



## Effect of Extracurricular Sports-Related Games on High School Students' Behaviour Patterns \*

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### Abstract

The aim of this study is to examine the effect of sports-related games carried out within the scope of extra-curricular activities on the behaviour patterns of high school students. The study was conducted as a pretest-posttest experimental design with control group. The study group of the research consisted of a total of 34 ninth-grade male and female high school students, with 15 students in the experimental group and 19 in the control group. The activities were conducted as extra-curricular activities. The experimental group took part in sports-related games activities over a 10-week period, on 2 days per week and for 2 lesson periods (80 minutes) per day. In the study, with the aim of determining the students' behaviour patterns, a "Youth Self Report (11-18 age) was used as a pretest and posttest measurement tool. For evaluation of the data, ANCOVA analysis was used by controlling the pretest scores. The research findings revealed that in the high school students' internalizing score and total problematic behaviour scores, the values of the experimental group were statistically significantly different ( $p < .05$ ) and lower than those of the control group. As a result of the study, it can be said that sports-based games are effective activities used for reducing high school students' behaviour problems.

### Keywords

Games  
Extracurricular Activities  
Behavioural Problems  
Physical Education  
Adolescence

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### Introduction

Extracurricular activities are "planned, programmed, organised activities at school, conducted outside lessons, conforming to educational aims, in line with students' interests and needs, in order to develop their personalities, with the knowledge of the school management and under the guidance of teachers" (Binbaşıoğlu, 1986). These activities can focus on students who are found to be in a passive state in the education system, and can assist in raising active, knowledgeable, productive individuals who are aware of and can develop their interests, skills and abilities (Gündüz, 1992 as cited in Pehlivan & Selçuk, 2005). Non-academic activities of this type can enable alternative success environments for many youths who cannot achieve high levels of success at school to gain confidence and to develop themselves (Murtaugh, 1988). It is seen that students who take part in extracurricular activities not only display fewer problematic behaviours (Pinhey, Perez, & Workman, 2002; Soytürk, 2011), but also

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develop their communication skills, which are an important social skill (Tepeköylü Öztürk, Özbey, & Çamlıyer, 2015; Grudeva, 2010). In this context, it can be said that these activities are a factor which complements in-class learning (Shulruf, 2010), which enables environments suitable for children and youths to be raised as responsible, disciplined, independent, tolerant, critical, cooperative individuals with a capacity for risk-taking (Grudeva, 2010), and which is related to positive academic, behavioural and psychological benefits (Fredricks & Eccles, 2006).

In our country, according to the circular 53578, no. 2010/49, dated 19.08.2010, activities that can be organised as extracurricular activities for students to make use of their leisure are determined as “scouting, physical education and sports activities, folk dancing and fine arts”, as well as “with the coordination of TÜBİTAK, science olympics and project studies for primary and secondary students” (Ministry of National Education [MoNE], 2010). Under the heading of physical education and sports activities, students are included in sports teams in various branches and these activities are conducted for preparation for and participation in competitions (Pehlivan & Selçuk, 2005).

Adolescence covers a period when individuals undergo a series of cognitive, emotional and physical changes. The period of abstract operations that begins together with cognitive development coincides with the beginning of this period. During the period of abstract operations, the childish way of thinking changes into the adult way of thinking, and during this transition, a way of thinking specific to the adolescence period is formed. This self-centred structure causes adolescents to experience various conflicts, particularly with their families (Erden & Akman, 2002). Therefore, individuals begin to drift away from their families during the adolescent period. They prefer to spend more time with their peers and adopt their norms, attitudes and behaviours (Alikaşifoğlu, 2008). In an affective sense, during this period the adolescent is in conflict and noncompliant, and he/she experiences mixed emotions (Çamlıyer & Çamlıyer, 2001). That is to say, this period, as one of deep socio-emotional development (Burnett, Thompson, Bird, & Blakemore, 2011), is a time for trying out adult roles and making friends by taking on important adult responsibilities, participating in academic and extracurricular activities, and making choices as consumers (Halpern-Felsher, Millstein, & Irwin, 2002).

Sports-related games are those which involve all the players in an activity, which ensure their active participation, and which are enjoyable, safe and challenging. In this implementation, various sports branches are varied before and/or during the implementation by the use of key elements. While this change is being made, the key elements used are determined as teaching/training style, keeping score, arena, team size, game rules, equipment, participation and time. Within the scope of the activity, the “Playing for Life - A Guide to Help Coaches and Teachers Improve Sport-Related Games”, developed in cooperation with the Australian Sports Commission’s “Active After-school Communities” and “Schools Network” is adopted, and the basic philosophy of the sports-related games prepared is to ensure that all the players take part in the contest whatever their skill level or sporting past. With this characteristic, an individual in a wheelchair and an individual with a good level of sporting skill are confronted with each other in similar contests within the same game. Therefore, game-like activities can ensure that participants are successful while developing their skills and understanding of sport and that, since enjoyable and safe environments are provided, they develop many cognitive, social and emotional skills and behaviours in a positive sense. Trainers and teachers play a facilitating role here. They create problem situations and ensure that students find solutions to these situations by means of the activities. The participants develop their skills by enjoying themselves in the game-like activities. Instead of traditional skills activities isolated from games (drills), the participants’ skills development is enabled with game-like activities. This arrangement also forces the participants to think about what they do and why they do it. Instead of by the trainers’ or teachers’ directives, the participants learn by self-discovery and by observing the other players. In these practices, participant role models are used to emphasise the skills. For development of the skills, the students are given the opportunity to train separately without discontinuing the activity. Variations are made by using the key elements in order to make the game easier or more difficult. The players’ skills for decision-making, for carrying out an activity according to the rules of the game, for working as a team and for communication are improved (Australian Sports Commission, 2007).

Behaviours are actions that a person does and attitudes he displays that distinguish him from other people and make him who he is (Geçtan, 2010). According to another definition, behaviours are “reactions and actions that a person displays in face of internal and external stimuli” (Şahin, 2004). These behaviours occur with various approaches, by which they become fixed and consolidated in the processes where they are learnt and experienced, and where they may sometimes vary but generally show consistency. The identification of normal behaviour is interpreted in various forms and under the effect of different value judgements. Offer and Sabshin (1966) deal with this subject in four ways; in their opinion, normality can be interpreted as wellness, there is no such thing as normality, normality means the same as “average” and normality is a process, and normal behaviour is a common product of systems that are in interaction with each other as cited in Geçtan, 2010). Behaviour problems include behaviour patterns that affect individuals’ lives from an early age (Savi, 2008). Behaviour problems are important sources of anxiety both for educators and for families in terms of raising healthy generations. In the formation of such problems, it is possible to list many factors such as family structure, culture, school, social conditions and economic level. However, for solving behaviour problems, participation in a sporting activity, particularly during adolescence, is strongly recommended (Donaldson & Ronan, 2006). As subjects and problems emphasised by youths, Köknel (1995) determined intolerance, pressure and derogatory dialogues by adults, difficulty in making friends, lack of friendships between girls and boys, lack of acceptance of and objection to friendships between girls and boys by families and the community, lack of opportunities for making effective use of free time, use of corporal punishment as a tool in education at home and school, heavy lesson load and teaching of rote-based lessons, lack of time for cultural activities or sport due to heavy lesson load, anxiety regarding choice of higher education or career, insecurity about the future, presence of excessive pressure and discipline in the education system, lack of time for relaxation and entertainment, lack of self-confidence, loneliness, and lack of a person, people or institutions that could assist with problems. In fact, it can be said that at the source of all these problems lie an inability to define status within society, a lack of acquisition of genuine roles, and an inability to play a part in society (Köknel, 1995). Therefore, it is seen that during this period, it seems inevitable that adolescents will experience emotional and behavioural problems within many conflicts. While physical inactivity leads to many other behaviour problems as other factors (Kantomaa, Tammelin, Ebeling, & Taanila, 2008), the positive effects of participation in sporting activities is generally indicated (Monshouwer, Ten Have, Van Poppel, Kemper, & Vollebergh, 2013). Moreover, for this age group, doing sport is the most suitable pursuit for exercising their developing muscles and to expend the built-up and overflowing energy within them. The success they achieve in a branch of sport increases their self-confidence. Even more importantly, team sports provide an environment where young people can mix with their peers. Their inclination to be different from their parents in a sense places them in an empty space. They will wish to fill this space by forming new affinities and relationships (Yörükoğlu, 1991). In this context, considering the subject in terms of behaviours, in studies conducted it has been found that participation in extracurricular activities has a negative relationship with giving up school (Mahoney & Cairns, 1997) and reduces alienation from school, that is, detachment from one’s environment (Yanık, 2017), that organised extracurricular activities attended by different groups of girls have a positive relationship with academic success, whereas participation in non-organised activities outside school has a negative relationship with academic success (Chambers & Schreiber, 2004). Length of participation in extracurricular activities and number of activities have also been determined to be related to positive academic, behavioural and psychological benefits (Fredricks & Eccles, 2006). Adolescents who participate in extracurricular activities have been observed to show improvement in academic attitude and willingness, and in final grades (Darling, Caldwell, & Smith, 2005). It is also stated that participation in extracurricular activities by groups with high levels of physically aggressive behaviours results in a reduction in these behaviours (Pinhey et al., 2002).

To create healthy generations, it is essential to raise young people as individuals who can adapt and have positive behavioural skills, and who can develop life skills according to conditions that change every day (WHO, 1999). Studies that have been conducted for a long time on the subject of adolescent health have resulted in intervention programmes that have changed from types that aim at prevention or treatment of behaviour problems to types that support the healthy development of young people (Kaner & Uçak Çiçekçi, 2000). The highest aim of physical education is to raise free individuals (Mosston & Ashworth, 2008). There are similar studies aimed at changing behaviour by means of sport and exercise in the literature (Driessens, 2015; Monshouwer, Have, Poppel, Kemper, & Vollebergh, 2009; Cohen, Taylor, Zonta, Vestal, & Schuster, 2007; Kantomaa et al., 2008). It has also been reported that sport can lead to an increase in negative behaviours (Wet, Muloiwa, & Odimegwu, 2018). However, since such an effect has not been investigated with sports-related games, it is not included among the reasons for conducting this study. In our country, students who are interested in a certain branch of sport and who consider themselves competent take part in extra-curricular sporting activities (Pehlivan & Selçuk, 2005; Tepeköylü Öztürk, 2012). The aim of these students is generally to represent their school in competitions and to achieve success in these. In fact, extracurricular activities are defined as “activities that allow students to bring about and discipline their own growth and development in line with their interests and abilities in the fields of knowledge, skills and attitudes, by planning their time themselves outside their lessons and in according to their own strengths” (MEB, Mevzuat Bankası, 1989/4). As another reason, however, is to present physical education teachers working in the field of application with types of activities aimed at increasing high school students’ enthusiasm for physical education and sports without giving importance to their physical advantages and with opportunities for changing behaviour, together with the expected related contribution to the literature.

The desire is to reveal whether using a valid measurement tool will reveal whether or not participation in sports-related games by youths in high school brings about changes in their behaviours. It is generally stated that the use of games by physical education teachers and coaches in their programmes is effective. However, they do not form games groups as extracurricular activities. Yet games are among the needs of all age groups. They can be organised according to the interests and needs of age groups (Çamlıyer & Çamlıyer, 2001). In the study, behaviour levels that apply to the whole measurement tool (both internalised and externalised behaviour problems) are taken into consideration. An examination of the effects of extracurricular sports-related games on high school students’ internalisation, externalisation, positive characteristics and their behaviour patterns resulting from these dimensions constitutes the aim of this study.

Within the scope of this aim, the suggested hypotheses to be tested are as follows:

Sports-related games have a significant effect on high school students’ internalisation scores.

Sports-related games have a significant effect on high school students’ externalisation scores.

Sports-related games have a significant effect on high school students’ scores for positive characteristics.

Sports-related games have a significant effect on high school students’ total scores.

## Method

### *Research Design:*

In the study, with the aim of revealing the effect of sports-related games carried out as extracurricular activities on behaviour patterns in high school students, the pretest-posttest experimental design with control group was used. This design is based on applying the factor whose effect is to be measured under certain rules and conditions, measuring the effect of a factor on a factor and, by comparing the findings obtained, reaching a conclusion (Yazıcıoğlu & Erdoğan, 2007).

### *Study Group*

The study group of the research consisted of a total of 34 male and female students studying in ninth grade in a high school in the province of Denizli, with 15 students in the experimental group and 19 in the control group. For the procedure of defining the subjects, the physical education teachers at the school were consulted, and announcements were made by them to all students at the school. The volunteer students were listed, their families were informed and their willingness to participate was ascertained. A meeting was held with the volunteers, during which information related to the study was given and the potential benefits to be gained from the study were explained. At the end of the meeting, the volunteers were asked to complete the pretest measurement tools. At the same meeting, the participants were randomly assigned to two groups of equal number. In determining the number of participants in the study groups, a power analysis was performed. Accordingly, for each group an effect size of  $d=0.80$  and a power of 0.70 at  $\alpha=0.5$  was reflected as an acceptable standard (Cross Portney & Watkins, 1993). The study group was originally determined as 40 people, with 20 in the experimental group and 20 in the control group. However, as two people from the experimental group participated in the activities for less than 9 weeks, one person was included in the school athletics team during the implementation, and two people experienced problems in reaching home following the activities, they could not fully take part in the activities and were excluded from the research. One person in the control group did not wish to complete the posttest, and so was excluded from the study. As a result of these situations, the research was completed with a total of 34 students, of which 9 females (60%) and 6 males (40%) were in the experimental group, and 10 females (52.6%) and 9 males (47.4%) were in the control group.

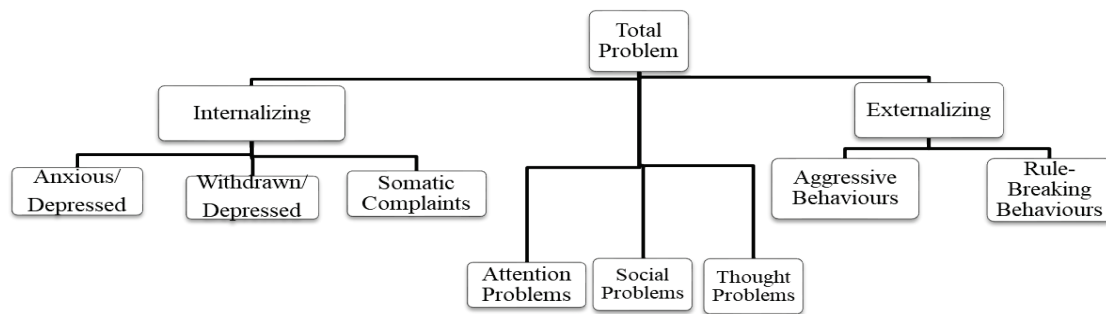
### *Data Collection Tools*

In the study, a "Youth Self Report (11-18)" was used to determine the high school students' behaviour patterns, and a personal information included in printed form at the beginning of this scale was used to determine the students' demographic information.

### *Youth Self-Report/11-18 (YSR)*

The Achenbach System of Empirically Based Assessment (ASEBA) used in this study is a cost-effective system that evaluates problem behaviours in children's and young people's competency and compliance functions with a standard and holistic approach in a short time. This was developed by Achenbach and Edelbrock in 1986 and last adapted into Turkish by Erol and Şimşek in 2001. The scale consists of two parts, namely, competencies and behaviours. In this study, the behaviour section, which is the second part and consists of 112 items, was used. In this section, in which problem behaviours and positive characteristics are investigated together, assessment is carried out according to prevalence during the last 6 months. The items are graded as 0: Not True, 1: Sometimes or Somewhat True and 2: Very or Often True and grouped into subscales. Moreover, in completing the problem behaviours in the scale, two separate behaviour scores are obtained for "internalizing" and "externalizing, while three problem scores (social problems, thought problems and attention problems) not included in the behaviour scores, and scores for "positive characteristics features" containing items like "being an animal lover" and "being honest" are obtained. The pattern related to the scale and subscales is given in the diagram below. For the positive characteristics of the scale, a Cronbach's alpha value of .89 was found, while a value of .95 was found for total problems (Erol & Şimşek, 2010). In the studies for developing the original scale, Cronbach's alpha values of .71 and .90 were found, respectively (Erol & Şimşek, 2010).





**Figure 1.** Empirically Based Subtests in Behaviour Assessment Scales for Children and Youths (Erol & Şimşek, 2010)

### *Sports-Related Games*

“Sports-related games”, which is the experimental variable in this study, are games that ensure the active participation of all players, regardless of students’ sports-related past or skill levels. These games are forms of sports branches which aim to raise participants’ participation to the highest levels by creating an enjoyable, safe and absorbing atmosphere and which are subjected to changes (modified) prior to and/or during implementation according to various criteria (teaching/coaching style, keeping of scores, arena, team size, game rules, equipment, participation and time).

In the study, the sports-related games were implemented by the researchers by utilising procedures in the “Playing for Life - A Guide to Help Coaches and Teachers Improve Sport-Related Games”, developed in cooperation with the Australian Sports Commission’s Active After-school Communities and Schools Network (Australian Sports Commission, 2007). The games programme was created by utilising the study by (Tepeköylü Öztürk, 2012).

### *Key Elements of Sports-Related Games Implementations*

These key elements and how they will change are explained below, and a model schema has been prepared;

- C-Training-Coaching Style: related to training/coaching style using questions for attracting interest in specific aspects of the game.
- H-How You Score/Win: related to increasing opportunities to score points.
- A-Area: concerns changing the shape and dimensions of the area in order to make the game more difficult or easier.
- N-Team Numbers: the numbers of players in teams may be different or the number of players in a team may be changed alternately.
- G-Game Rules: small changes that will not change the essential character of the game can be made to the game rules.
- E-Equipment: various sizes and types of equipment can be used.
- I-Inclusion: in order to raise participation to a maximum level, students may be included in an adapted activity by the use of any one or more sports-related games elements/keys.
- T-Time: the time allotted to the activities may be lengthened or shortened.

In conclusion, the CHANGE IT programme that was created raises participation of any individual or participation in a different structure of games elements to the highest level and meets players’ needs and the aim of the game in a better way (Australian Sports Commission, 2007).

**Table 1.** An Example of a Sports-Related Game Implementation (Tepeköylü Öztürk, 2012)

<b>7TH WEEK, 1ST IMPLEMENTATION</b>	
<b>Game Name:</b>	Climbing Activity
<b>Game Description:</b>	This activity can be included in the movement games group. The participants try to climb to the top of an artificial wall on the specified course.
<b>Focus of Target Skill</b>	-Deciding which handles to hold on to in order to avoid falling. -Striving to reach the top.
<b>Area and Equipment:</b>	-Artificial climbing wall. -Climbing equipment (climbing rope – dynamic rope must be used, safety belt, climbing shoes if possible, magnesium powder, carabiner)
<b>How is the Game Played?</b>	-The activity is explained by expert coaches. -Information is given about the climbing equipment and climbing wall. -Information is given about how to climb, how to descend and the rules. -A climbing wall (two levels of difficulty) is set up by climbing coaches -The participants first climb the easy wall, then if they wish to attempt it, the difficult wall.
<b>Scoring:</b>	-
<b>Safety Precautions</b>	-This activity must be carried out with expert coaches and people who are trained in this subject.
<b>7TH WEEK, 2ND IMPLEMENTATION (WARM-UP GAME)</b>	
<b>Game Name:</b>	Caterpillar
<b>Game Description:</b>	A movement game in which reaction speed is important. The players are to perceive the instruction rapidly as a team and try to carry it out.
<b>Focus of Target Skill</b>	-Making correct decisions in as short a time as possible. -Acting in harmony with the team in order to complete a sequence before the opposing team.
<b>Area and Equipment:</b>	-A suitable open or indoor playing area. -Chalk.
<b>How is the Game Played?</b>	-The players are separated into two teams. -The two teams line up and hold hands along a mutual line. -In the game, three instructions given by the teacher/trainer, namely “head”, “end” and “middle”, are used. -When the “head” instruction is given, the person designated as the head begins to run towards the end section, and because everyone is holding hands, all the players in the team follow him/her. -The player at the end goes under the arms of the previous player and again lines up along the line. -When the “end” instruction is given, the student at the end runs towards the head in the same way. -When the “middle” instruction is given, the students at the head and end run at the same time and pass under the arms of the two players nearest to the middle.
<b>Scoring:</b>	-The first team to line up along the line scores a point. -The team that reaches the pre-determined score wins the game.

<b>Safety Precautions</b>	-To prevent falls, the importance of moving as a team is emphasised.
	-Not
<b>7TH WEEK, 2ND IMPLEMENTATION (ACTUAL STAGE GAME)</b>	
<b>Game Name:</b>	<b>Hula-Hoop Handball</b>
<b>Game Description:</b>	This is a handball-based close contact game. The players are divided into two teams. The players try to score points inside the hoops without entering the penalty area by passing and dribbling.
<b>Focus of Target Skill</b>	-Discovering passing choices (e.g. dribbling, passing) for creating a scoring opportunity and moving the ball around. -Determining choices for getting the ball back while the opposing team is passing it around and making it difficult for opponents to score.
<b>Area and Equipment:</b>	-An open or indoor playing area suitable for the number of players. -4 cones -2 hula hoops -1 handball ball -A different coloured bib for players on each team -A small cone or something similar to mark the penalty area -1 roll of parcel tape.
<b>How is the Game Played?</b>	<b>Setting up the Game:</b> -One half of a basketball court or volleyball court can be used as the playing area depending on the number of players. -One hula hoop is stuck onto two cones with the parcel tape. This forms a goal. -The second goal is formed in the same way, and then the goals are placed in the designated areas. -A restricted area in the form of a semicircle or square with a diameter/width of 3 metres is created in front of each goal (the penalty area). The boundaries of the area are marked with cones. <b>Playing the Game</b> -The players are divided into two teams. -The game is started with a drop ball. - While one team tries to score a point in the opposing team's goal by dribbling and passing, the other team tries to stop them scoring a point in their goal.
<b>Scoring:</b>	- Each shot that hits the target scores a point. -The team that scores the most points within the designated period or that first reaches the designated score wins the game.
<b>Safety Precautions</b>	- It should be emphasised that players are to behave respectfully towards each other.

#### *Characteristics of the Implementer*

The implementer of the study is the second researcher. She completed her undergraduate, postgraduate and doctoral education in the field of sport education. In her doctoral thesis, she revealed the effect of sports-related games carried out as extracurricular activities on secondary school students' perceptions of their communication skill. At the university where she is employed, she conducts "Educational Games", "Educational Games in Sport" and similar courses.



### *Procedure*

In order to begin the research, first of all the required permission was obtained from the relevant official organisations. With this aim, the applied protocol, the participants' characteristics, the data collection tools and the ethical suitability of the experimental application was approved by the Academic Research Ethics Committee of Celal Bayar University. Since the study was at high school level, the necessary permission was obtained from the Provincial Directorate of National Education and the Provincial Governorship. Information was given to the high school students participating in the study and to their parents, and the "Informed Voluntary Consent Form" was signed. To ascertain that the students in the experimental group did not have any health problems that could prevent their participation in the study, doctor's reports were obtained.

Moreover, to be able to conduct the experimental application, the administrators and physical education teachers at the school where the study was to be conducted were met, the necessary announcements were made and approval was obtained. The school's area and equipment resources were examined and according to these resources the plan for the sports-related games implementation was given its final shape. Next, the students who were to voluntarily take part in the study were determined. A meeting was held with these students and information was given to them related to content, implementation, acquisitions and risks. At this meeting, the pretests of both the control and experimental groups were taken by requiring them to complete the measurement tools. The experimental group participated in the sports-related games activities over a period of 10 weeks, on 2 days per week and for 2 lesson periods per day (80 minutes). The activities were conducted as extracurricular activities. On completion of the implementation, the experimental and control groups were again required to fill in the measurement tools and the posttests were taken. The schedule for one implementation period is given below.

**Table 2.** Schedule for one Implementation Period

<b>Activity</b>	<b>Period</b>
Warm-Up	15 min.
Warm-Up Game	20 min.
Main Stage Game	35 min.
Cool-Down	10 min.

### *Data Analysis*

The frequency, arithmetic mean and standard deviation values of the data were determined, and to test the effectiveness of the experimental process in the pretest-posttest design with control group, the ANCOVA (Analysis of Covariance) statistical test technique was used. In the model, the pretest scores (covariates) were controlled, the group (experimental-control) scores were assigned as the independent variable and the posttest scores were assigned as the dependent variable. To determine whether or not the parametric tests of the data met the prerequisites, the skewness (between 0.37 and 1.739) and kurtosis (between -.030 and 2.724) values for each variable and the Levene's (equality of variances) test results were examined (Büyüköztürk, 200). In Table 3, the skewness and kurtosis values related to the normal distribution status of the total pretest-posttest scores for behaviour pattern subdimensions and behaviour problems in the experimental and control groups are given. There is one source which states that a skewness value in the range of  $\pm 3$  is regarded as acceptable (Kalaycı, 2008), while there is also a source which suggests transformation of variables with a value of over 1 (Yazıcıoğlu & Erdoğan, 2007). The presence of linear relationships between common and independent variables, which is one of the prerequisites in ANCOVA analysis, was determined by examining the scatter diagrams. The values related to equality of regression lines between common and independent variables, which is another of the prerequisites, were determined as [ $F_{\text{group*pretest(internalisation)}}(1.27)=.532$ ,  $p=.472$ ;  $F_{\text{group*pretest(externalisation)}}(1.27)=.043$ ,  $p=.836$ ;  $F_{\text{group*pretest(positive characteristics)}}(1.27)=.255$ ,  $p=.618$ ;  $F_{\text{group*pretest(total problems)}}(1.27)=.632$ ,  $p=.433$ ] respectively and the condition of equality of regression lines was established. A type 1 error of 5% was accepted.

**Table 3.** Skewness and Kurtosis Values Related to Pretest-Posttest Scores of Experimental and Control Groups

Group	Test	n	$\bar{X}$	Ss	Skewness	Kurtosis	Min.	Max.	
Experimental	Pretest	Internalizing	14	14.64	9.60	.370	-1.209	1.00	31.00
		Externalizing	14	13.57	9.90	1.388	1.852	2.00	38.00
		Positive characteristics	14	21.28	3.47	.054	-.751	15.00	27.00
		Total Problems	14	50.35	27.07	.581	-.988	15.00	96.00
	Posttest	Internalizing	14	12.07	9.91	1.739	2.724	4.00	38.00
		Externalizing	14	10.14	7.36	1.124	1.386	1.00	28.00
		Positive characteristics	14	20.78	3.90	-.427	-.411	14.00	27.00
		Total Problems	14	39.92	22.59	1.045	-.030	13.00	85.00
Control	Pretest	Internalizing	17	11.23	7.21	.422	.354	.00	28.00
		Externalizing	17	7.00	5.14	.037	-1.399	.00	15.00
		Positive characteristics	17	21.35	5.53	-.982	.039	10.00	28.00
		Total Problems	17	32.64	18.28	-.235	-1.326	3.00	58.00
	Posttest	Internalizing	17	13.17	8.04	.173	-.957	2.00	28.00
		Externalizing	17	8.35	4.83	.425	.266	.00	19.00
		Positive characteristics	17	19.88	4.84	-.927	.342	9.00	27.00
		Total Problems	17	36.58	18.04	.189	-1.054	8.00	67.00

### Results

In this section, findings related to the hypotheses put forward in the study are included.

Sports-related games have a significant effect on high school students' internalisation scores.

**Table 4.** Posttest Internalizing Problem Scores of Students in Experimental and Control Groups Adjusted for Pretest Scores

Group	N	$\bar{X}$ ; ss	$\bar{X}$ (Adjusted)
Experimental	14	12.07±9.91	10.38
Control	17	13.17±8.08	14.56

Examining the students' posttest mean scores for internalizing problems, adjusted according to their pretest scores in Table 4, it is seen that the scores for the experimental group ( $\bar{x}$ =10.38) were lower than those of the control group ( $\bar{x}$ =14.56). Accordingly, ANCOVA test was performed with regard to significance of internalizing problems score differences between groups, and the results are given in Table 5.

**Table 5.** ANCOVA Results Related to Comparison of Adjusted Posttest Internalizing Problem Scores of Students in Experimental and Control Groups

Source of Variance	KT	Sd	KO	F	p	$\eta p^2$
Model	1672.851	2	836.426	36.035	.000	.720
Pretest (Internalizing)	1663.476	1	1663.476	71.666	.000	.719
Group	128.996	1	128.996	5.557	.026	.166
Error	649.923	28	23.212			
Total	7305.000	31				

Examining Table 5, a significant difference was determined between the adjusted posttest internalizing problem scores of the experimental and control groups ( $F_{(1,28)}=5.557$ ,  $p=.026$ ). In other words, it is seen that following the implementation of the sports-related games activities, the students in the experimental group displayed fewer problem behaviours in terms of internalisation. Accordingly, it can be said that this difference originates from the sports-related games activities in which the experimental group took part. When the eta-squared values are examined, it is seen that being in different groups explains 16.6% of the variance in posttest internalizing problem scores.

Sports-related games have a significant effect on high school students' externalisation scores.

**Table 6.** Posttest Externalizing Problem Scores of Students in Experimental and Control Groups Adjusted for Pretest Scores

Group	N	$\bar{X}$ ; ss	$\bar{X}$ (Adjusted)
Experimental	14	10.14±7.36	7.82
Control	17	8.35±4.83	10.26

Examining the students' posttest mean scores for externalizing problems, adjusted according to their pretest scores in Table 6, it is seen that the scores for the experimental group ( $\bar{x}=7.82$ ) were lower than those of the control group ( $\bar{x}=10.26$ ). Accordingly, ANCOVA test was performed with regard to significance of externalizing problem scores differences between groups, and the results are given in Table 7.

**Table 7.** ANCOVA Results Related to Comparison of Adjusted Posttest Externalizing Problem Scores of Students in Experimental and Control Groups

Source of Variance	KT	Sd	KO	F	p	$\eta p^2$
Model	729.959	2	364.979	27.308	.000	.661
Pretest (Externalizing)	705.362	1	705.362	52.775	.000	.653
Group	38.364	1	38.364	2.870	.101	.093
Error	374.235	28	13.366			
Total	3706.000	31				

Examining Table 7, it is seen that following implementation of the sports-related games activities, the students in the experimental group displayed fewer problem behaviours with regard to externalizing problems but that the difference between the adjusted posttest externalization problem scores of the experimental and control groups was not significant ( $F_{(1,28)}=2.870$ ,  $p=.101$ ).

Sports-related games have a significant effect on high school students' scores for positive characteristics.

**Table 8.** Posttest Positive Characteristics Scores of Students in Experimental and Control Groups Adjusted for Pretest Scores

Group	N	$\bar{X}$ ; ss	$\bar{X}$ (Adjusted)
Experimental	14	27.78±3.90	20.80
Control	17	19.88±4.84	19.86

Examining the students' posttest mean scores for positive characteristics, adjusted according to their pretest scores in Table 8, it is seen that the scores for the experimental group ( $\bar{x}=20.80$ ) were higher than those of the control group ( $\bar{x}=19.86$ ). Accordingly, ANCOVA test was performed with regard to significance of positive characteristics score differences between groups, and the results are given in Table 9.

**Table 9.** ANCOVA Results Related to Comparison of Adjusted Posttest Positive Characteristics Scores of Students in Experimental and Control Groups

Source of Variance	KT	Sd	KO	F	p	$\eta p^2$
<b>Model</b>	234.933	2	117.467	9.521	.001	.405
<b>Pretest (Positive Characteristics)</b>	228.668	1	228.668	18.534	.000	.398
<b>Group</b>	6.832	1	6.832	.554	.463	.019
<b>Error</b>	345.454	28	12.338			
<b>Total</b>	13343.000	31				

Examining Table 9, it is seen that following implementation of the sports-related games activities, the students in the experimental group displayed a greater number of positive characteristics in their behaviours but that the difference between the adjusted posttest positive characteristic scores of the experimental and control groups was not significant ( $F_{(1,28)}=6.832$ ,  $p=.463$ ).

Sports-related games have a significant effect on high school students' total scores.

**Table 10.** Posttest Total Problem Behaviour Scores of Students in Experimental and Control Groups Adjusted for Pretest Scores

Group	N	$\bar{X}$ ; ss	$\bar{X}$ (Adjusted)
<b>Experimental</b>	14	39.92±22.59	32.49
<b>Control</b>	17	36.58±18.04	42.70

Examining the students' posttest mean scores formed from the total of the problem behaviour dimensions (anxious, withdrawn, somatic complaints, rule-breaking, aggressive behaviours, attention problems, social problems and thought problems), adjusted according to their pretest scores in Table 10, it is seen that the scores for the experimental group ( $\bar{x}=32.49$ ) were lower than those of the control group ( $\bar{x}=42.70$ ). Accordingly, ANCOVA test was performed with regard to significance of total problem behaviour score differences between groups, and the results are given in Table 11.

Sports-related games have a significant effect on high school students' total scores.

**Table 11.** ANCOVA Results Related to Comparison of Adjusted Posttest Total Problem Behaviour Scores of Students in Experimental and Control Groups

Source of Variance	KT	Sd	KO	F	p	$\eta p^2$
<b>Model</b>	8795.750	2	4397.875	39.255	.000	.737
<b>Pretest (Total Problems)</b>	8710.087	1	8710.087	77.745	.000	.735
<b>Group</b>	688.707	1	688.707	6.147	.019	.180
<b>Error</b>	3136.960	28	112.034			
<b>Total</b>	56925.000	31				

Examining Table 11, a significant difference was determined between the adjusted posttest scores formed from the total of the problem behaviour dimensions in the experimental and control groups ( $F_{(1,28)}=6.147$ ,  $p=.019$ ). In other words, it is seen that following the implementation of the sports-related games activities, the students in the experimental group displayed fewer total problem behaviours (anxious, withdrawn, somatic complaints, rule-breaking, aggressive behaviours, attention problems, social problems and thought problems). Accordingly, it can be said that this difference originates from the sports-related games activities in which the experimental group took part. When the eta-squared values are examined, it is seen that being in different groups explains 18% of the variance in posttest internalisation scores.

## Discussion and Conclusion

In this study, the effect of sports-related games activities on the behaviour patterns of high school students was examined. The study revealed that among the high school students' behaviours, the scores for internalizing and total problem behaviours were lower in the experimental group than in the control group. This finding supports the hypothesis related to the effect of sports-related games on problem behaviours. In other words, it can be said that sports-based games are effective activities used for reducing high school students' behaviour problems. It was seen that there was a difference in scores between the groups in favour of the experimental group in the externalizing and positive characteristics dimensions, but that this difference was not statistically significant. According to Yalçın (1998), the place where students will acquire positive behaviours is school. Implementation of physical education lesson programmes in schools must be prepared with consideration for students' expectations and wishes. In this case, students will take part in the lessons gladly and willingly. The acquisition of a number of skills can also be positively ensured in this context (as cited in Özdağ, Kürkçü, & Pepe, 2008). However, the specified syllabi and limited lesson contents may not always provide for this. In this context, sports-related games conducted as extra-curricular activities are an important opportunity for students to develop positive, unproblematic behaviours within school boundaries. Whereas sports-related games provide an opportunity in schools for cognitive, emotional, social and physical development for young people who do not require a sporting identity (Tepeköylü Öztürk et al., 2015), the use of computers as a tool for games with the aim of fulfilling the need for games results in less physical and social activity on the one hand (Vandewater, Shim, & Caplovitz, 2004) and takes the games concept to a different level on the other.

In the formation of behaviour problems, it is possible to list many factors such as family structure, culture, school, social conditions and economic level, but for solving behaviour problems, participation in a sporting activity, particularly during adolescence, is strongly recommended (Donaldson & Ronan, 2006). In studies in which they examined the relationship between level of active participation in sport and emotional and behavioural problems, Kantomaa et al. (2008) found that being physically inactive in the adolescent period was related to a number of emotional and behavioural problems. In another study, it was determined that being a sportsperson in sports clubs resulted in lower depression figures than for those who did less sport (Björnsdóttir, 2014). In a study in which 16,230 participants aged over 15 were contacted, it was found that those who were physically more active generally achieved a better level of mental health (Abu-Omar, Rütten, & Lehtinen, 2004). It was determined that among young adult students, those who were more active in sport had significantly lower levels of negative effect, somatic symptoms, depression symptoms and pessimistic life orientation, whereas they had significantly higher levels of positive effect, emotional stability and self-efficacy beliefs (Malabo, Van Eeden, & Wissing, 2007). It is recommended that participation in regular sporting activity for children and youths be advocated as a way of making good use of their leisure time. For, activities like these not only develop physical characteristics for combatting obesity, they also bring about improvement in psychological and social problems (Eime, Young, Harvey, Charity, & Payne, 2013; Salmon, 2001). Furthermore, it was also determined that in organised sports environments, an environment was created in which a good relationship between trainers and athletes, one suitable for social ethics, and also one where they could acquire social behaviours, could be established for children aged 12-18 (Rutten et al., 2007).

The internalizing behaviours in the content of the study consist of anxious/depressed, withdrawn/depressed and somatic complaints. It is seen that the difference obtained in the experimental group in terms of internalizing behaviours corresponds with the findings in the related literature related to sport, exercise and movement activities. In a study conducted with the scanning model, in inactive young people aged 15-16, anxious/depressed and withdrawn/depressed were determined in males and withdrawn/depressed and somatic complaints were found in females (Kantomaa et al., 2008). In another cross-sectional and spatial study, regular physical exercise was found to be related to eliminating several disorders such as anxiety (Ströhle et al., 2007). Directing young people towards an active lifestyle when still in childhood can prevent the development of internalizing and externalizing behaviour problems in the adolescent period (Wu, Bastian, Ohinmaa, & Veugelers, 2017). In this study, the active



involvement of everyone in the sports-related games applied gave the opportunity for environments to be created in which the students could be successful. In this process, by making modifications according to individual characteristics within the same game instead of supporting different behaviours for different individuals, an attempt to involve each individual in similar contests and their active participation was ensured. For, sports-related games attempt to maximise student participation by including students with different characteristics and proficiencies in absorbing, entertaining and safe sporting environments without giving importance to their sporting skills or pasts. Therefore, similar opportunities are created for students with different characteristics to succeed in different contests. In this way, it is considered that by ensuring active participation, the opportunities created for everyone to succeed will sustain a feeling of "I can do it" for positive personality development in students (Tepeköylü Öztürk, 2012). This is also an important factor in changing problematic behaviours in a positive direction.

### **Limitations and Recommendations**

It is considered beneficial to mention the limitations below and to make recommendations for future research. The first limitation can be said to be the fact that some subjects could not be persuaded to participate in the research until the end. Since the sports-related games were carried out based on the principle of voluntary participation and no obligation was involved, participation may have been affected by the ups and downs of the adolescent period. Another important limitation is the fact that the data were obtained with a measurement tool based on self-assessment. Moreover, observational data could not be obtained. Qualitative data were not obtained that could facilitate in-depth examination of the research findings, which were obtained by quantitative data. Furthermore, there is a general limitation related to the acquisition of implementation information by physical education teachers in schools regarding sports-related games.

#### *Recommendations Aimed at Implementation of Research Results*

- Sports-related games implementations covering longer periods can be planned that will enable the desired improvement in high-school students' behaviours and in their externalisation and positive characteristics scores.
- Changes in behaviour scores for non-clinical behaviour problems can be determined with different game implementations.
- Data were obtained with a measurement tool based on self-assessment. By means of the teacher's (TRF) and parent's (CBCL) versions of the form used, information can be gathered from three different sources, and the effect of sports-related games on internalisation, externalisation, positive characteristics and total scores can be examined with the data that comes from these three sources.

#### *Recommendations Aimed at Future Studies*

- Studies in which a larger number of participants begin can enable the participation of a greater number of subjects until the end of the study, and, moreover, rewards can be made depending on the characteristics of the age group.
- In future studies to be conducted, the effects of sports-related games on students' behaviours can be recorded through observation and information can be obtained in a different dimension.
- By means of qualitative data, the behavioural changes experienced by adolescents can be expressed according to their own perceptions and this can contribute to a deeper understanding of these changes.
- Future studies can be carried out to examine the physical, psychological, social and cognitive effects of sports-related games with activities designed for students at different levels of education.
- Schools must deal with students' behavioural development to the same extent as they are responsible for their academic development. Therefore, the implementation of activities in this direction both within and outside lessons can be possible by making the work of physical education teachers at all levels easier.

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