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DEPARTMENT OF PHYSIOTHERAPY & REHABILITATION

PHYSICAL ACTIVITY OF YOUNG PEOPLE AND THEIR LIABILITY TO OBESITY

MASTER THESIS

ASHRAF ALHAJ ALI, PT, MSc

ISTANBUL, 2019

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SUPERVISOR

PROF DR. SERAP INAL

ISTANBUL, 2019

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	Unvanı, Adı-Soyadı (Kurumu)	İmza
Jüri Başkanı:	Prof. Dr. Serap İnal	
Tez danışmanı:	Prof. Dr. Serap İnal	
Üye:	Prof. Dr. Rasmi Muammer	
Üye:	Dr. Öğr. Üyesi Anıl Tosun	
Üye:		

ONAY

Bu tez Yeditepe Üniversitesi Lisansüstü Eğitim-Öğretim ve Sınav Yönetmeliğinin ilgili maddeleri uyarınca yukarıdaki jüri tarafından uygun görülmüş ve Enstitü Yönetim Kurulu'nun 25../10../2019... tarih ve .2019/17-18..... sayılı kararı ile onaylanmıştır.

Prof. Dr. Bayram YILMAZ
Sağlık Bilimleri Enstitüsü Müdürü

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.

Ashraf ALHAJ ALI

Signature

DEDICATION

I would like to dedicate my thesis to my beloved wife Basma ALHAJ ALI, to my beloved daughter Sara ALHAJ ALI and sons Saleh ALHAJ ALI and Salem ALHAJ ALI.

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ABBREVIATIONS

PA	:	Physical Activity
BMI	:	Body Mass Index
ADL	:	Activity Daily Living
WC	:	Waist Circumference
NC	:	Neck Circumference
Kg	:	Kilograms
M	:	Meters
US	:	United States
IPAQ	:	International Physical Activity Questionnaire
CVA	:	Cardiovascular Disease
NEAT	:	Non Exercise Activity Thermogenesis
NIH	:	National Institutes of Health
CAD	:	Coronary Heart Disease
HRQL	:	Health Related Quality of Life
OSA	:	Obstructive Sleep Apnea
VS	:	Versus Against
ACSM	:	American College of Sport Medicine
MET	:	Metabolic Equivalents
WHO	:	World Health Organization
MVPA	:	Moderate to Vigorous Physical Activity
HBSC	:	Health Behavior in School Aged Children
BMR	:	Basal Metabolic Rate
TEE	:	Total Energy Expenditure
PAL	:	Physical Activity Level

ABSTRACT

Alhajali, A. (2019). Physical Activity Level of Young People and Their Liability to Obesity. Yeditepe University, Faculty of Health Sciences, Department of Physical Therapy and Rehabilitation, Master's Thesis, Istanbul .

The aim of this study was to assess the physical activity level of young people and their liability to obesity by means of assessing their BMI, waist and neck circumferences. The participants were (n=194) were aging between the age of 18-25 years; 118 were females (20.61±1.6yrs) and 76 were males (21.56±1.6yrs). Their body mass index (BMI), neck and waist circumferences were measured to assess their obesity status: The International Physical Activity Questionnaire-Long form(IPAQ-Long Form) was used to describe the pattern of their physical activity level. According to their body mass index data, 52.1% (36.8% male; 62% female) were in normal weight, 35.6% were overweight, the 4.6% were obese, 7.7% were underweight; and 52.1% were physically active. The BMI were found higher among female ($p=0.01$). Their BMI and involving with sports was found negatively related with each other in both gender. Neck circumference was also negatively related with the total physical activity of the participants. The waist and neck circumference were found related with daily total house work ($p<0.05$).

In conclusion, the young individuals were physically active and having low rate of obesity. Waist and neck circumferences are important criteria for both gender. Body mass index may be controlled by both gender not only perfoming daily physical activity but also adapting the behaviours of being active in household activities that this outcome may be searched in relation to cultural and behavioral aspects with multicentered studies.

Keywords: Physical Activity, Young people, Body Mass Index, Obesity, IPAQ-Long Form

ÖZET

Alhajali, A. (2019). Genç Bireylerin Fiziksel Aktivite Düzeyleri ve Obesiteye Yatkınlıkları. Sağlık Bilimleri Fakültesi, Fizyoterapi ve Rehabilitasyon Bölümü, Yüksek lisans tezi, İstanbul

Bu çalışma, üniversitede okuyan genç bireylerin (n=194) fiziksel aktivite düzeyleri ve kilo durumları durumu arasındaki ilişkiyi araştırmak amacıyla yapılmıştır. Yaşları 18-25 yıl arasında olan katılımcıların yaş ortalaması 20.9 ± 1.7 yıldır. Bunların 118'I kadın (20.61 ± 1.6 yıl) ve 76'sı erkektir (21.56 ± 1.6 yıl). Obesiteye olan yatkınlıklarını incelemek amacıyla vücut kitle indeksleri (VKİ), boyun ve bel çevre ölçümleri alınmıştır. Fiziksel aktivite düzeyleri Uluslararası Fiziksel Aktivite Anketi-Uzun Form (UFAA) ile değerlendirilmiştir. VKİ değerlendirmesine göre % 52.1'i normal kiloda, %35.6'sı fazla kilolu, %4.6'sı obez, %7.7'si düşük kilolu bulunmuştur. VKİ kadınlarda daha yüksek bulunmuştur (p=0.01). Her iki cinste de VKİ ve spor yapma negatif yönde ilişkili bulunmuştur. Boyun çevresi ise katılımcıların fiziksel aktivite düzeyleri de negative yönde ilişkili olduğu saptanmıştır. Aynı şekilde katılımcıların vücut ağırlığı, bel ve boyun çevresi ise evde yapılan günlük ev işleri ile ilişkili bulunmuştur ($p<0.05$).

Sonuç olarak, genç bireyler fiziksel olarak aktiftirler ve obezite oranı düşük bulunmuştur. Her iki cins için de bel ve boyun çevre ölçümleri önemli kriterlerdir. Vücut kitle indeksi fiziksel aktivite yapma yanı sıra, günlük ev işleri ile ilgilenmek ile de control altında tutulabilir. Genç bireylerin fiziksel aktivite ve obbesiteye yatkınlıkları, kültürel ve davranışsal farklılıklar açısından çok merkezli çalışmalar ile incelenebilir.

Anahtar Kelimeler: Fiziksel Aktivite, Gençler, Beden Kitle İndeksi, Obezite, IPAQ

1.INTRODUCTION

Obesity is responsible for many health diseases in all the countries through out the world. Therefore, controlling obesity is considered as a serious challenge worldwide among all age groups and in both gender. Inactivity and unhealthy habits are the leading causes of obesity (1), as well as overweight that may effect the general health conditions of young people (2). However, it is also considered as a concequences of the modern daily life among young people (2, 3). On the other hand, it is an important risk factor for the noncommunicable diseases such as cardioıvascular, respiratory diseases, metabolic syndrom, hypertension, colon cancer or diabetis that are treathening the life of individuals in any age groups (4)

Obesity and inactivity are also becoming a threat among the Turkish population, mainly due to inactive lifestyle (5). In 1990, only 18.8 percent of adult population were overweight and obese. The obesity prevealance was increased to 32.2% (28.4 – 36.1) in men, and 39.7% (34.1 – 45.5) in women according to the report of WHO. These ratios were significantly higher compared to global obesity ratios, which were reported as 13.2% (11.1% in men and 15.3% in women) in the same report. These were higher then the obesity ratios reported also for Europe, which was 23.4% in men and 27.1% in women. Thus, Turkey is among the countries demonstrating higher rates of obesity in Europe as well as in the world.

Since adolescents and young people are adapting sedentary life style and sedentary behaviour such as watching television and videos, playing computer games, surfing in internet in addition to sitting for homeworks and assignments inactivity is becoming evitable [7]. Decreased physical activity may be in relation to central fattening that is leading to obesity is considered as an risk factor among young individuals (Hatemi 2002). Central fattening that is measured with neck and waist circumference may give information regarding to life threatening diseases such as diabetis, cardiac diseases hypertensin, metabolic syndrome and obesity (Hatemi et al, 2002; Kafkas 2017).

Therefore, we aimed to observe the physical activity level of young individuals and their liability to obesity by observing their weight status as well as waist and neck circumferences that are acknowledged as easy and accurate measurement techniques (McArdle vd. 2006; Kafkas vd. 2017) Thus, the hypothesis of this study were,

H0: Young indivuals are physical activity and not liable to obesity

H1: Young indivuals are inactive and liable top obesity.

2.THEORITICAL FRAMEWORK AND LITERATURE REVIEW

2.1 Obesity

Overweight, which is leading to obesity that is noted and defined as increasing of fat tissue in the human body [10]. Relating to these definition, obesity is not only an eating unhealthy behaviour. But also it is accompaned to the presence of an effects of other factors like psychological and social factors, both of the causes and occurance of obesity make it an important subject to be defined and to studied by scientificals as an eating disorder as well as a biochemical disease, and as a health problem that is impacingt on the health of human body [10,11].

So there is high warming and alarming levels of overweight and obesity in young people reveals by recent shapes and figures. A recent documents and new report were recognized that changing the sedentary life style among young people and health behavior is not easy and very complex. It noted ‘it is vital that obesity and overweight are considered to be first and becoming at beginning at a societal rather than an individual level’s [7].

2.1.1 Strategies for Decrease Incidence of Overweight and Obesity in Children and Adolescents

People in young age may be overweight or obese due to inactivity in combination of unhealthy eating habits especialy in young aging. Less energy consumption with ineffecient amount of daily physical activity.

There are also some factors impact on health status of young people such as genetics and daily lifestyle, which is contributing and impacting on young people and child's weight status. The strategies related to weight status that produce successful weight loss among young people and weight maintenance will prevent overweight and help them to prevent and avoid obesity too.

Improving and encouraging of eating habits are necessary to decrease the prevelance of overweight and obesity in young people, so increasing the amount of daily physical activity plays an important role to decrease the incidence of overweight and obesity among young people [12,15].

There are a number of steps that can share and contribute to help the prevention of overweight and obesity among children and at childhood and adolescence, this steps may controll weight gain of people. There include:

- Change the habits of eating, family eating slowly and gradually should do that with gentel work to change the habits of family eating and daily activity levels of young people, this step will help young peopel to do healthy eating habits and eat healthy food, family should focus on that target more than focusing in weight controll or weight, that is necessary to keep and enhance healthy habits then get healthy weight.

-Change the family habits and encourage the healthy habits will take care of weight itself. No doubt and it is sure that Parents who are eating healthy foods and have healthy habits are physically active, and have normal weight, at same time, they are affecting positively on their children to eat healthy food and to live a healhty life style, their children will do healthy habits, so it is necessary and important that parents should be a good and a role model for their children and adolescence. this is important factor for keep healthy weight and maintain weight in normal range.

- Improvement and encouragement the physical activity. İt is vital and necessarry that children should do at least an hour of moderate physical activity daily to stay active and in normal weight, that means most days of the week. This help them to be in normal weight, and help them to be physical active, more than an hour of physical activity daily may promote weight loss if there is overweight or obese, and subsequent maintenance that can keep weight status in normal average and therefore they can be in normal weight during adolescence and young period of life.

- Reduction of time infront of the television and decrease the time of waching it, also necessary and important to reduce time spend in front of the using computer to less than 120 minutes every day. Sitting long time daily infront of television or computer makes change in body posture. So less time sitting means less inactivity, and less overweight, so decrease the liability to obesity.

- It is vital to educate people to eat just when they are hungry, not every time, so encourage and motivate children and adolescence not to eat hurry up but to eat little and slowly and to eat just only when they are feel that they are hungry.

- Avoid buying and eating of unhealthy food like soft drinks or foods with high level of sugar or fat, also refrigerator at home should be stocked with low fat food or with fat free and fresh fruit and fresh food like healthy fruites and vegetables instead of unhealthy drinks.

- At least serve five servings of healthy food daily like fruits to enhance healthy food and healthy habits among kids, children and young.

- Encourage and motivate children and individuaals specilly young people age to drink enough amount of water daily rather than drinks with high amount of sugar, and energy drinks that share also to enhance healthy habits among childhood and young people.

- People should regularly controll their weight to keep it in normal range and to avoid increasing of weight early.

- Crack a sweat: practice every day 30 minutesof moderate- intensity physical activity minutes daily like walking or weeding and hoeing the garden will crack a sweat.

- Give opportunities during the day time for even just 20 or 30 min. For burning some of fats by doing activity, and to give chance for energy consumption, for exapmle ambulation at home or around home in the garden, using stairs instead of elevator, Again and contineou repeat it many times for a few minutes, every little bit helps, thats keep body physically active and keep weight status in normal range, and at same time avoid liability to obesity.

2.1.2 Global Non Communicable Diseases Target Reduce Physical Inactivity

The main vision and basic overall purpose of this targets collaborative arrangement is to reduction of risk that lead to morbidity and mortality related to main four sharing risk factors which are including physical inactivity, and to reduce and decrease the risk of four groups of non communicable diseases (chronic respiratory diseases, cardiovascular diseases, diabetes, and cancers) through effective collaboration focused on achieving and performing results in low- and middle-income countries. Because of that World Health Organization put 9 Global non communicable diseases targets which are aiming and emphisizing and leading to decrease the risk of physical inactivity and unhealthy diets. [80].

Governments have endorsed nine international voluntary targets with overarching aim to reduce the premature of cases of death that are done by the four major of NCDs by 25% in 2025 according to WHO in 2014. WHO put 9 targets, in this thesis we focused on 3 targets that is realated to physical inactivity and obesity, targets numbers are 3, 7, and 8.which were discussed by world health organization to avoid overweight and diseases related to obesity.

Target 3: Reduce the incidence and Prevalence of Physical Inactivity among people.

Global Target a ten percent relative decreasing in percent of prevalence of insufficient physical activity and not enough physical activity by 2025.

In the world and around the world there are alot of deaths caused by cardiovascular diseases, whish is related to overweight and in many cases related to obesity, also Around the world a lot of deaths caused by obesity. more than ten of millions of deaths per year caused by NCDs, overweight and obesity are responsible for many of non communicable diseases, it is risk factor for all of noncommunicable diseases in the world,

Non communicable diseases decrease the economic status of people, because it decrease the ability to production and decrease input of people and increase output of people, and prevent people to live in healthy style and healthy wellbeing, that means people are not able to be physically active becuse of this diseases.

This is not allow for people to be enough healthy, all this diseases have strong relationship with overweight and obesity. Now creating the conditions that favour sustainable devolepment is meaning taking serious action and serious solve to prevent and control NCDs and to stop it, and to motivate people to be physically active. Nine Global NCD targets provide and supply a vital vision for progress the health status of individualls by 2025 and to make people to live in healthy status.

The world health organization provide and supply a rules and policies with some interventions that can share to realise this vision. To achieve and carry out of this target to make people healthy and enough physically active, when world health organization implemented that target, they considered that countries on track to meet and face the commitments made on NCDs at the United Nations General Assembly to decrease and reduce premature NCD deaths [80].

There are fast facts related to target 3

•In every 4 adults persons, there is one person is not helthy enough, and more than 80% of adolescent population and young people in the different countries around the world are not physically active enough.

• Less amount of physical activity and insufficient physical activity are one of the 10 factors that are leading risk factors for the Global deaths around the different countries, and it causing many deaths around the world approximately causing 3.2 million deaths in every year.

• Many environmental factors like urbanization, fearand worried of trafic for example make discouragement to people to do physical activity. So trafic and crowded cities does not give a good chance for people to walk or to do physical activity so it makes limited movement for individualls specially young people.

• Each week young people should do daily 150 minutes of regular physical activity to stay physically active, this maket hem living in healthy style and in normal weight status.

• Every day people aged 5-17 need at least 60 minutes of exercise to be healthy enough and to maintain physical and mental health, this will keep their weight in normal range and controll body weight status.

Target 7: Halt and decrease the rise in obesity by 2025

Fast Facts related to target 7:

•Among young people overweight is in high level and overweight developing to obesity with aging is growing, almost two-fifths of Global people in 18 years old and more is considered abnormal weight, this means that alot of people has overweight, with more than half a billion was obese, and this percent are increasing in many countries in the world with increasing the years.

• Obesity is related to unhealthy and poor health products and unhealthy outcomes, which are including type 2 diabetes and cancers, and conditions including obstructive sleep apnoea and orthopedic diseases like osteoarthritis.

• Increase physical inactivity due to many factors like sedentary nature of many forms of work, job, modes of transportation, increasing urbanization around the world and increasing hours of sitting, are all contributing to the rise and increase the overweight and obesity, all theses factors make shifts in eating habits towards diets containing energy-dense foods very high in fat and sugars, which also leading to increase physical inactivity among people and leading to decrease the expenditure of energy.

Priority Actions that are related to target 7:

Halting and stop the rise in overweight and obesity is not complex and it is possible, it can be achieved and it can be done, and it needs a dynamic approach that very effective to prevent it. To supporting policy implementation Partnerships between government and civil society will be important key and will emphisize the carry out of this target to enable people to live in healthy status.

The interventions which is very important to improve the quality of life, quality of health food, quality of diets and enhance Interventions to improve quality of health food, healthy diets and improve the level of physical activity, that take into account the factors that contribute and share to changes in physical activity patterns and diet.

Such as the environmental changes associated with economic development, are also necessary to change the physical activity level of individuals specialy young people. Addressing the lack of supportive polic across every sector, including health, agriculture, transport, urban planning, environment, food processing, distribution, shopping, and education is also important and should be considered to assess the the level of physical activity of people in all countries around the world.

Recommended Rules and Actions was achieved to carry out this target in 2025.

• Enhance health habits by enhance the healthy food in public institutions, for example food in the schools, that will make students able to buy and eat healthy food and to live in healthy lifestyle.

• Enhance physical activity, so healthy dietary is necessary to build a healthy body that can overcome on the different diseases.

• To produce healthy food should know the labelling contents of food and put it on the products and establish it easy, by this way production of healthy food become possible and easy and people can living in a healthy lifestyle.

• Develop and activate guidelines of policy measures that engage different actors system to:

› Reduce and decrease the content of free sugars and fat in all types of food and beverages, this will increase the healthy diet which is necessary to people.

› Increase the present of healthy food, that will give people good chance to live in healthy life style, and to avoid increasing weight of body.

• Marketing of unhealthy foods and food high in sugars should be restricted as much as possible, also restrict Maketing of fat and salt to children to keep their weight normal.

Target 8: Using drug therapy to prevent cardiac arrest and heart attacks.

A lot of people in the world around 50% of eligible individuals receive medicine therapy as treatment and counselling to prevent cardiology disease by 2025.

Fast Facts related to Target 8:

• Cardiovascular disease (CVD), the leading cause of NCD mortality, led to more than seventeen million deaths in 2012 around many countries in the world. it estimated seven million of these deaths were due to heart attacks (ischaemic heart disease) and 6.7 million were due to stroke, overweight and obesity are risk factors for cardiovascular disease, and it increase the probability and liability to cardiac attack.

• More than eighty percent of cardiovascular deaths occure in low and middle-income countries (LMICs) in the world, this is indicator that there is less education of risk factors of cardiovascular disease.

•In low and middle income countries the Primary care level of the health system always the weakest, plays a critical and important role in delivering these interventions, so we should increase the primary health care in that countries to make people live in healthy lifestyle.

Carry out and meeting this target is possible and available. Progress has been made to avoid and prevent heart attacks, but stil worried issue in many countries in the world that people should care about risk factors of diseases.

Here there are some actions to drive progress quality of health:

• Improve and enhance equitable primary health care access to prevention programmes, services, and essential medicines and technologies, emphasizing work on cardiovascular diseases and diabetes, it decreases the liability to diseases related to overweight and obesity.

• Equitable health financing , establish sustainable, and enstrengthen the health care workforce for the prevention and avoid of NCDs and controll it.that means support and increase the primary health care to educate people about risk factors of noncommunicable disease.

Effective promotion of physical activity remains a strategic key in achieving a mass shift in activity levels [8,16]

2.2 Obesity in Worldwide and in Turkey

In a few recent decates, the prevalence of overweight and obesity body mass index more than 30 kg/m² (BMI ≥30 kg/m²) has been increased greatly, during last century, one of the major and biggest health problem considering as accumulate of fat in the human body which is obesity, in other words. Obesity always result of many diffrernt factors including cultural of people, social that they are living around it, genetic and hormones changes in the body, physiological changes, behavioral and habits, it share in cause of excess fat that were stored in the body [7,19]. Therefore excess of fat in the body affected by interactions of body.

Accumulation of fat tissue in the human body knows as obesity, so obesity is not only realting to food disorder but it is also relating to presence of psychological factors, so overweight which leading to obesity is also defined as an increase in body fat tissue. However, the presence of psychological factors and risk factors of obesity maket hat subject important for researchers as well as a biologic problem [11,20].

Now obesity is responsible for many diseases, it is contineou change speedly and it has become a critical medical condition [13,21]. It is typically results from over-eating of unhealthy meal (especially an unhealthy food and diet) and lack of enough physical activity, with inactivty life style. [13,22].

In State of Turkey, percent of obesity among young people has been increased during last ten years [14]. Sedentary lifestyle caused an increasing of people specialy young people all over the world which is including state of Turkey [3,14,23]. also activity daily living decrease the risk of overweight and obesity among young people. One person in every five people in State of Turkey suffers from obesity or heavy overweight, that has been reported by the Turkish Statistical Institute (TurkStat) [15].

However, the presence of psychological factors and risk factors of obesity maket hat subject important for researchers as well as a biologic problem [11,20].Now obesity is responsible for many diseases, it is contineou change speedly and it has become a critical medical condition [13,21].

2.2.1 Obesity and Chronic Disease

There is a strong relationship between chronic disease and obesity, generally chronic diseases related to overweight or obesity in most cases[18]. The terms overweight and obesity are a good ways to describe having too much body fat. The world Obesity Federation published in its recent report that has been supported the definition of obesity as a "chronic disease" [21, 24]. So obesity is define as a disease because it is leading to other health conditions like diabetes, so it should be defined as a disease has asource of controversy for many years [26,29].

The risk of chronic diseases is high in people who have overweight or who are obese, obese people are liable to diabetes and other chronic diseases more than people who have normal weight, that means obesity is related with many cases or conditions of diseases [25]. This proves that even if young age but also obese, young people liable to chronic diseases specially type 2 diabetes, which is companion of obesity [21].

2.2.2 Obesity and Cardiology

Body weight status is directly related and completely linked to various cardiological risk factors. As BMI increases, many changes occures in the body like blood circulation and pressure, and metabolic changes. These changes lead to different pathological cases of cardiological and cardiovascular proplems [30,41].

2.2.3 Obesity and Pulmonary Function

Excess weight, overweight and obesity impact on respiratory function in human body. The excess accumulation of abdominal fat in the human body, may decrese the movement of the diaphragm, lung expansion, while accumulation of visceral fat in the body can decrease and limit the movement of chest, and decrease the strength of inspiration and expiration muscles, so respiratory muscle strength will effect and decrease [31,25]. That is important to keep waist circumference of young adults in normal range.

Asthma which known as difficult of respiration, and obstructive sleep apnea are two common chest and respiratory diseases that have been linked with strong overweight and obesity [21,32]. Therefore obesity also impact on respiratory system of human body. Strong overweight and obesity are also a major contributor to obstructive sleep apnea[22,34].Which is estimated to affect

approximately one person in every five adults. Around 50 percent and 75 percent of individuals people with obstructive sleep apnea have abnormal weigh like overweight and obesity [35,23]. This proves that loss of weight decrease the liability to sleep apnea.

2.2.4 Obesity and Quality of Life

There are high average of overweight or obesity and depression, An analysis of 17 cross-sectional studies has been found that people who were obese were more likely to have depression than people with healthy weights [37]. Since the studies included in the analysis assessed weight and mood only at one point in time, the investigators could not say whether obesity increases the risk of depression or depression increases the risk of obesity, so both of them are working together. So obesity is associated with depression, in many cases and depression is associated with obesity [30, 38, 48].

2.3 Physical Activity

Human physical activity is defined as any movement that producing by body, produced by skeletal muscles of human body, that require and consume amount of energy. This include alot of activities like transportation and engaging in recreational pursuits [31,49]. The Compendium of Physical Activities of human body is using to estimate the intensity of metabolic of an activity compared to a resting state to assess rate of energy that expenditure by human body [9,39]. According to Minisrty of Health in State of Turkey, Physical activity can be Defined as group of activities in our daily life which is proving and enhancing the heart rate of our bodies and respiration by using and consumption energy while using our muscles and joints and it causes different level of tirendess[42, 51, 54]. So it is movement performed by using our muscles of body and joints in daily life by energy consumption and by energy expiditure, increasing the rate of respiration and incresing of heart rate, it is leading to fatigue at different intensities. young peple should do physical activity at least 30 minutes medium intensity exercise daily to keep them self healthy[81,56]. Daily moderate physical activity is necessary to young people to keep them selves in health weight and to avoid overweight and obesity.

2.3.1 Physical Activity and Public Health

Human body was built to move and to transport around the environment, to produce bodly motion, and major systems, including the skeletal muscle which is resposible for many of movement of body, physical activity is important to support muscular system, metabolic, circulatory, digestive and endocrine systems, all of this systems do not develop and function properly unless stimulated by regular and frequent physical activity. That is the significance and importance of physical activity for different systems of human body [9,55]. That means physical activity enhances public health in many different fields as a preventive and theraputic, so physical activity has two positive effects and vital impact on our bodies.

The link and relationship between physical activity and different disease has been explored extensively. There are strong associated and relationship between physical activity and general health of individuals, now there is a clearance of impact of physical activity on weight status of human body as treated effect and theraputic effect [10,41]. Obesity is result from less of energy using that means less of clories burning[40,55]. Thus we can say that Physical exercise is known as any active movement or any bodily activity that enhances, maintains and emphysizes the physical fitness and overall health of muscles of human body. It is performed for many different reasons. These include activities of enjoyment, strengthening muscles and the cardiovascular system, enhance athletic skills, weight loss or maintenanceof weight status for young people [11,57].

The term “physical activity” describes many forms of movement that achievied by human body, many forms of different movement that are doing by body, including activities that involve the large group of skeletal muscles. Activities that involve the small skeletal muscles (e.g. playing board games, drawing, and writing) and include small group of skeletal muscles or large group of skeletal muscles are also important to use and burn amount of energy, so large group of muscles means large amount of burn of energy of body [59,44].

Physical activity is defined by its duration, intensity, and frequency. We can define duration of physical activity as the amount of time spent participating in a physical activity session. But the rate of energy that consumped and expenditure known as intensity of physical activity. Physical activity also has a frequency related to time of sessions [45,48].

2.3.2 Benefits of Regular Physical Activity

Since health is the state of complete physical activity, mental and social well-being of an individual. we aims to classify the benefits of physical activity as it is benifits and usefull for our bodies as physical health, for psychological health, social health, and for the future health [59,60].

Benefits for Physical Health

The physical activity improves all body systems but primaryly musculoskeletal and cardiovascular and respiratory systems[60]. These can be summurized as :

A) Benefits for Musculoskeletal System

− Build a strong muscle mass of human body and volume of lungs.

− Maintains the balance and equation between muscle functioning in reverse directions.

− Maintains balance by increasing strenght of muscles – by improving control of joint of human body.

− Protects, keep and increasing joint mobility of body, so it has a positive impacts on muscles, bones and joints

− Maintains and enhances the flexibility of muscle and joint, that makes the movement smooth and easy.

− Enhances muscle endurance and tolerance.

− Improves body reflexes and speed of reaction time, improves neuromascular function.

− Maintains integrity of body posture and keep normal body shape.

− Develops bodily awareness and improves balance, agility and quickness.

− Improves bodily defense against possible injuries, possible accidents and reduce tiredness.

B) Benefits for cardiovascular and respiratory systems

− Physical activity Reduces heart rate/minute

− Enhances cardiac stroke volume by expanding cardiac cavities and regulates cardiac rhythm.

− Regulates blood pressure by reducing vascular resistance and makes vasodilatation.

− Reduces risk of blood vascular diseases by regulating high blood cholesterol and triglycerides in the blood of body.

− Oxygenizes the lungs and cause lung expansion, and increases breathing capacity.

− Controls insulin activity in the blood and reduces blood sugar levels with regular physical activity. İt makes sugar of blood in normal level.

− Balances bodily use of water, sodium and other minerals that intake by body.

− Improves energy production by burning fats and expenditure of lipids.

− Enhances metabolic and biological functioning in the body and prevents weight gain.

C) Benefits for Psychological and Social Health

− Enables a feeling of wellness and generates happiness of individuals.

− Reduces the risk of depression and anxiety disorder whish is realred to obesity.

− Improves communication skills and body language.

− Improves ability of positive thinking and coping with stres as a skill of stres management.

− Increases self-respect and self-confidence and reduced symptoms of depression.

− Advances cognitive skills and develops social relations

D) Benefits for the Future Health

−Regular physical activity decreases death risk because of possible sudden or systemic diseases which occures due to insuffecient blood circulation.

Generally an active and psitive daily life is important and is the first step for a healthy life. In order to get the most benefit from physical activity, to protect body and improve health, regular exercise should be performed on a regular basis and incorporated into daily life[60,61].

2.3.3 Intensity of Physical Activity

The rate of energy expenditure by body systems known as intensity of physical activity, so intensity of physical activity related to mount of energy that is burning in human body during doing the activity, According to intensity level of physical activity, physical activities are grouped under three headings [13, 62, 53] light, moderate and vigorous:

Light: Light intensity of physical activity refers to daily activities which require very little effort. Like activity daily living it is simple activity, during this light activity Breathing and heart rate increase in very low level and during light-intensity physical activity is slightly increase above the resting value. Examples are slow walking, doing household chores.

Moderate: Moderate intensity of physical activity refers to physical activity which requires moderate effort of body, and works group of muscles. Breathing and heart rate of body during moderate-intensity physical activity is higher than the normal value and it is higher than light intensity of activity. That means rhythm of heart rate inceased, During moderate of physical activity, individuals can talk slowly but can not sing. Examples are brisk walking, low tempo running, dancing, jumping rope, swimming, playing table tennis, low tempo cycling.

Vigorous: Vigorous intensity of physical activity refers to physical activity which requires high level effort consumption by human body and high level of work of skeletal muscle, in vigorous physical activity muscle works strongly. Breathing and heart rate of body during vigorous-intensity physical activity is much higher than the normal value, much higher than light and moderate. During physical activity, individuals cannot say more than a few or little words without gasping for breath.

2.3.4 Amount of Physical Activity

Regular physical activity in children and adolescents promotes health and fitness of human body. Compared to those who are inactive and not healhty, Youth who are physically active have higher levels of fitness, lower level of body fat, and stronger muscloskeletal system, bones and muscles more stronger in people who are physically active[48, 60]. Depend on the amount of physical activity that is applied by individual daily, the amount of weight loss occurs, so amount of physically active determines the amount of energy consumption.

A lot of studies and researches denotes that regular weekly physical activity of body <150 minutes/week has a minimal effect on weight loss, but regular Physical activity more than 150 minutes every week result to modest weight loss (defined as ~2-3 kg), but with increasing amount of physical activity of human body between 225 and 420 minutes/week resulting in the greatest weight loss[64,48]. that means more regular daily physical activity leade to loss weight and keep weight status in normal range.

2.3.5 Sedentary and Lifestyle

A sedentary lifestyle is a type of human lifestyle involving little or no physical activity, it is unhealthy life style, sedentary also related to not enough level of physical activity and insufficient amount of energy burn, A person living a sedentary lifestyle is often sitting or lying down while engaged in an activity. For adults to keep their weight in normal range it very necessary to achieve 150 minutes of regular physical activity weekly, this is enough for young people to keep them physically active [65, 57].

But also little amount of physical activity daily is usefull and benifit for people who are living inactivity lifestyle, and positive thing is that even the small amount of physical activity have profound benefits to health [55, 57]. To reduce liability to inactivity and sedentary lifestyle it is important to increase the amount of daily activity gradually and regularely over a period of weeks or even months. Gradually exercise and regular programe of daily physical activity wıll make young people able to decrease the sedentary tıme [66, 62].so slowly and little by little sedentary people can doing physical activity with gradulally increasing to keep them active, healthy and maintain in normal range of weight.

2.3.6 Effects of Physical Activity

Persons specialy young people with moderate to high levels of physical activity or efficient and enough cardiorespiratory fitness, and they have a lower percent of mortality rather than those with sedentary life style or low cardiorespiratory fitness[61]. People who exercise regularly and doing regular physical activity have a lower risk of developing many long-term (chronic) conditions, and they are less liability to obesity.

Physical activity impact on obesity in these ways [16,63].

Physical activity (PA) and exercise training (ET) plays very important and critical role in the prevention of weight gain, initial weight loss, weight maintenance, and the obesity paradox, so as apreventive effect of physical therapy, physical activity impact on weight status of young people[63]. It has prevented role which is appearing in prevent of weight regain after weight loss.

1) To keep and stay young people in energy balance, Physical activity is necessary to increase the amount of people's total energy expenditure, which can help them stay in healthy weight or even lose weight, as long as they do not eat more to compensate for extra calories they burn.

2) Physical activity decreases fat around the waist and abdomen area of body, and decrease total body fat.

3) Weight lefting, increasing of physical activity means increasing in energy using by it causes muscle power and muscle-strengthening, activities build muscle mass, and keep weight of body healthy and normal, body mass which is build and increase by doing physical activity helps to increase the amount of energy consumption.

4)The fourth way that Physical activity decrease the psychlogical problems, also physical activity has theraputic effect to treat the psychological diseases like depression or anxiety.Activities of Daily Life, diet and exercise are also methods to prevent obesity among young people.

Sedentary individuals can experience a decrease in risk of death and disease with physical activity[54,68]. Daily and regular exercise can help prevent overweight from hypo kinesis (lack of regular physical activity).Energy intake of body is determined by the amount of calories that burned and absorbed from food consumption by human body. When the same amount of burned energy is equal to amount of calories intake by human, the weight will be constant, but without controll its status, so may be it increase. When young people using more calories than they absorb from their food, weight decrease may ocur and positive result will gain. And the opposite is true, when young people absorbs more calories than they spend, weight of body gain may occur [65,69]. Therefore weight status of body can be controlled by the amount of absorb calories and burn of energy.

2.4 Young People

According and relating to organization of UNESCO, young people defines as a development stage of old where the individual people are given formal education, they have not salary or economy input but they try to find and get a good economy status, and their marital status are single. Many studies on adolescence period and young people mention about the classification of age in this period of old, relating and according to UNESCO, adolescence period takes ages between 18-25 years, but United Nations said that young age it takes place between the ages of 15-25 years. So this is the period of young people.

Young adults between the ages of 18–25 years are in a period of transition from adolescence to adulthood so it is transition stage. With physiological and psychological developments, and it is aslo with physiological and psychological changes including hormones and genes, until recently, it was perceived that overweight or obesity mostly affected middle age adults[70,31]. But the overweight and obesity still increasing among young people, especially college students, because they spend alot of sitting time and weight of young people is becoming evident and increase gradually in this decates [67,66].These transitions in that period of age have been seen as a time of transient and displacement,so young people want to prove their self and want to get more confedence in their selves [67]. These important time in the life course, make young adults vulnerable to energy imbalance often leading to weight gain, unhealthy weight, which may not be concerning at the time but later accumulates, in this period of life they tends to sedentary life and physical inactivity, with unhealthy food, It is known that interaction of many factors that happen during these period of age years may make them vulnerable to alot of risk factors of overweight [66,72].

2.4.1 Young People and Inactivity

Physical inactivity of body and sedentary life among young people are recognized as an important risk factor for many diseases among individuals specially among young people[66]. Physical inactivity is associated with many of the leading causes of disease and disability, and body posture changes [66,74].

Today, there is a high significant amount of literature quantifying and qualifying the role of physical inactivity as a risk factor and worldwide interest and efforts to increase levels of participation [68]. Globally, around 31% of adults aged 15 and over were insufficiently active in 2008 (males 28% and females 34%). Approximately 3.2 million deaths every year are attributable to insufficient physical activity [68,74] so even if they are young people but also they are liable to diseases related to obesity.

In 2008, prevalence of insufficient physical active and not enough physical activity was highest level in the WHO Region of the Americas people and the Eastern Mediterranean Region. In both these regions, almost 50% of women were insufficiently active, physically inactive, while the prevalence of inactivity was found 40% in the Americas males people and 36% in people of Eastern Mediterranean. The South East Asian Region related to world health organization showed the lowest percentages (15% for males and 19% for females). In all WHO Regions, men were more active than women [20, WHO 2019]. With the consideration of differences between tow sexes.

In Turkye found around 60.5% of children old between 6-15 years are using computer and they spends many hours in sitting daily [80]. İt found 50.8% of them using internet, and 24.3% are using mobile. But the parecents were high in turkish children ages between 11-15 years, 73.1% are using computer, 65.1% are watching TV. and 37. 9% are using mobile telefon [80,81]. This sedentary behaviors are leading to physical inactivity and increasinf of weight among young adults [20,75]. Inactivity lead to overweight which also increases the risk of many orthopedic disorders like back pain, knee pain dut to muscle weakness.Globally, around 31% of adults aged 15 and over were insufficiently active in 2008 (males 28% and females 34%). Approximately 3.2 million deaths every year are attributable to insufficient physical activity [68,74] so even if they are young people but also they are liable to diseases related to obesity.In 2008, prevalence of insufficient physical active and not enough physical activity was highest level in the WHO Region of the Americas people and the Eastern Mediterranean Region. In both these regions, almost 50% of women were insufficiently active, physically inactive, while the prevalence of inactivity was found 40% in the Americas males people and 36% in people of Eastern Mediterranean.

2.4.2 Inactivity in Childhood

Children around the world are not moving enough, and they are not physically active enough to maintain healthy growth, healthy weight and development, according to a new and recent Global report [WHO,2013], compared 49 countries from 6 continents to assess and evaluate international trends in childhood physical activity in developed and developing nations, and to assess the level of physical activity among children age between 6-15 years, Physical inactivity is aglobal concern and can no longer be ignored.

For the good health now and in future, we need to enhance and motivate physical activity of body and change some vehavior and social habits to get physically active kids and healthy young [34,76]. Inactivity in childhood leads to inactivity in young people, this is leading to incease percent of overweight and obesity among young people. So it is very important to control body weight in childhood. Children who are using computer for many hours daily liable to physical changes like poor postur and physiological changes like less of flexability of muscles and joints [82,79].

Recommended levels of physical activity for children aged 5 - 17 years [WHO,2013].

Children people and young youth aged from 5–17 years should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity in every day. Amounts of physical activity in every day up than 60 minutes like (one hour/ day) provide more and extra health advantages, that enable child to be in healthy weight.

World health organization put Global target for increase the healthy habits among children [83].

1. According and relating to WHO the physical activity among children not enough, and it should increase daily to decrease inactivity and sedentary behavior, this will be healthy for children and for future years of old (young age).

2.Increase the quality of physical activity and physical education at primary schools until secondary that help students to recognize and understand the purpose of physical activity and its impact on health of body, with increasing the age should increase the time of physical activity among children to keep them physicaly active.

3.During school hours should do physical activity, and should increase the physical activity time.

3.MATERIAL AND METHOD

3.1 Individuals

This study was performed among university students (n=194) who were all volunteered, and 118 of females and 76 of males, aging between 18 to 25 years. The inclusion cretiria of the study were (1) being voluntary, (2) being over 18 years old (3) feeling themselves healthy enough for perfoming their tasks as a university student as their peers, (4) not having any diagnosed health condition. The exclusion criteria were (1) any difficulty in stable standing without any apperent movement of body, (2) if head dress of the students prevents accurate body height measurement.

The study was approved by Ethics Committee of Yeditepe University, Meeting Date: (16.5.2018, Decision Number: 850), All students that were submit to this thesis were informed about procedures of the research, their written consest were taken.

3.2 Evaluation Method

Evaluation method have been considered and determined by non probability sample of study method. At beginning and end of the study, the following evaluation were made for all participants who participated in this study (Figure 1).

3.2.1 Questionnaire

Data was collected from self report, paper based, cross-sectional questionnaire and anthropometric measurements, assessment form was included personal data of participants as age, gender, maritual status, transportation used and the anthropometric measurement data as height, weight, waist and neck circumferences in cm.

The apparatuses used to measure and calculate the anthropometric measurements were a beam scale of balance stadiometer, which is wall mounted with movable head piece and a non-stretchable measuring tape.

3.2. 2. Antropometric Measurements

i- The Weight Measurements

Weight was measured for all participants in kilogram (kg). They were asked to remove their heavy cloths like jacket, coat, throusers, skirts, and shoes. Participant stands in the middle of the

platform, the weight of student distributed equally to both feet. Their weight were recorded as seen on the scale (Figure 2).

ii- Height Measurements

Height was measured for all of participants in centimetre (cm). The height was measured by putting the stadiometer at examination side. They were asked to stand without bend or curve in erect position, looking at straight forward. The outcomes were recordeded in cm. (Figure 3)

iii- Waist Circumferences

The measurement done around hip at the mid of the distance between the lower rib margin and iliac crest around body in horizontal plane.

Participants were asked to remove their heavy clothes, d be with a short and t-shirt. The measuring tap was put direct on the skin of young people participant, Student was asked to stand with his feet close to each other (not wider then the shoulder width). They were asked to breath normaly, at the end of gentel exhaling the measurements were performed. This prevents subjects to avoid from contracting their abdominal muscles or holding their breath (Figure 5. Waist circumferences of more than 94 cm in men and more than 80 cm in women indicate the risk of obesity [70, Kafkas, Hatemi].

iv-Neck Circumferences:

The measurements were performed at level of the thyroid cartilage, which is calledAdam's apple in males (Figure 5). Neck circumference ≥ 37 cm in males and ≥ 34 cm in females are considered overweight, neck circumference ≥ 39.5 cm in males and ≥ 36.5 cm in females are obese [73, 74]. The participant should be in straigth standing position and should keep the neck straight and without any deviation in resting position with the eyes facing forward [75, 28].

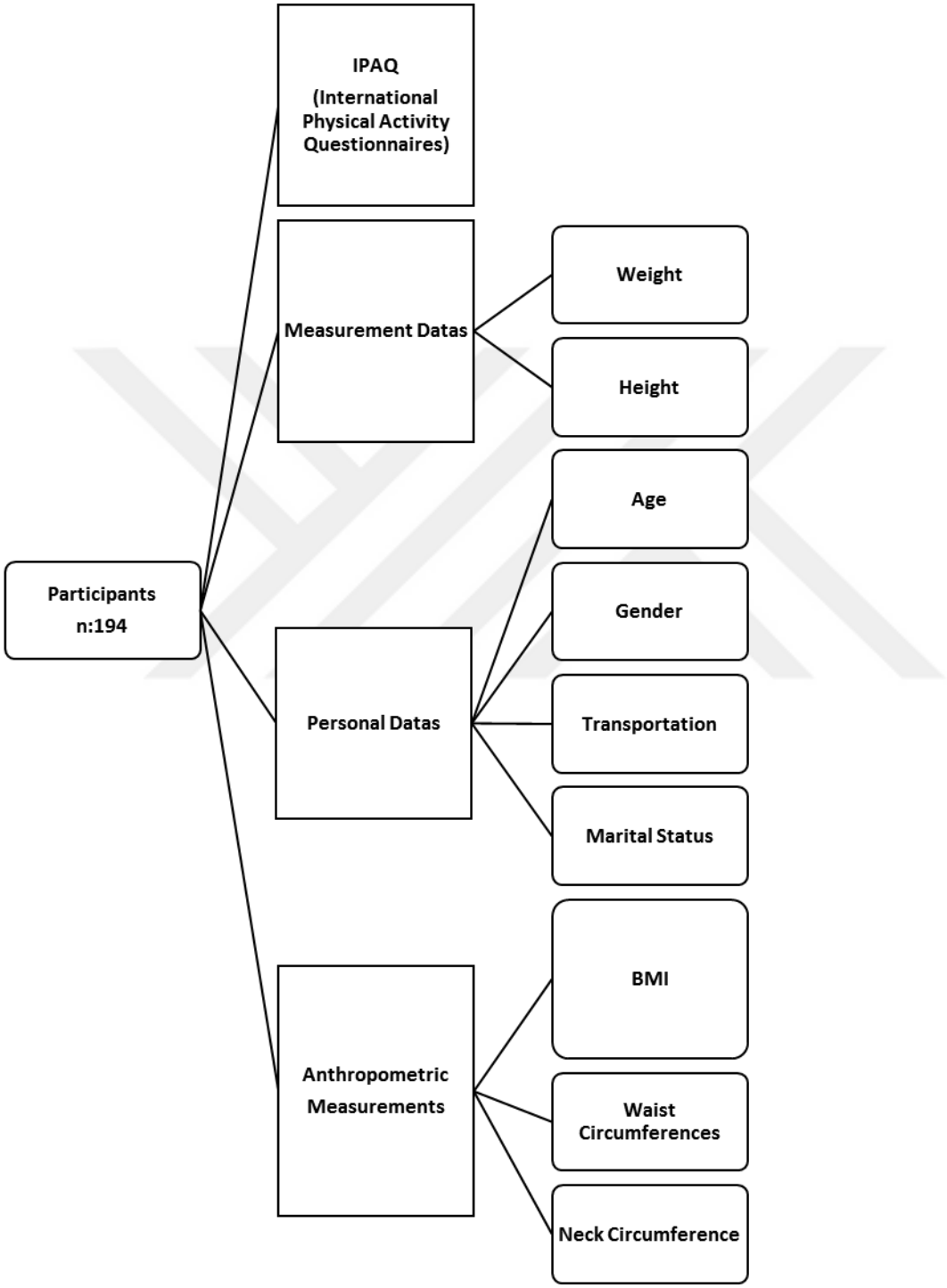

Figure 1: The flow chart of the evaluation procedure in the methodology of the study.

v. Body Mass Index

The Body Mass Index (BMI) with the unit of kg/m² is a simple measuring scale indicating the amount of excess fat of the participants body. It is based on height and weight of body that calculated according to the following formula;

$$BMI = weight(kg) / height(m)^2$$

It has a validated reference scale as given in Figure 2.

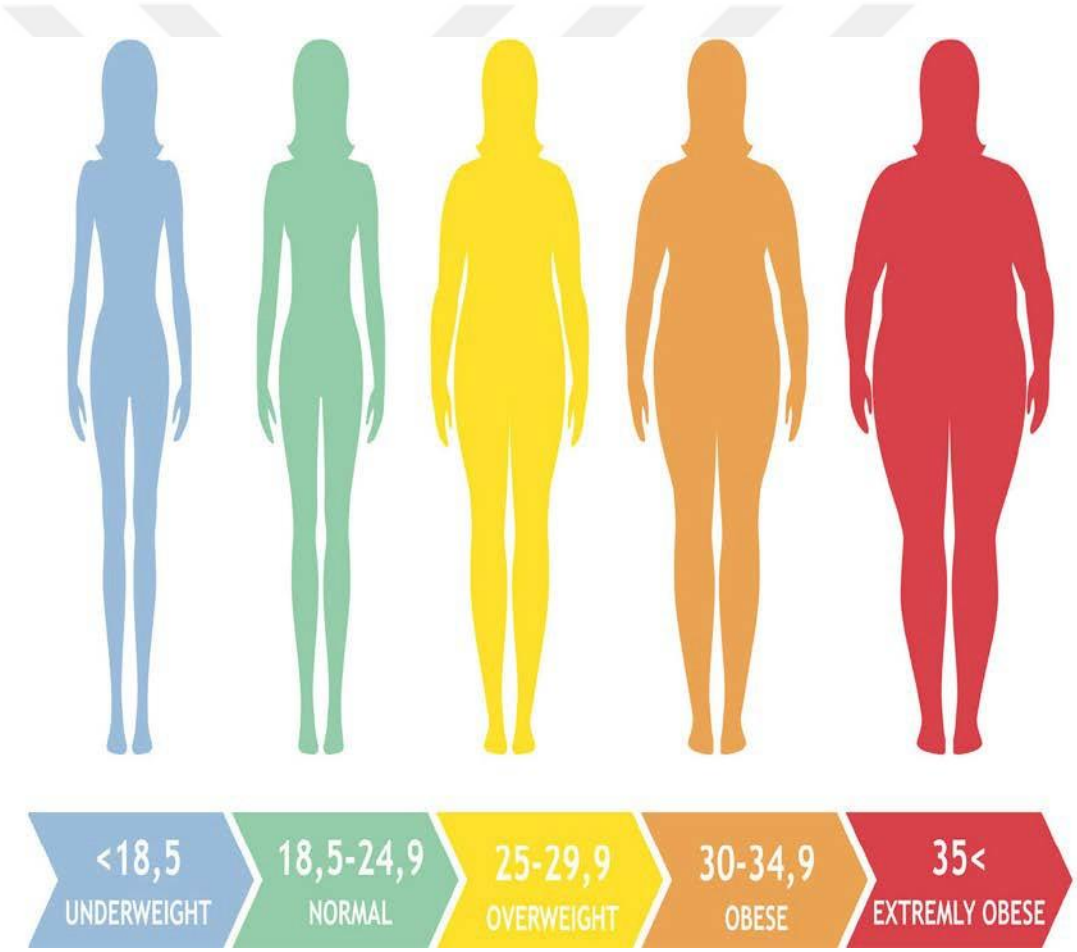

Figure 2: Classification of obesity degree according to body mass index.

Figure 3: Height measurement of the participants

Figure 4: Weight measurement of the participants

Figure 5: Neck and Waist measurement

4.RESULTS

The personal and anthropometric data of all participants according to gender are given in Table 1. The mean of ages for participants was 20.99±1.77 years. The mean of weight and height were for all participants was found 72.56±15.05kg and 171.68±8.09 cm, respectively. The mean waist and neck circumferences were as 84.68±14.56cm, and 34.34±4.05cm, respectively.

Table 1: The personal data and anthropometric measurements for all participants.

	FEMALE (N=118) Mean ± SD	MALE (N=76) Mean ± SD	t	p
Age (years)	20.61 ± 1.61	21.56 ± 1.6	3.855	.00
Height (cm)	166.88±6.184	178.88±4.456	14.945	.00
Weight (kg)	64.83±10.61	84.15±13.21	11.424	.00
Waist C (cm)	77.97±11.72	94.74±12.5	9.655	.00
Neck C (cm)	32.49±2.9	37.10±3.964	9.486	.00
BMI (kg/m2)	23.22±3.13	26.28±3.83	6.187	.00

***p<0.05; **p<0.01**

The outcomes achieved from the BMI assessment are given in Figure 4. Among the participants 61.9% of female 36.8% of male have normal weight. However, the 26% of female 50% of male were overweight. The obesity was 2% among female and 9% among male (Figure 6).

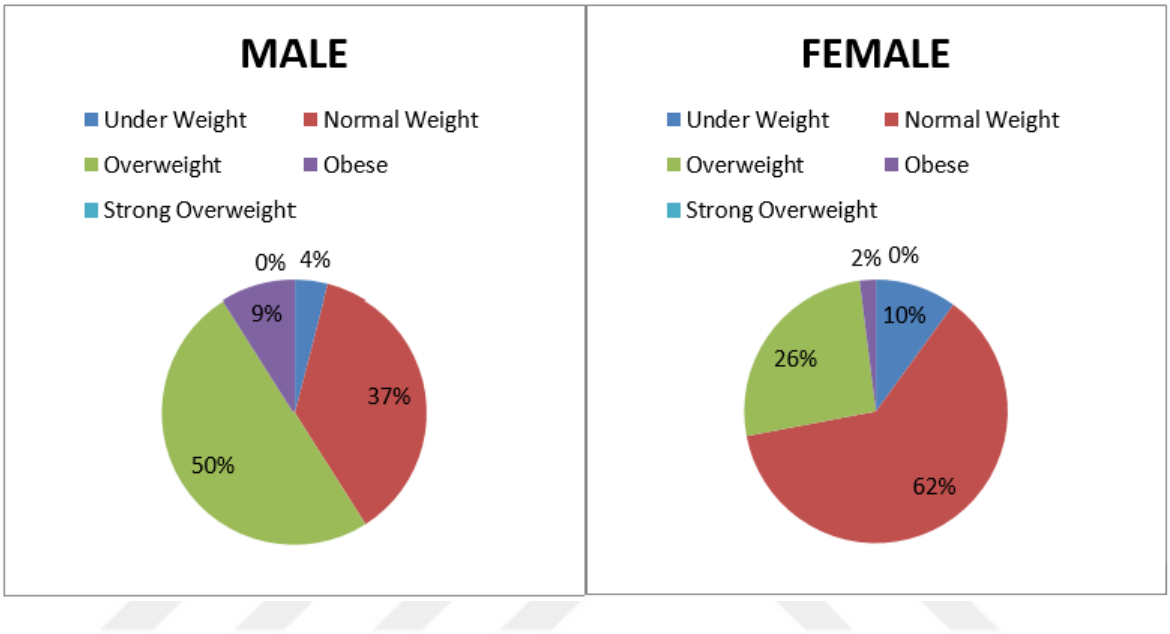

Figure 6: Weight status of the participants according to their Body Mass Index.

Body mass index was significantly high in males compared to female ($p = 0.001$). Waist circumference, and neck circumference were significantly reduced in normal weight participants compared with overweight and obese ($p = 0.01$) (Table 1).

The waist circumference was found significantly different between gender groups for underweight, normal weight, and overweight. The neck circumference is also significantly different between gender groups for normal weight, overweight, and obese in the fawor of men ($p<0.05$) (Table 2).

Table 2: Waist and neck circumferences of participants categorized as Underweight, normal weight, over weight and obese

Under Weight	**Female(N = 12)** Mean ± SD	**Male (N = 3)** Mean ± SD	**t**	**p**
Waist (cm)	64.4±10.0	81.0±9.165	1.234	0.024*
Neck (cm)	30.42±1.505	34.33±4.041	2.062	0.185
Normal Weight	**Female(N = 73)** Mean ± SD	**Male (N = 28)** Mean ± SD	**t**	**p**
Waist (cm)	74.88±7.399	84.82±5.696	2.162	0.007**
Neck (cm)	31.89±2.343	35.43±2.886	1.012	0.004**
Over Weight	**Female(N = 31)** Mean ± SD	**Male (N = 38)** Mean ± SD	**t**	**p**
Waist (cm)	86.87±9.391	97.53±6.48	1.031	0.003**
Neck (cm)	34.31±3.334	37.34±9.165	2.198	0.005**
Obese	**Female (N = 2)** Mean ± SD	**Male (N = 7)** Mean ± SD	**t**	**p**
Waist (cm)	104.5±7.778	118.14±15.313	0.137	0.048*
Neck (cm)	36.0±0.000	42.71±3.904	1.012	0.052*

***p<0.05; **p<0.01**

According to the results of International Physical Activity Questionnaire-Long Form analysis, 54.1% (24,44±3.73) of the participants were found inactive physical activity active and 45.2% (26,28±3.83) were depending on their daily and weekly physical activities (Table 3).

Table 3: The classification of the level physical activity of participants in relation to gender according to IPAQ-Long Form.

Intensity of Physical Activity		Male			
		Inactive Mean ± SD	Active Mean ± SD	t	p
Vigorous	Days/Week	0.40±1	1±2	-1.542	0.727
	Hours/Day	0.32±1	0.49±1.06	-0.801	0.236
Moderate	Days/Week	0.80±1	0.43±1	-1.596	0.332
	Hours/Day	0.83±1.41	0.39±0.64	-0.187	0.763
Walking	Days/Week	1.6±2	1.03±2	-0.594	0.167
	Hours/Day	0.82±1.11	0.63±1.18	-0.327	0.173
		Female			
		Inactive Mean ± SD	Active Mean ± SD	t	p
Vigorous	Days/Week	0.33±1	0.32±1	-0.232	0.324
	Hours/Day	0.24±0.90	0.48±1.63	-0.434	0.848
Moderate	Days/Week	0.38±1	0.36±1	-0.532	0.213
	Hours/Day	0.44±1.21	0.37±0.90	-0.754	0.121
Walking	Days/Week	1.1±2	1±1.21	-0.214	0.342
	Hours/Day	0.95±0.47	0.39±0.83	-0.348	0.262

***p<0.05; **p<0.0**

According to the results of International Physical Activity Questionnaire-Long Form analysis, the physical activity level of participants, in both gender were classified as active (61.1% ; 24,44±3.73) and inactive (38.2% ; 26,28±3.83) depending on their daily and weekly transportation physical activities. The preferred transportation as a physical activity was utilization of motor vehicles (3.85±1.82), bicycles (0.82 ± .62), and walking (3.66 ± 1.75) (Table 4).

Table 4: The intensity of the physical activity of participants in relation to type of transportation according to IPAQ-Long Form.

Intensity of Physical Activity		Male			
		Inactive Mean ± SD	Active Mean ± SD	t	p
Motor Vehicle	Days/Week	5.02±2.45	5.57±2.11	-0.321	0.123
	Hours/Day	2.29±1.71	2.68±1.71	-0.243	0.435
Bicycle	Days/Week	0.24±0.77	0.17±0.46	-1.766	0.231
	Hours/Day	0.18±0.45	0.14±0.43	-0.123	0.344
Walk	Days/Week	5.28±2.27	5.27±2.20	-0.356	0.234
	Hours/Day	1.82±1.42	1.92±1.24	-0.545	0.124
		Female			
		Inactive Mean ± SD	Active Mean ± SD	t	p
Motor Vehicle	Days/Week	5.10±1.82	5.19±2.15	-0.112	0.123
	Hours/Day	2.65±1.40	2.60±1.27	-0.353	0.343
Bicycle	Days/Week	0.10±0.38	0.26±0.72	-0.545	0.340
	Hours/Day	0.13±0.52	0.29±0.69	-0.232	0.213
Walk	Days/Week	5.54±2.06	5.57±2.10	-0.124	0.115
	Hours/Day	2.13±1.57	1.88±1.29	-0.435	0.324

p<0.05; **p<0.01

Table 5: The intensity of the physical activity of the participants in relation to type of house work according to IPAQ-Long Form..

Intensity of Physical Activity		Male			
		Inactive Mean ± SD	Active Mean ± SD	t	p
Vigorous	Days/Week	0.28±1.1	0.20±0.40	-0.842	0.324
	Hours/Day	0.09±0.28	0.19±0.46	-0.242	0.125
Moderate	Days/Week	0.28±0.80	0.23±0.40	-1.490	0.324
	Hours/Day	0.16±0.38	0.36±0.73	-0.433	0.823
Walking	Days/Week	0.50±0.70	0.90±1.6	-0.732	0.134
	Hours/Day	0.40±0.57	0.44±0.63	-0.231	0.154
		Female			
		Inactive Mean ± SD	Active Mean ± SD	t	p
Vigorous	Days/Week	0.36±0.90	0.44±1.4	-0.214	0.235
	Hours/Day	0.47±1.29	0.23±0.71	-0.432	0.123
Moderate	Days/Week	0.56±1	0.56±1	-0.124	0.553
	Hours/Day	0.55±1.07	0.45±0.73	-0.534	0.131
Walking	Days/Week	0.97±1.3	1.30±1.2	-0.342	0.244
	Hours/Day	0.91±0.92	1.04±0.84	-0.432	0.112

***p<0.05; **p<0.01**

According to the results of International Physical Activity Questionnair-Long Form analysis, physical activity level of participants as sport and leisure time, participants were classified as active (52.1 % ; 24,44±3.73) and inactive (47.2 % ; 26,28±3.83) depending on their daily and weekly physical activities. The intensity of physical activity was found as vigorous (1.02±1.81), moderate (0.38 ± 0.85) and walking (0.45 ± 1.78) (Table 6)

Table 6: The intensity of the physical activity of the participants in relation to amount of sport and leisure time according to IPAQ-Long Form.

P.A Sport and Leisure Time		Male			
		Inactive Mean ± SD	Active Mean ± SD	t	p
Vigorous	Days/Week	1.24±1.61	1.03±1.27	-0.324	0.345
	Hours/Day	0.81±0.72	0.63±0.84	-0.453	0.534
Moderate	Days/Week	0.48±1.10	0.40±0.60	-0.252	0.131
	Hours/Day	0.27±0.60	0.42±0.70	-1.433	0.432
Walking	Days/Week	0.54±0.70	0.53±0.70	-0.745	0.543
	Hours/Day	0.40±0.57	0.85±1.41	-1.232	0.243
		Female			
		Inactive Mean ± SD	Active Mean ± SD	t	p
Vigorous	Days/Week	1.36±1.65	1.73±2.04	-0.124	0.143
	Hours/Day	0.72±0.84	0.88±1.01	-0.324	0.324
Moderate	Days/Week	0.41±0.90	0.75±1.30	-0.565	0.134
	Hours/Day	0.36±0.80	0.44±0.80	-0.435	0.122
Walking	Days/Week	0.44±0.90	0.78±1.40	-0.244	0.342
	Hours/Day	0.33±0.53	0.62±0.88	-0.439	0.131

***p<0.05; **p<0.01**

Additionally, the physical activity level of participants as time spend sitting in both gender were classified as active (48.1%; 24,44±3.73) and inactive (51.2%; 26,28±3.83) depending on their their daily hours of sitting and weekly days of time spend sitting (Table 7).

Table 7: The intensity of the physical activity of the participants in relation to sitting time according to IPAQ-Long Form.

Intensity of Physical Activity		Male			
		Inactive Mean ± SD	Active Mean ± SD	t	p
Time spend sitting	Days/Week	6.44±2.08	6.39±2.41	-0.867	0.234
	Hours/Day	7.66±2.81	7.50±2.62	-0.654	0.743
		Female			
		Inactive Mean ± SD	Active Mean ± SD	t	p
	Days/Week	7.15±2.05	6.64±2.19	-0.854	0.112
	Hours/Day	8.03±2.58	7.44±2.57	-1.231	0.653
		Total			
		Inactive Mean ± SD	Active Mean ± SD	t	p
	Days/Week	6.75±6.44	2.08±6.39	-1.123	0.134
	Hours/Day	7.73±7.50	2.81±7.67	-0.423	0.345

***p<0.05; **p<0.01**

Regarding to the outcome achieved from Pearson Correlation test, BMI was found positively related with weight, waist and neck circumference measurements in both gender ($p<0.05$) (Table 8).

Table 8: The relation between the anthropometric measurements of the participants according to the Pearson correlation Test.

	Age	Height	Weight	Waist Circum.	Neck Circum.
BMI kg/m^2	r=0.187 p=0.008*	r=0.346 p=0.000*	r=0.906 p=0.000*	r=0.816 p=0.000*	r=0.621 p=0.000*
Age (years)		r=0.238 p=0.001*	r=0.252 p=0.000*	r=0.198 p=0.005*	r=0.276 p=0.000*
Height (cm)			r=0.705 p=0.000*	r=0.602 p=0.000*	r=0.574 p=0.000*
Weight (Kg)				r=0.887 p=0.000*	r=0.728 p=0.000*
Waist Circum. (cm)					r=0.719 p=0.000*

***p<0.05; **p<0.01**

Table 9: The relation between the anthropometric measurements and BMI in gender according to the Pearson correlation Test.

for males and females.Waist circumference was also found positively related with the neck circumferences in both gender ($p<0.05$) (Table 9).

		Age	Height	Weight	Waist_C	Neck_C
BMI kg/m^2	Male	-	-	r=0.951 p=0.000*	r=0.830 p=0.000*	r=0.546 p=0.000*
	Female	-	-	r=0.866 p=0.000*	r=0.740 p=0.000*	r=0.496 p=0.000*
Age (years)	Male		-	-	-	-
	Female		-	-	-	-
Height (m)	Male			r=0.341 p=0.002*	r=0.313 p=0.005*	r=0.240 p=0.032*
	Female			r=0.561 p=0.000*	r=0.356 p=0.000*	r=0.352 p=0.000*
Weight (kg)	Male				r=0.874 p=0.000*	r=0.585 p=0.000*
	Female				r=0.792 p=0.000*	r=0.582 p=0.000*
Waist.C (cm)	Male					r=0.655 p=0.000*
	Female					r=0.535 p=0.000*

(p<=0.05)

Regarding to the correlation between BMI and IPAQ-Long Form results, sports and recreative activities found correlated with the BMI of the participants and total house work was found negatively correlated with the waist and neck circumferences. Neck circumference was also negatively related with the total physical activity of the participants ($p<0.05$) (Table 10).

Table 10: The relation between the anthropometric measurements, BMI and IPAQ-Long Form according to the Pearson Correlation Test.

	Total Job	Total Transportation	Total House	Total Sport	Total PA
BMI kg/m^2	-	-	-	r=-0.140 p=0.049*	-
Age(years)	-	-	-	-	-
Height (m)	-	-	r=-0.353 p=0.000*	-	-
Weight (kg)	-	-	r=-0.245 p=0.000*	-	-
Waist.C (cm)	-	-	r=-0.195 p=0.006*	-	-
Neck.C (cm)	-	-	r=-0.225 p=0.000*	-	r=-0.148 p=0.036*

(p<=0.05)

Total physical activity was found positively correlated with the age of the female participants. Neck circumference was also negatively relalated with the total house work done among the female participants ($p<0.05$) (Table 11).

Table 11: The relation between the anthropometric measurements, BMI and IPAQ-Long Form in gender according to the Pearson Correlation Test.

		Total Job	Total Transportation	Total House	Total Sport	Total PA
BMI kg/m^2	Male	-	-	-	-	-
	Female	-	-	-	-	-
Age (years)	Male	-	-	-	-	-
	Female	-	r=0.225 p=0.013*	-	-	r=0.225 p=0.013*
Height (m)	Male	-	-	-	-	-
	Female	-	r=-0.218 p=0.017*	-	r=-0.343 p=0.000*	-
Weight (kg)	Male	-	-	-	-	-
	Female	-	r=0.212 p=0.020*	r=-0.184 p=0.044*	-	-
Waist C. (cm)	Male	-	-	-	-	-
	Female	-	-	-	-	-
Neck C. (cm)	Male	-	-	-	-	-
	Female	-	-	r=-0.205 p=0.025*	-	-

5.DISCUSSION

The physical activity level of young people and their liability to obesity was aimed to assess the relation between the BMI, waist and neck circumferences. We observed the effectiveness of these measurements in understanding the piorities of assessment tools in relation of the weight status of young people.

Linna et al. [82], studied body mass index as indicator for obesity among people, they found that men had a mean BMI of 23.9±3.1kg/m^2 and women with a mean BMI of 22.2± 3.5 kg/m^2. They reported that obesity was rare among young participants, as approximately just 4% all the participants were obese.

In another study done by Poobalan et al. [83], the rate of overweight and obesity situation among young adults in developing countries, they found that obesity was increased and of incidence rate of obesity was found rangeing from 2.3 to 12%, and overweight of participants was found 28.8%, females were mostly affected. Supporting these outcomes, we also have found that female were having higher BMI then males, and the obesity rate was 2% for females and 9% for males. Iseri et al. [84], the analysis of this study reported that the age, the region they live and gender are significant determinants on obesity among people living in Turkey. Since age and living are were similar for the participants, gender differences on weight status was the main determinant in our study.

On the other hand, the waist and neck circumferences as the important determinants of obesity and being under the risks of life threathening chronic diseases, were found within the normal ranges among females but high among males. Therefore, analyzing the different factors affecting obesity prevalence as gender, geographical regions and different age groups may be suggestable for the future studies in Turkey as well as in the other countries. This may also be observed by the multicentered studies to understand the differences between countries worldwide.

In this study we found that 52.1% of participants were active according to the analysis of IPAQ. Among the active ones only 4.6% were obese who may have different behavioral habits supporting them to gain weight that should have been searched. However, since overweight and obesity can be decreased if vigorous physical activity can be performed regularly ≥7 hours/week [72,74], the total time of physical activity as well as the preferred exercise regime could also be searched.

Waist and neck circumferences are effective the indicators of being under the risks of life threathening chronic diseases was found related to BMI for both gender in this study. They were also found related with the level of activity performed daily in the house for both gender. Thus, young people who should do at least one hour of physical activity daily to be in the limits of having normal waist circumference [43]. On the other hand, to control their body mass index at normal category they should be active in the household activities, as well.

Harold et al. [72], the study was focused on the increasing of body weight more than obesity, they studied 5000 males and females in the ages of 18–28years, and five years later they found that walking time as physical activity has a strong effect on less weight gaining [72]. We have found that besides the total physical activity that includes walking as well, useing transportation is related with lower weight gain among female.

The limitations of this study are the inequality in the number of gender that could be challenged. Additionally, we have not searched the quality of life of the participants that could have been more informative about the behavioral aspect of their level of physical activity. On the other hand, we believe that the strengths of this study is the utilization of the long form of International Physical Activity Questionaire, which is more time consuming from thje short form but much more informative on the level and type of physical activity. We believe, this may support the national and international literature. The other important aspect of this study is the assessment of the neck and waist circumferences of the young people that may be a data could be utilized for the future studies.

6.CONCLUSION

In conclusion, the young individuals were physically active and having low rate of obesity, however, among the pysically active ones 4.6% were obese, therefore, different behavioral habits supporting young individuals to gain weight that should have been searched, and if possible with multicentered studies to understand the cultural and behavioral differences. Waist and neck circumferences are important criteria for females that can be controlled by daily transportation habits. Body mass index may be controlled by both gender not only perfoming daily physical activity but also adapting the behaviours of being active in household activities.

Finally, we may conclude that, although young people are physically active and their liability to obesity are low in terms of antropometric data, this could be from different physical, behavioral and cultural aspects in multicentered studies.

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8. APPENDIX

APPENDIX 1. KATILIMCI ONAY FORMU

Yeditepe Üniversitesi
Sağlık Bilimleri Enstitüsü
Fizyoterapi ve Rehabilitasyon Yüksek Lisans Programı

Sayın Katılımcı,

Bu anket Yeditepe Üniversitesi Sağlık Bilimleri Enstitüsü Fizyoterapi ve Rehabilitasyon Yüksek Lisans Programı'nda yapılması planlanan "Observation of the Physical Activity Level of Young People and Their Liability to Obesity","Gençlerin Fiziksel Aktivite Seviyesi ve Obeziteye Yatkınlıklarının İncelenmesi" başlıklı tez kapsamında yapılmaktadır.

Amacımız gençlerin fiziksel aktivite seviyelerinin ve fiziksel aktivite yapma alışkanlıklarını incelenmek modern yaşamın önemli bir sorunu olan obeziteye olan eğilimleri hakkında bilgi edinmektir. Koruyucu fizyoterapi açısından önemli bulduğumuz bu konuyu araştırırken yapacağımız bu ankette özel ve gizli sayılabilecek soruların bulunmadığını ve sadece bu bilimsel çalışma da kullanılacağını taahhüt ederiz. Anket yanı sıra anket sonuçlarını destekleyeceğine inandığımız boy, kilo, bel, boyun çevresi ölçümleriniz araştırmacı tarafından yapılacak ve bu bilgiler de başka amaçlı kullanılmayacaktır.

Katılımınız için teşekkür ederiz.

Danışman: Prof. Dr. Serap Inal.

Araştırmacı: Fzt.Ashraf A.S. Alhaj Ali
GSM No. : 0506 131 10 33

Araştırmayakendiisteğimlekatılmışbulunmaktayım.
Vermişolduğumbilgileriaraştırmacınınkullanmasınaizinveriyorum.

Katılımcınınadı..... Imza.....Tarih.....

PARTICIPANT CONSENT FORM

Yeditepe University

Institute of HealthSciences

PhysiotherapyandRehabilitation Program

DearParticipant,

This questionnaire is for the Master of Science Thesis titled with "The Observation of Physical Activity Level of Young People Regarding to their Liability to Obesity"that will be performed in Department of Physiotherapy and Rehabilitation of Instituted of Health Sciences in Yeditepe University.

Our aim is to observe the physical activity level of youngpeople and to understand if they are liable to obesity or not, which is the consequences of modern life style. We assure you that any of the questions in the questionnaire are not private nor confidential, and the achieved data will be used only for scientific purposes. Your weight, height, as well as your waist and neck circumferences will be measured in addition to the questionnaire that all will be performed by their searcher.

Thank you for your participation.

Advisor: Prof. Dr. Serap Inal	Researcher / Physiotherapist: Ashraf A.S. AlhajAli GSM No: 0506 131 10 33

I have joined to this study with my own intension. I allow the researcher to use all the information I gave for his study.

Name of participant /----------

APPENDIX 2. ASSESMENT FORUM

Personal Data
Name:
Age:
Sex: M / F
Marital status: Single / Married
Do you live with others: Alone / Family / Dormitory
Transportation: Private car / Public transport / Other
Measurement Data
Height:
Weight:
Waist:
Neck:

INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE

We are interested in finding out about the kinds of physical activities that people do as part of their everyday lives. The questions will ask you about the time you spent being physically active in the **last 7 days**. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

Think about all the **vigorous** and **moderate** activities that you did in the **last 7 days**. **Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. **Moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal.

PART 1: JOB-RELATED PHYSICAL ACTIVITY

The first section is about your work. This includes paid jobs, farming, volunteer work, course work, and any other unpaid work that you did outside your home. Do not include unpaid work you might do around your home, like housework, yard work, general maintenance, and caring for your family. These are asked in Part 3.

1. Do you currently have a job or do any unpaid work outside your home?

   ☐ Yes

   ☐ No → ***Skip to PART 2: TRANSPORTATION***

The next questions are about all the physical activity you did in the **last 7 days** as part of your paid or unpaid work. This does not include traveling to and from work.

2. During the **last 7 days**, on how many days did you do **vigorous** physical activities like heavy lifting, digging, heavy construction, or climbing up stairs **as part of your work**? Think about only those physical activities that you did for at least 10 minutes at a time.

   _____ **days per week**

   ☐ No vigorous job-related physical activity → ***Skip to question 4***

3. How much time did you usually spend on one of those days doing **vigorous** physical activities as part of your work?

   _____ **hours per day**
   _____ **minutes per day**

4. Again, think about only those physical activities that you did for at least 10 minutes at a time. During the **last 7 days**, on how many days did you do **moderate** physical activities like carrying light loads **as part of your work**? Please do not include walking.

   _____ **days per week**

   ☐ No moderate job-related physical activity → ***Skip to question 6***

5. How much time did you usually spend on one of those days doing **moderate** physical activities as part of your work?

_____ **hours per day**
_____ **minutes per day**

6. During the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time **as part of your work**? Please do not count any walking you did to travel to or from work.

_____ **days per week**

☐ No job-related walking → ***Skip to PART 2: TRANSPORTATION***

7. How much time did you usually spend on one of those days **walking** as part of your work?

_____ **hours per day**
_____ **minutes per day**

PART 2: TRANSPORTATION PHYSICAL ACTIVITY

These questions are about how you traveled from place to place, including to places like work, stores, movies, and so on.

8. During the **last 7 days**, on how many days did you **travel in a motor vehicle** like a train, bus, car, or tram?

_____ **days per week**

☐ No traveling in a motor vehicle → ***Skip to question 10***

9. How much time did you usually spend on one of those days **traveling** in a train, bus, car, tram, or other kind of motor vehicle?

_____ **hours per day**
_____ **minutes per day**

Now think only about the **bicycling** and **walking** you might have done to travel to and from work, to do errands, or to go from place to place.

10. During the **last 7 days**, on how many days did you **bicycle** for at least 10 minutes at a time to go **from place to place**?

_____ **days per week**

☐ No bicycling from place to place → ***Skip to question 12***

11. How much time did you usually spend on one of those days to **bicycle** from place to place?

_____ **hours per day**
_____ **minutes per day**

12. During the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time to go **from place to place**?

_____ **days per week**

☐ No walking from place to place → ***Skip to PART 3: HOUSEWORK, HOUSE MAINTENANCE, AND CARING FOR FAMILY***

13. How much time did you usually spend on one of those days **walking** from place to place?

_____ **hours per day**
_____ **minutes per day**

PART 3: HOUSEWORK, HOUSE MAINTENANCE, AND CARING FOR FAMILY

This section is about some of the physical activities you might have done in the **last 7 days** in and around your home, like housework, gardening, yard work, general maintenance work, and caring for your family.

14. Think about only those physical activities that you did for at least 10 minutes at a time. During the **last 7 days**, on how many days did you do **vigorous** physical activities like heavy lifting, chopping wood, shoveling snow, or digging **in the garden or yard**?

_____ **days per week**

☐ No vigorous activity in garden or yard → ***Skip to question 16***

15. How much time did you usually spend on one of those days doing **vigorous** physical activities in the garden or yard?

_____ **hours per day**
_____ **minutes per day**

16. Again, think about only those physical activities that you did for at least 10 minutes at a time. During the **last 7 days**, on how many days did you do **moderate** activities like carrying light loads, sweeping, washing windows, and raking **in the garden or yard**?

_____ **days per week**

☐ No moderate activity in garden or yard → ***Skip to question 18***

17. How much time did you usually spend on one of those days doing **moderate** physical activities in the garden or yard?

_____ **hours per day**
_____ **minutes per day**

18. Once again, think about only those physical activities that you did for at least 10 minutes at a time. During the **last 7 days**, on how many days did you do **moderate** activities like carrying light loads, washing windows, scrubbing floors and sweeping **inside your home**?

_____ **days per week**

☐ No moderate activity inside home → ***Skip to PART 4: RECREATION, SPORT AND LEISURE-TIME PHYSICAL ACTIVITY***

19. How much time did you usually spend on one of those days doing **moderate** physical activities inside your home?

_____ **hours per day**
_____ **minutes per day**

PART 4: RECREATION, SPORT, AND LEISURE-TIME PHYSICAL ACTIVITY

This section is about all the physical activities that you did in the **last 7 days** solely for recreation, sport, exercise or leisure. Please do not include any activities you have already mentioned.

20. Not counting any walking you have already mentioned, during the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time **in your leisure time**?

_____ **days per week**

☐ No walking in leisure time → ***Skip to question 22***

21. How much time did you usually spend on one of those days **walking** in your leisure time?

_____ **hours per day**
_____ **minutes per day**

22. Think about only those physical activities that you did for at least 10 minutes at a time. During the **last 7 days**, on how many days did you do **vigorous** physical activities like aerobics, running, fast bicycling, or fast swimming **in your leisure time**?

_____ **days per week**

☐ No vigorous activity in leisure time → ***Skip to question 24***

23. How much time did you usually spend on one of those days doing **vigorous** physical activities in your leisure time?

_____ **hours per day**
_____ **minutes per day**

24. Again, think about only those physical activities that you did for at least 10 minutes at a time. During the **last 7 days**, on how many days did you do **moderate** physical activities like bicycling at a regular pace, swimming at a regular pace, and doubles tennis **in your leisure time**?

_____ **days per week**

☐ No moderate activity in leisure time → ***Skip to PART 5: TIME SPENT SITTING***

25. How much time did you usually spend on one of those days doing **moderate** physical activities in your leisure time?
_____ **hours per day**
_____ **minutes per day**

PART 5: TIME SPENT SITTING

The last questions are about the time you spend sitting while at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading or sitting or lying down to watch television. Do not include any time spent sitting in a motor vehicle that you have already told me about.

26. During the **last 7 days**, how much time did you usually spend **sitting** on a **weekday**?

_____ **hours per day**
_____ **minutes per day**

27. During the **last 7 days**, how much time did you usually spend **sitting** on a **weekend day**?

_____ **hours per day**
_____ **minutes per day**

This is the end of the questionnaire, thank you for participating.

APPENDIX 3. ETHICS COMMITTEE FORM

T.C. YEDİTEPE ÜNİVERSİTESİ

Sayı : 37068608-6100-15-1491 **17/05/2018**
Konu: Klinik Araştırmalar
Etik kurul Başvurusu hk.

İlgili Makama (Ashraf Alhaj Ali)

Yeditepe Üniv. Fizyoterapi ve Rehabilitasyon Bölümü Prof. Dr. Serap İnal'ın sorumlu olduğu **"Gençlerde Fiziksel Aktivite ve Kilo Durumu"** isimli araştırma projesine ait Klinik Araştırmalar Etik Kurulu (KAEK) Başvuru Dosyası (**1466** kayıt Numaralı KAEK Başvuru Dosyası), Yeditepe Üniversitesi Klinik Araştırmalar Etik Kurulu tarafından **16.05.2018** tarihli toplantıda incelenmiştir.

Kurul tarafından yapılan inceleme sonucu, yukarıdaki isimi belirtilen çalışmanın yapılmasının etik ve bilimsel açıdan uygun olduğuna karar verilmiştir (**KAEK Karar No: 850**).

Prof. Dr. Turgay ÇELİK
Yeditepe Üniversitesi
Klinik Araştırmalar Etik Kurulu Başkanı

9.CURRICULUM VITAE

A. PERSONAL INFORMATION
Name: Ashraf S. A. AlHajAli
Date of Birth: 24.9.1981
Place of Birth: Gaza – Palestine
Foreign Language: English,Turkish
E- post address : usherzaga@outlook.com
Telephone: 0506 131 10 33

B. EDUCATION INFORMATION
University and Faculty: Bachelor Degree of Physiotherapy (BSCPT), Faculty of Health Sciences / AlAzhar University –Gaza .
Date of Graduation: 2004
Master Degree: Physiothrapy and Rehabilitation,Yeditepe University- Istanbul .

C. Experiences
Working in Healrh Care and Rehabilitation Center until 2014. Gaza / Palestine.