PHYSICAL ACTIVITY GUIDELINES FOR TURKEY

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Complimentary. Not for Sale.
Although physical activity has throughout history been an essential condition for sustaining human life and the passing on genes to the next generations, today its priority and focus has decreased due to technological advances in working life, transportation and recreational activities. Although recent dramatic changes facilitate our daily lives to a great extent, they have major negative implications for public health. Modern society is made up of individuals who do their daily shopping through virtual markets online and physical inactivity is one of the main factors leading to serious health problems in such a society.

According to the 2004 Report of the World Health Organization (WHO), physical inactivity is identified among the leading risk factors for global mortality caused by non communicable diseases and accounts for almost 3.2 million deaths annually.

According to the 2008 report of the WHO, 31% of adults aged 15 and over are insufficiently active. Almost 87% of women and 77% of men in Turkey are insufficiently active according to the “Research on Risk Factors for Chronic Diseases” done by the Turkish Ministry of Health in 2011. These ratios confirm that sedentary lifestyle is a serious risk for Turkey as well.

Positive findings based on a wide range of studies show that the mortality risk for insufficiently active individuals is 20%-30% higher than that of the individuals who perform mild to moderate physical activity for 30 minutes a day 4-5 times a week. Research suggests that 150 minutes of physical activity per week in adults reduces the risk of ischaemic heart disease approximately 30%, of type 2 diabetes approximately 27%, and of breast and colon cancer approximately 20-25%.

Since physical activity is a key determinant of energy expenditure, and thus is fundamental to energy balance, weight control and prevention of obesity is one of the major problems of modern society.

Implications of physical activity are not limited to the prevention of the above mentioned diseases and obesity. It has been shown that participation in regular physical activity reduces the risk of hypertension and stroke, regulates blood fats and cholesterol, increases muscle mass, improves bone health hence reducing the risk of osteoporosis and fractures caused by falls.

Related research suggest that physical activity is associated with reduced symptoms of anxiety and depression, increased levels of self-esteem and positive psycho-social development of the individual.

Physical inactivity poses serious health risks not only for adults but also for children and adolescents. Besides genetic, environmental and biological factors, the major risk factors for chronic diseases are inactivity and poor nutrition. Since the risk increases markedly with sedentary life style, most of the chronic diseases we used to observe at later ages have today started to emerge during childhood periods. Therefore it is of great significance to promote physical activity among children starting from infancy and substantially decreasing the sedentary hours per day.

Promoting regular physical activity and sports among school age children is one of the major strategies for preventing both childhood illnesses and the diseases that have their origins among disruptions occurring during the early years of life. Participation in regular physical activity contributes to the cognitive development of children, hence increasing success in school and helping them build a more social and orderly lifestyle.
Together with an increased longevity of human life, the rate of older population also increases both in Turkey and in the world. In 2010 the rate of the population aged 65 and older to the total population was 7.3% and it is estimated that this rate will increase to 17.6% by 2040.

As people grow older, the risk of developing certain chronic diseases and health problems increase and this poses serious physical limitations in their daily life activities. Apart from psychological, social and economic problems brought about by chronic diseases, the life quality of the older individuals substantially decrease. Therefore, physical activity which is regarded as one of the integral elements of a healthy life has a unique significance and impact for older adults.

A study conducted in Turkey shows that physical activity rates among the older adults is low. Only 30% regularly walk and 15% do exercise at home. In order to maintain life at older ages without any dependency on other people, and to protect and improve health, it is of great significance to develop exercise habits starting from an early age, sustaining physical activity throughout life and increasing awareness related to physical activity.

Besides visual and auditory impairment; mental, psychological and physical handicaps, chronic and systemic diseases also restricts activity for several reasons and these bring along different secondary problems.

Physical activity not only protects and improves health of people with disabilities or permanent mobility restriction but also prevents development of diseases caused by inactivity. For physical and mental health, it is crucial to incorporate physical activity in daily life and transform it into a lifestyle through changes in behavior. There are physical activity types which are suitable to the unique condition of the disabled individual such as walking, stepping up on a ladder, gardening, several active games and team sports.

In order to get the most benefit from being physically active, it should be incorporated into daily life. Certain amount of physical activity, performed regularly for a certain period of time and as often as required, develop and improve both individual and social health. Inactive individuals should start performing physical activity for short time periods and target a progressive increase in activity.

The focus of these Guidelines is to emphasize the significance of physical activity on public health from early ages and suggesting examples of physical activity that could be done at every stage of life in order to prevent chronic diseases and improve health.

The guidelines include separate chapters about physical activities suitable for children and adolescents, adults, elderly and people with physical and intellectual disability. The Physical Activity Guidelines for Turkey has been prepared based on common perspectives by different specialists with the objective of generating awareness on physical activity and a more active, healthy lifestyle for each individual in society.

EDITORS
INTRODUCTION

Physical activity is defined as any bodily movement produced by skeletal muscles and joints that require energy expenditure. Physical activity is one of the major tools that maintain the bodily and psychological development of individuals. Physical activity promotes public welfare and environmental protection and it also means investing in the next generations. On the other hand, physical inactivity (lack of physical activity) is a public health problem.

Physical inactivity which is a common risk factor for chronic diseases and has been globally identified as the fourth leading risk factor for global mortality (6% of deaths globally). Moreover, physical inactivity is estimated to be the main cause for approximately 21–25% of breast and colon cancers, 27% of diabetes and approximately 30% of ischaemic heart disease burden. Increased sedentary lifestyle is one of the major factors contributing to the obesity epidemic. Physical inactivity and poor nutrition globally are estimated to constitute %2 of average public expenditure on health.

Increasing levels of physical activity in the population is not an individual task but demands a population-based, multisectoral, multidisciplinary, and culturally relevant approach. “Healthy Nutrition and Active Life Program of Turkey” has been designed in order to raise awareness of public on society’s fight against obesity, to promote a change in eating habits for sufficient and balanced nutrition, to increase levels of regular physical activity, and hence decrease the frequency of obesity and obesity-related diseases (cardiovascular disease, diabetics, some cancer types, hypertension and musculo-skeletal system diseases and etc.). The Prime Ministry Circular on the Program which adopted a multi-stakeholder and multisectoral approach was put into effect after it had been published in the Official Gazette no.27714 in 29.09.2010. 30% of the actions in the program include physical activities. One of the actions of the program is the preparation of the “Physical Activity Guidelines for Turkey.”

Many parties contributed to the preparation of these Guidelines which will be a cornerstone for the protection of health, and generation of examples specific for Turkey for the prevention of obesity and noncommunicable diseases. I would like to extend thanks to these parties, namely the representatives of public organizations and institutions, municipalities, the private sector, occupational organizations and civil society organizations for delivering opinion based on information and experience, academics for their scientific contributions, representatives the World Health Organization for their sharing and support and finally the employees at the Public Health Institution of Turkey, Department of Obesity, Diabetes and Metabolic Diseases.

Prof Seçil ÖZKAN, M.D., President of Public Health Institution of Turkey
ABOUT THE GUIDELINES

Physical activity is an integral part of life since birth. Regular practice of physical activity is crucial for healthy growth and development and protection of health at every phase of life. It is an effective and easily applied tool for the prevention of disease.

The Physical Activity Guidelines for Turkey has been prepared in order to raise awareness in our society, to provide a guide for the specialists working in this area, generation of suggestions specific to Turkey and hence increasing levels of physical activity. Answers to the following questions can be found while this guidelines document is in use.

- What is it?
- For what is it necessary?
- How should it be performed?
- Where can it be performed?
- What are the points to take into account?

In order to cover all areas of life, the answers to these questions are given in this Guidelines document under two main sections:

1. Age groups
   a. Infancy
   b. Childhood
   c. Adolescence
   d. Adulthood
   e. Older adulthood

2. Disability
   a. Auditory
   b. Visual
   c. Physical
   d. Intellectual

It is possible to benefit from these Guidelines as a whole or it can be examined chapter by chapter according to areas of interest.
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What is Physical Activity?

Physical Activity: Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure.

Exercise (Regular Physical Activity): Exercise is planned, structured, repetitive, and purposeful physical activity in the sense that the improvement or maintenance of one or more components of physical fitness is the objective.

Sports: Sport has been defined as all forms of physical activity performed within set rules by amateur or professional athletes with the objective of generally obtaining results in competition. Activities such as playing football or basketball in local sports fields are established as sports in our daily life.

Besides exercise and sports; playing games, household chores, gardening, walking, and activities required for everyday living, including eating and bathing are defined as physical activity.

Status in Turkey

According to the Turkish Nutrition and Health Survey, 58.4% of children aged 6-11 do not perform regular physical activity (30 or more minutes per day). Children of this age group spend on average 6 hours a day sitting or sedentary because of TV, computer, Internet, homework and studying.

While the ratio of those who do not perform any physical activity at all in the male population aged 12-14 and 15-18 is respectively 41.4% and 44.6%, it increases by age and becomes 69.5% in males aged 19-30, 73.2% in males aged 31-50 and 83.7% in males aged 75 and plus. Likewise, the ratio of those who do not perform any physical activity at all in the female population also increases by age being 69.8% in females aged 12-14, 72.5% in females aged 15-18, 76.6% in females aged 19-30 and 88.0% in females aged 75 and plus.

According to the “Survey on Risk Factors for Chronic Diseases”, 87% of women and 77% of men are insufficiently active all over the country. Another survey shows that only 30% of individuals over 65 years go for a walk.
Physical Activity Guidelines for Turkey

Benefits of Physical Activity

Health is the state of complete physical, mental and social well-being of an individual. Benefits of physical activity on health can be examined under three headings:

1. Benefits for physical health,
2. Benefits for psychological and social health,

1 Benefits for Physical Health

Benefits of physical activity on physical health can be examined under two headings:

A. Benefits for Musculoskeletal System
- Maintains and enhances muscle mass and volume,
- Maintains the balance between muscles functioning in reverse directions,
- Maintains balance by boosting muscle-joint control,
- Protects and boosts joint mobility,
- Maintains and enhances muscle and joint flexibility,
- Enhances endurance,
- Improves reflexes and speed of reaction,
- Maintains body posture and shape,
- Develops bodily awareness,
- Improves balance, agility and reactions,
- Reduces tiredness,
- Maintains and increases bone mineral content through muscle contraction and activity which helps prevent osteoporosis.

- Improves bodily defense against possible injuries and accidents.

B. Benefits for Other Body Systems:
- Reduces heart rate per minute,
- Enhances cardiac stroke volume by expanding cardiac cavities,
- Regulates cardiac rhythm,
- Regulates blood pressure by reducing vascular resistance,
- Reduces risk of vascular diseases by regulating high blood cholesterol and triglycerides,
- Oxygenizes the lungs and increases breathing capacity,
- Controls insulin activity and reduces blood sugar levels with regular physical activity,
- Balances bodily use of water, sodium and other minerals,
- Improves energy production by burning fats,
- Enhances metabolic functioning and prevents weight gain.

2 Benefits for Psychological Health and Social Development

- Enables a feeling of wellness and generates happiness,
- Reduces the risk of depression and anxiety disorder,
- Creates individuals with self-confidence who are happy with their body because physical activity enhances body shape and awareness and has a positive impacts on muscles, bones and joints,
- Improves communication skills,
- Improves ability of positive thinking and coping with stress,
- Increases self-respect and self-confidence,
- Advances cognitive skills,
- Develops social relations,
- Reduces feeling of tiredness

**Benefits for Old Age**

- Decreases death risk because of possible sudden or systemic diseases,
- Reduces risk of cancer development,
- Increases body resistance and develops protection against infections,
- Reduces risk of fractures due to falls by maintaining musculoskeletal system strength,
- Prevents falls which frequently occur during old age by improving balance, agility and reactions,
- Enables individuals to enjoy life by increasing the ability to cope with depression and anxiety,
- Promotes healthy ageing,
- Encourages older adults to become and stay more active,

Physical activity can be protective and have an improving impact on health only when planned, structured, and repetitive physical activity is performed together with daily activities. Such physical activity is also known as exercise.

Leading an active daily life is the first step for a healthy life.

In order to get the most benefit from physical activity, to protect and improve health, exercise should be performed on a regular basis and incorporated into daily life.

**Intensity of Physical Activity**

*According to the intensity level, physical activities are grouped under three headings:*

**Light:** Light intensity refers to daily activities which require very little effort. Breathing and heart rate during light-intensity physical activity is slightly above the resting value. Examples are slow walking, doing household chores etc.

**Moderate:** Moderate intensity refers to physical activity which requires moderate effort, and works muscles. Breathing and heart rate during moderate-intensity physical activity is higher than the normal value. During physical activity, individuals can talk but cannot sing. Examples are brisk walking, low tempo running, dancing, jumping rope, swimming, playing table tennis, low tempo cycling etc.

**Vigorous:** Vigorous intensity refers to physical activity which requires high level effort, works muscles strongly. Breathing and heart rate during vigorous-intensity physical activity is much higher than the normal value. During physical activity, individuals cannot utter more than a few words without gasping for breath. Examples are high tempo running, playing basketball, football, volleyball, handball, tennis, step aerobics and high tempo dancing.
Type of Exercises

Physical activities can be grouped under four main headings according to their capacity to develop physical fitness.

Endurance (Aerobic) Exercises

Endurance refers to the capability of performing physical activities for a longer time without feeling tired. Endurance (aerobic) exercises refer to activity in which the body's large muscles move in a rhythmic and dynamic manner and increase an individual's capacity for oxygen consumption. Such exercises should be performed for a sustained period of time, at a structured intensity and frequency. As endurance is built up gradually, we can perform and sustain all physical activity without feeling tired.

Examples for building up endurance would be activities which require moderate effort such as brisk and lengthy walking, cycling, working in a garden or a field, and tennis.

Strength Exercises

Strength is the ability of a muscle to withstand pressure. Activities such as lifting something off the ground, carrying loads, pulling or pushing a heavy object require strong muscles. For example, an adult can carry a luggage of certain weight only if he has strong arm muscles. As strength is built up we can lift weights more easily, jump higher or throw an object further away.

Muscle-strengthening activities require strong contraction of muscles. Examples for building up strength would be activities such as carrying a heavy object, climbing stairs, carrying a backpack, doing push-ups for arm muscles, doing sit-ups and weight lifting etc. These are activities we have to perform daily from time to time. In order to do these activities more easily and lead a healthy life, it is highly important for an adult to increase and/or maintain skeletal muscle strength and mass.

Physical activity and exercise increase and maintain skeletal muscle and bone strength, power, endurance, and mass and decrease body fat percentage. Muscle-strengthening activities aim at strengthening important and large muscle groups such as abdominal muscles, arms and shoulders, hip and leg muscles. While performing muscle and bone-strengthening activities, you should not put too much strain on a single area of the body and should work muscles in the upper, lower, back, front, right and left parts of the body in a balanced way.

Flexibility Exercises

Flexibility is the ability of a joint to move through its full range of motion. In other words, it is the ability of the body, arms and legs to move easily during a physical activity. For an adult, having a flexible body means being able to move easily during daily life activities. For example, having flexible hips and legs is crucial for sitting cross-legged, a flexible spine for bending back and forth easily and flexible shoulders for reaching to the back of the body. Regular physical activities such as yoga, pilates and Tai Chi increase flexibility. Separate flexibility exercises can be performed for each joint.

Flexibility differs from one individual to another depending on the differences in bodily structure but it can be improved through regular stretching (flexibility) exercises. Having a flexible body means easier performance of daily movements and an increase in life quality.

Balance Exercises

Balance is the ability of the body to withstand challenges from postural sway and move without falling. Maintaining balance requires not only sufficiently strong muscles but also a
An individual having a good balance can walk on tiptoes or in a straight line with closed eyes and without swaying. Activities such as standing on one leg, tiptoe walking, standing up on an uneven surface and being able to walk on a slippery surface without falling requires good balance. Having good balance reduces the risk of falling. Regular balance exercises can be performed for improving balance. Exercises that improve muscle strength, flexibility and endurance have a positive impact on balance as well.

**Metabolic Equivalent (MET)**

The activity level of an individual can be evaluated using the concept of metabolic equivalent (MET). MET is a unit that is used to calculate the oxygen uptake of the body during physical activity. MET refers to the oxygen uptake during physical activity and expresses this as milliliters per kilogram per minute, giving a measure of the rate of energy expenditure of an individual. MET refers to metabolic equivalent and 1 MET is the rate of energy expenditure while sitting at rest. It shows the value of the human metabolism compared to the resting value as the intensity of the movement increases by physical activity. The table below consists of MET values for different activities.

<table>
<thead>
<tr>
<th>Light-Intensity Activities (&lt;3 ME)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleeping</td>
<td>0.9 ME</td>
</tr>
<tr>
<td>Watching television</td>
<td>1.0 ME</td>
</tr>
<tr>
<td>Light household chores (cooking, dusting)</td>
<td>1.5 – 3 ME</td>
</tr>
<tr>
<td>Personal hygiene (shaving, having a shower)</td>
<td>1.5 – 3 ME</td>
</tr>
<tr>
<td>Writing, desk work</td>
<td>1.8 ME</td>
</tr>
<tr>
<td>Low tempo walking (&lt;3 km/hour)</td>
<td>2.9 ME</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Moderate-Intensity Activities (3-6 ME)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross training</td>
<td>3.0 ME</td>
</tr>
<tr>
<td>Gardening (lawn moving etc.)</td>
<td>3.3 ME</td>
</tr>
<tr>
<td>At-Home Exercises, Gymnastic Activities</td>
<td>3.5 ME</td>
</tr>
<tr>
<td>Walking at a normal pace (3-6 km/hour)</td>
<td>4.0 ME</td>
</tr>
<tr>
<td>Cycling (9-12 km/hour)</td>
<td>4.5 ME</td>
</tr>
<tr>
<td>Washing car</td>
<td>4.8 ME</td>
</tr>
<tr>
<td>Partner dances</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vigorous-Intensity Activities (&gt;6 ME)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking 6-7 km/hour</td>
<td>5-7 ME</td>
</tr>
<tr>
<td>Climbing stairs (at a medium pace)</td>
<td>6.5 ME</td>
</tr>
<tr>
<td>Jogging</td>
<td></td>
</tr>
<tr>
<td>Running, weight lifting, carrying objects, playing tennis</td>
<td>7.0 ME</td>
</tr>
<tr>
<td>Swimming (Free style)</td>
<td>8.0 ME</td>
</tr>
<tr>
<td>Jumping rope</td>
<td>9.0 ME</td>
</tr>
<tr>
<td></td>
<td>10.0 ME</td>
</tr>
</tbody>
</table>

**Fuel used during physical activity** depends on the intensity, duration and type of activity, as well as nutrition before activity and fitness level of the individual. As the intensity of exercise increases, carbohydrate is used as a source of fuel for the activity and as the duration of exercise increases, fat is used as a source of fuel. If you work a small muscle group during exercise, carbohydrate remains the dominant fuel source during exercise. If individual’s diet is
rich in carbohydrate, it will remain the dominant fuel source during exercise when the duration of exercise is long. Therefore, this guidelines document does not contain information about calculation of calorie consumption during physical activity.

As a matter of fact, calorie consumption during physical activity not only depends on the duration, intensity and type of exercise but also on weight and exercise capacity of the individuals.

**Duration and Frequency of Exercise**

In order to lead a healthy life and to prevent illness, exercise should be performed at a certain frequency, regularly and for a reasonable duration. These guidelines include detailed information regarding duration, intensity and frequency of exercise according to age groups.

**Phases of Exercise**

**Warm-up**

Warming up would be slow pace bodily and mental activities performed before active exercise in order to prepare muscles, joints, respiratory and circulatory systems. Warming up should start with stretching and continue with endurance activities that would increase heart rate slowly, for about 5-10 minutes.

**Work-out**

This is the phase which includes the main exercise. Work out exercises boost functioning of respiratory, circulatory and muscular system.

**Cool Down**

It is crucial to allow the increased heart rate and blood tension to decrease gradually after the exertion state. Lactic acid accumulates in muscle and blood during exercise and cooling down helps normalize lactic acid concentrations. In this phase, exercise should last at a slower pace for about 5-10 minutes.

**Physical Inactivity and its Implications**

Modern society is made up of individuals who even do their daily shopping through virtual markets online and physical inactivity is one of the main problems in such a society. Although technology is making our lives easy, in the long run it contributes to an increase in the number of INACTIVE individuals and has a negative impact on health.

Physical inactivity is a common risk factor for chronic diseases and has been globally identified as the fourth leading risk factor for global mortality (6% of deaths globally).

Moreover, physical inactivity is estimated to be the main cause for approximately 21–25% of breast and colon cancers, 27% of diabetes and approximately 30% of ischaemic heart disease burden. Increased sedentary lifestyle is one of the major factors contributing to the obesity epidemic. Physical inactivity is responsible for 15% of all-cause mortality in Turkey.

Physical inactivity has a negative impact on human health, hence it increases individual and social health expenditure. Physical activity is a fun, low-cost, highly efficient tool for protecting individual and social health and avoiding and decreasing medical expenditure.

Physical activity should be incorporated into every aspect of daily life. Moreover, it is of significance that organizations and institutions (Local Governments, Ministry of Environment and Urbanization, Ministry of Youth and Sports, Ministry of National Education, etc.) which have a responsibility for building supportive circles, act in line with their responsibilities. Local and central governments have responsibilities and a crucial role to play in promoting physical activity in all sections of society.

Local government policies which aim at creating environments that promote opportunities for
physical activity and active living can be an effective tool for promoting physical activity. For example, by developing and incorporating policies for reducing vehicle traffic speed and creating safe cycling and walking paths, local governments can contribute to promoting physical activity and eventual prevention and control of chronic diseases at a global level.

Local governments make decisions that have an impact on planning, transportation, health, and recreation. Therefore, local leaders’ perspectives on factors such as design of neighborhood, location of schools and enterprises, pedestrians, drivers and cyclists have an impact on people’s participation in physical activity and active life. The way cities are planned, designed and renovated is closely related to the resultant physical activity participation and health levels for both individuals and society.

Urban design is one of the aspects of urban planning which focuses on creating a neighborhood where individuals want to live, work and play.

Environmental conditions can affect physical activity levels both negatively and positively. For example, in a neighborhood suitable for walking, people are most likely to commute by walking and incorporate walking into daily routines. Local natural environments and parks increase social connections and promote active participation in recreational activities. Dispersed urbanization, large out-of-town shopping malls and huge distances between residential areas, offices, schools and shopping facilities reduce the number of active life opportunities in the city. There are certain actions that local governments may consider in order to promote physical activity in urban spaces, neighborhoods, schools and offices. Examples are:

- Observing the most suitable width when building pavements, and designing policies to reduce vehicle traffic speed, block roads against vehicular traffic,
- Encouraging children to participate in physical activity by locating playgrounds along the footpaths,
- Establishing play areas and providing support for building of indoor and outdoor sport and recreation facilities at schools,
- Instead of enlarging the number of road lanes in order to facilitate vehicular traffic, developing initiatives to encourage mass transportation by increasing facilities such as underground metro and urban railroads.

Individuals who make up society can benefit from services and facilities provided by municipalities in order to increase participation in physical activity such as walking and cycling paths, elderly and disabled services, exercise services with a specialist, sports and recreation facilities, sports schools, camps, etc. In order to get information about services and facilities provided by municipalities and conditions of use, individuals can apply to municipalities or examine their websites.

Individuals can also participate in physical activity by using facilities and services provided by the Ministry of Youth and Sports. These include summer and winter schools, youth camps, and performing exercises together with a specialist in a sports facility.

Individuals can get information about the closest facilities and services from the Provincial Directorates of Youth and Sports.
CHAPTER 2: PHYSICAL ACTIVITY ACCORDING TO AGE GROUPS

PHYSICAL ACTIVITY FOR CHILDREN AND ADOLESCENTS

This chapter includes information about the type, frequency, duration and intensity of physical activity according to age groups as well as safety, challenges and recommendations.

Summary

Although deaths from infectious diseases have declined markedly over the years, due to changing lifestyles, overall mortality from non-communicable diseases has increased globally and in all age groups. This also has an impact on children.

Children are affected by the negative implications of changing lifestyles and this is crucial for two reasons: many diseases have their roots in childhood and there is a remarkable increase in both obesity and type 2 diabetes in children. This suggests that a healthy childhood is the first step in the prevention of illnesses.

Besides genetic, environmental and biological factors, the major risk factors for chronic diseases are inactivity and poor nutrition. This chapter includes recommendations for physical activity for children and youth to provide help in the prevention of diseases and have a positive impact on health.

The health benefits of physical activity and exercise are not limited to weight control. Findings of several studies have demonstrated that physical activity has positive impacts on musculoskeletal system (including bones), cardiovascular system (heart/lungs), neuromuscular system (neural system) as well as psychosocial development (depression, anxiety and self-confidence). Physical inactivity has also been demonstrated to have negative impacts on health. Therefore, in order to prevent diseases which have roots in childhood, increasing participation in physical activity and decreasing levels of inactivity are among the major strategies recommended for children.

How much physical activity, how much inactivity?

The most prevalent reason for physical inactivity today is watching TV and using the computer. Therefore, watching TV is not recommended...
for babies under 2 years of age. The ideal for older children is 1 hour a day of television and they should not watch television for more than 2 hours a day. Children should watch TV only when supervised by an adult.

Children should be physically active from the first year of life. They should be kept active during the first year and activities on the ground should be supported.

Children aged 1-4 years should accumulate at least 180 minutes of various intensity physical activity daily.

Children of this age group should be encouraged to start physical activity with a variety of indoor and outdoor activities that enhance their ability to move. They should progress towards accumulating at least 60 minutes of energetic play (games requiring energy expenditure).

Children and adolescents aged 5–17 years should accumulate at least 60 minutes of moderate to vigorous intensity physical activity daily.

Vigorous-intensity activities should be incorporated at least 3 times per week.

Adolescents aged 12–18 years should also accumulate at least 60 minutes of moderate to vigorous intensity physical activity daily. Types of activities preferred should include vigorous intensity activities at least 3 days per week and muscle and bone strengthening activities 3 days per week.

A well planned physical activity program should include four types of activities, namely endurance (aerobic), muscle and bone strengthening, weight lifting, balance and stretching activities. Aerobic exercises should be the main activity in such a program. Inactive adolescents, should start with a low pace and they should perform 15-30 minutes of moderate intensity physical activity 1-2 days a week. After this lower
baseline, they should progress from performing 30 minutes of physical activity 2-3 days a week towards performing 30 minutes of physical activity 3-4 days a week.

In every case, being active is always better than being inactive.

In summary, for children aged 5-17;
- 60 minutes of moderate intensity activity per day is recommended.
- Performing activity more than 60 minutes provides extra benefit.
- Endurance (strengthening) activities are recommended.
- Vigorous intensity activities 3 days a week are recommended.
- Activities can be performed in multiple, shorter periods spread throughout the day.
- Shorter activities also provide benefits for inactive children.
- For children and youth, sports, recreational activities, transportation, household chores, spare time activities (playtime), physical education classes, other planned activities in family, school and community would all count as physical activity.

**General Information**

Types of physical activity recommended in this section are grouped according to age groups of 0-4, 5-11 and 12-18 years based on child development.

Besides promoting healthy child growth and development and socialization, and preventing development of bad habits and decreasing the risk of chronic adulthood illnesses that have roots in childhood, it is possible to create meaningful differences through physical activity in disease treatment and leading an active life into old age. In other words, physical activity increases the overall quality of life.

Participating in regular physical activity appears to enhance self-esteem among children and adolescents and increases their cognitive and academic performance. It also facilitates social adaptation and influences the socialization of children and adolescents.

The scientific evidence available from epidemiological studies of adults supports the overall conclusion that risk factors related to coronary diseases have their roots in childhood. The research suggests that moderate to vigorous intensity physical activity for at least 60 minutes per day would help children and youth maintain a healthy cardiorespiratory and metabolic risk profile. Higher volumes of physical activity are likely to have greater benefit. Generally higher intensities of physical activity are observed to have greater benefit, but research in this area is still limited.

A study by Fedewa et.al. dated 2011 which included a final analysis of 59 studies published between 1947 and 2009 suggests that physical activity has created positive and meaningful increases in academic performance and cognitive function of children and adolescents.
It was reported that aerobic exercises proved to be the most effective.

Another study demonstrated that the academic success of children who were physically active increased by 6% whereas the academic success of children in the control group who were physically inactive decreased by 1%.

Another study conducted in Turkey showed that the level of self-esteem among children aged 9-13 years was higher among physically active children when compared to inactive children. A further study showed that anxiety symptoms are lower among physically active adolescents aged 14-16 years when compared to inactive peers of the same age group.

Research conducted in 2009 in Sweden compared the physical fitness and IQ tests of 1.2 million male adults born between 1950 and 1970 and were enlisted for military service at age 18 years. The research concluded that adults with better physical fitness have higher IQs as well as higher logical, mathematical and verbal capabilities. Furthermore those who were fitter at the age of 18 years continued higher education and worked in more qualified jobs.

In their comprehensive study published in 2010, Janssen and LeBlanc reviewed scientific studies conducted on children and youth 5-17 years of age and demonstrated that physical activity provided substantive health benefits, promoted physical and cardiorespiratory fitness functions, decreased percentage of body fat, controlled blood pressure, decreased the risk of metabolic syndrome and injuries, affected bone health positively and reduced depression risk, hence decreased the risk of developing such illnesses and increased life expectancy. Therefore, the authors suggested, higher intensity activities are likely to have greater benefit for children and youth.

Choosing a Physical Activity

In order to protect child and adolescent health and increase quality of life, while selecting the type of physical activity, the following items should be taken into consideration:

- Age,
- Physical environment,
- Physical fitness,
- Body weight,
- Eagerness and willingness,
- Accessibility,
- Being fun
- Planned according to the needs of children and youth,
- Practical and easily applicable regardless of time and environment,
- Sustainable,
- Economic situation of the family.

Encouragement for Regular Physical Activity and Building a Program

Children and adolescents can perform physical activity in two ways. They can choose an exercise that they enjoy and incorporate this into their daily lives or they can choose to perform normal activities at a higher pace and in a more repetitive manner. The activity selected should be performed regularly and repetitively.

The progressive increase in the activity level of children should depend on the frequency, duration and intensity of the physical exercise performed. Thus, positive health benefits of physical activity will be increased and sustained.

Unless children’s daily physical activity habits transform into a regular schedule, bodily systems regulated for a certain period by physical activity will eventually start to lose the health benefits created by physical activity.

Physical activity should;
- Be regular,
- Be repetitive,
- Be performed at structured intensity and for a sustained period of time.
Physical Activity Recommendations for Children and Adolescents

Age Group: 0-4 Years

Period Before Walking

Nutrition in this period is significant for healthy development of infants. However, creating a suitable movement space and providing materials proper for infants’ age and development is also crucial.

Developmental Milestones: Lifts her head, sits up with and without support, rolls over, creeps, crawls, stands up with support or walks with support.

Recommended Activities: Baby massage, placing infants on blankets or other safe dry surfaces with clean and bright colored objects (like rattles, boxes and teethers, etc.) nearby or hanging crib toys in the crib to encourage reaching, holding, grasping, throwing and rolling. Other recommended activities include pulling the blanket from one hand while the infant is lying on his back on it along a safe surface, encouraging infant to give a kick toward the objects hanging over the crib or at his tiptoe, to follow moving light, to crawl towards small moving objects, bath time games, crawling under tables or through tunnels.
Infants Walking

Development of three essential motor skills is peculiar to this age period. These are balance, movements that require change of place (such as walking and running) and manual skills (reaching out to, holding, letting go and placing objects). Manual and motor skills developed during this time period require intense control. Newly walking toddlers concentrate their attention on the movement they perform. When toddlers develop the ability to walk on their own, their attention is shifted from the act of walking to their surroundings.

Developmental Milestones: Squats, walks independently, walks holding an object in hand, places objects (such as into a box or a drawer).

Recommended Activities: Playing with push toys (like doll carriages) or pull toys, piling up pillows/boxes, climbing onto a sofa or a chair, dancing with music in the background, wrinkling pieces of paper, throwing paper balls into a box and blowing bubbles.

Computer and TV etc. are not recommended for this age group.
Ages 2-3 Years

Toddlers try to understand the movement abilities of their bodies during this period. In their movements, they use their bodies either in an exaggerated or limited way.

Developmental Milestones: Kicks a ball, walks back and forth, jumps on both feet, stands up on tiptoes, and descends stairs with help.

Recommended Activities: Walking in the neighborhood, outdoor games in the park or garden, rolling over and child bowling.

Ages 3-4 Years

Children can control their movements and exhibit more coordinated movements during this period. Rhythmic coordination increases.

Developmental Milestones: Walks at a higher speed, changes direction, jumps, skips, runs, rolls over, throws and catches a ball, slides, climbs and descends stairs, stands on one foot to balance for a short time, tricycles and forward rolls.

Recommended Activities: Free space activities such as running, jumping and hopping, playing with toys suitable for their age, dancing, cycling, ball games, water games, sand games, group activities, playing with other family members or children (For example, game of “Imitate Me”)

During this period, a positive environment (encouraging children to perform physical
Developmental Milestones: Runs in different directions, bounces ball, jumps forward on both feet, stands up on one foot for 6-8 seconds. Walks down stairs with alternate legs.

Recommended Activities: Games to improve balance and concentration (like the game of stepping on peers’ shoes), puss-in-the corner, hopscotch, hide and seek, capturing the handkerchief, reaching targets among obstacles, ball games, dancing with balloon, imitating animals, tag game (pony, run away rabbit, cat and mouse game)

Ages 4-5 Years
Coordination and control in movement increase during this period.

activity, availability of playgrounds and existence of family members who exercise regularly) is crucial to motivate children for physical activity.
RECOMMENDATION

Period before walking: Infants should be kept as physically active as possible when they are awake. Baby gymnastics and playing activities on a safe surface are important.

Period from independent walking to 5 years of age: Toddlers of this age group should accumulate at least 180 minutes of various intensity physical activities per day. They should be encouraged to start physical activity with a variety of indoor and outdoor activities that enhance their ability to move and eventually progress towards also accumulating at least 60 minutes of activities that require energy expenditure.

Age Group: 5-11 Years

Ages: 5-7 Years

Developmental Milestones: Children acquire and develop mobility and fundamental movements of balance during this period. They exhibit low endurance, eye-hand coordination is developing. Large muscle control is quick. Children of these age group are fast, agile and active. They like competitive individual and pair games. During this stage, children can jump backwards, throw a ball with one hand, can kick a moving ball and shoot a ball through a hoop. They can ride a bicycle with training wheels. They can roll over, walk in a balance on a platform 25-30 cm above the surface and eventually they can walk backwards. They can throw down a ball and catch a bouncing ball. They can hop, jump rope (held by two other participants), and perform movements that require mobility (such as simple dance steps). They can maneuver a ball in a given direction either by hand or foot without losing their balance. They can stand up on one foot for about 10 seconds. They can do bodily movements in line with rhythm. They play games according to its rules.

Recommended Activities and Sports: Skipping (jumping rope, hopscotching), holding and rolling games (dodgeball), ice skating, gymnastics, skiing, athletics, football, swimming, and judo, etc.

It is not recommended for children to stay sedentary for a long period of time. Screen time (TV viewing, computer use etc.) of more than uninterrupted 20 minutes or a total of 1 hour per day is not recommended for children between 2-5 years. Any screen time more than this duration lays the ground for overweight and other diseases.
Recommended Games:

- For the development of yer değiştirme hareketi games like “Drop the Handkerchief” and “Puss-in-the-Corner.”

- For the development of balance, games such as “Not dropping the balloon on the floor.”

- For the development of object control games such as “Roll the Ball Towards a Target” or “Bowling.”

- For the development of combined movements, games such as “Fishing Net” and “Musical Chairs.”

- For the development of movements accompanied by rhythm and music, games such as “Count and See” and “Heel and Nose.”

- “Jumping and landing” games to define the movements of body parts

- Games such as “Pot Pot What’s Boiling Inside?”, “Hungry Elephant and Fat Elephant” to specify movement area.

- To reinforce ability of balance while doing basic movements and to encourage develop strategies by using body parts, games such as “Fishing Net” and “Find Your Partner.”

Age Group: 8-9 Years

Ages: 8-9 Years

Developmental Milestones: Develops rhythmic abilities, abilities that require strength and coordination and performs complex movements. Endurance and ability to do complicated movements improve. Children of this age group develop abilities for activities such as dribbling, passing forward, hitting balls with objects like a racket.

Recommended Activities and Sports: Folk dancing, hitting and catching games, table tennis, tennis, fencing, boxing, karate, taekwondo, basketball, volleyball and yoga.

Recommended Games: Following games will help improve the ability for mobility: “Find Your Place” and “Musical Chair.”

- For balance improvement, games such as “Hopscotch”, and “Freeze Tag.”

- For improvement of object control abilities, games such as “Hit the Target Gain the Points”, and “Throw Away.”

- For the development of combined movements, games such as “Jump Four Times” and “Clap Your Hands Three Times.”
- For the development of dancing with/without objects, individually or in group and in harmony with the background rhythm and music, games such as “Cross the Line Reach the Moon.”

- To develop harmony with nature, games such as “Stop the Ball veya Stop”, “Hide and Seek”, “Kite Flying” and “walking”.

### Ages: 10-11 Years

**Developmental Milestones:** Improvement in abilities that require endurance, agility, balance and coordination. Enjoys being creative in movements and participation in team sports. Can perform most of the basic movements perfectly. Cardiovascular and respiratory systems become suitable for endurance activities. Problems of posture may emerge. Girls may be reluctant to participate in certain activities due to pubertal symptoms. Male and female adolescents may prefer performing different physical activities. It is important to encourage adolescents to participate in activities of their own choice.

**Recommended Activities and Sports:** Yoga and dancing are recommended activities for the prevention of posture problems. Orienteering, daily walking or walking every other day and outdoor sports such as scouting and camping are recommended activities for this age group. Participation in activities performed with family such as household chores, gardening and shopping should be encouraged.

**Recommended Games:**

- For the improvement of ability to change direction together with built agility, games such as “Bringing the Ball” and “Singles and Pairs Competition.”

- To perform movements that require mobility with an increasing accuracy and using relations among body, spatial awareness and movement abilities, games such as “Ball Tag,” “Running Backwards Through the Circle Pit.”

- For the improvement of the ability to balance on certain objects, games such as “High from the Ground.”
- To improve movements of balance with an increasing accuracy and using relations between body, spatial awareness and movement abilities, games such as “My Mom Draws Water for Me,” and “Touching the Knee.”

- For the development of abilities to perform the movements that require object control, games such as “Catch the Ball,” “Ball Crossing the Bridge,” and “Stop.”

- To build object control abilities, games such as “Throwing and Catching”, “Try and Do”, and “Dodgeball.”

- For developing ability to create working/dance choreography accompanied by a piece of music of their own choice; dancing

- Games such as “Dodgeball”, and “Tie and Untie Knots” to build skills to perform basic and combined movements.

**ATTENTION!**

Children aged 5–17 years should accumulate at least 60 minutes of moderate to vigorous intensity physical activity daily. Vigorous intensity activities should be incorporated at least 3 times per week.

**ATTENTION!**

Recreational screen time should be limited to no more than 2 hours per day.

**Age Group: 12-18 Years**

**Developmental Milestones:** Girls reach puberty earlier than boys. Puberty is a period that accelerates physical growth –length and body weight- and speeds the transformation of muscle mass. These physical transformations are usually accompanied by an increase in appetite and food intake. Peak bone mass is acquired during puberty. There are differences between girls and boys in terms of strength, flexibility and endurance.
Uses time effectively while performing activities. Respects the rights of other individuals in physical activities and appreciates success.

**Recommended Activities and Sports:**
Bodyweight exercises, activities performed with exercise bands and balls increase bone and muscle strength. Running fast, brisk walking, winter sports, water sports, cycling, climbing and horse-riding are sports recommended for this age group.

- Heavy weight exercise may be harmful for health for this age group.
- Regular physical activity is important in order to protect ideal body composition.
- It should be emphasized that all children and adolescents should be physically active daily.
- Vigorous intensity exercises should also be incorporated into the activity program for a positive impact on health protection and promotion.
- Children and adolescents should be encouraged to participate in sports that include skipping such as jumping rope, volleyball and basketball to ensure optimal protection of bone health at later ages.

**ATTENTION!**
- Children and adolescents should start exercise at a lower pace.
- Children and adolescents in this age group should perform at least 15-30 minutes of moderate intensity physical activity once or twice weekly.
- After this lower baseline, they should progress from performing 30 minutes of physical activity 2-3 days a week towards performing 30 minutes of physical activity 3-4 days a week.
- Amount of physical activity should be up to 60 minutes on some days. Higher intensity activities should be preferred.
- Recommend performing 60 minutes of moderate to vigorous intensity activities daily.
- Vigorous intensity activities should be incorporated at least 3 times per week.
- Muscle and bone strengthening activities should be incorporated at least 3 times per week.
A well-conceived physical activity program should include four types of activity. Aerobic activities should be the main activities in such a program.

<table>
<thead>
<tr>
<th>Type of Activity</th>
<th>Age Group: 5-11 Years</th>
<th>Age Group: 12-18 Years</th>
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<tbody>
<tr>
<td><strong>Moderate Intensity</strong></td>
<td>Cycling</td>
<td>Skating</td>
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<tr>
<td><strong>Endurance (Aerobic)</strong></td>
<td>Brisk walking</td>
<td>Cycling</td>
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<tr>
<td><strong>Activities</strong></td>
<td>Skating</td>
<td>Household chores and gardening</td>
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<td></td>
<td>Cycling</td>
<td>Sports including grabbing and throwing (like frisbee)</td>
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<td></td>
<td>Skating</td>
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<tr>
<td></td>
<td>Cycling</td>
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<td></td>
<td>Skating</td>
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<tr>
<td></td>
<td>Jogging</td>
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<tr>
<td></td>
<td>Cycling at a high pace</td>
<td>Cycling at a high pace</td>
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<td></td>
<td>Jumping rope</td>
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<td>Sports like karate</td>
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<tr>
<td></td>
<td>Basketball</td>
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<td>Swimming</td>
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<td>Tennis</td>
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<td>Football</td>
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<td>High Tempo Dancing</td>
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<td></td>
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<td>Boxing</td>
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<tr>
<td><strong>Muscle Strengthening</strong></td>
<td>Tug of war</td>
<td>Tug of war</td>
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<tr>
<td><strong>Activities</strong></td>
<td>Modified push-ups</td>
<td>Modified push-ups</td>
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<td></td>
<td>(Knees on the ground)</td>
<td>(Knees on the ground)</td>
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<td></td>
<td>Bodyweight or resistance band exercises</td>
<td>Bodyweight, resistance band and weight training exercises</td>
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<td></td>
<td>Climbing on a rope</td>
<td>Artificial wall climbing</td>
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<td>Sit-ups</td>
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<td>Swinging on a bar</td>
<td>Gymnastic</td>
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<td>Gymnastic</td>
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<tr>
<td><strong>Bone strengthening</strong></td>
<td>Hopscotch</td>
<td>Skipping and jumping</td>
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<tr>
<td><strong>Activities</strong></td>
<td>Skipping and jumping</td>
<td>Jumping rope</td>
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<td>Jumping rope</td>
<td>Running</td>
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<td>Tennis</td>
<td>Volleyball</td>
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</table>
Physical Inactivity: It is more than 60 minutes of sedentary state at a time for children except when sleeping.

The most important reason for physical inactivity in children and adolescents is more than 1 hour uninterrupted screen time (Watching TV, using computer) and lack of motivation for starting physical activity.

Reasons behind lack of motivation for starting regular physical activity

- Lack of family awareness about physical activity,
- Exam anxiety of families and students,
- Lack of gymnasiums and parks,
- Fewer opportunities for walking to school (use of school buses especially in the big cities),
- Lack of formally integrated physical activity in school programs,
- Increase in electronic and digital media at home and office,
- High traffic density,
- Adults and old people who do not like children and adolescents playing around their houses,
- Lack of proper, safe and sufficient playgrounds, walking paths and sports/recreation fields,
- High population density,
- High crime level,
- Air pollution.
Recommendations for Increasing Physical Activity Level of Children

1. Fast-food, sweets and cola drinks should be limited (healthy nutrition).

2. Screen time (watching TV and movies and playing video games) should not exceed 2 hours a day.

3. Children should be encouraged to help daily household chores.

4. Walking should always be preferred as much as possible under safe conditions. Children should be encouraged to climb stairs instead of taking the elevators.

5. Children should be encouraged to perform outdoor physical activity after school and before homework time. Children should be allowed to play outdoors.

6. Recreational facilities in the neighborhood should be explored.

7. Gifts that encourage physical activity (such as skates, ropes and bicycle) should be preferred.

8. Brochures and posters that emphasize the importance of physical activity should be displayed in visible locations at schools.

9. Physical education and nutrition programs at schools should be promoted. Physical education classes and playtime activities should be performed outdoors when the weather is suitable.

10. Children should be encouraged and supported to participate in sports games at school.

11. Teachers should be informed about the importance of physical activity for children and adolescents and be given the opportunity to speak about physical activity.

12. Teachers should suggest to children and adolescents that they should set a target for performing physical activity. Positive changes should be tracked and rewarded.

13. Teachers should encourage students to pick physical activity related subjects as homework topics.

14. Number of sports facilities should be increased at schools.

15. Number of sports clubs should be increased at schools and students should be encouraged for participating in such clubs.

16. School sports events should be shared on classroom bulletin board.
**SPECIAL CONDITIONS**

**Children with Diabetes**

Physical activity and exercise are just as important for children with diabetes as they are to healthy children. Available evidence supports the overall conclusion that physical activity provides fundamental health benefits for patients with type 1 and type 2 diabetes. The target of diabetes treatment is to regulate blood glucose levels and physical activity is one of the three elements of diabetes treatment along with regular insulin doses and diet planning. Studies suggest that regular physical activity helps regulate blood glucose levels, maintains good metabolic control and decreases the risk of developing chronic complications markedly.

Exercise during diabetes decreases insulin resistance by increasing the insulin sensitivity of tissue and consecutively the need for insulin is also decreased. It also reduces blood glucose levels and improves metabolic control. Ketone production is also reduced with exercise. It prevents obesity by contributing to weight control and weight loss. It enhances the feeling of well-being and increases life quality.

Children and adolescents with diabetes should be encouraged to adopt a regular exercise program. Diabetic children should start performing exercises ideally 1-2 hours after meals. Moreover, an insulin dose adjustment and other arrangements for physical activity should be defined by the diabetes team based on the individual characteristics of the child. Physical activity/games should be appropriate for the age, desire and abilities. They should be encouraged to perform physical activities that are fun and require team participation. The duration and intensity of exercise should be increased gradually. Blood glucose level should be measured before, during and after exercising. If blood glucose levels are not within the safe limits, additional carbohydrate intake is recommended. Safe blood glucose levels and optimal carbohydrate intake amounts should be defined by a diabetes team depending on the age, sex, weight and individual characteristics of the patient. The individual should have an amount of sugar cubes with him during exercise. Large amounts of water and mineral water should also be consumed during exercise. Clothing that is appropriate for the ambient
temperature should be chosen for the physical activity.

Well prepared diabetes training should be given to children and adolescents with diabetes before starting to perform physical activity. A physical activity program should be formed according to living conditions and preferences of the child by the diabetes team. Diabetes is not an obstacle for participation in competitive sports or sports requiring extensive training. However, a physical activity program should be defined in cooperation with the child and his family according to the characteristics of the sports the child prefers.

**Children with Epilepsy**

Epileptic seizures may vary widely from one individual to another and may include symptoms ranging from loss of consciousness for a few seconds to contraction of large muscle groups. Therefore, it is important to get epilepsy under control before a child with epilepsy starts practicing physical activity. Participation in physical activity is crucial for child with epilepsy so as not to feel rejected, to socialize and to increase self-confidence. Technical climbing activities such as rock climbing and deep diving activities are not recommended for these children and adolescents. They can easily participate in any physical activities apart from these.

**Children with Asthma**

Asthma attacks should be under control for children with asthma to perform physical activity. Children with asthma can participate in all sorts of physical activity. It should be noted that performing physical activity in cold weather combined with air pollutants might trigger asthma attacks.
GUIDELINES FOR FAMILIES

**Infants under 1 year of age:** Infants should be kept physically active when they are awake. Playing activities on a safe surface is important.

Plan an activity time for infants and get them to perform physical activities such as reaching and grasping balls and other toys. Encourage infants to play and roll over on a safe surface. After making sure that the environment is safe, encourage infants to start crawling.

**Children aged 1-4 years:** Children of this age group should accumulate at least 180 minutes of various intensity physical activity per day. Daily physical activity should include a variety of both indoor and outdoor activities which develop infants’ movement abilities. Towards the end of 4 years of age, physical activity should progress towards accumulating also at least 60 minutes of energetic play.

Offer a wide range of environments and opportunities to support physical development and active play. The options are endless for this age group. Walk with your children in close neighborhood, play games in the garden or at parks, encourage them for activities such as running, jumping and hopping in safe yards, play together with children with toys appropriate for their age, sing and dance together, encourage cycling and playing ball with other children and provide opportunities for their participation in water and sand games.

Daily physical activity for infants and toddlers;
- Helps them develop a healthy body,
- Develops movement skills,
- Increases wellness,
- Helps maintain a healthy heart,
- Helps them be cheerful, happy and self-confident,
- Maximizes attention and learning skills.

**ATTENTION!**

Screen time (such as TV or computer) should not be allowed for infants under 2 years of age. Do not switch the TV on while your infant is around.

Do not allow your children to have more than 20 uninterrupted minutes or a total of 1 hour per day screen time. Any screen time more than this duration results in inactivity and lays the foundations for overweight and development of other diseases.

**Children aged 5-11 years:** For protection and promotion of health, encourage children to accumulate at least 60 minutes of moderate to vigorous intensity physical activity daily. Vigorous intensity activities should be incorporated at least 3 times per week.

Children of this age can participate in sports such as gymnastic, athletics, football, judo, tennis, outdoor sports, skiing, ice skating and folk dance. Encourage children to play games that involve
skipping (jumping rope, hopscotching), and group participation (dodgeball). Participation in activities performed with family such as household chores, gardening and shopping should also be encouraged.

It is important to develop habits for physical activity for children of this age group. Daily physical activity for children;

- Helps them make new friends,
- Maintains healthy bones and muscles,
- Protects flexibility,
- Helps them stay at a healthy weight,
- Maintains a proper posture and increases balance,
- Increases feelings of wellbeing,
- Develops a healthy heart,
- Increases self-esteem,
- Supports healthy growth and development.

**ATTENTION!**

Do not allow your children over 5 years of age to spend screen time more than 2 hours per day.

**Adolescents aged 12-18 years:**

- Make sure that children start exercise at a low pace. Encourage children to perform 15-30 minutes of moderate intensity physical activity 1-2 days a week.
- After this lower baseline, make sure that they progress from performing 30 minutes of physical activity 2-3 days a week towards performing 30 minutes of physical activity 3-4 days a week.
- Amount of physical activity should be up to 60 minutes on some days. Higher intensity activities should be encouraged.
- Recommend performing 60 minutes of moderate to vigorous intensity activities daily.
Children of this age group should be oriented towards sports and physical activity that they desire. Encourage their participation in activities performed with family such as household chores, gardening and shopping. Encourage them to climb stairs instead of taking the elevators, walking or cycling to the school instead of taking school bus if conditions are suitable.

For children to feel more comfortable during the adolescence period, it is important to develop habits of physical activity. Daily physical activity for children;

- Helps them develop a healthy body weight,
- Gives them the opportunity to spend enjoyable time with friends,
- Helps them make new friends,
- Increases academic performance,
- Increases feelings of happiness,
- Maintains healthy bones and muscles,
- Protects flexibility,
- Maintains a proper posture and increases balance,
- Increases feelings of wellbeing,
- Develops a healthy heart,
- Increases self-esteem,
- Supports healthy growth and development.
GUIDELINES FOR TEACHERS

Infants under 1 year of age: Make sure that infants are as physically active as possible during the day and recommend this to families. Playing activities on a safe surface are particularly important.

Make sure that infants under 1 year of age perform physical activities such as reaching and grasping balls and other toys, have tummy time on a safe surface, rolling over and crawling.

Children aged 1-4 years: Provide proper activities and environments for children to get active and move. Play with them in the garden, encourage activities such as running, jumping and hopping in safe environments, play together with toys appropriate for their age, sing and dance together, and provide opportunities for their participation in sand games.

Daily physical activity for toddlers and children;
- Helps them stay at healthy body weight,
- Develops movement skills,
- Increases wellness,
- Helps maintain a healthy heart,
- Helps them be cheerful, happy and self-confident,
- Increases attention and learning skills.

ATTENTION!

Screen time (such as TV or computer) should not be allowed for infants under 2 years of age. Do not switch the TV on while infants are around.

Do not allow your children over 2 years of age to have more than 20 uninterrupted minutes or a total of 1 hour per day screen time. Any screen time more than this duration results in inactivity and lays the ground for overweight and development of metabolic diseases.

Children aged 5-11 years:

- For promoting their health, to ensure that children accumulate at least 60 minutes of moderate to vigorous intensity physical activity daily, build strong cooperation with school management and parents
- Encourage children to perform various physical activities during the free time outside physical education classes.

- Encourage children to perform vigorous intensity activities at least 3 days per week and muscle and bone strengthening activities 3 days per week.

Encourage children of this age group to participate in sports such as gymnast, athletic, football, swimming, judo, tennis, outdoor sports, skiing, ice skating and folk dance and to play games that involve skipping (jumping rope, hopscotching) and group participation (dodgeball). Participation in activities performed with family such as household chores, gardening and shopping should be encouraged.

It is important to develop habits of physical activity for children of this age group. Because daily physical activity for children;
- Helps them make new friends,
- Maintains healthy bones and muscles,
- Protects flexibility,
- Helps them stay at a healthy weight,
- Maintains a proper posture and increases balance,
- Increases feelings of wellbeing,
- Develops a healthy heart,
- Increases self-esteem,
- Supports a healthy growth and development.

Adolescents aged 12-18 years:
- Encourage children to perform 15-30 minutes of moderate intensity physical activity 1-2 days a week at a low pace.
- After this lower baseline, they should be encouraged to progress from performing 30 minutes of physical activity 2-3 days a week towards performing 30 minutes of physical activity 3-4 days a week.
- Encourage them to increase the duration of physical activity to 60 minutes daily and to prefer vigorous intensity activities.
- Encourage them to perform 60 minutes of moderate to vigorous intensity activities daily.

Encourage adolescents to perform exercises they like, participate in activities performed with family members such as gardening works and shopping, climb stairs instead of taking the elevators, commute between home and school by walking or cycling if conditions are suitable.

Emphasize that it is important to develop good habits around physical activity for them to feel more comfortable during the adolescence period because daily physical activity for adolescents;
- Helps them stay at a healthy weight,
- Gives them opportunity to spend enjoyable time with friends,
- Helps them make new friends,
- Increases academic performance,
- Increases feelings of happiness,
- Maintains healthy bones and muscles,
- Increases flexibility,
- Increases feelings of wellbeing,
- Keeps cardiovascular and respiratory systems healthy,
- Increases self-esteem and self-confidence,
- Supports healthy growth and development,
- Maintains a healthy posture.
TIPS FOR TEACHERS

Dear Teachers,

- Physical activity is fun and healthy. Therefore, encourage children and adolescents to participate in daily physical activities.

- Every individual needs physical activity to become healthy and strong. Take the first step and help children and adolescents to try a new thing.

- Support them to perform vigorous intensity physical activities because such activities enhance circulatory and respiratory systems.

- Give small breaks between courses and give them the opportunity to do exercises.

- Encourage children and adolescents to share their physical activity experience in the classroom with other peers.

- Help them search and find the most appropriate sitting position in the classroom.

- Advise children and adolescents about correct warm-up and cool-down exercises before and after physical activity.

- Teach them why the rate and depth of breathing increase during physical activity.

- Emphasize the importance of strength, endurance, flexibility, balance and coordination.

- Support children and adolescents to build a new lifestyle and to incorporate physical activity into their lives. For this, it is important to raise awareness, set a target and gradually move towards it, give them feedback, co-planning and variety.

- Encourage them to keep a diary of their physical activities.

- Encourage them to prepare projects that require physical activity.

- School sports events should be shared on classroom bulletin board.
EXAMPLES OF GAMES

**Puss in the Corner:** Children are divided into groups. Squares are marked on ground. Children go to one of the corners of the square. One player is nominated “Puss” in each square. Players try changing corners without being caught to “Puss”. Puss gives the order to change. If “Puss” gets the corner that child becomes the new “Puss”.

**Hopscotching:** The course is first laid out on the ground and it is composed of a series of eight squares. Then, the first player tosses the marker (typically a stone) into the first square and then hops through the course to the eighth square, skipping the square with the marker in it and hops back towards the first square. He picks up the marker and leaves the square without stepping on lines. The game continues starting on the next square each time until the course is completed through 2nd, 3rd, 4th, 5th, 6th, 7th and 8th squares. If, while hopping through the court in either direction, the player throws the stone out of a line or steps on a line the turn ends and the next player starts.

**Hide and Seek:** The game is played by one player chosen at random (designated as being “it”), turning his back to all the other players and keeping his eyes closed. After counting to ten, he turns to face the other players. Meanwhile, the other players hide. The player who is “it” attempts to locate all concealed players. The player chosen as “it” locates and tags all players, the player found last is the winner and is chosen to be “it” in the next game.

**Drop the Handkerchief:** First, a player is chosen to be “it.” Then the players sit in a circle on the floor facing each other. The player who is “it” takes a handkerchief and sings the song that gives the game its name running around other players:

The lyrics are as follows:

*I sell butter, I sell honey, my master has died and I sell them. My master’s fur is yellow. If I sell it, it is fifteen liras. Zam-bak Zum-bak, turn and look behind.*

As the player who is the “it” walks around, he/she places the handkerchief behind one of the players. Other players clap their hands and accompany the song. As soon as the player notices the handkerchief, he grabs it and starts chasing “it” who is walking around the circle. If the player can catch “it”, he touches his back with the handkerchief. Then he starts the game to hide the handkerchief. If the sitting player does not notice that the handkerchief is placed by “it” at his back, then “it” completes the circle and picks up the handkerchief on the ground and touches the player on the ground with the handkerchief and then hands it in to the other player who becomes the new “it.”

**Keeping the Balloon in the Air:** The players are divided into two groups. A piece of rope is stretched out on the playground (not much higher above the ground). Each group is given two or three balloons. They have to carry the balloons to the other side of the rope without dropping them on the ground. The player who drops it becomes the player of the competing group. The game continues, until all members of one of the groups become the member of competing group.

**Rolling the Ball Towards a Target:** A goal post is formed using two cones. All players gather in an area defined by lines and at a proper distance from the goal posts specified according to the level of players. Players try to roll the ball between the two cones with one hand. Players should not kick the ball and attention should be paid for this.

**Bowling:** Children are divided into teams of two or three players. Each team takes their place behind the specified line. Plastic bottles full of water are lined up at a certain distance from the players. Players are given balls and asked to hit the bottles with the balls. The first team to knock over all the bottles is applauded.
Catching Fish: A rectangular area with four corners is drawn on the surface in the garden. It is called the “fishing net.” One of the players is nominated as “it.” The player chosen as “it” becomes the “fisherman” and then he waits on one corner of the fishing net. Other players become the “fish” and start circling around the fishing net. They start entering in and out of the fishing net as they wish and try not to be caught. The fisherman tries to catch the fish. He waits for a moment when as many fish as possible are inside the fishing net. Whenever he wishes, he shouts out “Stop!” or “I have caught you.” When the fisherman shouts out, all the fish inside the fishing net freeze. Hence, the fish are caught. The fisherman counts the fish inside the net and tells the number to the other players. Then, his turn is over. The fish caught nominate one of the other players as the next “it.” The new “it” becomes the fisherman. And the game continues as such. At the end of the game, the player who has caught the most fish is named as the “chief” and applauded.

Count and See: This is a game which is based on repeating and imitating the words and movements of the teacher or whoever leads the game for the kids.

Five fingers on my right hand (five fingers are shown). Five fingers on my left hand (five fingers are shown). Count and see, count and see (each finger is shown and counted to five - 1, 2, 3, 4, 5). All together makes ten (all fingers are shown this time). If you want, count and see, count and see, count and see, count and see, (the it is counted to ten one by one; 1, 2, 3, 4, 5, 6, 7, 8, 9, 10)

Heel and Nose: The teacher or an adult who leads the game teach the children the song by movements. Children can sing the song in groups. Movements that are suitable for the lyrics are used.

Heel and nose,
Heel and nose,

Jump up,
Jump up, jump up. Stop.
Right hands, left hands,
Now knees and both hands.
Now knees and both hands.
Now it is the turn for arms.
You come and play with us.
Right hands, left hands,
Now knees and both hands.

Pot Pot What’s Boiling Inside?

The game can be played with an odd number of players. Children are put into pairs and the one left single is nominated as “it.” After children are put into pairs, one of the players sits in a squat position and the other stays standing up behind him. They form a circle of pairs while staying in their positions. The one squatting is called “pot” and the one standing up is called “pot owner.” The player chosen as “it” approaches one of the pot owners randomly.

“It”: Pot Pot what’s boiling inside?
The PotOwner: Butter and honey.
“It”: Can I taste?
The Pot Owner: No, you can’t.
“It”: Can I smell?
The Pot Owner: No, you can’t.

“It” says to the pot owner, “If so you go that direction and I this direction,” and they start running around the circle in opposite directions. They applaud whoever reaches the pot near which they started running. The one who is the second becomes the next “it.” This time, the new “it” starts to ask the same questions to the pot owner next to him and it goes in the same manner until all the pairs in the circle completes their turn. Partners change role in the second round, the players in the squat position stand up and the ones standing up sit in a squat position. The game is repeated in new roles.

Hungry Elephant and Fat Elephant: One of the players is nominated as the “fat elephant.” He stands up on a corner in the playground and he
is enclosed by a circle drawn by other players. The fat elephant’s movements are restricted in this area. Hungry elephant stands up across him. Other team players try to grasp and carry the food in front of the fat elephant to the hungry elephant. If the fat elephant can catch one of the players in his area who is trying to grasp the food, the one caught becomes the next “it.”

**Fishing Net:** A circle is drawn on the playground. It is called the “fishing net.” One of the players is nominated as “it.” The “it” waits in a spot inside the fishing net and holds a whistle in his hand. Other players are allowed to walk or run freely inside and outside the fishing net. When the player nominated “it” blows the whistle, the children must stop and not move. Children inside the fishing net are regarded as caught. The fisherman counts the number of the fish and announces the number. Another player is nominated as the next “it.” The purpose of the game is to catch as many fish as possible.

**Find Your Partner and Sit Down:** Children are put into pairs in the playground. Players form two nested circles. One of the partners stand up in the inner circle and the partner stands up in the outer circle. Players in the inner and outer circles hold hand in hand. After the “Start” instruction by the teacher or by another player who leads the game, the players in the inner circle start spinning around the circle starting from the left and the players in the outer circle do the opposite. They should not release their hands. When the teacher, or the other player leading the game, shouts out “Find your partner and sit down”, each player finds his partner and they go towards the teacher or game leader and sit down. The game starts again.

**Find Your Place:** Two or three groups are formed depending on the number of players. Each player in each group is given a number starting from 1. The number given to each player is written on a paper which will be attached to the chest of the respective player. Players are allowed to study group members and recognize them. After the instruction is given or music starts, all players exchange places. After the music stops, players try to line up with their group member according to their numbers. The group which achieves lining up the first gets the applause.

**Musical Chairs:** A piece of music is picked for the game. Each player has a chair. The player nominated as “it” stands up in the middle. The teacher or the game leader starts the music and lets the players, walk, run or dance. When the music player suddenly stops the music, everyone must race to sit down in one of the chairs. The player who nominated as “it” also tries to find a seat. The player who is left without a chair becomes the next “it.”

**Freeeeze and Release:** Players move freely inside a bordered area. The teacher or the game leader give different instructions (by raising his right hand, left hand and jumping) and asks the players to move. While players are doing the instructed movements, the game leader shouts out “Freeeeze! The players stand still. When the game leader shouts out, “Release!”, they start to move according to the next instruction.

**Hit the Target, Gain the Points:** Players are divided in groups on the playground. Pictures of fruits, vegetables, animals, geometric shapes, etc. are placed in front of each group at a certain distance. The pictures are given numbers starting from one to ten. The number of pictures should be ten at the most. A straight line is drawn on the ground at a certain distance from where the pictures are placed and players are told to line up on the other side of the line. Players try to throw pouches full of sand, chickpeas, beans etc. and hit these pictures. After every player has thrown their pouches, the game starts again.

**Throw Away:** Each player is given a ball and asked to throw the balls as far away as possible on the playground. Players who manage to throw the balls to the furthest point make a group. At the end of the game the group consisting of the
largest number of players is specified and the game starts again.

Jump Four Times, Clap Your Hands Three Times: Players make a circle standing up. The game leader holds some objects in his hands, shows them to the group and asks the group to clap their hands the number of the objects in his hands. Children clap their hands the number of the objects shown to them. In the second round, the game leader shows two different objects and asks the players to jump when the first object is shown and to clap hands when the second object is shown. The game continues with rounds that include instructions such as “clap your hands, stamp your feet, squat.” etc.

Cross the Line Reach the Moon: Players are divided into groups depending on their number. They join hand in hand and make a circle. Spinning in a circle, they sing the song below. After the song is finished, each group is given a ball and a line is drawn on the ground. Players try to throw the ball over the line one by one. The players who can throw the ball over the line, crosses the line and make the shape of the moon there. At the end of the game, all players will be in the shape of the moon and they are given pictures of the moon.

Once there was a white balloon.  
It wanted to fly.

To reach the clouds  
and live in the sky  
was his biggest wish.  
One night, he flew to the sky  
and reached the stars.  
It lighted up the earth,  
sparkled through trees and flowers.

Stop: Players form a circle. One of the players is nominated as “it.” The “it” player throws the ball up high shouting a name among the players. The one whose name is called out runs and tries to catch the ball before it touches the ground. If he succeeds, he throws the ball again calling another name. If he catches the ball after it touches the ground, he shouts out “STOP.” Meanwhile, the players who run around have to freeze after “it” shouts out “STOP.” Then “it” tries to hit one of the players with the ball. The player who gets hit loses a point and becomes the next “it.” A player who gets hit three times is given a name. The game continues until all players are given names.

Bringing the Ball: Players stand on the playground randomly, not in any particular order. Then they are divided into groups. Each group is given a bucket. The teacher or the game leader also has another bucket full of small balls. The teacher or the game leader throws the balls in different directions randomly. Players try to catch and put the balls into their group bucket. The balls collected are counted. The group which collects the most number of balls wins the game.

Singles - Doubles Competition: Two parallel lines are drawn on the playground. Two groups of equal numbers are formed. Members of the same group are aligned on each line. The distance between the players is three steps long. One of the groups is called “singles” and the other “doubles.” When the teacher or the game leader shouts out “doubles,” players in the doubles group cross over, walk around their partners and turn back to their place. The singles repeat the same. Players who complete the loop in the shortest duration gain points.

Ball Tag: Some of the players are nominated as the “it.” When the teacher or the game leader shouts out “Start,” other players start to run away. The “its” try to touch the running away players with the balls they hold. The player who gets touched with the ball becomes the next “it” and takes the ball in his hand.

Run Backwards Through the Circle Pit: Players form nested circles. The number of the players forming the outer circle should be one more than the number of the players in the inner circle. After the teacher or the game leader makes the first sign, players in the circles start to
run in opposite directions. The running should be at a slow pace. After the teacher or the game leader makes the second sign, players running in circles go into pairs. Players who cannot go into pairs lose points.

**Higher from the Ground:** One of the players is nominated as “it.” Other players run randomly around “it” clapping hands and shouting out loud “I am low, I am low.” Then “it” tries to catch one of the players at low level. Other players continuously run around trying not to get caught. When “it” is about to catch one of the players, he raises from the ground and starts shouting out “I am high, I am high.” Then “it” is not allowed to catch the other players when they are at a high level. If he can catch them when they are at a low level, the one who gets caught becomes the next “it” and the game starts again.

**My Mom Draws Water for Me:** Players go into pairs and hold hands face to face with their partners. While singing “My mom draws water for me, draws water for me,” they swing their arms singing “And the circle goes down through my neck.” At the same time, one of them turns right and the other turns left and they together steer their arms through.

**Touching the Knees:** Children group into pairs. Pairs stand up inside a circle which is not too big. They try to touch each other’s knees with their hands and stay inside the circle at the same time. The one who exits the circle loses the game.

**Catch the Ball:** Players form a big circle. A player is nominated as “it” and he stands up inside the circle. One of the players in the circle is given a ball. When the teacher or the game leader shouts out “Start”, the player holding the ball starts to pass the ball to other players. Meanwhile, “it” tries to touch the player who holds the ball. The player who is touched by “it” while he is holding the ball, becomes the next “it.”

**Ball Crossing the Bridge:** Players form a circle. They straddle, their feet touching each other’s. They bend forward and put their hands on their knees. Some of the players are nominated as “it.” The number of the “its” depends on the classroom size. The “its” stand up inside the circle holding a ball. The “its” try to roll the ball through other players legs. They can try it three times. Other players try to catch the ball thrown through their legs. However, they are not allowed to take their hands off their knees until the ball is thrown. If “it” manages to roll the ball through one of the players legs, that player becomes the new “it.”

**Throwing and Catching:** Players go into pairs. Each pair is given a ball. The teacher or the game leader starts playing music. After the music starts, players also start to throw and catch the balls in pairs. When the teacher or the game leader stops the music, the player holding the ball tries to catch his partner by touching him with the ball. The music is started again and the game continues until all players are excluded from the game by getting touched.

**Try and Do It:** A line is drawn and players are asked to form a platoon in column behind the line. Players are expected to manage several tasks placed on the playground. When the teacher or the game leader shout out “Start”, the first player jumps up five times on both feet inside the circle which is drawn in front of the group. He starts running and takes the hula hoop and twirls it around his waist. Then he jumps rope five times, passes through the posts and comes back to the queue touching the hand of the next player and goes to the end of the queue.

**Dodgeball:** Players form two groups of equal numbers. Then, it is decided which group will start the game. The other group is divided into two and members line up face to face leaving a certain distance in-between. The other group members stand up in between the two smaller groups. While the members of the smaller
groups try to pass the thrown ball to each other, the group in the middle tries to avoid the ball and not to get hit. The one hit by the ball is excluded from the game. The game continues until no player is left in the middle. After all members are hit, members of the other group line up in the middle.

**Tie and Untie Knots:** Players form two groups of equal numbers. A line is drawn and players are asked to form a platoon in column behind the line. Players at the start of each line hold a long piece of ribbon. A chair is placed across each group at a distance. When the teacher or the game leader shout out “Start”, the players at the start of each queue runs towards the chair and ties the ribbon at the leg of the chair. Then he runs back towards the queue. The second player runs and unties the knot.

**Arm in Arm:** A player is nominated as “it” and another player is given the task of catching him. Other players run around the playground arm in arm. If “it” can catch one of the pairs and takes one of the player’s arm, his partner in the pair becomes “it” and starts running. The game continues as such.
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PHYSICAL ACTIVITY FOR ADULTS

Summary

Throughout human history, physical activity was often an integral part of life. By the industrial and technological revolution, which took place over very short timescale, we were introduced to a less active life. Environmental conditions and lifestyles of modern people have changed dramatically as people have started to lead a less active and more sedentary life, spending hours daily watching TV, playing video games, using the computer and performing almost every task at a desk.

In today’s society, lack of physical activity has been branded as a silent epidemic and associated with the development of many chronic diseases.

According to the reports of the World Health Organization (WHO), physical inactivity has been spreading rapidly in many countries and this increases the risk factors associated with diseases such as cancer, cardiovascular disease, obesity, type 2 diabetes and osteoporosis. According to the 2004 Report of the WHO, physical inactivity is identified as the 4th among the leading risk factors for global mortality and accounts for the death of almost 3.2 million people annually. 80% of global mortality caused by inactivity has taken place in low and middle income countries. Physical inactivity negatively affects the quality of life, increases medical expenditure made due to complaints such as pain, depression and anxiety, decreases the number of days worked as well as productivity and hence imposes a significant economic burden on societies throughout the world.

Sedentary lifestyles have started become common in Turkey as well. Almost 87% of women and 77% of men in Turkey are insufficiently active according to the “Research on Risk Factors for Chronic Diseases” done by the Turkish Ministry of Health in 2011.

Besides prevention of obesity and chronic diseases, physical activity boosts feelings of mental and bodily wellness, helps people find meaning in life, increases life quality, develops better social relations and helps prevent environmental pollution by promoting transportation through cycling and walking.

For promoting and maintaining good health, it is recommended that adults should accumulate at least 150 minutes of moderate intensity muscle strengthening and endurance activities involving the major muscle groups throughout the week.

General Information

The “Physical Activity Guidelines for Turkey” is prepared with the objective of generating awareness of physical activity and its protective and positive impacts on health, as well as providing recommendations for inactive individuals. This chapter is written for and relevant to healthy adults. Individuals suffering from acute or chronic diseases should have a medical check before choosing an appropriate physical activity.

As it is the case in the rest of the world, physical inactivity brings along serious health problems in Turkey. In order to create a healthy and happy society, active lifestyles should be promoted and physical activity should be incorporated into daily lives. It is recommended that adults should accumulate at least 150 minutes of moderate intensity physical activity throughout the week. Physical activity for adults should be composed of muscle strengthening and endurance activities involving major muscle groups such as walking, low tempo running, cycling and swimming. Activities should be performed in multiple shorter bouts of at least 10 minutes each, on 3 to 5 days a week. Increasing weekly activity level brings along more health benefits.
Moreover, adding muscle and bone strengthening activities involving large muscle groups 2 days a week is crucial in terms of promoting and maintaining muscle and bone mass density. Combining flexibility and balance activities in the weekly exercise schedule increases the ability of a joint to move through its full range of motion and prevent falls.

Decreasing inactive time during the day as much as possible, and adopting an active lifestyle help increase the amount of energy expenditure. Regular endurance activities combined with strength, flexibility activities and balance training is crucial for promoting and maintaining a healthy life, and for reducing risk factors from chronic diseases.

**Physical Activity Recommendations for Adults**

Physical activity for adults includes all the exercises specified in the first chapter according to physical fitness of the individual. Examples for physical activity suitable for adults are given below.

**Endurance (Aerobic) Exercises**

Adults should pick an activity they like and one that fits into their lifestyle, hence that is sustainable. Walking is the most convenient activity. Adults can walk at a pace which allows them to talk but not to sing. This is classified as moderate intensity activity and this intensity level is proper for improving good health. For beginners, slower pace and not getting out of breath is important. Physical condition levels differ from individual to individual. Therefore,

Regular physical activity is significant for improving and maintaining physical, psychological, intellectual, social and environmental wellness of an individual.

Regular physical activity is the most effective cure for prevention of coronary diseases, obesity, hyper tension, diabetes, osteoporosis and some cancer types. Moreover, the costs of developing physical activity habits are minimal.

Physical activity increases life quality of individuals by promoting feelings of energy, vigor, fitness and peace.

Incorporating physical activity into daily life is easy and does not require complicated planning. There are some crucial changes adults can make for a more active life. These include choosing to walk as much as possible while going for shopping, parking the car at a distance from home or office or getting off the bus earlier than planned and walking the rest of the route, and cycling whenever possible, etc.
it is crucial to pick the correct intensity level suitable for physical condition of an individual. Performing exercises together with a friend who has similar physical condition levels would be beneficial.

Endurance activity is good for heart and improves circulatory and respiratory fitness.

Adults should do aerobic physical activity at least on 3 days and ideally on five or more days each week.

Adults should accumulate at least 150 minutes of aerobic physical activity throughout the week. 30 minutes of physical activity daily on 5 days a week would be adequate. Accumulation of physical activity can be obtained in short multiple bouts of at least 10 minutes.

It is not must for beginners to do 30 minutes of physical activity every day from the start. Beginners can gradually increase their pace and strive to achieve the recommended amount of 150 minutes in a few weeks.

Evidence from research suggest that accumulating 150 minutes of moderate intensity activity throughout the week is adequate for promoting and maintaining good health. For additional health benefits, adults should increase their moderate intensity physical activity to 300 minutes per week, or engage in 150 minutes of vigorous intensity physical activity per week.

Beginners should start performing moderate intensity endurance activities and increase the dose of the activities as physical capacity is increased. In this way, muscle soreness and risk of injury due to previous physical inactivity is reduced.

Comfortable shoes and proper clothing should be chosen for workout. Depending on the type of the activity and the environment, proper protection measures should be taken. For example, adults should wear bike helmets during cycling, and a hat and sunglasses during walking for protection against the sun.

**Muscle and Bone Strengthening Activities**

Performing muscle strengthening activities involving the major muscle groups and targeting different muscles in the body on 2 days a week is crucial to promote and maintain muscle mass and strength. Muscle strengthening activities target lower and upper legs, hips, abdomen, chest, arms, forearms and shoulders. Picking an exercise for each part, adults can perform 6 different types of exercises in total. Adults should perform each of the exercises 8-12 times to reach a level of tiredness in the area targeted. Adults should perform these exercises ideally at a pace where they can repeat 1-2 sets of each activity 8-12 times and they should not work
out to a level of tiredness where no additional repetitions are doable. One set of exercise is a complete round of repetitions. After a certain period of rest, another set can be completed; hence an adult would complete two sets of exercise.

It takes some time for the individual to achieve the desired level in muscle and bone strengthening activities. Therefore, they should not strive to achieve the recommended level. 5 to 10 minutes of strengthening exercise is a good start for bone strengthening. Proper technique is essential for a healthy strengthening exercise and to avoid placing excessive pressure on the back and joints. A weight level appropriate to the individual’s physical condition should be picked. Only after lifting the weight for 8-12 times and getting used to the exercise over time, amount of weight can be increased gradually.

Each exercise session should include activities targeting different muscle groups. Muscle and bone strengthening activities should not be performed on two consecutive days.

When you learn each exercise well and start performing them correctly, you can reach a level where exercises targeting different muscle groups can be combined and a total of 6 types of exercises can be repeated 8-12 times in 1-2 sets. This can be can done two days a week.

For example: You can take a bag full of rice, or a bottle full of water in your hand and use them for performing exercises targeting your arm, shoulder and chest muscles. You can strengthen your abdominal and back muscles by exercises such as sit ups and reverse sit ups. You can target the leg and hip muscles by climbing stairs and moderate squats. You should be careful not to force your limits and should stay within your boundaries. Hence, do not perform exercises you are not familiar with using weights. Do not compete either with others or with yourself!
Flexibility Exercises

You should start doing flexibility exercises with a warm-up activity such as walking. Then you can progress towards active flexibility exercises. When performing flexibility exercises, once you achieve a certain level of tension, you can hold that for about 10 seconds. Stretching positions should be held at a point of tension in the muscle, but not pain. You should also find your own natural rhythm as you inhale and exhale and don’t hold your breath. You can increase the duration of the time period you hold the tension to 30 seconds gradually. You can combine flexibility exercises with warm-up and cool-down exercises.

You can perform flexibility exercises after endurance and muscle and bone strengthening activities.

Balance Training

In order to improve balance, you can start with simple exercises which require maintaining balance. These exercises may include standing on one leg and swinging the free leg back and forth or out to the side, one legged squat, tiptoeing and walking on heels. You should start performing simple exercises that are designed to improve your ability to balance with both hands touching a wall. You can gradually release one hand first and then get support only by touching the wall with your fingertips. As you start to learn the exercises and improve your balance, you can release both hands from the wall and even increase the difficulty level of exercises by performing them eyes closed.

Balance training exercises are those which can be performed especially after endurance activities.
activities. Hence, we can both perform flexibility and balance training exercises and at the same time allow the body to gradually transition from an exertional state to a resting or near-resting state.

**What Is a Good Daily Exercise Routine?**

A daily exercise routine should involve stages of warm-up, work-out and cool-down. These stages are defined in detail below. Basically, it is important to achieve desired levels of exercise gradually and allow the body gradual transit to a resting state after the exercise is completed. Performing warm-up exercises before you stretch is essential in any activities especially in muscle and bone strengthening and flexibility activities. To give a simple example, brisk walking for about 5-10 minutes (you can walk indoor at home too) before muscle and bone strengthening exercises, followed by warm-up exercises performed either with lighter weights or body weight is a good way to get prepared for working the targeted muscles. In the same manner, flexibility activities are recommended after endurance and muscle and bone strengthening activities.

**Warm-up**

Warming up should be slow pace bodily and mental activities performed before active exercise in order to prepare muscles, joints, respiratory and circulatory systems. Two main objects of warm-up are to prevent possible injuries during the work-out and to increase the performance.

Warm-up stage should include exercises lighter than the actual physical activities that will be performed during the work-out. Walking and active gymnastic activities can be easily performed during warm-up stage.

It would be better to devote the last part of your warm-up routine to stretching exercises. Avoid placing excessive pressure on muscles and joints. All the muscle groups that will be worked during the work-out should be properly activated by warm-ups.

If you plan to perform light intensity endurance exercises, you do not need to do any other exercises for warming up. However, if you plan to do moderate intensity endurance exercises, you need to 3-5 minutes of warm up exercises at a low tempo to activate the body before the exact work-out.

**Work-out**

This is the phase which includes the main exercise. Work-out exercises boost the functioning of respiratory, circulatory and muscular systems. Individuals who have not been active in some time should start at a comfortable level and add a little more activity as their physical capacity increases.

You can check whether the intensity of the activity you are performing is suitable for you by speech test and checking heart rate. While performing light intensity physical activities, you can talk and sing. While performing moderate intensity activities, you can talk but not sing. While performing vigorous intensity activities, you have difficulty even talking. As stated above, at least 150 minutes of moderate intensity aerobic physical activity throughout the week is adequate for adults to achieve health benefits.

Avoid pushing yourself beyond your physical limits during work-out. If you are doing this, you will get out of breath and find it difficult to breath in an out!
Cool Down

It is crucial to allow the increased heart rate and blood tension to decrease gradually after the exertional state. If you stop an exercise abruptly, (since venous return suddenly decreases) you may experience sudden decrease in blood tension, angina, and cardiac arrhythmia. Therefore, you should continue exercises at a light-intensity for about 5-10 minutes before stopping it. After work-out stage, cooling down allows the respiratory and circulatory systems to return to a resting state and the body to get rid of some substances accumulated in the blood due to muscle soreness. Cool downs should involve light intensity activities such as low tempo walking and stretching. Cool downs prevent muscle soreness and the risk of injury due to previous physical inactivity.

Warm-up and cool-down stages should not be neglected before and after performing physical activity. During the cool-down stage, it is expected that heart rate and respiratory rate return to their resting rates in 5-10 minutes.
How Much Activity is needed to Stay Healthy?

The Pyramid of Physical Activity below encompasses examples of which activities should be done and at what frequency by adults on a regular basis. The base of the Pyramid - the largest part - highlights those activities that are mostly recommended in our everyday lives while the peak of the pyramid highlights those activities we should avoid.

THE PYRAMID OF PHYSICAL ACTIVITY

- **SEDENTARY LIFE**
  - Watching television
  - Using the computer, etc.

- **CUT DOWN ON**
  - Exercises that involve large muscle groups such as push up, sit up, lifting weight and stretching, etc.

- **ENDURANCE - FLEXIBILITY - BALANCE**
  - Aerobic activity of 30-60 minutes such as brisk walking, cycling, swimming, dancing, skiing etc.

- **2-3 DAYS A WEEK**
  - Commuting between home and office by walking, household chores, gardening, climbing the stairs instead of taking the elevator, washing the car, etc.

- **3-7 DAYS A WEEK**

- **DAILY ACTIVITIES**

- **EVERY DAY**
Determining Duration and Intensity of Physical Activity

Increasing the duration of physical activity performed will bring extra health benefits. Accumulating at least 150 minutes of moderate intensity physical activity throughout the week is adequate for good health.

Can I Increase the Intensity of Physical Activity I Perform?

Since the objective of performing physical activity is promoting and improving health, moderate intensity activities are adequate for adults. Increasing the intensity of physical activity helps improve physical fitness. Be reminded that increasing the intensity of physical activity increases the risk of injuries as well. You should seek medical advice if you would like to do vigorous intensity physical activity. If you are allowed to perform vigorous intensity physical activity by a doctor, you can combine moderate and vigorous intensity exercises throughout the week.

In other words, you can do at least 150 minutes of moderate intensity aerobic physical activity throughout the week or do at least 75 minutes of vigorous intensity aerobic physical activity throughout the week, or an equivalent combination of moderate and vigorous intensity activity.

Things that You Should be Careful of When Doing Physical Activity

- Start performing physical activity with warm-up exercises and end it with cool-downs.
- Start exercising at a slower pace and increase the intensity gradually.
- In order to prevent injuries, prefer wearing non-slip, orthopedic shoes with arch support and made of light material. Walk on dirt rather than hard surfaces.
- Wear comfortable, cotton, loose fitting clothes that allow you to move freely and that are appropriate for the weather conditions and the physical activity you perform.
- On hot and humid days, prefer performing physical activity during the early morning and late evening hours while the sun is not at its peak.
- Do not hold your breath during exercises.
- Avoid positions which will place excessive pressure on your joints during exercise.
- Have at least one day interval between muscle and bone strengthening exercises.
- Avoid doing exercises immediately after meals or while you are hungry.
- Try to drink water during exercise.

Is it Difficult to Increase Physical Activity Levels?

It is not difficult or costly to live a physically active life. Being physically active does not require too much spending. You can participate in group activities in the neighborhood or perform a physical activity you choose and like such as walking in the park.

No additional time is needed for being physically active; however, performing regular physical activity needs you to spare time for it. Humans cannot live without sparing time for personal hygiene, eating and recreation. In the same manner, physical activity should also be an integral part of everyday life.

Age is not a barrier to getting physically active. Individuals who are active during younger ages have increased ability to be physically active and independent at old age.

Where to Perform Physical Activity

You can perform physical activity at home, at school, at the office and in almost every area of life.

For example you may prefer walking to places within walking distance instead of taking transportation. If you commute between the home and the office, you can get off the bus earlier than planned and walk the rest of the route. If you drive your car, you can park the car at a distance from home or office and walk the rest of the route.

You can go for a walking together with your friends in a park in the neighborhood. You can climb the stairs instead of taking the elevators.

You can dance while listening to the music. You can perform household chores and gardening by yourself.

If you work, you can walk during lunchtime or after work. The only equipment you need to do this is your sports shoes.

You can even do some endurance and flexibility exercises while watching TV.
Common Excuses That Keep Adults Sedentary

For obtaining the desired health benefits from physical activity, it should be performed regularly and maintained for a lifetime. Physical activity and exercises performed only for a few weeks do not yield the desired benefits for adults who have been insufficiently active for years. To get the health benefit of physical activity such as feelings of wellness and happiness, adults should perform physical activity regular and make it a part of their daily lives. We’ve looked at some of the common barriers people raise, and offer some tips on how to move past them below:

Recommendations for behavior change:

1. I am too busy for physical activity. I don’t have the time between work, family and other things.
   - Make an active lifestyle part of your life.
   - Incorporate physical activity into your daily routine.
   - Involve family and dedicate time for physical activity with the family members.
   - Perform physical activity together with your spouse and children.
2 I think my body weight is normal. So I don’t need to do physical activity.

- Weight control is only one of the positive impacts of physical activity and exercise. Having a normal body weight does not necessarily mean that you are healthy. You should perform regular physical activity in order to protect your health.

- Physical activity is fun. It develops a positive body image. It increases your self-esteem. It improves your cognitive functions.

3 I am scared of getting hurt during physical activity.

- Start slowly. As you get familiar with the exercises, you can increase both duration and intensity gradually.

- Choose something you like to do, or you are familiar with which requires less strength.

- Don’t neglect warm-up and cool-down stages before and after performing physical activity.
4 I have never done any exercise before.
- Don’t exaggerate it. Just get started and increase level of physical activity.
- Start walking regularly. It is this easy to start getting physically active!

5 There is nobody to take care of my children while I am doing physical activity.
- Your children also need physical activity. You can find activities to do together with your children regardless of their age. Dance together, play games that involve running around and tagging and go for a walk together in the park.
- Choose sports centers with indoor playgrounds.

6 My family and friends are not physically active.
- This is not a barrier. Start making the change yourself. Consider the health benefits of physical activity (better sleep, feelings of wellbeing, a stronger body) as a reward. Through these changes, you can set an example for them.

7 I don’t enjoy doing physical activity alone.
- You can form walking groups with your friends.

8 Weather conditions are not favorable for physical activity.
- It may be cold, rainy or even snowing outside. You can still create opportunities at home or indoors to do physical activity. You can have small walks or dance at home.

9 I don’t feel safe when I do physical activity alone.
- You can form walking groups with your friends.

10 I have health problems and I don’t want to take any risk.
- Seek medical advice.
- Pick activities you like and start slowly. Remember, there is definitely a type of activity which is suitable for you.

11 There are not any places suitable for physical activity in the neighborhood.
- Not all types of physical activity require outdoor spaces. Flexibility and balance exercises can be performed indoors. You can walk at home.
**Safety Recommendations**

**Under which conditions you should end physical activity?**

If you experience one of the following conditions, end physical activity and see your doctor:

1. Chest pain,
2. Abnormality in your heart rhythm or "skipped beats",
3. Shortness of breath,
4. Noticeable bruising during exercise,
5. Dizziness and staggering,
6. Joint pains which make you end an exercise,
7. Fatigue and tiredness which makes you end an exercise,
8. Headache which is started with exercise and gradually deteriorating.

**Physical Activity and Nutrition**

For protecting and improving health, as well as body weight and composition control, adults should do regular physical activity. Individuals need to use energy in order to perform physical activity and the body needs appropriate amounts of food intake in order for adequate energy output. If energy intake is not adequate, energy which is stored previously is consumed for performing physical activity, which leads to weight loss. Hence, a balanced and healthy diet is crucial to maintain body tissue integrity and to prevent impairment of health as a result of physical activity.

As a basic principle, in order to maintain a healthy body weight, energy intake from food resources should be equal to energy expenditure by physical activity. Less energy expenditure than energy intake results in storage of energy primarily as body fat and lays the ground for obesity.

Considering food production and diet habits in Turkey, daily diet planning should include four basic food groups that should be consumed every day. These food groups are shown in a diagram shaped as four leaf clover. As a general recommendation, daily energy intake of an adult should be from all of these four groups. 50-55% of daily energy intake should come from carbohydrates, 12-15% from proteins and 25-30% from fats.

A sufficient and balanced diet is crucial for healthy exercising. “Dietary Guidelines for Turkey” can serve a reference guide in this subject. Adults with sufficient and balanced dietary habits do not need to take dietary supplements such as vitamins and minerals. If adults with diabetes perform physical activity, they should observe the recommendations of physical activity and diet which are appropriate for their disease.

- Physical activity is crucial for body weight control; however, you should not do physical activity when you are hungry.
- You can consume some snacks and refreshments, for example a glass of milk, ayran or fruit, (approximately 150-200 kcal) up to 30 minutes before exercise.
- It is not proper to consume a huge meal just before exercise. You should also eat your main meal 3-4 hours before exercise.
- Fluid loss is peculiar to physical activity. Drink one tea glass of water every 15 minutes. Consume more liquids in very hot and humid weathers. Light straw colored urine means your liquid intake is adequate.
Summary

Ageing is an irreversible process that starts at birth and continues all through life. Although it is not correct to accept a set limit, chronologically the age of 65 years and above is considered to be the old age. Life expectancy is expanding in the world and in Turkey, increasing the ratio of older population to young population gradually. By year 2025, the number of old people in the world is expected to be 800 million. It is also estimated that there will be 9 million senior citizens in Turkey. In line with this increase, healthy ageing and being independent in social life becomes significant.

Ageing is not an illness. The changes that happen to the organ systems with ageing do not cause function loss or a disease on their own. However, the decrease in the organ systems reserves makes development of chronic diseases such as hypertension, diabetes, coronary diseases, osteoarthritis and osteoporosis more likely. We can hardly say the older adults in our country are physically active. One study reported that physical activity among the older adults was low; only 30% walk for exercise and 15% do exercises at home. This indicates that physical activity should be encouraged, the awareness level about this issue should be increased to allow healthy ageing among people and to maintain older adults’ independence in daily activities. It is necessary to increase the number of easily accessible, free and widely distributed physical activity fields and social facilities for older adults.

Regular physical activity has a positive impact upon many systems and organ functions. It has been reported that regular physical activity has increased life span and life quality even in people who have not exercised regularly until old age. Several positive effects of physical activities have been scientifically proven. The known positive effects are the following:

- Decreased risk for cardiac disease and stroke,
- Decreased risk for type 2 diabetes mellitus,
- Improvement in high blood pressure,
- Improvement in the blood lipid profile,
- Decreased risk for metabolic syndrome risk,
- Reduced risk for colon and breast cancer and some other cancers (such as lung and endometrial cancer),
- Prevention of weight gain,
- Increased cardiorespiratory performance,
- Prevention of falling and decrease in hip fracture,
- Decreased depression, improvement in cognitive functions,
- Increased bone mineral density,
- Improvement in sleep quality.

Considering old age and illnesses as something that hinders physical activity is an incorrect belief. In many chronic diseases, regular physical activity is suggested due to its healing and/or preventive effects.

A sedentary life shortens lifespan and causes early ageing.

Lack of physical activity accelerates the physiological changes caused by the ageing process, increases the frequency of many chronic diseases and causes these illnesses to be experienced at earlier ages. In short, it accelerates ageing and shortens life span.

There is a physical activity that can be done, at all ages and conditions and with each disease.
Older adults should consult their physician and learn what type of activities they can and cannot do and when they should stop the activity.

**Suggestions for older age group**

- The time spent watching television or visiting neighbors (i.e. sitting with them for extended hours) should be decreased.

- The most ideal activity for this group is walking. First, one should start walking for short periods and resting often, and unless s/he feels discomfort, first the duration and later the pace of the walk should be increased. If possible walking should be preferred for traveling short distances.

- Moderate-intensity endurance (aerobic) activities (that increase the breathing rate slightly) are brisk walking, cycling, jogging, swimming, playing tennis, hard household chores (vacuuming) and light garden work instead of heavy ones (digging and hoeing in the garden, sawing crops).

- High-intensity physical activities (ones that increase your breathing and heart rate significantly) are ones such as walking with weight or walking up a hill, running, playing volleyball, basketball and cycling. These can be done at least 75 minutes per week (3 days a week for 25 minutes or 4 days of week 20 minutes).

- Older adults should try to carry out the household chores him/herself.

- Moderate-intensity activities should be done five days a week for 30 moments or in bouts of 10 minutes, accumulating to 30 minutes (10x3=30 min); a total of at least 150 minutes per week.

- Moreover, 2 or 3 days a week muscle-strengthening activities (not consecutively but giving a break for a day), balance and flexibility exercises can be carried out.
General Information

Ageing is an irreversible process that starts at birth and continues all through life. Under normal conditions, ageing on its own does not cause a function loss or a disease. Chronologically, old age is defined as 65 years and above.

Depending on the process of ageing, there is a decrease in reserves (back-ups) of many organ systems. Although such a decline is considered normal, they pave the way for many chronic diseases. These diseases are hypertension, diabetes, coronary - vascular diseases, osteoarthritis, osteoporosis (increasing fragility of the bones) and sarcopenia (a decrease in the muscle strength and volume). **Lack of physical activity**, that is inactivity, accelerates the physiological changes caused by the ageing process, increases the frequency of many chronic diseases, causes these illnesses to be experienced at earlier ages and shortens life span. While evaluating older adults, these changes should be kept in mind and after the consideration of the unique health condition of each older person, individualized physical activities should be suggested.

**Physical activity extends life span and delays ageing.**

Given the ageing and increase in the life span of the population, it is necessary to encourage physical activity and increase the awareness level about this issue. Increasing physical activity decreases many health related risks. Older adults must avoid inactivity. A little physical activity is better than none, a lot of physical activity is better than a little. As the frequency, duration and the intensity of the physical activity increases, the health benefits increase as well.
The effects of old age combined with lack of physical activity are summarized below.

<table>
<thead>
<tr>
<th>System</th>
<th>Effects of Lack of Physical Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardio-vascular System</td>
<td>The ability of the heart to pump blood decreases, the vein walls tightens and gets thicker (atherosclerosis), blood pressure gets higher. The amount of blood flowing to the organs decrease. Due to thickening and tightening of the veins that nourish the heart, the heart cannot receive enough oxygen and nutrition. The risk for coronary heart disease and heart failure increases.</td>
</tr>
<tr>
<td>Respiratory System</td>
<td>During physical inactivity, as a result of decreasing capacity to inhale and exhale, weakness of respiratory muscles, and the decreasing ability for coughing and expectorating, the risk of respiratory infection increases.</td>
</tr>
<tr>
<td>Immune System</td>
<td>Individuals who are physically inactive are more likely to have infections than those who do regular physical activity.</td>
</tr>
<tr>
<td>Endocrine System</td>
<td>The scarcity of physical activity causes an increase in the body mass index, an increase in the fat tissue and also an excessive built up of abdominal fat. As a result of this, the risk for developing glucose intolerance or type 2 diabetes increases.</td>
</tr>
<tr>
<td>Gastrointestinal System</td>
<td>Due to increased levels of blood cholesterol and triglyceride, scarcity of physical activity may cause accumulation of fat in the internal organs, especially in the liver. The possibility of having colon cancer, diverticulitis and gallbladder stone is higher in individuals who are not sufficiently physically active than those older individuals who are physically active. Physical activity prevents constipation by increasing the bowel movements.</td>
</tr>
<tr>
<td>Neuro-cognitive System</td>
<td>The probability of depression and sleep disorders are higher for the inactive individuals when compared to physically active individuals. In parallel with this, the possibility for social phobia is higher in inactive individuals.</td>
</tr>
<tr>
<td>Musculoskeletal System</td>
<td>When the physical activity is limited, the muscle mass and strength decreases. The bone mineral density decreases and its quality deteriorate. The increase in the body fat mass and the decrease in the muscle mass and strength, increases the burden and the damage on the joints. Physically inactive individuals suffer osteoporosis, joint pain and osteoarthritis more often. Muscle weakness leads to balance and gait disorder and paves the way for falling and accidents.</td>
</tr>
</tbody>
</table>
The physiological changes and illnesses which develop due to old age can be improved or ameliorated with regular physical activity.

Regular physical activity has positive impact on several system functions. A relation between increased aerobic activity in older adults and decreasing rates of all-cause mortality has been reported. The studies indicate that regular physical activity has increased life span and life quality even among people who did not exercise regularly until old age.

Evidence Regarding the Beneficial Effects of Physical Activity

**Strong evidence**
- Decreased risk of early mortality,
- Decreased risk for coronary heart diseases,
- Decreased risk of stroke,
- Reduced risk for type 2 diabetes mellitus,
- Improvement in high blood pressure,
- Improvement in the blood lipid profile,
- Decreasing risk for metabolic syndrome,
- Decreased colon and breast cancer,
- Prevention of weight gain,
- Maintaining weight (along with a healthy diet),
- An increase in cardiopulmonary performance,
- Prevention of falling,
- Decreased depression,
- Improvement in cognitive functions,

**Moderate evidence**
- Improved functional capacity,
- Decrease in abdominal obesity,
- Maintaining body weight after weight loss,
- Reduced risk for hip fracture,
- Increased bone mineral density,
- Improvement in sleep quality,
- Reduced risk for lung and endometrial cancer,

**Types of Physical Activity**

**Endurance (Aerobic) Activities**

Endurance activities should be done regularly at least 3 days, ideally 5-7 days each week.

For instance walking regularly and briskly, cycling, swimming for long periods of time and working in a garden or field.
Muscle and Bone Strengthening Activities

When performing strengthening activities; abdominal, back, arm-shoulder and hip-leg muscles should be strengthened separately. For instance carrying objects, wearing a backpack, push-ups and sit-ups and weight lifting exercises target separate muscle groups.

Strengthening exercises should not be done two days in a row and each session should target a different group of muscles. For each muscle group to be worked, you should start with a set (7-8 repetitions), as you progress you should add 2-3 sets. Strengthening should be done by a gradual increase. As the muscle strength increases the number of repetitions, the number of sets and the amount of weights should be increased.

During the exercises, you should not hold your breath.

Flexibility Activities

Flexibility activities should start with a light warm up. When performing flexibility exercises, once you achieve a certain level of tension, you can hold that for about 10-12 seconds. After a few repetitions, another part of the body should be stretched. Flexibility exercises can be done 3 to 4 days a week.

Regular physical activities such as Yoga, Pilates and Tai Chi increases flexibility. As a part of regular exercising, one can do flexibility exercises for each joint separately.
Balance Activities

Having a good balance is necessary for older adults in order to reduce the risk of falling. Exercises that improve muscle strength, flexibility and endurance have a positive impact on balance as well.

Older adults should perform endurance, strengthening, stretching and balance exercises as recommended. The benefits of each group of exercises are varied, for instance stretching activities cannot replace endurance activities and do not have the same effects. Thus, for complete wellness, each activity should be done at sufficient levels.

Phases of Physical Activity

Warm-Up

The warm up phase should involve activities with less intensity than the ones to be done at the work-out phase. The warm-up phase should last five to ten minutes and start with walking on the spot, stretching moves, breathing deeply and simple arm movements and continue gradually with walking, rhythmic swinging and bending.

*When you start to sweat, this indicates you are ready for exercise.*
Work-out
This is the phase when the suggested activity is done.

Cool-Down
Cool down phase is achieved by slowing down or decreasing the number of repetitions. Breathing and relaxing exercises can be done or you can walk slowly.
The cool down period is important after about 20 minute moderate- and vigorous-intensity activities. It is necessary to gradually decrease the heart rate and blood pressure, which has increased during the conditioning period. If the exercise is ended abruptly, (since venous return will suddenly decrease) a sudden drop in the blood pressure, angina, and arrhythmia can occur, thus exercise should be finished after carrying it out at low intensity for 5 to 10 minutes.

Within the cool down period, we expect the heart rate and respiration frequency will return to the rates at the beginning.

Each physical activity should start with warm-ups and be finished with cool-downs.

Increasing the Level of Intensity of Physical Activity
After reaching a certain level of physical activity; the duration, frequency and intensity of the physical activity should be increased. For instance, after accumulating 20 minutes of physical activity daily, this physical activity level should be increased to 30 minutes per day or after reaching a frequency of 3 days of physical activity per day, that should be increased to 4 or 5 days a week.

The warm up and cool down phases should be longer for older adults.
In order to prepare the muscle and joints for movement so that they will be harmed less, and to allow coronary vascular and respiratory system to pull together after the exercise, the warm up and cool down phases should be long. Each would at least lasts 10 minutes.

Choosing a Physical Activity

While choosing a physical activity for older adults to protect health and increase their quality of life, one should take into consideration:

- Any accompanying illnesses,
- Physical surroundings (applicability, practicality),
- Accessibility,
- Economic status,
- The activity should also be fun and fit into group and recreational activities.

The suggestions for physical activity for older adults can be grouped into three according to the individual’s activity needs and functional status:

1. Healthy individuals of 65 years of age or above going for daily walks, working actively and/or doing recreational or sportive activities regularly: Beside increasing their strength in general and protecting their present activity level, the individuals in this group should do at least 150 minutes of moderate intensity endurance (aerobic) activities or 75 minute vigorous intensity physical activities or the equivalent moderate or vigorous intensity endurance (aerobic) activities per week. The 150 minute (2.5 hours) of weekly moderate activities can be carried out in 10 or more minute bouts per day or 30 minutes per day for five days of week.

To achieve more health benefits, the duration of moderate physical activity should be increased to 300 minutes per week; the duration of vigorous-intensity activity should also be increased gradually.

2. The group with low levels of activity, inactive or having low capacity due to their life style: The individuals in this group are ones with loss in muscle strength and/or ones who are overweight. Despite these conditions, it is possible for them to be healthy. By performing physical activity, it is possible to regain lost functions and prevent illnesses. Adults aged 65 or above, who have insufficiencies of movement, should do physical activities 3 or more days a week in order to improve balance and prevent falling. Endurance (aerobic) activities should be done at least in 10 minute bouts and this duration should be gradually increased.

If the individual has difficulty in increasing this duration, either the exercise should be carried out by inserting breaks or the duration of the exercise should be divided into 2 or 3 and the individual should accumulate to 30 minutes in total. (For instance, 10 minutes of exercise + rest + 10 minutes of exercise + rest + 10 minutes of exercise).

After reaching a certain level of physical activity; the duration, frequency and intensity of the physical activity should be increased. Moreover, older adults who are active, should also do balance and strengthening exercises determined according to their condition. Exercises involving strengthening of large muscles should be done 2 days a week or more.

The most suitable amount of weight that older adults can lift is determined as the weight they can lift in an activity for 8 to 10 times without feeling tired. The aim would be to repeat each movement in sets of 2 with 10 repetitions, with 1 or 2 minutes of rest between repetitions before the older adult moves onto working with more weight.

3. The group which has very low physical and functional capacity due to chronic disorders (arthritis, dementia, old age): In this group, the individual should be evaluated by a physician with regard to their health and
functional capacity. An exercise program that will aim at decreasing, preventing and treating the conditions that cause disability (such as a program for prevention of falling) should be prepared. Due to their health condition, exercises should involve a lengthy cool-down phase. In older adults with chronic diseases, the type, duration and intensity of physical activity may change according to the individual’s characteristics and the severity of the disorder. With regard to the type, duration and intensity level of the physical activity, the suggestions of the physicians and related experts must be taken into consideration.

For individuals who are unable to do endurance (aerobic) activities for 150 minutes per week due to their chronic disease, they should start with exercises that have shorter duration and have less intensity. The ideal is for older adults with chronic diseases to accumulate at least 150 minutes of moderate exercises weekly due to its health benefits.
The Ideal Physical Activity Recommendations for Older Adults

Walking

Walking which is regarded as the best physical activity for individuals of all ages is also the most common and easily practiced endurance (aerobic) activity. Walking is very significant for the physical activity programs for older adults. This activity should be carried out wearing comfortable shoes, which decrease the stress on the joints and provides support, and an outfit suitable for the season.

The schedule should be designed with the aim of reaching the desired heart rate and an area suitable for walking with normal steps and in a balanced manner should be picked. The time of the walk should also be appropriate. Besides being a suitable time for the individual, other things need to be considered are the weather conditions outside. Prefer walking during the early morning and late evening hours while the sun is not at its peak. Also walking should not be done immediately after meals. Two hours interval after meals is ideal.

If the individual does not have a habit of regularly walking, they will either get tired very easily or they cannot walk with the required pace. In that case, it is important not to give up. One should start walking slowly and should gradually increase the time and distance until the desired level is reached. At the beginning, the aim should be walking for 20 minutes. After this lower baseline is achieved, another 10-minute bout should be added each week. As part of the process, certain suggestions may help increase the walking duration (for instance, getting off the bus one stop before your actual stop or climbing the stairs instead of taking the elevator).

Before starting to walk, some “stretching” exercises should be done and the walk should start at a slow, comfortable pace. The head should be up and the stomach should be held in. The arms should hang naturally when walking. It is important that the distance to be walked is easily walkable. Later on, the distance should be gradually increased. No equipment other than suitable shoes would be required. Walking works leg, back and abdominal muscles at their own comfortable rhythm and pace. Since walking is a good exercise physiologically, it increases the muscle strength and circulation, improves balance and helps decrease the spasm in the leg and back muscles.

Besides the physiological benefits of walking, it also helps with improvement of cognitive status and self-confidence. It decreases stress and tension individual may experience.

Walking alone or with others

Walking with others is recommended for those individuals who do not wish to walk. This way, walking can become fun.

Some people like walking on their own and that allows them to set their pace themselves. Some others prefer walking with walking groups in order to be able to walk more regularly.

Walking for people who have a medical condition

The individuals who suffer from emphysema, shortness of breath, loss of vision, balance disorders, weak leg muscles, feet pain and swelling, muscle weakness due to paralysis and the other negative impacts of chronic diseases should also walk. Individuals with disabilities can walk with a supportive device (walker, cane or holding on to someone) as their physician recommends. For instance, for the individuals with chronic respiratory diseases, breathing exercises and relaxation techniques can be taught in order to increase their lung capacity.
Alternatives to Walking

Swimming

One of the best exercises is swimming or exercises performed in water. Since there is no bodily weight in water, there is no strain on the back, arms and legs. Swimming is thus preferred. Swimming is a sport that can be done all life long and it protects the physical condition of individuals.

Cycling

Individuals, who enjoy cycling, can cycle in safe areas or can ride a stationary bike. One should start cycling after warming up. After warm-ups, they should pedal fast. Since it is necessary to cool down, one should pedal slowly towards the end and then stop cycling.

Individuals should consult their physician to find out which physical activity is suitable for them.
Older Adults with Physical Difficulties can also Perform Physical Activities

At older ages, there is an increase in the occurrence of coronary vascular diseases, type 2 diabetes, obesity and certain types of cancers. In older adults, we often encounter musculoskeletal diseases such as osteoporosis, osteoarthritis and sarcopenia.

After all, age is the primary risk factor for the pathogenesis and progression of many chronic diseases. However, the physical activities that are done regularly may help change these risk factors. Regular physical activity is significant for the prevention of diseases and increasing life quality. Thus, older adults with chronic diseases should be encouraged to perform regular physical activity.

Neither old age nor chronic diseases are obstacles against physical activity.

In many chronic diseases, regular physical activity should be recommended for older adults due to their therapeutic and/or preventive effects. In older adults with chronic diseases, the type, duration and intensity of physical activity may change according to the individual’s characteristics and the severity of the diseases.

Older adults with chronic diseases should consult their physicians before starting a physical activity.

When determining the type, duration and intensity level of the physical activity, the suggestions of the physicians and related experts must be taken into consideration.

1- In hyper-tension, a disease often seen at old age, the focus should be on aerobic physical activities which target large muscle groups. These types of activities should be performed about 20-30 minutes each day. Strengthening exercises should be done two days a week and should start with light-moderate activities.

2- Older adults with chronic respiratory illnesses should, if possible, increase the physical activity duration gradually. Most of the time, walking is the most highly recommended type of aerobic exercise.

It is suggested that muscle strengthening exercises, especially ones that target lower extremity (hip, thigh and legs) muscles and special exercises for strengthening the respiratory muscles should be a part of the program.

There is a physical activity appropriate for each disease and each condition.

Having a little amount of physical activity is better than none, intensive physical activity is better than little and provides more benefits.

None of the illnesses often seen in adults and listed below is a barrier to physical activity. However, a physician must be consulted with regard to how to start physical activity, how long and what type of activity should be done!

- Musculoskeletal disorders (osteoarthritis, arthritis, osteoporosis, orthopedic problems),
- Neurological diseases (stroke, Parkinson’s, neuropathy),
- Cardiovascular diseases (heart failure, coronary artery diseases, peripheral vascular diseases),
- Respiratory diseases (COPD, asthma),
- Sensory diseases (Visual impairment, hearing impairment),
Carrying out physical activity prevents possible complications of the diseases mentioned above, advancing of the disease and resulting disabilities. It also increases the life quality and allows independence in daily life activities.

As a result, even the individuals who are very old, who suffer from chronic diseases such as dementia, who are temporarily physically inactive due to a fracture or an operation (that is, individuals who, besides daily activities, spend 6 hours of day in bed, asleep or on a chair) should perform some physical activity. A different physical activity approach can be suggested for these individuals.

**In the bedridden or very inactive older adults,** first the risk of falling off the bed or chair should be eliminated, the necessary support and movement aids should be provided and the ventilation and lighting in the room should be regulated.

Following that, exercises such as turning inside the bed often, techniques for breathing in and out deeply, activities for supportive respiratory muscles, movements aiming at protecting the joint space (raising legs sideways and back, holding the legs up, sliding the heels inside the bed, moving the ankles, extending and flexing arms at shoulders and elbows, making a fist and opening up hands) and stretching movements (trying to touch the bed head by stretching arms and by extending up both arms as far as possible) should all be completed.

These activities done in bed prevent pressure sores. Also the pumping activities for the ankle
reduce the risk for vascular occlusions and embolism.

During these bed exercises, the individuals should not hold their breath; they should take deep and easy breaths by inhaling through their nose and exhaling through their mouth.

Moreover, breathing exercises can improve the expectorating and respiratory function capacity.

Doing the bed activities not only allows bedridden older adults to be partially independent in their self-care activities but also increases the individual’s life quality since it decreases the burden on the caretaker.

Those who are able to sit, can do movements on the chair such as opening and closing joints, balance and stretching exercises, strengthening activities with small weights on their arms and legs. These may help reduce muscle weakness caused by inactivity.

**THERE ARE NO EXCUSES FOR NOT BEING PHYSICALLY ACTIVE!**

**I have no time**

You can change your life to include half an hour of physical activity each day, you can even do activities while watching television. You can walk when you go for shopping, you can meet your friends at the park and walk around the park 1 or 2 times.

**I am in Pain**

Learn how to protect your joints that hurt, use support (you may use a walker or a cane). Apply ice to sore joints. When your joints hurt, stop the movement, and then repeat it later on.
I Easily Get Tired

As you increase your physical activity level, your tiredness will decrease and you will start feeling fitter gradually.

I Have Several Illnesses

As your physical activity decreases, your disease will progress faster, you will be more depressed, your life quality will get worse. Despite your diseases, you can do a physical activity suitable for your condition by consulting your doctor. Increasing your physical activity helps treat your diseases and keeps you from gaining weight.

I Have No Place to Carry Out Physical Activity

If there are no parks or suitable areas nearby, there is always a physical activity that can be done at home, at work, on the street or at the mall. If the circumstances are unfavorable, you can walk to places or even at home.
**I am Too Old**

Physical activity is necessary for all ages. You can walk at a slow pace, use a walker, you can exercise by holding on to something to prevent falls. Doing physical activities extends life span and allows you to lead a more health life.

**I am Afraid of Falling**

Physical activity is the best method to strengthen muscles and improve balance. However, those with balance issues can perform physical activities by holding on to something, someone or by using a support.
Example: Suggestions to increase physical activity level for an elderly person with a low level of physical activity:

Example:

I am a 70 year-old person and I live alone. I can only do my own household chores and I can cook for myself. I cannot go out much since I am afraid of falling. What kind of physical activities can I do?

If you have a serious systemic illness, you need to consult your doctor first; if not you can increase your physical activity as noted below:

Holding a cane (the cane will help your balance, will carry some of your body weight and make you walk more carefully and slowly, you can start walking for only 10 minutes every other day. If you get tired, you can start walking by having breaks or walking quite slowly,

Unless you have problems, you can increase your pace a little and walk for 10 minutes again,

Unless you have muscle-joint pain, chest pain or shortness of breath, increase the duration up to 30 minutes (do not rush when increasing the activity duration and phase, you may fall and increase your health issues if you do so),

You can walk 5 days a week,

Make some changes in your daily routine,

If there is an elevator in your building, take the stairs to the 1st floor, then take the elevator, get off the elevator 1 or 2 floors earlier than you need to,

When going to the farmers’ market, get off the bus one stop early. Or if the market is within walking distance, you can get there slowly walking and taking breaks. You can even have a friend accompany you and chat along the way,

If there is a park near your home, try to go there everyday,

At home, you can work your legs and arms by opening and closing them while holding onto something,

When watching television, you can increase your physical activity by pretending to walk as you sit,

You can dance slowly when listening to music.

Motivation Techniques to Increase Physical Activities for Older Adults

1. Educating older adults about the benefits of physical activities and how to do physical activity,

2. Increasing the physical activity gradually and in line with a certain goal,

3. Making the patients feel safe in the environment where they exercise,

4. Adapting the activities and the equipment to be used to the older adult,

5. Organizing the home and environment to prevent the falls,

6. Treating the illnesses accompanying old age,

7. Providing informative leaflets,

8. Designing activity opportunities that are acceptable by older adults,

9. Encouraging behavior change such as spending time with grandchildren, friends and walking to shopping centers.

During the exercise if you have:

- Chest pain,
- Any disorder in heart rhythm,
- Vertigo, fatigue, tiredness and blacking out,
- Joint pain enough to make you stop exercising,

Stop the physical activity and consult your doctor.
Change your lifestyle to be healthier.

1. Do not spend more than 2 hours watching television, if you cannot avoid that you may pretend you are walking or you may dance while watching it.

What should older adults be careful about while exercising?

<table>
<thead>
<tr>
<th>What should older adults be careful about while exercising?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always start the exercise with a warm up</td>
</tr>
<tr>
<td>Start the exercise with low intensity; you can increase the intensity over time.</td>
</tr>
<tr>
<td>In order to avoid injury, use correct shoes (light, with orthopedic sole, gripping the ankle) and walk on the dirt track.</td>
</tr>
<tr>
<td>When exercising outdoors, you must pay attention to the weather conditions, take necessary precautions and wear appropriate outfits (made of cotton, does not cause you the sweat, not too tight).</td>
</tr>
<tr>
<td>On hot and humid days, exercise at cooler hours of the day.</td>
</tr>
<tr>
<td>Monitor your blood sugar level and if you are diabetic, have some food with carbohydrates with you.</td>
</tr>
<tr>
<td>Drink lots of water before and during the exercise.</td>
</tr>
<tr>
<td>Avoid exercising right after a meal.</td>
</tr>
<tr>
<td>Avoid exercising when you are very hungry.</td>
</tr>
<tr>
<td>Use a support if you are at risk of falling.</td>
</tr>
<tr>
<td>Do not hold your breath while exercising.</td>
</tr>
<tr>
<td>Refrain from positions that will place excessive pressure on your joints while exercising.</td>
</tr>
<tr>
<td>Do not start exercising without a warm-up and finish the exercise with cool-down activities.</td>
</tr>
<tr>
<td>Strengthening; (start with low weights and a low repetition number, you can increase the weight and repetition gradually) have a break for at least a day between two exercise sessions.</td>
</tr>
</tbody>
</table>
2. Do your own household chores, if you get tired you can try doing one thing at a time.

3. If the shops are close by, walk when you go grocery shopping. If they are far, get off public transport one or two stops before you actually need to get off.
4. Spend time with your grandchildren at the park.

5. Take your pet out for a walk if you have one.
6. Use the stairs instead of the elevator.

7. Instead of meeting your friends at home, meet them outside and have walks and trips together.
PHYSICAL ACTIVITY GUIDELINES FOR AGES 65 YEARS AND ABOVE

Physical activities (3-5 days a week):

1. **Moderate** endurance (aerobic) activities (increasing your breath and heart rate slightly) can be performed:
   - **30 minute periods** without interval or
   - **10 minute** bouts of 3 (10x3=30 minutes) accumulating to at least **150 minutes** per week.

2. **Vigorous - intensity** physical activities (increasing your breath and heart rate markedly) can be performed accumulating to at least **75 minutes** a week.

Before you start the activity, you need to have a 0-10 point scale evaluating your tiredness. According to the scale if the tiredness you feel is at 5-6 level you are carrying out a moderate exercise, if it is at 7-8 level you are carrying out a vigorous intensity activity.

0___________10

**Examples for moderate activities**
You can talk to your company but you cannot sing

- Brisk walking 5-6 km/hour
- Cycling 9-12 km/hour
- Jogging
- Swimming
- Tennis
- Heavy household chores (vacuuming, hand-washing clothes, cleaning the windows)
Examples for vigorous intensity activities

You cannot say more than a few words without gasping for breath

Walking with weight
Walking up hill
Running 7.5 km/hour
Cycling over 15 km/hour
Climbing stairs
Running
Volleyball
Heavy garden work (digging and hoeing garden, cutting crops)

Strength activities involving large muscle groups (such as trunk, hip and shoulders) should not be performed more than two days per week.

For improving your balance and preventing you from falling, you need to perform physical activity three days or more each week.

- If you are sitting or lying down for long periods of time, your activities are not sufficient.
- You need to be active all day long and limit the durations you spend sitting.

Being active for 150 minutes per week;

Decreases the risk for chronic diseases (such as hypertension, coronary diseases, diabetes) and untimely death.
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Summary

In this chapter, you will find information about increasing physical activity in people with visual, auditory, physical, intellectual and psychological disabilities.

Physical activity not only protects and improves the health of people with disabilities or permanent mobility restrictions, but also helps reduce the development of diseases caused by inactivity. For physical and mental health, it is crucial to incorporate physical activity in daily life and transform it into a lifestyle by changes in behavior. There are physical activities suitable for all people with disabilities such as walking, climbing stairs, doing garden work, dancing and participating in team sports. Inactive individuals should perform physical activity for short time periods and target at a progressive increase in activity.

When starting physical activity, it is very important to determine the correct activity intensity in accordance with the individual’s level. Health professionals should be consulted to find out what kind of an impact physical activity would have on the disability.

When individuals with visual impairments or with limited sight are provided with equipment tailored to their needs and their environments organized to ensure their safety and given opportunities to participate in physical activities, their life will be more meaningful and they will be able to participate in the social life. Examples of such physical activities are swimming as an aerobic activity or walking with a white cane.

Physical activity also has positive impact on psychological health. During and after physical activity, the exercise distracts the individual from focusing on any inappropriate stimulus; being a part of regular activity increases self-confidence and improves mood. Moreover,
individuals engage in social interaction during physical activity and this has possible impacts on their moods. Sensory motor play activities, ball games, playground activities and jumping on a trampoline can be suitable exercises for individuals with an intellectual disability.

Individuals with physical disabilities may develop additional health problems due to inactivity. It is known that, for individuals with physical disabilities, the most effective way of overcoming these problems is physical activity and sports. Through physical activities, individuals who are in a wheelchair can reduce possible secondary health problems to the lowest degree. For instance, it will be useful for students in a wheelchair to play table tennis, ball and balloon games at recess time. They can use supportive devices, equipment and prosthesis which are specially designed to facilitate physical activity or sports in line with the disability type. For instance, individuals with prosthesis or another device, as well as wheelchair bound individuals can play table tennis.

General Information

The physical activities mentioned in this chapter are not therapeutic, they seek to enable individuals to have a more active life and protect their health in general. Exercise, when used therapeutically, must be programmed by a physician and medical personnel.

Evidence from several studies done on diverse groups with different disabilities and chronic conditions (stroke, spinal cord injuries, multiple sclerosis, muscular dystrophy, cerebral palsy, limb amputations, mental illness, learning disorders, visual and hearing impairment, diabetes, etc.) has demonstrated that regular physical activity has health benefits for the disabled. Besides being a risk factor for health, inactivity in people with disabilities results in weight gain and obesity.

Adults with disabilities, who are able to, should get at least 150 minutes per week of moderate intensity, or 75 minutes per week of vigorous intensity aerobic activity. Alternatively, they can perform an equivalent combination of moderate and vigorous intensity aerobic activity. Aerobic activity should be performed in episodes of at least 10 minutes.

Adults with disabilities should also do muscle strengthening activities of moderate or vigorous intensity on 2 days per week on the condition that they are not consecutive.

When adults with physical problems are not able to meet the above guidelines, they should engage in regular physical activity for promoting and maintaining mobility. To ensure safe physical activity, a tailored physical activity plan should be designed based on the individual’s personal conditions, additional physical problems if any, level of physical fitness and previous experience. There are physical activities suitable for each individual with a disability.

In order to diminish risks from injury and negative impacts during physical activity;

- Adults with disability should increase frequency and duration of physical activity gradually. Inactive adults should start with light intensity physical activity and progress gradually.
- It is possible to prevent injuries and adverse effects by performing physical activity in a proper environment with appropriate equipment, by taking safety precautions and obeying the activity rules.
- When picking a physical activity for adults with disabilities; location, time and physical activity type should be taken into consideration.
- People with disabilities should consult their healthcare providers who will advise them about the physical activity guidelines appropriate for them.
Benefits of Regular Physical Activity for People with Disabilities

- Prevents musculoskeletal problems caused by inactivity.
- Improves health.
- Increases physical fitness.
- Boosts posture and balance.
- Increases self-esteem.
- Maintains weight control.
- Strengthens muscles and bones.
- Makes you feel more energetic.
- Reduces stress and promotes relaxation.
- Supports an independent lifestyle.

What should the community do?

- Community based programs which aim at meeting the needs of people with disabilities should be established.
- Environment should be organized in a way to allow people with disabilities to perform physical activity safely and comfortably (walking and wheelchair activities) and architectural obstacles should be removed.
- Participation of individuals with disabilities in planning and designing community based physical activity programs should be ensured.
- At schools, easily accessible physical activity classes should be organized for children and adolescents.
- Healthcare providers who have regular follow-up contact with people with disabilities should encourage them to incorporate regular physical activity into their lives.

PHYSICAL ACTIVITY FOR PEOPLE WITH VISUAL AND AUDITORY IMPAIRMENTS

Visually Impaired People

As a result of little or no vision, visually impaired individuals often have slower motor development and they learn to move on their own at a much slower pace, which in return brings along diminished levels of physical activity. For visually impaired children, isolation from peers and lower social interaction means
that play, which is a significant indicator of social interaction, occurs much less frequently. As a result of little or no hearing, auditory impaired individuals often have slower motor and balance development, a condition which has a negative impact on social interaction with peers. Auditory impaired children are at an advantage when compared to visually impaired children since they can visually track and perform physical activity.

Parents’ and teachers’ lack of knowledge about assistance and adjustments required for facilitating participation of visually and auditory impaired children in physical activities is one of the significant reasons for physical activity limitations. In order to encourage children, adults and people of old age to participate in social life and have a healthier lifestyle, this chapter provides guidelines for safety precautions and recommendations on physical activity.

Physical activity contributes to the bodily and psychological development of an individual and increases their social participation.

**Activities**

**Aerobic activities:** physical activities such as running, playing basketball, swimming, dancing, and folk dancing.

**Flexibility activities:** stretching exercises, dancing, and posture exercises.

**Strengthening activities:** carrying shopping bags, bowling, weight exercises done with bottles full of water. Jumping and weight lifting exercises are also good for strengthening bones.

**Balance training:** playing on a swing, balance board exercises, teeterboard, trampoline and sliding.

**Intensity and Duration of Activity**

Individuals with visual impairments should accumulate 60 minutes of daily moderate intensity activities throughout the day. Physical activity should be planned in multiple shorter bouts depending on the delayed motor response.

Totally blind individuals should start performing at least 10 minutes of physical activity daily depending on their physical inactivity levels. They should increase this duration gradually and seek to accumulate 60 minutes of activity every day. As such, individuals with visual impairments are encouraged to participate in meaningful and purposeful activities. Totally blind individuals cannot spend their physical energy and as a result they develop nervous tics and involuntary movements (head shaking, hand flapping, rocking or spinning around, etc.). Since performing physical activity diminishes such involuntary movements, duration and intensity of physical activity can be increased. Folk dances and team sports can be preferred since they increase individual’s social participation, psychological development and need for sharing.

Inadequate visual information and visual space limitations result in walking abnormalities and posture disorders. These eventually bring along musculoskeletal system disorders. Therefore stretching exercises to improve posture and body awareness exercises in three-dimensional routines should be preferred. In order to prevent musculoskeletal system injuries, it is important to do warm-up and cool-down exercises before and after the physical activity.

**Physical Activity Requirement and Safety Measures for Visually Impaired Individuals**

Visual information received from the environment is lower in visually impaired and partially sighted people when compared to sighted individuals. Diminished visual and auditory input results in decreased or delayed motor response. Physical activity reinforces physiological development and coordination among muscles, bones and nerves in visually impaired individuals. This chapter provides guidelines for safety precautions and recommendations on physical activity.
impaired individuals. Hence, the level of disability in an individual can be reduced. During physical activity, it is essential to use special equipment and take additional safety measures because of physiological function loss created by disability;

- Architectural organization of sports fields,
- Wearing a helmet and using a guide rope,
- Performing physical activities attended by an assistant when necessary,
- Orientation to the environment is essential. Location of objects and furniture should not be changed,
- Using guards for sharp edges and corners,
- Materials written in Braille alphabet including exercise descriptions,
- Vocal explanations and instructions,
- Special sports equipment and tools (ringing audible balls, blister surface, contrast and lighted boards),
- Planning physical activity in multiple shorter bouts depending on the delayed motor response.

Delayed motor response discourages visually impaired individuals from participating in activities, hence preventing social interaction.

When visually impaired individuals can perform physical activity with appropriate equipment and tools in an environment organized to ensure proper safety / security measures, life will be more meaningful for them and they would achieve better social participation.

Auditory Impaired People

In auditory impaired people, reception of auditory stimuli is inadequate depending on the level of hearing impairment. Therefore, such people also have balance and motor response limitations, which renders physical activity important for maintaining balance.

Individuals with partial hearing loss and those wearing hearing aids can participate in physical activity. In order for individuals with total hearing loss to perform physical activity, exercises should be described with illuminated boards and illustrations. This should also be complemented by sign language. Individuals with auditory impairments should especially perform aerobic activities and balance exercises.
### Physical Activity Guidelines for Turkey

#### Physical Activity for People with Visual and Auditory Impairments

<table>
<thead>
<tr>
<th>AGE RANGE</th>
<th>VISUAL IMPAIRMENT</th>
<th>AUDITORY IMPAIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGED 0-6</td>
<td>TOTALLY BLIND</td>
<td>PARTIALLY BLIND</td>
</tr>
<tr>
<td></td>
<td>Learning head control exercises with the help of tools such as bells and music</td>
<td>Teaching movements such as rolling over, crawling and creeping on a mat with contrasting colors (black and white stripes) using a bright yellow ball and other objects</td>
</tr>
<tr>
<td></td>
<td>Teaching how to roll over, creep and crawl on a surface with audible stimuli</td>
<td>Ambient light should be adjusted in such a way that it should not create glare, flickering or shadows which will make it difficult to perform physical activity</td>
</tr>
<tr>
<td></td>
<td>Teaching how to sit up with and without a support, also with the help of vocal toys</td>
<td>In order to develop general body coordination, hitting target or playing basketball and volleyball with modified hoops and nets</td>
</tr>
<tr>
<td></td>
<td>Teaching crawling, walking and balance exercises supervised by an adult (baby bouncer, sand and ball pool)</td>
<td>Balance exercises on a contrasting color surface (hopscotching, walking towards each other on a red line, sliding, swinging and trampoline, etc.)</td>
</tr>
<tr>
<td></td>
<td>In order to develop his hand muscles and fine motor abilities, playing on diverse touching surfaces and with playdough</td>
<td>Using textured balls and music in order to increase sensory input</td>
</tr>
<tr>
<td></td>
<td>In order to increase sensory input, jumping and activities with ringing balls and textured sensory balls</td>
<td>Swimming, walking and other aerobic activities</td>
</tr>
<tr>
<td></td>
<td>Swimming in pool filled with lukewarm water, walking and other aerobic activities</td>
<td></td>
</tr>
<tr>
<td>AGE</td>
<td>Activities</td>
<td></td>
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<td>-----</td>
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</tr>
</tbody>
</table>
| AGED 7-18 | - In order to develop general body coordination, activities such as wrestling, judo, hula hoop, and climbing on an artificial wall  
- Aerobic activities (such as folk dance)  
- Paralympic sports (goalball, weightlifting, running, etc.)  
- Classroom activities (Pushing the wall, standing on one foot and balance exercises, and correct posture exercises) |
| AGED 19-65 | - Aerobic activities (such as swimming and walking with white cane)  
- Gardening works, dancing, judo, jumping  
- Team sports, |
| AGE OVER 65 | - Walking with white cane  
- Carrying shopping bags  
- Climbing up and descending stairs  
- Carrying out gardening works with tools that have a textured surface  
- Flexibility and stretching activities with music |

- Aerobic activities (such as folk dance, jumping over a rope etc.)  
- Team games with increased visual stimuli  
- Aerobic activities (such as swimming and walking with bioptic glasses)  
- Gardening works, dancing, judo, jumping  
- Team sports  
- Climbing up and descending stairs under appropriate contrast and light adjustments  
- Walking with bioptic glasses  
- Carrying shopping bags  
- Climbing up and descending stairs  
- Carrying out gardening works with tools that have contrast colors  
- Flexibility and stretching activities with music  
- Walking  
- Carrying shopping bags  
- Climbing up and descending stairs  
- Gardening works  
- Flexibility and stretching activities with music
PHYSICAL ACTIVITY FOR MENTALLY CHALLENGED PEOPLE

Intellectually challenged individuals have difficulties in different areas of life such as self-care, social skills and working life. Autism and Down syndrome usually co-exist with conditions such as mental retardation. Sedentary lifestyle is quite common among intellectually challenged individuals. Therefore, obesity is quite common among individuals with autism and Down syndrome due to lack of physical activity and socialization opportunities, and the regular use of drugs. This group of individuals has a higher risk of developing cardiovascular diseases, bone and joint problems and depression.

Benefits of physical activity for intellectually challenged individuals

- Helps improve sense of hearing, sense of sight, tactile senses and motion perception.
- Boosts physical fitness by increasing endurance, balance, coordination, strength and flexibility.
- Helps weight control.
- Helps development of proper behavioral reactions.
- Helps decreasing repetitive, self-stimulatory behavior (clapping hands, spinning and rocking).
- Decreases aggressive behavior.
- Increases attention span.
- Helps participation in academic activities.
- Improves hand activities.
- Increases social abilities.

How demanding should physical activity for intellectually challenged individuals be?

Children should do at least 60 minutes and adults should do at least 150 minutes of moderate intensity (you should be able to talk without getting out of breath) activity which mostly includes aerobic exercises.

- Workload (level, intensity, etc.) during exercises should be increased slowly and gradually.

- Physical activity should start with 5-10 minutes of light exercise.
- It should be enjoyable and interesting.
- Activities should be tailored according to unique set of sensory needs and developmental level of an individual.
- Activities should be appropriate for the age of an individual. If the activity picked is a type of structured sports (such as football), rules should be established as possible as close to reality.

- If the individual needs instruction during physical activity, instructions should not only be audible but also include physically guided (touching shoulders, manual guidance) and visual instructions (pointing, showing with bodily movements, using illustrations) depending on the needs of the individual.

- Instructions should be simple and easily understandable. The same instructions should be used throughout the activity.

- Proper reinforcers should be used in order to achieve desired movement (for example, verbal reinforcer: “Well done, you have thrown the ball very well!).

- In order not to negatively affect motivation and self-esteem of the individual, carers should provide positive help and guidance more than necessary.

- Environments (such as untidy, noisy or very busy environments) which can decrease the attention of mentally challenged people during physical activity should be avoided.

- Support from the neighborhood is important. Physical activity should be performed supervised by or with the participation of family members, and friends, etc. as far as possible.

- Physical activity should include rhythmic exercises such as running, jumping and hopping which target large muscle groups.

- During school activities, children with autism and attention deficit hyperactivity disorder should be allowed drinking water and short walks in the school corridors.

**Physical activity recommendations for intellectually challenged individuals;**

- Swimming,
- Walking,
- Cycling,
- Jumping, pushing, rocking and stretching exercises,
- Yoga poses,
- Purposeful games with objects appropriate for the individual’s special condition (such as eating food, dressing, using fingers, grasping, etc),
- Functional games (such as playing house with real objects, etc.) and symbolic games
- Sensory motor activities (ball games, playground activities, finger paint and playdough, etc.),

- Social games (activities done with family members and friends should be incorporated into daily activity schedule),

- Dancing,

- Climbing up and descending stairs,

- Gardening works,

- Sports (such as football, table tennis, etc.),

- Excursions, camps,

- Street games and games at house (such as tagging, dodgeball, playing house, etc.),

- Playground activities (swinging, teeterboard, etc.),

- Simple object carrying activities (carrying small objects, and shopping bags, etc.),

- Games such as musical chairs,

- Walking pets in outdoor areas,

- Flying a kite,

- Making a snowman,

- Swinging on a hammock or playing on a swing, slight bouncing on a big treatment ball while feet on the ground while watching TV, hopscotching, balance board exercises, and sliding, etc.

- Wheelbarrow walking.

Things to consider for recommending physical activity;

- Seizures are common conditions seen in intellectually challenged individuals. Antiseizure drugs used to control seizures may have a negative impact on participation in physical activities and doing exercises. Activities such as boxing, football and underwater swimming are not recommended for individuals with seizure disorders. For personal safety, individuals with such disorders should be supervised while performing activities such as swimming, riding on a horse and contact sports.

- Since Down syndrome is associated with joint hyperflexibility, individuals with Down syndrome should avoid performing flexibility exercises.

- Extra caution is essential while planning physical activity for individuals with Down syndrome who also have been diagnosed with congenital heart disease.

- Contact sports should be excluded while planning physical activity for individuals with Down syndrome who have developed atlantoaxial instability.

PHYSICAL ACTIVITY FOR PEOPLE WITH PHYSICAL DISABILITIES

Activities for an individual with physical disabilities are restricted and the extent of the restriction depends on his disability. Architectural barriers and lack of knowledge about exercise, physical activity and sports prevent such individuals from improving their physical performance. It is a known fact that activity level of individuals with disabilities is lower than the rest of the population. Hence, they are at a greater risk of developing health problems due to low levels of activity.

It is known that, for individuals with physical disabilities, the most effective way of overcoming this problem is physical activity and sports. For example, physical activity can minimize possible health problems for wheelchair bound individuals. After spinal cord injuries, muscles controlling arms and legs cannot be used actively because of weakness. Such muscular weakness is often associated with certain health problems such as muscle contracture, spasticity, deep vein thrombosis, and swelling of arms and feet, which often develop after spinal cord injuries.
It is possible to prevent such problems through physical activity and therapeutic exercise which target elimination of functional limitations.

The main objective for encouraging individuals with physical disabilities to participate in physical activity and sportive programs is to help them lead a more independent and healthier life and increase their social participation.

Physical Activity Requirement and Safety Measures for Physically Challenged Individuals

1. Specify physical activities you have already been engaged in.

2. Individuals with disabilities should consult their health-care providers about the amounts and types of physical activity that are appropriate for their abilities. They should also set short and long-term targets.

3. Adults with disabilities should start with light intensity physical activity and progress slowly and gradually.

4. In case you experience excessive increase in your heart rate, get out of breath, feel pain and discomfort or fatigue, stop physical activity immediately.

5. Adjust the intensity of physical activity you perform in a way which will allow you to talk.

6. If you have to use orthesis, prosthesis and other supportive devices, be careful to wear, use and tie them safely during physical activity in order to prevent injuries to yourself and people around.
Intensity and Duration of Activity

Individuals with disabilities should perform at least 30 minutes of moderate intensity activity or 20 minutes of vigorous intensity activity 3 days a week. For example, wheelchair walking of a wheelchair bound individual for about 30 or 40 minutes is equal to moderate intensity activity while 20 minutes of wheelchair basketball equals to vigorous intensity activity.

Regular physical activity is the ideal target. Physical activity can be done safely when the program is matched to an individual’s abilities. Activities may be turned into fun (such as walking, wheelchair walking or dancing, etc).

Activities

Individuals with disabilities should be encouraged to participate in physical activity starting from childhood. The rate of participation in school based physical activities is quite low for individuals with disabilities. Unlike children with no disability who have various opportunities to perform physical activity in the street and school yard, children with disabilities are deprived of such opportunities. This eventually turns them into inactive individuals. Therefore, schools should be equipped with required personnel and equipment. Personnel at schools should be well informed about disabilities and physical activity. It is possible to employ adapted physical education programs. Activities at school may involve daily classroom activities and also be organized as small group activities. Such programs can be applied as a group activity within the schedule or tailored to the unique needs of each child with disabilities.

In order to get children with disabilities more active, school environment, playgrounds and sports halls should be organized in a way that will be favorable
for children with disabilities. Moreover correct guidance about physical activity should be provided, physical activity specialists should be employed at schools for the implementation of adapted physical education programs.

It is recommended that children should participate in sports that they enjoy in order to increase their self-esteem and help their development.

- Parents should approach children with disabilities with affection and try to incorporate them into daily activities at home.

- Each activity performed at home together with children with special needs helps them learn life skills. For example, you can tell him how to put the light on, lay the table and make the bed.

- You can give him simple tasks such as placing spoons near plates, bringing the cookies from the kitchen or putting the laundry in the laundry basket.

- You should never assume the activities your child can perform on his own. For example, if your child has an orthopedic leg problem, but can use his hands, you do not help put on his socks or feed him. The same applies to adults with physical disabilities. Individuals with disabilities should be encouraged to perform any activity on his own if he is able to do so.

Sport is the best example of physical activity for individuals with physical disability. Participation in sports not only promotes social integration, self-acceptance and development of social abilities but also act as an agent for creating integration with individuals with no disabilities. Through sports, children get to know and accept individuals with disabilities, and this acts as an agent for change to break down social barriers of discrimination since children will make up the future societies. Individuals with physical disabilities can perform sportive activities at an amateur level. They can also participate in team sports as professional players, even
be enrolled in the national sports teams and represent Turkey. In order to perform sports as a professional player, individuals with physical disabilities should apply to Turkish Sports Federation for the Physically Disabled. This organization issues a proper athlete’s license for physically disabled individuals. Turkish Sports Federation for the Physically Disabled makes contributions to the rehabilitation of individuals with physical disabilities through sports by providing opportunities for performing sports, and supporting and improving sports clubs for the disabled. Turkish Sports Federation for the Physically Disabled is engaged in both domestic and international competition and has activities in 13 different sports branches. Sports branches in the body of Turkish Sports Federation for the Physically Disabled are athletics, shooting, amputee football, table tennis, wheelchair basketball, elbow wrestling, weightlifting, badminton, archery, wheelchair tennis, sailing, swimming, and sitting volleyball. For more detailed information about this subject, you can visit the web page of Turkish Sports Federation for the Physically Disabled.

You can perform physical activity and sports with and without the help of supportive devices / equipments / prosthesis specially designed to facilitate physical activity or sports in line with your disability. For example you can play table tennis wearing or carrying your prosthesis or supportive devices or if you don’t use them, standing up or sitting in your wheelchair if you are bound to wheelchair.

Physical activity helps disabled people regain their mobility, enabling them to play an active role in society and stand out as athletes and set an example for other disabled people and society. Hence, environmental barriers preventing physically disabled people from participation in physical activity should be removed.

Successful strategies should be developed in order to promote participation of physically disabled in physical activities. As such, barriers in front of participation in physical activity will be removed.

Rather than the message of “You cannot do!”, it is important to give the message of “You can do!” or “I can do!” to the individuals with physical disabilities.
<table>
<thead>
<tr>
<th>Age Range</th>
<th>At Home / Outside Recreational Activities</th>
<th>Sports Activities</th>
<th>Office / School Activities</th>
</tr>
</thead>
</table>
| Aged 0 - 18 | - Active participation in physical education classes  
- Aerobic activities (running, jumping, etc...)  
- Walking and using wheelchair outside the home  
- Exercises to increase strength, endurance and flexibility  
- Riding on a horse  
- Swimming  
- Cycling  
- Water exercises  
- Dancing  
- Team games (like blind man's bluff, hide and seek, dodgeball, playing house, etc.)  
- Individual games (flying kite, water games, playing with ball and balloons, etc.)  
- Spending time in the playground.  
- Camping,  
- Fishing, | - Paralympic sports,  
- Athletics,  
- Shooting,  
- Amputee football,  
- Table tennis,  
- Wheelchair basketball,  
- Elbow wrestling,  
- Weightlifting,  
- Badminton,  
- Archery,  
- Wheelchair Tennis,  
- Sailing,  
- Swimming,  
- Sitting Volleyball,  
- Skiing,  
- Boccia  
- Wheelchair Curling,  
- Judo  
- Wheelchair Fencing,  
- Cycling,  
- Rowing,  
- Wheelchair Dancing, | - Classroom activities,  
- Team games, (such as blind man's bluff, hide and seek, dodgeball, playing house, etc.)  
- Individual games (flying kite, water games, playing with ball and balloons, etc.)  
- Small walks between classes,  
- Aerobic activities (such as folk dance, jumping on a rope etc.)  
- Desk activities (such as using phone keyboard)  
- Desk exercises (exercise for correct posture and sitting position) |
| Age 19 and Over | - Walking and using wheelchair outside the home,  
- Exercises to increase strength, endurance and flexibility,  
- Camping,  
- Fishing,  
- Gardening works,  
- Painting,  
- Helping other family members with household chores, |
|-----------------|--------------------------------------------------------|
|                  | - Paralympic sports,  
- Athletics,  
- Shooting,  
- Amputee Football,  
- Table Tennis,  
- Elbow Wrestling,  
- Weightlifting,  
- Badminton,  
- Archery,  
- Wheelchair Tennis,  
- Sailing,  
- Swimming,  
- Sitting Volleyball,  
- Skiing,  
- Boccia  
- Wheelchair Curling,  
- Judo  
- Wheelchair Fencing,  
- Cycling,  
- Rowing,  
- Wheelchair Basketball,  
- Wheelchair Dancing, |
|                  | - Desk activities (such as using phone keyboard)  
- Desk exercises (exercise for correct posture and sitting position) |
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