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fitness & exercise management (Semester: IV).

Topic: exercise for youth, adults & women

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Physical Activity

Physical activity is any activity that gets your body moving. It includes any activity that is part of your daily life – from sweeping and cleaning to carrying groceries, gardening, walking, dancing, riding a bicycle, lifting weights at the gym, stocking shelves in a store, or tossing a ball around with friends.

Exercise is a type of physical activity. Exercise is activity that is planned and done on a regular basis (e.g., several times a week) for enjoyment or for improving any aspect of physical fitness – strength, flexibility, or endurance. There are two main types of physical activity or exercise that the US Department of Health and Human Services (DHHS) recommends for adults: aerobic (cardiovascular or "cardio") and muscle-strengthening (resistance).

Benefits of Exercise and Being Physically Active

- Reduce fat around the waist
- Lower total cholesterol and LDL (the "bad" cholesterol)
- Raise HDL (the "good" cholesterol)
- Lower triglycerides (a type of fat in the bloodstream)
- Help control blood sugars
- Reduce depression
- Strengthen bones (help prevent bone disease)
- Strengthen the immune system
- Improve sleep quality
- Reduce stress
- Give you more energy throughout the day

Physical Activity for Youth

Children and adolescents (ages 6 - 17) should be physically active for at least 60 minutes daily. In 2009, just 18% of high school students participated in at least 60 minutes of PA each day. Those 60 minutes should include aerobic, strength and bone-strengthening activities.

- Aerobic: Most of the time spent being active should be doing moderate- or vigorous-intensity aerobic activities (vigorous-intensity activities should be done on at least three days of the week).
- Strength-building: muscle-strengthening activities should be included in the 60 minutes of physical activity on at least three days of the week.
- Bone-strengthening: As part of the 60 minutes of activity daily, bone-strengthening activities should be included three days of the week.

Encourage youth to be physically active through:

- Age-appropriate activities
- Doing three types of activity - aerobic, muscle-building and bone-building
- A variety of activities
- Participation in activities they enjoy

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
15-minute walk x 2	15-minute walk x 2	30 minute cycling, swimming, water aerobics, Zumba, etc.	Rest	30 minute walk (or 15-minute walk x 2)	30 minute cycling, swimming, water aerobics, Zumba, etc.	Rest
Strength		Strength		Strength	Strength	
Balance	Balance	Balance	Balance	Balance	Balance	Balance
Flexibility	Flexibility	Flexibility	Flexibility	Flexibility	Flexibility	Flexibility

Aerobic Activities

- Aerobic exercise is sometimes known as "cardio" -- exercise that requires pumping of oxygenated blood by the heart to deliver oxygen to working muscles.
- Aerobic exercise stimulates the heart rate and breathing rate to increase in a way that can be sustained/continued for the exercise session. In contrast, anaerobic ("without oxygen") exercise is activity that causes you to be quickly out of breath, like sprinting or lifting a heavy weight.
- Aerobic exercises can become anaerobic exercises if performed at a level of intensity that is too high.
- Aerobic exercise not only improves fitness; it also has known benefits for both physical and emotional health.
- Aerobic activities are those that incorporate running, swimming, biking and jumping rope, to name a few. These can be either moderate- or vigorous-intensity; include vigorous-intensity activities at least three times each week.
- Examples of moderate-intensity aerobic activities:
- Active recreation, such as hiking, skateboarding, rollerblading
- Bicycle riding
- Brisk walking
- Examples of vigorous-intensity aerobic activities:
- Active games involving running and chasing, such as tag, soccer, and basketball
- Bicycle riding
- Jumping rope
- Martial arts, such as karate

Muscle-strengthening Activities

A strength exercise is any activity that makes our muscles work harder than usual, which increases their strength, size, power and endurance. This involves using your body weight or working against some sort of resistance, to work specific muscle groups.

- Muscle-strengthening activities help maintain the ability to perform everyday tasks and slow down the rate of bone and muscle loss associated with ageing.
- Strength-building activities should be done three times each week as part of the daily 60 minutes of physical activity. Younger children can do structure activities like gymnastics or unstructured ones like playing on a jungle gym. Older children and adolescents might enjoy push-ups, pull-ups and weightlifting.
- Examples of muscle-strengthening activities:
  - Games such as tug-of-war
  - Modified push-ups (with knees on the floor)
  - Resistance exercises using body weight or resistance bands
  - Rope or tree climbing
  - Sit-ups (curl-ups or crunches)
  - Swinging on playground equipment/bars

Bone-strengthening Activities

- This kind of activity (sometimes called weight-bearing or weight-loading activity) produces a force on the bones that promotes bone growth and strength. This force is commonly produced by impact with the ground.

- Weight-bearing activities like hopping, jumping rope, skipping, running and sports and activities that incorporate those movements/activities (i.e. gymnastics and basketball) help to build strong bones. Include these types of activities three times weekly as part of the 60 minutes daily.
- Examples of bone-strengthening activities:
  - Games such as hopscotch
  - Hopping, skipping, jumping
  - Jumping rope
  - Running
  - Sports such as gymnastics, basketball, volleyball, tennis

PHYSICAL FITNESS CHART

	Male		Female	
Test	Ages 20-29	30-39	20-29	30-39
1 Minute Pull-Up	13	1	1	1
1 Minute Push up (Minimum)	26	20	20	15
1 Minute Sit Up (Minimum)	35	32	35	32
1.5 Mile Run (Maximum)	13.22	14.08	15.57	16.32

Exercises	Intensity	Duration	Frequency	Equipment
Cardiovascular-Endurance	70%-80% MHR	15-16 minutes	3-5 days per week	Bike, Rower, Treadmil, Stepper, Jump Rope
FORMAT: warm up 5min,;stretch;activity;cool down 5minutes;stretch				
Body Fat Loss	60%-70% MHR	45+Minutes	5+days per week	Same as above
FORMAT: warm up 5min,;stretch;activity;cool down 5minutes;stretch				
Muscular Strength	Fatigue After 15+Reps	60-90seconds between sets	Alternate days	Progressive Resistance Machines, Free weights
FORMAT: warm up 5min,;stretch;3 sets of 8-12 repetitions for each muscle group; stretch after each set				
Muscular Endurance	Fatigue after 15+reps	Not specified	Alternate Days or Daily	Same as above
FORMAT: warm up 5min,;stretch;3sets of 15+repetitions for each muscle groups; stretch after each set				
Flexibility	Feel stretch, not pain	Hold 10-16 seconds	Alternate Days or Daily	No special equipment needed
FORMAT: warm up 5min,;stretch				

Physical Activities/Exercises For Adults

- Types of physical exercises
- aerobics
- bodybuilding
- running
- squat
- sport
- stretching
- walking
- weight training
- Yoga,etc.

Endurance Exercises for Older Adults

Endurance activities, often referred to as aerobic, increase your breathing and heart rates. These activities help keep you healthy, improve your fitnes and help you perform the tasks you need to do every day. Endurance exercises improve the health of your heart, lungs, and circulatory system. They also can delay or prevent many diseases that are common in older adults such as diabetes, colon and breast cancers, heart disease, and othe Physical activities that build endurance include:

- Brisk walking or jogging
- Yard work (mowing, raking)
- Dancing
- Swimming
- Biking
- Climbing stairs or hills
- Playing tennis or basketball

Increase your endurance or “staying power” to help keep up with your grandchildren during a trip to the park, dance to your favorite songs at a

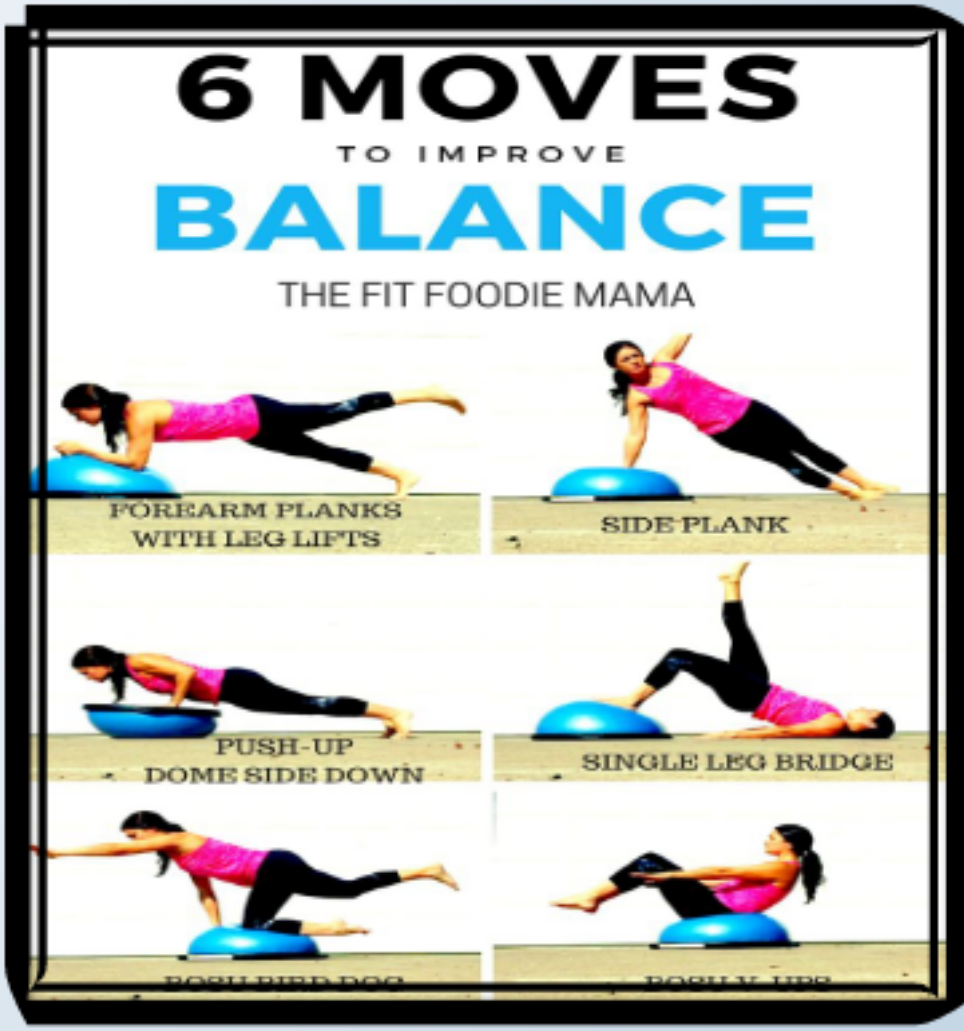
Strength Exercises for Older Adults

- Stretching is a kind of physical fitness exercise in which a muscle (or muscle group) is stretched on purpose to its fullest length in order to help the muscle's elasticity and its tone. This helps a person have better control of his or her muscles and be more flexible.
- Stretching, in its most basic form, is a natural and instinctive activity; it is done by many animals including humans. It may be done while yawning. Stretching often is done instinctively after waking from sleep, after long periods of being inactive, or after leaving small spaces and areas.
- Many athletes and dancers stretch deliberately before or after exercise in order to enhance performance and reduce injury.
- There are three basic types of stretching: ballistic, dynamic, and static stretching.
- Below are a few examples of strength exercises:

- Lifting weights
- Carrying groceries
- Gripping a tennis ball
- Overhead arm curl
- Arm curls
- Wall push-ups
- Lifting your body weight
- Using a resistance band

Balance Exercises for Older Adults

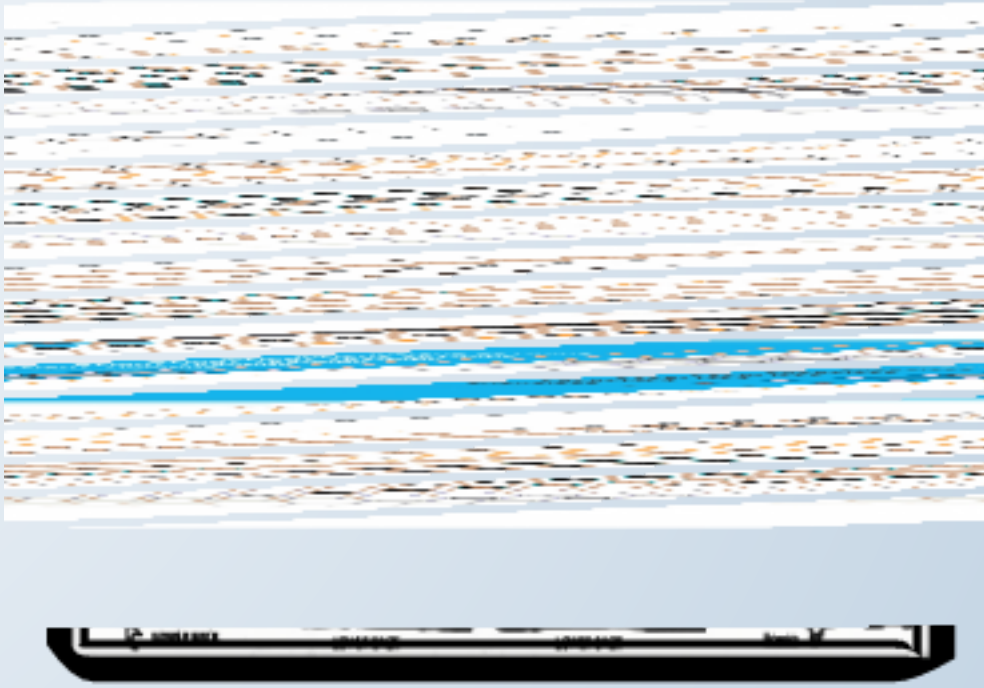
- Balance training involves doing exercises that strengthen the muscles that help keep you upright, including your legs and core. These kinds of exercises can improve stability and help prevent falls.
- Doing balance exercises can be intense, like some very challenging yoga poses. Others are as simple as standing on one leg for a few seconds.
- Balance exercises help prevent falls, a common problem in older adults that can have serious consequences. Many lower-body strength exercises also will improve your balance. Balance exercises include:
  - Tai Chi, a "moving meditation" that involves shifting the body slowly, gently, and precisely, while breathing deeply.
  - Standing on one foot.
  - The heel-to-toe walk.
  - The balance walk.
  - Standing from a seated position.
- **Intensity Level: Moderate**
  - To balance train, you don't have to run, jump, or do any other high-impact or high-intensity exercises. Usually balance training involves slow, methodical movements.



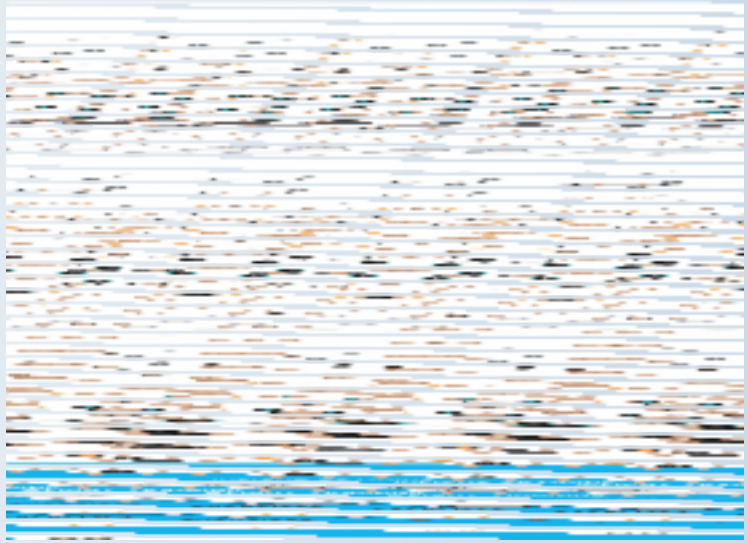
Flexibility Exercises for Older Adults

Flexibility is the range of motion in a joint or group of joints or the ability to move joints effectively through a complete range of motion. Flexibility training includes stretching exercises to lengthen the muscles and may include activities like yoga or Tai Chi. Improving your flexibility can help you move more comfortably throughout the day.

- Flexibility exercises are activities that improve the ability of a joint to maintain the movement necessary for carrying out daily tasks and physical activity.
- Stretching can improve your flexibility. Moving more freely will make it easier for you to reach down to tie your shoes or look over your shoulder when you back your car out of the driveway. Flexibility exercises include:
  - The back stretch exercise
  - The inner thigh stretch
  - The ankle stretch
  - The back of leg stretch



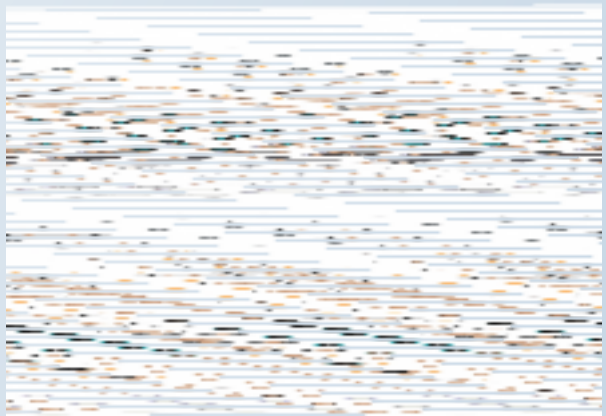
Running



It is the way in which people or animals travel quickly on their feet. It is a method of travelling on land. It is different to walking in that both feet are regularly off the ground at the same time.[1] Different terms are used to refer to running according to the speed: jogging is slow, and sprinting is running fast.

- Running is a popular form of exercise. It is also one of the oldest forms of sport. The exercise is known to be good for health; it helps breathing and heartbeat, and burns any spare calories. Running keeps a person fit and active. It also relieves stress. Running makes a person thirsty, so it is important to drink water when running.

Squat



- It is a renowned element of many folk dances. In powerlifting and bodybuilding, as well as in other sports, **squat** is an exercise that strengthens the muscles of the thighs, hips and buttocks, as well as the bones, ligaments and insertion of the tendons throughout the lower body.

Weight training

- It is a common type of strength training. It uses the force of gravity in the form of weighted bars, dumbbells or weight stacks to oppose the force generated by muscles. Weight training uses many different special things to help certain areas of muscle and different kinds of body motions.
- "Weight training" is not bodybuilding, Olympic weightlifting, or *powerlifting*; these are sports and not training. Weight training is a part of these sports' training.

Yoga

- It is an old discipline from India. It is both spiritual and physical. Yoga uses breathing techniques, exercise and meditation. It helps to improve health and happiness. *Yoga* is the Sanskrit word for *union*. Patanjali was a pioneer of classical yoga. He defined yoga as "the cessation of the modification of the mind" (*stopping changing the mind*).
- A person doing yoga will move from one posture (called *asana*) to another. For example, the "sun-salutation" contains 12 poses of asanas, one after the other, and is said to help balance body and soul. There is a specific mantra for each asana. The "sun-salutation" is popularly known as "Suryanamaskar

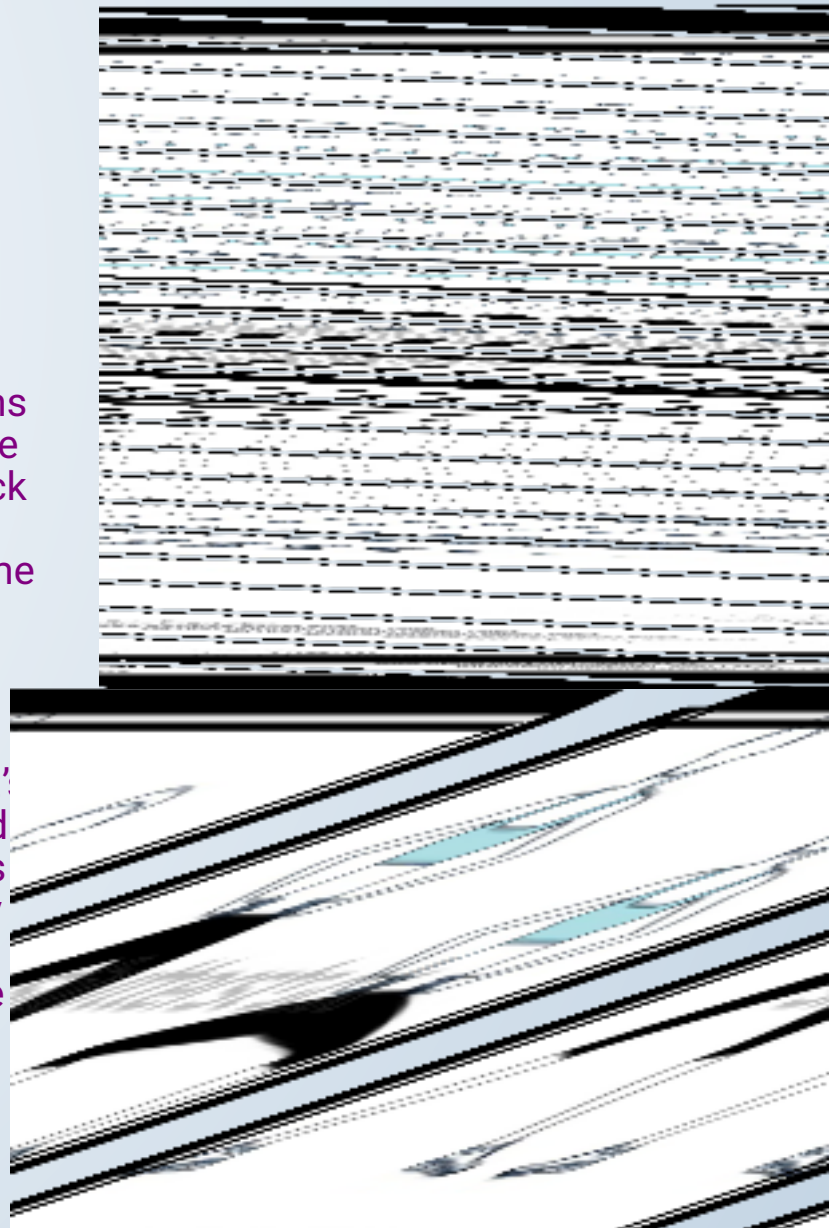
Exercises For Women

- **Jumping Jacks**

It’s a basic exercise to start with. It’s important to warm up and stretch before starting the regular exercise. Jumping jack gives flexibility and help you increase the stamina. Keep your feet together and stand tall and keeping hands straight at your sides. While jumping, raise your arms above your head and feet’s apart to the sides. Quickly reverse and come back to standing position with a jump. A one or two minute jumping jack exercises can loosen your muscles with more flow of oxygen into the bloodstream. Burn some calories, get flexible and toned body with some jumping jacks exercise daily. Modify jumping jack steps and have fun exercising.

- **Push-ups**

It’s one of the most effective and common do-at-home exercise ever. It’s quite simple to do. Get into plank position. Keep hands under bit outside your shoulder, keep your leg stretched, lower your body until chest gets near to the floor and quickly come back to original position. It basically strengthens your upper body as it’s beneficial for chest, shoulders and triceps. It also strengthens yours thighs and abdominal muscles. In the beginning, it seems difficult to do more number of pushups. You can also start with knee pushups, inclined pushups in the beginning.

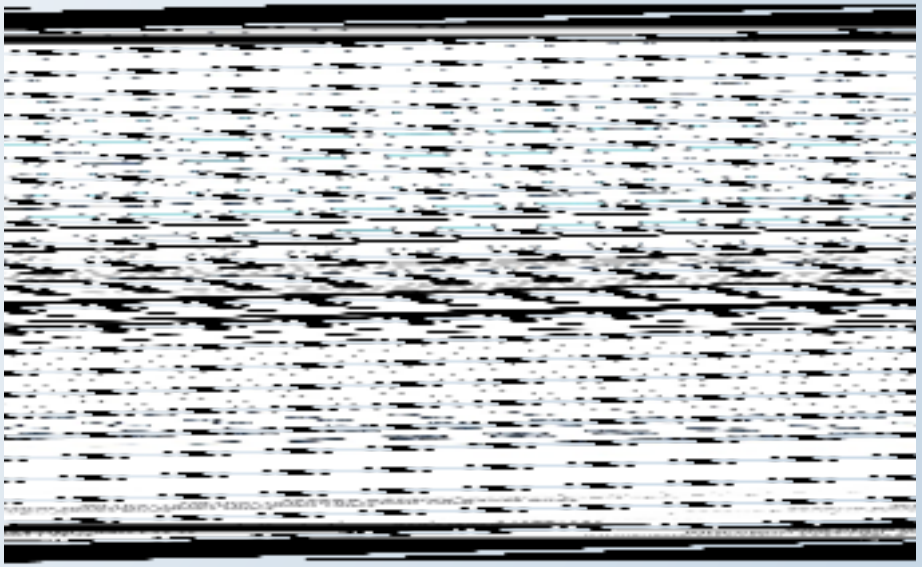


Single Leg Stand

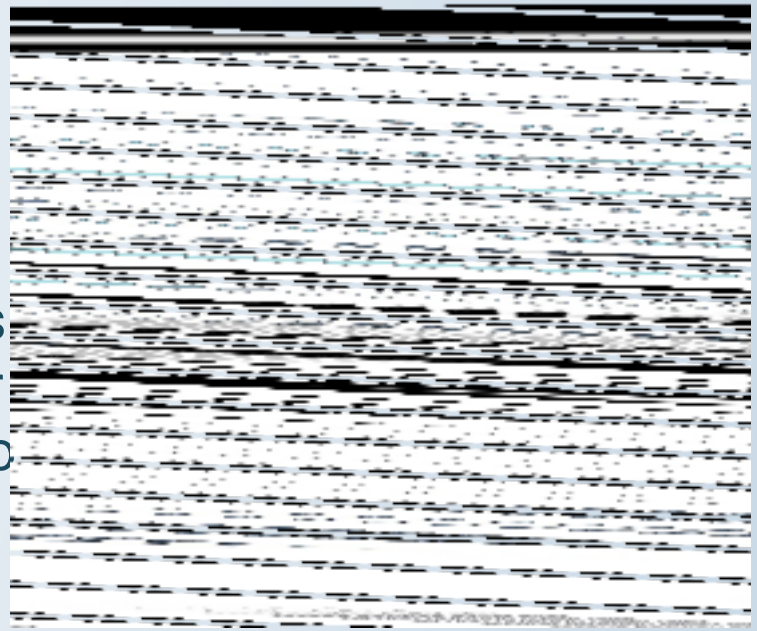
- Balancing on one feet enhances flexibility of leg muscles. It boosts your concentration, helps you stay focused that makes you fight anxiety and depression. To start with, do a basic exercise. Shift your entire body weight on one foot and lift the other slightly off the floor. Keep it straight forward and try not to lean your body. Stay in the position for a minute.

Plank

Plank exercise puts your entire body on work. It's most vital for abdominals. Get down on the floor on your elbows and toes. Elbows should bent and directly below your shoulders. Keep the body straight while holding on to the position.



Shoulder Stands



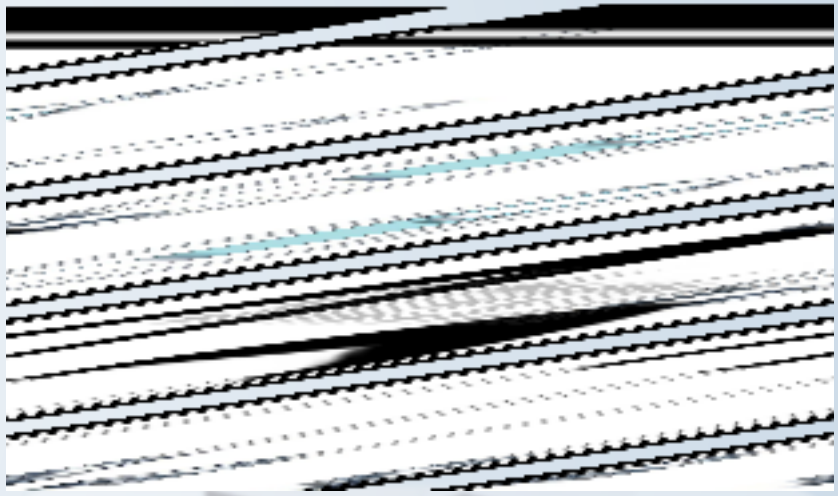
There are so many physical and mental benefits to yoga, so why not include bits of the practice in a workout for women? Inversion postures are great for relaxation, blood flow, and for a new perspective! This is one of the best exercises for women to add to their workout—but you can also add more chill inversions to other parts of your life. For example, try putting your legs up the wall for 5 minutes every night before bed.

BRIDGE

Bridges are not only one of the best exercises for a sculpted butt, but they will also help keep your back healthy and pain-free, making them a perfect addition to a leg workout for women

Steps up

This one of the best exercises for targeting the muscles of your glutes and hamstrings to create stronger legs and a tighter booty. Step-ups also target your quadriceps since they require you to straighten your knee against resistance.

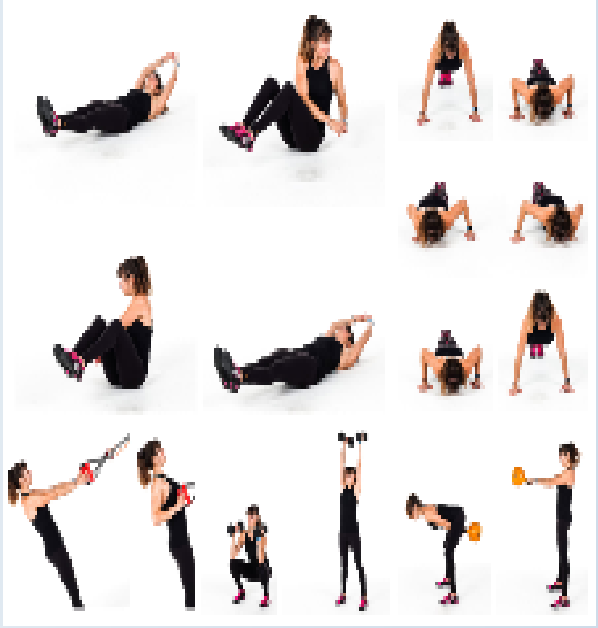


Hiit interval

High-intensity interval training (HIIT) is one of the best workouts for women because it burns more calories in a shorter amount of time compared to long, slow endurance exercise. Try incorporating it into your workout routine twice a week on alternate days.

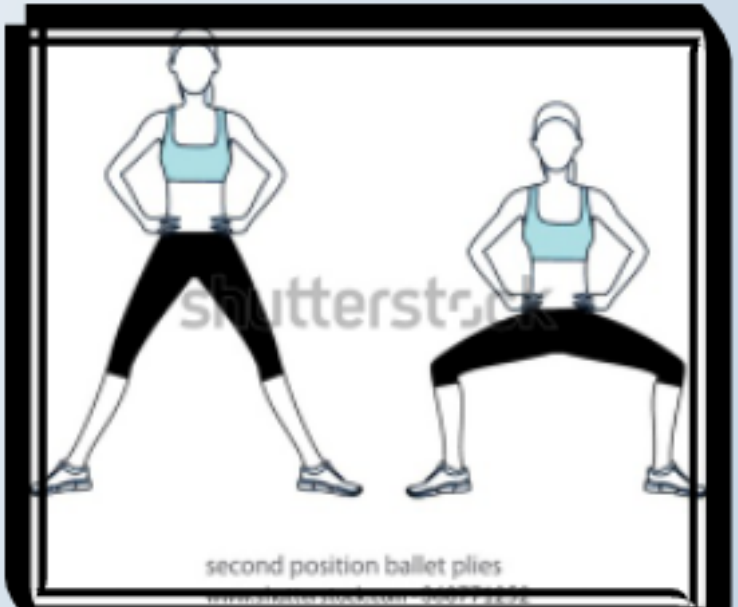
Cardio Workout

Cardio exercises like walking, jogging, swimming and aerobics can help you shed overall fat in the body. They boost your metabolism and quickly burn your calories to see a noticeable difference. Performing them along with push-ups and strength training, can change the size of your breast and make them appear smaller but firmer!



Second Position Pliés

- Your lower body—and we mean your entire lower body—loves pliés. They're one of the best exercises for women because, " they work all of the larger muscles in the lower half of the body, making them incredibly efficient and effective at both building muscle and burning calories," says Brennan. Turning your toes out during this move means that the squat motion will sculpt the inner thighs as well as tone the gluteus minimum (side of your butt). Add them to your leg day routine to create a killer workout for women.




THANK YOU

FIT INDIA

DR. RASHMI GUPTA.

INTRODUCTION

Physical fitness refers to the ability of your body systems to work together efficiently to allow you to be healthy and perform activities of daily living. Being efficient means doing daily activities with the least effort possible. A fit person is able to perform schoolwork, meet home responsibilities, and still have enough energy to enjoy sport and other leisure activities. A fit person can respond effectively to normal life situations, such as raking leaves at home, stocking shelves at a part-time job, and marching in the band at school. A fit person can also respond to emergency situations - for example, by running to get help or aiding a friend in distress.

COMPONENTS OF PHYSICAL FITNESS

HEALTH RELATED COMPONENTS

CARDIOVASCULAR ENDURANCE

Cardiovascular endurance (also known as cardiorespiratory endurance or aerobic fitness) refers to your body's ability to efficiently and effectively intake oxygen and deliver it to your body's tissues by way of the heart, lungs, arteries, vessels, and veins. By engaging in regular exercise that challenges your heart and lungs, you can:

- Maintain or even improve the efficient delivery and uptake of oxygen to your body's systems
- Enhance cellular metabolism
- Ease the physical challenges of everyday life

MUSCULAR ENDURANCE

Muscular endurance is one of two factors that contribute to overall muscular health. Think of muscular endurance as a particular muscle group's ability to continuously contract against a given resistance. Long-distance cyclists offer a clear example. To continuously pedal a bike over a long distance, often up steep inclines, cyclists have to develop fatigue-resistant muscles in their legs and glutes. These are evidence of a high level of muscular endurance. Likewise, holding a plank to develop core strength is another example of muscular endurance. The longer you're able to contract your abdominals and hold your body in a steady position, the greater endurance you have through your hips, abdominals, and shoulders.

MUSCULAR STRENGTH

While muscular endurance refers to how fatigue-resistant a particular muscle group is, muscular strength refers to the amount of force a particular muscle group can produce in one, all-out effort. In strength training terms, it's your one-rep max. Like muscular endurance, muscular strength is muscle group-specific. In other words, you may have incredibly strong glutes, but comparatively weak deltoids; or incredibly strong pectoral muscles, but comparatively weak hamstrings. This is why a well-balanced strength training program that targets all of your major muscle groups is so important.

FLEXIBILITY

Flexibility refers to the range of motion you have around a given joint. Like muscular strength and endurance, flexibility is joint-specific. For instance, you may have very flexible shoulders, but tight and inflexible hamstrings or hips. Flexibility is important at any age. It plays a role in unhindered movement and can affect your balance, coordination, and agility. Maintaining a full range of motion through your major joints can reduce the likelihood of injury and enhance athletic performance. As you get older, the importance of flexibility becomes even clearer. Think of individuals who are elderly: Many may walk with a shuffle or have a hard time reaching their arms over their heads. This may affect their quality of life, making it more challenging to perform activities of daily living, such as reaching items on high shelves, picking up items off the floor, or simply moving effectively to catch their balance if they start to fall.

BODY COMPOSITION

Body composition, or your body's ratio of fat mass to fat-free mass, is the final component of health-related physical fitness. Because high levels of fat mass are associated with negative health outcomes, such as heart disease and type 2 diabetes, attaining and maintaining a healthy body composition is a goal of just about all regular exercise routines.

SKILL RELATED COMPONENTS

POWER

Power combines speed and strength. In essence, it's how fast you can generate a maximal force. In sports, "power athletes" are those who exert brute strength in short, all-out efforts, such as Olympic weightlifters, football players, and gymnasts. But athletes in other sports, like basketball, volleyball, and tennis, can also benefit from developing greater power. Jumping to get a rebound requires leg power, while forcefully spiking a volleyball requires a combination of upper- and lower-body power.

SPEED

When you think of speed, you might think of an event like the 100-meter sprint. But speed, by nature, is relative. An elite 100-meter sprinter needs to be very, very fast, but only for about 10 seconds. On the other hand, if a marathon runner wants to improve their speed to

set a new personal best, they might aim to reduce their per-mile race pace from 10 minutes per mile to 9.5 minutes per mile—a speed they would have to maintain for a little over four hours. These two fictional athletes train differently, but with a similar goal: become faster for their sports. So speed training will differ based on the sport you're training for. Regardless of sport, high-intensity interval training (HIIT) is one of the best ways to improve speed.

AGILITY

Agility is the ability to move quickly and to easily change direction. Basketball players, for instance, are incredibly agile. They have to move in every direction, jumping, sliding, twisting, and backpedalling in quick response to the movement of the ball and other players. Their bodies have to be trained to respond and change course at the drop of a hat.

Agility drills commonly involve exercises that develop foot speed and direction change, such as:

- Ladder drills: Use an agility ladder to practice quick and specific foot placement.
- Cone drills: Set up cones in a "T" or star shape, then sprint, slide, backpedal, or change direction depending on which cone you're approaching.

COORDINATION

So many sports and activities require well-honed hand-eye (or foot-eye) coordination, including badminton, golf, soccer, basketball, football, racquetball, archery, softball, ultimate Frisbee, and more. All require you to be able to see an external object and respond precisely with your hands and/or feet to meet a pre-determined objective.

BALANCE

Gymnasts, yogis, skaters, and surfers all need highly refined balance skills to be able to participate in their sports. But these aren't the only athletes who benefit from balance training. Balance itself refers to your ability to adjust your body position to remain upright. It deals with proprioception, or knowing where your body is in space, and being able to make adjustments to your position as your centre of gravity changes during movement.

REACTION TIME

Reaction time refers to how quickly you can respond to an external stimulus. Think about a tennis match for a moment: The best competitors react almost instantaneously when the ball comes off their opponent's racquet, sprinting toward the location where they expect the ball to bounce. Reaction time hinges heavily on your mind-body connection. Your eyes see a stimulus, your mind interprets the stimulus, and your body reacts in accordance with that interpretation.

PHYSIOLOGICAL COMPONENTS

METABOLIC FITNESS

Metabolism is the set of cellular mechanisms that produce energy from our food and environment to power every process in the human body. When these mechanisms are functioning optimally, we are able to generate energy efficiently without deterioration or excessive harmful by-products. Put simply, this means having energy to live actively while feeling our best, without undue weight gain, aging, and risk of breakdown. This is Metabolic Fitness.

MORPHOLOGICAL FITNESS

A non-performance component of fitness related to body composition factors such as body circumferences, body fat content, and regional body fat distribution.

BONE INEGRITY

Term refers to the ability of a bone to function as component of the whole body, sustaining anticipated loads. Any change in bone architecture, i.e. mineral losses, deteriorates the overall bone quality and may result in injuries, fractures, death, life quality deterioration and monetary losses.

MEASUREMENT OF MUSCULAR ENDURANCE

FLEXED ARM HAND TEST:

The flexed-arm hang test measures upper body strength and endurance, timing how long someone can remain with the chin above a horizontal bar.

equipment required: Stopwatch, Horizontal overhead bar at an adequate height, stool or step (optional) and a gym mat to be placed under the bar.

pre-test: Explain the test procedures to the subject. Perform screening of health risks and obtain informed consent. Prepare forms and record basic information such as age, height, body weight, gender and test conditions. Record the height of the overhead bar. See more details of pre-test procedures.

procedure: Grasp the overhead bar. The grip for the President's Challenge allows using either an overhand grip (palms facing away from body) or underhand grip (palms facing toward body), while for Fitness Gram and Brockport the overhand grip is required (see more about grip types). Position the body with the armed flexed and the chin clearing the bar. The chest should be held close to bar with legs hanging straight. The body must not swing, the knees must not be bent, and the legs must not kick. The subjects should be assisted to this position. The subject holds this position for as long as possible. Only one trial is required.

scoring: The total time in seconds is recorded - timing is stopped when student's chin touches or falls below the bar. The type of grip used should also be recorded with the results.

BENT KNEE SIT-UPS

Sit-ups are one of the traditional forms of abdominal training. When performed correctly, a sit-up tones and strengthens your abdominal and oblique muscles. Bent-knee sit-ups, also called crunches, can be challenging for those with weak abdominal muscles or people who are not accustomed to regular exercise. Start slowly to avoid injury.

Equipment: A mat and a stopwatch.

Procedure: Begin a bent-knee sit-up by lying on the floor or a mat on your back. Bend your legs so your heels are planted firmly on the floor. Your toes should be slightly elevated off the floor. Place your feet between 12 and 18 inches away from your buttocks. Stretch your arms out in front of you or cross them on your chest for an easier bent-knee sit-up. Keeping your back straight and chin tucked slightly toward your chest, lift your upper back and head off of the floor as you tighten your core muscles. Perform the lift in a progressive curling motion rather than one swift, jerky movement. Hold for a second and ease yourself back down to the ground.

MEASUREMENT OF MUSCULAR STRENGTH

KRAUS WEBER TEST

The Kraus-Weber test, involves a series of exercises that measure minimum strength and flexibility of the back, abdominal, psoas and hamstring muscles. The six-item medical fitness test measures the strength and flexibility of key postural (core) muscles. The test consists of five strength challenges and one general flexibility procedure. A simple sit-up with knees bent and feet planted. A sit-up with legs extended and not bent. Raising feet while lying on the back. Raising head, chest and shoulders off the ground while lying on the stomach. Raising legs off the ground while lying on the stomach. With knees straight, bending forward to touch the floor.

The Test is done as follows:

- Kraus Weber Test No. 1: With his feet held on the ground by the examiner, the subject lies flat on his back with his hands behind the neck. Perform one sit-up.
- Kraus Weber Test No. 2: The subject is in the same position except that his knees are bent with his ankles close to the buttocks. Perform one sit-up.
- Kraus Weber Test No. 3: The subject lies flat on his back with his hands behind his neck. The legs are lifted 10 inches off the floor. Hold this position for 10 seconds.
- Kraus Weber Test No. 4: The subject lies on his stomach with a pillow under his lower abdomen and groin. The examiner holds his feet down. Lift head, shoulders, and chest off the floor and hold for 10 seconds.
- Kraus Weber Test No. 5: The subject's position is the same, but the examiner holds the chest down. With knees straight, lift legs off floor and hold for 10 seconds.
- Kraus Weber Test No. 6: The subject stands erect, barefooted, and with feet together. The examiner holds the knees straight. Bend over slowly and touch the floor with the fingertips. Hold this position for 3 seconds. An individual using this test has clear-cut evidence of increase or decrease in flexibility and strength.

BODY COMPOSITION TEST

BICEPS SKINFOLD

The bicep skinfold site is one of the common locations used for the assessment of body fat using skinfold callipers. See the complete list of skinfold sites, and the general procedure for taking skinfold measurements.

equipment: skinfold callipers (e.g. Harpenden, Slim glide, Lange), tape measure, marker pen, recording sheets. Read the Skinfold Guide for a comparison of available callipers.

pre-test: Explain the test procedures to the subject. Perform screening of health risks and obtain informed consent. Prepare forms and record basic information such as age, height, body weight, gender, test conditions. Callipers should be calibrated for correct jaw tension and gap width. See more details of pre-test procedures.

procedure: Skinfold measurement can use from 3 to 9 different standard anatomical sites around the body. The right side is usually only measured (for consistency). The tester pinches the skin at the appropriate site to raise a double layer of skin and the underlying adipose tissue, but not the muscle. The callipers are then applied 1 cm below and at right angles to the pinch, and a reading in millimetres (mm) taken two seconds later. The mean of two measurements should be taken. If the two measurements differ greatly, a third should then be done, then the median value taken.

THE SUPRASPINAL SKINFOLD

The supraspinal skinfold site is one of the common locations used for the assessment of body fat using skinfold callipers. It has previously been known as the Suprailiac site. See the complete list of skinfold sites, and the general procedure for taking skinfold measurements.

Method: The suprailiac skinfold is measured just above the iliac crest on the mid-auxiliary line (over the wing of the left scapula, in plane of dermatome). Grasp the skinfold firmly between your thumb and index finger of your left hand. The skinfold is lifted 1 cm and recorded with the callipers held in the right hand. Keep the fold elevated while the measurement is recorded. Take the skinfold measurement 4 seconds after the calliper pressure is released.

MEASUREMENT OF FLEXIBILTY

SIT AND REACH TEST

The sit and reach test is a common measure of flexibility, and specifically measures the flexibility of the lower back and hamstring muscles. This test is important as because tightness in this area is implicated in lumbar lordosis, forward pelvic tilt and lower back pain.

equipment required: sit and reach box (or alternatively a ruler can be used, and a step or box).

procedure: This test involves sitting on the floor with legs stretched out straight ahead. Shoes should be removed. The soles of the feet are placed flat against the box. Both knees should be locked and pressed flat to the floor - the tester may assist by holding them down. With the palms facing downwards, and the hands-on top of each other or side by side, the subject reaches forward along the measuring line as far as possible. Ensure that the hands remain at the same level, not one reaching further forward than the other. After some practice reaches, the subject reaches out and holds that position for at least one-two seconds while the distance is recorded. Make sure there are no jerky movements. See also video demonstrations of the Sit and Reach Test.

scoring: The score is recorded to the nearest centimetre or half inch as the distance reached by the hand. Some test versions use the level of the feet as the zero mark, while others have the zero mark 9 inches before the feet. There is also the modified sit and reach test which adjusts the zero-mark depending on the arm and leg length of the subject. There are some norms for the sit and reach test and also examples of some actual athlete results.

	men		women	
	cm	inches	cm	inches
super	> +27	> +10.5	> +30	> +11.5
excellent	+17 to +27	+6.5 to +10.5	+21 to +30	+8.0 to +11.5
good	+6 to +16	+2.5 to +6.0	+11 to +20	+4.5 to +7.5
average	0 to +5	0 to +2.0	+1 to +10	+0.5 to +4.0
fair	-8 to -1	-3.0 to -0.5	-7 to 0	-2.5 to 0
poor	-20 to -9	-7.5 to -3.5	-15 to -8	-6.0 to -3.0
very poor	< -20	< -7.5	< -15	< -6.0

BRIDGE-UP TEST

The prone bridge manoeuvre, or plank, has been viewed as a potential alternative to curl-ups for assessing trunk muscle performance. On two occasions, 5-9 days apart, participants held a prone bridge until volitional exhaustion or until repeated technique failure.

Method:

- Lie on your back with your hands at your sides, knees bent, and feet flat on the floor under your knees.
- Tighten your abdominal and buttock muscles by pushing your low back into the ground before you push up.
- Raise your hips to create a straight line from your knees to shoulders.
- Squeeze your core and pull your belly button back toward your spine.
- Hold for 20 to 30 seconds, and then return to your starting position.
- Complete at least 10 reps.