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## Investigation of the Effects of the Training Program on Negative Nutrition and Technology Addiction in Young Athletes

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### Abstract

In this study, the effect of a training program developed for healthy nutrition, increasing physical activity and reducing technological addiction on the related behaviors and habits of young athletes was examined. In the study, which was carried out according to the pre-test post-test model with control group, the curriculum developed for the research variables in the experimental group was applied in 4 modules. In the study, no experimental application was applied to the participants in the control group. There were 30 young athletes in the experimental group and 30 young athletes in the control group. Young athletes in the experimental and control groups were equal to each other in terms of gender, age, eating habits and physical activity. 'Dutch Nutrition Behavior Scale', 'Technological Addiction Scale' and 'Physical Activity Questionnaire' were used as data collection tools in the study. According to the findings of the study, it was found that the negative nutritional behaviors and technological addiction of the athletes in the experimental group decreased, while their physical activity levels increased compared to their peers in the control group.

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### Introduction

Genetic structure, appropriate training and nutrition are the main factors affecting the performance of athletes (Cui et al., 2022; Markus et al., 2021). Although personal physiological and psychological factors, training status, nutritional status, health, environmental factors, sport-specific characteristics play a role in the formation of high sportive performance, it is difficult to say which factor is more effective in maximum performance. However, it is undoubtedly a fact that it is impossible to expect high performance from an athlete with improper nutrition and impaired health (Guest et al., 2019). In fact, recent research shows that poor diet is responsible for more deaths globally than any other risk factor, including tobacco smoking (GBD 2017 Diet Collaborators, 2019). In light of this impact, diet, physical activity behaviors and technology addiction have been identified as priority areas for public health action (Beaglehole 2011; WHO 2013; WHO 2016). Since these behaviors develop early in life, children and adolescents are the target population for prevention (WHO 2013; WHO 2016).

A balanced consumption of carbohydrates, fats, proteins, vitamins, minerals and water, which are essential nutrients to meet the energy needs of vital activities in our body, to protect our health, to enable physical growth

and development, to adapt to training and to maximize the effects of training can be defined as nutrition (Condo et al., 2019; Malsagova et al., 2021). In the United States, it has been found that only less than 1% of adolescents consume the food groups in the food pyramid at the recommended rates (at least 6 servings of cereals, at least 3 servings of vegetables, at least two servings of fruits, meat and dairy groups, as little as possible fat and confectionery) (Stang & Bayerl, 2003). As a result of inadequate and unbalanced consumption of food groups, problems such as developmental delay, obesity, stunting, underweight for height and delayed puberty may occur. In adolescents, there is a significant decrease in diet quality and especially in the consumption of vegetables and fruits after primary school and with increasing age (Nelson et al., 2009; Neumark-Sztainer et al., 2003).

Scientific studies on the importance of nutrition in the performance of athletes are increasing day by day. In line with the data obtained, scientific information on sports nutrition is developed and trainings are organized for athletes on nutrition. Optimal nutrition provides quicker recovery between training and competitions, reduces fatigue and enables longer training (Rodriguez, Di Marco, & Langley, 2009; Benardot, 2020). It is expected that athletes who participate in competitions and play sports professionally should not have deficiencies in their knowledge about nutrition. In various studies, the main sources from which athletes receive education are coaches, team doctors, families, friends and media organizations (Bagaric & Strucic, 2021; Gultom et al., 2022; Jessri et al., 2010; Zawila, Steib & Hoogenboom, 2003).

Athletes should follow special nutrition programs before, during and after training to maximize their mental and physical performance. Especially in long-term, intensive training, athletes should consume the recommended amounts of nutrients to meet their needs (Follong et al., 2020; Maughan & Shirreffs, 2010). In addition, individuals engaged in sports should pay attention to their nutrition programs because their energy needs are higher. Inadequate and unbalanced nutrition in individuals engaged in sports can lead to problems such as loss of muscle mass, hormonal disorders, injury and prolongation of the healing process (Thomas, Erdman & Burke, 2016). In particular, the lack of nutritional information or incorrect information in the nutrition knowledge of coaches causes athletes to be misinformed and misinformed.

It is the adequate and balanced intake of nutrients by making arrangements including training and competition periods according to the athlete's age, gender, daily physical activity and sports branch. While making these arrangements, the height and weight of the athlete, body fat percentage, habits related to nutrition, health status, social and economic conditions should be taken into consideration (Güneş, 2015). Athletes may need two or three times more energy than individuals who do not do sports (Güneş, 2015). The energy requirement of athletes is determined by the type of exercise, intensity, intensity, amount of energy expended, and the nutrients that provide energy (Jenner et al., 2019; Meyer, O'Connor & Shirreffs, 2007).

Athletes who are engaged in competitive branches of sport may occasionally face various challenging factors during the competition. Competition, as the name suggests, is to struggle with one or more factors. One of these factors is the psychological dimension. In order for athletes to demonstrate their high performance at a high level, it is important for them to be able to cope with situations that will affect them psychologically negatively. In other words, one of the important arguments of being able to perform at a high level is to be able to control their emotions. As a matter of fact, some researches have started to be carried out in this field and as a result, it has

been considered that psychology is an important argument for sportive success that affects sportive performance (Madrigal, Hamill, & Gill, 2013; Watson, Connole & Kadushin, 2011).

The momentum achieved through sports supports spiritual development along with the increase in the quality of life. Today, through the studies conducted by many scientists, it is possible to say that it is possible to reach a healthy and happy life through sports (Cox, 1998). The pressure and stress that athletes are exposed to, intelligence, motivation, focusing and many other issues have been investigated to affect the increase in athlete performance (Weingberg, Could, & Weingberg, 2003; Gardner & Moore, 2006; Crocker, 1993). In order to increase the physical performance of students studying in the field of sports, they should be informed about issues such as adequate and balanced nutrition and technology addiction. For this purpose, trainings, conferences, etc. should be organized regularly during and after school education by experts in the field of nutrition for young athletes. In addition to the theoretical information provided to the students in these activities, practices should be carried out to transfer the information to sports life (Crocker, 1993).

Regular physical activity/exercise is important for physical, mental and emotional health, increases energy expenditure and has beneficial effects on maintaining body weight or weight loss (Nagorsky & Wiemeyer, 2020). It maintains normal serum cholesterol and glucose levels and increases high-density lipoprotein (HDL) cholesterol. During exercise, endorphins, known as natural tranquillizers, are released. It keeps the cardiovascular and skeletal system healthy, thus delaying ageing (Brady, 1988). The lack of physical activity has led to the onset of obesity, diabetes, cardiovascular diseases, high blood pressure, cholesterol, stroke and many cancers in children (Castelli, Hillman, Buck & Erwin, 2007). Regular physical activities improve mental health, musculoskeletal health and immune system. Diabetes, various respiratory disorders, vascular and heart diseases, high blood pressure, various cancers, stroke, vascular disorders and many similar disorders affect life and its duration (Allison, Dwyer & Makin, 1999). Physical activity, which is defined as any body movement that requires more energy than the resting state, also enables body movements that are put forward with the help of muscles that hold your muscles or skeleton that need energy expenditure together (Torbeyns, Bailey, Bos & Meeusen, 2014). To increase the amount of energy expended physically and to change a sedentary lifestyle, 150 minutes of physical activity per week at moderate intensity is recommended (Hallal, Victora, Wells & Lima, 2014).

Body weight increases as a result of the imbalance in energy intake from food and physically expended energy as a result of sedentary lifestyle caused by physical inactivity. In studies, it has been found that the physical activity level of people who spend a lot of time in activities with long sitting time such as watching television decreases and the incidence of obesity increases (Pitta et al., 2006). Technological developments that make life easier lead to modern but sedentary societies that carry out their daily shopping over the internet. The amount of energy expended by the masses, whose walking distances and out-of-home activities are gradually decreasing, is also decreasing. With the developing technology, individuals tend towards a sedentary lifestyle and lead a sedentary life. Industrialization and technological innovations brought by urbanization gradually increase physical inactivity and cause individuals and especially young people to spend more time in sedentary activities such as watching television, sitting in front of the computer, playing games on the internet (Salmon et al., 2000).

The opportunities provided by the development of technology have prevented people from leading a mobile life. In the results of scientific studies, it has been found that sedentary lifestyle causes obesity in children, young people and adults. Human beings tend to maintain a sedentary life or an active lifestyle from the first years of their life until the end of their life (Larsen, McMurray & Popkin, 2000). Physical activity is also associated with physiological and psychological improvements. Young people need to develop strong physical activity habits in order to achieve both health benefits and positive behaviors that can be maintained throughout life (Allison, Dwyer & Makin, 1999). Factors affecting well-being, health and living conditions have changed radically in the last fifty years with new technological changes.

As transportation has become easier, energy expenditure of individuals has decreased significantly in daily life. Regular participation in physical activities positively affects psychosocial and physical health (Biddle, 1995). A sedentary lifestyle constitutes a serious risk factor for some diseases that become more common in later life. Regular physical activity is recognized as health protection and improvement and has positive and effective results on many known health problems (Castelli et al., 2007). Individuals with technology addiction spend a lot of time during the day without physical activity and have been found to have an unhealthy diet in studies (Kim et al., 2010; Li et al., 2014). There is a relationship between spending time at the computer for a long time and eating habits, decreased physical activity and increased obesity (Shields & Behrman, 2000). Internet addicts may face problems such as insomnia, weight gain due to inactivity, and irregular eating habits (Young et al., 2000).

In the literature, it has been observed that there are findings that problematic technology use causes individuals to experience pain in areas such as eyes, back, neck and head and to have problems with nutrition (Baranowski et al., 2011; Zheng et al., 2016). In addition, in another study conducted by Chi, Hong, and Chen (2020) in China, it can be said that problematic technology use has negative effects on the physical, psychological and social lives of individuals. The negative use of technology causes many health problems in children and adolescents. It has negative effects on physical and social development with problems such as depression, anxiety, sleep problems, attention deficit, irregular nutrition, physical inactivity in children and adolescence (Kim et al., 2010; Lam, Peng & Mai, 2009). One of these negative effects is negative eating habits that affect the quality of life of young people by affecting their whole life. As the time spent in front of the screen increases, the risk of obesity increases with the consumption of excessive amounts of snacks, disruption of nutritional balance, increase in physical inactivity, decrease in metabolic rate and exposure to food advertisements (Baranowski et al., 2011). In a study conducted in adolescents in Switzerland, a positive relationship was found between television and internet addiction and obesity (Ortega, Ruiz & Sjöström, 2007). The risk of obesity increases due to consumption of unhealthy products in front of the screen, irregular meals, lack of portion control, and consumption of ready-to-eat foods. Technology addiction is not only limited to the internet, but also includes all types of addiction that have emerged with the development of technology such as television addiction, mobile addiction, virtual game addiction, and screen addiction (Sharma et al., 2017; Selwyn & Aagaard, 2021).

On the other hand, it is argued that technology addiction pushes individuals to a passive lifestyle, disconnects them from social life, causes many negative physiological effects, especially circulatory, respiratory, musculoskeletal and skeletal systems, as a result of sitting still for hours, makes them prone to violence, especially

due to violent content, and most importantly, turns excessive users into technology addicts (Gentile & Anderson, 2006; Szabo et al., 2013). Loprinzi and Cardinal (2011) stated that long-term engagement with technology-based tools such as computers and video games can be an example of sedentary behaviors. In the light of the related literature, in this study, the effect of a training program developed to increase healthy nutrition, physical activity and reduce technological addiction on the related behaviors and habits of young athletes was examined. In parallel with the general purpose of the research, the training program application, which was prepared in four sessions in parallel with the general purpose of the research, consists of activities, behavioral analyses and applications for the purposes of "healthy and balanced nutrition", "improving physical activity", "gaining the ability to cope with technology addiction", "gaining the habit of regular sports", "reducing negative nutrition behaviors".

## **Method**

This study was conducted according to the experimental method. The study carried out to determine the cause-effect relationships between variables by examining any event, phenomenon, object, person and factor in the research and to compare and measure the results is called experimental method. In the research, pretest-posttest model with control group was used. There is an experimental group and a control group in the research. The groups were formed by random assignment (sampling) method. In both groups, measurements are made before and after the experiment (Privitera, 2022; Bloomfield & Fisher, 2019). In this study, experimental and control groups were formed; athletes in these two groups were selected from participants who participated in sports activities in 2022-2023.

In the study, 60 young amateur athletes from different sports branches in Kazakhstan participated. Experimental and control groups were formed randomly. Experimental and control groups were kept equal in terms of age, gender, sports branch, previous generation habits and frequency of technology use. The athletes were divided into two groups of 30 people each as experimental and control groups. There were 15 female and 15 male athletes in both groups. The average age of the athletes in the experimental group was 16.8 years and the average age of the athletes in the control group was 16.9 years. Before the test and training applications, it was seen that there were no health problems for the athletes to participate in the study. Subjects were selected for the experimental and control groups according to the following criteria.

Inclusion criteria:

- Volunteering to participate in the study
- Being a young athlete (15-18 years old)
- Not receiving nutrition education
- Not receiving any medical nutrition therapy

Exclusion criteria:

- Not volunteering to participate in the study
- Being outside the 15-19 age range
- Nutrition education
- Having a chronic or metabolic condition requiring medical nutrition therapy

## **Experimental Implementation**

The experimental process of the study was categorized into two groups as experimental and control. Before the experimental procedures, the measurement tools of the research were applied to the experimental and control groups as pre-test. In this context, nutrition education, physical activity and technology addiction reduction program was applied in the experimental group. Within the framework of this application, face-to-face training/seminar was given to the experimental group collectively. The trainings lasted two hours each and were held in the conference hall during the guidance hour. A total of 4 training sessions were held one week apart.

In the first session, sustainable healthy nutrition was discussed. Participants were taught body mass index calculation and interpretation. The risks of obesity, examples of balanced menus and the differences between balanced menus and the menus that students are likely to consume were examined. In the second session, sports nutrition, positive and negative nutrition behaviors were discussed. In the third session, active participation in sport activities were carried out. Active participation in sports included setting individual and team goals, performing under pressure, skill development, team spirit, fun, success, physical fitness, being active, coping with difficulties, overcoming success and failure, increasing self-confidence, and developing decision-making strategies. In the fourth session, activities were carried out to reduce technology addiction.

In this context, the training program on technology addiction, conscious technology use program, creating time schedules to reduce the amount of time in technology use, planning and implementation of concrete places, people or things to be done to reduce technology addiction were included. After the applications in the experimental group, the measurement tools of the study were applied as post-test. In the control group, only the pre-test and post-test of the research were applied and no training was given.

## **Data Collection Tools**

The questionnaire form applied to young athletes at the beginning and end of the study consists of four sub-sections. The first part consists of questions prepared by the researcher to learn the demographic characteristics, anthropometric measurements (height, body weight, waist circumference, body mass index), physical activity levels, food and beverage consumption frequencies of the participants. In the second scale, the participants were asked to answer Likert-type questions to evaluate their nutritional behaviors. The third scale includes questions measuring the participants' technology addictions. In the fourth scale, the participants were asked to answer questions measuring their physical activity levels.

### *Dutch Eating Behavior Scale*

The scale developed by Van Strein et al. (1986) was adapted into Kazakh by the researchers and the validity and reliability study was conducted on young athletes. The scale consists of three subscales: emotional eating, restrictive eating and external eating. Factor loadings ranged from 0.53 to 0.92. Cronbach alpha values for the subscales are between 0.88 (external eating) and 0.95 (emotional eating). The internal consistency coefficient of

the whole scale was found to be 0.92. In the test, which is worked on a 5-point Likert-type scale, the questions are asked to be answered by ticking one of the options: always, very often, often, sometimes, rarely and never. Items 11, 12, 13, 14, 15, 16, 16, 17, 18, 18, 19, 20, 21, 22, 23 measure emotional eating sub-dimension, items 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 measure restrictive eating sub-dimension, items 24, 25, 26, 27, 28, 29, 30, 31, 32, 33 measure external eating sub-dimension. High scores obtained in the scale indicate that eating behavior is at a negative level.

#### *Physical Activity Questionnaire*

The Physical Activity Questionnaire (PAQ) is a questionnaire developed by Kowalski et al. in 1997. FAS was designed to evaluate the physical activity of young athletes in the last 7 days during their sports period (15). It consists of 9 questions in which the answers given to the questionnaire are scored between 1 and 5 and the 10th question which questions whether there is an obstacle to physical activity during the last week. A score of '1' corresponds to low intensity physical activity and a score of '5' corresponds to high intensity physical activity, but the last question is not included in the scoring. The total score is obtained by calculating the average score of all questions. The minimum score that can be obtained from the scale is 9 and the maximum score is 45. The validity and reliability study of this questionnaire in Kazakh was carried out by the researchers. Cronbach's alpha coefficient of the scale was calculated as .79.

#### *Technology Addiction Scale*

The adaptation of the Technology Addiction Scale developed by Young (1996) to determine the level of addiction in high school students was carried out by the researcher. The scale, which consists of four sub-dimensions: using social networking (6 items), instant messaging (6 items), playing online games (6 items) and using websites (6 items), is graded on a five-point Likert scale (1-never, 2-rarely, 3-medium frequency, 4-very often, 5-always). In this study, the procedures were carried out on the total scores of the scale. The lowest score of the total score of the Technology Addiction Scale is 24 (24×1) and the highest score is 120 (24×5). There are no reverse scored items in the scale. As a result of the analyses, the reliability of the scale was calculated with internal consistency and the Cronbach Alpha ( $\alpha$ ) value was 0.88.

### **Data Analysis**

While evaluating the findings obtained in the study, SPSS 26.0 statistical package program was used for statistical analyses. Descriptive statistical methods (number, frequency, percentage, mean, standard deviation) were used to evaluate the study data. The dependent variables of the study were individuals' nutritional behavior, technology addiction and physical activity level. The independent variable was the nutrition education, physical activity and technology addiction reduction program applied as an experimental procedure. Shapiro-Wilk normal distribution test was applied to select the appropriate test before the comparison of quantitative data. In the analysis of quantitative data, Independent sample t test was used in the comparisons between groups due to the formation of parameters showing normal distribution between the two groups.

## Findings

The comparison of the pretest nutritional behaviors of the young athletes in the experimental and control groups is summarized in Table 1. According to the analyses, the mean pre-test nutritional behavior of the experimental group was found to be 3.04 and 3.00 in the control group. A t value of 0.20 was calculated between the pre-test mean scores of the two groups. According to this finding, there was no significant difference between the pre-test mean scores of the two groups ( $p>0.05$ ). It is understood that the students in the experimental and control groups had equal level and partially negative eating behaviors before the experimental procedures of the study.

Table 1. Comparison of Nutritional Behaviors of Athletes in Experimental and Control Groups in Pre-test

Pre-test	Group	N	Mean	Std. Deviation	t	p
Nutritional Behavior	Experimental	30	3.04	0.72	0.20	0.84
	Control	30	3.00	0.86		

The comparison of the pre-test physical activity levels of the young athletes in the experimental and control groups is summarized in Table 2. According to the analyses, the mean pre-test physical activity scores of the experimental group were 22.30 and 22.37 in the control group. The t value of -0.08 was calculated between the mean pre-test physical activity level scores of the two groups. According to this finding, there was no significant difference between the mean physical activity pre-test scores of the two groups ( $p>0.05$ ). It is understood that the physical activity levels of the young athletes in the experimental and control groups were equal before the experimental procedures of the study.

Table 2. Comparison of Physical Activity Levels of Athletes in Experimental and Control Groups in Pre-test

Pre-test	Group	N	Mean	Std. Deviation	t	p
Physical Activity	Experimental	30	22.30	3.85	-0.06	0.96
	Control	30	22.37	5.36		

The comparison of the pre-test technological addiction levels of the young athletes in the experimental and control groups is summarized in Table 3. According to the analyses, the mean pre-test technological dependence scores of the experimental group were 3.16 and 3.12 for the control group. A t-value of 0.37 was calculated between the two groups' technological dependency pre-test mean scores. According to this finding, there was no significant difference between the two groups' technological addiction pre-test mean scores ( $p>0.05$ ). It is understood that the technological addiction levels of the athletes in the experimental and control groups were equal and partially high before the experimental procedures of the study.

Table 3. Comparison of Technological Addictions of Athletes in Experimental and Control Groups in Pre-test

Pre-test	Group	N	Mean	Std. Deviation	t	p
Technology Addiction	Experimental	30	3.16	0.50	0.37	0.71
	Control	30	3.12	0.48		

The comparison of the nutritional behaviors of the young athletes in the experimental and control groups in the post-test after the experimental procedures is summarized in Table 4. According to the analyses, the mean post-test nutritional behavior scores of the experimental group were 2.66 and 3.01 for the control group. A t value of -2.29 was calculated between the mean post-test scores of the two groups after the experimental interventions. According to this finding, a significant difference was found between the post-test mean scores of the two groups ( $p < 0.05$ ). After the experimental procedures of the study, a significant decrease was observed in the negative eating behaviors of the athletes in the experimental group compared to their peers in the control group.

Table 4. Comparison of Nutritional Behaviors of Athletes in Experimental and Control Groups in Post-Test

Post-test	Group	N	Mean	Std. Deviation	t	p
Nutritional Behavior	Experimental	30	2.66	0.54	-2.29	0.03
	Control	30	3.01	0.79		

The comparison of the physical activity levels of the young athletes in the experimental and control groups in the post-test after the experimental procedures is summarized in Table 5. According to the analyses, the mean post-test physical activity scores of the experimental group were 25.10 and 22.53 in the control group. A t value of 2.46 was calculated between the mean physical activity post-test scores of the two groups after the experimental interventions. According to this finding, a significant difference was found between the physical activity post-test mean scores of the two groups ( $p < 0.05$ ). After the experimental procedures of the study, a significant increase was observed in the physical activity of the athletes in the experimental group compared to their peers in the control group.

Table 5. Comparison of Physical Activity Levels of Athletes in Experimental and Control Groups at Post-test

Post-test	Group	N	Mean	Std. Deviation	t	P
Physical Activity	Experimental	30	25.10	4.03	2.46	0.02
	Control	30	22.53	4.04		

The comparison of the technological dependency of the young athletes in the experimental and control groups in the post-test after the experimental procedures is summarized in Table 6. According to the analyses, the mean of the post-test technological dependence scores of the experimental group was -2.68 and the mean of the control group was 3.05. The t value of -2.73 was calculated between the post-test technological dependency mean scores of the two groups after the experimental applications. According to this finding, a significant difference was found between the technological dependence post-test mean scores of the two groups ( $p < 0.05$ ). After the experimental procedures of the study, a significant decrease was observed in the technological addiction of the athletes in the experimental group compared to the athletes in the control group.

Table 6. Comparison of Technological Addictions of Athletes in Experimental and Control Groups in Post-test

Post-test	Group	N	Mean	Std. Deviation	t	p
Technology Addiction	Experimental	30	2.68	0.61	-2.73	0.01
	Control	30	3.05	0.42		

## **Discussion and Conclusion**

In this study, the effects of increasing physical activity and reducing negative eating behaviors and technological addictions program applied to young athletes were tested with experimental method. According to the preliminary findings of the study, the experimental group athletes, to whom the program of increasing physical activity, reducing negative eating behaviors and technological addictions was applied, showed a significant decrease in negative eating behaviors compared to their peers in the control group. In this respect, the experimental applications of the research were effective. This finding is similar to the results of the studies conducted by Dollahite et al. (2003), Eicher-Miller et al. (2009), Melchior et al. (2009), Mortazavi et al. (2021), Sánchez-Díaz et al. (2020), and Tam et al. (2019). Using a pre-test post-test group design, Dollahite et al. evaluated the effect of nutrition education on food insecurity and dietary behaviors among participants. After the training program, both groups showed a significant decrease in food insecurity score. In the experimental group receiving nutrition education, food insecurity, nutritional inadequacy and negative eating behaviors improved significantly compared to the control group (Eicher-Miller et al., 2009).

It is considered important to employ theories and models that can help behavior change as a result of educational interventions together with individual characteristics and the surrounding environment in correcting nutritional behaviors (Mortazavi et al., 2021). Behavior change theories and models can be very helpful in the design and evaluation of comprehensive nutrition education programs (Hamayeli et al., 2009). Such education programs contribute to raising awareness, developing attitudes and skills conducive to healthy eating, improving access to healthy food and creating healthy choices, especially when choosing food on a limited budget (Mello et al., 2010; Melchior et al., 2009).

Most sports research focusing on sports nutrition has reported the health and performance-related effects of diets (Durkalec-Michalski et al., 2018; Kondo et al., 2018; Paoli, Bianco & Grimaldi, 2015) and nutrition education programs (Tam et al., 2019). Nutrition education interventions are specific programs designed to help target populations change their eating habits and/or increase their nutrition knowledge (Murimi et al., 2017). Considering that increased nutritional knowledge can provide significant positive changes in eating habits in athletes, these results are particularly important for young athletes (Tam et al., 2019). In turn, improved eating habits can improve performance as well as the development of positive habits in young athletes (Bentley, Mitchell & Backhouse, 2020). Therefore, nutrition education interventions appear to be a key strategy to optimize the performance of young athletes.

Another finding of the study is the effects of the program of increasing physical activity, reducing negative eating behaviors and technological addictions on the physical activity of young athletes. According to the research findings, the experimental procedure applied in the experimental group led to a significant increase in the physical activity levels of young athletes. These findings are supported by the results of the studies conducted by Cragie (2011), Crespo et al. (2012), Frenn et al. (2013), Golley et al. (2011), Loveman et al. (2015), Mikkilä (2005), Morgan et al. (2020), Smit (2015), Telama (2009), and Van Lippevelde et al. (2012).

Developing healthy eating and physical activity behaviors during childhood and adolescence is an important step in preventing obesity and negative dietary behaviors, especially as these behaviors are likely to persist into adulthood (Cragie et al., 2011). For example, long-term prospective cohort studies have shown that diet and television viewing habits in childhood and youth are predictors of similar behaviors decades later (Mikkilä 2005; Smit 2015). In this context, in addition to the formation of adequate and balanced nutrition habits, it is also very important to acquire regular physical activity habits during this period. It is noted that physical activity decreases during the transition periods from childhood to adolescence or from adolescence to adulthood (Telama, 2009). Loveman (2015) examined the effectiveness of diet, physical activity and behavioral interventions given to children for the treatment of overweight and obesity and found significant evidence that they help to reduce children's body mass index (BMI).

The last finding of the research is about the effects of the training program on increasing physical activity, reducing negative eating behaviors and technological addictions on the technological addictions of young athletes. According to the findings of the study, the experimental process applied in the experimental group led to a significant decrease in the technological addictions of young athletes. These findings are similar to the findings of the studies conducted by Davis (2001), Kim (2008), Roij, Zinn, Schoenmakersn, & Mheen (2012). It is seen that intervention programs with proven effectiveness include activities related to time management such as regulating the time spent on the internet and making daily time planning (Kim, 2008; Young, 2007). The fact that similar activities for using time effectively are included in the educational content program shows that it has common points with other intervention programs and is effective.

When the literature is examined, it is seen that educational intervention programs are insufficient in dealing with technology addiction. However, it is seen as a problem that needs to be dealt with in terms of the gradual decrease in the age of technology addiction tendency, affecting children, adolescents and young athletes especially in their academic and sportive processes. Based on this, it has been very effective to plan and implement the training program prepared with a holistic approach to ensure healthy and balanced nutrition, increase physical activity and conscious use of technology. The high incidence of technology addiction in young athletes makes the intervention and prevention programs more important. At this point, there is a need to develop and disseminate intervention programs based on nutrition, psychological and physical activity and educational content for healthy body and mind development. In addition, activities aimed at behavioral change for nutrition and physical activity should be supported. Community participation should be ensured for healthy nutrition and continuous physical activity and state policies should be established. Schools, sports clubs, teachers and coaches should help their athletes to adopt and maintain healthy eating and physical activity behaviors.

## **Notes**

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