T.C.
YEDİTEPE UNIVERSITY
INSTITUTE OF HEALTH SCIENCES
DEPARTMENT OF NUTRITION AND DIETETHICS

THE EFFECT OF PHYSICAL ACTIVITY ON EMOTIONAL APPETITE IN UNIVERSITY STUDENTS.

MASTER THESIS

GÖZDE ALTUNTAŞ

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SUPERVISOR
Assoc. Prof. Dr. Binnur OKAN BAKIR

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	Title, Name-Surname (Institution)
Chair of the Jury:	Asst.Prof.Dr. Esen KARACA (İzmir Demokrasi University)
Supervisor:	Asst.Prof.Dr. Binnur OKAN BAKIR (Yeditepe University)
Member/Examiner:	Asst.Prof.Dr. İrem KAYA CEBİOĞLU (Yeditepe University)

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Prof. Dr. Bayram YILMAZ

Director of Institute of Health Sciences

DECLARATION

I hereby declare that this thesis is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree except where due acknowledgment has been made in the text.

16/06/2021

GÖZDE ALTUNTAŞ

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LIST OF SYMBOLS AND ABBREVIATIONS

ACSM: American College of Sports Medicine

AgRP: Agouti-related peptide

AHA: American Heart Association

ARC: Arcuate nucleus

ATP: Adenosin Trifosfat

BMI: Body Mass Index

CART: Cocaine and amphetamine regulated transcript

CDC: Centers for Disease Control and Prevention

Cm: Centimeter

GLP-1: Glucagon Like Peptid-1

PYY: Peptide YY

PP: Pancreatic polypeptide

Kg: Kilogram

Kg/m2: Kilogram/Meters2

IPAQ-SF: International Physical activity Qustionnaire- short form

MET: Metabolic Equivalen

Max: Maximum

Min: Minimum

NPY: Neuropeptide Y

%: Percentages

POMC: Nöropeptid Proopiomalonocortin

SD: Standart Deviation

SPSS: Statistical Package For Social Sciences

WHO: World Health Organization

Tip 2 DM: Tip 2 Diabetes Mellitus

VO2 max: Maximal oxygen consumption

ABSTRACT

Altuntaş, G. (2021). The effect of physical activity on emotional appetite in university students. Yeditepe University, Institute of Health Science, Department of Nutrition and Dietetics, Master's Thesis, Istanbul.

This study was conducted to evaluate the effect of emotional appetite on physical activity in university students. For this purpose, a questionnaire study was applied to 339 students between the ages of 18-65, studying at Yeditepe University. General information questionnaire form, emotional appetite questionnaire (EMAQ) and International physical activity questionnaire-short form (IPAQ) were applied to the participants in the data collection tool and their anthropometric measurements were recorded. In our study, the emotional appetite questionnaire was used to determine the emotional appetite states of the individuals. An International physical activity form was used to determine the level of physical activity. Throughout the research, the data were applied online with a questionnaire. 75.2% of the participants are women and 24.8% are men. As a result of our study, positive emotion and state scores of male students were higher than female students and this was statistically significant ($p < 0.05$). A significant correlation was found between female individuals' positive emotion and state total scores and negative emotion and state total scores and body weight and BMI values ($p < 0.05$). A significant correlation was found between female individuals' positive emotion and state total scores and negative emotion and state total scores and body weight and BMI values ($p < 0.05$). It was determined that there was no significant relationship between positive emotion and state total score, negative emotion and state total score and anthropometric measurements in the emotional appetite questionnaire of the male students participating in the study. There was no statistically significant relationship between physical activity and emotional appetite variables of the participants ($p > 0.05$). As a result, the relationship between emotional appetite and physical activity should be examined in more detail and individuals' awareness of their emotions and situations, eating behaviors and physical activity relationship should be increased.

Keywords: Emotional appetite, BMI, physical activity

ABSTRACT (TURKISH)

Altuntaş, G. (2021). Üniversite Öğrencilerinde Duygusal İştahın Fiziksel Aktiviteye Etkisi. Yeditepe Üniversitesi Sağlık Bilimleri Enstitüsü, Beslenme ve Diyetetik Anabilim Dalı, Yüksek Lisans Tezi, İstanbul.

Bu araştırma, üniversite öğrencilerinde duygusal iştah durumunun fiziksel aktiviteye etkisini değerlendirmek amacıyla yapılmıştır. Bu amaç doğrultusunda Yeditepe Üniversitesinde okuyan ve yaşları 18-65 yaş aralığında değişen 339 öğrenciye anket çalışması uygulanmıştır. Katılımcılara, veri toplama aracında genel bilgi anket formu, duygusal iştah anketi (DİA) ve Uluslararası fiziksel aktivite anketi-kısa formu (IPAQ) uygulanmış ve antropometrik ölçümleri kaydedilmiştir. Çalışmamızda bireylerin duygusal iştah durumlarını belirlemek amacıyla duygusal iştah anketi kullanılmıştır. Fiziksel aktivite düzeyini belirlemek amacıyla Uluslararası fiziksel aktivite formu kullanılmıştır. Araştırma boyunca veriler online ortamda anket formu ile uygulanmıştır. Katılımcıların %%75.2'si kadın, %24.8'i erkektir. Çalışmamız sonucunda erkek öğrencilerin pozitif duygu ve durum puanları kadın öğrencilerden daha yüksektir ve bu istatiksel olarak önemli bulunmuştur ($p<0.05$). Kadın bireylerin pozitif duygu ve durum toplam puanları ve negatif duygu ve durum toplam puanları ile vücut ağırlığı, BKİ değerleri arasında anlamlı ilişki bulunmuştur ($p< 0.05$). Araştırmaya katılan erkek öğrencilerin duygusal iştah anketinde yer alan pozitif duygu ve durum toplam puanı, negatif duygu ve durum toplam puanı ile antropometrik ölçümleri arasında anlamlı bir ilişki olmadığı tespit edilmiştir. Katılımcıların fiziksel aktivite ile duygusal iştah değişkenleri arasında istatistiksel olarak anlamlı bir ilişki bulunmamaktadır ($p>0.05$). Sonuç olarak duygusal iştah ve fiziksel aktivite ilişkisi daha detaylı incelenmeli ve bireylerin duygu ve durumlar ile yeme davranışları, fiziksel aktivite ilişkisinde farkındalıkları artırılmalıdır.

Anahtar Kelimeler: Duygusal iştah, BKI, fiziksel aktivite

1. INTRODUCTION AND PURPOSE

Appetite is a conscious desire for food. It is controlled by the pancreas and adrenal glands, mainly the digestive system and central nervous system (1) One of the basic conditions of being alive is to meet the energy needs. Humans, like many other species, meet their energy needs from food. Energy intake is affected by appetite-enhancing (oroxygenic) and appetite-reducing (anorexigenic) elements. Mechanisms that affect appetite are evaluated separately as hedonic and homeostatic. The relationship between hedonic and homeostatic systems of appetite is involved in the regulation of eating behavior. Appetite control takes place in the brain through the hypothalamus (2).

Individuals' desire to eat can be influenced by physical factors as well as psychological factors. Psychosomatic theories reveal that individuals who are faced with a negative mood can eat in response (3).When normal weight and overweight individuals were compared, it was reported that individuals with overweight were able to eat more when they experienced negative emotions than normal or underweight individuals (4,5).

The emotional state of the people, the amount and frequency of meals affect their food preferences. It is known that eating behavior varies in various emotional situations such as anxiety, happiness, anger, and sadness. Eating behavior in relation to emotional states in people has been defined as emotional eating. Emotional eating has also been shown to be associated with body weight (6). Emotional eating behavior has been reported to lead to problems related to body weight such as obesity, depression, eating disorders and other psychological and physical health problems (6,7).

University period can create a risky period in terms of emotional eating behavior due to many lifestyle changes such as social relationships, accommodation and nutrition. In this context assesment of emotional eating behaviors of university students is important (8).

Physical activity; is the activity that occurs as a result of energy expenditure by using muscles and joints in daily life, increases the pulse rate and respiratory rate and results in different degrees of fatigue (9). Regular activities such as daily housework, exercise and various sports activities, shopping, and hobbies are considered physical activities (10). Physical activity is beneficial for individuals of all age groups. Physical activity habits, healthy growth and development of children and young people, getting away from harmful habits in personality development, socializing, preventing depression - anxiety disorder, diabetes, hypertension, obesity, etc. It is very important in the prevention of diseases, in the treatment of diseases, in the protection of mental and physical functions, and in improving the quality of life throughout life (11). Physical activity; ıt is very effective in maintaining and increasing muscle strength, preserving and increasing muscle tone and joint mobility, controlling Diabetes by providing euglycemia, accelerating metabolism, and alleviating the negative effects of menopause in women. In terms of mental and social health, it makes the individual feel good and increases social adaptation ability. Since it reduces the risk of developing diseases such as cancer, Diabetes and hypertension in the future, it provides a healthy old age (12).

Maintaining a physically active life improves physical health and is closely related to self-confidence, psychological well-being, less depressive symptoms and stress. Physical activity can affect individuals psychologically and cause emotional eating behavior. Emotional eating behavior can also affect individuals' body weight positively or negatively (13,14).

In this study, it is aimed to examine the effect of physical activity status of university students on emotional appetite. It is thought that physical activity can reduce emotional appetite (14).

2. LITERATURE REVIEW

2.1.Appetite

Appetite is defined as a conscious desire for food. It is controlled by the pancreas and adrenal glands, especially the central nervous system and digestive system. Eating desire is affected by physical and psychological factors. Factors such as hunger in individuals, the color, smell and appearance of the food consumed, social events, habits and psychological status of the individual affect the appetite (15). Mechanisms that affect appetite are evaluated separately as hedonic and homeostatic. The relationship between hedonic and homeostatic systems of appetite is involved in the regulation of eating behavior. The homeostatic appetite system helps to refill the emptied stores by increasing the eating behavior with the emptying of energy stores (16). While homeostatic appetite protects the body against energy deficit, it shows poor effectiveness in protecting against energy surplus (17).

Hedonic appetite is based on the reward system. The taste and smell signals of foods trigger hedonic mechanisms (18). Regardless of biological needs, it causes excessive food consumption based on emotional pleasure and reward. Lowe and Butryn showed in their study that hedonic hunger was stimulated by continuous consumption of high-energy foods with strong taste. Homeostatic and hedonic controls of eating behavior are interconnected systems (19).

2.1.1. Neuroendocrine control of appetite

Appetite is controlled by the central nervous system and digestive system, primarily the adrenal glands and pancreas. The hypothalamus part of the brain provides appetite control. Neural hormones and many biochemical factors in the hypothalamus are known to affect appetite. Appetite, satiety and satiety are regulated by many intrinsic factors, including the content and amount of the previous meal, the individual's level of physical activity and genotype. Appetite and satiety begin with the gastrointestinal and cognitive processes before food enters the mouth (20).

The hunger and satiety centers in the brain and the stimulation to end these centers after sufficient food intake is one of the important factors affecting food intake. The hypothalamic nucleic center provides the regulation of appetite by forming

endocannabinoids, which have an appetite-changing effect, through the hypothalamic neurons. The hypothalamus part of the brain plays a role in appetite regulation and energy metabolism. The ventromedial hypothalamus region of the hypothalamus is called the "satiety center" and the lateral hypothalamus region is called the "hunger center" (21). In addition to physiological factors, psychological factors such as the pleasure of eating, taste, taste and social life affect the appetite. Social, environmental and metabolic functions affect the feeling of hunger and satiety. It also has this effect on habits and diseases (22).

With the sight and smell of food, preprandial hunger signals begin to be produced. These signals stimulate food intake and prepare the body for the act of eating. Sensory factors provided by the foods taken in the mouth at the beginning of the prandial phase also indicate hunger and increase food intake (23). The resulting hunger signals are carried to the brain stem via cranial nerves. Prandial and postprandial signals are produced when nutrients absorbed as a result of digestion reach the circulation. When nutrients reach into circulation; they can be metabolized in tissues or organs, activated by stimulating receptors in the central nervous system, or act as satiety signals after absorption (24).

The relationship between the homeostatic and hedonic systems of appetite is effective in regulating food intake. The homeostatic system provides energy balance and relies on negative feedback control. Hedonic system is based on reward (25).

The arcuate nucleus in the hypothalamus has an important role in the integration of signals regulating appetite. This area of the brain is not protected by the blood brain barrier. So the energy balance signals of arcuate nucleus (ARC) can travel through the underlying median eminence. Some peripheral gut hormones such as peptide tyrosine tyrosine (PYY) and glucagon-like peptide 1 (GLP-1) can cross the blood brain barrier by unsatisfactory mechanisms (26). In addition, other signals such as leptin and insulin are transported from the blood to the brain through satisfactory mechanisms. Thus, the blood brain barrier has a dynamic regulatory role in the passage of some circulatory energy signals. There are two primary neuron populations in ARC that affect energy balance and integrate nutritional status signals (27). One of the neuronal circuits inhibits food intake through the neuropeptide

proopiomelanocortin (POMC) and cocaine and amphetamine regulated transcript (CART) expression. The other neuronal circuit stimulates food intake through neuropeptide Y (NPY) and agouti-associated peptide (AgRP) expression. Physiological regulation of food intake is provided by the hypothalamus, brain stem, adipose tissue and intestinal hormones (28,29)

Saturation can be initiated by neural stimulation from the stomach after consumption of food to the brain, which indicates gastric distension. This is followed by the secretion of various signal hormones that can detect the digestion and absorption of nutrients. These hormones are Cholecystokinin secreted from duodenum and jejunum, GLP-1 secreted from small and large intestine, oxyntomodulin, PYY, Pancreatic polypeptide (PP) secreted from pancreas and amylin. These hormones, which occur with eating attacks, act as short-term and episodic signals (30). Satiety and satiety signals occur through the vagus nerve connecting the intestines to the brain or through the blood perfusing the hypothalamus. Insulin hormone secreted from pancreas and leptin hormone secreted from adipose tissue are known as two important saturation signals. These hormones help regulate the energy balance in the body in the long run (31). On the contrary, it has been observed in various experiments that intravenous and subcutaneous infusion of Ghrelin hormone secreted from stomach cells leads to an increase in energy need. Ghrelin hormone is known to have appetite stimulating properties. In addition, Ghrelin hormone is known as the only stomach hormone known to increase appetite (32).

2.1.2. Relationship between Emotional Status and Appetite

The desire to eat is affected by psychological factors as well as physical factors. One of the basic conditions of being alive is to meet the energy needs. Humans meet their energy needs through nutrients, as in many other living species. Energy intake is affected by appetite-enhancing (oroxygenic) and appetite-reducing (anorexigenic) elements (33). There are many theories in which emotional state and eating behavior are evaluated. One of these theories is the psychosomatic theory (34). According to this theory, individuals cannot understand their hunger and satiety. The individuals represented by this theory eat not to respond to internal stimuli such as appetite or to respond to the feeling of hunger, but to fully respond to their emotions. Since these

individuals lack the urge for hunger awareness, some external signals are needed about when and how much to eat (34,35).

The most likely cause of the stress-weight gain relationship is emotional appetite. Emotional appetite is the eating behavior that develops against negative mood and is positively associated with depression. From an academic point of view, the definition of emotional appetite is based on Kaplan & Kaplan's psychosomatic theory. Due to the anxiety-reducing effect of eating behavior, individuals develop impulsive eating behavior in case of anxiety and stress, thus creating an environment for obesity (36). In a study conducted by Goldshmidt et al., emotional appetite status was compared in obese individuals according to the presence of depression. The Beck Depression Inventory (BDI) was applied to 50 obese individuals (Body Max Index [BMI] > 30 kg / m2) participating in the study and the depression level of these individuals was determined according to the cut-off point. A comparison was made between the two groups by applying the emotional appetite questionnaire to the individuals. As a result, it has been reported that emotional appetite is present in cases of obesity and depression (37). In another study conducted with 42 participants by Lemmens et al., two groups were formed from individuals with abdominal obesity and individuals with normal waist circumference. Individuals have been observed by being exposed to psychological stress. As a result, it has been reported that individuals in the abdominal obesity group experienced more sweet and junk food deprivation during stress than the control group, although they were full (38). Emotional and psychological pathways affect the choice of food, the amount of food taken, the number of meals, and this is not necessary in the normal physiological cycle. In this case, foods are seen as a "stress reduction tool"(39). Individuals with emotional eating behaviors are more prone to food intake in stressful situations in daily life. In a study conducted by Oliver et al. with 68 healthy participants, the participants were given a 4-minute conversation task in front of the public and a meal including sugary / fatty foods was presented before this task. It has been reported that individuals with emotional appetite have increased intake of foods high in sugar / fat content (40).

Although not all physiological mechanisms between stress and eating behavior are fully defined, it can be explained as the hormonal influences of psychological mechanisms such as learning, imitation and emotion regulation (41). In addition, sex

is also effective in this regard. Studies show that stress-related nutritional behavior is more common in women than in men. At the same time, it has been reported in different studies that consuming high amounts of delicious foods and alcohol dependence changes the stress response in the body through glucocorticoid-related mechanism, and has hypothalamic and extra-hypothalamic effects on food intake (42). Neuroendocrine response begins to decrease and this HPA axis adaptation is defined as "neuroendocrine tolerance", which is related with addiction. The taste of foods with high sugar / fat content creates a reward effect in the brain (43) In a cross-sectional study with a large sample, withdrawal symptoms were observed for such palatable foods. In addition, it has been reported that withdrawal symptoms are directly proportional to such food intake and withdrawal symptoms increase as BMI increases (44). After a balanced meal consisting of healthy foods and a small amount of delicious foods (high sugar / fat content), plasma glucose level rises in relation to the food, insulin secretion takes place to balance glucose and glucose uptake into peripheral tissues begins. As a result of high consumption of delicious foods, carbohydrate / fat metabolism, insulin sensitivity and appetite hormones change. By affecting the reward center in the brain, this triggers the desire for food intake and changes energy homeostasis. The combination of high cortisol and intense energy results in hyperinsulinemia and fat around the waist (43,44).

It is known that emotional appetite is a common ailment worldwide and can trigger binge eating behavior. Emotional appetite is a learned behavior and is used as an emotion regulation strategy. According to the classical learning theory, the first step is the feeling of hunger that increases in negative mood, and the second step is the reinforcement with the improvement of the negative mood as we eat. In this case, foods are seen as regulators (45).

Understanding which foods to be used in the stress situation is critical in understanding the negative effects of stress on health and the emotional appetite mechanism. Although there is usually no physiological hunger or energy need, it has been reported that there is a tendency to foods with high fat and / or sugar content, such as fast-food or junk food. Although such foods provide relief in negative mood as a short-term effect, long-term intake causes obesity, making the body more susceptible to depression and anxiety (46).

2.2. Emotional Eating

Emotional Eating is a type of eating disorder that describes binge eating behavior that develops in response to negative emotions. Initially, emotional eating was associated with bulimia as a factor that triggers overeating in bulimic patients. Later studies have shown that emotional eating behavior may also be related to binge eating attacks. This binge eating response that develops in response to negative emotions; it has been observed in obese individuals, women with eating disorders, and people with normal weight who diet (47).

Emotional eating is a psychological eating behavior that develops as a reaction to negative emotions such as loneliness, depression, anger, stress, and anxiety and generally causes eating above normal (48). Emotional eating develops as a result of food consumption to maintain mood control. Studies have shown that emotions cause a 30-48% change on appetite and food consumption. Although emotional states seem to have an effect on eating behavior, it is difficult to determine exactly how they affect nutrition (49). Studies have examined how changing emotions affect individuals' eating behaviors. Generally, it has been observed that negative emotions such as stress, anxiety, and depression increase eating and negatively affect eating habits. Contrary to this, happiness and other positive emotions increase the consumption of food by enjoying it and the choice of healthy food (50).

Laboratory research on emotional eating behavior is difficult. Individuals with this eating behavior may hesitate to show the natural eating behavior. In addition, these individuals show eating behavior under the influence of intense emotions, especially when they are alone. Therefore, most of the studies on emotional eating are based on clinical observations (51).

2.2.1. Theories About Emotional Eating

2.2.1.1.Psychosomatic Theory:

The concept of emotional eating was first proposed by Kaplan and Kaplan in 1957 (52). This theory associated with emotional eating claims that food is used as an emotional defense in times of distress, causing obesity. According to the psychosomatic theory; overweight and obese individuals eat when they are nervous and anxious, and this act of eating reduces anxiety in individuals (53). Although the effect of eating on anxiety is not fully explained, it has been reported that protein and carbohydrate intake can have an effect on serotonin synthesis in the brain and thus anxiety can be reduced (54). Obese individuals cannot distinguish between feelings of hunger and anxiety because they have learned to eat against anxiety and hunger. Therefore, eating food to reduce anxiety caused obesity (53,54).

2.2.1.2. Extrinsic Theory:

This theory focuses on intrinsic stimuli, food in response to stimuli associated with food regardless of hunger or satiety. Accordingly, some individuals are more sensitive to external features such as the smell and appearance of foods, and these stimuli have a greater effect on eating behavior than the feeling of hunger (55). Although it is advocated that the normal bodily response to emotional appetite is a decrease in appetite, Schachter et al. (1968) also found that stress and emotional arousal cause excessive eating, especially in overweight individuals (56).

2.2.1.3. The Constraint Theory:

This theory was developed by Herman, Mack, and Polivy. The restriction hypothesis is expressed as the cognitive effort exerted on the desire to eat. According to the constraint theory; the eating behavior is determined by desire to consume foods and our efforts to resist consuming that food (57). Individuals who adhere to the restrictive theory are constantly concerned about what they eat. In addition, these individuals chronically try to limit their food intake to prevent fat intake from food. Studies have shown that individuals with restrictive eating behaviors become less motivated to diet after a while and start to eat more (58, 59).

2.2.1.4. Escape Theory:

Another theory developed to explain binge eating. According to this theory, the reasons why individuals resort to emotional eating is the negative awareness they feel about theirselves. When a person encounters a situation that negatively affects his or her self, they tend to eat in order to avoid the effects of this situation. The effect of emotions on eating behavior is more dominant in obese individuals than in non-obese individuals, and it is stronger in individuals who diet than those who do not diet (60). Obese individuals are under the influence of emotional eating more than normal individuals (61).

2.2.2. Emotional Eating Mechanisms

The idea that individuals use food to cope with emotions in emotional eating behavior has been suggested. Therefore, how some physiological and psychological mechanisms affect emotional eating will be explained (62).

2.2.2.1 Physiological mechanisms

Negative emotional states such as distress and sadness cause physiological responses such as inhibition of gastric motility and the introduction of sugar into the blood. This situation, which is similar to satiety physiology, can explain how sadness and stress can lead to weight loss by reducing eating in general (63).

Studies have suggested that the consumption of foods with high carbohydrate content and low protein content increases the level of tryptophan in the blood and increases the activity of the serotonergic system in the brain (64, 65). Thus, it has been stated that as a result of food consumption in individuals, the level of serotonin in the brain increases and negative emotions decrease (66). Markus et al. (1998) increased their stress levels by asking the participants to solve math problems in an environment where they gave a violent and disturbing sound. As a result of the research, it was found that participants who ate carbohydrate-rich diets were less stressed than those who have protein-rich diets (67).

Another mechanism thought to affect mood regulation is changes in endocrine hormone. High-fat foods affect the hypothalamic-pituitary-adrenal axis and reduce stress levels (68).

In addition, when stress develops, it causes ghrelin levels to increase in individuals and therefore dopamine release. As a result, it can cause the activation of the food reward system (69). In the brain reward system, dopamine can cause the desire for food and consequently food intake (70).

2.2.2.2 Psychological mechanisms

It has been suggested that individuals with negative emotions tend to taste sugary. As a result of the studies conducted, it has been observed that sugary tastes cause positive emotional reactions in newborn babies (71,72). Macht and Müller (2007) investigated the effect of sugary flavors in adults. When the participants were shown a sad movie, it was observed that the individual chose chocolate as a food in a state of negative emotion. The same experiment was repeated with two different chocolates in terms of taste (73).

Emotional change in individuals with emotional eating behavior is much higher than in others (74). Macht and Simons (2011) explain the positive effect caused by sugary flavors with hedonic eating seen in emotional eating. Accordingly, pleasurable foods have a positive effect on mood (75).

2.3. Physical Activity

The World Health Organization (WHO) defines physical activity as physical movements performed by spending energy through muscles and joints (76). These physical movements increase the heart and respiratory rate and cause fatigue of different severity. Basic body movements such as walking, swimming, jumping, jumping, running, cycling and head, arm, leg and trunk movements or different sports, games, exercise and dance are considered physical activities (77). Exercise, on the other hand, is planned and repetitive activities to be physically healthy, to protect and improve body image (78).

Physical activity has an important place in the prevention and treatment of diseases. Physical activity has a protective effect on cardiovascular diseases, stroke, Type 2 diabetic, colon and breast cancer. It is also considered as a modifiable risk factor associated with other important health outcomes such as mental health (79).

The most widely known recommendation for physical activity for public health was the Centers for Disease Control and Prevention (CDC) in 1995 and the American College of Sports Medicine (ACSM) Published by. The first recommendation was, "Every US adult should do 30 minutes or more of moderate-intensity physical activity most days of the week, preferably all days." This recommendation has been accepted worldwide and in many European countries (80). According to the American Heart Association (AHA) and ACSM recommendation, all healthy adults should engage in moderate-intensity aerobic physical activity for at least 30 minutes 5 days a week or vigorous-intensity aerobic activity for at least 20 minutes 3 days a week to promote and maintain their health (81).

2.3.1. Types of Physical Activity

2.3.1.1. Endurance (Aerobic) activities:

These types of activity, called endurance or aerobic exercises, are physical activities that increase heart rate and respiratory rate (82). Therefore, it contributes to the protection and improvement of pulmonary health. Endurance activities help to make daily work more comfortable and increase the quality of life by increasing the physical activity capacity. Muscle groups activated by these types of exercise derive energy from amino acids, carbohydrates and fatty acids in the form of adenosine triphosphate (ATP) based on aerobic metabolism (83).

Examples of endurance exercise types include walking, dancing, running, tennis, basketball, climbing, cycling, swimming (84,85).

2.3.1.2.Force Activities

Strength activities help preserve muscle and bone strength that decreases with age. Regular strength training, carrying food or items, lifting weights, climbing stairs are among the main strength-increasing activities. Strength activities can be planned and performed regularly at home, at work and in sports halls (86). Strength exercise is recommended at least two days a week, according to the American Heart Association (AHA). In addition, strength exercises make daily tasks easier and help reduce injuries. Force activities should aim to strengthen important and large muscles of our body such as abdomen, back-waist, shoulder-arm and hip-leg muscles (87).

2.3.1.3. Flexibility Activities

Its flexible activities consist of various movements such as dance, yoga and pilates to stretch the muscles and to give the body a more flexible structure (88). Flexibility activities provide more freedom of movement in performing other exercises and daily activities. Before the flexibility exercises, some warm-up activities such as walking can be done to keep the muscles warm. The fact that the muscles are warm makes it easier to perform more stretching movements without pain and tension during the flexibility exercises (89). In endurance and strength exercises, stretching or flexibility exercises should be done later (90).

Flexibility exercises can be useful at all ages. Excessive tight muscles in individuals pain during exercise, It has been associated with injury and poor performance. It is recommended that healthy individuals do flexibility exercises such as stretching, yoga and pilates for all major muscle tendon groups including neck, shoulders, chest, waist, hips, legs and ankles at least two to three times a week (91).

2.3.1.4. Balance Activities

Balance activities are exercises that improve an individual's ability to balance without falling against internal or external forces. Strengthening the back, abdominal and leg muscles helps to increase balance (92). Almost all kinds of activities related to movement, such as walking and that keep individuals on their feet, contribute to the maintenance of balance. However, there are special exercises used to increase balance. These are useful for adding to the daily routine and help increase balance. Exercises such as standing on one leg, walking on a straight line, and being able to move on a slippery surface without falling are among the activities that provide balance (93).

In order to be successful in most sports activities, first of all, it is necessary to have the appropriate posture and balance (92,93).

2.3.2. Intensity of Physical Activity

The term "intensity" is used to describe the magnitude of the effort made to perform physical activity or exercise and the speed at which the activity is performed. The intensity of physical activity shows how difficult individuals have in their exercises and expresses the physiological level of work achieved during exercise (94). In

addition, physical activity intensity is an important variable in all exercise training. Two concepts are at the forefront in order to evaluate exercise intensity. These are explained as absolute density and relative density (95).

The absolute intensity of physical activity is the rate of energy expenditure associated with that activity. Measurement of the Metabolic Equivalent (MET) value is often used to determine the absolute density (96). MET is a unit used to estimate the energy consumption or oxygen consumption of physical activity. MET has traditionally been defined as 3.5 ml VO2 per minute per kilogram of body weight and is considered the resting metabolic rate (BMR). Energy expenditure of other activities is expressed in multiples of MET. For adults, for example, sitting and reading requires approximately 1.3 METs. Walking slowly requires approximately 2.0 METs. METs are used to describe light, medium and heavy intensity physical activity classes. Absolute energy expenditure rates are divided into 4 categories.

2.3.2.1. Intense vigorous activity

İntense vigorous activity is defined as activities that require MET of 6.0 or greater (97). Activities that fall into this category include running, carrying a heavy load upstairs, rowing or attending an aerobics class. It is equivalent to 300 minutes of intensive physical activity per week (98).

2.3.2.2. Moderate activity

Moderate activity is defined as activities that require energy between 3.0 and 6.0 METs. Fast walking can be given as an example in this category. Activities between 150 and 300 minutes a week (99).

2.3.2.5. Light intensity activity

Light intensity activity is defined as activities that require energy below 3.0 METs. Examples of this class include jogging or cooking activities. They are activities less than 150 minutes a week (99,100).

Relative, in other words relative density, refers to the ease or difficulty of an individual to perform any physical activity. Relative intensity individual exercise capacity is considered. Physical activity intensity is also adjusted accordingly. Relative intensity for aerobic activity can be expressed using physiological

parameters such as the percentage of the individual's aerobic capacity VO2max (measured maximum oxygen consumption during exercise) or the percentage of the individual's maximum heart rate (101). In addition, the degree of difficulty felt by the person during exercise can be expressed on a scale of 80-10. Protocols for submaximal tests that estimate MaxVO2 include tests such as walking on the treadmill, bicycle ergonometry, step testing, walking and running in the field (102). Cardiorespiratory fitness is influenced by age, genetic makeup, body composition and sex-related factors as well as physical activity (103).

2.3.3. Health Outcomes of Physical Activity

An important study, first conducted by Morris et al in London in 1953 on bus drivers, found that drivers had a higher rate of developing cardiovascular disease (CVD) than more active bus drivers chiefs, and the relationship between physical activity and health was shown (104). Inactivity; it contributes to the development of premature death, cardiovascular disease and stroke, obesity, type 2 diabetes, colon cancer, breast cancer, poor skeletal health and depression (105).

2.3.3.1. Cardiovascular disease and stroke

Current evidence indicates that the greatest benefit of physical activity is on the cardiovascular system. For example, men who lead an active lifestyle are half as likely to die of serious heart disease or suffer from cardiovascular disease (CVD). For women, the reduction in risk is between 30-40%. There is a dose-response relationship between physical activity level and health outcomes. The greatest health benefits are seen with moderate physical activity (106). The benefits of physical activity and fitness also include those with chronic heart disease, and studies have shown the importance of regular exercise to slow down or reverse the disease process. Direct benefits of regular physical activity to the cardiovascular system; improving the ability of the heart to fully contract and relax by increasing the blood pumping efficiency, better blood circulation, increased lung capacity and with it increased ability to take and use oxygen, better response of blood vessels to dilatation in response to activity, and providing blood vessel wall health including less inflammation in the form. Metabolic effects are; changes in blood lipid profiles can be summarized as the increase in the ratio of protective high density lipoprotein (HDL) to low density lipoprotein (LDL) and increased use of fat as fuel. In this way,

physical activity reduces risk factors for heart disease and stroke, such as hypertension and hyperlipidemia (107).

2.3.3.2. Type 2 Diabetes Mellitus

Type 2 Diabetes Mellitus (DM), which is generally known as adult disease and is seen after the age of 40, is becoming widespread among young people with the increase of inactivity and obesity. There is good evidence that being physically active improves blood glucose levels, prevents or delays the occurrence of type 2 diabetes (108). In a study of about 6,000 people, it was found that for every 500 calories spent weekly on leisure physical activity, the risk of developing type 2 diabetes decreased by 6% (109). However, the biggest gains have been seen with heavy physical activity, which can reduce the risk of developing type 2 diabetes in at-risk groups by up to a third. High-risk groups for diabetes include people with obesity, positive family history, and impaired glucose tolerance. Most of the benefits of physical activity for reducing type 2 diabetes are achieved through short and long-term improvements in the insulin effect leading to better blood sugar control. Physical activity improves the ability of liver, skeletal muscle, and fat cells to respond to insulin, known as insulin sensitivity. For example, 16 weeks of exercise training for older men resulted in a significant improvement in insulin sensitivity and fasting glycemia (110).

2.3.3.3. Cancer

Being the second most common cause of death in Europe after cardiovascular diseases, cancer is known as a disease that can be reduced by physical activity. Especially in breast and colon cancer, the risk-reducing effect of physical activity is clear. It has been shown that physically active men have a 30-40% lower risk of developing colon cancer than their inactive peers, while physically active women have a 20-30% lower risk of developing breast cancer than their inactive peers. Physical activity reduces the incidence of cancer through mechanisms such as reducing inflammation, strengthening the immune system fighting cancer, and ensuring hormone balance (111).

2.3.3.4. Obesity

A study published in 2011 showed that the prevalence of obesity worldwide nearly doubled between 1980 and 2008. According to country estimates for the European

Union, it was found that more than half of the adult population was overweight and 23% of women and 20% of men were above the obesity limit in 2008, and childhood obesity in Europe increased over the same time period. In primary school children, the prevalence of overweight and obesity varies between 20-40%, with a higher prevalence in the south of Europe than in the north. However, recent data on Swedish children show no increase in body mass index among school children (112).

Decreases in physical activity levels in daily life, It is an important factor in the dramatic increase in the prevalence of overweight and obesity in Europe. There is evidence that those who lead a physically active lifestyle gain less weight with age than their inactive peers. It is known that those with the highest levels of physical activity are least likely to gain weight with age, and vice versa. Physical activity alone is not enough for weight loss. When combined with calorie-restricted diets, physical activity not only enhances weight loss, but also improves body composition, increases fat loss and preserves metabolically active muscles. There is strong evidence that those who do regular physical activity are more likely to maintain weight loss than those who use diet alone (112,113).

2.3.3.5. Musculoskeletal health

Physical activity builds strong muscles, tendons and ligaments, healthy joints and thicker bones. This situation is especially important for children and adolescents in their growing period. Increase in bone mineral density also reduces the risk of osteoporosis and hip fracture that may occur in the future. Regular participation in physical activity throughout life ensures proper development during childhood and adolescence, and protection of musculoskeletal health in adulthood and old age. Staying active in old age reduces the risk of hip fractures and falls and helps preserve functional abilities such as climbing stairs, carrying and climbing stairs (79,114).

2.3.3.6. Mental health

Physical activity is known to alleviate symptoms of depression and cause mood changes to feel better. Even small amounts of physical activity increase resistance to stress and play a role in improving sleep quality. Regular physical activity can increase mental vigor. It has been shown to increase academic performance in young people and contribute to the preservation of thinking, learning and decision-making

skills in adults. In older adults, it can improve mental functions in areas such as staying active, planning, immediate memory and decision-making, and delay the onset of dementia (115).

In some individuals, being physically active can become an obsession with overweight control. However, exercise is seen as a more acceptable alternative to eating disorders. Strategies to cope with this behavior are similar to those used for eating disorders (105,116).

2.3.4. The Relationship between Physical Activity and Emotional Appetite

Long-term exercise stimulates hunger. It also increases the post-meal satiety signal by affecting the gastrointestinal peptides. Thus, it shows a double action. Various studies have investigated the effect of exercise on appetite. As a result of these studies, it has been observed that exercise increases appetite and vigorous exercise may lead to a temporary suppression of appetite. This temporary suppression of appetite is called 'exercise-induced anorexia' and this effect leads to a short-term negative energy balance (24).

The effects of ghrelin hormone on exercise have been studied in various studies. In a recent study, it was observed that ghrelin was suppressed with resistance exercises (30, 118). At the same time, this effect has been reported to play a role in exercise-induced anorexia for up to one hour after physical activity. In addition to the ghrelin hormone, intestinal hormones involved in appetite suppression were also studied to examine exercise-induced anorexia. It is known that ghrelin hormone has appetite suppressing properties (32,33). Therefore, many studies focused on PYY. In various studies, it has been reported that plasma PYY levels increase during aerobic exercise in both lean and obese individuals. When the GLP-1 and PP responses of aerobic exercise were examined, they observed that the concentrations of these hormones increased during and at least 30-60 minutes after exercise (33,119). In most individuals, vigorous exercise causes a temporary suppression of appetite. Accordingly, suppression of appetite does not automatically increase food intake. This is not enough to fully compensate for the energy expended in exercise (30).

It may be that there is no compensatory increase in food intake after exercise, the increase in ghrelin after exercise or the exercise-induced increase in appetite-

suppressing hormones such as PYY and GLP-1 affects the prolongation of satiety (26,27). However, the real importance of these hormonal responses requires more studies to precisely determine changes in appetite and food intake and exercise-related changes in appetite hormones. When examining the effect of exercise on these hormones and its effect on energy intake, it was found that anorexigenic hormones (PYY, PP and GLP-1) increased concentrations while plasma ghrelin concentrations were suppressed after strenuous endurance exercise, but these data was not clear. It has been shown that these hormonal changes are monitored by changes in appetite at rest (28).

As an easily replaceable energy balance component that can potentially create acute energy deficits, exercise is a widely used weight control tool. In the energy balance equation, the beneficial effect of exercise is twofold it increases energy expenditure and also regulates energy intake. Energy intake varies with exercise in individuals (29). These differences are thought to be a result of exercise intensity, nutritional status, sex, macronutrient composition of the test meal, and the time between exercise and eating. In conclusion, acute exercise has been shown to increase fasting plasma levels of cholecystokinin and GLP-1. Acute exercise increases plasma PP levels depending on the intensity of the exercise 28,120).

Exercise increases satiety by increasing postprandial sensitivity to nutrients consumed in meals. Acute responses to exercise include changes in hormones such as ghrelin, GLP-1, and PYY, as well as changes in substrate oxidation in muscle (120). When exercise is repeated for a long time, effects on body composition are observed which normally take the form of a decrease in adipose tissue and an increase in lean tissue. These gradual changes are known to cause changes in appetite control. The acute effects of exercise on appetite are brought about by "satiety" signals. The effect of permanent exercise is through changes in body composition in addition to the short-term changes previously noted (121).

Exercise generally increases lean tissue and decreases adipose tissue. Since the increase in lean tissue will increase energy demand, it will also cause an increase in basal hunger. A reduction in adipose tissue will lead to greater postprandial (satiety) suppression of appetite, partly through an increase in insulin and leptin sensitivity

(122). Therefore, persistent exercise will lead to increased sensitivity of appetite control mechanisms. High intensity activity induces significant reductions in fat mass. These reductions in fat mass may result from both increased exercise-induced energy expenditure and potentially post-exercise energy intake through appetite suppression (118,120).

The effect of physical activity and its aftermath on leptin level has not been fully clarified, while the leptin level does not change with short-term exercise for less than 12 weeks and leptin levels decrease with the decrease in the fat ratio in individuals with regular exercise in long-term exercise for more than 12 weeks (121). It is thought that many factors cause physical activity to decrease leptin level. With physical activity, energy balance, fat mass, hormone levels and metabolites change. Along with these changes, exercise can also change the leptin response. At the same time, depending on the intensity, duration, frequency and content of the exercise, and the eating habits of the individuals, the effect of exercise on the leptin level may be at different levels (122).

Lipid metabolism and changes in lipid concentration cause a decrease in leptin level. It has lower leptin levels than inactive individuals due to body fat mass and complex neurohormonal adaptations in athletes (123). It was found that there was an increase in ghrelin concentrations after exercise in women compared to men. It has also been shown that exercise helps weight management by directly affecting the total amount of energy consumed, the concentration of appetite-related hormones in the circulation, and feelings of hunger and fullness (124). In particular, exercise intensity and type of exercise can alter hormones related to appetite. In support of this view, one study reported reduced energy intake at lunch and dinner following a steady cycling cycle at high intensity (75% VO2max) compared to a low intensity (40% VO2max) exercise. There is also evidence that exercise intensity affects circulatory levels of appetite-related hormones (125).

3. MATERIALS AND METHODS

3.1. Participants

This thesis is designed as a cross-sectional descriptive study. It was applied online with those who meet the inclusion criteria among voluntary women and men students between the ages of 18-65 studying at Yeditepe University. According to the data obtained from Yeditepe University student affairs, the universe of the research consisted of 16450 enrolled students. The confidence interval for the sample calculation was determined as 95% and the error rate as 5%. Accordingly, it was calculated a sample size as 370 at least. Due to Covid-19 restrictions 339 individuals could be reached.

Ethical approval was obtained for this study from the Yeditepe University Clinical Research Ethics Committee on 07.10.2020 (Appendix 1). After giving information about the study to the individuals who agreed to participate in the study, their written consent was obtained that they voluntarily participated in the study.

3.2. Data Collection

A data collection form developed in line with the literature was applied to the individuals who voluntarily participated in the study. Data collection form was consisted of socio-demographic characteristics of the participants. The "Emotional Appetite Questionnaire" was used to assess emotional eating situations of the individuals, and the "International Physical Activity Questionnaire" was used to determine the levels of physical activity. General and relevant information in the questionnaire form was obtained online from all individuals participating in the study. The questionnaire link received on www.onlineanketler.com was shared with the students through the student representatives of all departments.

3.2.1. General Information on the Characteristics of Individual

In this study, the students' information consisting of age, sex, place of residence (accommodation), economic status, smoking, alcohol use, body weight and height were questioned. Body (kg) / (height) 2 (m2) formula was used in BMI calculation. Values According to the World Health Organization's BMI classification: < 18.5 kg /

m2 as weak; 18.5-24.9 kg / m2 as normal; 25-29.9 kg / m2 as Overweight and ≥ 30 kg / m2 was evaluated as obese (112).

3.2.2. Emotional Appetite Questionnaire (EMAQ)

In 2003, Geliebter and Aversa developed the Emotional Appetite Questionnaire (EMAQ) to assess the eating behaviors of people in the BMI ranges from underweight to overweight, in both positive and negative emotions and situations (126). Nolan et al. also demonstrated the internal consistency in 2010 based on the reliability analysis of the survey; but they did not complete their validity analysis (127). In 2014, Demirel and colleges performance the Turkish validity and reliability.

EMAQ consists of 22 items including negative and positive emotions (14 items) and negative and positive situations (8 items). Each item is scored in a 9-point likert, with the level of appetite affecting being 1-4 less, 5 the same, and 6-9 more. At the same time, the options I do not know and not suitable can be marked for each item, and in such a case, they are not included in the scoring. Although there is no cut-off point in the scale, positive emotional appetite questionnaire score with the addition of the scores of positive emotions and situations; the negative emotional appetite questionnaire score is obtained by adding the scores of negative emotions and situations. Positive emotions; “confident, happy, relaxed, playful, enthusiastic”. Negative emotions; “sad, bored, angry, anxious, frustrated, tired, depressed, frightened, lonely. Positive situations; “when falling in love, when engaged in an enjoyable hobby, after receiving good news”. Negative situations are; “ When under pressure, after a heated argument, after a tragedy of someone close to you, after ending a relationship, after losing money or property”. The survey score is calculated according to these feelings and situations. The scale, which does not have any cut-off points for emotional eating, evaluates in which emotions and situations emotional eating may be present. Since there is no cut-off point for scoring, it cannot be evaluated as high if it is above a certain score, and as low if it is below a certain score. The higher the score, the more negative/positive situations and negative/positive emotions show that emotional eating may exist (128).

3.2.3. International Physical Activity Questionnaire - Short Form (IPAQ)

The International Physical Activity Questionnaire-Short Form (IPAQ) was used to determine the physical activity index of the students. Validity and reliability study was carried out in Turkey (129). The short form includes the last seven days. The questionnaire consists of seven questions and provides information about sitting, walking, moderately vigorous activities and time spent in vigorous activities. The sitting score is calculated separately in the questionnaire. By multiplying the minute, day, and MET value, the "METminutes \ week" score is obtained. For walking score, walking time (minutes) is multiplied by 3.3 MET. For the calculation, 4 METs for moderate activity and 8 METs for vigorous activity are used (130). Total score; walk, It is obtained by summing the MET-min week scores found for moderate and vigorous activities (IPAQ, 2004). As a result, 3000 MET-min / week is classified as having adequate physical activity level (beneficial for health).

The categorical scores of the three physical activity levels classified as a result of the IPAQ are as follows:

1-Low: No activity was reported or some reported activities are not sufficient for categories 2 and 3.

2- Moderate: vigorous physical activity for at least 20 minutes, 3 or more days, 5 or more days of moderate physical activity, or at least 30 minutes of walking every day, 5 or more days a week walking, moderate or vigorous activity meeting at least 600 MET-min.

3-High: vigorous activity for at least 3 days to meet at least 1500 MET-min per week or 7 or more days of walking to meet at least 3000 MET-min per week, moderate or severe activity

During the calculation of the questionnaire, the calculations of those who answer "I do not know \ I am not sure" should be excluded from the analysis (131). Data is not be evaluated if the response is 16 hours for walking, moderate and vigorous activities. At the same time, the duration should be at least 10 minutes for all three types of activity. Answers below 10 minutes should be considered as zero (132).

3.3. Statistical Analysis

Arithmetic mean, standard deviation, median and minimum-maximum values were determined as descriptive statistics for quantitative data. Descriptive statistics for qualitative variables are shown as numbers and percentages. The significance level within the scope of the study is taken as $\alpha = 0.05$. First, for the questions on demographic information in the questionnaire, then the frequency (frequency) distribution for the physical activity questionnaire and emotional appetite scale in other parts of the questionnaire is given. Kolmogorov-Smirnov and Shapiro-Wilk normal distribution tests were performed in the SPSS program. As a result of these tests, non-parametric methods were preferred for the analyzes where the questions did not show a normal distribution ($p< 0.05$). In the analysis of group difference, Mann-Whitney-U test, which has a non-parametric counterpart and is suitable for the group of 2, was used instead of t test for two groups. Kruskal-Wallis test was used for more than two groups. Mean rank values were taken into account in order to determine the source for significant differences. Chi-square test was used for correlation analysis of two categorical data, Kendall's tau-b and Spearman rank correlation tests were used for correlation analysis of two continuous and one continuous-one categorical data.

4. RESULTS

4.1. General Characteristics of Students

The distribution of students according to their demographic characteristics is given in Table 4.1. Of the 339 students participating in the study, 75.2% (n=255) were women -and 24.8% (n=84) were men. The mean age of the students participating in the study was determined as 24.2 ± 4.52 years.

Considering the residency status of the students, 10.6% of the women participants, 16.7% of men participants were alone at home, 79.6% of women participants, 72.6% of men participants were at home with their family, 4.3% of women and 6.0% of men were with their friends. Together, 5.5% of women participants and 4.8% of men participants were living in a dormitory.

When the income status of the students is examined; 27.1% of the women, 27.4% of the men had an income less than their expenses, the income of 48.6% of women and 41.7% of men was equal to their income, 24.3% of the women and 31.0% of men had an income more than their expenses.

While 25.1% of women and 44.0% of men smoked, 74.9% of women students and 56.0% of men students do not smoke. Additionally, 41.6% of women 40.5% of men participants used alcohol. Table 4.1. shows demographic characteristics of the students by sex

Table 4.1. Demographic Characteristics of Students by Sex

Demographic Features	Women (n:255)		Men (n:84)		Total (n:339)	
	N	%	N	%	N	%
Accommodation						
Home (Alone)	27	10.6	14	16.7	41	12.1
Home (with family)	203	79.6	61	72.6	264	77.9
Home (with friend)	11	4.3	5	6.0	16	4.7
Dormitory	14	5.5	4	4.8	18	5.3
Level Of income						
Low income	69	27.1	23	27.4	92	27.1
Middle income	124	48.6	35	41.7	159	46.9
High income	62	24.3	26	31.0	88	26.0
Cigarette Smoking						
Smoking	64	25.1	37	44.0	101	29.8
Not Smoking	191	74.9	47	56.0	238	70.2
Alcohol usage						
Drinking	106	41.6	34	40.5	140	41.3
Not Drinking	149	58.4	50	59.5	199	58.7

4.2. Evaluation of Students' Anthropometric Measurements

The evaluation of anthropometric measurements according to sex is given in Table 4.2. For women; mean body weight was 59.9 ± 10.71 kg, the mean height was 165.1 ± 5.84 cm, the mean BMI was 21.9 ± 3.67 kg /m². Men had a mean body weight as 81.6 ± 14.20 kg, mean height as 179.3 ± 6.29 cm, mean BMI as 25.4 ± 3.96 kg / m²

Table 4.2. Evaluation of Students' Anthropometric Measurements According to Sex

Anthropometric Measurements	Women (n:255)		Men (n:84)	
	X̄±SS	Min-Max	X̄±SS	Min-Max
Body weight, kg	59.9±10.71	43-120	81.6±14.20	56-140
Height, cm	165.1±5.84	140-186	179.3±6.29	160-192
BMI, kg/m²	21.9±3.67	15.9-43.0	25.4±3.96	17.2-40.5

BMI: Body Max Index

In Table 4.3., BMI classification of students according to sex is given. 11.4% of women were underweight, 72.2% were normal, 12.2% were overweight and 4.3% were obese. 2.4% of men were underweight, 51.2% were normal, 38.1% were overweight and 8.3% were obese. A statistically significant relationship was found between the BMI classification of students according to sex ($p<0.05$). The frequency of women in the underweight class (11.4%) was found to be higher than that of men (2.4%). The frequency of men in the overweight class (38.1%) was also higher than that of women (12.2%). The frequency of men in the obese class (8.3%) was also higher than the frequency of women (4.3%).

Table 4.3. Distribution of Students' Body Mass Index by Sex

BMI	Women(n:255)		Men (n:84)		Total (n:339)		
	N	%	N	%	N	%	p*
Underweight	29	11.4	2	2.4	31	9.1	0.000
Normal Weight	184	72.2	43	51.2	227	67.0	
Overweight	31	12.2	32	38.1	63	18.6	
Obese	11	4.3	7	8.3	18	5.3	

*: Chi-square fisher exact test BMI: Body Max Index

4.3. Assessment of Students' Physical Activity Status

In Table 4.4., IPAQ-SF classification of students according to sex is given. 35.3% of the women were inactive, 54.5% were moderately active and 10.2% were highly active. 39.3% of men were inactive, 41.7% were moderately active and 19% were highly active. A total of 36.3% of the students were inactive, 51.3% were moderately active and 12.4% were highly active.

Table 4.4. IPAQ-SF Distribution of Students by Sex

IPAQ-SF	Women (n:255)		Men (n:84)		Total(n:339)		
	N	%	N	%	N	%	p*
Low	90	35.3	33	39.3	123	36.3	0.848
Moderate	139	54.5	35	41.7	174	51.3	
High	26	10.2	16	19.0	42	12.4	

*: Chi-square fisher exact test

4.3. Evaluation of Students' Emotional Appetite Questionnaire Scores and Sex, Anthropometric Measurements, Sociodemographic Features and Physical Activity Status

Table 4.5. shows the Emotional Appetite Questionnaire score mean of the students according to sex. The mean Positive Emotion value of the women participants was 28.1 ± 8.35. The mean value of Positive Emotion of men participants was 29.6 ± 8.60. The mean Positive Status value of the women participants was 15.1 ± 4.94. The mean Positive Status value of the men participants was 16.4 ± 4.95. The mean negative emotion value of the women participants was 35.9 ± 13.31. The mean negative emotion value of the men participants was 33.7 ± 13.29. The mean negative state value of the women participants was 14.7 ± 7.31. The mean negative state value of the men participants was 15.7 ± 6.81. The mean positive mood of the women participants was 43.2 ± 12.17. The mean positive mood of the men participants was

45.9 ± 12.56. The mean negative mood of the women participants was 50.6 ± 18.49. The negative mood mean of the men participants was 49.4 ± 18.66.

Men students' positive status scores and positive emotion and state scores were higher than women students and this was statistically significant ($p < 0.05$). No significant difference was found between positive emotion scores, negative emotion scores, negative situation scores, negative emotion and state scores and sex ($p > 0.05$).

Table 4.5. Emotional Appetite Questionnaire Scores of Students According to Sex

EMAQ	Women (n:255) X̄±SS (Min-Max)	Men (n:84) X̄±SS (Min-Max)	p *
EMAQ-PE	28.1±8.35 (5-45)	29.6±8.6 (4-45)	0.086
EMAQ-PS	15.1±4.94 (3-27)	16.4±4.95 (3-27)	0.024**
EMAQ-NE	35.9±13.31 (9-81)	33.7±13.29 (5-67)	0.28
EMAQ-NS	14.7±7.31 (4-45)	15.7±6.81 (4-33)	0.152
EMAQ-P	43.2±12.17 (8-72)	45.9±12.56 (8-72)	0.024**
EMAQ-N	50.6±18.49 (13-118)	49.4±18.66 (14-95)	0.741

EMAQ, Emotional Appetite Questionnaire: PE, Positive Emotion: NE, Negative Emotion: PS, Positive Situation: NS, Negative Situation: P, Positive Total Score: N, Negative Total Score
** Significant difference for 0.005

The relationship between the women students' anthropometric measurements and their Emotional Appetite Questionnaire scores was examined in Table 4.6. It has been stated that there was a significant and negative correlation between women individuals' positive emotion and state total scores and body weight and BMI values ($p < 0.05$).

As the body weight and BMI values of the women students increased, the positive emotion and state total scores in the emotional appetite questionnaire decreased.

It was stated that there was a significant and positive correlation between women students' negative emotion and state total scores and body weight and BMI values ($p < 0.05$).

As the body weight and BMI values of the female students increased, the negative emotion and state total scores in the emotional appetite questionnaire also increased.

Table 4.6. Evaluation of the relationship between women students' anthropometric measurements and Emotional Appetite Questionnaire scores

Anthropometric Measurements	**Emotional Appetite Questionnaire Score**			
	EMAQ-P		**EMAQ-N**	
	r	**p***	**r**	**p***
Body weight, kg	-0.124	0.047*	0.2	0.001*
Height, cm	0.063	0.318	-0.001	0.991
BMI, kg/m²	-0.177	0.005*	0.238	0.000*

Spearman correlation analysis

EMAQ, Emotional Appetite Questionnaire: P, Positive Total Score: N, Negative Total Score

Table 4.7. shows the relationship between men students' anthropometric measurements and their Emotional Appetite Questionnaire scores. It was determined that there was no significant correlation between positive emotion and state total score, negative emotion and state total score and anthropometric measurements in the emotional appetite questionnaire of the men students participating in the study ($p>0.05$).

Table 4.7. Evaluation of the relationship between men students' anthropometric measurements and Emotional Appetite Questionnaire scores

Anthropometric Measurements	Emotional Appetite Questionnaire Score			
	EMAQ-P		EMAQ-N	
	r	p*	r	p*
Body weight, kg	0.025	0.819	-0.036	0.747
Height, cm	0.097	0.379	-0.108	0.327
BMI, kg/m²	-0.56	0.614	0.014	0.898

Spearman correlation analysis

EMAQ, Emotional Appetite Questionnaire: P, Positive Total Score: N, Negative Total Score

Table 4.8. shows the emotional appetite questionnaire scores of the participating students according to BMI classes. No statistically significant difference was found between the positive emotion and state total scores, and negative emotion and state total scores of the students according to BMI classes ($p> 0.05$).

Table 4.8. Comparison of the Emotional Appetite Questionnaire scores of the students according to their BMI classes

BMI	EMAQ-P			EMAQ-N		
	Median	Min-Max	p	Median	Min-Max	p
Underweight	46.0	(15-72)	0.437*	46.0	(15-80)	0.109*
Normal Weight	43.0	(8-72)		48.0	(14-113)	
Overweight	43.0	(8-72)		54.0	(13-94)	
Obese	41.5	(23-57)		55.0	(18-118)	

*Kruskal-Wallis test EMAQ, Emotional Appetite Questionnaire: P,

Positive Total Score: N, Negative Total Score

Table 4.9. shows the evaluation of the sociodemographic characteristics of the students according to the emotional appetite questionnaire positive emotion and state total scores, negative emotion and state total scores.

There was no statistically significant difference between the positive emotion and state total scores of the students, median values, residence status, economic status, smoking and alcohol use groups ($p > 0.05$). There was a statistically significant difference between men and women students in terms of the median values of positive emotion and state total scores of the students participating in the study ($p < 0.05$). When the median values were examined, it was found that men students' positive emotion and state total scores were higher than the median value of women students.

There was no statistically significant difference between the median values of negative emotion and state total scores between sex, residence status, economic status and smoking groups ($p > 0.05$). There was a statistically significant difference between the alcohol consuming and the student groups who do not consume alcohol in terms of the median values of negative emotion and state total scores of the students ($p < 0.05$). When the median values were examined, it was found that the negative emotion and state total scores of the students who used alcohol were higher than the median values of the students who did not use alcohol.

Table 4.9. Evaluation of Students' Emotional Appetite Questionnaire Scores and Sociodemographic Features

Demographic Features	EMAQ-P			EMAQ-N		
	Median	**Min-Max**	**p**	**Median**	**Min-Max**	**p**
Sex						
Women	42.0	(8-72)	0.024	50.0	(13-118)	0.741*
Men	46.0	(8-72)		47.0	(14-95)	
Accommodation						
Home (Alone)	43.0	(21-72)		55.0	(14-118)	
Home (with family)	43.0	(8-72)	0.146	49.0	(14-113)	0.124**
Home (with friend)	46.0	(15-72)		40.0	(15-70)	
Dormitory	50.5	(16-72)		45.5	(13-113)	
Level Of income						
Low income	44.0	(8-72)		46.0	(14-118)	
Middle income	43.0	(8-72)	0.419	49.0	(13-113)	0.550**
High income	42.0	(21-72)		50.0	(14-97)	
Cigarette Smoking						
Smoking	42.0	(8-72)	0.135	48.0	(14-96)	0.457*
Not Smoking	43.5	(8-72)		49.0	(13-118)	
Alcohol usage						
Drinking	43.0	(8-72)	0.184	53.0	(14-113)	0.003*
Not Drinking	43.0	(8-72)		46.0	(13-118)	

*:Mann Whitney U testi **: Kruscal Wallis testi EMAQ, Emotional Appetite Questionnaire: P, Positive Total Score: N, Negative Total Score

Table 4.10. shows how the eating level changes compared to normal for different emotional states in women students.

In the women participants, the situations that eaten more than normal occurred mostly when they were bored with 29%, happy with 15.3% and alone with 15.3%

When the situations that are eaten less than usual are examined; it was observed that 51.8% were after the tragedy of their relatives, 34.5% were under pressure, and 33.7% were after ending a relationship.

When women students were safe with 54.9%, when they were comfortable with 46.7%, after getting good news with 41.2%, their eating patterns do not change compared to normal, they were the same.

Table 4.10. The impact of women's emotional eating behaviors on emotional appetite

		1	2	3	4	5	6	7	8	9	not apply	don't know
Sad	n	61	32	41	21	28	9	24	7	31	0	1
	%	23.9	12.5	16.1	8.2	11.0	3.5	9.4	2.7	12.2	0.0	0.4
Bored	n	16	18	13	6	36	27	39	26	74	0	0
	%	6.3	7.1	5.1	2.4	14.1	10.6	15.3	10.2	29.0	0.0	0.0
Confident	n	11	4	18	11	140	14	17	11	21	1	7
	%	4.3	1.6	7.1	4.3	54.9	5.5	6.7	4.3	8.2	0.4	2.7
Angry	n	55	44	35	23	50	11	10	9	16	0	2
	%	21.6	17.3	13.7	9.0	19.6	4.3	3.9	3.5	6.3	0.0	0.8
Anxious	n	81	44	31	23	21	12	11	9	23	0	0
	%	31.8	17.3	12.2	9.0	8.2	4.7	4.3	3.5	9.0	0.0	0.0
Happy	n	14	8	11	15	72	29	37	29	39	0	1
	%	5.5	3.1	4.3	5.9	28.2	11.4	14.5	11.4	15.3	0.0	0.4
Frustrated	n	51	39	43	35	48	5	8	3	16	1	6
	%	20.0	15.3	16.9	13.7	18.8	2.0	3.1	1.2	6.3	0.4	2.4
Tired	n	58	37	47	33	52	8	5	3	8	1	3
	%	22.7	14.5	18.4	12.9	20.4	3.1	2.0	1.2	3.1	0.4	1.2
Depressed	n	55	39	41	30	36	9	15	9	21	0	0
	%	21.6	15.3	16.1	11.8	14.1	3.5	5.9	3.5	8.2	0.0	0.0
Frightened	n	86	46	40	28	35	3	1	0	7	1	8
	%	33.7	18.0	15.7	11.0	13.7	1.2	0.4	0.0	2.7	0.4	3.1
Relaxed	n	7	2	9	5	119	33	24	17	36	1	2
	%	2.7	0.8	3.5	2.0	46.7	12.9	9.4	6.7	14.1	0.4	0.8
Playful	n	13	3	10	11	91	24	41	24	38	0	0
	%	5.1	1.2	3.9	4.3	35.7	9.4	16.1	9.4	14.9	0.0	0.0
Lonely	n	26	20	26	22	61	22	20	17	39	0	2
	%	10.2	7.8	10.2	8.6	23.9	8.6	7.8	6.7	15.3	0.0	0.8

Enthusiastic	n	14	8	16	15	96	32	28	15	28	0	3
	%	5.5	3.1	6.3	5.9	37.6	12.5	11.0	5.9	11.0	0.0	1.2
When under pressure	n	88	42	50	19	25	5	7	4	13	0	2
	%	34.5	16.5	19.6	7.5	9.8	2.0	2.7	1.6	5.1	0.0	0.8
After a heated argument	n	61	46	39	26	39	12	10	3	16	0	3
	%	23.9	18.0	15.3	10.2	15.3	4.7	3.9	1.2	6.3	0.0	1.2
After a tragedy of someone close to you	n	132	59	25	8	11	2	4	0	6	0	8
	%	51.8	23.1	9.8	3.1	4.3	0.8	1.6	0.0	2.4	0.0	3.1
When falling in love	n	38	17	22	28	80	16	8	7	27	4	8
	%	14.9	6.7	8.6	11.0	31.4	6.3	3.1	2.7	10.6	1.6	3.1
After ending a relationship	n	86	28	26	24	39	11	8	5	15	3	10
	%	33.7	11.0	10.2	9.4	15.3	4.3	3.1	2.0	5.9	1.2	3.9
When engaged in an enjoyable hobby	n	21	15	22	14	97	26	27	10	22	1	0
	%	8.2	5.9	8.6	5.5	38.0	10.2	10.6	3.9	8.6	0.4	0.0
After losing money or property	n	60	34	50	38	55	4	3	2	5	0	4
	%	23.5	13.3	19.6	14.9	21.6	1.6	1.2	0.8	2.0	0.0	1.6
After receiving good news	n	7	3	8	12	105	35	46	9	29	0	1
	%	2.7	1.2	3.1	4.7	41.2	13.7	18.0	3.5	11.4	0.0	0.4

Table 4.11. shows in what direction the eating level changes compared to normal for different emotional states in men students. Emotions and situations that eat more than normal in men; when 22.6% was happy, 20.2% was playful, 17.9% was after receiving good news. When the most less eaten food situations compared to normal were examined; 40.5% after their relatives suffered a disaster, 25.0% when they were afraid, 23.8% when they were anxious.

When men students were safe with 42.9%, when 41.7% were enthusiastic, 40.5% when they were comfortable, their eating order did not change compared to normal, it was the same.

Table 4.11. The impact of men's emotional eating behaviors on emotional appetite

		1	2	3	4	5	6	7	8	9	not apply	don't know
Sad	n	17	10	17	5	21	2	2	3	3	2	2
	%	20.2	11.9	20.2	6.0	25.0	2.4	2.4	3.6	3.6	2.4	2.4
Bored	n	10	11	8	6	18	4	7	7	11	0	2
	%	11.9	13.1	9.5	7.1	21.4	4.8	8.3	8.3	13.1	0.0	2.4
Confident	n	5	3	2	2	36	8	13	2	9	0	4
	%	6.0	3.6	2.4	2.4	42.9	9.5	15.5	2.4	10.7	0.0	4.8
Angry	n	16	12	15	7	20	4	2	3	4	0	1
	%	19.0	14.3	17.9	8.3	23.8	4.8	2.4	3.6	4.8	0.0	1.2
Anxious	n	20	16	10	6	14	8	1	4	4	0	1
	%	23.8	19.0	11.9	7.1	16.7	9.5	1.2	4.8	4.8	0.0	1.2
Happy	n	2	1	5	3	18	10	10	15	19	0	1
	%	2.4	1.2	6.0	3.6	21.4	11.9	11.9	17.9	22.6	0.0	1.2
Frustrated	n	12	21	11	13	18	3	2	1	1	0	2
	%	14.3	25.0	13.1	15.5	21.4	3.6	2.4	1.2	1.2	0.0	2.4
Tired	n	15	15	14	12	13	7	2	0	5	0	1
	%	17.9	17.9	16.7	14.3	15.5	8.3	2.4	0.0	6.0	0.0	1.2
Depressed	n	14	18	16	9	16	2	2	2	4	0	1
	%	16.7	21.4	19.0	10.7	19.0	2.4	2.4	2.4	4.8	0.0	1.2
Frightened	n	21	18	6	8	20	2	3	1	1	1	3
	%	25.0	21.4	7.1	9.5	23.8	2.4	3.6	1.2	1.2	1.2	3.6
Relaxed	n	3	3	1	0	34	10	9	10	13	0	1
	%	3.6	3.6	1.2	0.0	40.5	11.9	10.7	11.9	15.5	0.0	1.2
Playful	n	3	0	5	2	24	12	11	9	17	0	1
	%	3.6	0.0	6.0	2.4	28.6	14.3	13.1	10.7	20.2	0.0	1.2
Lonely	n	7	7	8	9	27	7	7	3	8	0	1
	%	8.3	8.3	9.5	10.7	32.1	8.3	8.3	3.6	9.5	0.0	1.2

Enthusiastic	n	2	0	5	3	35	12	10	7	8	0	2
	%	2.4	0.0	6.0	3.6	41.7	14.3	11.9	8.3	9.5	0.0	2.4
When under pressure	n	19	16	18	12	14	1	3	0	0	0	1
	%	22.6	19.0	21.4	14.3	16.7	1.2	3.6	0.0	0.0	0.0	1.2
After a heated argument	n	19	14	13	11	17	4	4	0	2	0	0
	%	22.6	16.7	15.5	13.1	20.2	4.8	4.8	0.0	2.4	0.0	0.0
After a tragedy of someone close to you	n	34	17	11	7	10	2	0	0	1	0	2
	%	40.5	20.2	13.1	8.3	11.9	2.4	0.0	0.0	1.2	0.0	2.4
When falling in love	n	12	4	7	7	23	5	7	3	11	0	5
	%	14.3	4.8	8.3	8.3	27.4	6.0	8.3	3.6	13.1	0.0	6.0
After ending a relationship	n	19	11	10	8	16	2	4	3	6	2	3
	%	22.6	13.1	11.9	9.5	19.0	24.0	4.8	3.6	7.1	2.4	3.6
When engaged in an enjoyable hobby	n	9	1	5	5	21	16	11	7	9	0	0
	%	10.7	1.2	6.0	6.0	25.0	19.0	13.1	8.3	10.7	0.0	0.0
After losing money or property	n	19	8	19	11	20	1	2	1	2	0	1
	%	22.6	9.5	22.6	13.1	23.8	1.2	2.4	1.2	2.4	0.0	1.2
After receiving good news	n	1	1	4	1	27	16	9	10	15	0	0
	%	1.2	1.2	4.8	1.2	32.1	19.0	10.7	11.9	17.9	0.0	0.0

Table 4.12. shows the relationship between emotional appetite questionnaire scores and physical activity scores. There was no statistically significant relationship between physical activity and emotional appetite variables of the participants (p >0.05).

Table 4.12. Evaluation of the Relationship between Students' Emotional Appetite Questionnaire and Physical Activity

Emotional Appetite Questionnaire Score	IPAQ-SF	
	r	**p***
EMAQ-PE	-0.033	0.547
EMAQ-PS	-0.055	0.317
EMAQ-NE	0.020	0.72
EMAQ-NS	0.046	0.403
EMAQ-P	-0.058	0.285
EMAQ-N	0.026	0.629

Spearman Correlation analysis
EMAQ, Emotional Appetite Questionnaire: PE, Positive Emotion: NE, Negative Emotion: PS, Positive Situation: NS, Negative Situation: P, Positive Total Score: N, Negative Total Score

5. DISCUSSION And CONCLUSION

5.1.Evaluating the General Characteristics of the Individuals

A total of 339 students participated in the study. Of the 339 students who participated, 75.2% were women (n = 255) and 24.8% were men (n = 84) students. The ages of the students participating in the study vary between 18-46. The rate of women participants was found to be higher in the study (Table 4.1). This may be due to the fact that the study was about the effect of the emotional appetite of the participants on the nutritional status, attracting more attention from women participants and therefore more willing to participate voluntarily.

When we examine the smoking and alcohol use of the individuals participating in the study, as seen in table 4.1, a total of 29.8% of the participants were smoking.

It was determined that 25.1% of women students and 44.0% of men students were smoking. When we examine the alcohol consumption status of the individuals included in the study, a total of 41.3% of students consume alcohol. 41.06% of women students participating in the study and 40.5% of men students were consuming alcohol.

With the industrialization and rapid changes in technology, it is seen that smoking and alcohol use has become widespread in societies, especially among young people. In a study conducted with 192 university students, the rate of students trying to smoke at least once in their lifetime was 61.5%; the lifetime alcohol trial rate was found to be 70.8% (133).

In the study of Turhan et al., lifetime smoking, alcohol and drug use rates among university students were 73.2%, 56.6% and 9.6%, respectively (134). In another study, in which 1518 students studying at Ege University participated, cigarette and alcohol consumption was examined and 29.5% of the students participating in the study consumed cigarettes and 55.6% alcohol (135). In the study by Vatan İ. et al. (2009) in which the smoking status of students studying at Uludağ University Faculty of Medicine was examined, it was determined that 17.5% of the total 763 students were smoking (136).

Alcohol and smoking are very risky for our health. When these studies are examined, it is seen that alcohol and cigarette consumption is high among university students. It is thought that the reasons such as stress they experience, staying away from their families, psychological or friendships may be effective (135). In chronic smokers, cardiovascular disease, other cancer diseases, especially lung cancer, and many other health problems may occur (135,136). Another factor that threatens our health is alcohol consumption. Excessive alcohol consumption can cause liver disease, cardiovascular disease, cancer types, and mental impairment (137). Alcohol consumption is recommended as ≤ 14 g per day for women and 28 g for men (138).

5.2. Evaluation of Findings Related to Anthropometric Measurements of Individuals

Anthropometric measurements enable the determination of nutritional status and analysis of the physical characteristics of the body. In this study, the mean body weight of men students included in the study was 71.6±14.20 kg, height 179.3±6.29 cm, and the mean body weight of women students was 59.9±10.71 kg and height 165.1±5.84 cm (Table 4.2).

Vassigh (2012), in his comprehensive thesis study on students studying at four universities in Ankara, the mean body weight of men was 73.4 ± 12.1 kg, and women were 56.9 ± 8.0 kg. The mean height of men was 170 ± 6.9 cm and that of women was 160 ± 6.1 cm (140). In the study conducted in Afyon by Yıldırım İ. et al. (2017), the mean body weight of men in the 18-27 age group was 73.33 ± 15.10 kg and 59.50 ± 11.38 kg for women. The mean height of men was 175.78 ± 6.75 cm, while women were found to be 162.62 ± 5.39 cm (141). The mean of height and weight measurements in studies conducted with similar age groups are similar to the results of this study.

Using the measurement of body weight and height, the calculated BMI values of the participants are an important indicator of obesity and thinness. Especially it is the most important step of obesity treatment. It has been stated that the results of BMI values are an important indicator for the diagnosis of obesity (142). In this study, it was determined that the mean BMI values of women students included in the study were 21.9 ± 3.67 kg / m2, and 25.4 ± 3.96 kg / m2 for men students (Table 4.2).

Looking at the mean body composition by sex, it was found that women students were normal according to their BMI mean (21.9 ± 3.67), while men students (25.4 ± 3.96) were overweight. 67% of the students participating in this study are in the normal BMI class, 18.6% are in the overweight class, 9.1% are in the underweight, 5.3% are in the obese class (Table 4.3). In this study, the frequency of women students in the underweight class (11.4%) was found to be higher than that of men students (2.4%). The frequency of men students in the overweight class (38.1%) was also higher than the frequency of women students in the overweight class (12.2%) (p = 0.000). This may be due to the fact that the men students in this study were more physically active compared to women students, and their muscle mass was higher.

In the study conducted by Şanlıer (2005) with university students, it was determined that the mean BMI values of men students were 22.6 ± 2.6 kg / m2 and 21.0 ± 2.7 kg / m2 for women students (143). In the study conducted by Yıldız et al. (2015) on young adults, it was found that the mean BMI value of men participants was 24.92 ± 3.15 kg / m2, and the mean BMI value of women participants was 21.23 ± 3.18 kg / m2 (144). In the study conducted by Özkan et al. on 382 university students, it was observed that the mean age of women students was 20.6 ± 1.71 years, and the mean age of men students was 20.36 ± 1.36 years. According to BMI grouping, 24.87% of women and 33.53% of men were found to be in the slightly obese and obese class (145). In the study performed by Seven (2013) on women and men individuals whose mean age is 33.88 ± 10.01, it was stated that the mean BMI values of men participants were 27.96 ± 4.38 kg / m2, while women participants were 24.99 ± 5.27 kg / m2 (146).

In the 2014 report of the World Health Organization, the mean BMI of adults living in Turkey was 27.8 kg / m2, and according to sex, it was 27.1 kg / m2 for males and 28.5 kg / m2 for women (147). According to the results of TBSA, it was concluded that the mean BMI of all age group individuals (19 and over) in Turkey was 26.4 ± 4.5 kg / m2 in men and 28.9 ± 6.4 kg / m2 in women (148).

5.3. Evaluation of Individuals' Emotional Appetite Questionnaire

A person's motivation to eat, quantity, frequency, and food selection can be influenced by certain factors without being directly related to his or her physiological needs or the nutritional value of the food (149). Eating has been associated with the pursuit of happiness in many modern societies (150). The individual's thoughts about food and eating behaviors that are affected by his social and physical environment are related to emotions and can be affected by his emotions. According to the results of this study, the mean positive EMAQ scores of men and women students were found to be 45.9 ± 12.56 and 43.2 ± 12.17, respectively. The mean positive EMAQ score of men students was found to be higher than that of women students. This difference between the sex is statistically significant ($p < 0.05$) (Table 4.5.). In addition, the mean negative EMAQ scores of men and women students are 49.4 ± 18.66 and 50.6 ± 18.49, respectively. The negative EMAQ score of women students is higher than men students; however, this difference was found to be statistically insignificant ($p = 0.741$) (Table 4.5.).

In the study of Demirel et al., it was found that sex did not affect EMAQ scores (151). Choo S. and Chan C. (2013) stated in their study that women tend to eat more emotionally as a result of negative emotions (152). In the thesis study of Bilgen (2018), it has been determined that women participants have higher emotional eating scores than men participants in order to cope with negative emotions (153). Likewise, in the study conducted by Aslan and Gürler, it was stated that women participants showed more emotional eating than men participants in negative emotions and negative events (154).

While the studies conducted indicate that there is more emotional eating in negative emotions and negative events in women, in this study, there was no statistically difference between the sex in negative emotions and negative situations ($p > 0.05$). It is thought that the reason why this result is different from the results of the literature studies may be due to the difference between emotions and eating behavior among individuals (155). When individuals experience a negative emotion, they can use methods such as eating behavior to reduce it.

In this case, it may cause an increase in BMI by causing an increase in weight (126). In the studies conducted on this subject in the literature, it is stated that negative emotional stimuli increase the tendency to eat in individuals and as a result, they cause an increase in body weight (156,157,158). In addition, it has been found that individuals with low BMI display more eating behaviors when they experience positive emotions (126). In a study conducted with healthy individuals with normal body weight, it was reported that positive emotions trigger food intake (159).

In this study, a negative relationship was found between body weight and BMI of women students and positive EMAQ scores ($p < 0.05$). Body weight and BMI of women students with high positive EMAQ scores are low, while body weight and BMI of women students with low positive EMAQ scores are high. In addition, a significant positive correlation was found between the body weight and BMI of the women participants and the negative EMAQ score ($p < 0.05$). While BMI of women individuals with high negative EMAQ score is also high, BMI of women individuals with low negative Emotional Appetite questionnaire score is also low (Table 4.6.). No relationship was found between body weight and BMI of men students and positive and negative EMAQ scores ($p > 0.05$) (Table 4.7.).

It can be explained by the emergence of motivational phenomena such as hunger, which is one of the general precursors of eating behavior, and the positive emotion, which is the distinctive stimulus. The difficulty of meeting these two phenomena (positive emotion and hunger) frequently during the day may explain the low frequency and amount of eating behavior and low BMI in these individuals (151). In a study conducted on individuals with normal weight, it was found that food intake increased in positive emotional states. As a result, it is thought that individuals increase their nutritional intake in positive moods and choose and consume healthier food for weight control (159). In a study conducted on 196 university students and volunteer hospital workers, a positive significant relationship ($p < 0.01$) was found between the negative total score of the emotional appetite questionnaire and BMI; a significant inverse correlation was found between EMAQ positive total score and BMI ($p < 0.01$) (151). In a study conducted with 232 undergraduate students and volunteers between the ages of 18-52, there was a positive and significant relationship between BMI and BMI for negative emotions in both cases (negative

emotion and negative mood), while the positive total score of EMAQ and BMI were negatively and significantly a relationship has been found (126).

Geliebter and Aversa analyzed the questionnaires of 90 people, 15 weak, 15 normal and 15 slightly obese, for each sex. As a result, in negative emotions and situations, slightly obese people ate more than the other groups ($p = 0.001$); found that weak people ate more than slightly fat people in positive emotions and situations ($p = 0.01$) (127). Masheb and Grilo's study examined binge eating disorder and emotional eating behaviors on 220 people with binge eating disorder. While he did not find a relationship between BMI and negative emotions (anxiety, sadness, loneliness, tiredness, irritability), he found a positive significant relationship between happiness, which is a positive emotion, and BMI (160). Many studies have been done on food, eating behavior and emotions (149). Food can affect our emotions, and many researchers have shown mood as a key variable (161). Desmet and Schifferstein reported in their study on 42 university students that pleasant feelings (love, hope, etc.) occur more frequently than unpleasant feelings (sadness, fear, etc.) during the day (149). Among the women participants, the situations that ate more than normal were mostly bored with 29%, happy with 15.3% and lonely with 15.3%. When the situations that are eaten less than normal in women students are examined; it was observed that 51.8% of their relatives were under pressure, 34.5% were under pressure, and 33.7% were after ending a relationship (Table 4.10). When 22.6% is happy, 20.2% was joyful, 17.9% was after receiving good news. When the most less eaten food situations in men students compared to normal were examined; it was stated that 40.5% when their relatives suffered a disaster, 25.0% when they were afraid, and 23.8% when they were anxious (Table 4.11).

It is still unclear whether there is a sex difference in emotional events. Compared to men, women experience more and more negative emotions. This may explain why women experience more mood disorders (162). This difference may be due to the fact that boys and girls have different ways of coping with emotions such as stress, distress, and happiness. In his study, Baygut found that students ate less when they were tired, anxious, sad, anxious, angry and excited.

In addition, when the students were happy, they ate more (75.6%) Men: 77.3%, Women: 74.3%) (163). In their study of Koball et al., 139 undergraduate students (70% women), reported that people ate more food when bored than other emotions (daunted, anxious, depressed) (164). While Özçelik was happy and excited in his study on 400 people in 2000, 6.25% of the people did not eat at all (Men: 1.93%, Women: 9.02%), 26.75% ate less than usual (Men: 18.59%, Women:31.97%), 22.0% ate more and more often than usual (Men: 20.51%, Women: 22.95%), 44.25% did not change (Men: 57.69%, Women: 35.65%), 0.75% did not eat. found that his condition varied according to the cause (Men: 1.28%, Women: 0.41%).

When people are sad and tired, the rate of eating, 12.25% does not eat at all (Men: 8.33%, Women: 14.76%), 52.0% eats less than usual (Men: 49.36%, Women: 53.69%), 14.75% each eating more and more frequently than usual (Men: 9.62%, Women: 18.03%), there is no change at 20.00% (Men: 30.77%, Women: 13.11%), 1.00% depends on the cause (Men: 1.92%, Women:0.41%) was determined.

The difference in the effect of the psychological state on eating was found to be significant ($p < 0.01$) in the general sample (80.00%) of the people whose eating pattern was affected in sad-tired states, and the rate of being affected by the joyful-excited states (55.75%) was higher (165).

In a study conducted on 100 people (Women: 90, Men: 10) with a mean age of 32.9 ± 8.59 years who applied to Soydemir diet polyclinic, it was found that food intake was the highest while nervous (20.4%) and pessimistic (16.6%), while excited (9.9%) While determining that the increase in food intake is the least; it was determined that the decrease in food intake of individuals was mostly in their angry (18.2%), anxious (17.0%) and angry (17.0%) states. When they were happy, the decrease in food intake (9.1%) was minimal (166). In the study conducted by Vançelik et al. on 1120 undergraduate students using the simple random method, 16.4% of the students did not eat at all when they were sad or tired, while 42.6% ate less than usual, 20.4% ate more and often than usual, 18.1% It was found that there was no change. It was reported that 9.4% did not eat at all when they were happy or excited, 22.9% ate less than usual, 24.8% more and more often, and 41.4% did not change (167). A study of 50 slightly obese or obese women between the ages of 19-

64, 42.0% when anxious, 36.0% when angry, 48.0% when angry, 16.0% when excited, 20.0% when happy, 58.0% when pessimistic found that 16.0% had an increased appetite when rejoicing (168).

5.4. Causes of Differences Between Individuals' Physical Activity Levels

According to the results of the research, 36.3% of the individuals were inactive, 51.3% were minimally active and 12.4% were highly active. If these rates are examined for men and women students, 39.3% of men students and 35.3% of women students are inactive, 41.7% and 54.5% of men and women students, respectively, are minimally active. The rate of men students who are active in improving health is 19.0%, and 10.2% of women students. Physical activity status between men and women students was examined and no statistically significant difference was found according to sex (Table 4.4.).

In the "Chronic Diseases Risk Factors Research" conducted by the Ministry of Health in 2011, the physical activity levels of women and men living throughout Turkey were found to be 87.0% and 77.0%, respectively. Walking is the easiest type of exercise and should be done regularly, at least 3 days a week, ideally 5-7 days (150 minutes / week) (169). In the study conducted by Arslan et al. on 758 university students, 8.5% of women students and 28.1% of men students had sufficient physical activity levels according to IPAQ scores. Total physical activity score, severe physical activity level and moderate vigorous activity level of the boys were found to be higher than the girls ($p < 0.05$) (170). Kitiş and Gümüş found that the mean MET-min of women in their study on women over 20 years old was 989.8 ± 1195.4 (171). In the study conducted by the prosecutor and his friends on university students, it was determined that 15% of the students were physically inactive, 68% were at low physical activity, and 18% were at a sufficient level of physical activity. The rates of physically inactive, low physical activity and adequate physical activity level of men and women students were 11% and 17%, respectively; 66% and 68%; 23 and 15% (172). In a study conducted by Aslan et al. on 207 (Women: 101, Men: 106) university students in 2007, 28.71% of the girls are sedentary, 30.70% are active and 40.59% are very active, while 16.98% of the boys are sedentary and 21.70%. was found to be active and 61.32% very active (173). Aydın and Solmaz

applied the IPAQ to determine the physical activity levels of the students of the Faculty of Sport Sciences. As a result, it was determined that 7.7% of the students were inactive, 33.2% were at low activity and 59.1% were at sufficient activity level. These rates are 6.1% and 10.5% for men and women students, respectively; 34.1% and 31.6%; It was 59.8% and 57.9%. These differences in terms of sex were not found to be statistically significant ($p > 0.05$) (174). Lapa, in his study on 400 women and 300 men university students between the ages of 18 and 34, evaluated the IPAQ rates of low, moderate and high activity levels for men and women students at 9.0% and 3.7% respectively; 70.8% and 49.7%; he found it to be 20.3% and 46.7%. This difference between the sex was found to be statistically significant ($p < 0.001$) (175). In a 2014 study conducted by Pengpid and Peltzer on 800 university students, IPAQ found low, moderate and high physical activity levels by 19.8% (Men: 15.7%, Women: 28.2%), 41.8% (Men: 41.8%, Women: 41.7%), respectively. and 38.5% (Men: 42.5%, Women: 30.1%) (176).

In another study aiming to determine the relationship between athletes' nutritional habits and moods, it was found that eating behaviors of 50.4% of athletes reduced their negative emotions, 31.5% did not affect their negative emotions, and 18.1% increased their negative emotions even more. had stated. When the effect of emotional states on food preferences was questioned, 69.3% of the athletes stated that their mood affects their food preferences, and 55.9% of them stated that their food preferences affect their mood (177). In the study by Rodriguez- Ayllon et al. reported that increasing physical activity of adolescents has a positive effect on their mental health outcomes and therefore they experience less negative moods (178)

Mengi found in his study that the appetite of the athletes increased in positive emotions and situations, and that the appetite of the athletes decreased in negative emotions and situations (179). In 1562 people participating in a web-based study, high emotional eating was shown to be associated with weight gain, exercise was shown to be negatively related, and exercise was proven to reduce emotional eating ($p < 0.05$) (180).

In our study, no statistically significant relationship was found between the patients' IPAQ level and the Emotional Appetite questionnaire scores (Table 4.12.) Contrary

to our study, a positive relationship was found between emotional appetite and physical activity in different studies. The reason for this difference may be that the research was carried out on university students and the COVID-19 pandemic period, due to the limitations, less physical activity and more time spent at home.

CONCLUSION

In our study, the effects of physical activity levels and anthropometric measurements of university students on their emotional appetite were evaluated.

Emotional eating is a condition that is frequently observed in the young adult period and negatively affects the eating habits of the individual. For this reason, measures should be taken to prevent individuals from affecting their eating habits. Psychologists and dietitians should be informed about how to manage certain emotional states and how to manage their eating situations at that time with alternative options.

Suitable areas should be created for individuals of all ages to do sports and increase their level of physical activity and people should be encouraged to do sports. Physical activity has a positive effect on the symptoms of depression as well as maintaining and improving health.

The main purpose of this study is to examine the effects of various emotions and situations on students' eating behaviors and their relationship with physical activity levels. The study sheds light on new and similar studies to be carried out in the future, and other studies are needed in larger universes.

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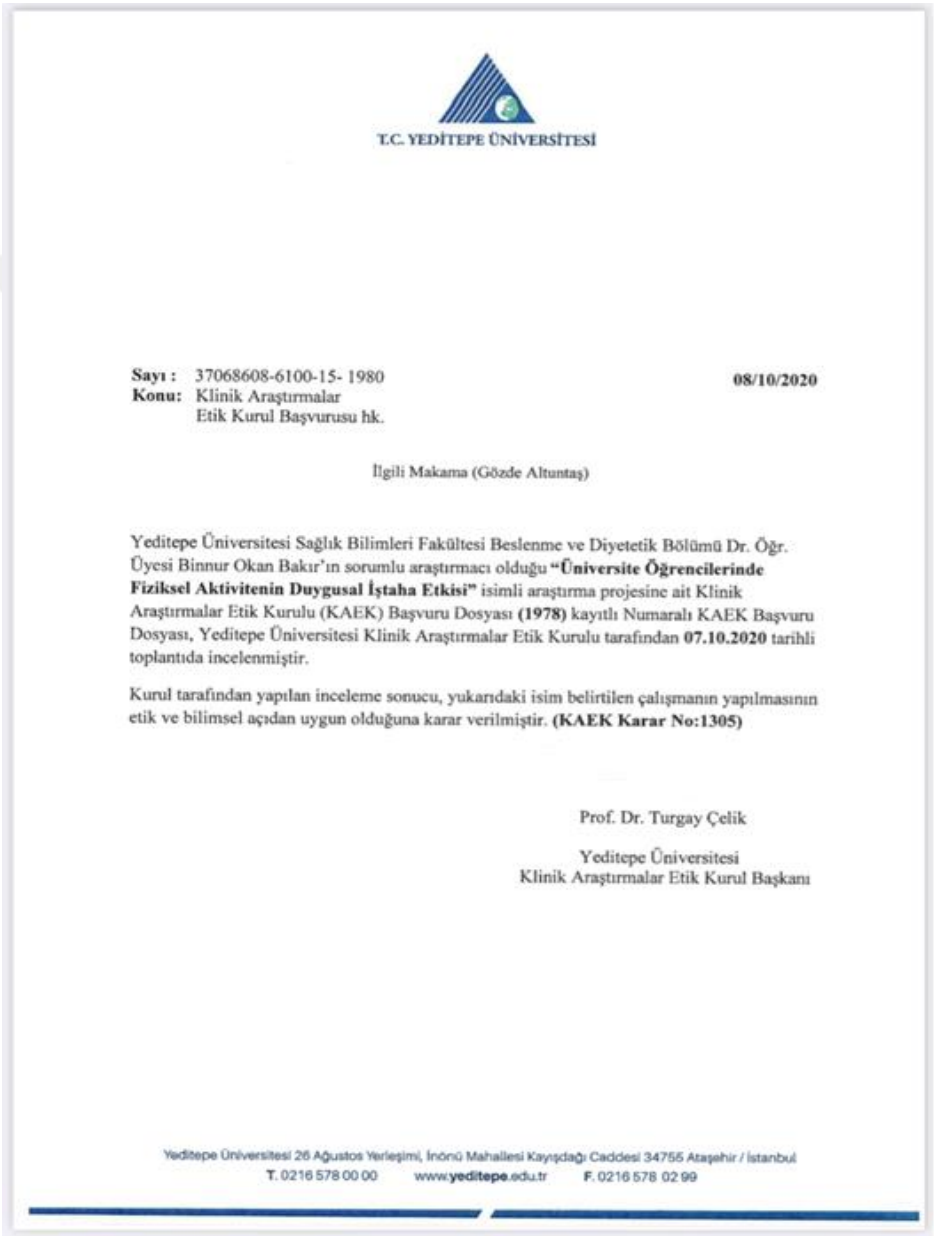
6. APPENDICES

6.1. Ethical Approval



T.C. YEDİTEPE ÜNİVERSİTESİ

Sayı : 37068608-6100-15- 1980 **08/10/2020**
Konu: Klinik Araştırmalar
Etik Kurul Başvurusu hk.

İlgili Makama (Gözde Altuntaş)

Yeditepe Üniversitesi Sağlık Bilimleri Fakültesi Beslenme ve Diyetetik Bölümü Dr. Öğr. Üyesi Binnur Okan Bakır'ın sorumlu araştırmacı olduğu **"Üniversite Öğrencilerinde Fiziksel Aktivitenin Duygusal İştaha Etkisi"** isimli araştırma projesine ait Klinik Araştırmalar Etik Kurulu (KAEK) Başvuru Dosyası **(1978)** kayıtlı Numaralı KAEK Başvuru Dosyası, Yeditepe Üniversitesi Klinik Araştırmalar Etik Kurulu tarafından **07.10.2020** tarihli toplantıda incelenmiştir.

Kurul tarafından yapılan inceleme sonucu, yukarıdaki isim belirtilen çalışmanın yapılmasının etik ve bilimsel açıdan uygun olduğuna karar verilmiştir. **(KAEK Karar No:1305)**

Prof. Dr. Turgay Çelik

Yeditepe Üniversitesi
Klinik Araştırmalar Etik Kurul Başkanı

Yeditepe Üniversitesi 26 Ağustos Yerleşimi, İnönü Mahallesi Kayışdağı Caddesi 34755 Ataşehir / İstanbul
T. 0216 578 00 00 www.yeditepe.edu.tr F. 0216 578 02 99

6.2. Survey

ANKET FORMU

Üniversite Öğrencilerinde Fiziksel Aktivitenin Duygusal İştaha Etkisi

A) GENEL BİLGİLER

1. Doğum tarihi: ……

2. Cinsiyet: a) Kadın b) Erkek

3. İkametgah durumu:

a) yalnız, evde c) arkadaşımla birlikte, evde

b) ailemle birlikte, evde d) yurtta

4. Ekonomik durumunuzu nasıl değerlendiriyorsunuz?

a) gelirim giderimden az
b) gelirim giderime eşit
c) gelirim giderimden çok

5. Ağırlık (kg) :

6. Boy (cm) :

7. Sigara kullanıyor musunuz?

a) hayır, içmiyorum b) Evet içiyorum, …… adet/gün

8. Alkol kullanıyor musunuz?

a) hayır, tüketmiyorum b) Evet, tüketiyorum

7.1. Cevabınız evet ise hangi türü, ne sıklıkla ve ne kadar içersiniz?

En sık …… İçerim

Hergün/ Haftada/ Ayda/ Yılda …… Bardak/ Kadeh/ Kutu/ Şişe

B) DUYGUSAL İŞTAH ANKETİ

Lütfen yemek yeme davranışınızın belirli duygular, durumlar ve şartlar ile nasıl etkilendiğini aşağıdaki tablodan bir numarayı işaretleyerek belirtiniz. Tablo 1 ile 9 arasında değişmektedir, 1 normalden çok daha az yemek yediğinizi, 9 normalden çok daha fazla yemek yediğinizi, 5 ise yemek yemenizde bir değişiklik olmadığını belirtmektedir. Eğer o soru için uygun değilse lütfen UD'yi, eğer cevabı bilmiyorsanız lütfen CB'u işaretleyiniz.

Aşağıdakiler sizin **DUYGULARINIZI** ifade ediyor:											
Normal ile kıyaslandığında, yemek yemeniz	**Daha az**				**Aynı**				**Daha Fazla**		
SİZ:											
Üzgün (olduğunuzda)	1	2	3	4	5	6	7	8	9	UD	CB
Sıkılmış (olduğunuzda)	1	2	3	4	5	6	7	8	9	UD	CB
Güvenli (olduğunuzda)	1	2	3	4	5	6	7	8	9	UD	CB
Kızgın (olduğunuzda)	1	2	3	4	5	6	7	8	9	UD	CB
Kaygılı (olduğunuzda)	1	2	3	4	5	6	7	8	9	UD	CB
Mutlu (olduğunuzda)	1	2	3	4	5	6	7	8	9	UD	CB
Yılgın (olduğunuzda)	1	2	3	4	5	6	7	8	9	UD	CB
Yorgun (olduğunuzda)	1	2	3	4	5	6	7	8	9	UD	CB
Karamsar (olduğunuzda)	1	2	3	4	5	6	7	8	9	UD	CB
Korkmuş (olduğunuzda)	1	2	3	4	5	6	7	8	9	UD	CB
Rahat (olduğunuzda)	1	2	3	4	5	6	7	8	9	UD	CB
Neşeli (olduğunuzda)	1	2	3	4	5	6	7	8	9	UD	CB
Yalnız (olduğunuzda)	1	2	3	4	5	6	7	8	9	UD	CB
Hevesli (olduğunuzda)	1	2	3	4	5	6	7	8	9	UD	CB

Aşağıdakiler sizin içinde bulunduğunuz **ŞARTLARI** ifade ediyor:											
Normal ile kıyaslandığında, yemek yemeniz											
	Daha az					**Aynı**				**Daha Fazla**	
SİZ:											
Baskı altında iken	1	2	3	4	5	6	7	8	9	UD	CB
Hararetli tartışmadan sonra	1	2	3	4	5	6	7	8	9	UD	CB
Size yakın olan biri felakete uğradıktan sonra	1	2	3	4	5	6	7	8	9	UD	CB
Aşık olduğunuzda	1	2	3	4	5	6	7	8	9	UD	CB
Bir ilişkiyi bitirdikten sonra	1	2	3	4	5	6	7	8	9	UD	CB
Keyif veren bir hobi ile meşgul olduğunuz sırada	1	2	3	4	5	6	7	8	9	UD	CB
Para veya bir eşyanızı kaybettikten sonra	1	2	3	4	5	6	7	8	9	UD	CB
İyi haberler aldıktan sonra	1	2	3	4	5	6	7	8	9	UD	CB

ULUSLARARASI FİZİKSEL AKTİVİTE ANKETİ

Bu bölümdeki sorular son 7 gün içerisinde fiziksel aktivitede harcanan zamanla ilgilidir. Lütfen son 7 günde yaptığınız şiddetli fiziksel aktiviteleri düşünün. (işte, evde, bir yerden bir yere giderken, boş zamanlarınızda yaptığınız spor, egzersiz veya eğlence vb.)

Şiddetli fiziksel aktiviteler yoğun fiziksel efor gerektiren ve nefes alıp verme temposunun normalden çok daha fazla olduğu aktivitelerdir. Sadece herhangi bir zamanda **en az 10 dakika** süre ile yaptığınız aktiviteleri düşünün.

1.Geçen 7 gün içerisinde kaç gün ağır kaldırma, kazma, aerobik, basketbol, futbol, veya hızlı bisiklet çevirme gibi şiddetli fiziksel aktivitelerden yaptınız?

Haftada____gün

☐ Şiddetli fiziksel aktivite yapmadım. → **(3.soruya gidin.)**

2.Bu günlerin birinde şiddetli fiziksel aktivite yaparak genellikle ne kadar zaman harcadınız?

Günde____saat
Günde____dakika

☐ Bilmiyorum/Emin değilim.

Geçen 7 günde yaptığınız **orta** dereceli fiziksel aktiviteleri düşünün. Orta dereceli aktivite orta derece fiziksel güç gerektiren ve normalden biraz sık nefes almaya neden olan aktivitelerdir. Yalnız bir seferde en az 10 dakika boyunca yaptığınız fiziksel aktiviteleri düşünün.

3.Geçen 7 gün içerisinde kaç gün hafif yük taşıma, normal hızda bisiklet çevirme, halk oyunları, dans, bowling veya çiftler tenis oyunu gibi **orta** dereceli fiziksel aktivitelerden yaptınız? Yürüme hariç.

Haftada____gün

☐ Orta dereceli fiziksel aktivite yapmadım. → **(5.soruya gidin.)**

4. Bu günlerin birinde **orta** dereceli fiziksel aktivite yaparak genellikle ne kadar zaman harcadınız?

Günde____saat

Günde____dakika

☐ Bilmiyorum/Emin değilim.

Geçen 7 günde **yürüyerek** geçirdiğiniz zamanı düşünün. Bu işyerinde, evde, bir yerden bir yere ulaşım amacıyla veya sadece dinlenme, spor, egzersiz veya hobi amacıyla yaptığınız yürüyüş olabilir.

5.Geçen 7 gün, bir seferde en az 10 dakika yürüdüğünüz gün sayısı kaçtır?

Haftada____gün

☐ Yürümedim. → **(7.soruya gidin.)**

6. Bu günlerden birinde yürüyerek genellikle ne kadar zaman geçirdiniz?

Günde____saat
Günde____dakika
☐ Bilmiyorum/Emin değilim.

Son soru, **geçen 7** günde **hafta içinde oturarak** geçirdiğiniz zamanlarla ilgilidir. İşte, evde, çalışırken ya da dinlenirken geçirdiğiniz zamanlar dâhildir. Bu masanızda, arkadaşınızı ziyaret ederken, okurken, otururken veya yatarak televizyon seyrettiğinizde oturarak geçirdiğiniz zamanları kapsamaktadır.

7.Geçen **7 gün** içerisinde, günde **oturarak** ne kadar zaman harcadınız?

Günde____saat
Günde____dakika
☐ Bilmiyorum/Emin değilim.

6.3. Confirmation Form

BİLGİ ONAM FORMU

Katılımınız için talep ettiğim ‘’Üniversite Öğrencilerinde Fiziksel Aktivitenin Duygusal İştaha Etkisi’’ başlıklı bu araştırma,
Yeditepe Üniversitesi ‘nde öğrenim görmekte olan öğrencilerin fiziksel aktivite durumları incelenerek duygusal iştaha olan etkisini saptamak amacıyla yapılacaktır.

Çalışmaya katılımda tamamen gönüllülük esastır. Kişisel ve kimlik bilgileriniz alınmayacaktır. Verileriniz tamamen gizli tutulacak ve sadece araştırmacı tarafından değerlendirilecektir. Araştırma bir anket çalışmasıdır ve hiçbir sakıncalı yanı bulunmamaktadır. Genel olarak duygusal iştah, fiziksel aktivite durumu ile ilgili sorular yönlendirilecektir.

Elde edilecek olan bilgiler gerektiğinde araştırmanın izleyicileri, yoklama yapanlar, etik kurul ve resmi makamlar tıbbi bilgilerinize ulaşabilecektir. Fakat bu gönüllü onam formunun imzalanmasıyla bu bilgiler gizli tutulacaktır. Bu araştırmada yer almak tamamen sizin isteğinize bağlıdır. Araştırmada yer almayı reddedebilirsiniz. Çalışmanın herhangi aşamasında da katılım onayınızdan vazgeçebilirsiniz.

Araştırmaya katılımınız için sizden herhangi bir ücret istenmeyecek ve katılımınız karşılığında size herhangi bir ücret ödenmeyecektir. Sizden beklenen, bilgilendirilmiş onam formunu doldurup, bu araştırmaya katkı sağlamayı kabul ettikten sonra, doldurmanızı talep edilecek olan anketlerin doldurulmasıdır.

Bu araştırmaya katılabilmeniz için;

- Daha önce ve/veya şu an Psikiyatrik tanısı olmamak,
- Gebe/ emzikli olmamak gerekmektedir.

Araştırmacı: Dyt. Gözde ALTUNTAŞ
Yeditepe Üniversitesi Sağlık Bilimleri Enstitüsü Beslenme ve Diyetetik Yüksek Lisans Programı öğrencisi
Danışman: Dr. Öğr.Üyesi Binnur OKAN BAKIR
Yeditepe Üniversitesi Sağlık Bilimleri Enstitüsü Beslenme ve Diyetetik Bölümü Öğretim Üyesi

Yukarıda yer alan ve araştırmaya başlanmadan önce gönüllüye verilmesi gereken bilgileri gösteren metni okudum ve sözlü olarak dinledim. Aklıma gelen tüm soruları araştırıcıya sordum, yazılı ve sözlü olarak bana yapılan tüm açıklamaları ayrıntılarıyla anlamış bulunmaktayım. Araştırmaya katılmayı isteyip istemediğime karar vermem için bana yeterli zaman tanındı. Bu koşullar altında, bana ait tıbbi bilgilerin gözden geçirilmesi, transfer edilmesi ve işlenmesi konusunda araştırma yürütücüsüne yetki veriyor ve söz konusu araştırmaya ilişkin bana yapılan katılım davetini hiçbir zorlama ve baskı olmaksızın gönüllülük içerisinde kabul ediyorum. Bu formu imzalamakla yerel yasaların bana sağladığı hakları kaybetmeyeceğimi biliyorum.

Gönüllü;	Araştırmacı;
Ad, Soyad:	Ad, Soyad:
Tarih:	Tarih:
İmza:	İmza: