design generally include children and adolescents aged 8 to 16 (Yolcu et al., 2021). The studies examined how interventions with parkour affected various aspects of participants, such as their physical activity levels, health-related behaviors, motivations, feelings and opinions about the intervention, and some social and cognitive skills. The interventions were designed using flipped learning (Botella et al., 2021), collaborative learning (Fernandez-Rio et al., 2017), and the adventure education model (Fernández-Río & Suarez, 2016). The positive outcomes of these studies for K-12 age group participants were similar to the objectives of the adventure education model. Hence, parkour was chosen as a tool to achieve the desired outcomes of intervention in the current study.

2.3 Motor Coordination

Fundamental movement skills (FMS) are important for maintaining the physical functions required in daily life and developing more complex sport-specific skills (Goodway et al., 2019). FMS are divided into three categories as locomotor (walking, running, jumping, leaping, galloping, sliding, skipping), object control (throwing, kicking, catching, dribbling) and balance/stability skills (one foot balance, swinging, twisting, rolling). On the other hand, motor coordination plays an important role in the development of fundamental movement skills and sport-specific skills (Vandorpe et al., 2012).

A study by Lopes et al. (2012) examined the correlation between motor coordination and sedentary behavior among 213 children aged 9-10. The results revealed that children with low sedentary behavior had better motor coordination than those with high sedentary behavior. Lopes et al. (2011) also conducted a longitudinal study on the relationship among motor coordination, physical fitness, and physical activity of the children. In the study, 285 children (142 girls, 143 boys) were measured annually

from 6 to 10 years old. Participants with low motor coordination levels at the beginning showed a greater decrease in physical activity levels at the end of the three years than participants with high and medium motor coordination levels. According to the results, motor coordination over time was an important predictor of physical activity in children aged 6-10. In other studies, it has been observed that low motor coordination level is a determinant in the increase of body mass index (D'Hondt et al., 2014).

Vandorpe et al. (2012) examined the level of motor coordination and participation in physical activity of children aged 6-9 years who participated in sports club activities and participated partially or not at all over three years. It was revealed that the children who participated in the sports club activities during the study had a higher level of motor coordination than those who participated partially or at all. In the three years, motor coordination predicted the physical activity participation of children aged 6-9. In another study conducted by Fransen et al. (2012) with 735 male participants aged 6-12 who participated in one or more sports courses, it was determined that the participants between the ages of 10-12 who participated in more than one sport had a higher motor coordination level than those who participated in only one sports course. In addition, it has been revealed that weekly participation in sports affects motor coordination levels in all age groups (Fransen et al., 2012).

In a different study, anthropometric characters, physical fitness, and motor coordination levels of participants aged 9-11 who participated in different sports branches were compared (Opstoel et al., 2015). Children who performed below average on physical fitness and motor coordination tests participated in sports less weekly than those who performed above average and at high levels (Opstoel et al., 2015). Söğüt (2016) conducted a study examining the motor coordination levels of 101 tennis players aged 6-14. It revealed that 40.6% of the participants were above the normal level, and the rest had a normal level of motor coordination. Additionally, in the studies in which exercise and training programs were applied, it was stated that the intervention group had a higher motor coordination level than the non-intervention group (Čillík & Willwéber, 2018; Walaszek & Nosal, 2014).

A systematic review conducted by Han et al. (2018) on the studies included intervention on motor coordination and FMS of overweight/obese children and adults. The reviewed studies' participants were children and adolescents aged between 4-17 years. The studies involved interventions in improving fundamental movement skills, and motor coordination of overweight children and adults reported that 33 of 38 studies showed improvement in locomotor, object control, balance, and complex tasks. However, the results on balance were controversial. Based on the 17 studies included in the review, the authors noted that the motor coordination and FMS of overweight children and adolescents can be improved with exercise/physical activity interventions (Han et al., 2018).

Fundamental movement skills are essential not only later in life but also more complex skills. Motor coordination, which refers to the ability to execute movements with accuracy and precision, has an important role in the development of fundamental movement skills. Moreover, several studies have suggested that children with better motor coordination are more likely to engage in physical activities later on in life, leading to better health and overall well-being. Children's motor development and participation in physical activity are important outcomes of the primary school curriculum. Thus, motor coordination was included in the current study to examine the effects of an adventure education-based parkour intervention.

2.4 Perceived Motor Competence

Self-concept is a person's perception of themselves in academic, social, emotional, and physical aspects (Shavelson et al., 1976). General self-concept is divided into academic and non-academic. Non-academic self-concept includes social, emotional, and physical self-concepts (Shavelson et al., 1976). How a person perceives or evaluates their physical abilities and physical appearance constitutes the physical self-concept (Fox & Corbin, 1989). According to Harter (1988), a child's view of their competence affects their persistence in a task. Perceived competence is also associated with actual competence. There is an inconsistency between the motor competence perceptions and the actual motor competence of early childhood. However, in middle childhood, children begin to compare themselves more accurately with their peers as

they reach a higher level of cognitive development. For this reason, the consistency between the perception of motor competence and actual motor competence increases with age (Stodden et al., 2008).

Babic et al. (2014) reviewed 64 studies on physical activity and physical self-concept. As a result of the meta-analysis, it was concluded that perceived competence is strongly associated with physical activity. It also showed that general physical self-concept in young people has a moderate effect between perceived competence, perceived fitness, and physical activity.

The study conducted by Slykerman et al. (2016) examined the relationship between perceived motor competence and actual motor competence of 59 male and 50 female participants with an average age of 6.5 years. The study revealed that boys have higher perceived and actual motor competence than girls. It has been stated that actual motor competence is more important than perceived in terms of physical activity level in the sample studied. In a study conducted with 161 children with an average age of 8.82, it was stated that children with low perceived motor competence also had low motivation to participate in sports (Bardid et al., 2016)

According to some studies on young children, there is no significant relationship between perceived and actual motor competence (Clark et al., 2018; Morano et al., 2020; Nobre et al., 2017). However, studies with varying age groups have shown a moderate correlation between the two (Carcamo-Oyarzun et al., 2020; Raudsepp & Liblik, 2002). In a study conducted by McKiddie and Maynard (1997) with 160 children aged 11 to 15 years on actual and perceived motor competence, the actual level of physical competence was measured by teacher evaluation. The results revealed that the accuracy of the assessment increased with age.

A recent longitudinal study on the relationship between perceived and actual motor competence of primary school children was conducted by Strotmeyer et al. (2022). The participants of the study were 200 primary school children with a mean age of 8.84 ± 0.63 . According to the results, the relationship between perceived and actual

motor competence increased over time. However, the effects of perceived motor competence on object control skills were stronger than locomotor skills. Additionally, BMI had a negative impact on actual locomotor skills and perceived self-concept. The authors suggested that it is important to develop strategies that aim to promote physical activity by acquiring AMC, particularly in object control, and PMC, especially in locomotor, during childhood (Strotmeyer et al., 2022).

Perceived motor competence becomes more consistent with age. In other words, the children's perception of motor competence becomes parallel to the actual motor competence with time. The studies examined in the previous section show that motor competence is an important factor in children's participation in physical activity in later life. Supporting children's perceived and actual motor competence for lifelong participation in physical activity should be considered together. Therefore, the current study includes both variables to achieve a comprehensive understanding.

2.5 Creativity and Divergent Thinking

Creativity becomes even more essential as technological developments increase knowledge and complexity (Runco, 2004). Many different definitions of creativity have been made in the literature. However, since creativity is complex and multifaceted by its nature, it does not have a universal definition. Creativity can be defined as the process of producing innovative, appropriate, and useful ideas or solutions to a problem or situation (Amabile, 1988; Runco & Jaeger, 2012). According to Hudgins and Edelman (1988), creativity is a process in which divergent thinking (DT), convergent, and critical thinking are blended. Creativity is also a building block of problem-solving and problem-finding (Runco, 2004).

Divergent thinking is a valuable tool that can lead to originality, a key characteristic of creativity (Runco & Acar, 2012). It involves generating alternative ideas and is often used to measure creative potential (Okuda et al., 1991)(Runco, 2010). Sturza Milić (2014) identifies divergent thinking as a structure with four main components: fluency, originality, flexibility, and elaboration. Fluency involves producing as many solutions as possible to a stimulus. Originality expresses unique ideas from others within

solutions. Flexibility can be defined as the ability to produce solutions for different contents. Finally, elaboration refers to the amount of detail given in the answers (Richard, Aubertin, et al., 2020a).

In their study, Zachopoulou et al. (2006) aimed to design and implement a physical education program to promote creativity in preschool children. The study participants were 251 children aged four to five years from 12 preschool centers. A 10-week physical education program consisting of 20 lessons that involved movement elements, motor skills, and movement exploration was designed. Creative thinking and children's behavior were assessed. Results of the study indicated that children improved their creative fluency and imagination after the program. Children's behavior also showed positive signs of creativity, such as curiosity, flexibility, originality, and elaboration.

Bollimbala et al. (2019) examined the effect of acute physical activity on children's divergent and convergent thinking in a study conducted with 34 students with an average age of 12 years. The intervention included a physical education lesson with a holistic approach. The study concluded that children in the intervention group with normal body mass index improved significantly in divergent and convergent thinking skills compared to children in the control group, but there was no difference in children with low body mass index.

In a pilot study of 50 students from fifth to eighth grade, the age-related effects of school-based 10-week, five-minute daily sitting and movement meditation training on creativity and spatial cognition were examined (Marson et al., 2021). It was determined that younger children showed more creative behavior and better spatial cognition after movement-based meditation, while older children showed more improvement in the same variables after sitting meditation training. It was concluded that the applied intervention may affect children's cognitive skills differently depending on their developmental stages. Charles and Runco (2001) conducted a study on 117 third, fourth, and fifth-grade students to examine divergent thinking and evaluative skills. The findings revealed that the accuracy of originality evaluations and

the preference for relevant ideas increased with age. The divergent thinking test results were unrelated to the evaluation scores. The authors indicated that fourth-grade children got higher fluency raw scores than third and fifth-grade children.

In a six-week dance-based physical education intervention, the effect on the creativity skills of 40 participants, 20 of whom were between the ages of 7 and 8, and 20 of whom were controls, were examined (Neville & Makopoulou, 2021). As a result, the overall effect of the intervention was small, and no statistically significant difference was found. However, in pairwise comparison tests, it was observed that there was a high effect size among children whose creativity baseline scores were lower and higher than the reference score. It was determined that students with a starting score above the reference score benefited more from the intervention, while those with a starting score below the reference score benefited less.

Ángel Latorre-Román et al. (2021) conducted a study to assess the effects of a 10-week active recess program on physical fitness, school aptitudes, creativity, and cognitive flexibility in children. One hundred fourteen children (age range = 8–12 years old, 47.3% girls) participated in this study. The experimental group performed a high-intensity interval training program for ten weeks during recess, three times a week. The control group did not receive any intervention. The experimental group experienced significant improvements in all school aptitudes, creativity, and cognitive flexibility. The experimental group showed a greater increase than the control group in all these variables. No significant differences were found in physical fitness between groups. Another study assessed the effects of a 4-week (5 units per week) motor and coordination-oriented exercise intervention during the morning break on 80 children aged 11-14 years (Tilp et al., 2020). The study results indicated that the experimental group experienced significant improvements in attention/concentration ability, basic arithmetic competence, and the fluency facet of creative potential. No significant differences were found in other facets of creative potential between groups.

In a meta-analysis study involving the effects of acute and long-term physical activity practices on creative behavior performance, it was determined that practices involving

a few days or weeks had a larger effect size than acute practices (Rominger et al., 2022). In addition, when the total effect size of creativity studies involving interventions was examined, it was determined that the average effect size of the intervention was medium.

2.5.1 Motor Creativity

Motor creativity can be explained as developing a new movement pattern to solve a predetermined problem and expressing it physically (Sturza Milić, 2014; Wyrick, 1968). Motor creativity is measured by fluency, originality, flexibility, and elaboration variables, which are also included in cognitive creativity (Joy Paul Guilford, 1967).

Richard et al. (2018a) examined the effect of a creative exercise program based on nonlinear pedagogy principles on children's motor and cognitive creativity in their study involving 140 fourth-grade students. The intervention consists of 10 sessions given over three months. The study determined that the students in the creativity program had higher values in the originality variable in cognitive creativity and the variables of fluency and flexibility in motor creativity than the students in the control group who continued traditional education.

Pagona and Costas (2008) conducted a follow-up study to examine whether the level of motor creativity developed by third-grade students, to whom they conducted a special physical education program nine years ago, is still preserved. During these nine years, none of the groups involved a particular activity or an intervention to improve motor creativity. It was determined that the experimental group continued to show statistically significant superiority over than control group after nine years. According to Pagona and Costas (2008), once motor creativity is developed in children, it maintained even after nine years.

The effects of a motor creativity-oriented intervention that lasted 12 physical education lessons on the knowledge of health, attitudes towards nutrition, and exercises of 112 elementary students were the aim of the study conducted by Mouratidou et al. (2017). When the effect of the intervention on motor creativity was analyzed, it was

determined that the intervention group significantly improved in fluency, originality, and imagination. Results indicated a significant increase in health knowledge in the intervention group. On the other hand, there was no difference between intervention and control groups in terms of attitudes towards nutrition and exercise. Additionally, Mouratidou et al. (2017) indicated that the motor problem-solving tasks allowed the children to find new motor solutions.

In their study, Zachopoulou et al. (2005) divided 191 children into three different age groups: preschool, first, and third grade. They reported that older children performed more movements and better-quality movements. Additionally, they indicated that among these age groups, there was no significant difference between genders. In another study, 84 children aged 6-12 divided into three groups were examined (Domínguez et al., 2015). According to the results, children's motor creativity level, particularly fluency, and flexibility, increases with age. The increase in motor fluency level was very high at 6 to 9 years old.

Thomaidou et al. (2021) applied an eight-week creative dance and movement intervention to 57 preschool children aged 49 to 73 months. The study aimed to investigate the effects of the intervention on motor creativity and motor competence. The results indicated that the intervention group was significantly better than the control group in motor creativity. However, the difference between groups on motor competence was not significant. Additionally, both motor creativity and motor competence scores were significantly associated with the age of the participants.

In recent years, studies on motor creativity have also been carried out in Türkiye. The sample of these studies consists of preschool children. Pamuk et al. (2022) conducted a study on the effects of regular physical activity involvement on motor creativity in 158 children aged 54-72 months. While 79 of the participants regularly participated in sports activities, the other 79 did not participate in any activity. Results revealed that children who regularly participated in sports activities had significantly higher levels of fluency and originality among the sub-dimension of motor creativity, but there was no significant difference in imagination.

In another study, Alper and Ulutaş (2022) examined the effects of an intervention consisting of 24 sessions (12 weeks) to develop children's creative thinking skills on 5-6-year-old children's motor and cognitive creativity. According to the results, there was a significant difference in favor of the experimental group on both motor and cognitive creativity skills.

Consequently, motor creativity is spreading as an important learning tool for physical education in preschool and primary school (Mouratidou et al., 2017). In the studies conducted in the literature, there is a relationship between motor creativity and cognitive creativity. On the other hand, the relationship between motor creativity and motor competence is contradictory. In the present study, both motor and cognitive creativity were evaluated together.

2.6 Intersections

While the studies that included the variables of this study were examined, it was observed that some studies examined the same variables in different combinations. These studies are presented in Table X with their participants, research methods, variables, interventions, and results. In this section, these studies were examined.

Marinšek and Lukman (2022) examined the relationship between motor creativity and motor proficiency of 39 children aged 5 to 6. According to the results, there was no relationship between these two variables. Scibinetti et al. (2011) studied the relationship between cognitive creativity, motor creativity, and motor competence of 31 children aged 7 to 8 years. Results indicated that there was no relationship between motor creativity and motor competence. However, cognitive creativity was significantly related to motor creativity in all dimensions except originality.

On the other hand, some studies reported a significant relationship between motor competency components and motor creativity. Sturza Milić (2014) conducted a study on how motor experience affects the motor creativity of preschool children. Participants of the study were 154 preschool children aged 6 to 6.5 years. The results

showed a positive correlation between motor performance and motor creativity scores, meaning that children with better motor skills also had higher motor creativity (fluency). The authors concluded that motor experience plays an essential role in developing motor creativity (fluency) in preschool children, and it is essential to provide them with adequate and stimulating conditions for their motor development and creative motor expression. The relationship between creativity, physical fitness, gender, and age variables of 308 children aged 8 to 12 years was examined by Latorre Roman et al. (2017). The results showed that while the physical fitness of the boys was better than the girls, there was no difference in creativity in terms of gender. Moreover, creativity was positively correlated with physical fitness. Tocci et al. (2022) conducted an intervention that includes a specialist-led enriched physical education program once a week (1 hour) for six months. The participants of the study were 95 children aged 6–9 years. Variables of the study were motor creativity, motor coordination, executive function, and creative thinking. While the intervention group received specialist-led enriched PE, the control group received conventional PE. The enriched PE group showed a more pronounced improvement in all motor creativity dimensions than the conventional PE group, independently of baseline levels of motor and cognitive skills and sex. The improved motor creativity was partially mediated by improved motor coordination and inhibitory ability.

Strotmeyer et al. (2022) conducted a study that examines the effects of a 6-month motor competence-based physical education program on 200 children aged 8.84 ± 0.64 . The intervention group received a motor competence-oriented physical education program twice a week for six months, while the control group received regular physical education. The study used a longitudinal design with two measurement points (baseline and follow-up after six months). Variables of the study were actual motor competencies (AMC), perceived motor competencies (PMC), physical self-concept (PSC), and body mass index (BMI). According to the results, the intervention group improved actual motor competence (AMC), perceived motor competence (PMC), and physical self-concept (PSC) scores. There was no significant difference in terms of BMI between groups. Results showed a positive correlation between AMC and PMC and between PMC and PSC. Additionally, PMC mediated

the effect of AMC on PSC. Authors suggested that improving children's AMC can increase their PMC and PSC, which may positively affect their motivation and well-being (Strotmeyer et al., 2022). In another study, Bournelli et al. (2009) examined the relationship between motor creativity and self-concept among 414 children aged 6 ± 0.3 to 7 ± 0.3 years. Results indicated that motor creativity was correlated with self-concept.

The effects of a cooperative high-intensity interval training (C-HIIT) physical education program for 12 weeks on 184 children (aged 12 to 16 years) were examined Ruiz-Ariza et al. (2019). The measured variables were creativity, emotional intelligence (EI), and academic performance. The experimental group improved more than the control group in creativity and EI from pre-test to post-test, while there was no significant difference in academic performance change between the groups. There were positive correlations between creativity and EI and between EI and academic performance on the pre-test and post-test. Results indicated that C-HIIT positively affected creativity and EI after controlling for pre-test scores, sex, age, and BMI. After controlling for these variables, c-HIIT did not affect academic performance (Ruiz-Ariza et al., 2019).

Three different intervention groups and a control group were examined in terms of cognitive functions (creativity, attention, and impulse control) and motor skills (balance, aiming, and catching) by Rodríguez-Negro et al. (2020). The intervention groups were a balance intervention program, a game-based program, and a drama learning program). The intervention programs lasted for 12 weeks, with two sessions per week of 45 minutes each. The control group followed the regular physical education curriculum. The results showed that students of the game-based program significantly improved their creativity and attention, and students of the drama learning program improved their creativity, attention, and impulse control. Both students of the balance intervention program and the game-based program improved balance and catching results. There were no significant differences between groups in aiming skills. The authors suggested that physical education could be an accurate tool

for improving students' cognitive and motor development, but each physical exercise type could have different effects (Rodríguez-Negro et al., 2020).

2.7 General Summary

Physical education and sports play an important role in developing physical, social, emotional, cognitive, and lifestyle skills (Bailey, 2006). Various curriculum and instruction models have been developed to achieve physical education and sports' educational goals and outcomes (Kirk et al., 2006; Siedentop & Tannehill, 2002). One of these models is adventure education, which focuses on developing skills such as decision-making, self-confidence, cooperation, problem-solving, and risk management through challenging activities and sports (Dort et al., 1996). The adventure education model can be applied outdoors, on the mountain, river, or lake, and indoors (Siedentop & Van der Mars, 2011). In the studies that used the adventure education model in the design of the intervention, it was reported that the personal, social, emotional, psychological, and physical skills of the participants were positively affected (Gehris et al., 2010; Hattie et al., 1997; Lee & Zhang, 2019; McKenzie, 2000; Peng & Lau, 2022). However, most of these results were obtained with qualitative data. In addition, there are no in-depth studies examining the effects of the adventure education model on children's motor, physical and cognitive skills with both qualitative and quantitative data.

Parkour is a physical activity in which natural and urban obstacles are overcome quickly and efficiently in flow (Gerling et al., 2013). With the increasing interest in parkour, studies on parkour have increased recently. Remarkably, it is also being studied in the fields of culture (Ferro, 2015), medicine (Rossheim & Stephenson, 2017), policy (Gilchrist & Wheaton, 2011), and architecture (Brunner, 2011). In studies involving parkour athletes, it has been reported that parkour improves jumping, muscle strength, and cardiorespiratory fitness (Dvorak et al., 2017; Grosprêtre & Lepers, 2016), parkour athletes have a lower body fat ratio (Warren et al., 2013) and better dynamic posture control (Maldonado et al., 2015) compared to other athletes. However, from the perspective of children, there is a limited number of studies on parkour. When we look at the studies involving the K-12 age group, participants'

physical activity levels (Cheng et al., 2021; Coolkens et al., 2018), motivation (Botella et al., 2021), and agility (Juan et al., 2022) were examined with quantitative data, and it was stated that parkour had positive effects on these variables. In the results obtained from qualitative data, it was concluded that parkour has positive effects on the following skills:

- sense of belonging, opportunities for social participation, and self-evaluation (Grabowski & Thomsen, 2017)
- fun, productivity, and motivation (Botella et al., 2021)
- self-confidence, problem-solving, overcoming fears, cooperating, and helping each other (Fernández-Río & Suarez, 2016)

The skills that parkour showed positive effects in studies involving the K-12 age group show parallelism with the studies on the adventure education model. Therefore, in this study, parkour was determined as a tool for an intervention based on adventure education.

Motor coordination is an important factor in motor development. In line with the results of studies examining physical activity and motor coordination, it can be said that motor coordination has a determining role in physical activity participation (Lopes et al., 2012; Lopes et al., 2011; Opstoel et al., 2015; Vandorpe et al., 2012). In addition, studies indicate that participation in physical activity improves motor coordination (Čillík & Willwéber, 2018; Fransen et al., 2012). According to the review conducted by Han et al. (2018) on overweight children and adolescents, interventions that aim to improve motor coordination and motor competence positively affected locomotor, object control, and complex tasks.

Actual motor and perceived motor competency are important concepts for a physically active lifestyle (Strotmeyer et al., 2022). In studies examining children's perceptions of their motor competence, there are discrepancies between actual and perceived levels of motor competence. While some studies (Clark et al., 2018; Morano et al., 2020; Nobre et al., 2017) have indicated that there is no relationship between actual motor competence and perceived motor competence, some studies (Carcamo-Oyarzun et al.,

2020; Raudsepp & Liblik, 2002) have indicated the opposite. However, Stodden et al. (2008) indicated that the relationship between actual and perceived levels of motor competence was more consistent with age. Additionally, perceived motor competence has a positive effect on physical activity involvement (Slykerman et al., 2016) and motivation to participate in sports (Bardid et al., 2016)

Creativity is the process of producing innovative, appropriate, and useful ideas or solutions to a problem or situation (Amabile, 1988; Runco & Jaeger, 2012). Divergent thinking is the ability to generate alternative solutions, a key characteristic of creativity (Runco, 2010). Divergent thinking often used to measure creative potential (Okuda et al., 1991), has been the subject of many theories, tests, studies, and practical applications over the years (Runco, 2010). Some studies investigated the effects of different types of physical activity on children's creativity and divergent thinking skills. Bollimbala et al. (2019) found that a holistic physical education lesson improved the creativity skills of children with normal body mass index but not those with low body mass index. According to Marson et al. (2021) a movement-based meditation enhanced creativity skills for younger children, while sitting meditation did so for older children. Charles and Runco (2001) found that children's ability to evaluate the originality and relevance of ideas increased with age, but divergent thinking test scores were not related to evaluation scores. In another study, a dance-based physical education intervention had a small and non-significant overall effect but a high effect size for children with low or high baseline creativity scores (Neville & Makopoulou, 2021). Rominger et al. (2022) found that physical activity interventions had a positive and significant effect on creativity, with a larger effect size for long-term practices than for acute practices. Creativity is an important construct within 21st-century skills. Education is critical in developing and supporting children's creativity skills (Kupers et al., 2019). Studies measuring creativity through divergent thinking have reported that physical activity has a positive effect on creativity skills.

Motor creativity is developing a new functional movement or a movement pattern to overcome a problem or situation (Richard et al., 2018a; Sturza Milić, 2014; Wyrick, 1968). The dimensions of motor creativity are fluency, originality, and flexibility,

which are also part of cognitive creativity (Joy Paul Guilford, 1967). Richard et al. (2018a) indicated that a 10-session creative exercise program based on nonlinear pedagogy improves fourth-grade students' originality in cognitive creativity. Additionally, the program positively affected the students' fluency and flexibility in motor creativity. Another study indicated that a 12-physical education lesson length motor creativity-oriented intervention significantly improved the intervention groups' fluency, originality, and imagination dimensions of motor creativity (Mouratidou et al., 2017). Another study also concluded that a 24-session (12-week) creative thinking intervention had positively affected the experimental group in terms of motor and cognitive creativity parameters (Alper & Ulutaş, 2022).

On the other hand, according to the study conducted by Pamuk et al. (2022), regular participation in sports activities positively affected fluency and originality but not the image dimensions of children aged 54-72 months. Results of the studies revealed a relationship between motor creativity and cognitive creativity but no relationship between motor competency (Marinšek & Lukman, 2022; Scibinetti et al., 2011; Thomaidou et al., 2021). Another aspect that affects the motor creativity of children is age. According to the results of the studies, motor creativity is significantly related to age (Domínguez et al., 2015; Marinšek & Lukman, 2022; Zachopoulou et al., 2005). A limited number of studies focus on the long-term effects of the interventions on improving motor creativity skills. In a nine-year follow-up study, Pagona and Costas (2008) indicated that the intervention group continued showing statistically significant superiority over the control group after nine years..

There is inconsistency in studies examining the relationship between motor competence and motor creativity in children. While some studies have reported that there is no relationship between motor creativity and motor competence (Marinšek & Lukman, 2022; Scibinetti et al., 2011), there are also studies reporting a significant positive relationship between these two constructs (Sturza Milić, 2014; Tocci et al., 2022). In studies involving intervention, it was concluded that children in the intervention group developed significantly more in motor competence components

and motor creativity (Sturza Milić, 2014; Tocci et al., 2022). Additionally, Scibinetti et al. (2011) also concluded that cognitive creativity is related to motor creativity.

In the limited number of studies on children's motor, cognitive, and social-emotional development, it has been observed that these skills develop in relation to each other. The study conducted by Strotmeyer et al. (2022), it was reported that a 6-month intervention on motor competence improved the AMC, PMC, and PSC skills of children in the experimental group and that there was a positive relationship between AMC and PMC and between PMC and PSC. In a correlational study involving 414 children, a relationship was found between motor creativity and self-concept (Bournelli et al., 2009). A similar result showed that a 12-week physical education program, including high-intensity interval training, significantly improved the creativity and emotional intelligence of children in the intervention group. In the same study, it was also reported that there was a positive relationship between creativity and emotional intelligence (Ruiz-Ariza et al., 2019). In the same study, it was also reported that there was a positive relationship between creativity and emotional intelligence Rodríguez-Negro et al. (2020) concluded that physical education can be an optimal tool for children's motor and cognitive development. Considering the limited number of studies that examined the variables of this study with different combinations, it can be said that in addition to Negro's statement, physical education intervention programs can potentially improve children's creativity and social-emotional skills.

In conclusion, the current study examined the effects of an eight-week physical education intervention based on the adventure education model with a student-centered holistic structure, using parkour to overcome difficulties and obstacles, on children's motor coordination, perceived motor competencies, divergent thinking skills, and motor creativity.

CHAPTER 3

METHOD

The main purpose of the current study was to evaluate the effects of the adventure education model-based parkour intervention on fourth-grade students' motor coordination, divergent thinking, perceived motor competence, and motor creativity skills. Therefore, this chapter explains the study's research design, participants, data collection tools, data collection procedure, data analysis procedure, and intervention.

3.1 Research Design

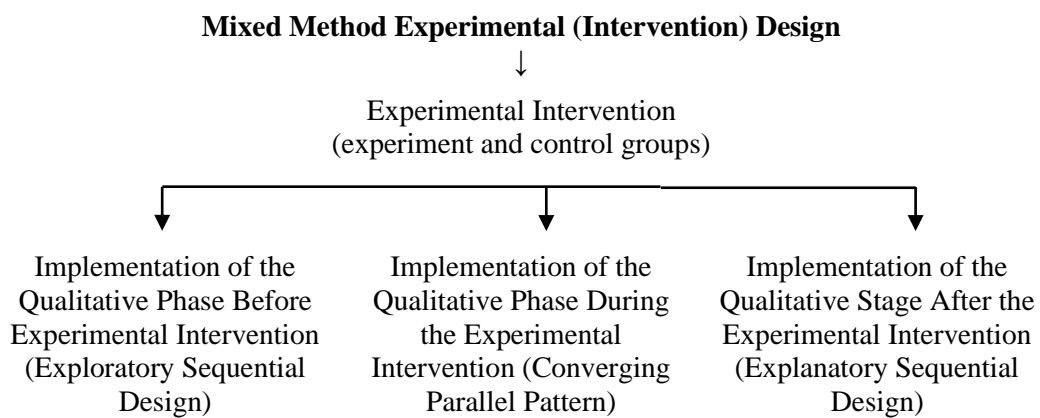
The mixed-methods experimental (intervention) design was used in the current study. The mixed-methods experimental design includes an intervention and uses both quantitative and qualitative data to delve deeper into research questions (Creswell & Clark, 2017). There are three core designs in mixed-method research as exploratory, convergent, and explanatory. Even though each uses a combination of qualitative and quantitative data, what distinguishes these three core research designs is the stage at which qualitative data is collected. Besides these three-core mixed methods designs, there are several complex designs.

The Mixed Methods Experimental (Intervention) Design is one of the complex mixed-method designs (Creswell & Clark, 2017). The types of the mixed methods experimental design were represented in Figure 3.1. In the mixed methods experimental design embedded with an explanatory sequential core design, an intervention is applied to the experimental group and examined whether this intervention affects the outcomes (Creswell & Clark, 2017). In this research design, the researcher first collects and analyzes quantitative data. After the qualitative data are collected and analyzed, it is used to explain or elaborate the results of the quantitative data collected in the first phase.

In the current study, although observation notes and group meetings with the participants at the end of the session were made during the intervention, the primary data used for the qualitative part were semi-structured interviews with the participants. Observation notes and end-of-session meetings were used only to understand changes in the participants themselves through the study variables and the content of the theoretical framework of the intervention. In addition, it aimed to ensure the study's trustworthiness by triangulating data with observation notes and end-of-session group meetings.

Figure 3.1

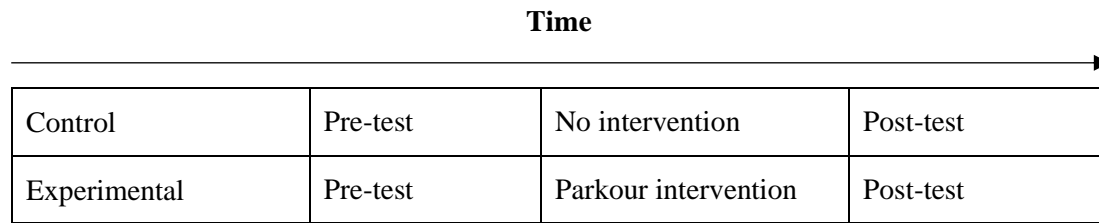
Mixed Method Experimental Design by time of implementation of the qualitative phase (Creswell & Clark, 2017)



For the quantitative part of the study, a pretest-posttest control group design was used (Creswell & Creswell, 2017). Quasi-experimental designs are used when random sampling is not possible. The design includes a pre-test and post-test on the control and experimental groups, and only the experimental group takes the treatment (Creswell & Creswell, 2017). Figure 3.2 illustrates the quasi-experimental between-group design.

Figure 3.2

Quasi-experimental between-group design (Creswell & Creswell, 2017)



3.2 Participants

The current study involved fourth-grade students from three rural schools in Amasya, a city in the middle of the Black Sea region of Türkiye. Due to the low number of students in village schools, the convenience sampling method was used to select participants for both the qualitative and quantitative phases. This method involves selecting participants based on suitability and characteristics matching the research sample (Fraenkel et al., 2012). Three different village schools were selected for the study. Two schools were chosen to create a comparison group that was equal in size to the intervention group. The selected schools had similar physical infrastructure and student profiles, with one school designated as the intervention group and the other two as the comparison group. In the curriculums that the Ministry of Education in Türkiye determines in order of educational levels, fundamental movement skills are last included in the fourth-grade curriculum. According to the physical education and games curriculum, students are expected to know and perform the fundamental movement skills at the end of the fourth grade. The sport-specific movement skills starting from the fifth-grade curriculum are included in the outcomes. Therefore, fourth-grade students were selected as the sample for this study. Detailed demographic information about participants is presented in Table 3.1.

A total of 30 students from two different classes from the same school were reached for the intervention group. However, one of the students did not participate in the study due to his family's disapproval, and another student left the study in the second week of the intervention due to health problems. As a result, 28 students participated in the

study from the beginning to the end in the intervention group. The intervention group consisted of female (n=18) and male (n =10) students aged between 8 to 10 years. Additionally, semi-structured interviews were also conducted with two classroom teachers of the intervention group to understand their observations and thoughts about the intervention and the participants behaviors on studies' variables. For the comparison group, 30 students from two different schools were reached. One student did not participate in the study due to his family's disapproval, and another did not participate due to health problems. Another student transferred to another school in the middle of the semester. Thus 27 students participated in the study as a comparison group. The comparison group includes female (n = 14) and male (n=13) students aged between 8 to 12 years.

Table 3.1
Demographics information of participants

	<i>N</i>	<i>Mage</i> (<i>year</i>)	<i>Mheight</i> (<i>cm</i>)	<i>Mweight</i> (<i>kg</i>)
Intervention group	28	9.63	134.11	32.43
Girls	18	9.62	134.36	32.91
Boys	10	9.64	133.65	31.57
Comparison group	27	9.79	133.19	29.99
Girls	14	9.71	132.11	29.14
Boys	13	9.87	134.35	30.91

3.3 Data Collection Instruments

In order to measure the effects of the adventure education model-based parkour intervention on 4th-grade students, four data collection instruments were used to collect quantitative data. The quantitative data was collected before and after the intervention for comparison and intervention groups. The qualitative data was collected from only the intervention group during and after the intervention. Semi-structured interviews were conducted with all participants in the intervention group and their two classroom teachers. Measurements of the participants were made during physical education and game classes, which are two lessons per week of 40 minutes.

The variables to be examined in the study and their measurement methods are presented in Table 3.2.

Table 3.2
Data Collection Instruments

Variables	Quantitative Data Collection Tools	Qualitative Data Collection Tools (for all variables)
Motor Competence	Körperkoordinationstest für Kinder	
Cognitive Skills	Play Creativity Divergent Thinking: Realistic Presented Problems	Semi-structured interviews End-of-course meetings with students (voice records) Observation notes
Social-Emotional Skills	Perceived Motor Competence Scale in Childhood	

3.3.1 Körperkoordinationstest für Kinder: KTK

Körperkoordinationstest für Kinder (KTK) is a norm-referenced motor proficiency test used to evaluate the motor coordination of children aged 5-14 years (Kiphard & Schilling, 2007). KTK includes four test items; Walk Backward (WB), Jump to Height (HH), Side Jump (JS), and Sideways Move (MS). The test battery development study was conducted on 1228 German children and the test-retest reliability was reported as $r=.85$ (Kiphard & Schilling, 2007). The adaptation study conducted by Özkara and Kalkavan (2018) reported test-retest reliability as $r=.90$ in their validity-reliability study with the participation of 202 Turkish children.

There are four stations to measure these four items in KTK. While each participant has three attempts for WB and HH items, there are two attempts for JS and MS. The sum of the measurements of the attempts in each item is scored. For WB, there are three rectangular shape balance beams with widths of 6 /4.5 /3 centimeters. All balance beams have a height of 5 centimeters. Participants are asked to walk backward on each balance board from wide to narrow. If the participant reaches eight steps without falling per attempt or falls off the board before reaching eight steps, the number of steps is written as a score.

The HH item has 12 foam obstacles of 60 cm x 20 cm x 5 cm. The participant is asked to approach and pass the obstacle by jumping at least two steps on one foot and then to move away from the obstacle by jumping at least two steps after the obstacle. The participant must jump over the obstacle with both right and left feet separately. When the obstacles are overcome, the height is increased by one foam each. There are three attempts to pass through the obstacle of each height. If the participant could not pass on the last attempt, the measurement for that foot ends.

For the JS, a wooden stick of 60cm x 4cm x 2cm is placed in the middle of a 100 cm x 60 cm area as a separator. The task is to jump right and left without separating the feet from each other, within the designated area, over the bracket in 15 seconds. The sum of the jumps made in both attempts in the specified time is taken as the score.

The MS item uses two square platforms with dimensions of 25 cm x 25 cm x 2 cm and a height of 3.7 cm. The participant stands on one of the platforms, and the other platform stands right next to it in the direction the participant wants to go. The participant must move from one platform to another and move the open platform in the direction he/she wants. While moving the platform to the other side, he/she should use both hands and continue without getting off the platform. For this task, the participant has two attempts and 20 seconds for each attempt. Each platform carried by the participant is counted, and the sum of the two attempts determines the overall score of the item.

Applying the KTK test battery takes 15-20 minutes per student. In order to reduce the application time of these scales, four senior students from the Department of Physical Education and Sports of Amasya University received three hours of theoretical and practical training as practitioners on the KTK test battery. A responsible practitioner was assigned to each station in the test battery. Practitioners received training on both the functioning of the test battery and scoring. During the training, each practitioner tested and scored other practitioners. KTK test battery was applied at the beginning and the end of the parkour intervention to both groups in a large classroom used as a workshop.

3.3.2 Play Creativity

Play Creativity is a test that evaluates the motor creativity of children (Richard, Aubertin, et al., 2020b). The measure shaped by 11 tasks that include six creativity variables: originality, fluency, elaboration, imagination, relevance, and flow. The measure is shaped by 11 tasks that include six creativity variables: originality, fluency, elaboration, imagination, relevance, and flow. The Pearson correlation result of the whole scale was .88. In addition, imagination ($r=.87$), originality ($r=.84$), fluency ($r=.77$), flow ($r=.81$), elaboration ($r=.79$), and imitation (appropriateness) ($r=.98$) from acceptable to strong. Intra-observer kappa ranged from 0.79 to 0.88 and between-observer from 0.81 to 0.85. Intra Class Correlation ICC ranges from 0.72 to 0.90 for observers and 0.65 to 0.84 for observers (Richard, Ben-Zaken, et al., 2020).

The back-translation procedure (Brislin, 1970) was followed to adapt the Turkish measure. In the first step, two bilingual physical education and sports expert translated the Play Creativity tool into Turkish. These two-translation was compared, and an agreement was reached. This Turkish form of the tool was translated into English by another expert. These two forms (Turkish and English) were determined to be compatible. The back-translated English form was reviewed by one of the developers of the Play Creativity tool. The developer of the tool determined that the back-translated and original versions of the Play Creativity tool were compatible.

The researcher and another expert in physical education and sports received three hours of training from one of the developers of the Play Creativity tool before the research. This online training covered the application of the test, the interpretation of the data, and the data analysis. Another expert received this training to measure inter-rater reliability before the main study's data were analyzed.

It takes between 10 and 15 minutes to apply the Play creativity tool to a participant. In the study, measuring 60 participants only by the researcher would have resulted in insufficient time for the eight-week intervention. Therefore, a three-hour theoretical and practical training on applying the Play Creativity tool was given to four senior undergraduate students from the Department of Physical Education and Sports at

Amasya University. In the measurements, university students were only practitioners, not evaluators. Their task was to read the instructions to the participants and video record the participants' measurements.

The researcher made evaluations of the pre-test and post-test measurements through video recordings. After the researcher made evaluations, several measurements equal to 30% randomly selected from all measurements taken in the pre-test and post-test were re-scored by another expert. The interclass correlation coefficient was .88 for the pre-test and .80 for the post-test. According to Koo and Li (2016), the interclass correlation coefficient between 0.75 and .90 indicates a good coefficient.

3.3.3 Divergent Thinking: Realistic Presented Problems

Realistic Presented Problems from the Runco Creative Assessment Battery (rCAB; 2020, www.creativitytestingservices.com) is a scale used to assess divergent thinking ability through problem-solving. The problems in the scale were adapted to the concept of physical activity by two field experts. After the adaptation of the questions, approval was obtained from the scale developer on the content validity of the questions. The scale includes six problem situations. Three questions were asked in the pre-test and the other three in the post-test. The questions used in the pre-test and post-test are not the same but consist of similar content. Some of the questions used in the scale are as follows:

- You will play dodgeball with your friends in the schoolyard. Your teacher lets you pick up a ball from the gym. When you enter the room, you see that the ball is too high on the top shelf for you to reach. What do you do to get the ball? Don't forget to write as many solutions as possible.
- One day, on the way to school, you meet a friend and walk by, discussing homework. On your way to school with your friend, you saw a water pipe burst on the road and made a big hole. It's the only way to school. There is very little time left for the first lesson. What would you do to get through this pit? Don't forget to write as many solutions as possible.

Participants are asked to produce as many solutions as possible to these problem situations. Solutions listed by children are scored for fluency (total number of ideas) and originality (number of unique ideas). For each item, a lexicon was created with ideas (solutions) from all participants. The synonyms are grouped to avoid bias in originality scores. Fluency is scored as the sum of the different ideas each participant mentions about. Finally, the originality score only includes the number of unique ideas mentioned by a child. This procedure is implemented in line with the guideline proposed by Acar and Runco (2014).

The researcher made evaluations of the pre-test and post-test measurements. After the researcher made evaluations, several measurements equal to 30% randomly selected from all measurements taken in the pre-test and post-test were re-scored by another expert. The interclass correlation coefficient was .85. According to Koo and Li (2016), the interclass correlation coefficient between 0.75 and .90 indicates a good coefficient.

3.3.4 Perceived Motor Competence Questionnaire in Childhood (PMC-C)

The Perceived Motor Competence Questionnaire in Childhood (PMC-C) is a scale developed by Dreiskaemper, Utesch, and Tietjens (2018) to assess perceived motor competence and includes eight fundamental movement skills (locomotor and object control) for seven years and older. The scale consists of two factors, object control and locomotor. Each factor contains 12 questions. Construct validity ($\chi^2/df = 1.76$, $N = 197$, $p < .001$, Tucker-Lewis Index = .91, Comparative Fit Index = .90, RMSEA = .06) and internal consistency (object control .79-.91) of the scale; locomotor .79-.84), Dreiskemper et al. (2018) reported. The sample of the Turkish adaptation study conducted by Mülazimoğlu-Balli and Hürmeriç-Altunsöz (2019) consists of 356 children, 172 girls, and 184 boys. In the study, while the Cronbach reliability coefficient was .90 in displacement skills and .87 in object control skills, confirmatory factor analysis results were within acceptable reference ranges.

PMC-C also includes photos showing skills in which the participants evaluate their self. Before the administration of the scale to participants, the figures showing the movements with their names were shown and explained in detail to all participants.

The scale was applied to both groups before and after the eight-week parkour intervention. In this study, only the locomotor part of the scale was used as the intervention included locomotor skills.

3.3.5 Qualitative Data Collection Tools

The current study used three sources (semi-structured interviews, group interviews, and observation notes) to collect qualitative data. The main data source was semi-structured interviews. The interview questions to be used in semi-structured interviews were created according to the feedback of three field experts, considering the literature, conceptual framework, and research variables. A group interview was conducted with semi-structured interview questions during the pilot study before the intervention. Necessary changes were made in the interview questions after the group interview conducted in the pilot study, the researcher's observations, and the experts' feedback.

The second data collection tool was the group interviews conducted at the end of the sessions throughout the intervention. In the group interviews, the participants were asked about their thoughts on the session and themselves. The following questions were asked in the end-of-session interviews.

- What did we do in today's session?
- What did this mean for you?
- How do you think you were?
- What could we have done to achieve the goal? (If they indicate that there is something they did not achieve.)

Group interviews lasting approximately five minutes about the session with the students in the intervention group were audio recorded at the end of each session. Participant views from the end-of-session group interviews were not used in any way to shape future sessions of the intervention. The intervention continued with the session plans made before the main study started. The information obtained from these interviews was used to understand the change in the participants' views about themselves regarding the study variables and their thoughts about the intervention.

In addition, the researcher kept observation notes about the behavior and development of the participants. Semi-structured notes were used for observation. In these notes, the variables of the research and the variables in the content of adventure education were listed as titles. The researcher noted the participants' behaviors during the session under the relevant heading together with the anonymous name of the participant. In summary, semi-structured interviews, observation notes, and group interviews were used as qualitative data collection tools for the research.

3.4 Data Collection Procedure

Data collection procedure include four phases. The first phase of the data collection procedure was preparation. During the preparation phase, accessible schools were determined with physical facilities suitable for the study. The schools were selected according to the criteria of not having any indoor gymnasium, being located in villages, having similar sports opportunities, and having similar socio-economic backgrounds of the participants. Approval from the Human Subjects Ethics Committee of Middle East Technical University and the Ministry of National Education was obtained before the process of the current study. Afterwards, informed consents were taken from the student's parents and teachers.

In the second phase, intervention was applied in another school with equivalent characteristics to the schools determined for the main study. During the pilot study, the functioning of parkour intervention, the use of audio recording systems, the applicability of quantitative data collection tools was evaluated. Semi-structured interview questions were applied. The findings were presented to the examination of two field experts and necessary changes were made based on their opinions.

In the third phase, schools were determined as intervention and comparison. There is extreme diversity in the student population of village schools in our country according to the region. For this reason, considering the class sizes, one of the schools was determined as the intervention group and the other two as the comparison group. At the beginning of the study, "Play Creativity", "KTK", "Divergent Thinking: Realistic

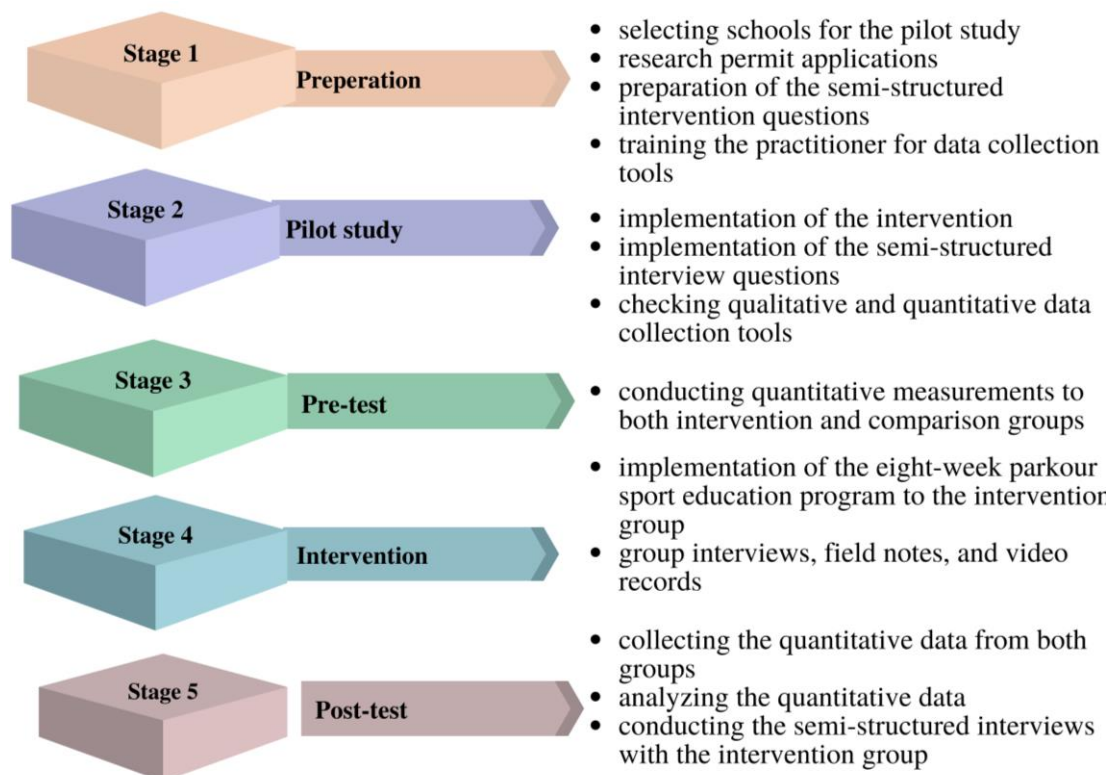
Presented Problems” and “PMC-C” scales were applied to both comparison and intervention groups.

An 8-week parkour intervention was applied to the intervention group in the fourth phase of the study. During the intervention, audio records of the 5 to 10 minutes of group interviews at the end of the session, and observation notes were taken.

In the last phase of the study, quantitative data tools (Play Creativity, PMC-C, Divergent Thinking: Realistic Presented Problems and KTK) applied both intervention and comparison groups as post-test. Following the analysis of the quantitative data, semi-structured interviews were conducted with the intervention group and their classroom teachers. Face to face interviews took 10-15 minutes for each participant.

Figure 3.3

Overall Study Design



3.5 Pilot Study

Before starting the main research, a pilot study was conducted in two schools to achieve various objectives. These objectives included:

- evaluating the feasibility of the parkour intervention,
- experiencing the equipment to be used in the intervention,
- testing the safety measures to be used during the intervention,
- evaluating the applicability of “Play Creativity” and KTK tests.

The pilot study was conducted in two village schools with similar sports facilities and socio-cultural structures to the schools in the main study sample. One of the schools, which consists of 18 students (10 male, 8 female), was selected to implement the parkour intervention. Sessions 1.1 and 1.2 of the intervention were applied to determine whether it could be effectively incorporated into the 40-minute lesson period of the curriculum. During the pilot study, the use of equipment and security measures were also evaluated. The results of the pilot study indicated that the parkour intervention could be successfully implemented within the current curriculum, and there were no issues with equipment usage or safety precautions.

A total of 20 students (12 male, 8 female) of one of the schools have been chosen for application of the KTK and Play Creativity tool. Each practitioner trained for implementing and scoring KTK was assigned to a different station. During the application of the first ten participants, it was observed that a waiting queue was formed at the station where the "jump to high" variable was measured. It was also observed that the measurement of a participant took an average of 15-20 minutes. In order to shorten the measurement time and eliminate the waiting queue, the number of stations where the "jump to high" variable was measured was increased to two. In this way, the measurement time of the KTK scale was reduced to around 15 minutes for five students. Furthermore, practitioners trained for the Play Creativity scale gained experience under the researcher's supervision in reading and video recording the scale instructions to the pilot study participants.

3.6 Parkour Intervention

The current study involved an eight-week parkour intervention for fourth-grade students in primary school. The intervention was based on the adventure education model and aimed to improve participants' motor coordination, creativity, and parkour-specific skills. In order to achieve the outcomes of the adventure education model, activities that include risks (e.g., rafting, rock climbing, canoeing) are used as a tool (Ritson, 2016). Therefore, parkour sport has been used to achieve the aims of the intervention in the current study. Table 3.3 shows the distribution of skills focused on during each session.

The intervention was designed by the researcher, who had taken parkour classes and was an intern in the same age group as the sample of this study. The content of the intervention was assessed by a parkour coach from Denmark with 12 years of training experience. Two sessions of the intervention were administered as a pilot study to 18 students in a school different from the schools that formed the comparison and intervention groups of the study. As a result of the observation notes and observations obtained from the pilot study, necessary changes were made in the intervention with a physical education and sports expert.

The duration of the intervention was determined considering the national and religious holidays, semester breaks, and the pre-test and post-test data collection process as eight weeks. Since the physical education and game class are two sessions a week in the curriculum determined for the fourth grade, the intervention was shaped as two sessions, each lasting 40 minutes, two days a week. The total teaching and implementation time of the eight-week intervention was 640 minutes. Since there is no indoor gym at both comparison or intervention schools, the intervention was implemented at the schoolyard. The parkour intervention was conducted only in the intervention group by the researcher. Mosston and Ashworth's (2008) teaching styles (e.g., command, practice, learner initiated, inclusion) were used in the intervention, although they varied according to the subject of each lesson. The comparison group received the regular curriculum.

During the implementation of the parkour intervention, which was planned for eight weeks, unforeseen mandatory breaks were given, except for the official and religious holidays already considered. The semester break was in the sixth week of the intervention. However, on the day of session 1.2, the governorship declared a mandatory holiday for village schools due to heavy snowfall. Since the intervention was done in the school garden, the parkour intervention could not be applied during sessions 2.1 and 2.2 due to heavy snowfall. Due to these circumstances, sessions 1.2, 2.1, and 2.2 have been moved forward by two weeks. Although a one-week off was planned only for the semester break in the planned schedule, an additional two-week break was required due to these reasons.

In order to ensure safety, a number of actions were implemented, which are listed below:

- Judo mats cover the floor of the parkour area.
- Only the obstacles made from mat were used while participants were first learning the skills.
- The upper surface of the obstacles was covered with a medium-density mat.
- Crash mats were used when it is necessary.
- Participants were informed about what to do in a possible situation.
- In the fourth week, when the height of the obstacles started to differ, the participants were taught techniques to reduce the risk of injury in the event of a fall.

3.6.1 General Content of The Sections in the Sessions

The first session of each week is designed mainly for teaching, and the second session is designed for practice and games. The skills to be taught during the lesson were explained in the first session of each week. Information was given about the topic of the day, and videos were shown on how to perform the skills. The most used teaching styles for every first session were command, inclusion, and practice. On the other hand, reciprocal, divergent discovery, and practice styles were the most common for the

second sessions of the week. The learner-designed individual program and learner-initiated style were used in a limited number of sessions with special activities.

Table 3.3
Distribution of skills according to sessions

Sessions	1.1	1.2	2.1	2.2	3.1	3.2	4.1	4.2	5.1	5.2	6.1	6.2	7.1	7.2	8.1	8.2
Motor Skills	Jumping			✓	✓	✓	✓	✓	✓	✓	✓	Learner initiated activities	✓	Learner designed activities	✓	✓
	Hopping	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓
	Running	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓
	Climbing						✓	✓	✓	✓	✓		✓		✓	✓
	Leaping								✓	✓	✓		✓		✓	✓
	Balance		✓		✓	✓	✓	✓	✓	✓	✓		✓		✓	✓
	Divergent Thinking		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓
	Problem Solving		✓		✓	✓	✓	✓	✓	✓	✓		✓		✓	✓
	Decision making		✓		✓	✓	✓	✓	✓	✓	✓		✓		✓	✓
	Motor Creativity		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓
Social – Emotional Skills	Self-efficacy			✓				✓		✓	✓		✓		✓	✓
	Risk management					✓	✓	✓	✓	✓	✓		✓		✓	✓
	Cooperation	✓	✓			✓				✓	✓		✓		✓	✓
	Vaults	✓	✓	✓	✓	✓		✓		✓					✓	✓
Parkour Skills	Landings					✓	✓	✓	✓	✓	✓		✓		✓	✓
	Climbing						✓	✓	✓	✓	✓		✓		✓	✓
	Bar skills												✓		✓	✓
	Safety						✓								✓	✓
	Descent								✓	✓	✓		✓		✓	✓
	Strides								✓	✓	✓				✓	✓
	Tic Tac										✓		✓		✓	✓

3.6.1.2 Warm-ups

In the warm-up part of the first sessions of each week, after a short warm-up lap to get to know the track of that day, FMS associated with that day's parkour skill was taught. Warm-ups of every first session included teaching and repeating the FMS skills cumulatively. Warm-ups of every second session only include short repetitions of the already learned FMS. Every first session's warm-up part included a short game to familiarize the participants with each other and the parkour field. These games included parkour skills and FMS. Additionally, most games were aimed to force the participants to cooperate, solve problems and make decisions.

3.6.1.3 Teaching

The main body of every first session in the intervention covers teaching. The first six sessions included basic parkour skills. As the weeks progressed, the difficulty and complexity of the skills increased. The parkour intervention is designed holistically due to the nature of the adventure education model. During teaching, there were obstacles that participants could try for each skill level. The parkour area and equipment were reorganized according to the subject of each session, covering all skill levels. Under the practitioner's supervision, participants are allowed to use more difficult equipment settings for skill acquisition when they feel ready.

There were some special sessions on different focuses and aims. One of these focuses was safety. In the seventh session, when climbing skills in parkour were started to be learned, ways to minimize the risk of injury in case of a possible fall were also taught. Falling techniques in judo sport, called UKEMÍ, adapted to the parkour settings. In this session, the mechanism of how to safely fall from a height on the back and face down was taught. Additionally, parkour roll was taught.

While preparing the intervention, one of the important aims was to develop creative thinking and self-confidence by focusing on the participants' problem-solving, decision-making, and collaboration skills. Special sessions that directly involve these topics have been designed in the last weeks when it is thought that the participants

have achieved sufficient knowledge of parkour and FMS skills. In the twelfth session, participants were allowed to design their practice session on the skills they learned at the eleventh session after the planned game. The topic of session fourteen was to work on the skills that participants feel uncomfortable with on their own. In session fifteen, participants were informed about the competitions in parkour. They were divided into three groups speed, skill, and creativity. In line with the information about the parkour competitions, each group created activities in their field, and all groups experienced each other's activities.

3.6.1.4 Practice and Games

The second session of each week started with a short warm-up. After the warm-up, pair, individual, and group exercises were used according to the practice needs. In these exercises, students who performed the skills correctly taught those who could not, while the practitioner supported them with feedback. Additionally, there were exercises designed to use pair practice and self-check as well. Teaching styles and exercise types used in these sessions varied on the current situation of the participants.

Although the first sessions of the practice often include games, the second sessions are entirely built on practice and games. Games involving skills to be developed were played after the practice part. These games are designed for the development of participants' parkour and FMS skills, as well as their cognitive and social-emotional skills. It is aimed that the participants use skills such as decision-making, problem-solving, cooperation, self-confidence, and finding solutions through the FMS and parkour skills they have learned.

As an example, the participants were asked to go from point A to point B in an area with obstacles of different shapes and sizes, and they were told that the game would be over when the whole group reached point B. The difficulty level increased with each completed task. In the final task, five players were assigned different physical disabilities, and the goal was for the entire group to reach point B together. The purpose of the game was to make the participants understand that they can only finish

the game by helping each other and that they need to find different solutions to overcome the obstacles and decide together.

3.6.1.5 Cool-down and Group meetings

The purpose of the cool-down is to lower the heart rate of the participants and to minimize possible muscle pain with stretching movements so that they are ready for the next lesson. Group interviews were conducted during the cool-down. At the end of each session, a five-minute group interview was held with the participants in which they evaluated themselves and the session.

3.6.1.6 Homework

During the application, a total of four assignments were given to the participants. Three of these assignments were given to be used in the content of the following sessions. As an example of an assignment, in session 8.1, the participants were asked to find places in the schoolyard to practice their parkour skills. In Session 8.2, they taught each other parkour skills at the places which they found for homework.

Apart from the sessions, an assignment prepared by the practitioner was given to the participants for the semester break. During the one-week semester break, homework was given to improve the physical fitness of the participants.

3.7 Parkour Equipment

All the tools used as obstacles were designed with compartments to change the size. The heights of the obstacles and the placement of the equipment in the area were changed according to the subject of each lesson and the difficulty of the skill to be learned. The top surface of the wooden boxes is covered with non-slip vinyl with medium hardness sponge filling. The floor of the area where the lesson will be taught is covered with judo mats. The equipment used in the study is listed below.

- 14 wooden vaulting boxes with five sections
- 2 wooden pyramid vaulting boxes with five sections
- 4 wooden single jump boxes

- 4 pyramid four section foam vaulting box
- 2 folding foam ramps
- 3 crash mats
- 6 steel pipes in various lengths
- 30 judo mats

3.8 Intervention Integrity

Intervention integrity is the degree to which an intervention is implemented as planned (Luiselli, 2018). Checking the integrity of the intervention is important since it can impact the effectiveness and feasibility of the intervention. When intervention integrity is high, it corresponds to better learning outcomes for both children and adults (Luiselli, 2018).

In the current study, an expert observed thirty percent of the 16-session parkour intervention to check intervention integrity. The sections in the session plans of the parkour intervention constitute the observation form. The observed sessions were randomly selected. The expert evaluation form is presented in Table 4.1. As a result of the evaluation the intervention integrity was 90%.

Some of the sessions coincided just before the students' lunch break. The cafeteria in the school was not big enough to serve all the students in the school at the same time. For this reason, students were sometimes dismissed 5-10 minutes before the lunch break, depending on their grade level, and had to go to eat their lunch in an orderly manner. Due to lack of time, in most sessions, the cooling down period was either shorter than it should have been or not done at all. On the other hand, the attendance rate of the children was 87.2% to eight-week parkour intervention.

3.9 Data Analysis

Statistical power can be increased by including the pre-test as a covariate (Murrar, 2018). Thus, the required sample size can be expected to be lower than required for an unadjusted analysis of post-test scores (Sim, 2018). Therefore, a one-way univariate

analysis of covariance (ANCOVA) was applied by taking the pre-test data as a covariate. IBM SPSS Statistics version 28 was used for the analysis of quantitative data. The data met the assumptions of ANCOVA. The significance level of alpha values was determined as .01 to reduce the risk of type one error. The assumptions of the ANCOVA were checked, and no violations were found. According to Shapiro-Wilks results on KTK (.953), PMC-C locomotor (.575), DT fluency (.801), DT originality (.091), and Play Creativity (.097) the assumption of normality was not violated. The results of the Levene's test on KTK (.591), PMC-C locomotor (.426), DT fluency (.069), DT originality (.445), and Play Creativity (.981) showed no violation for the assumption of homogeneity of variance. Interaction between covariates and dependent variables for KTK (.975), PMC-C locomotor (.961), DT fluency (.292), DT originality (.840), and Play Creativity (.662) showed that the regression slopes was homogeneous.

In the qualitative phase, the researcher transcribed voice records. Another researcher has checked transcribed voice records for comparison with actual audio files. Semi-structured interviews, group interviews, and observation notes were analyzed using the reflexive thematic analysis method. The reflexive thematic analysis involves creating short codes that capture important features related to answering the research question. These codes and data are then examined to identify potential themes and patterns of meaning. The next step involves reviewing these themes to ensure they adequately answer the research question. Finally, descriptive names are given to each theme. According to the steps of thematic analysis, qualitative data analysis of the current study began with the assignment of preliminary codes. Patterns were searched among these preliminary codes. Afterward, the patterns obtained from the codes were examined, named, and defined.

Two steps were followed to ensure trustworthiness. Data triangulation was done by using group interviews with participants, observation notes, and interviews with classroom teachers in the first step. The aim was to make a more accurate analysis by comparing the answers given by the participants in the interviews with different data collection tools. In the second step, another expert who was not involved in the study

examined the transcripts for codes and themes. After an expert review, an agreement was reached. These steps were aimed at reducing the risk of researcher bias.

3.10 Positionality of the Researcher

I am a 33-year-old Turkish man born and raised in a small city in the middle of the Black Sea region. As a researcher, I have witnessed the difficulties and deprivations experienced by students in my own village and neighboring village schools, even though I have not been exposed to these in my own life. Also, as a physical education and sports graduate, I have witnessed deficiencies in fundamental and sport-specific movement skills in myself and my undergraduate peers. I think that students, including myself, who have been educated in our current education system, do not have sufficient skills to interpreting information, questioning, finding, and solving problems. I am aware that not being objective about the method and intervention I used in this study would be misleading in terms of overcoming the problems I set out to contribute to their solution. I recognize many students' social, economic, and structural realities in our country and aspire to contribute to positive change through rigorous and relevant research.

Table 3.4
Intervention Integrity of the Implementation of the Parkour Intervention

Session	Skills	Warm - up					Teaching					
		Skill introduction by videos	Warm - up	Ice breaker game	FMS and repetition	Skill demonstrations	Feedbacks	Task manipulations	Skill-specific game	Cool-down	Discussion about today	Equipment setting
3.1	Jumping - Balance	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓
	Precision landing - Monkey vault	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓
3.2	Jumping - Balance											
	Precision landing - Monkey vault		✓		✓	✓	✓	✓	✓	-	✓	✓
4.2	Climbing											
	Waist - Parkour roll		✓		✓	✓	✓	✓	✓	-	✓	✓
7.1	Swinging Bar skills	✓	✓		✓	✓	✓	✓	✓	-	✓	✓
	All Skills		✓		✓	✓	✓	✓	✓	-	✓	✓
7.2	All Skills		✓		✓	✓	✓	✓	✓	-	✓	✓
	All Skills		✓		✓	✓	✓	✓	✓	-	✓	✓

CHAPTER 4

RESULTS

In this chapter, descriptive results, ANCOVA results, and qualitative results were explained. Gender did not have a statistically significant role in any variable. However, in the descriptive results, mean values by gender and for the group are presented. The results are presented according to the research questions. First, the results of the quantitative data and then the results of the qualitative data are explained.

4.1 Research Question 1a

Is there a significant mean difference between the fourth-grade students who participated in eight-week adventure education model-based parkour intervention and those who followed the regular curriculum regarding motor coordination scores after controlling the pre-test results?

The unadjusted pre-test and post-test results of the KTK scores are presented in Table 4.1 as split by gender. Additionally, Figure 4.1 shows the groups' unadjusted KTK mean score changes between the pre-test and post-test.

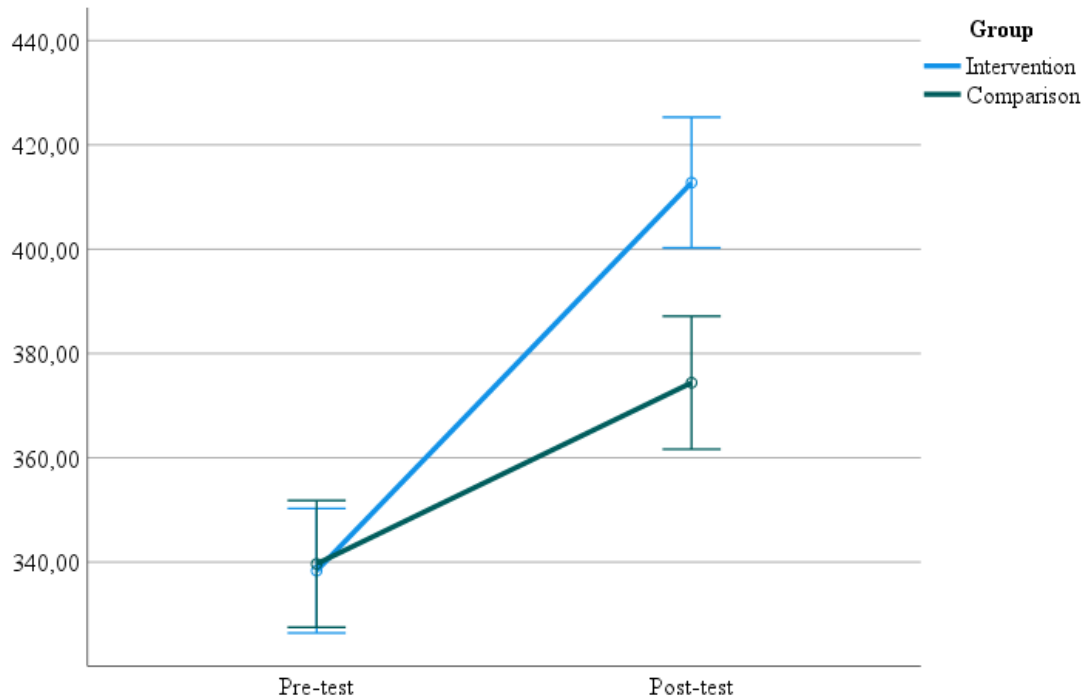
Table 4.1

Descriptive results of pre-test and post-test KTK scores of the groups

Source		Pre-test		Post-test	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Intervention (n=28)	Boys	346.00	32.05	421.80	31.00
	Girls	334.11	30.40	407.78	32.28
	Total	338.36	30.95	412.79	31.99
Comparison (n=27)	Boys	341.69	35.17	369.62	32.50
	Girls	337.79	30.04	378.86	36.18
	Total	339.67	32.03	374.41	34.12

Figure 4.1

Pre-test and post-test KTK mean score changes of the intervention and comparison groups.



The covariate KTK pre-test scores were significant, $F(1,52) = 42.01$, $p < .001$. There was also a significant effect of groups (intervention and comparison) on the score of KTK post-test after controlling for the effects of KTK pre-test scores $F(1,52) = 34.45$, $p < .001$, partial $\eta^2 = .398$. Results revealed that 39.8% of the variance in motor coordination is explained by the adjusted main effect of the group after controlling for the KTK pre-test. Results of the ANCOVA on KTK post-test are represented in Table 4.2.

It can be asserted that the group taking an adventure education-based parkour intervention for eight weeks ($M_{adjusted} = 413.24$, $SE = 4.69$) has significantly higher motor coordination scores compared to the group who followed the regular physical education and games curriculum ($M_{adjusted} = 373.94$, $SE = 4.78$).

Table 4.2*ANCOVA results for KTK post-test as dependent variable*

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2
KTK_Pre	1	25875.05	25875.05	42.01	<.001	.447
Group	1	21217.31	21217.31	34.45	<.001	.398
Error	52	32026.18	615.89			
Total	55	8613763.00				

4.1.2 Research Question 1b

Is there a significant mean difference between the fourth-grade students who participated in eight-week adventure education model-based parkour intervention and those who followed the regular curriculum regarding perceived motor competence after controlling the pre-test results?

The unadjusted pre-test and post-test results of the PMC-C locomotor scores are presented in Table 4.1 as split by gender. Additionally, Figure 4.1 shows the groups' unadjusted PMC-C locomotor mean score changes between the pre-test and post-test.

Table 4.3*Descriptive results of pre-test and post-test PMC locomotor scores of the groups*

Source		Pre-test		Post-test	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Intervention (n=28)	Boys	3.47	0.47	3.84	0.22
	Girls	3.13	0.53	3.23	0.62
	Total	3.29	.49	3.50	.52
Comparison (n=27)	Boys	3.18	0.50	3.14	0.51
	Girls	2.84	0.46	2.94	0.43
	Total	3.11	.51	3.06	.53

The covariate PMC-C pre-test scores were significant, $F(1,52) = 23.92, p < .001$. There was also a significant effect of groups (intervention and comparison) on the score of PMC-C post-test after controlling for the effects of PMC-C pre-test scores $F(1,52) = 7.44, p = .009$, partial $\eta^2 = .125$. The results of the ANCOVA on PMC-C locomotor post-test scores are represented in Table 4.4.

Figure 4.2

Pre-test and post-test PMC (locomotion) mean score changes of the intervention and comparison groups.

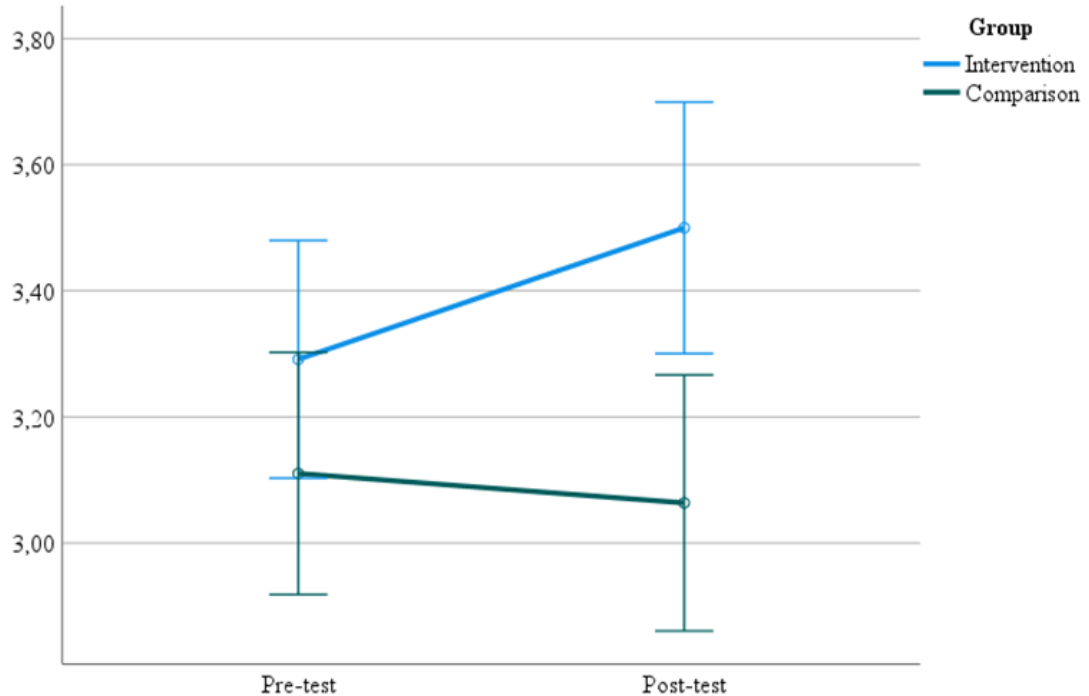


Table 4.4

ANCOVA results for PMC-C locomotor post-test as dependent variable

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2
PMC_Pre	1	4.62	4.62	23.92	<.001	.315
Group	1	1.44	1.44	7.44	.009	.125
Error	52	10.04	.19			
Total	55	611.09				

Results revealed that 12.5% of the variance in perceived motor competence is explained by the adjusted main effect of the group after controlling for the PMC-C pre-test. It can be asserted that the group taking an adventure education-based parkour intervention for eight weeks (*Adjusted*= 3.45, *SE*= .084) has significantly higher perceived motor competence scores compared to the group who followed the regular physical education and games curriculum (*Adjusted*= 3.12, *SE*= .085).

4.1.3 Research Question 1c

Is there a significant mean difference between the fourth-grade students who participated in eight-week adventure education model-based parkour intervention and those who followed the regular curriculum regarding motor creativity and divergent thinking after controlling the pre-test results?

The unadjusted pre-test and post-test results of the PLAY Creativity scores are presented in Table 4.1 as split by gender. Additionally, Figure 4.1 shows the groups' unadjusted PLAY Creativity mean score changes between the pre-test and post-test.

Table 4.5

Descriptive results of pre-test and post-test PLAY Creativity scores of the groups

Source		Pre-test		Post-test	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Intervention (n=28)	Boys	71.80	19.77	96.60	23.67
	Girls	77.67	14.97	104.22	16.43
	Total	75.57	16.72	101.50	19.25
Comparison (n=27)	Boys	82.62	25.95	3.14	97.69
	Girls	77.07	20.01	2.94	84.50
	Total	79.74	22.78	90.85	22.28

The covariate Play Creativity pre-test scores, was significant, $F(1,52) = 38.49$, $p < .001$. There was also a significant effect of groups (intervention and comparison) on the score of Play Creativity post-test after controlling for the effects of Play Creativity pre-test scores $F(1,52) = 9.76$, $p = .003$, partial $\eta^2 = .158$. The results of the ANCOVA on PMC-C locomotor post-test scores represented in Table 4.6.

Results revealed that 15.8% of the variance in motor creativity is explained by the adjusted main effect of group after controlling for Play creativity pre-test. It can be asserted that the group taking an adventure education-based parkour intervention for eight weeks ($M_{adjusted} = 102.89$, $SE = 3.02$) has significantly higher motor creativity

scores compared to the group who followed the regular physical education and games curriculum ($M_{adjusted} = 89.41, SE = 3.07$).

Figure 4.3

Pre-test and post-test PLAY Creativity mean score changes of the intervention and comparison groups.

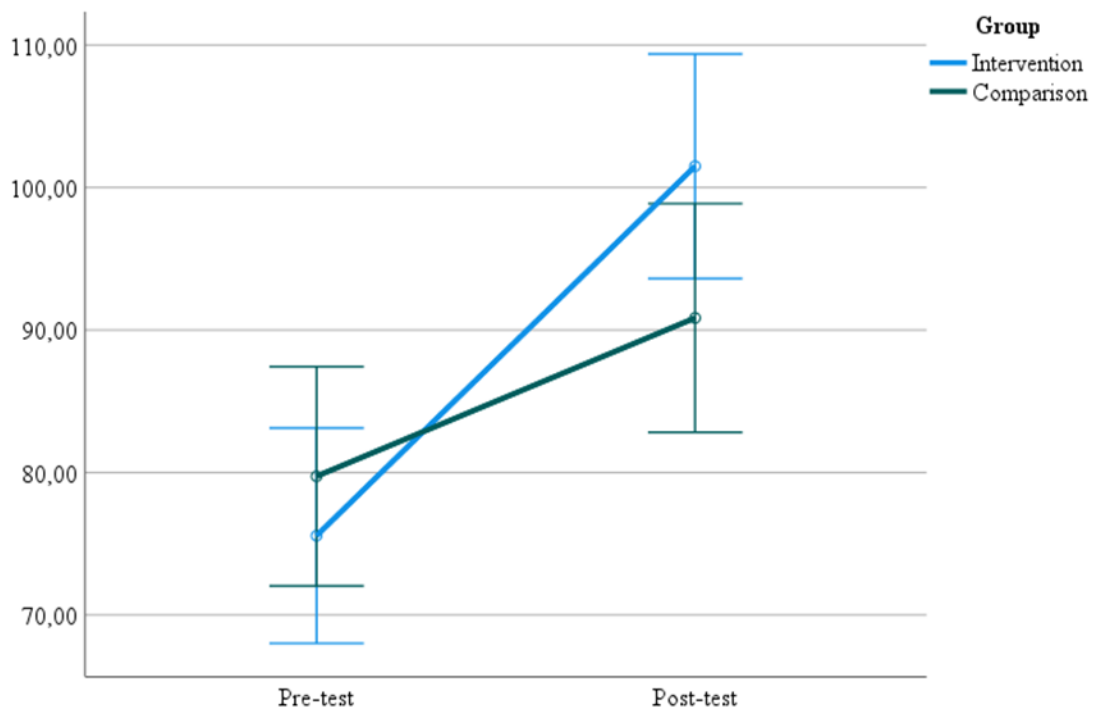


Table 4.6

ANCOVA results for PLAY creativity post-test as dependent variable

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2
Play_Pre	1	9744.88	9744.88	38.49	<.001	.425
Group	1	2471.70	2471.70	9.76	.003	.158
Error	52	13165.53	253.18			
Total	55	534233.00				

In the current study, divergent thinking is measured with two structures as fluency and originality. The unadjusted pre-test and post-test results of the DT fluency scores are presented in Table 4.1 as split by gender. Additionally, Figure 4.1 shows the groups' unadjusted DT fluency mean score changes between the pre-test and post-test.

Table 4.7*Descriptive results of pre-test and post-test DT fluency scores of the groups*

Source		Pre-test		Post-test	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Intervention (n=28)	Boys	6.50	1.35	9.70	3.33
	Girls	6.83	1.95	10.56	2.91
	Total	6.71	1.74	10.25	3.04
Comparison (n=27)	Boys	6.31	2.32	6.46	2.30
	Girls	7.21	2.61	6.64	1.98
	Total	6.78	2.47	6.56	2.10

The covariate DT Fluency pre-test scores, was significant, $F(1,52) = 11.16, p = .002$. There was also a significant effect of groups (intervention and comparison) on the score of DT Fluency post-test after controlling for the effects of DT Fluency pre-test scores $F(1,52) = 33.14, p < .001, \text{partial } \eta^2 = .389$. The results of the ANCOVA on DT Fluency post-test scores represented in Table 4.8.

Figure 4.4

Pre-test and post-test DT fluency mean score changes of the intervention and comparison groups.

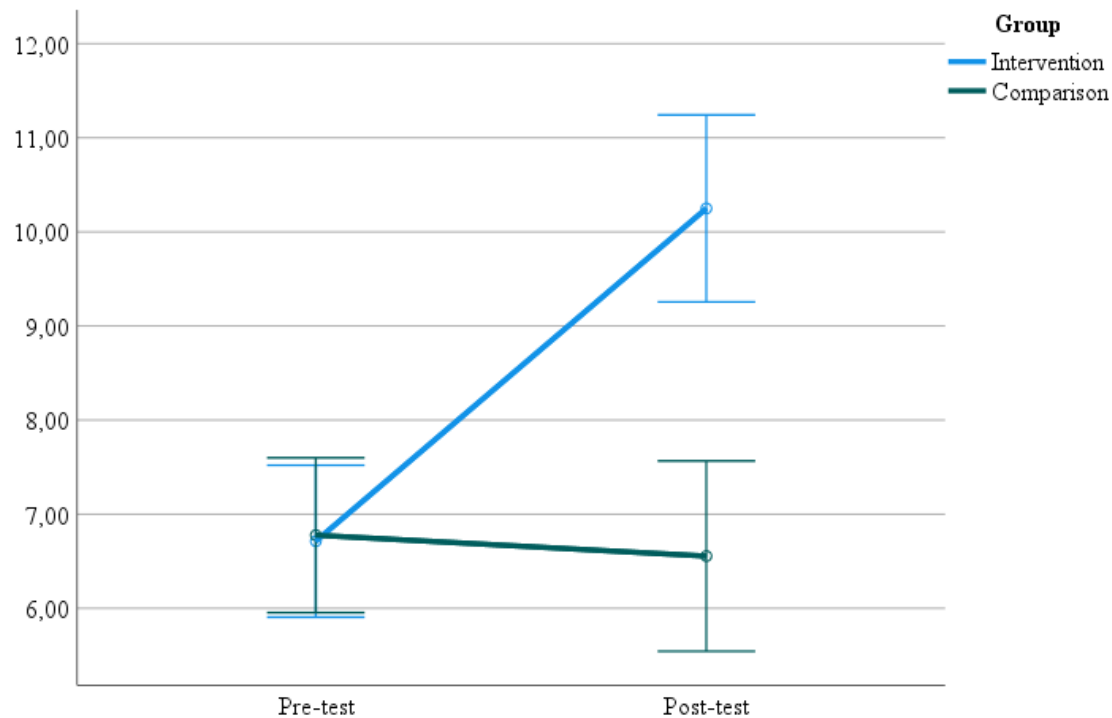


Table 4.8*ANCOVA results for DT fluency post-test as dependent variable*

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2
DT_Fluency_Pre	1	64.31	64.31	11.16	.002	.177
Group	1	190.92	190.92	33.14	<.001	.389
Error	52	299.61	5.76			
Total	55	4466.00				

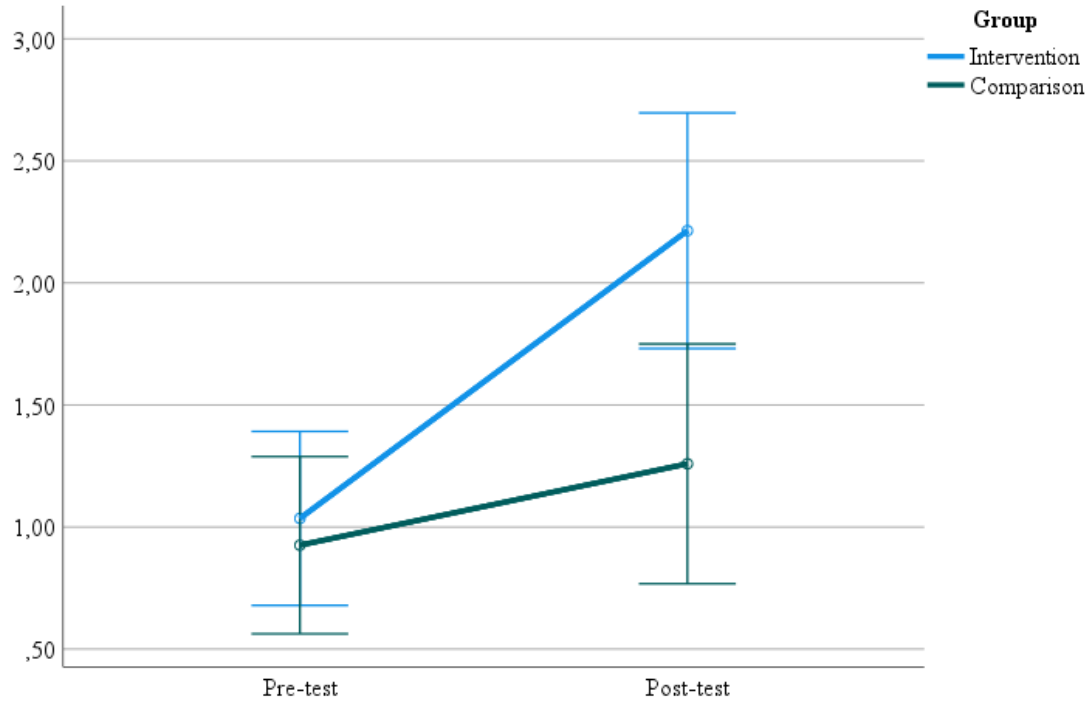
Results revealed that 38.9% of the variance in divergent thinking fluency skills is explained by the adjusted main effect of group after controlling for DT fluency pre-test. Following these results, it can be asserted that the group taking an adventure education-based parkour intervention for eight weeks (*Madjusted*= 10.27, *SE*= .45) has significantly higher divergent thinking fluency scores compared to the group who followed the regular physical education and games curriculum (*Madjusted*= 6.54, *SE*= .46). The unadjusted pre-test and post-test results of the DT originality scores are presented in Table 4.1 as split by gender. Additionally, Figure 4.1 shows the groups' unadjusted DT originality mean score changes between the pre-test and post-test.

Table 4.9*Descriptive results of pre-test and post-test DT originality scores of the groups*

Source		Pre-test		Post-test	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Intervention (n=28)	Boys	1.00	0.82	2.20	1.40
	Girls	1.06	0.80	2.22	1.40
	Total	1.04	.79	2.21	1.37
Comparison (n=27)	Boys	1.08	1.26	1.00	1.22
	Girls	0.79	0.89	1.50	1.09
	Total	.93	1.07	1.26	1.16

Figure 4.5

Pre-test and post-test DT Originality mean score changes of the intervention and comparison groups.



The covariate DT originality pre-test scores, was not significant, $F(1,52) = .70$, $p = .407$. There was a significant effect of groups (intervention, and comparison) on the scores of DT Originality post-test after controlling for the effects of DT Originality pre-test scores $F(1,52) = 7.39$, $p = .009$, partial $\eta^2 = .124$. The results of the ANCOVA analysis on DT Originality post-test scores represented in Table 4.10.

Table 4.10

ANCOVA results for DT originality post-test as dependent variable

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2
DT_Originality_Pre	1	1.14	1.14	.70	.407	.013
Group	1	12.05	12.05	7.39	.009	.124
Error	52	84.76	1.63			
Total	55	266.00				

Results revealed that 12.4% of the variance in divergent thinking originality scores is explained by the adjusted main effect of group after controlling for DT fluency pre-test. It can be asserted that the group taking an adventure education-based parkour intervention for eight weeks ($M_{adjusted}= 2.21$, $SE= .24$) has significantly higher divergent thinking originality scores compared to the group who followed the regular physical education and games curriculum, ($M_{adjusted}= 1.27$, $SE= .25$)

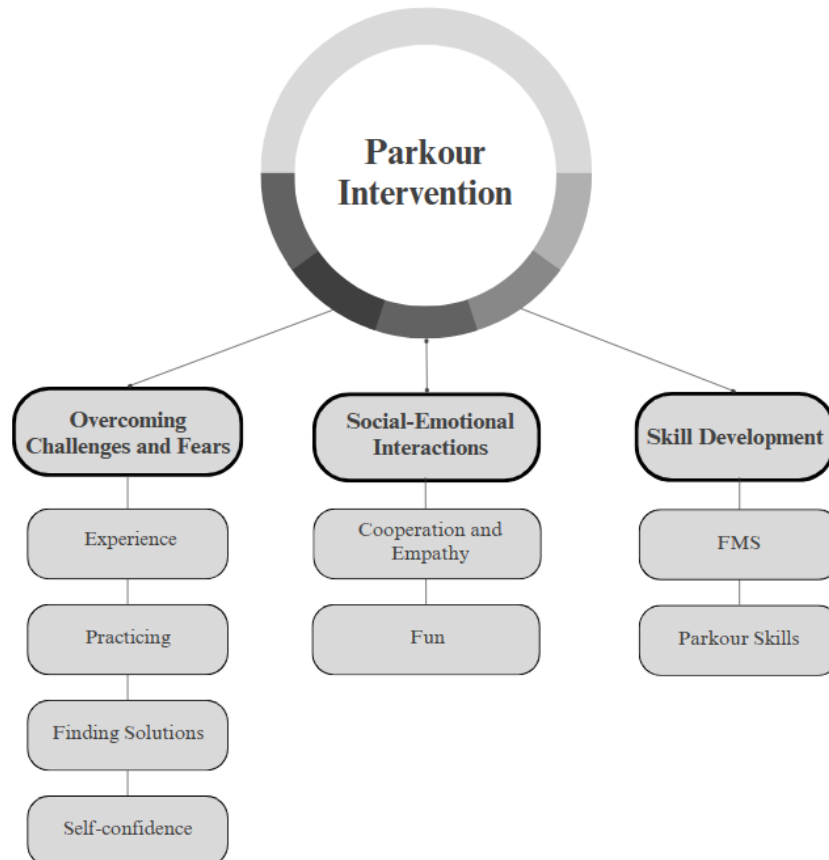
4.2 Research Question 2

What are the participants' experiences, thoughts, and perceptions regarding parkour intervention based on the adventure education model in terms of motor, cognitive, and social-emotional skills?

The themes and sub-themes are represented in Figure 4.6.

Figure 4.6

Themes and sub-themes emerged from qualitative data



4.2.1 Overcoming Challenges and Fears

In the adventure education model, activities and sports that involve difficulties are important tools to achieve the aims of education. In this study, parkour skills and games, including skills learned, were used as a tool in teaching. The participants' thoughts about the equipment and skills used during the intervention were examined in depth with various semi-structured questions. The interviews revealed that at the beginning of the training, the participants had various challenges and fears about tools and skills. The participants stated that they were afraid of falling, getting injured, or not being able to do the skills when they first saw the area and equipment where they would do parkour sport intervention. For example, participant 2 expressed her feelings as follows:

“When I first saw the tools, I was a little scared and a little excited. I was afraid I would fall.”

Participants also stated that they had challenges due to their drawbacks. It was observed that some of the participants had injury experiences or fears from their previous experiences before intervention. Examples of these were an existing fear of heights or a fall in his previous experiences and fractures in his/her arms or legs.

“Before the training, I had difficulties in climbing high grounds, jumping far, and overcoming obstacles. Something happens when I go up to high places; it makes me feel nauseous or something.” (Participant 22)

“My hand was broken. I was afraid that it would happen again and that I would fall behind in my studies.” (Participant 11)

Participants also expressed that they were afraid of being unable to perform the skills. The skills they had fear or get shy to perform were parkour skills, which generally include long jumps, climbing, and bar movements.

“I said something would happen while I was passing the bar. I was afraid, I said it would be difficult. I said I cannot do it” (Participant 1)

Participants expressed how they overcame their fears and hesitations when they saw the tools for the first time or new skills during the intervention and how they coped with these fears and challenges. The sub-themes that emerged from the interviews were as follows; practicing, experiencing, finding solutions, and self-confidence.

4.2.1.1 Practice

Participants mentioned that after the sessions, they had practiced the skills they were afraid of or struggled with at home, neighborhood, and school. In the interviews, although no homework about parkour skills was given during the intervention, the participants stated that they did exercises of their own free will to overcome the challenges they experienced performing the skills.

"I had a hard time, once I was performing monkey vault, I was very scared. I worked monkey vault on the things I saw everywhere, now I can do it."
(Participant 23)

"I no longer have difficulty in the movements that I cannot do. When I did it both at home and here, my struggle was gone. I have already repeated it at home." (Participant 22).

4.2.1.2 Experience

At the start of the sessions, participants watched videos demonstrating the skills they were going to learn that day. Some participants felt scared when they saw some of the skills and doubted their ability to do them. However, they were able to overcome their fears by trying the equipment themselves or practicing the skills they saw in the videos.

"I was scared because it looked so hard in the video. But the truth came easy when I tried it myself. So, at the end of the session, my fear disappeared"
(Participant 13)

Participant 22, who stated that she felt dizzy when climbing high places before the intervention, stated that this situation decreased during the training. She explained the reason for the decrease in dizziness as follows:

"I was very scared because I am a very careless person. After training, I am no longer afraid of heights. I am very little afraid of heights. I used to be very dizzy before, but now very little."

4.2.1.3 Self-Confidence

Another factor expressed by the participants in coping with fear and difficulties was the increase in their self-confidence. Participants stated that they thought they could not do it when they saw the skills, but their self-confidence increased as they experienced it. In this way, they said that when more difficult skills are encountered, they have the courage to do them as their self-confidence increases.

"I changed my mind after trying it myself. I thought I could do it after I did it. It made me change my mind, make me feel confident." (Participant 28)

"Before these lessons, when there was a place I could not climb, I gave up. With the training, I was able to do it. I was able to climb. I do not give up once I cannot do it anymore; I try to do it again." (Participant 21).

The researcher observed during the lessons that Participant 17 frequently stated that he could not use the parkour equipment and perform the skills due to his short stature. However, after the first two weeks of the intervention, it was observed that Participant 17 no longer expressed his drawbacks about his height and attended the classes willingly. Moreover, the classroom teacher mentioned the behavioral changes of the Participant 17.

"I said I cannot do it because I am short. What we learned in these lessons was both useful in real life and taught us to do it again and again without giving up. Those who make fun of my height or physical movements are surprised when I do it now; they say you can do it." (Participant 17)

"Participant 17's self-confidence increased with the parkour intervention, and he socialized." (Teacher 1)

The participants stated that as they experienced the skills and were taught the skills that they could do to their friends who could not, their self-confidence increased, and they overcome their fears and hesitations in this way.

"I felt confident when I taught my friends something. Then I taught it to my friends." (Participant 22)

According to the observations done by researcher, some of the participants were afraid and embarrassed to do the movements at the beginning of the intervention. For

example, this situation of Participant 27 was reflected in the observation notes as follows:

"Participant 27 constantly waits for the trainer's approval while performing the skills. When she repeats the skills independently, she thinks she is doing it wrong or cannot do it." (Observation notes from session 1.1).

In the following weeks of the intervention, it was observed that these students showed improvement in expressing themselves, contributing the sessions, and performing movements.

"There are positive improvements in the behaviors of participant 27. It is seen that her shyness has decreased and she is more confident in trying movements." (Observation notes from session 5.1)

Classroom teacher 2 also stated the changes they observed in these children as follows:

"Participants 27 and 18 were more introverted children. For example, when we played a game, they did not have confidence in themselves. There was insecurity about not being able to do things. But now, during the parkour intervention, I'm looking at those children from afar, they were trying to do movements, and they were having fun. They are different kids now."

Additionally, classroom teacher mentioned a memory that happened during the math class:

"One day, they couldn't answer a question in math class. When I said that you can do it, they said to each other; "yes, we can do that. As we do in parkour education as our physical education teacher said."

4.2.1.4 Finding Solutions

During the intervention, teaching methods aiming to produce solutions, such as guided discovery, problem-solving, and cooperation, directed in line with the content of the session, were used. According to the observation notes, it was observed that the participants had difficulty both individually and as a group in identifying and solving the problem in games involving problem-solving.

"They cannot identify most of the problems they need to solve to complete the games... They have difficulty producing solutions to the problems in the games... They failed because they tried to solve the problem in the game in this session only from their point of view." (Observation notes from session 1.2, 2.2, 3.2)

However, in the following weeks, improvements in problem-solving skills, both individually and as a group, were reflected in the observation notes.

"They are better at finding and solving problems as a group in the "be a number or letter" game. They can solve faster." (Observation notes from session 6.2)

Participants were asked questions to understand their coping strategies in semi-structured interviews. One of these questions is as follows: "There are two obstacles far from each other, and you want to jump from one to the other. But you think this distance is difficult for you. What would you do in this situation?". Among the answers given by the participants about what they did to cope with their difficulties or fears, it was also seen that they produced various solutions to overcome them.

"So, I cope with it on the ground, not on the obstacles. In the lesson, we stuck tapes on the ground as the gap length between the high obstacles, so I made it with stones. I made it with stones in front of our house. As I could jump, I opened the distance of the stones more and more. I cope with it like this. Then I could do it over obstacles" (Participant 12).

"If it is far, the distance between the obstacles, I put another obstacle in the middle. I jump from there to the next. I can decrease the distance a bit if I can. I would not have thought of these before lessons. I would be undecided." (Participant 18).

4.2.2 Social-Emotional Interactions

In the parkour intervention, the participants did pair and group exercises in line with the content of the sessions. Participants who were able to perform the skills during the exercises taught other participants who had deficiencies. The practitioner gave feedback only when necessary and was not directly involved in teaching each other sections. In addition, group discussions were held on how they would help each other with possible falls and injuries. Most of the participants stated that the attitudes of their friends had changed positively, while some of them stated that it was the same as before.

4.2.2.1 Cooperation and Empathy

The interviews revealed the effects of the mentioned practices on their social interactions. In the first weeks of the intervention, it was reflected in the observation notes that the participants constantly criticized each other and were not supportive.

“Many of the participants constantly criticize and argue with each other. They use words that demean each other for their mistakes.” (Observation notes from session 2.1)

However, as the intervention progressed, it was observed that they started to help each other and became more constructive in their mistakes and successes.

Participants stated that when they help each other, their self-confidence increases, and they understand the importance of cooperation and empathy.

“Normally we didn't help each other in lessons. We started helping with parkour education.” (Participant 23).

“The fact that they helped me when I fell, this gave me confidence. You can do this, they said, don't be afraid. They provided such confidence.” (Participant 28).

In the first weeks of the intervention, it was observed that participants were not able to work efficiently as a group.

“They cannot cooperate in movement problems that they need to solve as a group.” (Observation notes from session 2.2)

However, as the intervention continued, participants stated that they became aware of this situation in the end-of-session discussions. In the following weeks of the intervention, participants became better at solving problems as a group.

The classroom teachers also mentioned the effects of the intervention on the students' behaviors as a group.

“There was more unity. In fact, there was more integration between the children.” (Teacher 2)

Games that prioritize group work in parkour intervention are included in both warm-up and game sections. It was seen that the participants made sense of cooperation in these games.

“The games were the most fun part of the training. I liked making letters (game) the most. We were doing it as a group, we were planning, and then we were doing it.” (Participant 26)

One of the most mentioned games during the interviews was about disabled people. Some of the participants were assigned a different type of disability while others were not. The aim was to overcome the obstacles from point A to point B as a group. Participants stated that they understood that it is important to empathize and help each other with this game.

“We empathize. We also experienced the same problems they experienced. If there was someone, I would help immediately.” (Participant 23)

It was observed that Participant 27, who did not communicate much with her friends in the first sessions of the intervention and was not willing to learn skills, increased communication with her friends afterward and learned skills willingly. Her friends stated that Participant 27 communicated with them more and was more willing to take a part in the intervention, in the group discussions towards the middle of the intervention.

“The attitudes of my friends changed towards me with parkour education. They are helping me now. They weren't that helpful before.” (Participant 27).

4.2.2.2 Fun

Most participants defined the parkour intervention as having fun in terms of the games they played and the skills they learned. They stated that they developed themselves with entertainment and wanted this education to take place in the future. Both classroom teachers mentioned the students' motivation, excitement, and happiness toward the parkour intervention sessions.

“I could already see in their eyes that they were so happy.” (Teacher 1)

In addition, some participants stated that after they experienced the skills that they were scared of, they described the same skills as fun. Although Participant 1 stated that he was afraid when he first saw the parkour bar skills, when asked what was fun in the intervention, he stated that the bar moves were fun.

"I would like to have parkour education next year as well. It is both fun and our skills are improving. I am doing the movements which I do myself at home more easily now. For example, the fun thing, the bar movements were a lot of fun." (Participant 1).

While developing parkour intervention, a holistic approach, which is one of the requirements of the adventure-education model, was applied. For this reason, most games played during the intervention are not one-on-one games that involve competition but games that require group work or where the individual competes with himself.

"I liked it because we did not team up with our friends. If we were a team, we could fight. That we will win, that we will win. I like that there is no racing. So, I had fun." (Participant 11).

According to the researcher's observations, participants used the teaching techniques used in the sessions while they were teaching the skills to each other.

"I taught skills to others in classes. I felt good. Because I could, I taught my friends too. It is good, so I loved it. First, I told, I showed. Slowly later, I showed them as fast as possible, and they did it fast. My friends also taught me something. I felt happy while they were teaching. Because I could not do it, I was sad, but they gave me something like self-confidence and energy. That is why I was happy." (Participant 3).

4.2.3 Skill Development

One of the main focuses of parkour intervention that we conducted in this study is to ensure the development of gross motor skills and increase motor coordination while learning parkour skills. In the semi-structured interviews, the participants stated that they improved in skills such as climbing, jumping, overcoming obstacles, running, hanging, and balance.

“Before I took parkour, I was a little bad at climbing, jumping far, and overcoming obstacles. Before, we didn't know anything yet. After the parkour education, I am not as slow as before, I also accelerated in running.” (Participant 4).

Participant 6, whose body mass index is above normal, frequently stated that she could not do these skills due to her weight in the first sessions of the intervention.

“Participant 6 states that in movements that require going over obstacles, she cannot do it because of her weight even before she tries the movement.” (Observation notes from session 1)

However, she joined the session willingly without mentioning this issue afterward. In the semi-structured interviews held after the training, she expressed her development as follows.

“Before I got the intervention, I was very bad at climbing, jumping far, overcoming obstacles. I couldn't jump far. Now I'm better at climbing, long jumping, hopping on one leg.” (Participant 6).

While most participants stated that they were bad at the skills in the intervention before, some participants stated that they were good at these skills before, but they improved further during the parkour intervention.

“Before parkour intervention, I was good at climbing and jumping long distances. After the training, I got even better in all of them. I can jump farther and climb better. I couldn't stand on one leg for long. I started to stand more.” (Participant 8).

The researcher was observed that the participants did not know the names of the fundamental movement skills and what they were, at the beginning of the intervention. However, in the last weeks of intervention, it was observed that they could name both fundamental movement skills and parkour skills and knew what they were. Classroom teachers also noticed this situation.

“The reaction that mostly comes to my mind is this: we will do this move, hopping, the monkey vault. You know, it means that they said the names of the movements because it was a result of the intervention.” (Teacher 1)

4.3 Research Question 3

How do the qualitative data collected from interviews and observations explain the quantitative results obtained from surveys and tests regarding the effects of the adventure education model-based parkour intervention on fourth-grade students' motor, cognitive, and social-emotional skills?

The results of the ANCOVA on motor coordination revealed that adventure education-based parkour intervention improves the participants' KTK scores. The qualitative data from semi-structured interviews, observation notes, and end of meeting discussions also supports the analysis of quantitative data. Participants indicated that the intervention improved their running, jumping, climbing, hanging and balance. The classroom teacher observed that students learned the names of the fundamental movement skills and parkour skills. This indicates that the participants noticed and internalized the development of fundamental movement skills or parkour skills resulting from the intervention.

The locomotor dimension of the PMC-C scale was used to understand the participants' self-perceptions regarding motor competence. The ANCOVA results revealed that adventure education-based parkour intervention participants PMC-C locomotor scores significantly improved more than the comparison group. The semi-structured interviews revealed that student's perception on motor competence positively changed. The researcher observed that some participants who stated that they could not perform physical movements due to their weight, height, or inability to perform physical movements during the intervention did not complain about these issues towards the middle of the intervention and willingly participated in the intervention. On the other hand, interviews with the participants and observation notes revealed changes in social-emotional skills in addition to the positive change in self-perception. Participants stated that they did not normally help each other much before the intervention. However, with the intervention, they supported and helped each other. Classroom teachers reported that children were more united after the intervention. In the researcher's observations, it was stated that in the first sessions, children could not

cooperate in movement problems that needed to be solved as a group, but as the intervention progressed, they were able to solve movement problems together. During the sessions, those who could do the skills better taught those who could not. It was stated by the participants that this situation had a pleasing effect for both the learner and the instructor. Participants also stated that the games and activities were fun.

In the study, cognitive skills were assessed with general creativity (divergent thinking) and motor creativity. The results show that participants of the parkour intervention based on the adventure education model significantly improved their divergent thinking and motor creativity scores more than the comparison group. In the interviews with the participants, they stated that when they first saw the parkour equipment and skills, they thought they could not do it and were afraid. However, they found various ways to overcome these fears and difficulties during the intervention. They stated that they tried the skills they could not or were afraid of doing at home even though they were not given homework. They stated that they produced facilitating solutions (such as bringing the obstacles closer together) to perform the skills they could not.

CHAPTER 5

DISCUSSION

This study aimed to understand in depth how an intervention based on an adventure education model using parkour as a tool to develop social-emotional, cognitive, and motor competence of fourth-grade children yielded results using qualitative and quantitative data. In this chapter, the quantitative results obtained in the study are explained with qualitative results and discussed in comparison with the related literature. In the discussion below, the sample group of this study was 55 in total, and the results were discussed based on this study sample; therefore, there was no intention to generalize to the population.

5.1 Effects on Motor Competence

Fundamental movement skills are critical for the acquisition of sport-specific skills and lifelong physical activity participation (Goodway et al., 2019). Motor coordination is an important factor in the development of both fundamental movement skills and complex movement skills (Vandorpe et al., 2012). Therefore, this study assessed motor coordination skills with the KTK test. Results indicated that the intervention group significantly improved motor coordination more than the comparison group after controlling for the effects of pre-test results $F(1,52) = 34.45, p < 0.001$.

The qualitative results revealed that skill development was one of the main themes. Participants stated that the parkour intervention based on the adventure education model improved their skills such as climbing, jumping, running, hopping, and balancing. The classroom teachers of the participants also stated that the children learned the names of the skills, showed them to each other, and discussed who could do it better during recess.

According to studies, there is a significant relationship between motor coordination and participation in physical activity (Lopes et al., 2012; Lopes et al., 2011; Opstoel et al., 2015; Vandorpe et al., 2012). The studies on motor coordination revealed that training/exercise or physical activity interventions improve motor coordination in children (Čillík & Willwéber, 2018; Han et al., 2018; Walaszek & Nosal, 2014). Moreover, motor coordination is an indicator of physical activity participation (Vandorpe et al., 2012) and body mass indexes of children (D'Hondt et al., 2014). One of the aims of the fourth-grade Physical Education and Play curriculum in Türkiye is to ensure children's regular participation in games and physical activities for an active and healthy life (MEB, 2018). Furthermore, the World Health Organization states that it is critical for health that children and adolescents engage in 60 minutes of daily moderate to vigorous physical activity at least three times a week (WHO, 2020). In the current study, it was concluded that the 8-week parkour intervention based on the adventure education model improved children's motor coordination.

5.2 Effects on Social-Emotional Skills

Self-concept is how a person sees themselves in different domains, such as academic, social, emotional, and physical (Shavelson et al., 1976). Physical self-concept involves the evaluation of one's physical abilities and appearance (Fox & Corbin, 1989). A child's sense of competence affects their motivation and performance in a task (Harter, 1988). Adventure education has a student-centered and holistic structure. In the meta-analysis study in which the outcomes of the studies, including adventure education, were analyzed, interpersonal and self-concept skills were identified as two main categories (Hattie et al., 1997). According to the intervention studies conducted on children and adolescents, adventure education positively affected the participants' self-perceptions and social skills (Baena-Extremera et al., 2012; Garst et al., 2001; Gibbons et al., 2018; Stuhr et al., 2015).

Perceived motor competence refers to an individual's perception of their motor skills (Morano et al., 2020). The self-perceptions of the children participating in this study on their skills were analyzed through motor skills. In the current study, results of the PMC revealed that perceptions of the intervention group on locomotor skills

competence significantly more improved than the control group after controlling for the effects of PMC pre-test scores $F(1,52) = 7.44, p = 0.009$. The qualitative results also reflected the change in children's perceptions of their motor competencies. For example, Participant 21 expressed her opinion about her motor skills before and after the training as follows:

"Before these lessons, when there was a place, I could not climb, I gave up. With the training, I was able to do it. I was able to climb. I do not give up once I cannot do it anymore. I try to do it again."

Additionally, the researcher and classroom teachers noticed a positive change in how students perceived their motor skills after the intervention. According to the classroom teacher, two students who lacked confidence in their skills and were hesitant to join in games because they thought they could not do the movements became more self-assured after the intervention. They willingly participated in the games with their friends.

There are conflicting results regarding the relationship between actual and perceived motor competence. In some studies on young children, it was reported that there was no relationship between perceived and actual motor competence (Clark et al., 2018; Morano et al., 2020; Nobre et al., 2017), while in studies with varying age groups, a moderate relationship was reported (Carcamo-Oyarzun et al., 2020; Raudsepp & Liblik, 2002). Although perceived and actual motor competence levels were not compared in this study, it was concluded that both perceived motor competence and motor coordination improved significantly more in the intervention group.

The consistency between children's perceptions on their motor competence and actual motor competence increases with age (Stodden et al., 2008; Strotmeyer et al., 2022). However, perceived competence is associated with physical activity (Babic et al., 2014). Children's perception of their competence affects their motivation to participate in physical activity. According to the observations made by the classroom teacher during school time, the parkour intervention based on the adventure education model positively affected the motor competence perceptions of the children in the study and influenced participation in physical activity.

The elements of the adventure education model specified by Ritson (2016) were considered while developing the intervention in this study. These elements, which are used to shape adventure education, aim to lead participants to work as a group while struggling with difficulties, achieve a greater sense of achievement, understand concepts, and provide social-emotional interaction. The challenging nature of the physical environment in adventure education is essential in ensuring equality as each participant is exposed to a new environment. In addition, dealing with difficulties and challenges gives a greater sense of achievement (Ritson, 2016). In the studies involving parkour, the changes in the social-emotional skills of the participants were examined, as in the studies on adventure education (Botella et al., 2021; Fernandez-Rio et al., 2017; Grabowski & Thomsen, 2017). The participants' thoughts about their social-emotional skills were revealed in the semi-structured interviews conducted in the present study.

One of the important features of the adventure education model is that it enables overcoming fears and challenges (Fernández-Río & Suarez, 2016). Parkour and adventure education intersect in overcoming obstacles and challenges. In the present study, participants indicated they were scared when they saw the parkour equipment and the parkour skills to be performed for the first time. Similar comments were made by the children in the study conducted by Fernández-Río and Suarez (2016). In the study, the children stated that they thought the parkour was dangerous and challenging but that it was fun after they experienced it (Fernández-Río & Suarez, 2016). In the current study, the participants stated that they overcame their fears as they experienced the tools and skills. It is understood that they developed various strategies to overcome difficulties and fears. Participants who stated that they increased their self-confidence by exercising at home and school also stated that they could produce different solutions to cope with challenges and fears due to the intervention.

Another theme that emerged from the analysis of the interviews was "Fun". Baena-Extremera et al. (2012) reported in their study on adventure education that it significantly increased the participants' sense of fun. Dyson (1995) conducted a

qualitative case study focused on the opinions of third and fifth-grade students regarding a physical education curriculum based on adventure education. The curriculum was developed around trust, challenge, risk, cooperation, problem-solving, and goal-setting concepts. In the study, "having" fun was one of the main themes (Dyson, 1995). Participants of the current study stated that the games in the intervention and the parkour skills they learned were fun. In addition, some participants stated that the skills that they stated that they were afraid of before experiencing were fun afterward. For example, Participant 1 stated that he was scared when he saw the bar movements in the video showing the skills to be performed at the beginning of the course, and then he stated that the bar movements were one of the skills he had the most fun with.

"I would like to have a parkour next year. It is both fun and improves our skills. For example, the bar crossing was very fun." (Participant 1).

In their literature review study on the effect of adventure education on students' physical education learning outcomes, Lee and Zhang (2019) concluded that adventure education improved the social and peer relationships of the participants. In the parkour intervention based on the adventure education model applied in our study, games, exercises, and activities were designed to encourage group and pair work. In the analysis of the interviews, the participants stated that helping each other increased their self-confidence, and making joint decisions provided them to have fun.

5.3 The Effects on Cognitive Skills

5.3.1 Divergent Thinking

Creativity can be defined as finding different, new, appropriate, unique, and useful solutions to a situation or problem. Although not the same construct as creativity, divergent thinking is one of the most frequently used indicators of creativity (Okuda et al., 1991; Runco, 2004). This study examined the effect of an 8-week adventure education model-based parkour intervention on children's creativity by measuring divergent thinking tasks that adapted to the movement for cognitive creativity. This study's measurement of divergent thinking skills was limited to fluency and originality

variables. Fluency refers to producing as many solutions as possible, while originality refers to unique ideas (Domínguez et al., 2015).

According to the results of the current study, fluency ($F(1,52) = 33.14, p < 0.001$) and originality scores ($F(1,52) = 7.39, p = 0.009$) of the children in the intervention group increased significantly more than the control group, after controlling the pre-test results. Previous research on the effects of a physical activity intervention on children's creativity skills has found similar positive improvements (Ángel Latorre-Román et al., 2021; Gondola, 1986; Tilp et al., 2020; Zachopoulou et al., 2006). However, some studies report that the physical activity intervention was significantly more effective in groups with specific characteristics but not all participants (Bollimbala et al., 2019; Neville & Makopoulou, 2021). According to the meta-analysis study by Rominger et al. (2022), medium- and long-term physical activity practices have shown more positive effects than acute practices on creative ideation.

In the intervention implemented in this study, participants experienced fundamental movement skills and parkour skills that they had not experienced before. They realized they could overcome the obstacles they faced in the city and nature in different ways. They also experienced how to teach these skills to each other. These may be the reason for the development of children's divergent thinking skills.

5.3.2 Motor Creativity

Motor creativity is the ability to create new and original movement patterns to solve a problem or a situation (Pagona & Costas, 2008; Sturza Milić, 2014; Wyrick, 1968). According to Scibinetti et al. (2011), there was a significant positive relationship between motor creativity and cognitive creativity in terms of fluency and flexibility aspects. Therefore, this study examined the effects of the intervention on both cognitive skills and motor competence of children in a holistic manner.

The play creativity scale has 11 movement tasks that include the variables of six components: originality, fluency, elaboration, imagination, appropriateness, and flow (Richard, Aubertin, et al., 2020a). The current study evaluated the six creativity

components as a total score rather than separately. Results of the current study indicated motor creativity of the intervention group who participated in an 8-week adventure education-based parkour intervention was significantly more improved than the control group after controlling the pre-test result. Previous intervention studies on motor creativity of the children have also shown similar positive improvements (Alper & Ulutaş, 2022; Mouratidou et al., 2017; Richard et al., 2018b; Thomaidou et al., 2021).

According to the themes that emerged from the analysis of the semi-structured interviews with the participants, they stated they were able to find new ways to solve problems that required movement. Most participants stated that they developed strategies to overcome physical barriers, learn movement skills, overcome fears and difficulties, and would not have considered these solutions before the intervention. For example, participant 18 was asked what he would do if the distance between two obstacles seemed too far for him to jump. Participant 18 stated that:

"If it is far, the distance between the obstacles, I put another obstacle in the middle. I jump from there to the next. I can decrease the distance a bit if I can. I would not have thought of these before lessons. I would be undecided."

After the semi-structured interviews were analyzed, it was seen that the qualitative data supported the development that emerged with quantitative data. Throughout the intervention, children had to cross obstacles in a way they had not consciously experienced before while learning and practicing parkour skills. The fact that parkour involves overcoming obstacles in nature and the city may have enhanced children's motor creativity by enabling them to find new solutions to the different motor problems they encountered while doing this activity. In addition, due to the nature of the adventure education model, the eight-week parkour intervention included games and activities that involved parkour skills and forced children to use problem-solving, decision-making, and collaboration skills.

The development of technology has led to an increasing proliferation and complexity of knowledge. Creativity is becoming more and more important to find solutions to problems by processing, analyzing, and using multiple and complex information.

According to Organisation for Economic Cooperation and Development (OECD), most member countries' curricula include creativity or critical thinking as learning outcomes (Vincent-Lancrin, 2022).

In the study conducted by Heilmann and Korte (2010) on the school curricula of the 27 EU countries, physical education was the third subject after arts and information and communication technologies in the occurrence of the term creativity or its synonyms in the curriculum. In intervention studies that included physical activity, it was reported that all or some components of cognitive and motor creativity improved (Alper & Ulutaş, 2022; Richard et al., 2018b). Moreover, according to the study conducted by Scibinetti et al. (2011), there was a moderate positive relationship between motor creativity and cognitive creativity. However, the number of studies examining this relationship is quite insufficient.

Pagona and Costas (2008) conducted a retention study with the same scales on the experimental group, whose motor creativity skills developed significantly more than the control group in an intervention they had implemented nine years ago. The retention study concluded that the experimental group participants who had improved their motor creativity in the original study were still at a better level of motor creativity nine years later.

In the previous sections, studies reporting a positive relationship between motor creativity and cognitive creativity were mentioned. Considering the study conducted by Pagona and Costas (2008), the motor creativity of children can be developed and made permanent by using physical education and sports. Therefore, the current study indicated that the intervention group developed divergent thinking skills, which is one of the most frequently used determinants of creativity, and motor creativity skills more than the control group will make an important contribution to the literature.

Parkour is an activity where each participant finds a unique way to overcome obstacles quickly and fluently. Obstacles constantly changed in size, height, and material as obstacles in nature and the city were used in parkour. The placement and height of the

obstacles used during the intervention also varied constantly. In addition, games involving risk, cooperation, problem-solving, and decision-making were designed and implemented in this intervention based on the adventure education model. Within the games, the rules changed in an increasingly complex way. Most games played during the intervention included the obstacles used for parkour skills. Therefore, they had to follow the game's rules and pass the obstacles simultaneously. All this may have led participants to develop the ability to find and physically implement different and unique movement solutions.

5.4. Discussion on Intersections

Physical education and sports provide opportunities for children and adolescents to develop cognitive, social, and emotional skills, as well as fundamental movement skills and sport-specific skills (Bailey, 2006). The multifaceted nature of physical education and sports makes it a tool with high potential for achieving both specific and general education outcomes. Adventure education is a model that enables learning by developing cognitive and social skills such as problem-solving, decision-making, cooperation, and self-confidence through activities involving challenges and fears (Gehris et al., 2010; Hodgson & Berry, 2011; Lee & Zhang, 2019; McKenzie, 2000; Ritson, 2016).

In the intervention implemented in the current study, cognitive, social-emotional, and physical skills were examined holistically. For this reason, adventure education, a student-centered model based on activities and sports involving risk, constitute the theoretical framework of this study. In the intervention, problem-solving, decision-making, and cooperation take through physical activities. Parkour is the art of overcoming natural and urban obstacles in the fastest and most efficient way. Therefore, overcoming the physical and mental obstacles children face during the intervention combined parkour and adventure education with the metaphor of "overcoming obstacles."

According to the results of the study, the eight-week adventure education model-based parkour intervention significantly improved the motor coordination, perceived motor

competence, divergent thinking, and motor creativity skills of the children in the intervention group more than those in the control group when the pre-test results were controlled. The studies show that there is a positive relationship between motor coordination and participation in physical activity (Lopes et al., 2012; Lopes et al., 2011; Opstoel et al., 2015; Vandorpe et al., 2012). As in many curricula, one of the outcomes of physical education and sport in Türkiye is participation in regular physical activity (MEB, 2018). Based on this relationship between motor coordination and physical activity participation, the adventure education-based parkour intervention applied in the current study may positively affect physical activity participation.

Studies on the relationship between motor creativity and motor competence have found contrasting results. Some studies have found a significant relationship between motor creativity and motor competence (Latorre Roman et al., 2017; Sturza Milić, 2014; Tocci et al., 2022), while others have not found any relationship (Marinšek & Lukman, 2022; Scibinetti et al., 2011). Although the relationship between motor coordination and motor creativity was not examined in the current study, it has been seen that both variables improved as a result of the intervention. Considering the current study and the studies that have reached similar results, it can be concluded that both motor competence and motor creativity can be developed with non-linear pedagogical methods, activities that participants do not often experience, and different teaching methods rather than building physical education lessons on physical fitness and repetition of learned skills.

There are intervention studies examining cognitive creativity, motor creativity, and social-emotional skills (Bournelli et al., 2009; Rodríguez-Negro et al., 2020; Ruiz-Ariza et al., 2019). In these studies, motor creativity and self-concept (Bournelli et al., 2009), creativity and emotional intelligence (Ruiz-Ariza et al., 2019) were positively correlated. In addition, Strotmeyer et al. (2022) reported that actual motor competence, perceived motor competence, and physical self-concept skills of the intervention group improved in a study conducted with 200 children with a motor competence-based physical education program. The results showed a positive relationship between actual

motor and perceived motor competence and between perceived motor competence and physical self-concept.

In the current study, considering the fourth-grade curriculum in Türkiye, children's motor competence, cognitive skills, and social-emotional skills are addressed holistically using the adventure education model and parkour. Exposing participants to unfamiliar environments and experiences is one of the elements of adventure education. In qualitative interviews, participants reported feeling scared and intimidated when they saw the parkour equipment and skills. This indicates that parkour is a new and risky activity for the participants. However, the participants reported that when they experienced the equipment and skills, they overcame their fears, had fun, increased their self-confidence, and found different solutions to overcome the challenges. Overcoming the challenges created a greater sense of achievement for the participants. The increase in self-confidence can also be reflected by an increase in perceived motor competence. Overcoming obstacles is a construct identified with parkour. One of the requirements of adventure education is to experience activities that involve challenges and risks and to strive to overcome them, which is a kind of overcoming obstacles. Both parkour and the games provided opportunities for children to solve motor and social problems during the intervention. In this way, it was aimed at children to produce new solutions, cooperate, and make decisions. The significant improvement in divergent thinking and motor creativity scores and the supportive answers they gave in the interviews about these issues show that using parkour as a tool in adventure education can be useful in achieving educational goals.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

This section consists of two parts. The first part presents the conclusions according to the research questions. The second part contains recommendations.

6.1 Conclusions

In line with the objectives and results of the study, the following conclusions are drawn:

1. *The effects of the adventure education model-based parkour intervention on motor competence of fourth-grade students*

Physical development, one of the aims of physical education and sports, can be evaluated by the fact that students should be able to learn and apply fundamental and combined movement skills in the primary school fourth-grade curriculum outcomes prepared by the Ministry of Education in Türkiye. For children to succeed in lifelong physical activity or movements specific to different sports branches, they must have competence in fundamental movement skills (Stodden et al., 2008). In the current study, one of the aims of the intervention is to learn gross motor skills from fundamental movement skills and to apply them in a coordinated manner. According to the results of the study, the adventure education model-based parkour intervention significantly improved the motor coordination of fourth-grade primary school students compared to those who did not receive the intervention. Qualitative results also support those participants were aware of this development and its reasons.

2. *The effects of the adventure education model-based parkour intervention on social-emotional skills*

The Ministry of Education's curriculum expects students who complete primary school and have taken physical education and games courses to confidently use their movement skills, actively participate in physical activities and games, and develop personal responsibility, self-confidence, cooperation, social responsibility, and respect for diversity. The results of the current study indicated that the intervention group significantly improved their perceptions of their motor competencies more than the comparison group. In addition, the themes of having fun, self-confidence, cooperation, and social skills emerged from the interviews with the participants after the intervention. The contents of these themes are consistent with the social skills that should be developed in the physical education and play curriculum.

3. The effects of the adventure education model-based parkour intervention on cognitive skills

In today's constantly evolving technological landscape, the volume and intricacy of data continue to expand. Therefore, possessing robust creative abilities is crucial to developing innovative and appropriate solutions for overcoming obstacles and complex issues. According to the results of the current study, the intervention group's divergent thinking skills and motor creativity developed significantly more than the comparison group. In addition, interviews with the participants revealed that they were able to develop new strategies to overcome the challenges and fears they faced.

In conclusion, the adventure education model with parkour as a tool may be an appropriate tool for Turkish content in reaching educational outcomes. In particular, it can be an alternative for children in rural schools with very limited access to sports facilities to acquire the physical, social-emotional, and cognitive skills they need to learn.

6.2 Recommendations for future research

- The study consists of 55 fourth-grade primary school students from three different schools. This situation requires the results of the study to be evaluated specifically for the sample studied. Future studies that reach a larger sample

group, including village schools in different geographical regions, will strengthen generalizability.

- The intervention of this study focused on locomotor and balance skills. In future studies, the teaching part of the intervention can be expanded to include ball skills, and the games can be modified to include more ball games.
- In future studies, conducting a follow-up study on the changes resulting from the intervention would be useful. Thus, it can be determined whether the changes are permanent or acute.
- A similar study can be reapplied by training classroom teachers as practitioners. Thus, applicability in the field can be examined.
- Future studies, which are based on the adventure education model and whose sample consists of children in village schools, will determine the appropriateness of the model in achieving the aims of education.

6.3 Recommendations for Implications

- The adventure education model and basic skills of parkour can be used as in-service training for current classroom teachers in physical education and game classes.
- Adventure education and parkour can be applied in primary school teacher education.
- According to the Ministry of Education in Türkiye, only 17.6% of registered schools have a sports hall. Low-cost parkour parks to be established in school gardens following the safety procedures to be determined can be useful in achieving educational outcomes.
- Türkiye's geography varies according to regions. Therefore, other risky and challenging physical activities, which are the tools of adventure education, can be modified according to the geographical characteristics of rural schools.

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APPENDICES

A. APPROVAL OF THE METU HUMAN SUBJECTS ETHICS COMMITTEE

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER



ORTA DOĞU TEKNİK ÜNİVERSİTESİ
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Sayı: 28620816/

01 ARALIK 2021

Konu : Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi : İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Doç.Dr.Irmak HÜRMERİÇ ALTUNSÖZ

Danışmanlığımı yürüttüğünüz Oğuzhan YOLCU'nun "Parkur Sporü Eđitiminin Çocukların Motor,Bilişel ve Sosyal-Duygusal Becerileri Üzerine Etkisi: Bir Karma Yöntem Çalışması" başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülmüş ve 478-ODTU-2021 protokol numarası ile onaylanmıştır.

Saygularımızla bilgilerinize sunarız.

Prof.Dr. Mine MİSİRLİSOY
İAEK Başkanı

B. CONTENT LETTER OF MINISTRY OF EDUCATION



T.C.
AMASYA VALİLİĞİ
İl Millî Eğitim Müdürlüğü



Sayı : E-47613789-605.01-36943785
Konu : Araştırma İzni

15.11.2021

VALİLİK MAKAMINA

İlgi : (a) Orta Doğu Teknik Üniversitesi Rektörlüğü Öğrenci İşleri Daire Başkanlığı'nın 10/11/2021 tarih ve 54850036-044-E.250 sayılı yazısı.
(b) Millî Eğitim Bakanlığı'nın 21/01/2020 tarihli ve 1563890 (2020/2) Sayılı Genelgesi.

İlgi yazı (a) ile; Orta Doğu Teknik Üniversitesi Beden Eğitimi ve Spor Anabilim Dalı doktora programı öğrencisi Oğuzhan YOLCU tarafından uygulanması planlanan "Parkur Müdahalesinin Çocukların Motor Becerileri, Yaratıcılıkları ve Cesaretleri Üzerindeki Etkilerinin İncelenmesi" konulu tez çalışması kapsamında, Doç. Dr. İrmak HÜRMERİÇ ALTUNSÖZ danışmanlığında, Müdürlüğümüze bağlı Merkez ilçede bulunan Tuğgeneral Hikmet Akıncı İlkokulu, İlyas İlkokulu ile Ovasaray İlkokulu öğrencilerine 2021-2022 Eğitim-Öğretim yılında, belirtilen 8 (sekiz) hafta sürecek olan parkur sporu eğitimini uygulayabilmek için izin talep edilmektedir.

Bu bağlamda; söz konusu talebin, ilgi (b) 21/01/2020 tarihli ve 1563890 (2020/2) sayılı Genelge (Araştırma Uygulama İzinleri) de belirtilen hususlar doğrultusunda ve Türkiye Cumhuriyeti Anayasası ve insan hakları alanındaki uluslararası sözleşmeler başta olmak üzere 6698 sayılı Kişisel Verilerin Korunması Hakkındaki Kanun ile yürürlükte olan tüm yasal düzenlemeler ve politika belgelerine uygun, Türkiye Cumhuriyeti Anayasası, Millî Eğitim Temel Kanunu ile Türk Millî Eğitiminin genel amaçlarına uygun olarak ilgili yasal düzenlemelerde belirtilen ilke, esas ve amaçlara aykırılık teşkil etmeyecek şekilde, denetimleri ilgili okul müdürlükleri tarafından gerçekleştirilmek üzere, derslerin aksatılmaması ve gönüllülük esasına göre araştırma yapılması, araştırma ile ilgili sonuç raporlarını çalışmanın bitiş tarihinden itibaren 30 (otuz) gün içinde izin alınan kuruma ulaştırılması, uygulama sırasında da mühürlü ve imzalı örnekten çoğaltılan veri toplama araçlarının kullanılması Müdürlüğümüze uygun görülmektedir.

Makamlarınıza da uygun görüldüğü takdirde Olurlarınıza arz ederim.

Alpaslan KANAR
Müdür a.
İl Millî Eğitim Şube Müdürü

OLUR
15.11.2021
Ömer COŞKUN
Vali a.
İl Millî Eğitim Müdür V.

Ekler:

- 1- İlgi (a) Yazı ve Ekleri (33 Sayfa)
- 2- (2020/2) Sayılı Genelge (3 Sayfa)

Bu belge güvenli elektronik imza ile imzalanmıştır.

Adres : Hızırpaşa Mah. İstasyon Cad. No: 72 Merkez/AMASYA

Belge Doğrulama Adresi : <https://www.turkiye.gov.tr/meb-ehys>

Bilgi için: Ahmet D.DURMUŞ

Uzman: Memar

Telefon No : (0358) 212 29 93/2041

E-Posta: argo05@meb.gov.tr

İnternet Adresi: Faks: (0358) 218 50 31

Keş Adresi : meb@h01.kep.tr

Bu evrak güvenli elektronik imza ile imzalanmıştır. <https://evrakozgcu.meb.gov.tr> adresinden 4db4-1109-3df5-862a-e1e1 koda ile teyit edilebilir.



T.C.
AMASYA VALİLİĞİ
İl Millî Eğitim Müdürlüğü



Sayı : E-47613789-44-67899206
Konu : Tez Çalışması Kapsamında
Araştırma/Anket İzni Hk.

09.01.2023

DAĞITIM YERLERİNE

İlgi : Valilik Makamının 09.01.2023 tarih ve E-47613789-44-67873148 sayılı Onayı.

Orta Doğu Teknik Üniversitesi Beden Eğitimi ve Spor Anabilim doktora programı öğrencisi Oğuzhan Yolcu, Doç. Dr. İrmak Hürmeriç Altunsöz'ün danışmanlığında yürütmekte olduğu "*Parkur Sporü Eğitiminin Çocukların Motor, Bilişsel ve Sosyal-Duygusal Becerileri Üzerine Etkisi: Bir Karma Yöntem Çalışması*" başlıklı tez çalışması kapsamında Müdürlüğümüze bağlı Merkez İlçede bulunan Ovasaray İlk ve Ortaokulunda görevli öğretmenlere, belirtilen anketi uygulayabilmek için talep edilen iznin verildiğine dair ilgi Onay ekte gönderilmiş olup gerekli duyuruların yapılması hususunda;

Bilgilerinizi ve gereğini arz/rica ederim.

Mahmut KESKİNER
İl Millî Eğitim Müdürü V.

Ek: Onay ve Ekleri (37 Sayfa)

Dağıtım:

- Orta Doğu Teknik Üniversitesi Rektörlüğüne
(Öğrenci İşleri Daire Başkanlığı)
- Ovasaray İlk ve Ortaokulu Müdürlüğüne

Bu belge güvenli elektronik imza ile imzalanmıştır.

Adres : Hızırpaşa Mah. İstasyon Cad. No: 72 Merkez/AMASYA

Belge Doğrulama Adresi : <https://www.turkiye.gov.tr/meb-ebys>

Telefon No : (0358) 211 04 00/2041

Bilgi için: Ahmet D.DURMUŞ

E-Posta: arge05@meb.gov.tr

Unvan : Memur

Keş Adresi : meb@hs01.kep.tr

İnternet Adresi: Faks: (0358) 218 50 31

Bu evrak güvenli elektronik imza ile imzalanmıştır. <https://evrakorga.meb.gov.tr> adresinden 7b5f-7e58-3748-8ae2-a9f0 kodu ile teyit edilebilir.

C. QUALITATIVE DATA COLLECTION TOOLS

Adı Soyadı:

Görüşme No:

Takma Adı:

Görüşme Yeri:

Cinsiyet:

Görüşme Süresi:

Yarı-Yapılandırılmış Görüşme Soruları

Bugün parkur dersi ile ilgili konuşacağız. Konuşma sırasında sadece dersleri düşünerek cevaplar vermeni istiyorum. Yapacağımız görüşme kimse ile paylaşılmayacak ve herhangi bir ders notu verilmeyecek.

	Soru	Olumlu	Olumsuz
1	Parkur eğitimi almadan önce beden eğitimi ve oyun dersinde neler yaptınız?	+Neleri yapmayı severdin? +Neden seviyordun? +Bunları yaparken neler hissediyordun	-Neleri yapmayı sevmiyordun? -Neden sevmiyordun? -Derse katılmak istemediğin oluyor muydu? -Neden katılmak istemiyordun?
2	Bu dönemki parkur eğitimi hakkında ne düşünüyorsun? -Önceki beden eğitimi derslerinden farkı neydi?	+Neleri sevdin? +Neden sevdin? +Birkaç örnek verebilir misin?	-Neleri sevmedin? -Neden sevmedin? -Birkaç örnek verebilir misin?
3	Parkur aletlerini ilk gördüğünde neler düşündüğünü açıklar mısın? -Bu aletleri kullandıktan sonra düşüncelerinde ne gibi değişiklikler oldu?	-Neden böyle düşündün?	-Neden böyle düşündün?
4	Parkur eğitimi almadan önce yüksek yerlere tırmanmakta, uzağa zıplamakta, engelleri aşmakta nasıldın? -Zorlanır mıydın?	+Neden iyi olduğunu düşünüyorsun? +Zorlandığın oluyor muydu? +Sence neden zorlanıyordun?	-Neden zorlandığını düşünüyorsun? -Örnek verebilir misin?
5	Peki parkur eğitimi sırasında veya sonrasında tırmanma, uzağa zıplama, engelleri aşmakla ilgili değişiklikler oldu mu?	+Nasıl değişiklikler oldu +Bu değişikliklere ne sebep oldu? +Örnek verebilir misin?	-Sence neden bir değişiklik olmadı?
6	Örneğin; arasında mesafe olan iki bir engelden diğerine sıçramak istiyorsun. Ancak engeller arasındaki mesafeyi aşamayacağını düşündün. Düşmekten veya yapamamaktan çekindin. Ne yaparsın?	+Bu çözümleri parkur eğitimi almadan önce düşünebilir miydin?	-Neden vazgeçersin?

7	Temel hareket becerilerinde nasıl değişiklikler oldu?	+Neler değişti? +Sence neden değişti?	-Neden değişmediğini düşünüyorsun?
8	Her dersin başında o gün öğreneceğiniz konuyla ilgili videoları izlediğinde ne düşündün?	+Zor olduğunu düşünmediğin halde kendin yaptığında zorlandığın oldu mu? Örnek verebilir misin? +Dersin sonunda bu hislerinde ne gibi değişiklikler oldu?	-Yapamayacağımı düşünmenin sebebi neydi? -Seni ne korkuttu? -Örnek verebilir misin? -Dersin sonunda bu hislerinde ne gibi değişiklikler oldu?
9	Parkur dersi süresince yapmaktan çekindiğin hareketler oldu mu? -Yapmakta zorlandığın hareketler oldu mu? -Dönem sonunda hala çekiniyor muydun? Yapabildin mi?	+Sence neden çekinmedin? +Çekinmemenin sebebi neydi?	-Hangileri, neden? -Bunun üstesinden nasıl geldin? -Sence neden çekinmemeye başladın?
10	Parkur etkinlikleri sırasında veya sonrasında arkadaşlarının sana karşı davranışları nasıldı? -Derslerde başkalarına bir şey öğrettin mi veya arkadaşların sana bir şey öğretti mi?	+Örnek verebilir misin? +Ne hissettin? Ne düşündün?	-Örnek verebilir misin? -Ne hissettin? Ne düşündün?
11	Parkur eğitiminde herhangi bir sağlık sorunu yaşadın mı?	+Nasıl sakatlandın? +Peki neden sakatlandığımı düşünüyorsun?	
12	Parkur eğitimi gelecek sene de olsun ister misin?	+Neden?	-Neden?
13	Parkur eğitiminin en iyi en eğlenceli kısmı neydi? Parkur eğitiminin en kötü en sıkıcı kısmı neydi?	+Neden? Örnek verebilir misin?	-Neden? Örnek verebilir misin?
14	Parkur eğitimini sen veriyor olsaydın neleri farklı yapmak istedim?		
15	Benim sormadığım, senin söylemek istediğin şeyler varsa söyleyebilirsin? Teşekkürler		

Adı Soyadı:

Görüşme No:

Takma Adı:

Görüşme Yeri:

Cinsiyet:

Görüşme Süresi:

Yarı-Yapılandırılmış Görüşme Soruları

	Soru	Pozitif	Negatif
1	-Kaç yıllık öğretmensiniz? - Bu okulda kaçınıcı yılınız?		
2	Beden eğitimi ve oyun dersinde ne tür etkinlikler yapıyorsunuz? -Dersi etkin bir şekilde yapabiliyor musunuz? - Yaşadığımız zorluklar nelerdir? - Örnek verebilir misiniz?		
3	Beden Eğitimi ve Oyun dersinin temel hareket becerileri gelişimi ve fiziksel gelişime etkileri hakkındaki düşünceleriniz nelerdir?		
4	Beden eğitimi ve oyun dersinde uygulanan parkur sporu eğitimine çocukların yaklaşımı nasıldı sizce? -İstekliler miydi? -Derse katılmak istemeyen oluyor muydu?	-Neden? - Örnek verebilir misiniz?	-Neden? - Örnek verebilir misiniz?
5	Parkur sporu eğitimi süresince çocukların beden eğitimi ve oyun dersine karşı yaklaşımlarında bir değişiklik fark ettiniz mi?	-Nasıl değişiklikler fark ettiniz? -Örnek verebilir misiniz?	
6	Daha önceden beden eğitimi ve oyun dersine aktif katılmayan öğrencilerin derse karşı isteklerinde bir değişiklik fark ettiniz mi?	Örnek verebilir misiniz?	
7	Parkur sporu eğitiminin çocukların fiziksel, sosyal	-Hangi konularda faydalı olduğunu düşünüyorsunuz? -Örnek verebilir misiniz?	-Neden bir faydası olduğunu düşünmüyorsunuz? - Örnek verebilir misiniz?

	becerilerine faydalı olduğunu düşünüyor musunuz?		
8	Eğitim sırasında farklı boyutlara odaklandık. Bunlardan birisi problem çözme, çocuklarda bu konuda değişimler gördünüz mü? -farklı düşünme - cesaret / kendine güven	+Bu değişimler nelerdir?	
9	Beden eğitimi ve oyun dersinde parkur sporu eğitimini işlemek istemiydiniz? -Bu eğitimi bir beden eğitimi öğretmenin işleymesini ister miydiniz?	- Neden isterdiniz?	-Neden istemezsiniz?
10	Son olarak parkur sporu eğitimi hakkında eklemek istediğiniz bir husus var mı? -Düşünceleriniz, önerileriniz ya da aklınızda kalan çocuklarla ilgili anılarınız olabilir.		

GÖZLEM NOTLARI

Hafta:

Konu	Saat	Notlar
Motivasyon	—:—	
	—:—	
	—:—	
Kendine güven	—:—	
	—:—	
	—:—	
Yaratıcılık	—:—	
	—:—	
	—:—	
Motor yeterlilik	—:—	
	—:—	
	—:—	
Beceri ile ilgili uygunluk	—:—	
	—:—	
	—:—	
Problem çözme	—:—	
	—:—	
	—:—	
Karar verme	—:—	
	—:—	
	—:—	
	—:—	
	—:—	
	—:—	

D. CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: Yolcu, Oğuzhan

e-mail: _____

EDUCATION

Degree	Institution	Year of Graduation
MS	Amasya University, Department of Physical Education and Sports Education	2016
BS	Amasya University, Department of Physical Education and Sports	2012

WORKING EXPERIENCE

2013 – 2021	Amasya University, Department of Physical Education and Sports	Research Assistant
2021 – Present	Middle East Technical University, Department of Physical Education & Sports	Research Assistant

FOREIGN LANGUAGE

English (Advanced)

C. TURKISH SUMMARY / TÜRKE ÖZET

GİRİŞ

Beden eğitimi ve spor, temel hareket becerilerini ve fiziksel yeterliliği geliştirirken, ilkokul ve ortaokul boyunca problem çözme, akran ilişkileri ve liderlik gibi kişisel ve sosyal becerilerin gelişimine de katkı sağlamaktadır (Opstoel et al., 2020). Bailey (2006) tarafından yapılan literatür taramasına göre, beden eğitimi ve sporun faydaları ve sonuçları fiziksel gelişim, yaşam tarzı gelişimi, duygusal gelişim, sosyal gelişim ve bilişsel gelişim olmak üzere beş kategori altında toplanmıştır. Bu sonuçlara ve faydalara ulaşmak için birçok farklı öğretim ve müfredat modelleri üzerine çalışmalar yapılmıştır. Spor Eğitimi Modeli, Taktik Oyun Modeli, Bireysel ve Sosyal Sorumluluk Modeli ve Macera Eğitimi Modeli gibi müfredat ve öğretim modelleri, farklı öğrenme ihtiyaçlarını karşılamak için geliştirilmiştir (Kirk et al., 2006; Siedentop & Tannehill, 2002). Macera Eğitimi Modelinde, risk alma, karar verme, problem çözme, özgüven, saygı ve iş birliği gibi becerileri geliştirmek için zorlukların üstesinden gelmeyi gerektiren aktiviteler kullanır (Bisson, 1999). Macera Eğitimi Modelini kullanan çalışmaların meta-analizi, öğrencilerin akademik, liderlik, benlik kavramı, kişilik, kişilerarası iletişim ve maceracılık özelliklerinde iyileşmeler olduğunu ortaya koymuştur Hattie et al. (1997). Son bulgular, parkur sporunun Macera Eğitimi Model'inin eğitim çıktılarına ulaşmada değerli bir araç olabileceğini göstermektedir (Botella et al., 2021; Fernandez-Rio et al., 2017; Fernández-Río & Suarez, 2016).

Parkur, uygulayıcıların şehirdeki veya doğadaki fiziksel engelleri mümkün olduğunca hızlı ve verimli bir şekilde aşmak için kendi yollarını oluşturdukları fiziksel bir aktivitedir (Gerling vd., 2013). Parkur hız, güç, çeviklik, dayanıklılık, esneklik, vücut kontrolü, farklı koşullara uyum ve özgüveni geliştirir ve destekler (Aynés & Cárceles, 2016; Grosprêtre & Lepers, 2016; Maldonado et al., 2015). Artan ilgi ve katılımcı sayısına rağmen, alanyazında belirli bir öğretim modelini veya yöntemini temel alan

ve çalışmanın amaçlarına ulaşmak için parkuru bir araç olarak kullanan sınırlı sayıda çalışma bulunmaktadır. Türkiye'de de bu konuda eğitimde bir müdahale çalışması bulunmamaktadır.

Milli Eğitim Bakanlığı (MEB) tarafından düzenlenen beden eğitimi ve oyun dersi öğretim programının amaçları arasında öğrencilerin temel hareket becerilerini etkili ve özgüvenli bir şekilde kullanabilmeleri yer almaktadır. Temel hareket becerileri, fiziksel aktivitelere, spor branşlarına veya oyunlara katılmak için gerekli olan daha gelişmiş, karmaşık hareketlerin yapı taşlarıdır (Goodway et al., 2019). Motor koordinasyon, bu temel hareket becerilerinin ve spora özgü hareket becerilerinin geliştirilmesinde önemlidir. Motor koordinasyon ayrıca fiziksel aktiviteye katılımı ve vücut kitle endeksini de etkilemektedir (D'Hondt vd., 2014; Lopes vd., 2012; Lopes vd., 2011). Algılanan motor yeterlilik, fiziksel aktiviteye katılımı da önemli bir rol oynar (Babic et al., 2014). Slykerman ve arkadaşları (2016) tarafından yapılan çalışmada, düşük seviyede algılanan motor yeterliliğe sahip çocukların spora katılım motivasyonlarının da düşük olduğu bildirilmiştir.

Milli Eğitim Bakanlığı, 2019-2023 kalkınma planının bir parçası olarak eğitimde "21. yüzyıl becerilerini" geliştirmeyi hedeflemektedir. Bu beceriler, öğrenme, okuryazarlık ve yaşam becerileri olmak üzere üç kategoriden oluşmaktadır. Öğrenme becerileri eleştirel düşünme (sorunlara çözüm bulma), yaratıcı düşünme (yeni alternatifler geliştirme), iletişim ve iş birliği (başkalarıyla birlikte çalışma) becerilerini içermektedir (Gelen, 2017). Ekonomik İş birliği ve Kalkınma Örgütü (OECD) ve Dünya Ekonomik Forumu'na göre eleştirel düşünme, yaratıcı düşünme, önemi giderek artmaktadır (WEF, 2023), (Vincent-Lancrin, 2022). Çalışmalar, fiziksel aktivitenin çocukların yaratıcılık becerilerini geliştirebileceğini ve macera eğitimi programlarının yaratıcı problem çözme becerilerini önemli ölçüde geliştirdiğini göstermiştir (Ángel Latorre-Román et al., 2021; Richmond et al., 2014; Tilp et al., 2020).

Motor yaratıcılık kavramı, çeşitli fiziksel zorlukları, engelleri ve sorunları etkili bir şekilde ele alabilecek yeni ve yenilikçi hareketler veya hareket dizileri tasarlama süreciyle ilgilidir (Richard, Aubertin, et al., 2020a; Sturza Milić, 2014; Wyrick, 1968).

Yapılan çalışmalar fiziksel aktivite müdahalelerinin motor yaratıcılığı geliştirebileceğini göstermiştir (Mouratidou et al., 2017; Richard et al., 2018b). Bu çalışma sekiz haftalık bir beden eğitimi müdahale programının çocukların motor koordinasyonu, algılanan motor yeterlilikleri, iraksak düşünme ve motor yaratıcılık becerileri üzerindeki etkilerini parkuru bir araç olarak kullanarak bütüncül bir şekilde incelemeyi amaçlamaktadır. Çocuklarda motor yeterlilik ve motor yaratıcılık arasındaki bağlantıyı araştıran çeşitli çalışmalar yapılmıştır, ancak bulguları tutarsızdır. Bazı çalışmalar ikisi arasında bir ilişki bulamazken (Marinšek ve Lukman, 2022; Scibinetti vd., 2011), diğerleri pozitif bir ilişki olduğunu bildirmiştir (Sturza Milić, 2014; Tocci vd., 2022).

Türkiye'nin mevcut ve gelecekteki eğitim vizyonu temel hareket becerileri, özgüven, yaşam boyu fiziksel aktiviteye katılım, yaratıcılık, eleştirel düşünme, esenlik, liderlik ve iş birliğini vurgulamaktadır (MEB, 2018; Kalkınma Planı). Bu becerilerin topluları geleceğe hazırlamak için gerekli olduğu birçok uluslararası kuruluşun raporlarında da görülmektedir (Heilmann & Korte, 2010; Vincent-Lancrin, 2022). UNESCO'ya göre "Kaliteli Beden Eğitimi", bedensel okuryazarlığı, sosyal ve duygusal becerileri geliştirmeye yönelik çocuk merkezli ve kapsayıcı bir yaklaşımı ifade eder ve fiziksel aktiviteye yaşam boyu katılımı teşvik eder (McLennan & Thompson, 2015). Kaliteli beden eğitimi aynı zamanda eleştirel düşünme, problem çözme, yaratıcı düşünme ve karar verme becerilerini geliştirme fırsatları da sağlayabilir (De Coning & Keim, 2021; McLennan & Thompson, 2015). Beden eğitimi, kaliteli eğitimin önemli bir parçasıdır (McLennan & Thompson, 2015). Sadece fiziksel aktivite hakkında öğrenmeyi değil, aynı zamanda hem okul içinde hem de dışında fiziksel aktivite yoluyla öğrenmeyi de kapsar. McLennan'a (2021) göre, eğitim ve sağlık çıktılarının birleşimi ile kaliteli beden eğitimi, düşük maliyetle fiziksel, sosyal-duygusal, bilişsel ve yaratıcılık becerilerini geliştirme fırsatları sağlayabilir. Ancak, MEB (2020) verilerine göre örgün eğitim kurumlarının yalnızca %17,6'sında spor salonu bulunmaktadır. Ayrıca, spor salonları inşa etmenin maliyeti 2018 devlet yatırım programında 2.500.000 TL olarak açıklanmıştır. Parkur parkları daha uygun maliyetli ve alan açısından verimli bir alternatif sunabilmektedir. Beden eğitimi ve spor yoluyla ilköğretim dördüncü sınıf öğrencilerimizin fiziksel, sosyal ve

bilişsel beceri gelişimlerini destekleyebilecek, geleneksel yöntemler dışındaki müfredat ve öğretim modellerine dayalı alternatif programlara ihtiyaç duyulmaktadır.

Bu çalışmada, değinilen sorunlara çözüm bulmak amacıyla iki araştırma sorusu sorulmuştur. İlk araştırma sorusu nicel verilere odaklanmıştır. İkinci soru ise nicel sonuçları derinlemesine incelemek için nitel verilere odaklanmıştır.

1. Sekiz haftalık macera eğitimi modeline dayalı parkur müdahalesi ve normal müfredat gruplarındaki dördüncü sınıf öğrencileri arasında ön test sonuçları kontrol edildikten sonra
 - a) motor yeterlilik
 - b) bilişsel beceriler
 - c) sosyal-duygusal beceriler açısından anlamlı bir fark var mıdır?
2. Katılımcıların motor, bilişsel ve sosyal-duygusal beceriler açısından macera eğitimi modeline dayalı parkur müdahalesine ilişkin deneyimleri, düşünceleri ve algıları nelerdir?
3. Görüşme ve gözlemlerden toplanan nitel veriler, macera eğitimi modeline dayalı parkur uygulamasının dördüncü sınıf öğrencilerinin motor, bilişsel ve sosyal-duygusal becerileri üzerindeki etkilerine ilişkin anket ve testlerden elde edilen nicel sonuçları nasıl açıklamaktadır?

Sonuç olarak bu çalışma, macera eğitime dayalı sekiz haftalık bir parkur müdahalesinin çocukların fiziksel, sosyal-duygusal ve bilişsel becerileri üzerindeki etkilerini karma yöntem yaklaşımı kullanarak bütüncül bir şekilde incelemeyi amaçlamaktadır.

YÖNTEM

Bu çalışmada karma yöntem müdahale (deneysel) deseni kullanılmıştır. Karma yöntem müdahale deseni, araştırma sorularını daha derinlemesine incelemek için nicel ve nitel verilerin kullanıldığı bir müdahaleyi içerir (Creswell ve Clark, 2017). Karma yöntem araştırmalarında keşfedici, eş zamanlı ve açıklayıcı olmak üzere üç temel

tasarım vardır. Her biri nitel ve nicel verilerin bir kombinasyonunu kullansa da bu üç temel araştırma tasarımını birbirinden ayıran şey nitel verilerin hangi aşamada toplandığıdır. Bu üç temel karma yöntem tasarımının yanı sıra, farklı kompleks tasarımlar da bulunmaktadır.

Karma yöntem müdahale (deneysel) tasarımı, kompleks karma yöntem tasarımlarından biridir (Creswell & Clark, 2017). Açıklayıcı sıralı çekirdek desene sahip karma yöntem müdahale deseninde, uygulama grubuna bir müdahale uygulanır ve bu müdahalenin sonuçları etkileyip etkilemediği incelenir (Creswell & Clark, 2017). Bu araştırma deseninde araştırmacı ilk olarak nicel verileri toplar ve analiz eder. Nitel veriler toplanıp analiz edildikten sonra, ilk aşamada toplanan nicel verilerin sonuçlarını açıklamak veya detaylandırmak için kullanılır.

Bu çalışmada, müdahale sırasında gözlem notları ve oturum sonunda katılımcılarla grup toplantıları yapılmış olsa da nitel kısım için kullanılan birincil veriler katılımcılarla yapılan yarı yapılandırılmış görüşmelerdir. Gözlem notları ve oturum sonu toplantıları sadece çalışma değişkenleri ve müdahalenin teorik çerçevesinin içeriği aracılığıyla katılımcıların kendilerindeki değişimleri anlamak için kullanılmıştır. Ayrıca gözlem notları ve oturum sonu grup toplantıları ile veri üçgenlemesi yapılarak çalışmanın güvenilirliğinin sağlanması amaçlanmıştır.

Müdahale grubu için aynı okuldan iki farklı sınıftan toplam 30 öğrenciye ulaşılmıştır. Ancak öğrencilerden biri ailesinin onaylamaması nedeniyle çalışmaya katılmamış, bir diğeri ise sağlık sorunları nedeniyle müdahalenin ikinci haftasında çalışmadan ayrılmıştır. Sonuç olarak, müdahale grubunda 28 öğrenci çalışmanın başından sonuna kadar çalışmaya katılmıştır. Müdahale grubu, yaşları 8 ila 10 arasında değişen kız (n=18) ve erkek (n=10) öğrencilerden oluşmuştur. Karşılaştırma grubu için iki farklı okuldan 30 öğrenciye ulaşılmıştır. Bir öğrenci ailesinin onaylamaması nedeniyle, diğeri bir öğrenci ise sağlık sorunları nedeniyle çalışmaya katılmamıştır. Bir diğeri ise dönem ortasında başka bir okula nakil olmuştur. Böylece 27 öğrenci karşılaştırma grubu olarak çalışmaya katılmıştır. Karşılaştırma grubu, yaşları 8 ila 12 arasında değişen kız (n=14) ve erkek (n=13) öğrencilerden oluşmaktadır. Katılımcılara

ilişkin detaylı demografik bilgiler Tablo 2.1'de sunulmuştur. Ayrıca, müdahale grubunun iki sınıf öğretmeniyle de yarı yapılandırılmış görüşmeler yapılarak, öğretmenlerin müdahaleye ilişkin gözlem ve düşünceleri ile katılımcıların araştırma değişkenlerine ilişkin davranışları anlaşılmasına çalışılmıştır.

Tablo 2.1

Katılımcıların demografik bilgileri

	<i>N</i>	<i>Myaş</i> (<i>yıl</i>)	<i>Mboy</i> (<i>cm</i>)	<i>Mkilo</i> (<i>kg</i>)
Müdahale grubu	28	9.63	134.11	32.43
Kızlar	18	9.62	134.36	32.91
Erkekler	10	9.64	133.65	31.57
Karşılaştırma grubu	27	9.79	133.19	29.99
Kızlar	14	9.71	132.11	29.14
Erkekler	13	9.87	134.35	30.91

Macera eğitimi modeline dayalı parkur müdahale programının 4. sınıf öğrencileri üzerindeki etkilerini ölçmek amacıyla nicel verileri toplamak için dört veri toplama aracı kullanılmıştır. Veriler hem karşılaştırma hem de müdahale grupları için müdahaleden önce ve sonra toplanmıştır. Katılımcıların ölçümleri haftada iki ders saati olan 40 dakikalık beden eğitimi ve oyun dersleri sırasında yapılmıştır.

Tablo 2.2

Veri toplama araçları

Değişkenler	Nicel Veri Toplama Araçları	Nitel Veri Toplama Araçları (tüm değişkenler için)
Motor yeterlilik	Körperkoordinationstest für Kinder Play Creativity	Yarı yapılandırılmış görüşmeler
Bilişsel beceriler	İraksak Düşünme: Gerçekçi Sunulan Problemler	Öğrencilerle ders sonu toplantıları (ses kayıtları)
Sosyal-duygusal beceriler	Çocukluk Döneminde Algılanan Motor Yeterlilik Ölçeği	Gözlem notları

KTK test bataryasının uygulanması öğrenci başına 15-20 dakika sürmektedir. Bu ölçeklerin uygulama süresini azaltmak için Amasya Üniversitesi Beden Eğitimi ve

Spor Bölümü'nden dört son sınıf öğrencisi teorik ve pratik eğitim almıştır. Test bataryasındaki her istasyon için bir sorumlu uygulayıcı görevlendirilmiştir. Uygulayıcılar hem test bataryasının işleyişi hem de puanlama konusunda eğitim almıştır. Eğitim sırasında her uygulayıcı sorumlu olduğu istasyon nezdinde diğer uygulayıcıları test etmiş ve puanlamıştır. KTK test bataryası parkur müdahale programının başında ve sonunda atölye olarak kullanılan büyük bir sınıfta her iki gruba da uygulanmıştır.

Benzer bir prosedür Play Creativity ölçeği için de uygulanmıştır. Play Creativity aracının bir katılımcıya uygulanması 10 ila 15 dakika sürmektedir. Ölçümlerde üniversite öğrencileri değerlendirici değil, sadece uygulayıcı konumundaydı. Araştırmacı tarafından yapılan değerlendirmelerden sonra hem ön-test hem de son-test ölçümlerinin %30'u başka bir uzman tarafından değerlendirilmiştir. Sınıflar arası korelasyon katsayısı ön test için .88 ve son test için .80 olarak bulunmuştur. Koo ve Li'ye (2016) göre sınıflar arası korelasyon katsayısının 0.75 ile .90 arasında olması iyi bir katsayı olduğunu göstermektedir.

Gerçekçi Sunulan Problemler ölçeği (rCAB; 2020, www.creativitytestingservices.com), problem çözme yoluyla ıraksak düşünme becerisini değerlendirmek için kullanılan bir ölçektir. Ölçekte yer alan problemler iki alan uzmanı tarafından fiziksel aktivite kavramına uyarlanmıştır. Soruların uyarlanmasının ardından ölçek geliştiricisinden soruların kapsam geçerliliğine ilişkin onay alınmıştır. Çocuklar tarafından listelenen çözümler akıcılık (toplam fikir sayısı) ve özgünlük (benzersiz fikir sayısı) açısından puanlanmıştır. Her bir madde için tüm katılımcılardan gelen fikirlerle (çözümlerle) bir sözlük oluşturulmuştur. Bu prosedür Acar ve Runco (2014) tarafından önerilen kılavuz doğrultusunda uygulanmıştır. Araştırmacı ön-test ve son-test ölçümlerinin değerlendirmelerini yapmıştır. Araştırmacı değerlendirmeleri yaptıktan sonra, ön test ve son testte alınan tüm ölçümlerden rastgele seçilen %30'a eşit sayıda ölçüm başka bir uzman tarafından yeniden puanlanmıştır. Sınıflar arası korelasyon katsayısı .85 olarak bulunmuştur. Koo ve Li'ye (2016) göre sınıflar arası korelasyon katsayısının .75 ile .90 arasında olması iyi bir katsayıya işaret etmektedir.

Bu çalışmada nitel veri toplamak için üç kaynak (yarı yapılandırılmış görüşmeler, grup görüşmeleri ve gözlem notları) kullanılmıştır. Ana veri kaynağı yarı yapılandırılmış görüşmelerdir. Yarı yapılandırılmış görüşmelerde kullanılacak görüşme soruları, literatür, kavramsal çerçeve ve araştırma değişkenleri göz önünde bulundurularak üç alan uzmanının geri bildirimlerine göre oluşturulmuştur. Müdahale öncesi pilot çalışma sırasında yarı yapılandırılmış görüşme soruları ile bir grup görüşmesi gerçekleştirilmiştir. Pilot çalışmada yapılan grup görüşmesi, araştırmacının gözlemleri ve uzmanların geri bildirimleri sonrasında görüşme sorularında gerekli değişiklikler yapılmıştır.

İkinci veri toplama aracı, müdahale boyunca oturumların sonunda gerçekleştirilen grup görüşmeleridir. Grup görüşmelerinde katılımcılara oturumla ve kendileriyle ilgili düşünceleri sorulmuştur. Oturum sonu görüşmelerinde aşağıdaki sorular sorulmuştur.

- Bugünkü oturumda ne yaptık?
- Bu sizin için ne ifade etti?
- Nasıl olduğunuzu düşünüyorsunuz?
- Hedefe ulaşmak için ne yapabiliirdik? (Eğer başaramadıkları bir şey olduğunu belirtirlerse)

Müdahale grubundaki öğrencilerle oturum hakkında yaklaşık beş dakika süren grup görüşmeleri her oturumun sonunda ses kaydına alınmıştır. Oturum sonu grup görüşmelerinden elde edilen katılımcı görüşleri, müdahalenin gelecek oturumlarını şekillendirmek için hiçbir şekilde kullanılmamıştır. Müdahale, ana çalışma başlamadan önce yapılan oturum planları ile devam etmiştir. Bu görüşmelerden elde edilen bilgiler, katılımcıların çalışma değişkenlerine ilişkin kendileri hakkındaki görüşlerindeki değişimi ve müdahaleye ilişkin düşüncelerini anlamak için kullanılmıştır.

Ayrıca araştırmacı, katılımcıların davranışları ve gelişimleri hakkında gözlem notları tutmuştur. Gözlem için yarı yapılandırılmış notlar kullanılmıştır. Bu notlarda araştırmanın değişkenleri ve macera eğitiminin içeriğinde yer alan değişkenler

başlıklar halinde sıralanmıştır. Araştırmacı, katılımcıların oturum sırasındaki davranışlarını ilgili başlığın altına katılımcının anonim ismi ile birlikte not etmiştir. Özetle, araştırmada nitel veri toplama aracı olarak yarı yapılandırılmış görüşmeler, gözlem notları ve grup görüşmeleri kullanılmıştır.

Bu çalışma için veri toplama prosedürü dört aşamada gerçekleştirilmiştir. İlk aşama, çalışma için uygun fiziksel tesislere sahip okulların belirlenmesini içeren hazırlık aşamasını içermektedir. Seçim kriterleri arasında kapalı spor salonu olmayan, köylerde bulunan, benzer spor olanaklarına sahip ve katılımcıların benzer sosyo-ekonomik geçmişleri olan okullar yer almıştır. Orta Doğu Teknik Üniversitesi İnsan Denekleri Etik Kurulu'ndan ve Milli Eğitim Bakanlığı'ndan onay alınmış ve öğrencilerin ebeveynlerinden ve öğretmenlerinden bilgilendirilmiş onam alınmıştır.

İkinci aşama, müdahale programının ana çalışma için belirlenen okullarla benzer özelliklere sahip bir okulda uygulanmasını içermektedir. Pilot çalışma sırasında parkur müdahalesi, ses kayıt sistemleri, nicel veri toplama araçları ve yarı yapılandırılmış görüşme soruları kullanılarak değerlendirilmiştir. Bulgular iki alan uzmanı tarafından gözden geçirilmiş ve onların görüşleri doğrultusunda gerekli değişiklikler yapılmıştır.

Üçüncü aşamada, okullar müdahale ve karşılaştırma grupları olarak belirlenmiştir. Okullardan biri müdahale grubu, diğer ikisi ise sınıf büyüklüğü ve öğrenci nüfusu çeşitliliğine göre karşılaştırma grubu olarak belirlenmiştir. Çalışmanın başında hem müdahale hem de karşılaştırma gruplarına "Play Creativity", "KTK", "Gerçekçi Olarak Sunulan Problemler" ve "PMC-C" ölçekleri uygulanmıştır.

Çalışmanın dördüncü aşamasında, müdahale grubuna 8 haftalık macera eğitimi modeline dayalı parkur müdahalesi uygulanmıştır. Müdahale süresince seans sonundaki 5 ila 10 dakikalık grup görüşmelerinin ses kayıtları ve saha notları alınmıştır.

Çalışmanın son aşamasında, her iki gruba da nicel veri araçları (Play Creativity, PMC-C, Gerçekçi Sunulan Problemler ve KTK) son test olarak uygulanmıştır. Nicel

verilerin analizinin ardından, müdahale grubuyla yaklaşık 10 dakika süren yarı yapılandırılmış görüşmeler yapılmıştır. Ayrıca, katılımcıların davranış değişikliklerini anlamak için müdahale grubunun iki sınıf öğretmeniyle müdahalenin sonunda görüşülmüştür.

Ana araştırmaya başlamadan önce, iki farklı okulda farklı amaçlarla bir pilot çalışma yürütülmüştür. Çalışmanın amaçları şunlardır:

- Parkur müdahale programının uygulanabilirliğini değerlendirmek,
- Müdahalede kullanılacak ekipmanların deneyimlenmesi,
- Müdahale sırasında kullanılacak güvenlik önlemlerinin test edilmesi,
- "Play Creativity" ve KTK testlerinin uygulanabilirliğinin değerlendirilmesi.

Pilot çalışma, ana çalışmanın örneklemini oluşturan okullara benzer spor tesislerine ve sosyo-kültürel yapıya sahip iki farklı köy okulunda gerçekleştirilmiştir. Parkur müdahale programının uygulanması için 18 öğrenciden (10 erkek, 8 kız) oluşan okullardan biri seçilmiştir. Parkur müdahalesinin 1.1 ve 1.2 oturumları uygulanmıştır. Müfredatta yer alan 40 dakikalık ders süresi içerisinde parkur müdahalesinin sağlıklı bir şekilde ele alınıp alınamayacağı kontrol edilmiştir. Müdahalenin uygulandığı pilot çalışmada, parkur müdahalesinin eğitim ve uygulama süresinin mevcut müfredat içerisinde tamamlanabildiği, ekipman kullanımı ve güvenlik önlemleri açısından herhangi bir eksiklik olmadığı gözlemlenmiştir.

KTK ve Oyun Yaratıcılığı aracının uygulanması için okullardan birinden toplam 20 öğrenci (12 erkek, 8 kız) seçilmiştir. İlk on katılımcının uygulaması sırasında "yükseğe zıplama" değişkeninin ölçüldüğü istasyonda bekleme kuyruğu oluştuğu ve bir katılımcının ölçümünün ortalama 15-20 dakika sürdüğü gözlemlenmiştir. Ölçüm süresini kısaltmak ve bekleme kuyruğunu ortadan kaldırmak için "yükseğe zıplama" değişkeninin ölçüldüğü istasyon sayısı ikiye çıkarılmıştır. Bu şekilde KTK ölçeğinin ölçüm süresi beş öğrenci için yaklaşık 15 dakikaya indirilmiştir.

Bu çalışmada, ilkokul dördüncü sınıf öğrencileri için macera eğitimi modeline dayalı sekiz haftalık bir parkur müdahale programı kullanılmıştır. Müdahale, katılımcıların

parkura özgü becerilerinin yanı sıra motor koordinasyon, ıraksak düşünme, öz yeterlilik ve motor yaratıcılık becerilerini geliştirmeyi amaçlamıştır. Macera eğitimi modelinin çıktıklarına ulaşmak için risk içeren etkinlikler (rafting, kaya tırmanışı, kano vb.) bir araç olarak kullanılmaktadır (Ritson, 2016). Bu nedenle, mevcut çalışmada müdahalenin amaçlarına ulaşmak için parkur sporu kullanılmıştır.

Parkur Müdahalesi

Müdahale, bu çalışmanın örneklemiyle aynı yaş grubunda parkur eğitimi verme üzerine staj yapmanın yanı sıra parkur dersleri almış olan araştırmacı tarafından tasarlanmıştır. Programın içeriği Danimarka'dan 12 yıllık eğitim deneyimine sahip bir parkur antrenörü tarafından değerlendirilmiştir. Programın iki oturumu, çalışmanın karşılaştırma ve müdahale gruplarını oluşturan okullardan farklı bir okuldaki 18 öğrenciye pilot çalışma olarak uygulanmıştır. Pilot çalışmadan elde edilen saha notları ve gözlemler sonucunda, bir beden eğitimi ve spor uzmanı ile birlikte müdahalede gerekli değişiklikler yapılmıştır.

Dördüncü sınıf için belirlenen müfredatta beden eğitimi ve oyun dersi haftada iki oturum olduğu için müdahale haftada iki gün, her biri 40 dakika süren iki oturum olarak şekillendirilmiştir. Sekiz haftalık müdahalenin toplam öğretim ve uygulama süresi 640 dakikadır. Hem karşılaştırma hem de müdahale okullarında kapalı spor salonu bulunmadığından program okul bahçesinde uygulanmıştır. Parkur programı sadece müdahale grubunda araştırmacı tarafından yürütülmüştür. Müdahalede Mosston ve Ashworth'un (1986) öğretim stilleri (komut, uygulama, öğrenen inisiyatifli, dahil etme gibi) her dersin konusuna göre değişmekle birlikte kullanılmıştır. Karşılaştırma grubuna ise normal müfredat uygulanmıştır.

Sekiz hafta olarak planlanan parkur programının uygulanması sırasında, daha önce dikkate alınan resmi ve dini tatiller dışında, öngörülmeven zorunlu aralar verilmiştir. Yarıyıl tatili, müdahale programının altıncı haftasında verilmiştir. Ancak 1.2 oturumunun yapıldığı gün yoğun kar yağışı nedeniyle valilik tarafından köy okulları için zorunlu tatil ilan edilmiştir. Müdahale okul bahçesinde yapıldığı için 2.1 ve 2.2

oturumlarının olduđu gnlerde yođun kar yađıđı nedeniyle parkur programı uygulanamamıđtır.

Bu kođuallar nedeniyle 1.2, 2.1 ve 2.2 oturumları iki hafta sonraya alınmıđtır. Planlanan programda sadece smestr tatili iin bir haftalık ara verilmesi planlanmasına rađmen, bu nedenlerden dolayı iki haftalık ek ara verilmesi gerekmiđtir. Gvenliđi sađlamak iin eřitli nlemler alınmıđtır. Bu nlemler ađađıda sıralanmıđtır:

- Parkur alanının zemini judo minderleri ile kaplandı
- Katılımcılar becerileri ilk kez đrenirken sadece mattan yapılmıđ engeller kullanılmıđtır.
- Engellerin st yzeyi orta yođunlukta mat ile kaplanmıđtır.
- Gerektiđinde arpma matları kullanılmıđtır.
- Katılımcılar olası bir durumda ne yapmaları gerektiđi konusunda bilgilendirilmiđtir.
- Engellerin yksekliliđinin farklılađmaya bađlayacađı 4. haftada katılımcılara dđme durumunda yaralanma riskini nasıl azaltacaklarına dair teknikler đretilmiđtir.

Mdahale ieriđi

Her haftanın ilk oturumu ađırlıklı olarak đretim iin, ikinci oturumu ise uygulama ve oyunlar iin tasarlanmıđtır. Her haftanın ilk oturumunda ders sırasında đretilecek beceriler aıklanmıđtır. Gnn konusu hakkında bilgi verilmiđ ve becerilerin nasıl yapılacađına dair videolar gsterilmiđtir. Her ilk oturumda en sık kullanılan đretim stilleri komut, katılım ve alıđtırma olmuđtur. te yandan, haftanın ikinci oturumlarında karđılıklı, iraksak keřif ve uygulama stilleri en yaygın kullanılan stiller olmuđtur. đrenen tasarımı bireysel program ve đrenen inisiyatifli stil ise zel etkinliklerle sınırlı sayıda oturumda kullanılmıđtır.

Her haftanın ilk seanslarının ısınma blmnde, o gnk parkuru tanımak iin kısa bir ısınma turunun ardından, o gnk parkur becerisiyle iliřkili temel hareket becerisi đretilmiđtir. Her ilk seansın ısınma blm, temel hareket becerilerinin kmlatif olarak đretilmesini ve tekrarlanmasını ierir. İkinci seansların ısınma blmleri

sadece önceden öğrenilmiş temel hareket becerilerinin ve parkur becerilerinin kısa tekrarlarını içermektedir. Her ilk seansın ısınma bölümleri, katılımcıların birbirlerini ve parkur alanını tanımalarını amaçlayan kısa bir oyun içermektedir. Bu oyunlar parkur becerilerini ve temel hareket becerilerini içermektedir. Oyunların çoğu katılımcıları iş birliği yapmaya, problem çözmeye ve karar vermeye zorlamayı amaçlamıştır.

Her haftanın ikinci oturumu kısa bir ısınma ile başlamıştır. Isınmanın ardından uygulama ihtiyaçlarına göre ikili, bireysel ve grup egzersizleri kullanılmıştır. Bu alıştırmalarda becerileri doğru yapan öğrenciler yapamayanlara öğretirken, uygulayıcı da onları geri bildirimle desteklemiştir. Ayrıca, eşli uygulama ve kendini kontrol etme için tasarlanmış alıştırmalar da bulunmaktadır.

Uygulamanın ilk oturumları genellikle oyun içermekle birlikte, ikinci oturumlar tamamen alıştırmaya ve oyun üzerine kurulmuştur. Uygulama bölümünden sonra geliştirilecek becerileri içeren oyunlar oynanmıştır. Bu oyunlar katılımcıların parkur ve temel hareket becerilerinin yanı sıra bilişsel ve sosyal-duygusal becerilerinin gelişimi için tasarlanmıştır. Katılımcıların öğrendikleri temel hareket becerileri ve parkur becerileri aracılığıyla karar verme, problem çözme, iş birliği, özgüven, çözüm bulma gibi becerileri kullanmaları hedeflenmiştir.

Soğumanın amacı katılımcıların kalp atış hızını düşürmek ve esneme hareketleriyle olası kas ağrılarını en aza indirerek bir sonraki derse hazır olmalarını sağlamaktır. Grup görüşmeleri soğuma sırasında gerçekleştirilmiştir. Her seansın sonunda katılımcılarla kendilerini ve seansı değerlendirdikleri beş dakikalık bir grup görüşmesi yapılmıştır.

Müdahale Bütünlüğü

Müdahale bütünlüğü, bir müdahalenin planlandığı gibi uygulanma derecesidir (Luiselli, 2018). Müdahalenin bütünlüğünü kontrol etmek, müdahalenin etkililiğini ve uygulanabilirliğini etkileyebileceğinden önemlidir. Müdahalenin bütünlüğü yüksek olduğunda hem çocuklar hem de yetişkinler için daha iyi öğrenme çıktılarına

ulařılabilir (Luiselli, 2018). Bu alıřmada, bir uzman, mdahalenin btnlğn kontrol etmek iin 16 oturumluk parkur mdahalesinin %30'unu gzlemlemiřtir. Parkur mdahalesinin oturum planlarında yer alan blmler gzlem formunu oluřturmaktadır. Gzlemlenen oturumlar rastgele seilmiřtir.

Arařtırma dıřında bařka bir uzmanın oturumların %30'unu inceleyerek yapmıř olduėu deėerlendirme sonucu mdahalenin btnlėu %90 bulunmuřtur. Bazı oturumlar ėrencilerin ėle tatilinden hemen ncesine denk gelmiřtir. ėle yemeėinin neden olduėu zaman yetersizliėiyle oėu oturumda soėuma sresi ya olması gerekenden kısa tutulmuř ya da hi yapılmamıřtır. te yandan, ocukların sekiz haftalık parkur mdahalesine katılım oranı %87,2 olmuřtur.

Veri Analizi

n testin bir ortak deėiřken olarak dahil edilmesiyle istatistiksel g artırılabilir (Murrar, 2018). Bu yolla, gerekli rneklem byklėnn, son test puanlarının dzeltilmemiř bir analizi iin gerekenden daha dřk olması beklenebilir (Sim, 2018). Bu nedenle, n test verileri ortak deėiřken olarak alınarak tek ynl tek deėiřkenli kovaryans analizi (ANCOVA) uygulanmıřtır. Veriler ANCOVA varsayımını karřılamıřtır. Tip bir hata riskini azaltmak iin alfa deėerlerinin anlamlılık dzeyi .01 olarak belirlenmiřtir.

Nitel ařamada, arařtırmacı ses kayıtlarını yazıya dkmřtir. Bařka bir arařtırmacı, gerek ses dosyalarıyla karřılařtırmak iin yazıya dklen ses kayıtlarını kontrol etmiřtir. Yarı yapılandırılmıř grřmeler, grup grřmeleri ve gzlem notları dřnmsel tematik analiz kullanılarak analiz edilmiřtir. Dřnmsel tematik analiz, arařtırma sorusunun yanıtlanmasıyla ilgili nemli zellikleri yakalayan kısa kodlar oluřturmayı ierir. Bu n kodlar arasında rntler aranmıřtır. Daha sonra kodlardan elde edilen rntler incelenmiř, adlandırılmıř ve tanımlanmıřtır.

Gvenilirliėi saėlamak iin iki adım izlenmiřtir. İlk adımda katılımcılarla yapılan grup grřmeleri, gzlem notları ve sınıf ėretmenleriyle yapılan grřmeler kullanılarak veri eřitilmesi (genleme) yapılmıřtır. Ama, katılımcıların grřmelerde

verdikleri cevapları farklı veri toplama araçlarıyla karşılaştırarak daha doğru bir analiz yapabilmektedir. İkinci adımda, çalışmaya dahil olmayan başka bir uzman, kodlar ve temalar için transkriptleri incelemiştir. Uzman incelemesinin ardından bir mutabakata varılmıştır. Bu adımlar, araştırmacı yanlılığı riskini azaltmayı amaçlamıştır.

SONUÇLAR

Bu bölümde, tanımlayıcı sonuçlar, ANCOVA sonuçları ve nitel sonuçlar açıklanmıştır. Cinsiyet hiçbir değişkende istatistiksel olarak anlamlı bir rol oynamamıştır. Ancak betimsel sonuçlarda cinsiyete göre ve grubun geneli için ortalama değerler sunulmuştur. Sonuçlar araştırma sorularına göre sunulmuştur. İlk olarak nicel verilerin sonuçları, ardından da nitel verilerin sonuçları açıklanmıştır.

Araştırma Sorusu 1a

KTK puanlarının düzeltilmemiş ön-test ve son-test sonuçları Tablo 3.1'de cinsiyete göre ayrılmış olarak sunulmuştur.

Tablo 3.1

Grupların ön test ve son test KTK puanlarının betimsel sonuçları

		Ön-test		Son-test	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Müdahale (n=28)	Erkek	346.00	32.05	421.80	31.00
	Kız	334.11	30.40	407.78	32.28
	Toplam	338.36	30.95	412.79	31.99
Karşılaştırma (n=27)	Erkek	341.69	35.17	369.62	32.50
	Kız	337.79	30.04	378.86	36.18
	Toplam	339.67	32.03	374.41	34.12

KTK ön test puanlarının etkileri kontrol edildikten sonra grupların (müdahale ve karşılaştırma) KTK son test puanı üzerinde anlamlı bir etkisi olduğu görülmüştür $F(1,52) = 34.45, p < .001, \text{kısmi } \eta^2 = .398$. Sonuçlar, KTK ön testi kontrol edildikten sonra motor koordinasyondaki varyansın %39.8'inin grubun düzeltilmiş ana etkisiyle açıklandığını ortaya koymuştur.

Tablo 3.2

Bağımlı değişken olarak KTK son testi için ANCOVA sonuçları

Source	df	SS	MS	F	p	Partial η^2
KTK_Pre	1	25875.05	25875.05	42.01	<.001	.447
Group	1	21217.31	21217.31	34.45	<.001	.398
Error	52	32026.18	615.89			
Total	55	8613763.00				

Sekiz hafta boyunca macera eğitimi temelli parkur müdahalesi alan grubun ($M_{düzeltilmiş} = 413.24$, $SE = 4.69$), normal beden eğitimi ve oyun müfredatını takip eden gruba ($M_{düzeltilmiş} = 373.94$, $SE = 4.78$) kıyasla önemli ölçüde daha yüksek motor koordinasyon puanlarına sahip olduğu söylenebilir.

Araştırma Sorusu 1b.

PMC-C lokomotor puanlarının düzeltilmemiş ön test ve son test sonuçları cinsiyete göre ayrılmış olarak Tablo 3.3'te sunulmuştur.

Tablo 3.3

Grupların ön-test ve son-test PMC lokomotor puanlarının tanımlayıcı sonuçları

Source		Ön-test		Son-test	
		M	SD	M	SD
Müdahale (n=28)	Erkek	3.47	0.47	3.84	0.22
	Kız	3.13	0.53	3.23	0.62
	Toplam	3.29	.49	3.50	.52
Karşılaştırma (n=27)	Erkek	3.18	0.50	3.14	0.51
	Kız	2.84	0.46	2.94	0.43
	Toplam	3.11	.51	3.06	.53

PMC-C ön test puanlarının etkileri kontrol edildikten sonra grupların (müdahale ve karşılaştırma) PMC-C son test puanı üzerinde anlamlı bir etkisi olduğu görülmüştür $F(1,52) = 7.44$, $p = .009$, kısmi $\eta^2 = .125$.

Tablo 3.4*Bağımlı değişken olarak PMC lokomotor son testi için ANCOVA sonuçları*

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2
PMC_Pre	1	4.62	4.62	23.92	<.001	.315
Group	1	1.44	1.44	7.44	.009	.125
Error	52	10.04	.19			
Total	55	611.09				

Sonuçlar, PMC-C ön testi kontrol edildikten sonra, algılanan motor yeterlilikteki varyansın %12,5'inin grubun düzeltilmiş ana etkisi tarafından açıklandığını ortaya koymuştur. Sekiz hafta boyunca macera eğitimi temelli parkur müdahalesi alan grubun ($M_{düzeltilmiş} = 3.45$, $SE = .084$), normal beden eğitimi ve oyun müfredatını takip eden gruba ($M_{düzeltilmiş} = 3.12$, $SE = .085$) kıyasla önemli ölçüde daha yüksek algılanan motor yeterlilik puanlarına sahip olduğu söylenebilir.

Araştırma Sorusu 1c.

PLAY Yaratıcılık puanlarının düzeltilmemiş ön test ve son test sonuçları cinsiyete göre ayrılmış olarak Tablo 3.5'te sunulmuştur.

Tablo 3.5*Grupların ön-test ve son-test PLAY Creativity puanlarının betimsel sonuçları*

Source		Ön-test		Son-test	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Müdahale (n=28)	Erkek	71.80	19.77	96.60	23.67
	Kız	77.67	14.97	104.22	16.43
	Toplam	75.57	16.72	101.50	19.25
Karşılaştırma (n=27)	Erkek	82.62	25.95	3.14	97.69
	Kız	77.07	20.01	2.94	84.50
	Toplam	79.74	22.78	90.85	22.28

Oyun Yaratıcılığı ön test puanlarının etkileri kontrol edildikten sonra, grupların (müdahale ve karşılaştırma) Oyun Yaratıcılığı son test puanı üzerinde de anlamlı bir etkisi olduğu görülmüştür $F(1,52) = 9.76$, $p = .003$, kısmi $\eta^2 = .158$.

Tablo 3.6

Bağımlı değişken olarak PLAY Creativity son-testi için ANCOVA sonuçları

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Partial η^2
Play_Pre	1	9744.88	9744.88	38.49	<.001	.425
Group	1	2471.70	2471.70	9.76	.003	.158
Error	52	13165.53	253.18			
Total	55	534233.00				

Sonuçlar, motor yaratıcılıktaki varyansın %15.8'inin Oyun yaratıcılığı ön testi kontrol edildikten sonra grubun düzeltilmiş ana etkisi tarafından açıklandığını ortaya koymuştur. Sekiz hafta boyunca macera eğitimi temelli parkur müdahalesi alan grubun ($M_{düzeltilmiş} = 102.89$, $SE = 3.02$), normal beden eğitimi ve oyun müfredatını takip eden gruba ($M_{düzeltilmiş} = 89.41$, $SE = 3.07$) kıyasla önemli ölçüde daha yüksek motor yaratıcılık puanlarına sahip olduğu söylenebilir.

Bu çalışmada ıraksak düşünme akıcılık ve özgünlük olmak üzere iki yapı ile ölçülmüştür. DT akıcılık puanlarının düzeltilmemiş ön-test ve son-test sonuçları Tablo 3.7'de cinsiyete göre ayrılmış olarak sunulmuştur.

Tablo 3.7

Grupların ön-test ve son-test DT akıcılık puanlarının betimsel sonuçları

Source		Ön-test		Son-test	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Müdahale (n=28)	Erkek	6.50	1.35	9.70	3.33
	Kız	6.83	1.95	10.56	2.91
	Toplam	6.71	1.74	10.25	3.04
Karşılaştırma (n=27)	Erkek	6.31	2.32	6.46	2.30
	Kız	7.21	2.61	6.64	1.98
	Toplam	6.78	2.47	6.56	2.10

DT Akıcılık ön test puanlarının etkileri kontrol edildikten sonra grupların (müdahale ve karşılaştırma) DT Akıcılık son test puanı üzerinde anlamlı bir etkisi olduğu görülmüştür $F(1,52) = 33.14$, $p < .001$, kısmi $\eta^2 = .389$.

Tablo 3.8

Bağımlı değişken olarak DT akıcılık son-testi için ANCOVA sonuçları

Source	df	SS	MS	F	p	Partial η^2
DT_Fluency_Pre	1	64.31	64.31	11.16	.002	.177
Group	1	190.92	190.92	33.14	<.001	.389
Error	52	299.61	5.76			
Total	55	4466.00				

Sonuçlar, ıraksak düşünme akıcılığı becerilerindeki varyansın %38,9'unun DT akıcılığı ön testi kontrol edildikten sonra grubun düzeltilmiş ana etkisi tarafından açıklandığını ortaya koymuştur. Bu sonuçlara göre, sekiz hafta boyunca macera eğitimi temelli parkur müdahalesi alan grubun ($M_{düzeltilmiş}= 10.27$, $SE= .45$), normal beden eğitimi ve oyun müfredatını takip eden gruba ($M_{düzeltilmiş}= 6.54$, $SE= .46$) kıyasla anlamlı derecede daha yüksek ıraksak düşünme akıcılığı puanlarına sahip olduğu söylenebilir.

DT özgünlük puanlarının düzeltilmemiş ön-test ve son-test sonuçları Tablo 3.9'de cinsiyete göre ayrılmış olarak sunulmuştur.

Tablo 3.9

Grupların ön-test ve son-test DT Özgünlük puanlarının betimsel sonuçları

Source		Ön-test		Son-test	
		M	SD	M	SD
Müdahale (n=28)	Erkek	1.00	0.82	2.20	1.40
	Kız	1.06	0.80	2.22	1.40
	Toplam	1.04	.79	2.21	1.37
Karşılaştırma (n=27)	Erkek	1.08	1.26	1.00	1.22
	Kız	0.79	0.89	1.50	1.09
	Toplam	.93	1.07	1.26	1.16

DT Özgünlük ön test puanlarının etkileri kontrol edildikten sonra grupların (müdahale ve karşılaştırma) DT Özgünlük son test puanları üzerinde anlamlı bir etkisi olduğu görülmüştür $F(1,52) = 7.39$, $p = .009$, kısmi $\eta^2 = .124$.

Tablo 3.10

Bağımlı değişken olarak DT Özgünlük son testi için ANCOVA sonuçları

Source	df	SS	MS	F	p	Partial η^2
DT_Originality_Pre	1	1.14	1.14	.70	.407	.013
Group	1	12.05	12.05	7.39	.009	.124
Error	52	84.76	1.63			
Total	55	266.00				

Sonuçlar, ıraksak düşünme özgünlük puanlarındaki varyansın %12.4'ünün DT akıcılık ön testi kontrol edildikten sonra grubun düzeltilmiş ana etkisi tarafından açıklandığını ortaya koymuştur. Sekiz hafta boyunca macera eğitimi temelli parkur müdahalesi alan grubun ($M_{düzeltilmiş} = 2.21$, $SE = .24$), normal beden eğitimi ve oyun müfredatını takip eden gruba kıyasla ($M_{düzeltilmiş} = 1.27$, $SE = .25$) ıraksak düşünme özgünlük puanlarının önemli ölçüde daha yüksek olduğu söylenebilir.

NİTEL SONUÇLAR

Yarı yapılandırılmış görüşmelerden elde edilen veriler tematik analiz uygulanarak incelenmiştir. Tematik analiz sonucunda dört ana tema ve bunların alt temaları ortaya çıkmıştır. Bu bölümde temalar açıklanmıştır.

Zorlukların ve Korkuların Üstesinden Gelmek

Parkur becerileri ve parkur ile temel hareket becerilerini içeren oyunlar, macera eğitiminde öğretim aracı olarak kullanılmıştır. Katılımcılar ekipman ve becerilerle ilgili olarak düşme veya yaralanma korkusu da dahil olmak üzere zorluk ve korkularını dile getirmişlerdir. Örneğin katılımcı 2 duygularını şu şekilde ifade etmiştir:

"Aletleri ilk gördüğümde biraz korktum, biraz da heyecanlandım. Düşeceğimden korktum."

Bazılarının daha önce yaralanma deneyimleri veya yükseklikten kaynaklanan korkuları varken, diğerleri becerileri gerçekleştirememekten korktuğunu belirtmiştir.

"Eğitimden önce yüksek yerlere tırmanmakta, uzağa atlamakta ve engelleri aşmakta zorlanıyordum. Yüksek yerlere çıktığımda bir şeyler oluyor, midem bulanıyordu." (Katılımcı 22)

Katılımcılar, eğitim sırasında araçları ilk kez gördüklerinde ya da yeni becerilerle karşılaştıklarında yaşadıkları korku ve tereddütleri nasıl aştıklarını, bu korku ve zorluklarla nasıl başa çıktıklarını ifade etmişlerdir. Görüşmeler sonucunda ortaya çıkan alt temalar; pratik yapma, deneyimleme, çözüm bulma ve özgüven olarak belirlenmiştir.

Alıştırma Yapmak

Parkur müdahalesi sırasında katılımcılar evde, mahallelerinde ve okulda zorlandıkları becerileri çalıştıklarını bildirmişlerdir. Herhangi bir ev ödevi olmadan bile, zorluklarının üstesinden gelmek için gönüllü olarak egzersiz yaptıklarını belirtmişlerdir.

"Yapamadığım hareketlerde artık zorlanmıyorum. Hem evde hem de burada yaptığımda zorlanmam ortadan kalktı. Zaten evde de tekrar ediyorum."
(Katılımcı 22).

Deneyimlemek

Her seansın başında katılımcılar o gün öğrenecekleri becerilerin videolarını izlemişlerdir. Bazı katılımcılar videolarda gördükleri becerileri yapamayacaklarından korktuklarını, ancak becerileri kendileri denediklerinde korkularını yendiklerini belirtmiştir.

"Videoda çok zor görüldüğü için korkmuştum. Ama kendim denediğimde gerçekten çok kolay geldi. Böylece eğitimin sonunda korkum ortadan kalktı."
(Katılımcı 13)

Kendine Güven

Katılımcılar ayrıca becerileri gerçekleştirme konusunda deneyim kazandıkça özgüvenlerinin arttığını bildirmişlerdir. Başlangıçta yapamayacaklarını düşünürken, denedikçe ve başardıkça özgüvenleri arttığını belirtmişlerdir. Daha zor becerilerle karşılaştıklarında bile, artan özgüvenleri nedeniyle bunları deneme cesaretini buldukları gözlemlenmiştir.

"Bu derslerden önce tırmanamayacağım bir yer olduğunda pes ediyordum. Eğitimle birlikte yapabildim, tırmanabildim. Artık yapamadığım zaman pes etmiyorum, tekrar yapmaya çalışıyorum." (Katılımcı 21)

"27 ve 18 numaralı katılımcılar daha içe dönük çocuklardı. Mesela bir oyun oynadığımızda kendilerine güvenleri yoktu. Bir şeyleri yapamama konusunda güvensizlikleri vardı. Ama şimdi parkur müdahalesi sırasında o çocuklara uzaktan bakıyorum, hareketleri yapmaya çalışıyorlardı ve eğleniyorlardı. Onlar artık farklı çocuklar." (Öğretmen 2)

Daha önce boyu konusunda güvensiz olan bir katılımcı, müdahalenin ilk iki haftasından sonra çekincelerini dile getirmeyi bıraktı. Müdahale, becerileri gerçekleştirmek ve zorluklarla karşılaştığında pes etmemek için güven kazanmasına yardımcı oldu.

"Kısa boylu olduğum için yapamayacağımı söylüyordum. Bu derslerde öğrendiklerimiz hem gerçek hayatta işimize yaradı hem de pes etmeden tekrar tekrar yapmayı öğretti. Boyumla ya da fiziksel hareketlerimle dalga geçenler şimdi yaptığımda şaşırıyorlar, yapabiliyorsun diyorlar." (Katılımcı 17)

Genel olarak, parkur müdahalesi katılımcıların korku ve tereddütlerinin üstesinden gelmelerine yardımcı olmuş, özgüvenlerini artırmış ve yeni şeyler deneme isteklerini geliştirmiştir. Bu yeni keşfedilen özgüven, matematik dersindeki performansları gibi hayatlarının diğer alanlarına da yansdı.

Çözümler Bulma

Müdahalede, katılımcıların sorunlara çözüm bulmalarına teşvik etmek için yönlendirilmiş buluş, problem çözme ve iş birliği yöntemleri kullanılmıştır. Yarı yapılandırılmış görüşmelere göre, katılımcılar zorluklarla başa çıkma stratejileri hakkında çeşitli cevaplar verdi. Örneğin, birbiri arasında uzak mesafe bulunan iki engelden atlama alıştırmaları yapmak için yere bantlar koyup önce yerde denediğini belirtmiştir. Bir diğer katılımcı ise mesafeyi azaltmak için ortaya başka bir engel koyduğunu belirtmiştir. Zorlukların ve korkularının üstesinden gelmek için buldukları bu çözümlerin eğitimden önce akıllarına gelmeyeceğini bildirmişlerdir.

Sosyal Beceriler

Parkur müdahalesi sırasında, katılımcılar oturumların içeriğiyle ilgili ikili veya grup egzersizleri yaptılar. Egzersizlerde yetkin olanlar zorlanan diğerlerine öğretirken, uygulayıcı sadece gerektiğinde geri bildirimde bulunmuştur. Düşme veya yaralanma durumunda birbirlerine nasıl yardımcı olacakları konusunda grup tartışmaları da yapılmıştır. Katılımcıların çoğu arkadaşlarının tutumlarında olumlu değişiklikler olduğunu bildirirken, birkaçı herhangi bir değişiklik olmadığını belirtmiştir.

"Düştüğümde bana yardım etmeleri bana güven verdi. Bunu yapabilirsin, korkma dediler. Böyle bir güven sağladılar." (Katılımcı 28)

İş birliği ve empati, katılımcıların müdahale yoluyla geliştirdikleri sosyal beceriler arasında yer almıştır. Birbirlerine yardım etmek özgüvenlerini ve ekip çalışmasının önemini anlamalarını artırmıştır. İlk birkaç hafta katılımcılar grup olarak verimli bir şekilde çalışmakta zorlanmışlar, ancak iş birliğini vurgulayan oyunların dahil edilmesiyle bunu anlamlandırmaya başlamışlardır. Sınıf öğretmenin müdahale sırasında öğrencilerin davranışları üzerine gözlemi ise şu şekildeydi:

"Daha fazla birlik vardı. Aslında çocuklar arasında daha fazla bütünleşme vardı." (Öğretmen 2)

Başlangıçta iletişim kurmayan ve beceri öğrenmeye isteksiz olan Katılımcı 27, programın ortalarına doğru müdahaleye daha fazla dahil oldu ve arkadaşlarıyla daha fazla iletişim kurmaya başlamıştır. Arkadaşları da onun müdahaleye yönelik tutumunda olumlu bir değişiklik olduğunu fark etmiştir.

"Parkur eğitimiyle birlikte arkadaşlarımdan bana karşı tutumları değişti. Artık bana yardımcı oluyorlar. Daha önce bu kadar yardımcı olmamışlardı." (Katılımcı 27)

Katılımcılar parkur müdahalesi eğlenceli olarak tanımlamış ve bu sayede yeni beceriler geliştirdiklerini belirtmişlerdir. Öğretmenler, öğrencilerin dersler sırasında motive ve mutlu olduklarını belirtmişlerdir.

"Çok mutlu olduklarını gözlerinden okuyabiliyordum." (Öğretmen 1)

Müdahale bütüncül bir yaklaşım izlemiş ve rekabetten ziyade grup çalışması ve bireysel mücadeleleri içermiştir.

"Hoşuma gidiyordu çünkü arkadaşlarımızla takım olmuyorduk. Eğer bir takım olsaydık, kavga edebilirdik. Yarış olmaması hoşuma gitti. O yüzden eğlendim." (Katılımcı 11)

Gözlemler, katılımcıların becerileri başkalarına öğretirken oturumlardan öğrendikleri öğretim tekniklerini kullandıklarını göstermiştir.

Beceri Gelişimi

Parkur müdahalesinin odak noktalarından biri, parkur becerilerini öğrenirken katılımcıların kaba motor becerilerini ve motor koordinasyonunu geliştirmektir. Yapılan görüşmelerde katılımcıların çoğunluğu tırmanma, zıplama, engelleri aşma, koşma, asılı kalma ve denge konularında gelişme kaydettiklerini belirtmiştir.

"Eğitim almadan önce tırmanma, uzağa atlama, engelleri aşma konusunda çok kötüydüm. Uzağa zıplayamazdım. Şimdi tırmanmada, uzun atlamada, tek ayak üzerinde zıplamada daha iyiyim." (Katılımcı 6)

Bazı katılımcılar ise becerilerde zaten iyi olduklarını ancak daha da geliştiklerini bildirmiştir. Katılımcıların müdahale sırasında temel hareket ve parkur becerilerinin isimlerini öğrendiği sınıf öğretmenleri tarafından fark edilmiştir.

"En çok aklıma gelen tepki şu oluyor: "Bu hareketi yapacağız, zıplama, maymun geçişi". Yani hareketlerin isimlerini söylediler çünkü müdahalenin bir sonucuydu." (Öğretmen 1)

TARTIŞMA VE SONUÇ

Bu çalışma, dördüncü sınıf çocuklarının sosyal-duygusal, bilişsel ve motor yeterliliklerini geliştirmek için parkuru bir araç olarak kullanan macera eğitimi modeline dayalı bir müdahalenin nasıl sonuçlar verdiğini nitel ve nicel veriler kullanarak derinlemesine anlamayı amaçlamıştır. Bu bölümde, çalışmada elde edilen nicel sonuçlar nitel sonuçlarla birlikte açıklanmakta ve ilgili literatürle karşılaştırmalı olarak tartışılmaktadır. Aşağıdaki tartışmada, bu çalışmanın örneklem grubunun toplam 55 kişi olduğu ve sonuçların bu çalışma örneğine dayalı olarak tartışıldığı, dolayısıyla evrene genelleme niyetinin olmadığı unutulmamalıdır.

Motor koordinasyon, temel ve karmaşık hareket becerilerinin kazanılmasının yanı sıra yaşam boyu fiziksel aktiviteye katılım için de önemlidir (Vandorpe et al., 2012). Bu nedenle, bu çalışmada motor koordinasyon becerileri KTK testi ile değerlendirilmiştir. Sonuçlar, ön test sonuçlarının etkileri kontrol edildikten sonra, müdahale grubunun karşılaştırma grubuna göre motor koordinasyonu anlamlı şekilde daha fazla geliştirdiğini göstermiştir $F(1,52) = 34.45, p < 0.001$. Nitel sonuçlar, macera eğitimi modeline dayalı parkur müdahalesinin tırmanma, zıplama, koşma, hoplama ve denge gibi becerileri geliştirdiğini göstermiştir. Çalışmalar motor koordinasyon ile fiziksel aktiviteye katılım arasında anlamlı bir ilişki olduğunu (Lopes et al., 2012; Lopes et al., 2011; Opstoel et al., 2015; Vandorpe et al., 2012) ve eğitim/egzersiz ya da fiziksel aktivite gibi müdahalelerin çocuklarda motor koordinasyonu geliştirebileceğini göstermektedir (Çillik & Willwéber, 2018; Han et al., 2018; Walaszek & Nosal, 2014). Türkiye'deki dördüncü sınıf Beden Eğitimi ve Oyun müfredatı, aktif ve sağlıklı bir yaşam için fiziksel aktivitelere düzenli katılımı teşvik etmeyi amaçlamaktadır (MEB, 2018). Dünya Sağlık Örgütü, çocuklar ve ergenler için haftada en az üç kez 60 dakikalık günlük orta ila şiddetli fiziksel aktivite önermektedir (WHO, 2020). Çalışmadaki 8 haftalık macera eğitimine dayalı parkur müdahalesinin çocukların motor koordinasyonuna olumlu etkisi bu hedeflere ulaşımında macera eğitiminin ve parkurun alternatif olabileceğini göstermektedir.

Benlik kavramı, bir kişinin kendisini akademik, sosyal, duygusal ve fiziksel gibi farklı alanlarda nasıl gördüğünü ifade eder (Shavelson et al., 1976). Fiziksel benlik kavramı, kişinin fiziksel yeteneklerinin ve görünüşünün değerlendirilmesini içerir (Fox & Corbin, 1989). Bir çocuğun yeterlilik duygusu, motivasyonunu ve bir görevdeki performansını etkiler (Harter, 1988). Macera eğitimi modelini kullanan müdahale çalışmalarında, öğrencilerin benlik algılarını ve sosyal becerilerini olumlu yönde etkilediği görülmüştür (Baena-Extremera et al., 2012; Garst et al., 2001; Gibbons et al., 2018; Stuhr et al., 2015).

Algılanan motor yeterlilik, bireyin kendi motor becerilerine ilişkin algısını ifade eder (Morano et al., 2020). Bu çalışmaya katılan çocukların becerilerine ilişkin öz algıları

motor beceriler üzerinden analiz edilmiştir. Bu çalışmada, PMC sonuçları, PMC ön test puanlarının etkileri kontrol edildikten sonra, müdahale grubunun lokomotor beceri yeterliliğine ilişkin algılarının kontrol grubuna göre önemli ölçüde daha fazla geliştiğini ortaya koymuştur $F(1,52) = 7.44, p = 0.009$.

Bu çalışmada müdahale geliştirilirken Ritson (2016) tarafından belirtilen macera eğitimi modelinin unsurları dikkate alınmıştır. Macera eğitimi modelini şekillendirmek için kullanılan bu unsurlar, katılımcıları zorluklarla mücadele ederken grup olarak çalışmaya yönlendirmeyi, daha büyük bir başarı duygusu elde etmeyi, kavramları anlamayı ve sosyal-duygusal etkileşim sağlamayı amaçlamaktadır. Macera eğitiminde fiziksel ortamın zorlayıcı doğası, her katılımcının yeni bir ortama maruz kalması nedeniyle eşitliğin sağlanması açısından önemlidir. Buna ek olarak, zorluklarla ve meydan okumalarla başa çıkmak daha büyük bir başarı hissi verir (Ritson, 2016). Parkurla ilgili çalışmalarda, macera eğitimiyle ilgili çalışmalarda olduğu gibi katılımcıların sosyal-duygusal becerilerindeki değişimler incelenmiştir (Botella vd., 2021; Fernandez-Rio vd., 2017; Grabowski ve Thomsen, 2017).

Macera eğitimi modelinin önemli özelliklerinden biri de korkuların ve zorlukların üstesinden gelmeyi sağlamasıdır (Fernández-Río & Suarez, 2016). Parkur ve macera eğitimi, engellerin ve zorlukların üstesinden gelme konusunda kesişmektedir. Bu çalışmada katılımcılar parkur ekipmanlarını ve parkur becerilerini ilk kez gördüklerinde korktuklarını belirtmişlerdir. Benzer yorumlar Fernández-Río ve Suarez (2016) tarafından yürütülen çalışmada da çocuklar tarafından yapılmıştır. Çalışmada çocuklar parkurun tehlikeli ve zorlayıcı olduğunu düşündüklerini ancak deneyimledikten sonra eğlenceli olduğunu belirtmişlerdir (Fernández-Río ve Suarez, 2016). Mevcut çalışmada ise katılımcılar araç ve becerileri deneyimledikçe korkularının üstesinden geldiklerini belirtmişlerdir. Zorlukların ve korkuların üstesinden gelmek için çeşitli stratejiler geliştirdikleri anlaşılmaktadır. Evde ve okulda egzersiz yaparak özgüvenlerini artırdıklarını belirten katılımcılar, müdahale sayesinde zorluklarla ve korkularla başa çıkmak için farklı çözümler üretebildiklerini de ifade etmişlerdir.

Yaratıcılık, bir duruma veya soruna farklı, yeni, uygun, benzersiz ve faydalı çözümler bulmak olarak tanımlanabilir. Yaratıcılıkla tam olarak aynı yapı olmasada, ıraksak düşünme yaratıcılığın en sık kullanılan göstergelerinden biridir (Okuda vd., 1991; Runco, 2004). Bu çalışmanın sonuçlarına göre, ön test sonuçları kontrol edildikten sonra, müdahale grubundaki çocukların akıcılık $F(1,52) = 33.14$, $p < 0.001$ ve özgünlük puanları $F(1,52) = 7.39$, $p = 0.009$) kontrol grubuna göre anlamlı şekilde daha fazla artmıştır. Önceki araştırmalar da fiziksel aktivite müdahalelerinin özellikle orta ve uzun vadeli uygulamalarda yaratıcılık becerileri üzerinde olumlu etkileri olduğunu ortaya koymuştur (Ángel Latorre-Román et al., 2021; Gondola, 1986; Tilp et al., 2020; Zachopoulou et al., 2006). Bununla birlikte, fiziksel aktivite müdahalesinin tüm katılımcılarda olmasa da belirli özelliklere sahip gruplarda önemli ölçüde daha etkili olduğunu bildiren çalışmalar da vardır (Bollimbala vd., 2019; Neville ve Makopoulou, 2021). Mevcut çalışmada uygulanan müdahale, katılımcıları yeni hareket ve parkur becerilerine maruz bırakarak ıraksak düşünme yeteneklerinin gelişmesine yol açılmış olabilir.

Motor yaratıcılık, bir sorunu ya da durumu çözebilecek yeni ve orijinal hareket kalıpları yaratma becerisidir (Pagona ve Costas, 2008; Sturza Milić, 2014; Wyrick, 1968). Scibinetti ve diğerlerine (2011) göre motor yaratıcılık ile bilişsel yaratıcılık arasında akıcılık ve esneklik boyutları açısından anlamlı pozitif bir ilişki vardır. Bu nedenle, bu çalışmada müdahalenin çocukların hem bilişsel becerileri hem de motor yeterlilikleri üzerindeki etkileri bütüncül bir şekilde incelenmiştir. Mevcut çalışmanın sonuçları, 8 haftalık macera eğitimi temelli parkur müdahalesine katılan müdahale grubunun motor yaratıcılığının, ön test sonucu kontrol edildikten sonra kontrol grubuna göre önemli ölçüde daha fazla geliştiğini göstermiştir. Çocukların motor yaratıcılığı üzerine yapılan önceki müdahale çalışmaları da benzer olumlu gelişmeler göstermiştir (Alper ve Ulutaş, 2022; Mouratidou vd., 2017; Richard vd., 2018; Thomaidou vd., 2021).

Katılımcılarla yapılan yarı yapılandırılmış görüşmelerin analizinden ortaya çıkan temalara göre, katılımcılar hareket gerektiren sorunları çözmek için yeni yollar bulabildiklerini belirtmişlerdir. Yarı yapılandırılmış görüşmeler analiz edildikten

sonra, nitel verilerin nicel verilerle ortaya çıkan gelişimi desteklediği görülmüştür. Müdahale boyunca çocuklar parkur becerilerini öğrenirken ve uygularken daha önce bilinçli olarak deneyimlemedikleri bir şekilde engelleri aşmak zorunda kaldılar. Parkurun doğada ve şehirde engelleri aşmayı içermesi, çocukların bu aktiviteyi yaparken karşılaştıkları farklı motor problemlere yeni çözümler bulmalarını sağlayarak motor yaratıcılıklarını geliştirmiş olabilir.

Teknolojinin gelişmesi, bilginin giderek çoğalmasına ve karmaşıklaşmasına yol açmıştır. Yaratıcılık, çoklu ve karmaşık bilgileri işleyerek, analiz ederek ve kullanarak sorunlara çözüm bulmak için giderek daha önemli hale gelmektedir. Ekonomik İş Birliği ve Kalkınma Örgütü'ne (OECD) göre, üye ülkelerin çoğunun müfredatında öğrenme çıktıları olarak yaratıcılık veya eleştirel düşünme yer almaktadır (Vincent-Lancrin, 2022). Heilmann ve Korte (2010) tarafından 27 AB ülkesinin okul müfredatları üzerine yapılan çalışmada, beden eğitimi, yaratıcılık terimlerinin veya eş anlamlılarının müfredatta yer aldığı sanat ve bilgi ve iletişim teknolojilerinden sonra üçüncü ders olmuştur. Fiziksel aktiviteyi içeren müdahale çalışmalarında, bilişsel yaratıcılık ve motor yaratıcılığın tüm veya bazı bileşenlerinin geliştiği bildirilmiştir (Alper ve Ulutaş, 2022; Richard vd., 2018). Ayrıca, Scibinetti ve arkadaşları (2011) tarafından yapılan çalışmaya göre, motor yaratıcılık ile bilişsel yaratıcılık arasında orta düzeyde pozitif bir ilişki vardır. Ancak bu ilişkiyi inceleyen çalışma sayısı oldukça yetersizdir. Pagona ve Costas (2008), 9 yıl önce uyguladıkları bir müdahalede motor yaratıcılık becerileri anlamlı derecede daha fazla gelişen deney grubu ve kontrol grubu üzerinde aynı ölçeklerle bir kalıcılık çalışması yürütmüştür. Kalıcılık çalışmasında, orijinal çalışmada motor yaratıcılıklarını geliştiren deney grubu katılımcılarının dokuz yıl sonra hala daha iyi bir motor yaratıcılık seviyesinde oldukları sonucuna varılmıştır. Önceki bölümlerde motor yaratıcılık ile bilişsel yaratıcılık arasında pozitif bir ilişki olduğunu bildiren çalışmalardan bahsedilmişti. Pagona ve Bournelli'nin çalışması göz önünde bulundurulduğunda, beden eğitimi ve spor kullanılarak çocukların motor yaratıcılıkları geliştirilebilir ve kalıcı hale getirilebilir. Dolayısıyla bu çalışmada, müdahale grubunun yaratıcılığın en sık kullanılan belirleyicilerinden biri olan ıraksak düşünme becerilerini ve motor yaratıcılık becerilerini kontrol grubuna göre daha fazla geliştirdiğini gösteren sonuç literatüre önemli bir katkı sağlayacaktır.

Bu çalışmada, Türkiye'deki dördüncü sınıf müfredatı dikkate alınarak, macera eğitimi modeli ve parkur sporu kullanılarak çocukların motor yeterlilikleri, bilişsel becerileri ve sosyal duygusal becerileri bütüncül bir şekilde ele alınmaktadır. Katılımcıları bilmedikleri ortamlara ve deneyimlere maruz bırakmak macera eğitiminin unsurlarından biridir. Nitel görüşmelerde katılımcılar parkur ekipmanlarını ve becerilerini gördüklerinde korktuklarını belirtmişlerdir. Bu da parkurun katılımcılar için yeni ve riskli bir aktivite olduğunu göstermektedir. Ancak katılımcılar, ekipman ve becerileri deneyimlediklerinde korkularının üstesinden geldiklerini, eğlendiklerini, özgüvenlerinin arttığını ve zorlukların üstesinden gelmek için farklı çözümler bulduklarını bildirmişlerdir. Zorlukların üstesinden gelmek katılımcılar için daha büyük bir başarı hissi yaratmıştır. Özgüvendeki artış, algılanan motor yeterlilikteki artışla da yansıtılabilir. Engellerin üstesinden gelmek parkur ile özdeşleşmiş bir yapıdır. Macera eğitiminin gerekliliklerinden biri de zorluk ve risk içeren aktiviteleri deneyimlemek ve bunların üstesinden gelmek için çabalamaktır ki bu da bir tür engellerin üstesinden gelmektir. Hem parkur hem de müdahaledeki oyunlar, çocukların motor ve sosyal problemleri çözmeleri için fırsatlar sağlamıştır. Bu sayede çocukların yeni çözümler üretmeleri, iş birliği yapmaları ve karar vermeleri amaçlanmıştır. Çocukların iraksak düşünme ve motor yaratıcılık puanlarındaki anlamlı iyileşme ve bu konularla ilgili görüşmelerde verdikleri destekleyici cevaplar, parkurun macera eğitiminde bir araç olarak kullanılmasının eğitim hedeflerine ulaşmada faydalı olabileceğini göstermektedir.

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