

Physical Activity

Physical activity is defined as any bodily movement produced by skeletal muscles that requires more energy expenditure than that during leisure. It includes the various forms of exercise and sport, as well as the activities involving bodily movements, as in the case of playing, walking, domestic work and gardening.

The exercise program consists of three phases:

Phase 1: Fitness acquisition: It lasts for 4–6 weeks of gradual exercise, in terms of duration, repetition and intensity. It has observed, at this phase, that with the passage of time, the heart pulse goes lower at rest time and restoration time.

Phase 2: Fitness improvement: It lasts for 4–6 weeks, during which both the duration and intensity of exercise are increased with the aim of attaining a better fitness level.

Phase 3: Fitness maintaining: During this phase, the fitness level is sustained. It lasts for 6 months or more, during which the exercise is diversified with a view to creating excitement and drawing the practitioner's attention for as long as possible.

Little Exercise Better than None:

Non-active people will have to embark on exercise, gradually, and with the passage of time, the duration, repetition and intensity shall be increased. Non-active adults, and those whose pathological condition does not allow to go beyond certain exercise limits, will enjoy numerous health benefits when doing more exercises.

However, pregnant women, as well as cardiac patients, will have to take the proper precautions and medical consultations prior to the attainment of the recommended fitness levels.

Types and Intensity of Exercise:

The type of exercise varies according to the preset target. In case the practitioner seeks to increase his cardiorespiratory fitness, for instance, he will have to do exercises that have to do with air (e.g. walking, trotting, running, cycling and swimming).

But in case the practitioner seeks to increase his muscle fitness, he will have to concentrate on muscle strength exercises. Physical resilience could be improved through prolongation exercises, useful also for increasing bone mass (trotting helps increase bone mass).

Types:

Moderate Exercises:

Over the last decades of the 20th century, physicists and scientists specialized in human health managed to calculate the proper exercise for individuals, based on their age and health condition. All such efforts came

up with the conclusion that the adult should exercise for at least 30 minutes, in all (or most) days of the week.

This includes: walking (5.6 kilometers per hour), cycling (less than 16 kilometers per hour), sports dancing, pruning trees of the home garden, tennis (doubles), golf, air and water sports.

Intense Exercises:

Running (8 kilometers per hour).

Fast trotting (7.25 kilometers per hour), cycling (more than 16 kilometers per hour), swimming, basket ball, tennis (singles).

Duration of Exercise:

By this we mean the duration that should be spent every day exercising. The duration of exercise is proportionate with its intensity.

The exercise duration varies according to the purpose, taking into account the time spend in warm-up and relaxation.

- Health promotion: 30-60 minutes.
- Fitness improvement: 20-60 minutes.
- Weight loss: 60-90 minutes (per day).

The physical activity recommended according to the age group:

The physical activities set out below are the guidelines recommended for the Saudis according to the age group, and they

are derived from the guidelines and recommendations issued by the international health organizations and bodies.

Children

- From an hour to several hours of daily physical activity, providing that the period of the single physical activity is no less than 66 straight minutes. Also, the physical stagnation periods, such as watching TV, playing video games, or surfing the internet, should not be more than two running hours during day time.

Adolescents

- Two hours of the daily physical activity; half of it is in systematized physical activity and the other half is in the form of free aerobic play, conditioning that all these activities be aerobic. Further, these activities should include highly vigorous physical activities, including muscle-strengthening activities and bone-density boosting, at least three times a week, along with reducing stagnation periods to a maximum of two hours daily.

Adults (18 – 64)

- Practicing from two hours to thirty minutes of the moderate-vigorous aerobic physical activity most days of the week: five days and over, such as walking, running, riding bicycle, swimming, life physical work such as doing your garden, or the moderately serious house work, meaning that you should engage in at least 150 minutes

of physical activities in a week; providing that each physical activity session be no less than 10 unremitted minutes.

- Doing muscle strengthening exercises for 15 to 60 minutes (an hour) per week, over 2–3 sessions, along with doing stretching exercises; to develop the muscles and joints resilience at a rate of three times a week.

Elders (65 and over)

- Elders who do not suffer from chronic diseases and their health condition is well are prescribed the adults' physical activity instructions, with taking into consideration the age-related functional changes.

The Importance of Exercising:

The importance of regular exercising lies in three basic aspects:

First Aspect: improving several tracts of the body and enhancing their efficiency, starting with the hormonal and metabolic systems and ending with nervous and muscular systems.

Second Aspect: is related to preventing from some diseases and health problems, especially chronic ones, such as coronary heart disease, second type diabetes, osteoporosis, and some types of cancer such as colon and breast cancer. While the health problems which the physical activity contributes to are relieving depression, worry, and stress symptoms and improving psychological health.

Third Aspect: increasing the energy exerted by the body, and hence, effectively contributing to preventing from obesity and putting paid to it.

Benefits of Regular Exercise for the young:

- Enhancing the efficiency level of heart and lungs.
- Increasing the stamina level of muscles and body elasticity.
- Building bone density.
- Reducing the level of blood fats.
- Lessening the risks of getting injured with cardiac diseases and increasing the cell sensitivity for insulin.
- Improving the psychological health for the young and promoting confidence.
- Relieving worry and depression symptoms.
- Helping the young grow in a socially healthy way.

Benefits of Regular Exercise for Adults:

- Raising the heart and lung efficiency.
- Enhancing the muscle fitness and joint resilience.
- Diminishing risks of getting injured with coronary heart artery diseases.
- Lessening the proportion of fats in the body.
- Increasing the solubility of fibrin in blood, helping, in turn, in hemophilia.
- Lessening the platelet sticking, reducing, in turn, the likelihood of developing clot.

- Augmenting the sensitivity of the body cells for insulin, leading to lowering blood sugar.
- Increasing bone density, in turn, rendering it less vulnerable for break.
- Reducing worry, depression, and stress.
- Diminishing the likelihood of developing colon and breast cancer.

General Guidelines and Tips to be Adopted when Practicing a Physical Activity:

Avoidance of Injuries:

- When a practitioner starts a physical activity, he must start with a warm-up exercise for 5 minutes (simple activity), then end with a relaxation exercise. At the end of the physical activity, the practitioner must perform stretching exercises (muscle stretching).
- The practitioner must wear a proper sneaker, as the performance of jogging and running requires a certain kind of sneakers that alleviate shocks and reduce strain on the joints of the ankle and knee. The other games also, such as tennis and the like, have their own sneakers that prevent sliding.
- The exercises may cause stress on the joints and pain in the knee and ankle; therefore, the exercises must be performed in the proper way without straining the joints.
- The practitioner must start the physical activity with a warm-up exercise and end with a relaxation exercise. Also, the stretching exercises must not be neglected.

- In case of jogging and running, the runner is preferable to perform such activities on dusty terrains, not on asphalt or cement terrains as they cause strain of joints.

Consultation of a Physician before Exercises:

- The recommendations, issued by the specialized medical associations, say that any person, under the age of 40 years who does not suffer from health disorders or risks causing coronary heart diseases, could perform the physical activity without the need of a medical examination.

Persons to Consult a Physician before Exercises:

- Men aging over 45 years and women aging over 55 years.
- Patients suffering from the risk of heart diseases, such as high blood pressure, high levels of cholesterol in the blood, smoking or diabetes.
- Patients suffering from the diseases of kidney, asthma, lung or liver.
- Persons having a family history, as if one of their parents or siblings was suffering from a heart disease before the age of 66 years. In this case, the person has to make a medical checkup, including an electrocardiogram while exercising.
- When performing a physical activity, the practitioner must stop the exercise immediately after feeling pain in the chest, or shoulders or when he feels short of breath, dizziness, nausea, or the like. Afterwards, he must consult the physician.

Matters to Be Avoided:

- The practitioner must not take a hot or steam bath immediately after the physical activity as the blood vessels start widening after any physical activity, and the hot or steam bath may increase such widening, which may cause low arterial blood pressure, especially when the practitioner loses much fluids during the physical activity. The practitioner must regain the lost fluids before taking the steam bath.
- When inflammation occurs in the throat or chest or when the body temperature gets high as a result of influenza, for instance, it is advisable not to engage in any tough physical activity. After improvement of the health status, the practitioner can gradually resume the practice.

Proper Sneaker to Be Worn During Exercises:

The proper sneaker is very essential for any person wishing to practice exercises safely and properly. Such sneakers help practitioner to feel pleasure during exercises as well as wish of continuity, so it is very important to choose the sneaker that fits the physical activity. The sole, defined as the bottom part of a shoe, must be flexible and including lining under the heel in the form of silica gel, air bubbles or the like to alleviate contact with the terrain, which in turn prevents strain of the foot and the joints of the bottom part of the body. The sneaker must be also fitting the size of the foot; given that the distance between the front part of the sneaker and the foot fingers must be about 1 cm.

Running Sneaker:

It is a shoe used for running and jogging by a practitioner who can perform such kinds of activities. Such a sneaker must include lining under the heel and foot in order to alleviate contact with the terrain during running or jogging. Also, the sneaker must provide proper support for the heel and the foot arch in order to prevent them from turning inside or outside during running.

Exercises Sneaker:

Most of aerobics exercises strain joints and bones severely as they require harsh contact with the terrain many times, so the practitioner must choose a sneaker that includes lining under the foot and heel and provides proper support for the heel area. The sneaker sole must be somewhat tough with some flexibility under the sole in order to allow easy motion.

Tennis Sneaker:

When a person wears the sneaker of walking or running then plays tennis, he probably suffers from strain of feet or the ankle joint, so it is advisable to wear a proper sneaker that provides good support for the foot and heel. The tennis sneaker must also have other characteristics that provide stability and prevent sliding.

A Timetable Shows the Power Exerted in Exercises by a Man Weighting 69.9 Kg per (Hour–Half an Hour)

Type	of Physical	Power Exerted for a Man Weighting 69.9
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Activity	Kg	
	Exerted Power (Kg/Half an Hour)	Exerted Power (Kg/Hour)
Moderate Intensity physical activity		
Normal walking (5.6 km per hour)	63.5	127
Riding a bike (less than 16 km per minute)	65.8	131.5
Golf game(walking while bearing the game tools)	74.8	149.7
Fitness dance	149.7	74.8
Simple exercises	49.9	99.8
Prolongation exercises	40.8	81.6
Mountaineering	83.9	167.8
High Intensity Physical Activity		
Jogging/jumping (8 km per hour)	133.8	267.6
Riding a bike (more than 16 km per hour)	133.8	267.6
Recreational swimming	115.7	231.3
Aerobic exercises	108.9	217.7
Walking (7.25 km per	104.3	208.7

hour)		
Basketball (high intensity)	99.8	199.6
High intensity garden tasks (cutting woods)	99.8	199.6
Weightlifting (powerful effort)	99.8	199.6

Activities to Be Performed by Patients:

The practice of such activities will depend on the consultation of the specialized physician.

Activities to Be Performed by Patients Suffering from Arterial Blood Pressure:

- The physical activity is considered remedy for cases suffering from high blood pressure.
- Patients suffering from arterial blood pressure must practice moderate intensity exercises for at least 30 minutes every day or during the most days of the week.
- The physical activity must be aerobic, such as brisk walking, jogging, riding a stationary bike, swimming, basketball and tennis.
- A single session of physical activities can reduce blood pressure for 22 hours after exercises.
- The blood pressure must be under control before starting the exercise, especially before the physical activity.

Activities to Be Performed by Obese Persons (to Lose Weight):

- Persons suffering from obesity can practice moderate intensity exercises with low impact, such as walking, riding stationary or regular bikes, swimming, training on a ski simulator, rowing, and practicing on a treadmill and badminton.
- Heavyweight persons must avoid the activity of jogging and running, because it causes strain of joints.
- The obese person must, to lose weight, perform exercises for 60–90 minutes every day or during the most days of the week (5 days or more), equivalent to 300 minutes per week. The obese person must lose 2000 Kcal or more per week.
- The duration and iteration of the physical activity are more important than the intensity of the activity.
- The obese person must increase the duration and iteration of the physical activity gradually during the week, so as to reach, after a period of successive steps, to 63 minutes or more every day or during the most days of the week.
- The activity should be diversified to include walking, swimming or riding a bike, for those suffering from disorders in the foot or knee.

Activities to Be Performed by Type–2 Diabetics:

- Type–2 diabetics may practice an aerobic activity for at least 30 minutes during every day or during the most days of the week. Later on, this period may increase to 63 minutes after a period of successive steps.

- Cases who do not suffer from disorders in retina or an increase in arterial blood pressure can practice moderate exercises twice a week to strengthen muscles.
- Diversity of physical activities is a must to include all the major muscles in the body, thus, the practitioner can make the most of the physical activity, for example, he may, after a period of successive steps, move his hands or put light weights on the wrists during the brisk walking.
- Regular practice of the physical activities is a must, as the benefits of activity start decaying after abstention for one to two weeks.
- Attention should be paid to patients suffering from pain in the feet, as they must not practice running or walking on a daily basis. Also, the practice of swimming and riding a stationary bike must be performed on another day.
- The sneaker must be fitting the patient's foot, and including good lining in the form of silica gel or air bubbles. The use of the cotton socks that absorb sweat is a must as well.
- If the practitioner uses insulin, he must not perform any physical activity if the blood sugar level is less than 100 mg/dl or having reached 250 mg/dl or more.
- Insulin injection must be taken away from the muscles, used in the physical activity.
- The practitioner must drink liquids regularly to avoid drought.

Activities to Be Performed by Osteoarthritis Patients:

- Osteoarthritis patients must perform a moderate to severe aerobic activity that does not impose pressure on the joints for a period of 30

minutes a day, 3 to 4 times a week. Such activities may include, for instance, swimming, riding a stationary bike, and walking, if possible.

- The muscles around the joint must be strengthened by performing exercises 2 to 3 times a week. Also, the flexibility exercises must be performed from 5 to 10 minutes a day to maintain the average range of the joint motion and improve the daily life style of the patient.
- After consulting a physician, the practitioner must take the anti-inflammatory drugs 1 hour before the exercise to reduce the intensity of the pain and inflammation.
- When acute inflammations occur in the joint, the practitioner should postpone the physical activity, which includes continuous movement of such a joint; knowing that the practice of riding a stationary bike or swimming is better than walking, especially when the knee joint is inflamed. In addition, walking is better than swimming when the shoulder joint or wrist is inflamed.

Activities to Be Performed by the Pregnant Woman:

- The type and intensity of the physical activity for any pregnant woman depend on her health as well as the amount of her physical activity before pregnancy. In all cases, the specialized physician must be consulted to make sure that there are no any contraindications.
- The pregnant woman who does not suffer from any health disorders must, after consulting a physician, practice a low to moderate intensity physical activity for 150 minutes (two hours and thirty minutes) per week.

- Walking and swimming are appropriate activities. Also, the riding of a stationary bike is safer than jogging.
- The aerobic exercises, such as walking and swimming, are welcomed.
- The practice of physical activities that may lead to imbalance or frequent vibration for the body is not advisable.
- The pregnant woman must reduce the intensity of the physical activity with the progress of pregnancy, due to the increase of the body weight, which in turn casts an additional burden upon her.
- The pregnant woman must not perform any physical activity while lying down, especially after the fourth month of pregnancy, as the increase of the uterus size stresses on the inferior vena cava, hindering the venous blood return.
- The pregnant woman must avoid the physical activities which include high impact, such as jogging and running, especially on a solid ground, as well as jumping, skipping, basketball, volleyball and the like.
- The pregnant woman must stay away from the activities that could cause a structural or muscles injury due to the sudden change of the body or contact with others as in basketball.
- The pregnant woman must avoid the stretching exercises that lead to bending of the joints sharply; due to fragility of tissues surrounding the joint during pregnancy.
- The pregnant woman must not perform any physical activity in the hot or wet weather; in order not to push the temperature of her body to increase.

- After consulting a physician, the pregnant woman can resume the physical activity after about 4 to 6 weeks in case of the normal birth, or 10 weeks in case of the caesarean birth.

Related Links:

World Health Organization (WHO):

http://www.who.int/dietphysicalactivity/PA_Recommendations_AR.pdf

<http://www.who.int/dietphysicalactivity/pa/en/in>

Centers for Disease Control and Prevention (CDC)

<http://www.cdc.gov/physicalactivity/data/facts.html>

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<http://www.cdc.gov/physicalactivity/data/facts.html>

Dr. Haza'a bin Mohamed Al Haza'a, Selected topics in activity and physical performance physiologies; 2010.