

ENS JPC JUBELAG PCG & ENS GJ TAMAYO PCG

PHILIPPINE COAST GUARD

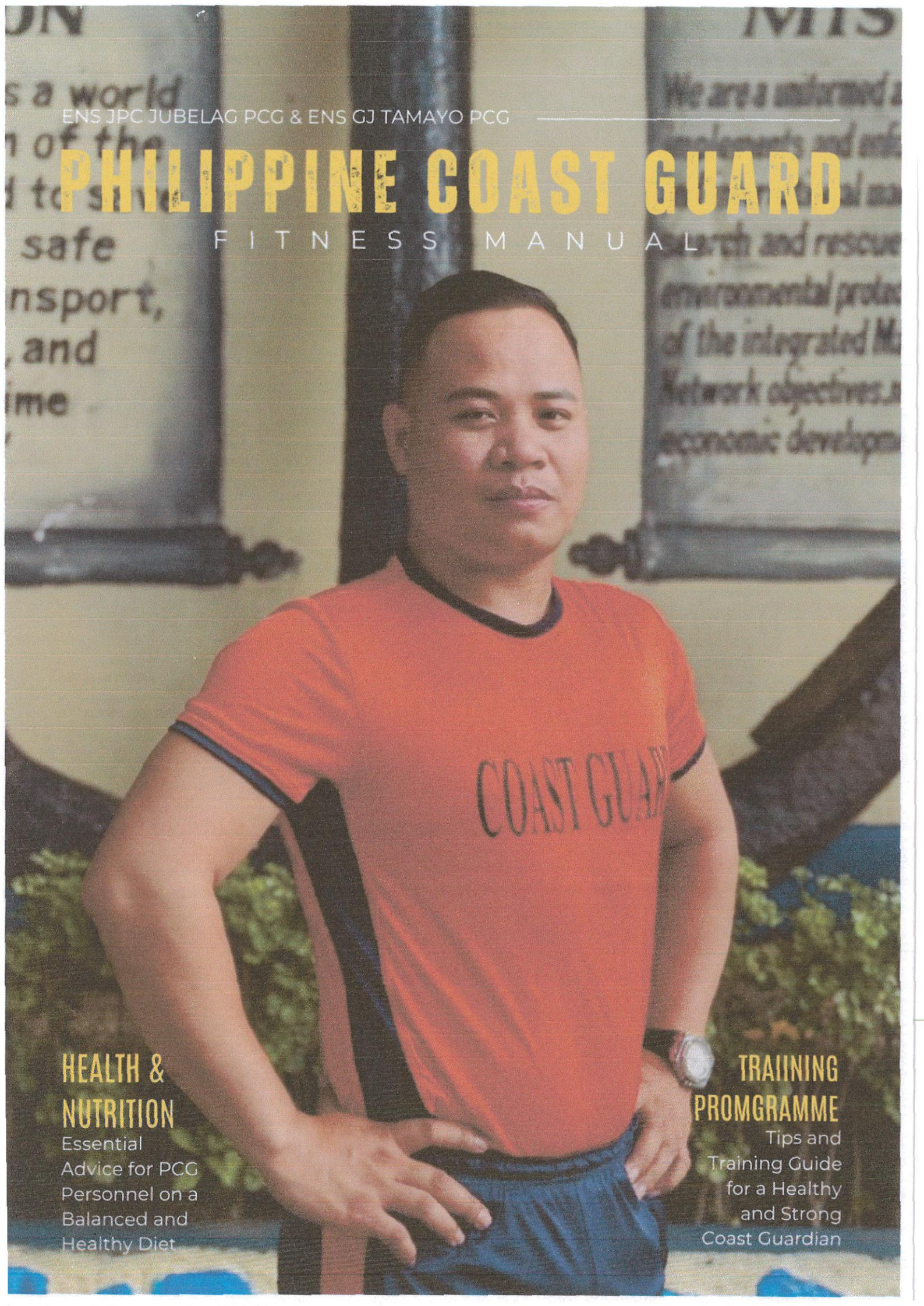
FITNESS MANUAL

HEALTH & NUTRITION

Essential
Advice for PCG
Personnel on a
Balanced and
Healthy Diet

TRAINING PROGRAMME

Tips and
Training Guide
for a Healthy
and Strong
Coast Guardian



CHAPTER I: INTRODUCTION

Physical fitness is the ability of the human body to function with force and liveliness, without exaggerated fatigue, and with enough energy to enjoy leisure activities and prevent physical stress (Li Xuan, 2020). Fitness in the physical sense means that your body's processes can work well together so that you can stay healthy and do everyday things. Being efficient means putting in as little work as possible daily. A healthy person has time to do their schoolwork and cleaning and still has the energy to play sports and do other fun things.

Physical fitness is classified into two types: health-related fitness and skill-related fitness. Health-related Fitness (HRF) is theoretically defined as a multidimensional construct containing the components of cardiorespiratory endurance, muscular strength, muscular endurance, flexibility, and body composition (Una et al., 2019). Its primary goal is to attain and keep those attributes that boost the individual's working efficiency and overall health. There are five components of health-related physical fitness: (1) cardiorespiratory endurance, (2) muscular endurance, (3) muscular strength, (4) flexibility, and (5) body composition.

- **Cardiovascular endurance** - the capacity to engage in physical activities at levels ranging from moderate to vigorous for an extended duration
- **Muscular strength** - the capacity of an individual's muscles to generate force or lift big weights
- **Muscular endurance** - the capacity of an individual's muscles to endure and sustain physical activity over an extended duration
- **Flexibility** - the capacity of an individual to effectively mobilize their muscles and joints across a comprehensive spectrum of motion;
- **Body composition** - the fat, bone, and muscle percentage within an individual's body.

The second type of physical fitness is skill-related fitness or performance-related fitness. It involves skills that enhance one's performance in athletic or sports events. There are six skill-related fitness components: agility, coordination, balance, power, speed, and reaction time.

- **Agility** -The ability to shift direction and position while moving quickly.
- **Balance** is the ability to control or stabilize the body while standing or moving.
- **Coordination** - the ability to use the senses with body parts during movement.
- **Speed** - the ability to move your body or parts of your body swiftly.
- **Power** - the ability to move swiftly while using maximum muscle effort. It is a combination of speed and muscle strength.
- **Reaction Time** - a rapid response to what you hear, see, or feel.

Why is Physical Fitness and Engaging to Physical Activity Important?

Physical fitness is crucial for maintaining good health, and exercise plays a significant role in improving or maintaining physical fitness. Many studies support that fitness prevents almost any type of disease, and there is a significant reduction in the

chance of developing chronic diseases over time, such as cardiovascular disease, type 2 diabetes, and even cancer, which is associated with improved fitness levels. Being active can also help you age healthily and add years to your life to remain healthy and busy. For instance, strength training in old age can help keep lean muscle mass, a significant indicator of falls and quality of life. Adults who engage in moderate-to-intense physical activity and reduce their sitting time benefit in various ways. Very few lifestyle decisions have the same profound effect on your health as physical activity. Improving individuals' physical fitness and engaging in physical activities has benefits: (1) boosts the mood and improves mental health, (2) improves the quality of sleep, (3) promotes long-term health, (4) controls and manages chronic diseases, (5) helps to control weight, (6) Strengthens your bones and muscles, and (7) improves the brain and heart health. Maintaining an active lifestyle is critical for overall health at any age.

Physical fitness is an essential part of, and an important means of, ensuring and maintaining good health. Exercise is a physical activity which is designed for improvement or maintenance of physical fitness. Pursuit for fitness should be an integral aspect of one's lifestyle, and hence one should engage in regular physical activity, exercises, games, sports and martial arts. Persons living with diabetes often find it challenging to pursue a proper exercise regimen in an effective, yet safe, manner. In this communication, we suggest a strategy to kick start a physical fitness regimen that one can adhere to. This simple suggestion will be helpful not only for persons living with diabetes and other chronic diseases, but for their health care providers as well.

Incorporating activities that improve cardiovascular endurance, muscular strength and endurance, flexibility, and body composition in a well-balanced exercise routine to help you improve function effectively in daily activities. Aerobic exercises like jogging help you get in shape by building up your cardiorespiratory endurance and burning calories. Strengthening training exercises make muscles more robust and more durable, and they also help you get a healthy body. Stretching and yoga are activities that can help you become more flexible.

CHAPTER II: ASSESSING FITNESS LEVEL

Understanding your starting point is crucial when embarking on a fitness journey. Though starting a fitness program is personal, accurate self-assessment is critical. By understanding your strengths and weaknesses, we can create personalized fitness plans to boost your exercise efficiency. This process is a foundational stage based on scientific study and empirical data. Being aware of your body's limits can prevent damage; it helps identify older adults with poor physical fitness before exercising, allowing for appropriate modifications and precautions. In addition, assessing fitness levels can provide valuable information for potential health and injury risks and improve patient management.

Furthermore, evaluating fitness before initiating an exercise program can positively affect most coronary heart disease risk factors and enhance the quality of life. We provide challenging but not too strenuous workouts to keep you safe and healthy. Lastly, assessing fitness levels allows an individual to customize an exercise program to maximize effort for developing a safe and effective individualized exercise program based on fitness status.

Our approach in the PCG Fitness Manual begins with a thorough fitness level assessment. Before engaging in such physical activities, we must measure our strength, endurance, cardiovascular health, and flexibility using scientifically approved tests. Below are the tests to measure the said components with their corresponding test protocols.

RESTING HEART RATE

Resting heart rate (RHR) is how fast your heart beats when you are at rest. It is used to help determine appropriate exercise intensity levels (difficulty of the exercise) as it provides valuable information on an individual's overall health. If your RHR is high, doing easy to moderate exercises is safer to prevent straining your heart. If your RHR is low, you can do more challenging activities because your heart is strong and can handle it.

How to Calculate Resting Heart Rate (RHR):

1. The best time to measure your RHR is in the morning, right after waking up.
2. You'll need a stopwatch or timer on your phone.
3. Find your pulse: Place your index and middle fingers gently on your wrist (below your thumb) or the side of your neck (under your jaw). Make sure not to press too hard; feel your pulse.
4. Count the Beats: Start the stopwatch or timer. Count how many times your heart beats for a full 60 seconds. Or, count for 15 seconds and then multiply that number by 4 to get your heart rate in beats per minute (BPM). Either of these methods can get a pretty accurate reading.
5. Record Your RHR: Stop the timer after 60 seconds (or after multiplying by 4). The number you counted is your Resting Heart Rate (RHR) in beats per minute (BPM).
6. You may also use a heart rate monitor or a fitness tracker to measure. Ensure the device you use is reliable for accurate heart rate measurements.

BODY COMPOSITION

Body composition refers to the proportions of tissues that comprise your body, such as muscle, fat, bone, and water (Heyward & Gibson, 2014). It's important to measure body composition because it gives insights into your overall health and fitness

Skinfold testing

Skinfold testing measures the amount of subcutaneous fat (fat beneath the skin) with a tool called a skinfold caliper to find out the body fat percentage. Since fat distribution differs by gender, men and women employ different bodily sites. It is best to measure the right side of the body first thing in the morning since activity and drinking water will change the skinfold girth.

Men

Chest: Diagonal fold taken halfway between the nipple and the upper portion of the pectoral (chest) muscle.

Abdomen: Vertical fold taken about 2 cm to the right of the navel (belly button).

Thigh: Vertical fold taken midway between the upper part of the knee and the hip joint.

Women

Triceps: A vertical fold at the midpoint level between the bony tip of the top of your shoulder and the elbow joint.

Suprailiac: Diagonal fold taken just above the iliac crest (hip bone) in the midaxillary line (armpit).

Thigh: a vertical fold taken midway between the upper part of the knee and the hip joint.

Skinfold measurements are added to an equation to estimate body density, which is then used to calculate body fat %. See Annex A.

Waist-Hip Ratio

The Waist-Hip Ratio is a simple and effective body composition and health risk assessment tool. It involves measuring waist and hip circumferences and estimating the ratio. Research indicates that WHR can predict health concerns.

According to the World Health Organization (WHO):

- For men, a WHR of 0.90 or below is considered low risk, 0.90 to 0.99 is moderate risk, and 1.0 or above is high risk.
- For women, a WHR of 0.80 or below is considered low risk, 0.80 to 0.84 is moderate risk, and 0.85 or above is high risk.

Steps to Measure and Calculate WHR:

In measuring, apply the right amount of pressure, not too tight or loose, and ensure the tape is straight and not twisted. If you do not have a soft and flexible table, you can use a string or yarn.

1. Measure Your Waist: (provide pictures)

Use a tape to measure around the narrowest part of your waist. Take the measurement when you've breathed out normally.

2. Measure Your Hips:

Use the tape to measure around the widest part of your hips and buttocks.

3. Calculate the WHR:

$$\text{WHR} = \frac{\text{Waist Circumference}}{\text{Hip Circumference}}$$

Divide the number you got for your waist by the number you got for your hips. This result is your Waist-Hip Ratio.

So, if your waist is 30 inches and your hips are 40 inches, your WHR would be $\text{WHR}: 30/40 = 0.75$

3.3 CARDIOVASCULAR ENDURANCE

Cardiovascular endurance, also known as aerobic endurance or cardiorespiratory fitness, refers to the ability of your heart, lungs, and blood vessels to supply oxygen and nutrients to your muscles during sustained physical activity (American College of Sports Medicine, 2018). Measuring cardiovascular endurance is important because it provides valuable information about your overall health and fitness level.

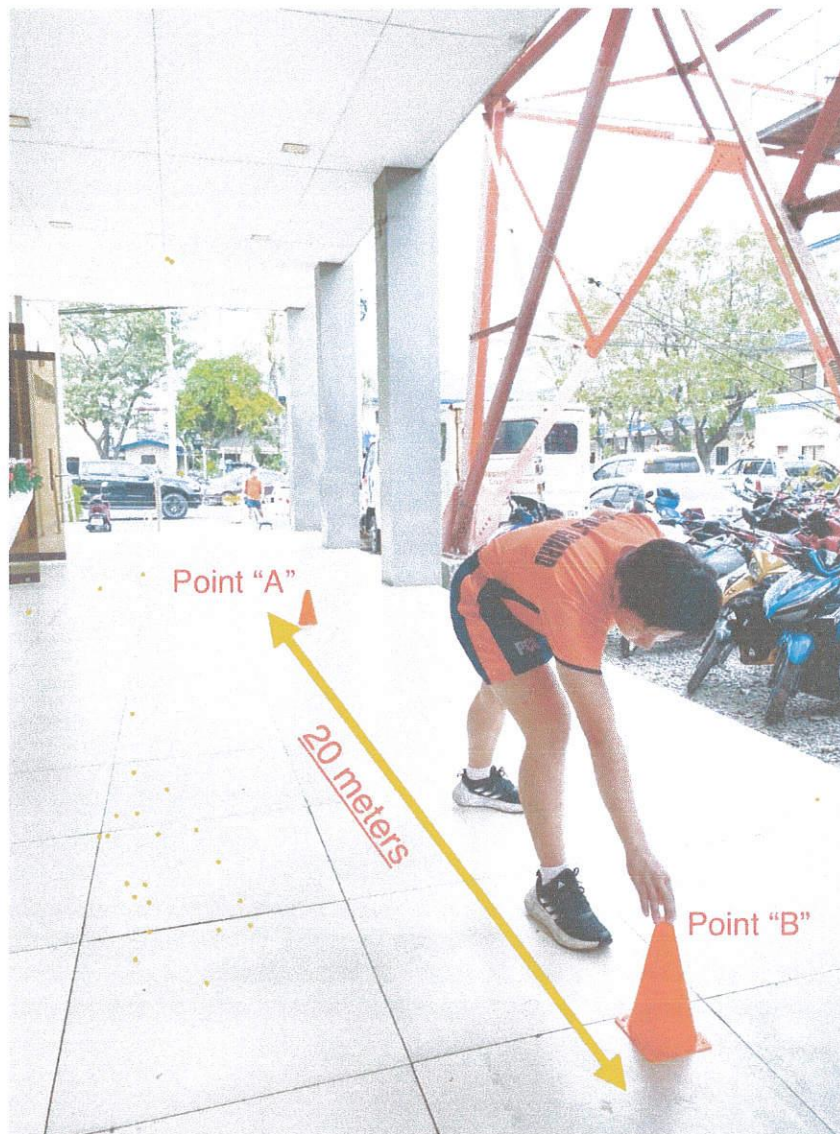
2.4 KM (1.5 mile) Run Test

Conducting a 2.4-kilometer (1.5-mile) run to assess your fitness level is a simple yet effective way to measure your cardiovascular endurance. Here's how you can do it:

1. Find a flat and measured route.
2. Warm up for 10-15 minutes with light jogging and stretching.
3. Use a timer or stopwatch.
4. Use an application (e.g., Strava) to have an accurate calculation of distance if a running track is not available
5. Start the timer and run at a comfortable pace.
6. Monitor your time as you run.
7. Stop the timer as you cross the 2.4-kilometer mark.
8. Record your finishing time.

BEEP TEST

The Beep Test is a running exercise where you go back and forth between two points 20 meters apart. You have to run at the same speed as the beeping sound you hear. It starts with a triple beep, and when you hear it, you run to the other point and back before the next beep. The speed gets faster as the test goes on, and each level lasts about a minute. When you hear the triple beep again, it means a new, faster level is starting



To conduct a beep test for self-assessment:

1. Find a flat, marked 20-meter (65.6-foot) distance.
2. Download or use a beep test app with pre-recorded beeps.
3. Begin at one end and run to the other when you hear a beep.
4. Continue running back and forth, matching the beeps.
5. If you miss a beep, stop and note the level reached.
6. Use a beep test chart to find your fitness level.
7. Set goals and track progress for future assessments.

FLEXIBILITY

Flexibility in the context of the human body and movement refers to the range of motion or the ability of joints and muscles to stretch and move freely without discomfort or restriction (American College of Sports Medicine, 2018; Kisner & Colby, 2017). Being flexible is essential for activities like sports, dancing, yoga, and just moving around daily. It helps you perform better, reduces the risk of getting hurt, and makes you feel healthier overall.

Sit and Reach

The sit and reach test measures the flexibility of the lower back and leg muscles. This test is crucial because tightness in these muscles can lead to issues such as lower back pain.

Materials Needed: A ruler or a specifically designed sit and reach box (optional)

Positioning: If you have a sit and reach box, put it near your feet. If not, use a ruler or tape measure placed on the floor between your legs.



Test Execution:

1. Sit on the floor with your legs straight in front of you. Keep your feet together and toes pointing up.
2. Reach forward slowly with your arms, keeping them straight and fingers extended.
3. Keep your knees straight, don't bend them.

2. Reach forward slowly with your arms, keeping them straight and fingers extended.
3. Keep your knees straight, don't bend them.
4. Slide your fingers along the ruler or sit and reach the box as far as you can without bouncing or



jerking.

5. Exhale while reaching.
6. Hold your farthest point for about 2 seconds with flat legs.
7. Note the measurement where your fingertips reach.
8. Do the test at least twice to ensure accuracy. A partner can help measure and record your best attempt.

Scoring: Your score is the distance your fingertips reach on the ruler or sit and reach box. Record the best result.

Back Scratch Test

The Back Scratch Test measures how well you can reach your hands behind your back. This test measures general shoulder flexibility.

Materials Needed:

- A ruler or measuring tape.

Steps:

- Start Position: Stand up straight with your feet shoulder-width apart.
- Hand Placement:

- Lift your right arm and bend it so your hand goes down your back with your fingers pointing down.
- At the same time, put your left arm behind your back, bend it too, and try to touch your right hand's fingers.
- Measurement:
 - Use a ruler or measuring tape to measure the space between your fingertips on both hands. If they touch, see how much they overlap.
 - Write down the measurement.
- Repeat:
 - Now, switch your arms. Lift your left arm and put your right arm behind your back.
 - Measure the space or overlap between your fingers again.
- Scoring:
 - Add up the measurements from both arms.
 - If your fingers overlap a lot or the space between them is small, your shoulders are flexible and healthy.

Try to touch your right hand's fingers with your left hand from above and below your back.

Measure the distance between your fingers or how much they overlap.

Switch arms and measure again.

A more considerable overlap or smaller distance means you're more flexible.

Precaution:

Stop the test if the subject experiences pain.

MUSCULAR STRENGTH AND ENDURANCE

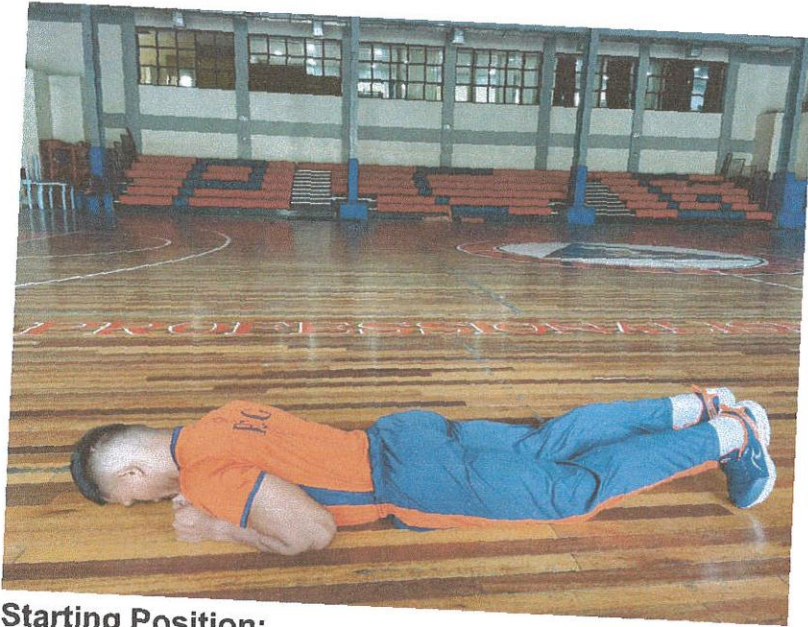
Muscular strength is the capacity to exert force against resistance, like lifting a heavy object. It measures how much weight or resistance you can handle for a short period.

Muscular endurance is your muscles' capacity to contract repeatedly or longer without fatigue. It's about how long your muscles can keep going without giving out.

Both are essential for daily life and well-being. Strength helps you lift, whereas endurance lets you do things for longer.

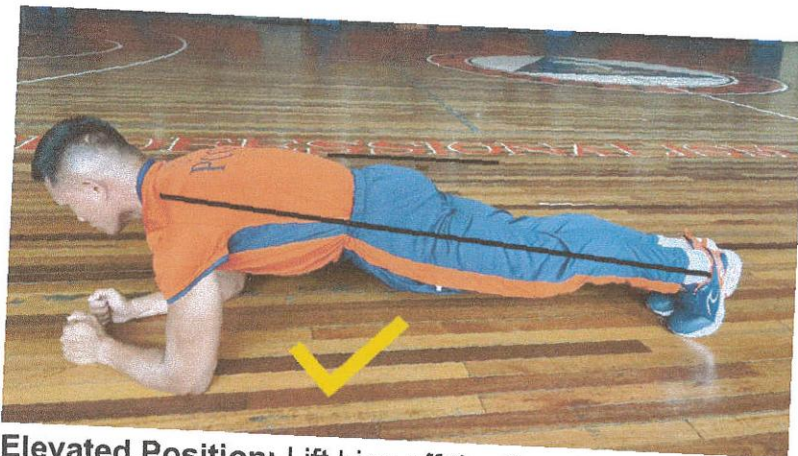
Plank Test

Objective: Holding the plank as long as you can. Plank Test is a straightforward way to assess core strength and stability.



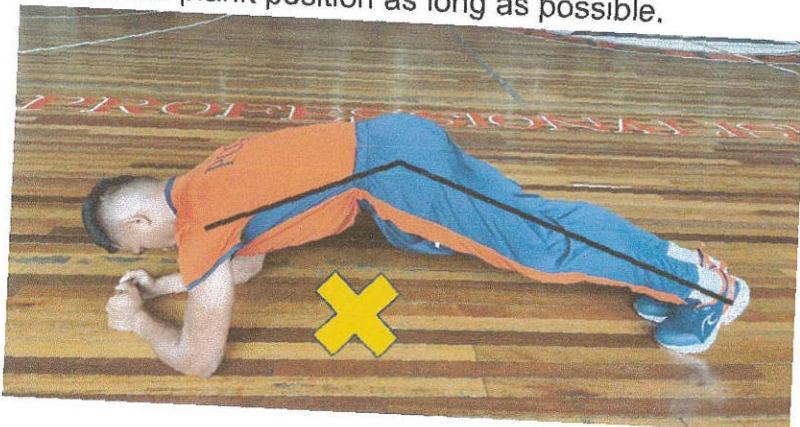
Starting Position:

Lie on the ground, elbows under shoulders, feet shoulder-width apart, weight on forearms and toes.



Elevated Position: Lift hips off the floor to create a straight line from head to toes, supported by elbows and forearms.

Maintaining Position: Keep form stable, look at the floor, engage core muscles, aim to hold the plank position as long as possible.



Squat Test

Equipment needed: A chair; a friend to help keep count and time you (optional).

Goal: Do as many squats as you can with no rest

Objective: The aim of this test is to complete the maximum number of squats within one minute. It's a way to assess your lower body strength and endurance

Starting Position: Stand in front of a chair, facing away from it. Stand with your feet shoulder-width apart and your toes pointing slightly outward. Keep your back straight, chest up, and look straight ahead.

Test Proper:

This test requires the testee to complete as many squats as possible with no rest.

1. Before starting, warm up for 10 minutes.
2. Stand in front of a chair, facing away from it.
3. Stand with your feet shoulder-width apart and your toes pointing slightly outward.
4. Keep your back straight, chest up, and look straight ahead.
5. Slowly lower your body by bending your knees and pushing your hips back, lightly touching the chair with their backside before standing back up.
6. Lower yourself until your thighs are parallel to the ground or as far as you comfortably can.
7. Keep your knees aligned with your feet; don't let them go past your toes.
8. Push through your heels to stand back up to the starting position.
9. Repeat the squat as many times as you can with proper form.
10. Count how many squats you can do before your form breaks down or you can't complete another one.



You may use a chair and when your glutes touch the chair, lift yourself back up.

1-Minute Push-up Test

Conducting a one-minute Push-Up Test involves the following steps:

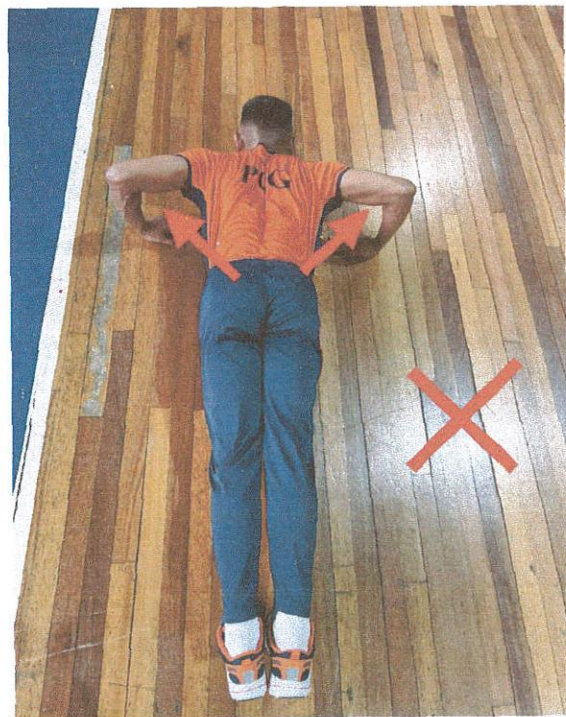
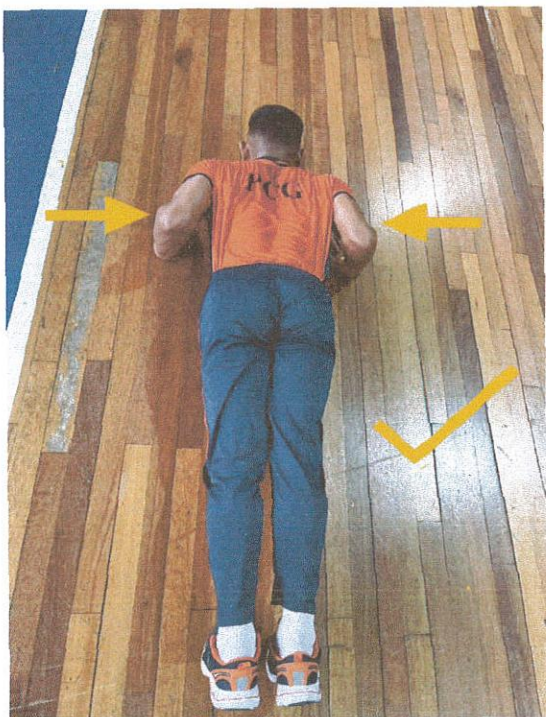
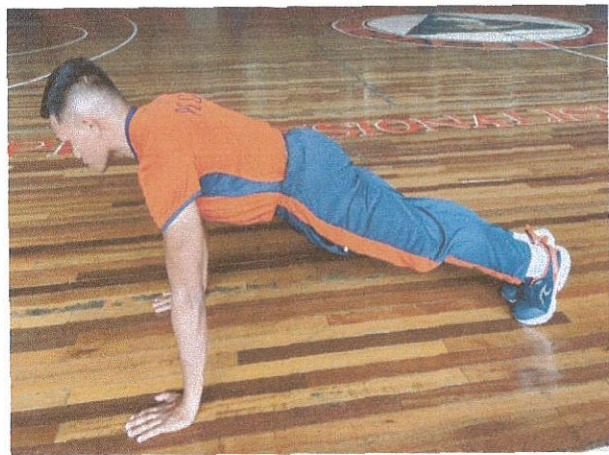
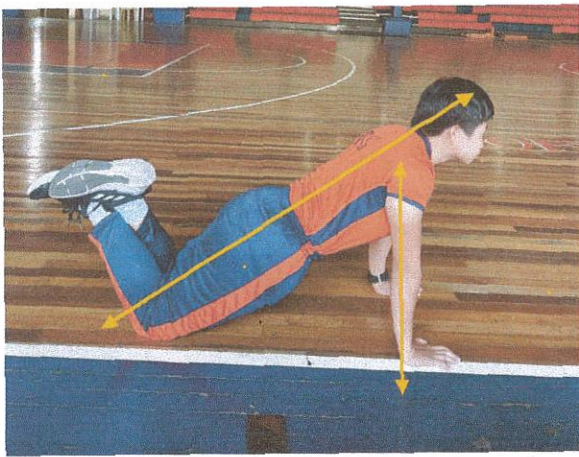
Equipment needed: A stopwatch or timer that can measure one full minute; a friend to help keep count and time you (optional).

Goal: Do as many push-ups as you can in one minute.

Objective: The aim of this test is to complete the maximum number of push-ups within one minute. It's a way to assess upper body strength and endurance.

- Men will assume a traditional push-up position
- females can use the modified push-up position (on knees)

Starting Position: Start in a plank position with your hands shoulder-width apart and palms flat on the ground. Keep your body in a straight line from head to heels, engaging your core muscles.



Execution: Start a timer for 1 minute. Lower your body by bending your elbows (keeping them close to your side) until your chest is about an inch from the ground, or your elbows form a 90-degree angle. The goal is to lower the chest toward

the floor while keeping it at a consistent level. Resting in the up position is allowed during the test. Count and record the number of push-ups completed in 1 minute.

CHAPTER III: PHYSICAL FITNESS TRAINING

Physical fitness training is a journey of self-improvement, vitality, and holistic well-being. It is the deliberate and disciplined effort to nurture the body's strength, endurance, flexibility, and overall health that offers a multitude of benefits. These activities, targeting key fitness aspects like strength, endurance, flexibility, and balance, significantly improve cardiovascular health by strengthening the heart and enhancing circulation, thereby reducing heart disease and stroke risks.

Physical Fitness Training also builds muscle strength and endurance, making everyday tasks more manageable and less tiring. Flexibility and balance, crucial for aging individuals, are improved through exercises like stretching and yoga. Additionally, physical fitness plays a vital role in weight management by burning calories and improving metabolic health.

The mental health benefits are notable as well; regular exercise reduces depression and anxiety symptoms, elevates mood, and improves sleep quality. It's linked to increased longevity, lowering the risk of various chronic diseases. Exercises that are weight-bearing or involve resistance strengthen bones, mitigating osteoporosis risk.

Furthermore, regular exercise boosts immune function, helping the body fend off infections and diseases. These advantages are widely endorsed by scientific research and health authorities like the American Heart Association and the CDC, emphasizing the significance of physical activity for both cardiovascular health and overall wellness. Studies in health journals also corroborate the mental health and weight management benefits of exercise, along with its role in preventing chronic diseases.

There are several types of physical fitness training, each targeting different aspects of health and fitness. Here are some of the primary types of physical fitness training

I.Types of Physical Fitness Training

Aerobic (Cardiovascular) Training

This type of training focuses on improving your cardiovascular endurance and involves activities that elevate your heart rate and increase your breathing. Incorporating aerobic training into a fitness routine is essential for overall health and well-being. Aerobic activity is a core component of fitness training programs. Cardiovascular exercise, like running or swimming, is great for your body: It gives you more energy, keeps your blood pressure in check, and helps control cholesterol. Plus, it helps you burn calories and stay at a healthy weight. If you have good cardiovascular endurance, you can exercise for a long time without feeling tired because your body can keep getting the oxygen it needs during the workout.

A.1 Types of Aerobic Training

Walking or Jogging: This aerobic exercise is straightforward to access. Individuals can adjust its intensity to match their fitness levels and perform it outdoors and indoors, such as on a treadmill.

Cycling: Whether using a stationary bike or a regular bicycle, cycling offers particular benefits to individuals with joint issues, as it promotes heart health without exerting excessive strain on the back, hips, knees, and ankles.

Cardio Equipment: Common types of cardiovascular exercise equipment, including rowing machines, stair climbers, ellipticals, and treadmills, enable individuals to perform repetitive motion exercises that increase heart rate.

Swimming: This low-impact activity involves using the arms and legs to propel oneself through the water. It proves to be a suitable choice for individuals experiencing joint discomfort since the buoyancy of water reduces stress on the joints. Open-water swimming typically provides a higher intensity level than pool swimming.

How to incorporate aerobic exercise into your program?

- Each of these workouts engages major muscle groups, raising heart rate and respiration, ultimately improving aerobic capacity and cardiovascular well-being.
- The best kind of cardio is any exercise you enjoy and will keep doing. It should involve big muscles, be rhythmic (no stop-and-start), and make your heart and lungs work hard.
- WHO recommends at least 150 to 300 minutes of moderate intensity activity total per week; 75 to 150 minutes vigorous intensity activity total per week
- You can start with 20 minutes per day done 3 times a week (total of 60 minutes a week) then gradually increase the frequency

How to Track Aerobic Training?

1. **Apps for Distance Tracking:** Use smartphone apps like Strava, Runkeeper, or MapMyRun to measure how far you run, walk, or cycle. These apps rely on GPS technology to track your route distance and app. They're great for outdoor activities where distance is essential.
2. **Watches for Duration:** Fitness and smartwatches like Garmin, Fitbit, or Apple Watch are handy for tracking how long you exercise. They often have timers and stopwatches and can also provide data like heart rate and calories burned. Tracking duration helps you stay consistent and gradually increase your workout time.
3. **Counting Rounds or Sets:** For structured workouts like circuit training or HIIT, keep track of the number of rounds or sets you complete. You can do this manually or with a timer or app. Counting helps ensure you're meeting workout intensity requirements and allows you to set goals for future workouts.

These methods give you insights into different aspects of your aerobic training. Distance tracking is for endurance, duration tracking maintains consistency, and counting rounds or sets ensures workout intensity. Combining these methods helps you see your progress and set achievable fitness goals.

How to progress?

1. **Faster Pace:** Start by increasing the speed of your current aerobic activity. For example, if you're walking, try to walk faster. This incrementally boosts your heart rate and endurance.
2. **Add Duration:** Extend the length of your workout sessions. If you're used to exercising for 30 minutes, try pushing it to 35 or 40 minutes. This helps your body adapt to longer periods of physical stress.
3. **Add More Rounds:** If your workout is structured in rounds or sets, increase their number. For instance, if you're doing three sets of a circuit, bump it up to four. This increases the overall volume of your workout.
4. **Add Incline and Other Challenges:** Introducing new challenges like inclines (if you're walking or running) or resistance (if you're cycling) can significantly enhance the intensity of your workout. These challenges force your muscles to work harder and improve your cardiovascular strength.
5. **Change the Activity Type:** Evolving your training by changing the type of aerobic activity can stimulate different muscle groups and prevent boredom. For example, you can progress from walking to brisk walking, then to jogging, and eventually to running. Each stage requires more effort and endurance, aiding in gradual improvement.

Remember, the key to effective progression in aerobic training is to make these changes gradually. This helps prevent injury and ensures a steady improvement in fitness levels. Also, it's essential to listen to your body and not push too hard too fast, as this can lead to burnout or injury.

B. Anaerobic Training

Anaerobic exercise is a type of physical fitness training that involves short intense bursts of physical activity with less demand of oxygen supply. These exercises are great to maintain and build muscle as well as lose body fat.

B.1 Types of Anaerobic Training

1. Sprint Training

Sprint training is a form of exercise designed to enhance your sprinting capabilities. It involves short, high-intensity running or sprinting at your maximum speed, incorporated with rest or recovery. Sprint training aims to increase speed, power, and anaerobic endurance.

Here are various types of sprint training exercises tailored to different fitness levels and goals. Explore these varieties and discover how to incorporate them into your fitness routine:

- a. **Sprint Interval Training:** An interval sprint is a sequence or pattern of alternating between running a high speed for a short duration, followed by slowing down or stopping to rest or recover. It is like running as fast as possible for a little while and then taking a break.

Sprint and recovery intervals can be customized to a specific distance or duration based on the individual's fitness level. Beginners should start with short sprints and longer rest periods and gradually increase the distance and time and shorter rests as they improve.

Example:

1. Sprint 100 meters, then walk or easy jog for 100 meters
2. Sprint at maximum effort for 20-30 seconds, then walk or jog slowly for 60-90 seconds
- b. **Fartlek training:** It is a form of interval training that is less structured and involves continuous running in which you alternate between faster and slower segments. This type of training is based on your perceived (according to feeling) effort, and the running pace can range from easy, slow jog to as fast as 80% of your maximum speed.

Fartlek Run Variation:

1. **Fartlek by Feeling:** This method involves adjusting your running speed based on how you feel during the run, making it intuitive and adaptable to your energy levels.
 2. **Landmark Fartlek:** Runners use visible landmarks as cues to change their pace, such as trees or lampposts, and these things tell you when to go faster or slower. For example, you run fast to reach the 1st lamppost, then jog or walk on to the next lamppost.
 3. **Music Fartlek:** The rhythm and tempo of music dictate running speed, with faster songs prompting faster running and slower songs leading to recovery periods.
 4. **Short Fartlek (Time-Based):** It includes alternating between high-intensity sprints and low-intensity recovery periods based on set time intervals, such as sprinting for 30 seconds and then recovering for a specific time.
 5. **Short Fartlek (Distance-Based):** In this variation, runners sprint for a defined distance and then follow it with a slower-paced recovery jog for a set distance, providing control over intensity based on distances covered.
- c. **Hill Sprints:** This is a type of sprint training to develop leg strength, cardiovascular fitness, and running speed. This workout involves sprinting up a moderately steep or steep hill at maximum effort in a short period. Then, you walk or jog downhill to recover before sprinting again. This cycle is repeated for multiple rounds.
- d. **Track Sprints:** A track sprint is a common form of sprint training used by athletes. Track sprints are short-distance running exercises, such as 100m, 200m, or 400m sprints, that emphasize explosive speed and power.
- e. **Shuttle Runs:** These involve sprinting to a point and then quickly changing direction to sprint back to the starting point. Shuttle runs improve agility, acceleration, and deceleration.

2) Resistance Training

Resistance training, known as strength training, is the use of resistance, such as dumbbells and bodyweight, to build muscular strength and power, and anaerobic endurance.

1. **Free Weights:** This traditional strength training routine involves using weights like dumbbells, barbells, and kettlebells. It helps you move your body more easily, improves your balance, and makes you better at coordinating your movements..
2. **Weight Machines:** These machines target specific muscle groups. They guide the user through a fixed motion path, making them particularly user-friendly for novices.
3. **Bodyweight Training:** This approach relies on one's own body weight to offer resistance. Common exercises include push-ups, pull-ups, squats, and lunges.
4. **Resistance Bands:** These stretchable elastic bands add resistance to workouts. Compact and versatile, they can be used in a variety of exercises to work different muscle areas.
5. **Isometric Resistance:** This method involves muscle contraction against an immovable object, like doing wall sits or holding a plank position. It's beneficial for boosting muscle stamina.
6. **Plyometric Training:** Often referred to as jump training, this technique uses explosive movements to enhance muscle power. Examples include box jumps and jump squats.
7. **Circuit Training:** This strategy merges multiple resistance exercises performed back-to-back with minimal rest. It's effective for both strength development and cardiovascular health.

Resistance training involves several key aspects:

1. **Overall Program:** This includes a mix of different exercise types like aerobic workouts, stretching, strength exercises, and balance activities.
2. **Weights/Resistance:** Different exercises use different kinds of resistance, such as hand weights, body weights, or resistance bands.
3. **Specific Exercises:** These are movements designed to strengthen certain muscles, like calf raises for the calves.
4. **Form:** Maintaining proper form is crucial to minimize the chances of getting injured.
5. **Repetitions (Reps):** This is the number of times you do an exercise in a row.
6. **Sets:** A set is a series of reps done without stopping. For example, doing 15 squats, resting, and then another 15 squats is two sets.
7. **Rest Periods:** You need to rest between sets. How long you rest depends on how intense the exercise is.
8. **Variety:** Changing up your routine by adding new exercises keeps your muscles challenged and growing.

9. **Progressive Overload:** To keep improving, you need to make exercises harder over time, like using heavier weights or doing more reps.
10. **Recovery:** Muscles need time to heal and get stronger after a workout. Usually, you should wait up to 48 hours before working the same muscle group again.

3) High-intensity interval Training (HIIT)

HIIT involves short periods of intensive activity followed by less strenuous exercise to recover. These workouts last 4–30 minutes. HIIT boosts fitness, blood sugar regulation, and fat burning.

HIIT sessions start with a warm-up, then intensive workouts for a short time, slow up to recover and end with a cool-down. The more challenging exercises should be done at nearly maximum effort, while the easier ones should be half as hard. The program may have three reps (repetitions) with 20 seconds of intense exercise in each phase.

Here's a sample of a HIIT workout:

1. Begin with a 5-minute warm-up, which can involve light jogging
2. Follow with 30 seconds of high-intensity exercise, such as burpees, jump squats, and squat thrust
3. Transition to a 1-minute recovery period involving high knees or jumping jacks
4. Repeat the high-intensity and recovery cycle, typically 4 to 6 times.
5. End the session with a 5-minute cool-down consisting of stretching or light walking.

To perform a HIIT workout, follow these steps:

1. Always start with a warm-up to reduce the risk of injury.
2. During high-intensity intervals, exert near-maximum effort.
3. Allow your body to recover during low-intensity breaks while maintaining movement.
4. Execute multiple rounds of high and low-intensity intervals.
5. Conclude with a cool-down phase to gradually return your heart rate to its normal state.

How to incorporate anaerobic exercise into your program?

The World Health Organization recommends anaerobic exercises for **people of all ages**. These exercises are crucial for maintaining muscle mass, especially as you age, and they play a significant role in overall health and well-being.

Training Frequency: To effectively engage in anaerobic training, it's recommended to target **each muscle group or movement pattern** at least twice a week. This ensures balanced muscle development and prevents overtraining any single muscle group.

Starting as a Beginner: Beginners should aim for 8 to 12 repetitions per set. This range promotes both strength and muscle endurance.

Workout Structure: A typical anaerobic workout session should include 2 to 4 sets of each exercise, with each session repeated **2 to 3 times a week**. This frequency *allows for sufficient muscle recovery* while still promoting strength gains.

Tracking Progress: Keeping a workout log, either in a notebook or a smartphone app, is an effective way to track progress. It helps you stay committed and see how you're improving over time.

Progressive Overload: To keep progressing, increase workout intensity frequently; this might involve increased weight, repetitions, or challenging workouts. Progressive loading is essential to anaerobic training development.

By incorporating anaerobic exercises into your fitness routine, you can enjoy significant improvements in muscle strength, tone, and overall physical health. Remember to start slowly, focus on proper form, and gradually increase the intensity of your workouts for the best results.

CHAPTER IV: NUTRITION

Nutrition plays a vital role in our health: A balanced diet, including essential macronutrients and micronutrients, can improve endurance, muscle strength, and overall physical ability. Poor dietary choices, characterized by excessive caloric intake from processed and high-sugar foods, are often linked to obesity. On the other hand, a diet focused on whole foods, balanced in carbohydrates, proteins, and healthy fats, can aid in managing and reducing obesity, thereby improving physical fitness. Scientific literature documents the interplay between diet, exercise, and overall health extensively. Swift et al. (2014) highlight this relationship in a study published in the "Journal of the Academy of Nutrition and Dietetics."

Optimal nutrition is necessary for maintaining a healthy and prolonged life. It goes beyond satisfying hunger and involves selecting foods that are both pleasurable and beneficial for one's health. While many people follow quick-fix diets, commonly known as "fad diets," proper health and physical strength, require a comprehensive approach that includes rigorous training and a diet tailored to meet specific caloric needs. Eating well entails selecting the suitable types and amounts of food at the correct times to improve athletic performance. Food's primary role is to facilitate effective body functioning, and poor dietary choices can result in health issues and manifest in body weight.

Consistently exercising and maintaining a well-balanced diet have been proven to significantly improve overall health. Physical activity boosts heart health, helps regulate blood sugar, and builds muscle, while a healthy diet provides essential nutrients and energy to support these physical improvements. Eating healthy and exercising regularly can be really important for preventing and managing health issues such as type 2 diabetes and heart problems. Additionally, it contributes to improved mental health by reducing symptoms of depression and anxiety. Therefore, maintaining a balanced diet and staying physically active is imperative, not just for combatting obesity and achieving physical fitness but also for preserving long-term health and overall well-being.

I. Obesity in the Philippines

The Philippines is facing pressing health concerns related to maintaining a healthy weight and consuming nutritious foods, which is having a significant impact on people's well-being and the healthcare system. These issues reflect global trends, with many Filipinos becoming overweight due to urban living, changes in eating habits, and a lack of physical activity. In 2019, nearly 1 in 5 Filipino adults, particularly women, were overweight, and almost 3 in 10 children were experiencing excess weight gain. A lack of physical activity is among the main contributors to these health problems, contributing to conditions such as heart disease and diabetes. To combat this, it is crucial to promote activities like walking, running, and sports to maintain fitness and improve overall health.

Proper nutrition is another essential aspect of maintaining good health and avoiding excessive weight gain. While some Filipinos lack access to nutritious foods, others consume too many unhealthy options. The government and various organizations are working to provide healthy food in schools and educate people about good nutrition. The Philippine government is actively taking measures to address obesity and promote healthy eating habits. Campaigns like "Pinggang Pinoy" promote balanced meals and portion control, while the annual "Nutrition Month" campaign educates people about making healthy food choices.

In summary, the Philippines faces significant challenges related to weight management, fitness maintenance, and healthy eating habits. Addressing these issues requires a range of solutions, including enacting laws, providing education, and fostering community support. These efforts are crucial to help Filipinos maintain good health and reduce the burden on the healthcare system.

II. Obesity and Overweight

Body composition means looking at what makes up your body, like fat, bones, and muscles. Doctors and health experts use it to check if you're in a healthy weight range based on your unique body. Our bodies are composed of various things like water, protein, fat, and minerals. When it comes to fat, there are two types:

- a. **Essential fat (non-fat mass):** This kind of fat is in important places like your bones, liver, kidneys, intestines, and muscles which is necessary for your body to function.
- b. **Stored fat (fat mass):** This type of fat is stored in your adipose tissue. Your body uses it as a source of energy, and it also acts like insulation and padding, protecting your organs. It's the fat you can feel just under your skin.

Therefore, even if two people seem the same height and weight, their body compositions might be different. One person might have more fat and less muscle, and that can affect their health differently.

Excessive stored fat leads to obesity and being overweight which can be harmful to your health. Overweight and obesity can severely impact your health and well-being. It occurs when you consume more calories than your body needs for energy, leading to an "energy imbalance" that results in storing extra calories as fat. Food provides energy for immediate use and reserves some as glycogen or fat for later use.

III. Energy Imbalance

Energy imbalance refers to the difference between the calories you consume from foods and drinks and the calories your body uses up. This difference is significant for controlling your weight and staying healthy. Here are the key aspects:

A. Caloric Consumption vs. Expenditure

Calorie intake refers to the total amount of calories that an individual consumes through food and beverages on a daily basis. It signifies the calorific value of the food items that are ingested by the body, and is a crucial factor in determining an individual's overall energy balance.

Calorie expenditure represents the amount of energy that the body expends in a day, primarily through physical activity such as exercise, as well as through basal metabolic processes such as breathing and digestion.

This interplay between calorie intake and expenditure is critical in maintaining a healthy body weight and preventing various metabolic disorders. This balance affects weight, health, and well-being.

How to calculate daily calorie intake?

You can estimate your daily caloric intake by using various online calculators or apps. One commonly used method is the Harris-Benedict Equation, which calculates your Basal Metabolic Rate (BMR) and then applies an activity factor to it. Here's the formula:

- For men: $BMR = 88.362 + (13.397 \times \text{weight in kg}) + (4.799 \times \text{height in cm}) - (5.677 \times \text{age in years})$
- For women: $BMR = 447.593 + (9.247 \times \text{weight in kg}) + (3.098 \times \text{height in cm}) - (4.330 \times \text{age in years})$

Basal Metabolic Rate (BMR) is the number of calories your body uses to stay alive when you're not moving or doing anything; it is the energy your body needs just to keep your heart beating, breathe, and do essential functions if you were in bed all day without moving.

Once you have your BMR, you can multiply it by an activity factor to estimate your daily caloric needs. Here are some common activity factors:

- Sedentary (little or no exercise): $BMR \times 1.2$
- Lightly active (light exercise or sports 1-3 days a week): $BMR \times 1.375$
- Moderately active (moderate exercise or sports 3-5 days a week): $BMR \times 1.55$
- Very active (hard exercise or sports 6-7 days a week): $BMR \times 1.725$
- Super active (very hard exercise or a physical job & exercise): $BMR \times 1.9$
- You can find various online calculators that use these formulas to give you an estimate of your daily caloric intake.

The result will be you ***estimated daily calorie intake***

B. Positive and Negative Energy Balance

Positive and negative energy balance refers to the relationship between the amount of calories a person consumes and the amount they expend through various activities and bodily functions.

Positive Energy Balance occurs when you consume more calories than your body burns, leading to excess calories being stored as fat.

Negative Energy Balance happens when you burn more calories than you consume, resulting in weight loss as your body uses stored energy (fat) for fuel.

The Concept of Energy Balance

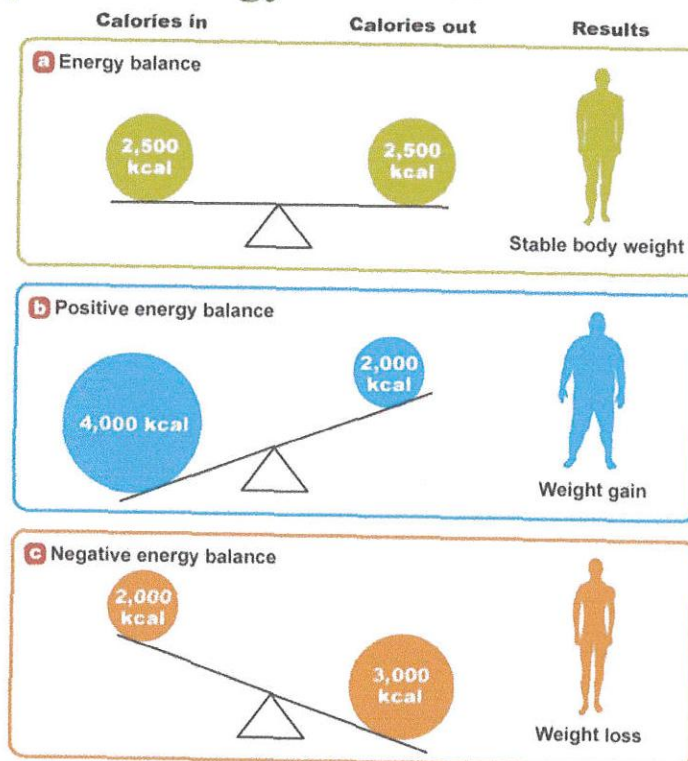


Figure 14.1

The following are several factors can contribute to overweight and obesity, including:

A. **Lack of Physical Activity:** A sedentary lifestyle, combined with excessive screen time, can result in a higher BMI. Adults should strive for at least 150 minutes of weekly aerobic exercise and regular muscle-strengthening workouts. Children need 60 minutes of daily aerobic activity.

B. **Unhealthy Eating Behaviors:** Consuming too many calories for age, sex, and activity level can contribute to weight gain. Being mindful of calorie intake, limiting saturated fat to 10% of daily calories, and keeping added sugar intake below 10% of daily calories can help.

C. **Inadequate Sleep:** Poor sleep quality or insufficient sleep (less than 7 hours per night) can disrupt hormones that control hunger, leading to overeating and weight gain.

D. **High Stress Levels:** Stress activates hormone changes in the body, releasing cortisol, which can heighten appetite and encourage the storage of fat, such as metabolic syndrome and polycystic ovary syndrome, to control weight gain.

E. **Genetics:** Genetics influence body weight, and some individuals may have a genetic tendency to be overweight. Nevertheless, making healthy lifestyle changes can still lower the risk.

F. **Medications:** Certain medications, like antidepressants, antipsychotics, and insulin, can induce weight gain by altering hunger signals. It's crucial for individuals to discuss weight-related side effects with their healthcare provider.

G. **Environment:** Your habits are influenced by your surroundings. Having access to healthy options and exercise areas can be beneficial. Obesity can result from consuming fast food and engaging in limited physical activity. Being aware empowers you to make choices for a healthier life. To avoid obesity, take control of your well-being.

IV. Healthy Diet for Healthy Body

Though calorie intake is essential for weight control, the nutritional value of those calories also plays a crucial role, too. Focusing on whole, healthy foods, including lean proteins, good fats, and complex carbohydrates, can help you manage your weight and promote overall health. It's not just about eating less; it's about making better food choices. When it comes to weight control and health, the number of calories you consume does matter. If you eat more calories than your body burns, you'll gain weight, and if you eat fewer calories, you'll lose weight. However, the type of calories you eat, where you get them from, and when you eat them can also have an impact.

The Institute of Medicine of the National Academies suggests the following acceptable macronutrient distribution ranges (AMDR) for individuals:

Carbohydrates should constitute 45–65% of their calorie intake.

Fats should account for 20–35% of their calorie intake.

Proteins should make up 10–35% of their calorie intake

In addition, WHO recommends that adults consume at **least 400 grams** of vegetables and fruits and **25 grams** of naturally occurring **dietary fibre per day**.

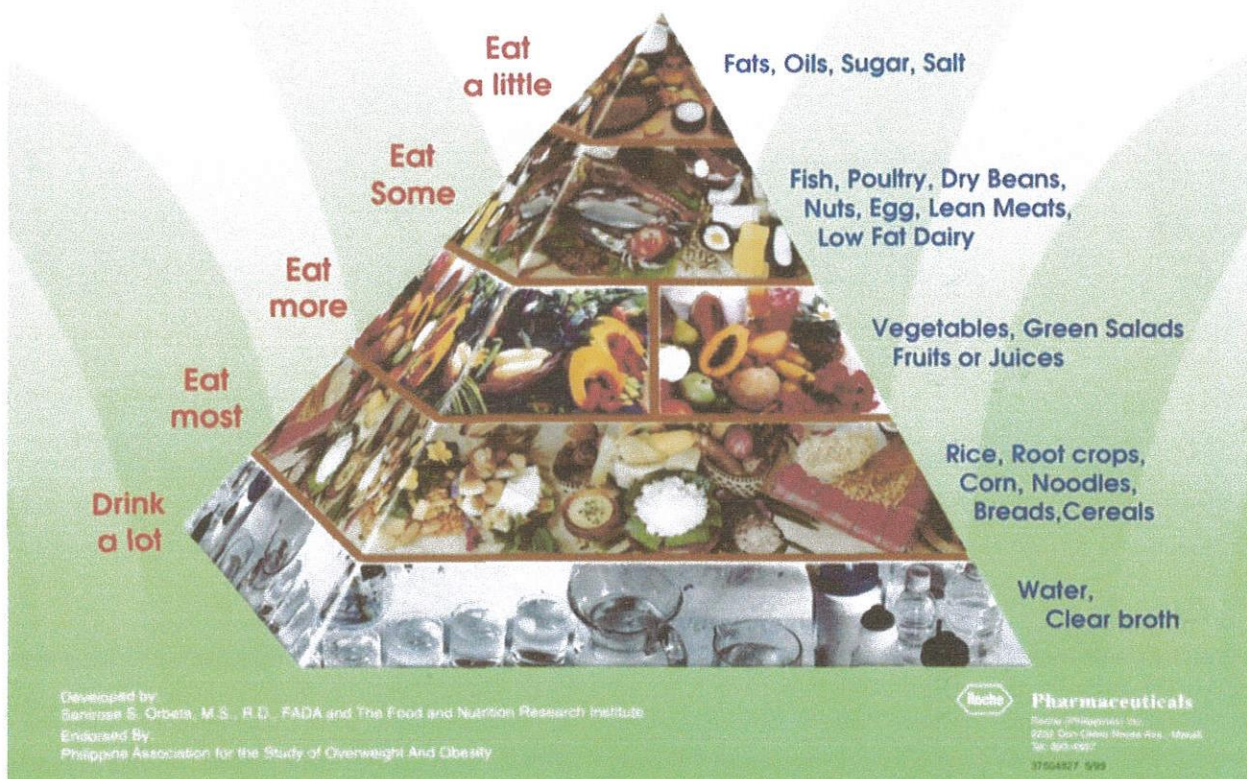
Dietary Fat: The type of fat matters more than the amount. Fats that are good for your health, such as monounsaturated and polyunsaturated fats, are a preferable choice compared to unhealthy fats like trans fats and saturated fats. Opt for essential fatty acids like omega-3 (fatty fish, avocados) over omega-6 (vegetable oils). Prioritize food quality and source when choosing macronutrients.

Protein: High-protein foods are crucial for muscle growth and various bodily functions; they promote weight management, blood sugar control, cognitive function, and nutrient absorption. Opt for lean meats, nuts, seeds, and beans, and avoid red and processed meats as it is less healthy.

Carbohydrates: The quality of carbohydrates is crucial. Refined grains, sugary drinks, and high-glycemic foods like white bread and white rice can lead to weight gain and health issues. Instead, opt for whole grains sourced from vegetables, fruits, beans, and minimally processed starches to promote better health and avoid the pitfalls of processed high-glycemic carbohydrates.

THE FILIPINO PYRAMID FOOD GUIDE FOR TODAY'S LIFE STYLE

Your Daily Eating Choices



Tips for healthy eating?

1. **Balanced Eating:** Eat the right amount of food for your body. If you overeat, you'll gain weight, and if you eat too little, you'll lose weight. Using the formula of *Daily Calorie Intake*, you can determine how many calories you are going to intake whether you want to lose or gain fat.
2. **Carbs Are Important:** About one-third of your food should come from starchy carbohydrates like potatoes, bread, rice, and pasta. Go for whole grain versions, as they keep you full for longer.

3. **Fruits and Veggies:** Incorporate at least 5 portions of fruits and vegetables in your meal. You can have them fresh, frozen, canned, dried, or as juice. A portion is about the size of your hand.
4. **Fish is Good:** Eat fish at least twice a week, including oily fish like salmon and mackerel, which are rich in healthy fats called omega-3s.
5. **Watch Fat and Sugar:** Cut down on foods high in saturated fat, like butter and cream. Also, be mindful of added sugars in things like sugary drinks, sweets, and cakes. Check food labels for sugar content.
6. **Sugar-Sweetened Beverages:** Drinks with added sugars, such as sodas, increase the risk of weight gain, obesity, and diabetes. They are not filling, leading to excess calorie consumption. Reducing sugary drink intake can lead to weight loss.
7. **Fruit Juice:** Even 100% fruit juice is high in sugar and calories, similar to sugary sodas. Excessive fruit juice consumption can contribute to weight gain, so it's wise to limit intake.
8. **Alcohol:** Moderate drinking doesn't necessarily cause weight gain. In some cases, moderate drinkers may gain less weight than nondrinkers, but the relationship varies depending on the type of alcohol consumed.
9. **Less Salt:** Too much salt can raise your blood pressure. Try not to have more than 6 grams of salt a day, which is about a teaspoon.
10. **Stay Active:** Regular exercise is essential for your overall health. Try to be physically active regularly, like walking or cycling.
11. **Stay Hydrated:** Drink plenty of fluids, mainly water. Avoid sugary drinks, and limit fruit juice to a small glass a day.
12. **Don't Skip Meals:** Skipping meals can slow metabolism, reduce energy, and lead to overeating, making weight management difficult.

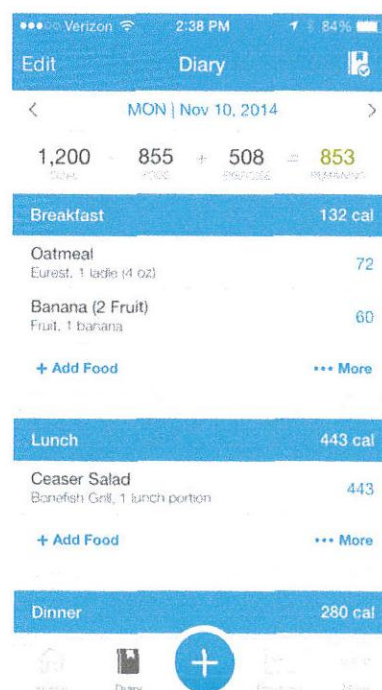
V. WEIGHT LOSS vs. FAT LOSS

Weight loss refers to a decrease in your overall body weight from muscle, water, and fat losses, while **Fat loss** refers to weight loss from fat, and it's a more specific and healthful goal than weight loss. (Van De Walle, 2021).

If you are trying to lose weight, aim and prioritize fat loss over quick weight loss programs to avoid losing muscle and water weight. Preserving muscle is essential for health, as it helps control blood sugar, maintains healthy cholesterol levels, and reduces inflammation.

Tips for Fat Loss

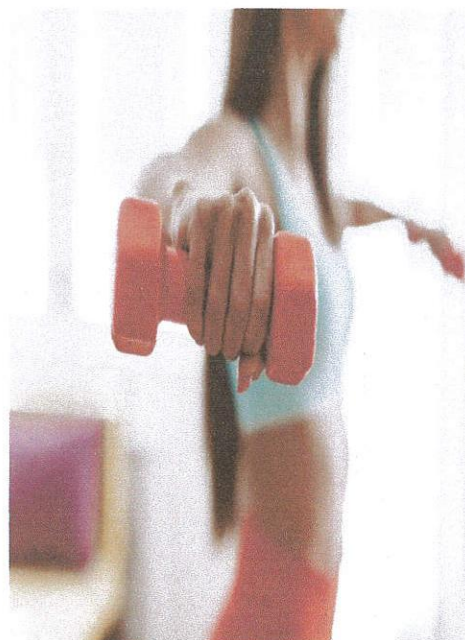
- Monitor your calorie consumption with the use of applications such as MyFitnessPal
- It is advisable to target a weekly weight loss of 1 to 2 pounds (equivalent to 0.5 to 1 kilogram)



- Reduce calorie intake by approximately 500-600 calories a day
- Increase your daily physical activity and aim for regular exercise.
- Incorporate low-fat and low-carb diets
- Drink (unsweetened) coffee
- Choose lean protein sources like poultry, fish, and beans.
- Limit sugary drinks and high-calorie snacks.
- Avoid excessive consumption of processed and fast foods.
- Stay hydrated by drinking plenty of water.

Tips for Weight Gain

- Increase calorie intake by approximately 500-600 calories a day
- Aim for a weekly goal of increasing your body weight by 0.25–0.5%
- Opt for nutrient-dense, calorie-rich foods.
- Add healthy fats to your diet, such as avocados, nuts, and olive oil.
- Include protein-rich foods like lean meats, fish, eggs, and dairy.
- Eat more frequent, balanced meals and snacks throughout the day.
- Focus on strength training exercises to build muscle mass.
- Make gradual adjustments to your calorie intake to ensure steady progress towards your target.



VI. HOW TO MAKE A MEAL PLAN

Step 1: Calculate your BMR

BMR	
MALE	FEMALE
$\text{BMR} = 88.362 + (13.397 \times \text{weight in kg}) + (4.799 \times \text{height in cm}) - (5.677 \times \text{age in years})$	$\text{BMR} = 447.593 + (9.247 \times \text{weight in kg}) + (3.098 \times \text{height in cm}) - (4.330 \times \text{age in years})$

Example

AGE	25
GENDER	MALE
HEIGHT (centimeters)	166

WEIGHT (kilograms)	70
PHYSICAL ACTIVITY	Lightly active

Computation:

$$= 88.362 + (13.397 \times \text{weight in kg}) + (4.799 \times \text{height in cm}) - (5.677 \times \text{age in years})$$

$$= 88.362 + (13.397 \times 70 \text{ kg}) + (4.799 \times 166 \text{ cm}) - (5.677 \times 25)$$

$$= 88.362 + 937.79 + 796.634 - 141.925$$

$$= 1,822.786 - 141.925$$

$$= 1680.861$$

BMR=1681

Step 2: Compute your Total Daily Energy Expenditure (TDEE)

Total Daily Energy Expenditure (TDEE) is an estimate of the daily calories you burn, accounting for physical activity and exercise. Once you've calculated your BMR, the next step is to factor in the calories burned through your daily activities based on your lifestyle.

Sedentary (little or no exercise):	BMR x 1.2
Lightly active (light exercise or sports 1-3 days a week):	BMR x 1.375
Moderately active (moderate exercise or sports 3-5 days a week):	BMR x 1.55
Very active (hard exercise or sports 6-7 days a week):	BMR x 1.725
Super active (very hard exercise or a physical job & exercise):	BMR x 1.9

Computation:

Since the subject A exercises 1-3 days a week, he is classified in Lightly active. We will be using BMR x 1.375

Subject A BMR is 1681

$$\text{BMR} \times 1.375$$

$$= 1681 \times 1.375$$

$$\text{TDEE} = 2,311.375$$

This final number provides you with an estimate of the daily calorie requirement needed to maintain your current weight.

Subject A's TDEE is 2311 calories. To stay the same weight, he should eat the same amount. If he wants to lose fat, he should eat 500 calories less, and if he wants to gain weight, he should eat 500 calories more each day.

CHAPTER V: GUIDELINES TO START A TRAINING PROGRAM

Starting a training program is crucial to reaching your fitness goals. Following standards throughout your fitness journey ensure safety and efficiency, regardless of your level of experience. Below are some essential steps and guidelines to contemplate when starting a training program:

1. Assessment of your Health and Fitness Level

Before starting any training program, it's vital to assess your current health and fitness level. In Chapter 1: Assessing Fitness level, various tests will help to determine your fitness level, enabling you to identify limitations, set realistic goals, address weaknesses, and prevent injuries.

2. Set Clear and Realistic Goals

To improve your fitness, it's essential to define specific goals that are tailored to your needs. Whether you want to lose weight, gain muscle, improve your cardiovascular health, or boost your overall well-being, it's crucial to set SMART goals that are specific, measurable, achievable, relevant, and time-bound.

SMART Goals

- **Specific:** Goals must be precisely defined, making them easy to understand and track. Clarity is essential for gauging achievement. For example, "I want to lose 5kg" is better than a vague goal like "I want to lose weight."
- **Measurable:** Fitness goals should be quantifiable to monitor progress effectively. Instead of saying, "I want to jog more," state, "I will jog for 15 minutes five days a week." Measurable goals offer a clear path to success.
- **Attainable/Achievable:** Goals should strike a balance between being challenging and realistic. Unrealistic goals can lead to discouragement. Consider factors like resources and capabilities when setting fitness goals, like "I will lose 4kg in 4 weeks by exercising 3-5 days a week."
- **Relevant and Realistic:** Goals should align with your interests and needs, making them meaningful and motivating. Ensure they make sense for you and are achievable. For instance, if your goal is to run 10km, focusing on resistance training in a short timeframe may be irrelevant.
- **Time-bound:** Set a specific timeframe for achieving your goal, creating a sense of urgency. A deadline keeps you focused and motivated. For example, "I want to lose 3 kilograms in one month by doing body workouts 3 times a week." Having a timeframe helps with planning and commitment.

Type: The specific exercises or activities you should do. It could be cardio, strength training, flexibility exercises, or sports. Choose types that match your goals and what you enjoy.

6. Implement the Plan and Progress Gradually

Begin your training program based on your personal plan and goals. Stay committed and progress gradually; gradually increase the duration and intensity of your workouts to prevent injury and achieve optimal results. Incorporate a variety of exercises, such as cardiovascular and strength training, to target different aspects of your overall fitness.

7. Proper Technique and Form

Using good workout routines is essential for several reasons. Prevention of muscular, joint, and ligament injuries is its primary goal. This allows safe exercising without damage. The correct technique also ensures that you're targeting the proper muscles so you get more out of your workout time. It helps your body stay balanced, preventing posture difficulties and chronic pain. For best results, perform exercises correctly, whether your fitness goals are strength, endurance, or flexibility. Starting with excellent exercise habits early on helps you prevent poor habits that are hard to overcome and creates a sustainable and pleasurable fitness path.

8. Nutrition and Hydration

To support your training goals, focus on eating good foods with lots of nutrients like proteins, carbs, healthy fats, vitamins, and minerals. Don't just count calories. Also, make sure to drink enough water before, during, and after your workouts to stay hydrated. This helps your body work well and recover properly. A balanced diet and hydration are essential for your fitness and health.

9. Monitor Progress

Keeping track of your fitness journey is vital to staying motivated and reaching your goals. You should regularly write down your workouts, what you eat, and any changes in your body or how you perform. Also, measuring things like your strength and size from time to time helps you understand how well your fitness routine is working. This way, you can make changes if needed and stay focused on your goals. This makes your fitness journey more successful and satisfying.

10. Rest and Recovery

Rest and recovery are essential in training. After tough workouts, your muscles get tiny tears. Rest days help them heal and grow stronger. Without rest, you won't make progress and could get tired, perform poorly, and even get hurt. So, take rest days to stay healthy, improve, and avoid problems. Overtraining can lead to burnout and injuries. Incorporate rest days into your training schedule.

11. **Reflect and Learn**

Stay dedicated and cautious in your fitness program. Listen to your body, stop if you feel pain or discomfort to avoid injuries. Reflect on your progress to improve your workouts and understand your body better for better overall well-being; This helps in understanding what works and what doesn't.

12. **Reward yourself**

A fitness program with rewards can boost motivation. You set goals, like losing weight or getting stronger, and reward yourself when you achieve them. Rewards should be fun and not interfere with your goals, such as giving yourself a cheat meal. This approach makes fitness more fulfilling and lasting.

WELL-ROUNDED WORKOUT ROUTINE

A workout routine consists of three essential parts: (1) Warm-up, (2) Activity, and (3) Cool-down. Each of these components serves its own purpose and is combined to achieve the desired training effect.

I. Warm up and Muscle Activation

A good workout begins with a proper warm-up and muscle activation, regardless of your training type. While stretching can be part of a warm-up, it's not the entire warm-up. Recent research indicates that static stretching may be more effective when done separately from the warm-up and closer to the end of your workout. A well-rounded warm-up consists of various elements that not only prevent injuries but also prepare your body for exercise.

1. **General Warm-Up:** Begin with light activities like walking, jogging, or easy aerobics to raise your heart rate and get a light sweat going, this should typically last for 5 to 10 minutes. This helps increase blood flow and muscle temperature.
2. **Static Stretching:** Perform short-hold stretches for 10-15 seconds for major muscle groups. This improves flexibility but should be done early in the warm-up to prevent adverse effects on performance.
3. **Sport-Specific Warm-Up:** Prepare for your specific sport with more vigorous activities that mimic the movements you'll use during the training. Include sports-specific drills and technical exercises.
4. **Dynamic Stretching:** Finish with controlled dynamic stretches that involve gentle bouncing or swinging movements; this should be performed for about 5 to 10 minutes. These stretches should be specific to your sport and help you reach your physical and mental peak.
5. **Muscle Activation:** Exercises are essential for warming up, improving performance, and injury prevention. They involve controlled movements targeting specific muscles, enhancing strength and

explosiveness. These exercises are a valuable addition to your warm-up routine and may involve minimal equipment. Using a stretchy band for resistance can be beneficial, but choosing the right tension is vital for optimal results in your fitness program.

II. Activity

In creating a safe and effective workout program, you should actively incorporate three key components in your main activity : **aerobic exercises, resistance training, and flexibility exercises**. Aim to engage in 30-45 minutes of aerobic exercise on 3-6 days a week, ensuring you include one recovery day. Conduct resistance training three days a week, targeting major muscle groups and gradually intensifying your workouts. Following both aerobic and resistance training sessions, actively dedicate time to flexibility exercises to enhance your range of motion. To prevent overuse injuries and promote overall well-being, actively vary your exercises regularly.

Overload: To improve fitness, you must apply additional stress to your body, leading to long-term adaptations. Achieve overload through the FITT principle: increasing Frequency, Intensity, Time, or Type of exercise.

Specificity: Tailor your training to align with your sport or fitness goals. Focus on the energy system and skills relevant to your activity, identifying strengths and weaknesses for performance improvement.

FITT Principle: To ensure ongoing adaptation, modify training variables like frequency, intensity, time, and type. These adjustments create an environment for progressive overload by changing the level of physical stress.

Reversibility: If you stop training or reduce your training volume, you can lose the gains you've made. Overtraining, however, should be avoided through appropriate rest and recovery.

Variance: Introduce variety into your training routine to keep it engaging and challenge different muscle groups. Switch up exercises, incorporate circuits, or try different activities to maintain interest and progress.

Rest, Recovery & Periodization: Appropriate rest and recovery are crucial to control the amount of stress on the body. Periodization involves systematically dividing training into blocks to optimize recovery and prevent overexertion.

III. Cool Down

Cooling down after exercise helps your heart rate and blood pressure return to normal gradually. Cooling down supports recovery after a workout and reduces soreness. To cool down:

1. Do easy exercise for five to 10 minutes at the end of your workout.
2. Try activities like walking
3. Finish with some static stretches, which are best done when your body is warm.

Sample Whole Body Workout Session

	Exercise	Repetitions/Duration	Set
WARM UP	Jumping Jacks	20	2
	Stationary jog	1 minute	2
	Plank Walk Out	10	2
	Squats	10	2
	High Knees	20	2
STRETCHING	Stretching of your preference (5-10 minutes)		
ACTIVITY	Push-ups	8	3
	Jump Squats	8	3
	Triceps Dips	8	3
	Lunges	8	3
	Dead Hang	30 seconds	3
	Planks	30 seconds	3
	Russian Twists	20	3
COOL DOWN	Walk	5 minutes	
	Child's Pose	10	
	Wall Calf Stretch	30 seconds each side	
	Quad stretch	15 seconds/leg	

Point for Beginners: Begin with three sets of 8-12 repetitions. To Progress:

...feels too easy, do more repetitions or exercise for a longer time.

...harder by adding weights or trying different exercises that work the ...les.

...increase the number of repetitions you do to challenge yourself

Sample Workout Plan

Goal: To lose 3kg and Run 3-km by the end of the month

Subject A's 1-month Workout Plan						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Strength Training (Whole Body)	Rest	Aerobic Training (Run for 10 mins)	Rest	Strength Training (Whole Body)	Flexibility Training (Active Rest)	Aerobic Training (Run for 1 Km)
Strength Training (Upper Body)	Aerobic Training (Run for 15 mins)	Rest	Strength Training (Lower Body)	Core Training	Aerobic Training (Run for 1.5-km)	Flexibility Training
Morning: Aerobic Training (Run for 20 mins) Evening: Strength Training (Upper Body)	Flexibility Training (Active Rest)	Morning: Core Training Evening: Strength Training (Lower Body)	Rest	Morning: Aerobic Training (Run for 2.5-km) Evening: Strength Training (Upper Body)	Flexibility Training (Active Rest)	Morning: Core Training Evening: Strength Training (Lower Body)
Morning: Aerobic Training (Run for 25 mins) Evening: Strength Training (Upper Body)	Flexibility Training (Active Rest)	Morning: Core Training Evening: Strength Training (Lower Body)	Rest	Morning: Aerobic Training (Run for 3-km) Evening: Strength Training (Upper Body)	Flexibility Training (Active Rest)	Morning: Core Training Evening: Strength Training (Lower Body)

Important Points to Remember:

- Avoid exercising the same muscle group on consecutive days to allow for recovery.
- To progress in aerobic training, increase distance, time, or speed gradually.

- Ensure you give your body enough rest to recover between workouts.
- Incorporate core training and flexibility exercises to enhance overall strength, mobility, and prevent injuries.

CHAPTER VI: SELF-MONITORING

Keeping track of your eating and activity is important whether you want to lose or gain weight. It helps you notice your habits, stay consistent, and make better choices. It also keeps you accountable and lets you see if you're getting closer to your weight goals. Overall, it helps you figure out what works best for you in a healthy way.

Weight Loss/Gain Log

You may track your weight daily or weekly, depending on your preference

Goal Weight: _____ Target Date: _____

Initial Weight: _____ Date: _____

Final Weight: _____ Date: _____

Weight Tracker			
	Starting weight	Current Weight	Remarks
Week 1			
Week 2			
Week 3			
Week 4			

Food Log

DATE: _____

Daily Food Log			
	MEASUREMENT/ SIZE	MENU/FOOD	AMOUNT OF CALORIE
Breakfast			
Lunch			
Dinner			
Total calories:			

Carbohydrates (grams): _____

Protein (grams): _____

Fat (grams): _____

- Use food tracker applications (MyFitnessPal) to measure the macronutrients

Anthropometric Measurement

Quarter	Date	Waist-Hip Ratio	Skinfold Testing	Remarks
1st Quarter				
2nd Quarter				
3rd Quarter				
4th Quarter				

Training Log

Strength Training

Date:

Exercise	Sets #	Weight	Reps	Weight	Reps	Weight	Reps	Weight	Reps
Barbell Bench Press	4	185	8	185	8	185	8	185	8
Barbell Squat	4	225	6	225	6	225	6	225	6
Barbell Deadlift	4	275	5	275	5	275	5	275	5
Barbell Overhead Press	4	135	8	135	8	135	8	135	8
Barbell Row	4	155	10	155	10	155	10	155	10
Barbell Bicep Curl	4	95	12	95	12	95	12	95	12
Barbell Tricep Extension	4	75	12	75	12	75	12	75	12
Barbell Front Squat	4	155	8	155	8	155	8	155	8
Barbell Lunges	4	135	10	135	10	135	10	135	10
Barbell Calf Raise	4	135	15	135	15	135	15	135	15
Barbell Plank	4	0	60	0	60	0	60	0	60
Barbell Pushup	4	0	20	0	20	0	20	0	20
Barbell Pullup	4	0	10	0	10	0	10	0	10
Barbell Chinup	4	0	10	0	10	0	10	0	10
Barbell Dumbbell Bench Press	4	45	12	45	12	45	12	45	12
Barbell Dumbbell Squat	4	65	12	65	12	65	12	65	12
Barbell Dumbbell Deadlift	4	85	12	85	12	85	12	85	12
Barbell Dumbbell Overhead Press	4	35	12	35	12	35	12	35	12
Barbell Dumbbell Row	4	45	12	45	12	45	12	45	12
Barbell Dumbbell Bicep Curl	4	25	12	25	12	25	12	25	12
Barbell Dumbbell Tricep Extension	4	25	12	25	12	25	12	25	12
Barbell Dumbbell Front Squat	4	45	12	45	12	45	12	45	12
Barbell Dumbbell Lunges	4	35	12	35	12	35	12	35	12
Barbell Dumbbell Calf Raise	4	35	15	35	15	35	15	35	15
Barbell Dumbbell Plank	4	0	60	0	60	0	60	0	60
Barbell Dumbbell Pushup	4	0	20	0	20	0	20	0	20
Barbell Dumbbell Pullup	4	0	10	0	10	0	10	0	10
Barbell Dumbbell Chinup	4	0	10	0	10	0	10	0	10

Cardio Training

Date: _____

Exercise	Time	Dist	Int*	Time	Dist	Int	Time	Dist	Int
1. Einmal um den See (ca. 1,5 km) laufen	10 min	1,5 km	1	10 min	1,5 km	1	10 min	1,5 km	1
2. Einmal um den See (ca. 1,5 km) joggen	15 min	1,5 km	2	15 min	1,5 km	2	15 min	1,5 km	2
3. Einmal um den See (ca. 1,5 km) sprinten	20 min	1,5 km	3	20 min	1,5 km	3	20 min	1,5 km	3
4. Einmal um den See (ca. 1,5 km) marschieren	12 min	1,5 km	1	12 min	1,5 km	1	12 min	1,5 km	1
5. Einmal um den See (ca. 1,5 km) hüpfen	25 min	1,5 km	4	25 min	1,5 km	4	25 min	1,5 km	4
6. Einmal um den See (ca. 1,5 km) klettern	30 min	1,5 km	5	30 min	1,5 km	5	30 min	1,5 km	5
7. Einmal um den See (ca. 1,5 km) schwimmen	40 min	1,5 km	6	40 min	1,5 km	6	40 min	1,5 km	6
8. Einmal um den See (ca. 1,5 km) radfahren	18 min	1,5 km	2	18 min	1,5 km	2	18 min	1,5 km	2
9. Einmal um den See (ca. 1,5 km) skifahren	22 min	1,5 km	3	22 min	1,5 km	3	22 min	1,5 km	3
10. Einmal um den See (ca. 1,5 km) segeln	28 min	1,5 km	4	28 min	1,5 km	4	28 min	1,5 km	4

*Intensity: L - Light / M - Moderate / V - Vigorous

CHAPTER VII: EXERCISES AND PROPER EXECUTION

General Tips:

- Exhale on the way up, inhale on the way down.
- Maintain a stable plank position.
- Engage core to protect the back.

I. Fundamental Movements

a. Push

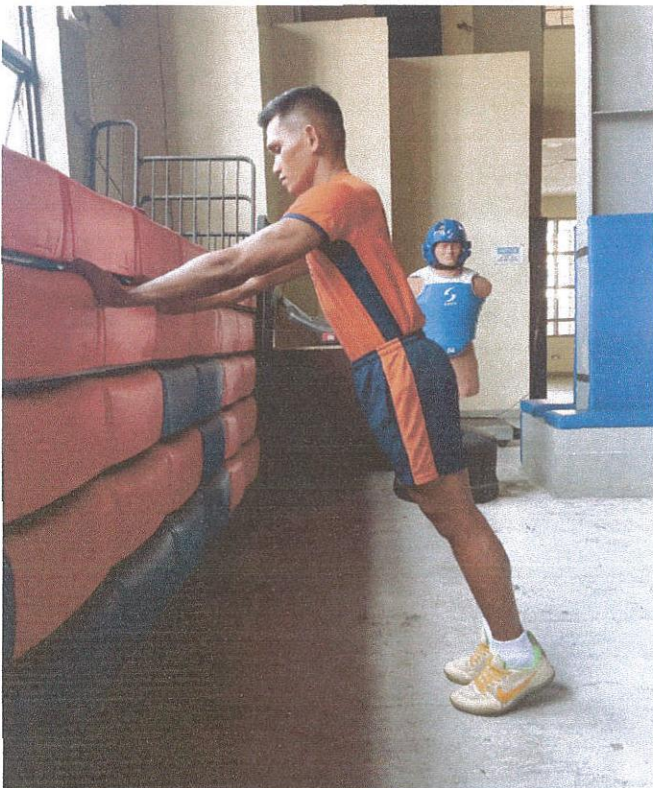
- **Incline Push-up**

- Stand facing a wall, about arm's length away.
- Place your hands on the wall at shoulder height, slightly wider than shoulder-width apart.
- Step back a bit to create a slight angle with your body.
- Keep your body straight from head to heels.
- Lower your chest towards the wall by bending your elbows.
- Push yourself back to the starting position by straightening your arms.
- Repeat for your desired number of reps.

To Progress: Use a lower surface (like a sturdy table or bench) for a slightly harder angle.

Starting Position:

Execution Position:

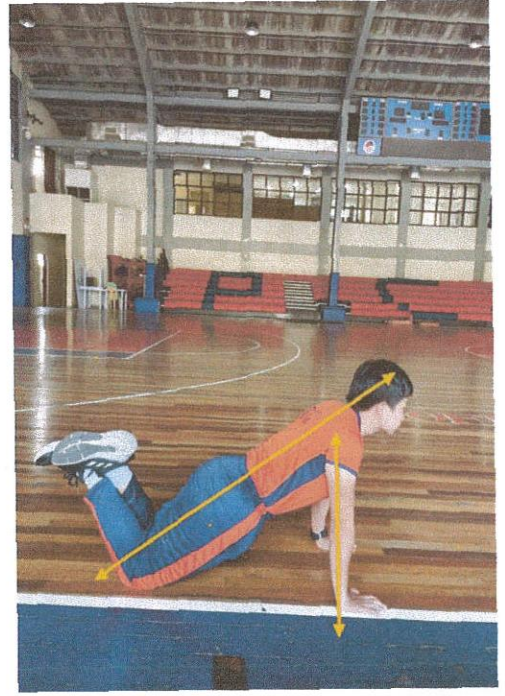
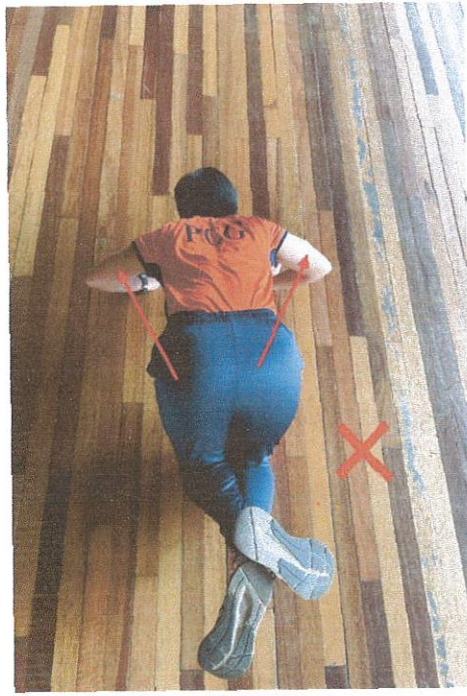


Kneeling Push ups

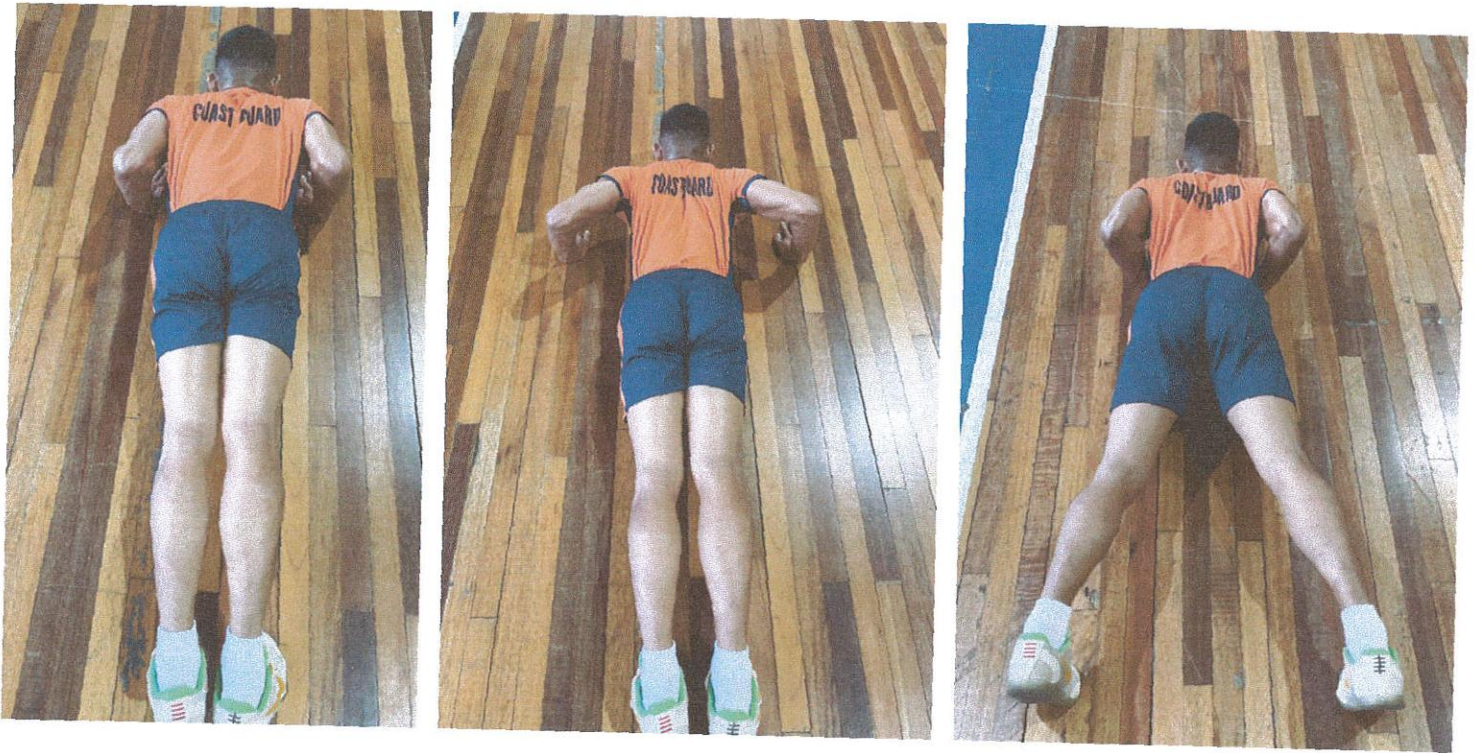
- Begin on your knees and hands, with hands slightly wider than shoulder-width apart.
- Keep your body straight from head to knees.
- Bend your elbows to lower your chest towards the ground.
- Push back up to the starting position.
- Repeat as needed.

Progressions:

1. **Elevated Kneeling Push-Ups:** Place your hands on an elevated surface (like a bench) to increase the challenge.
2. **Kneeling Push-Ups:** Gradually reduce the angle of your body until you can do standard push-ups from your toes.
3. **Wide-Grip Kneeling Push-Ups:** Place your hands wider apart to work different chest muscles.
4. **Diamond Kneeling Push-Ups:** Bring your hands close together under your chest for added difficulty.
5. **One-Arm Kneeling Push-Ups:** Once strong enough, try one-arm kneeling push-ups for an advanced variation.

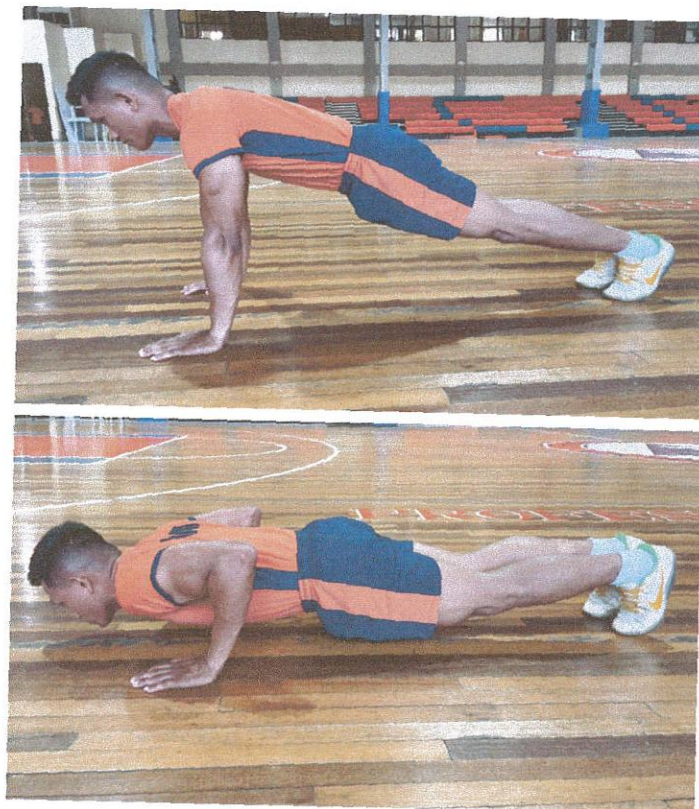


- Push ups (normal, wide and diamond)



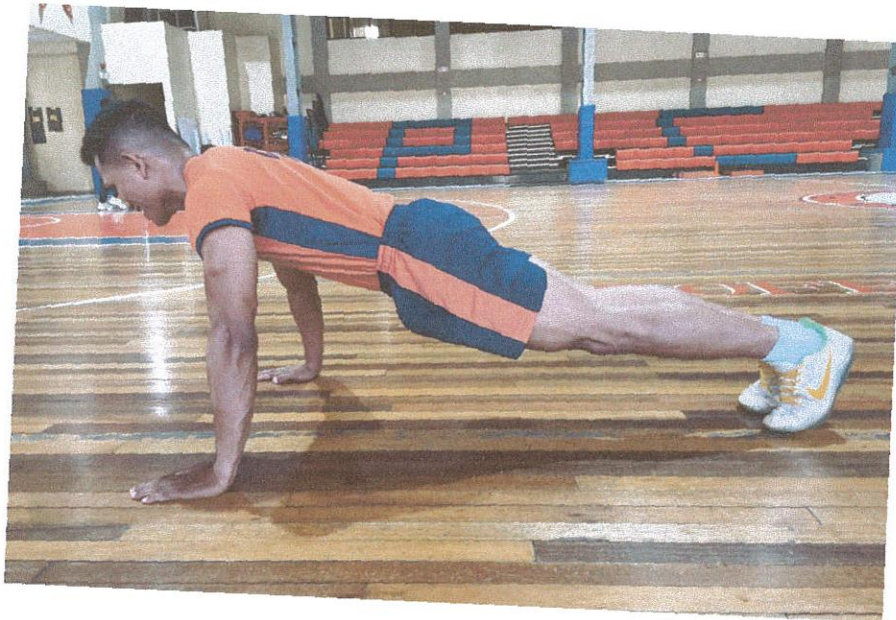
Normal Push-Ups:

- Hands slightly wider than shoulders.
- Straight line from head to heels.
- Lower and raise chest, keeping elbows close.
- Repeat as needed.



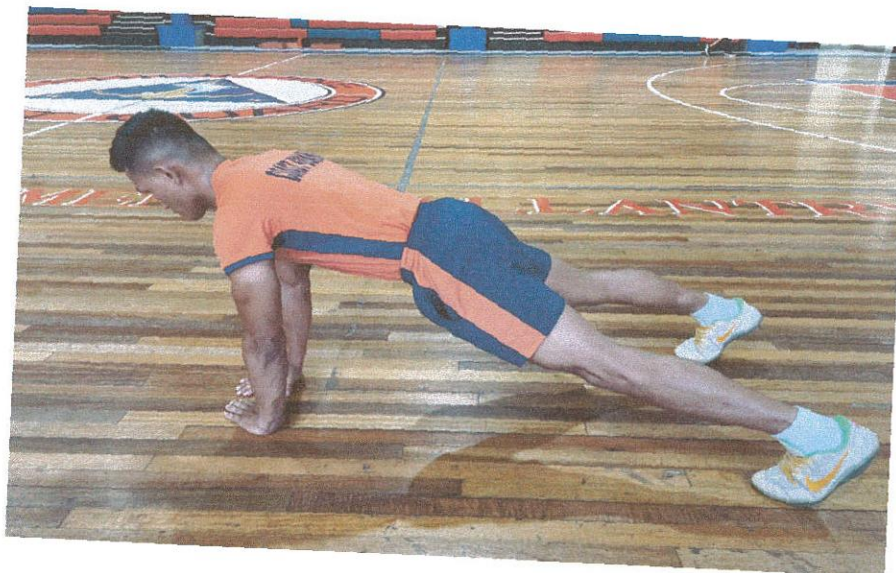
Wide Grip Push-Ups:

- Hands wider than shoulders.
- Straight body line.
- Lower and raise chest, keeping elbows wide.
- Repeat as needed.



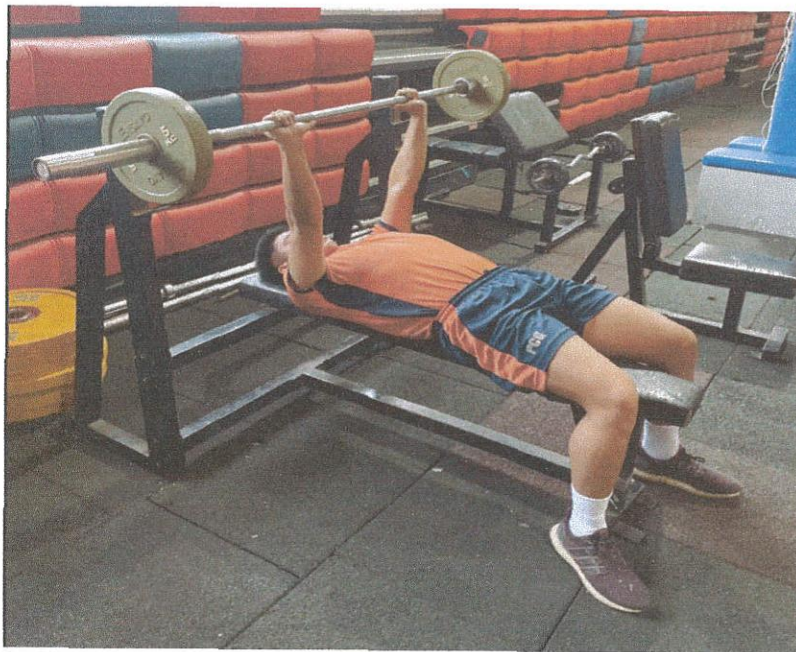
Diamond Push-Ups:

- Hands in a diamond shape under the chest.
- Straight body line.
- Lower and raise chest, targeting triceps.
- Repeat as needed.



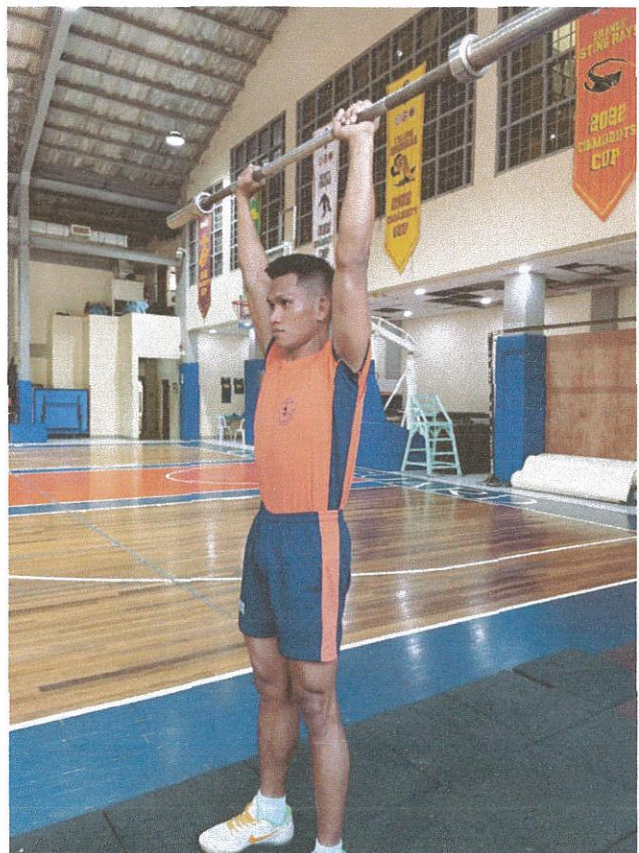
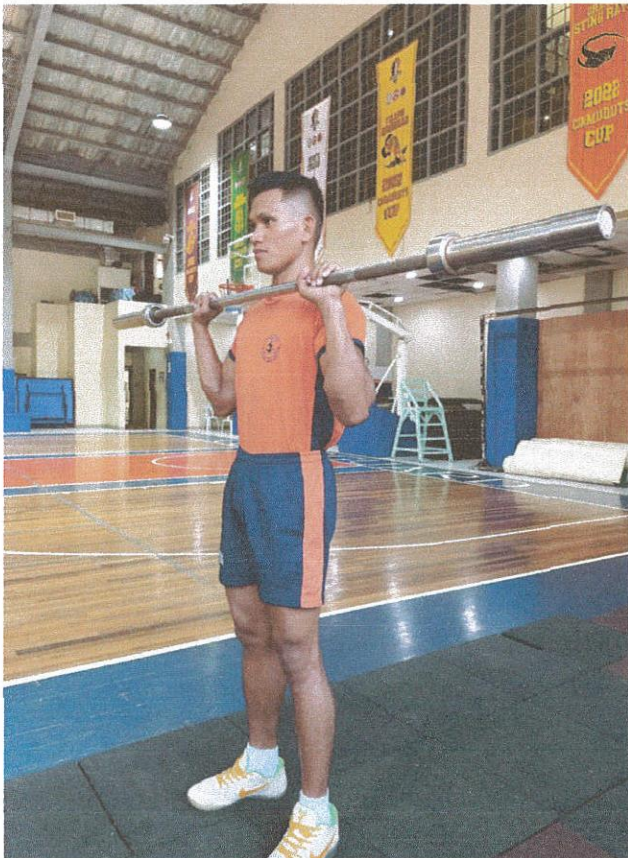
Barbell Bench press

- Lie on a flat bench, grip the barbell slightly wider than your shoulders.
- Feet flat on the ground, eyes under the bar.
- Lower the barbell to mid-chest, elbows at 90 degrees.
- Push the barbell back up, fully extending your arms.
- Exhale on the way up, inhale on the way down.
- Repeat as need
- Keep back flat, maintain a natural lower back arch.
- Start with a manageable weight, use a spotter for heavy lifts.
- Safely rack the barbell after each set.
- Gradually increase weight for progression.
- Seek professional guidance if needed, especially for beginners.



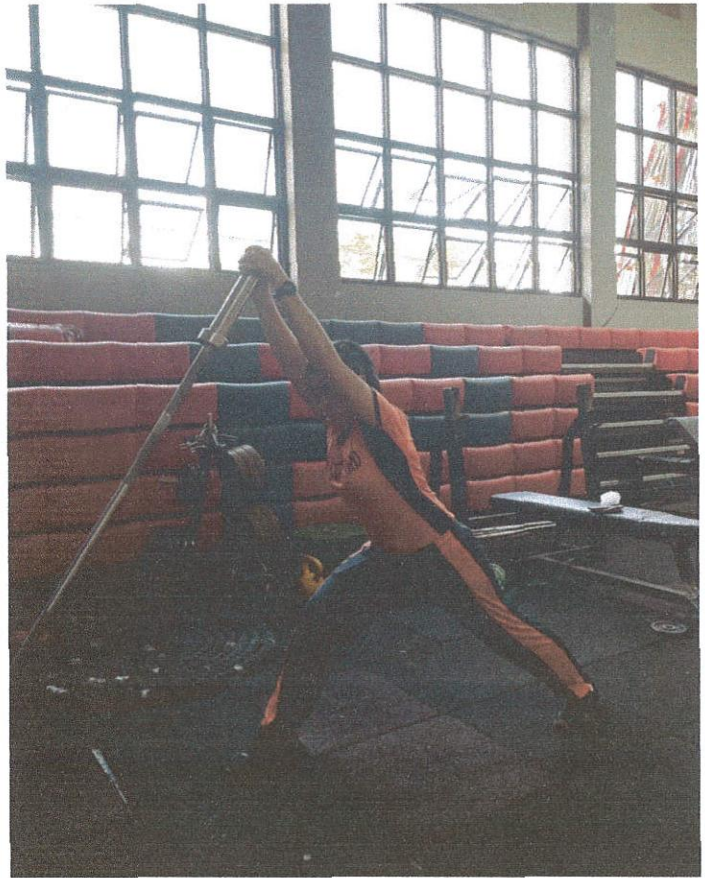
Military press

- Stand with feet shoulder-width apart, holding a barbell at shoulder height.
- Palms face forward, hands slightly wider than shoulder-width.
- Keep a straight back, engage core, feet flat on the ground.
- Press the barbell directly overhead, fully extending your arms.
- Lower the barbell with control to shoulder height.
- Exhale on the press, inhale on the lowering phase.
- Aim for 3 sets of 8-12 repetitions.
- Avoid arching the back or leaning backward; engage the core.
- Start with a weight that allows for proper form.
- Consider a spotter for heavy weights.
- Stretch shoulders and neck during cooldown.
- Gradually increase weight for progression.
- Seek professional guidance if new to the exercise.



Jammers press

- Stand with feet shoulder-width apart, hold a barbell at shoulder height.
- Engage core, keep a straight back.
- Press the barbell overhead and slightly forward, extending arms.
- Lower barbell with control to shoulder height along a diagonal path.
- Exhale on the press, inhale on the lowering phase.
- Aim for 3 sets of 8-12 repetitions.
- Maintain a stable stance, avoid excessive leaning.
- Start with a weight allowing proper form.
- Use a spotter if needed.
- Stretch shoulders and neck during cooldown.



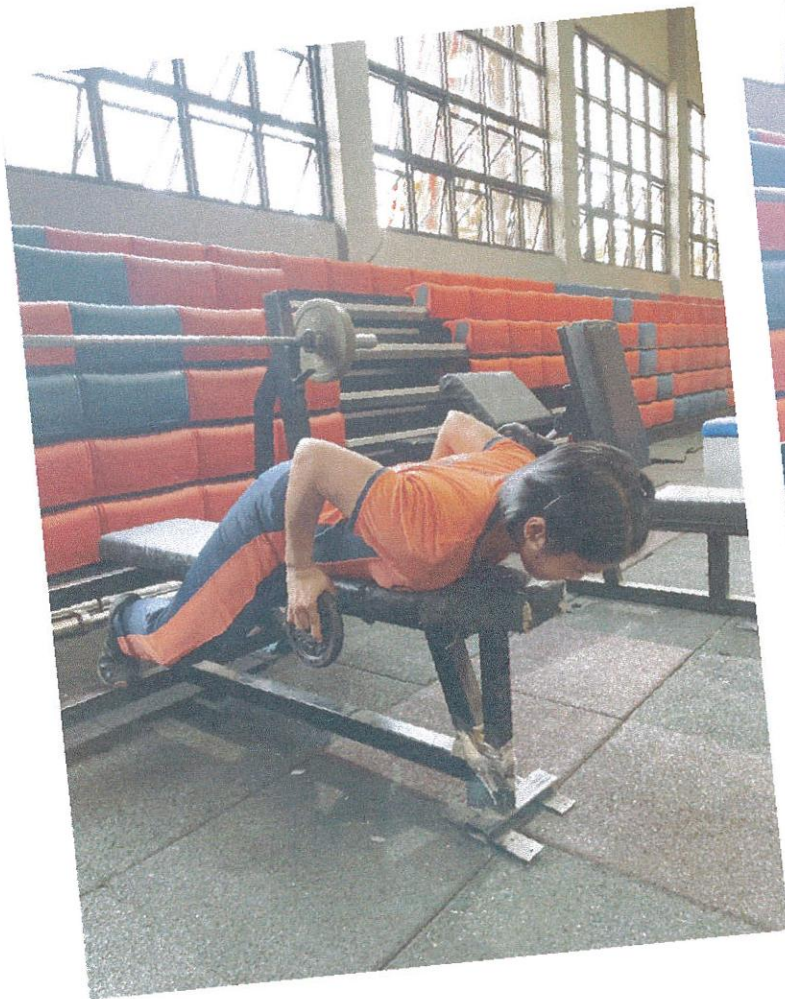
B. PULL

Chest Supported Rows:

- Lie face down on an incline bench.
- Hold a weight with an overhand grip.
- Pull the weight towards your lower ribcage, squeeze your back muscles, and lower it.
- Maintain proper form and breathing.

Progression:

- Increase weight gradually.
- Add more repetitions to sets.
- Experiment with different grips.
- Try various equipment and attachments.
- Include pauses, isometric holds
- Adjust the bench angle for variation.



Barbell Bent over rows

- Stand with feet shoulder-width apart.
- Hold a barbell with overhand grip, hands slightly wider than shoulders.
- Hinge at the hips, keeping a straight back.
- Pull the barbell towards lower chest or abdomen.
- Keep elbows close to the body.
- Squeeze shoulder blades at the top, hold briefly.
- Lower the barbell down with control.
- Exhale on the pull, inhale on the release.
- Aim for 3 sets of 8-12 reps.
- Maintain straight back, avoid using momentum.

Pronated Grip:

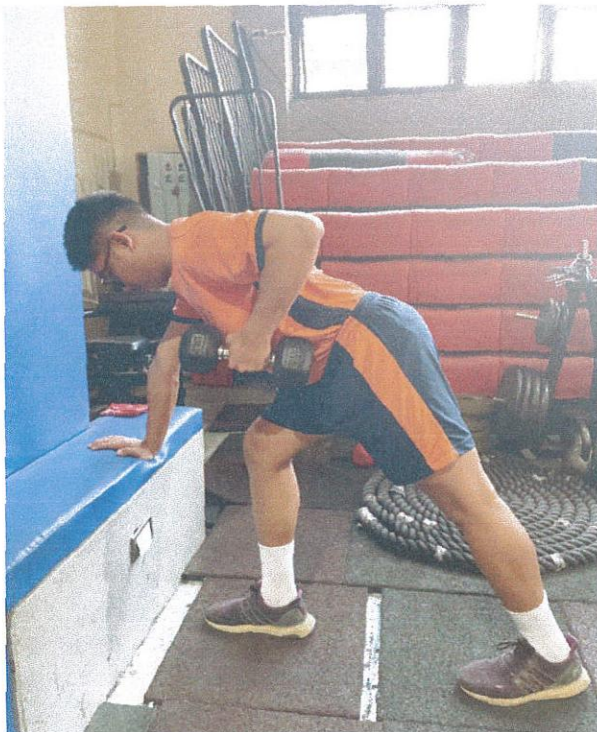


Supinated Grip:



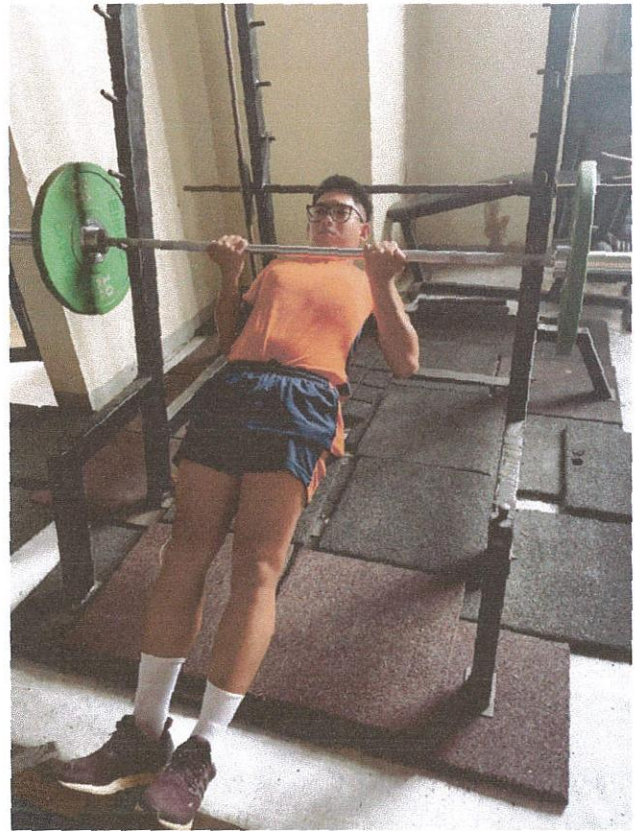
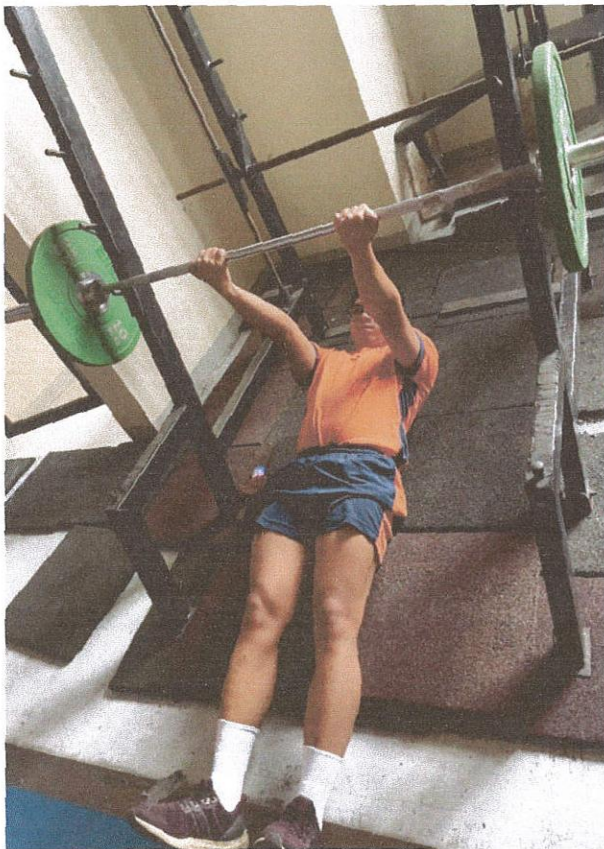
Single arm rows

- Stand with feet shoulder-width apart.
- Hold a dumbbell in one hand, palm facing in.
- Support the opposite hand on a bench or surface.
- Hinge at the hips, keeping the back straight.
- Pull the dumbbell towards your hip, elbow close.
- Squeeze your shoulder blade at the top.
- Lower the dumbbell down with control.
- Exhale on the pull, inhale on the release.
- Aim for 3 sets of 8-12 reps on each arm.
- Maintain a straight back, avoid torso rotation.
- Choose a challenging weight with proper form.
- Stretch back and shoulders after the exercise.
- Gradually increase weight for progression.



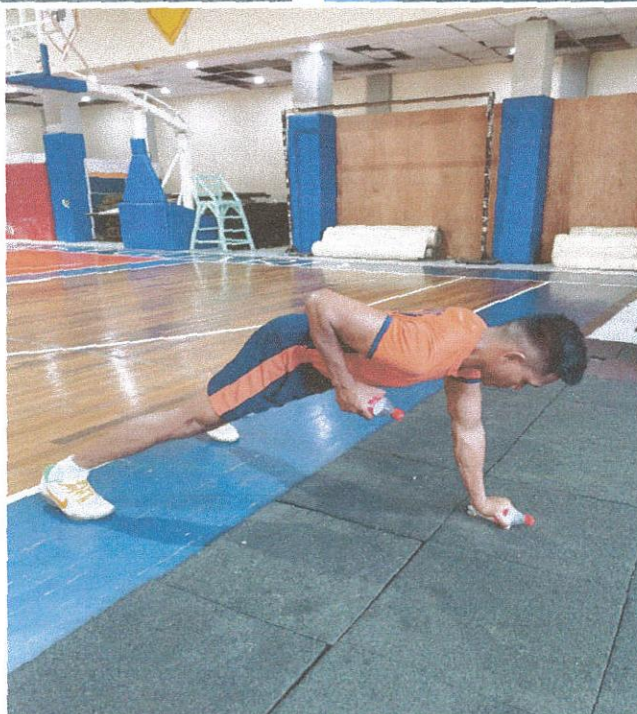
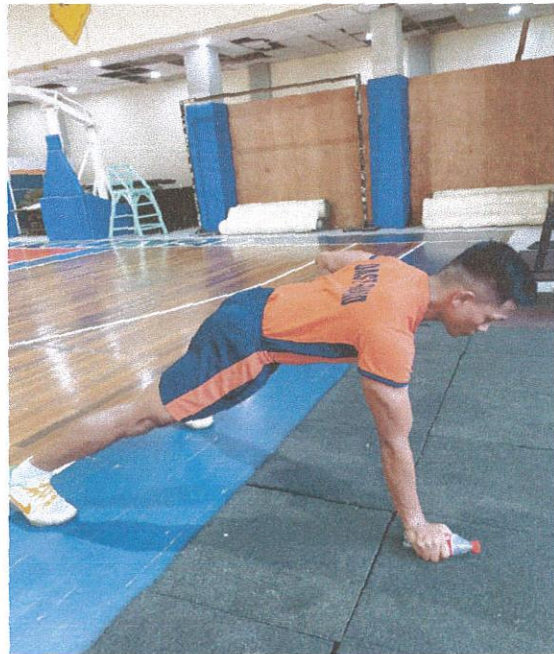
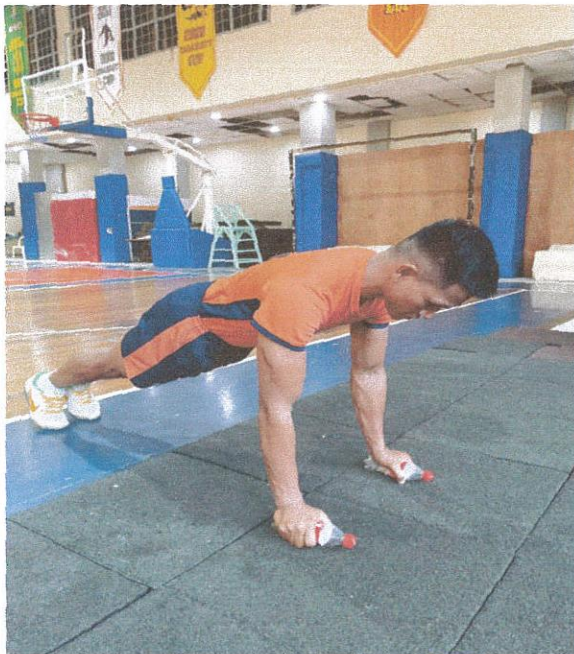
Barbell or Smith Machine Rows:

- Use a bar or Smith machine at waist height.
- Lie beneath the bar, grip it slightly wider than shoulder-width.
- Maintain a straight body line from head to heels.
- Pull your chest towards the bar, squeezing shoulder blades together.
- Keep elbows close to your body.
- Lower your body with arms fully extended.
- Aim for 3 sets of 10-15 reps.
- Engage your core for a straight body position.
- Exhale when pulling up, inhale when lowering down.
- Avoid arching your back or shrugging shoulders.
- Choose a challenging yet controlled bar height.
- Ensure the bar is secure and can support your weight.
- Stretch your back and shoulders during cooldown.
- Progress by adjusting the bar height or adding weight.



Plank Rows

- Start in a plank position with a dumbbell in each hand.
- Maintain a straight line from head to heels, engage core.
- Lift one dumbbell, pulling it towards your hip.
- Keep the elbow close to the body, squeeze shoulder blades.
- Lower the dumbbell with control.
- Alternate sides, repeating the rowing movement.
- Exhale on the lift, inhale on the lowering phase.
- Aim for 3 sets of 8-12 reps per arm.
- Avoid rotating hips or arching the back.
- Choose a weight allowing proper form.
- Keep a stable



PULL-UPS

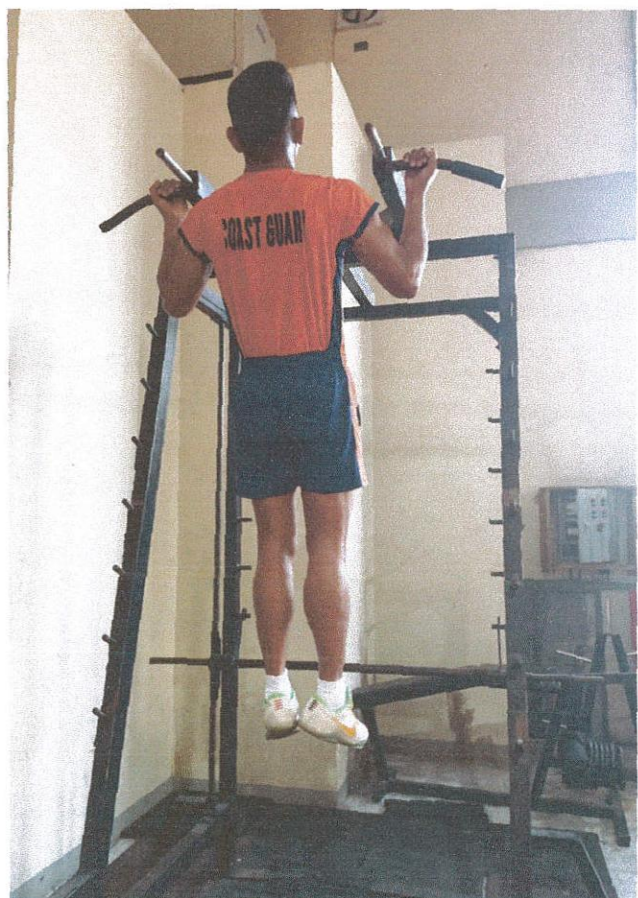
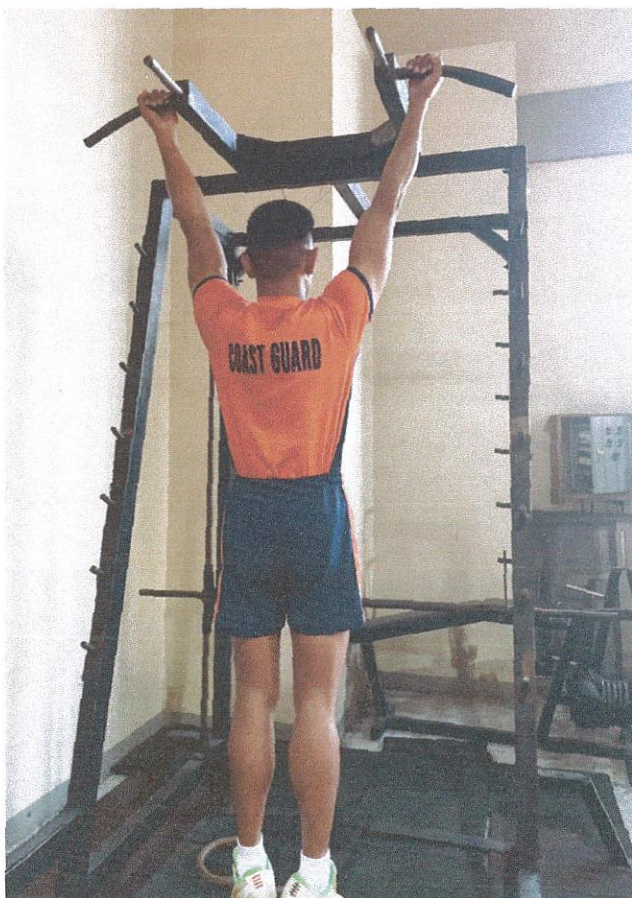
- Hang from a pull-up bar with palms facing away (overhand grip).
- Start with arms fully extended.
- Pull your body up towards the bar by bending your elbows.
- Aim to chin or chest to the bar.
- Lower your body back down with control until arms are fully extended.
- Keep your core engaged and body straight.

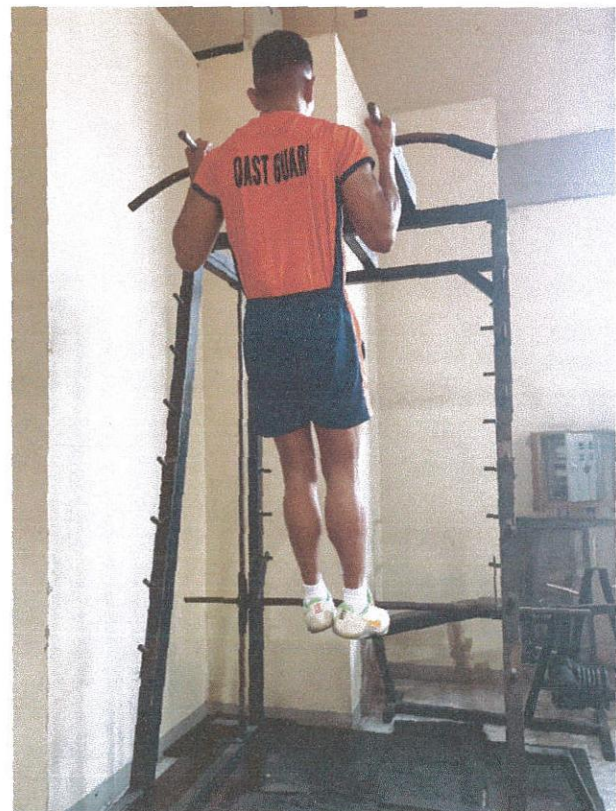
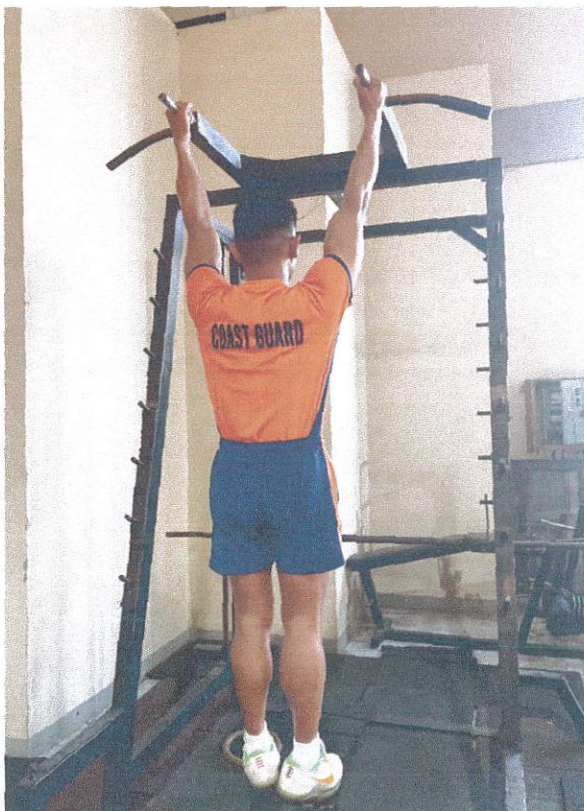
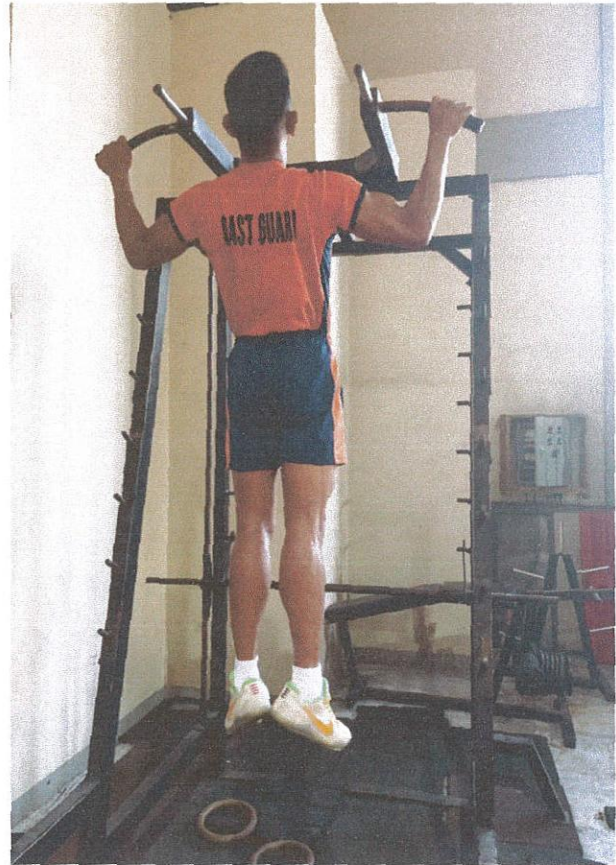
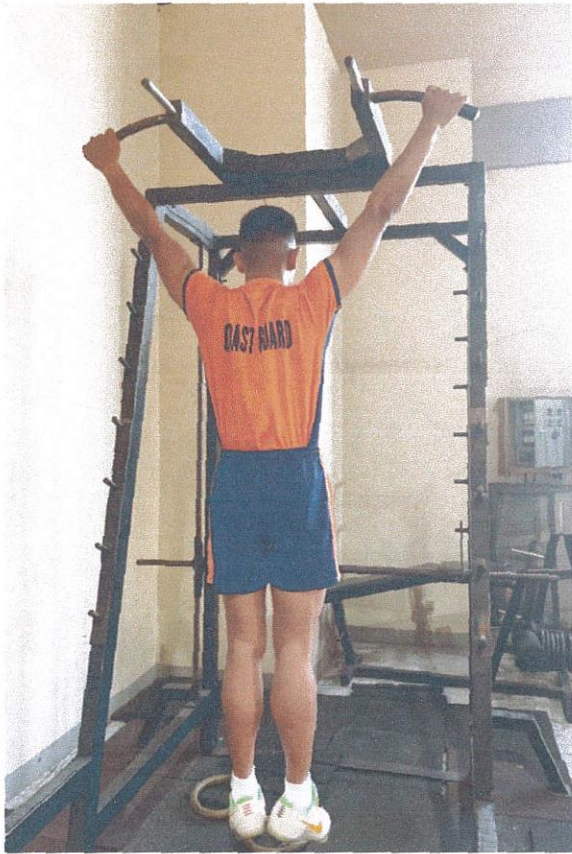
Variations:

- **Wide-Grip Pull-Ups:** Hands wider apart to target the outer back.
- **Close-Grip Pull-Ups:** Hands close together to focus on the biceps and inner back.
- **Chin-Ups:** Palms facing towards you (underhand grip) to emphasize biceps.
- **Neutral-Grip Pull-Ups:** Palms facing each other on parallel bars.
- **Assisted Pull-Ups:** Use a band or machine for assistance.
- **L-Sit Pull-Ups:** Lift legs in an L-shape while pulling up.
- **Weighted Pull-Ups:** Add weight using a belt or vest.

Progression:

- Increase repetitions over time.
- Add weight gradually.
- Work on different grip variations.
- Master strict form before attempting advanced versions.
- Use assistance as needed and reduce it gradually.





C. SQUAT

Squat

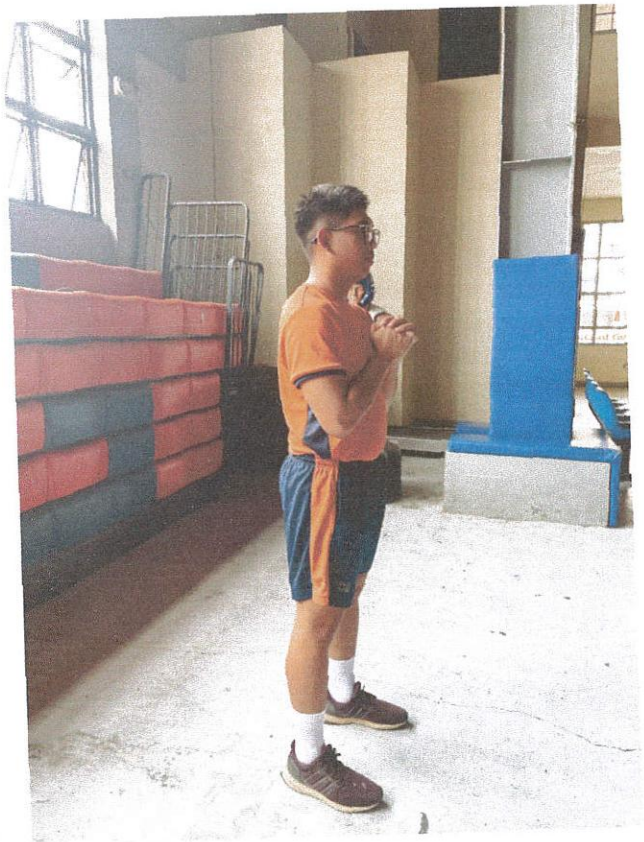
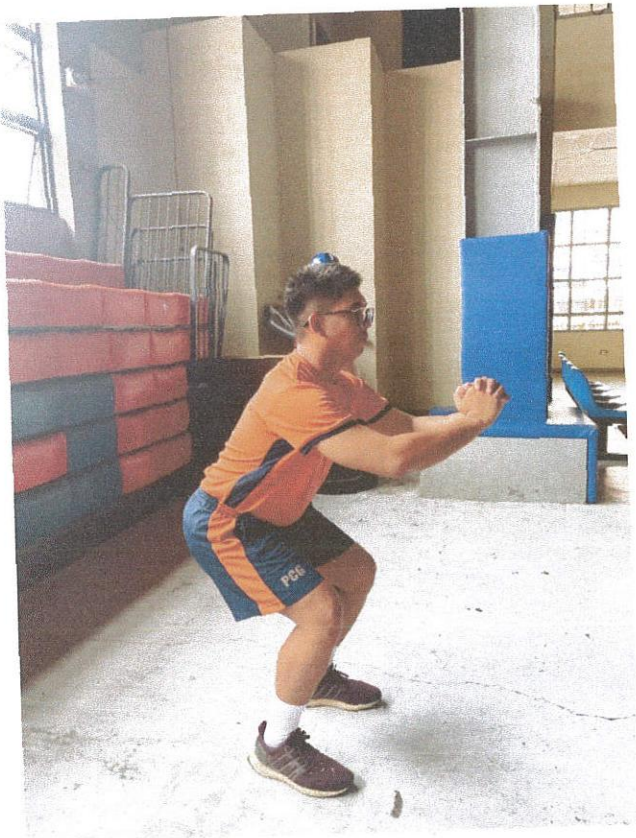
- Stand with feet shoulder-width apart.
- Keep chest up
- Engage core
- Look straight ahead
- Keep back straight
- Feet flat on ground
- Descent:
 - Hips back and down
 - Knees aligned with toes
 - Lower until thighs parallel

Ascent:

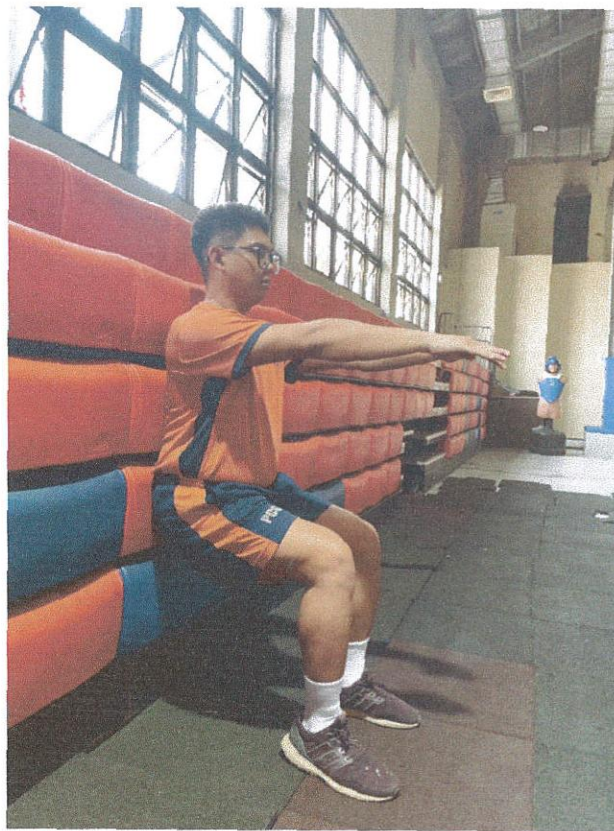
- Push through heels
- Straighten hips and knees
- Reps: Start with 3 sets of 10-12 reps.

Progression:

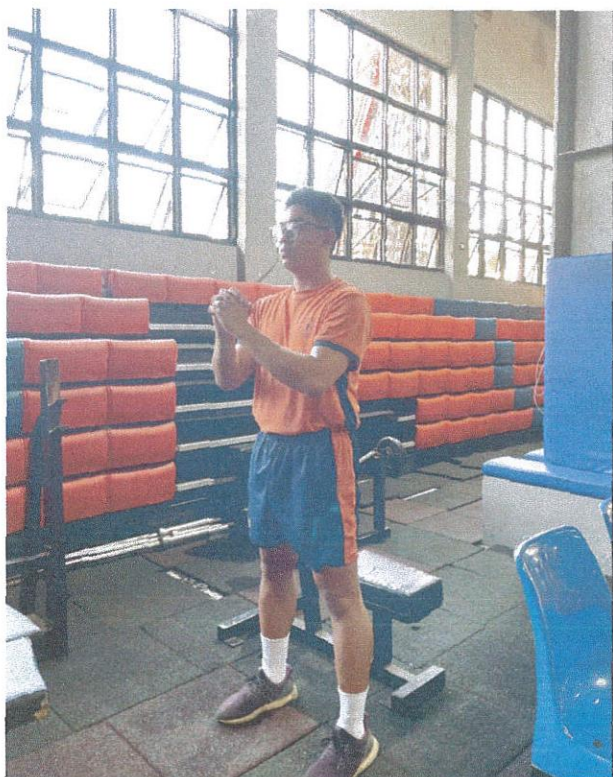
- Increase Weight: Add weights gradually.
- Vary Stance: Try wide/narrow stance.
- Change Tempo: Slow or explosive reps.
- Single-Leg Squats: Advanced option.
- Deeper Squats: Go below parallel.
- Plyometric Squats: Jump squats for power.
- Higher Volume: More sets/reps.
- Rest & Recovery: Vital for growth.



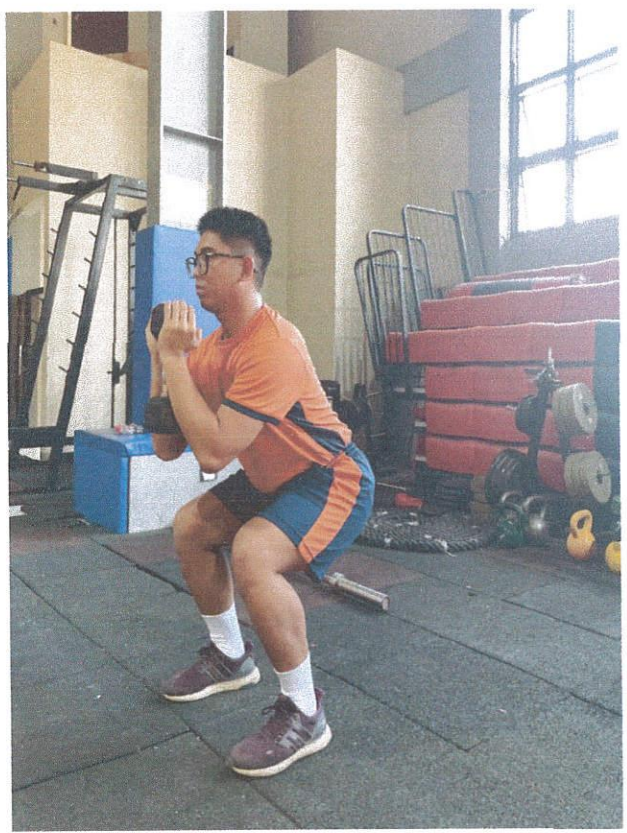
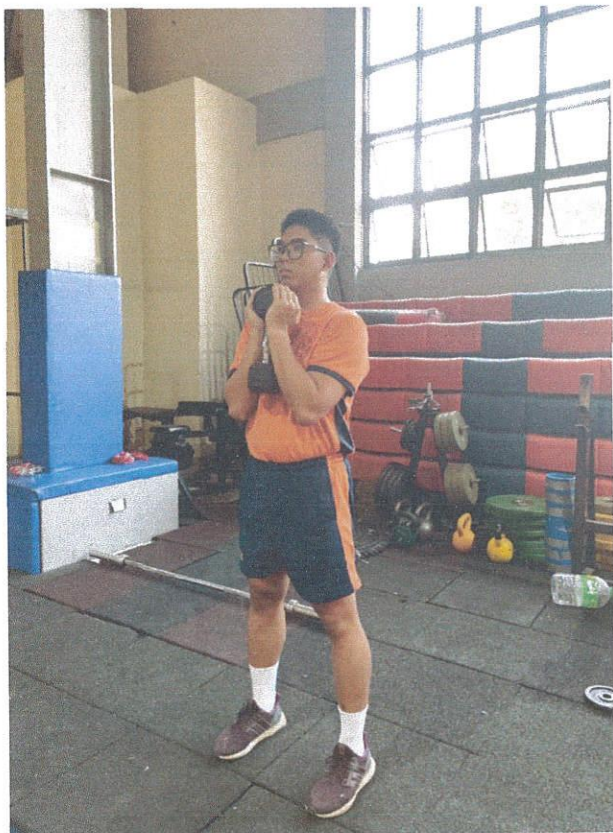
Wall Sit



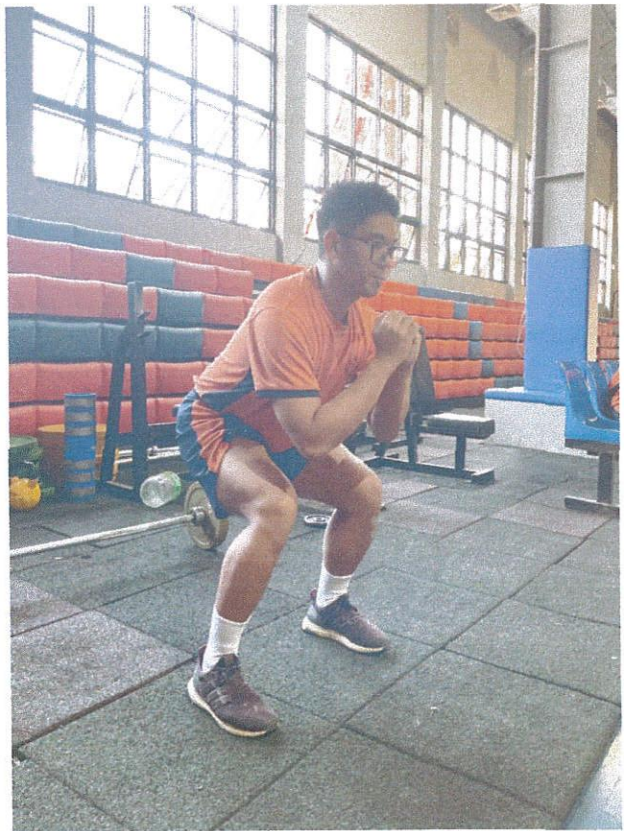
Box Squat



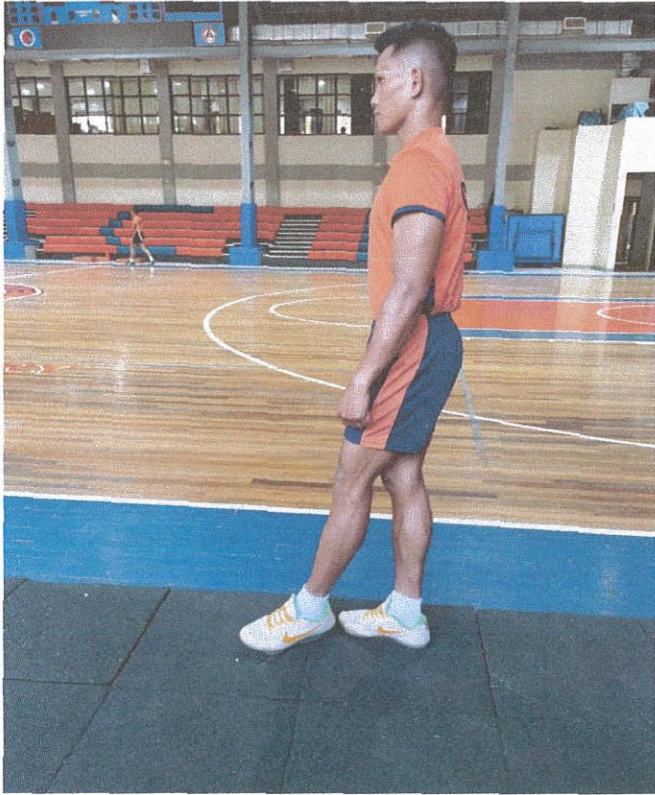
Goblet Squat



Jump Squat



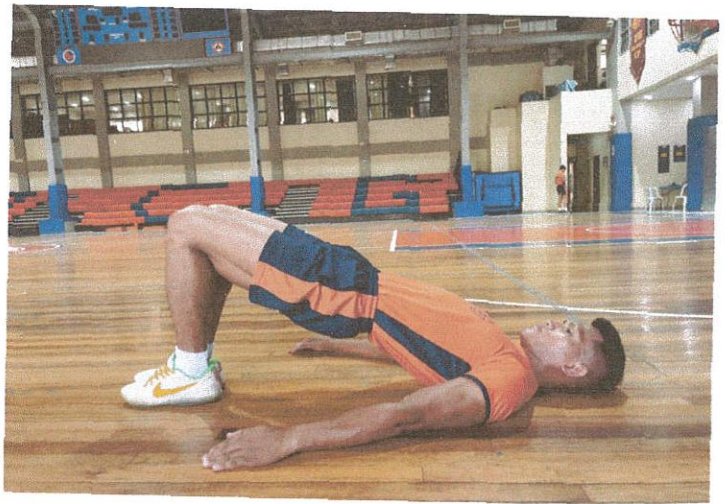
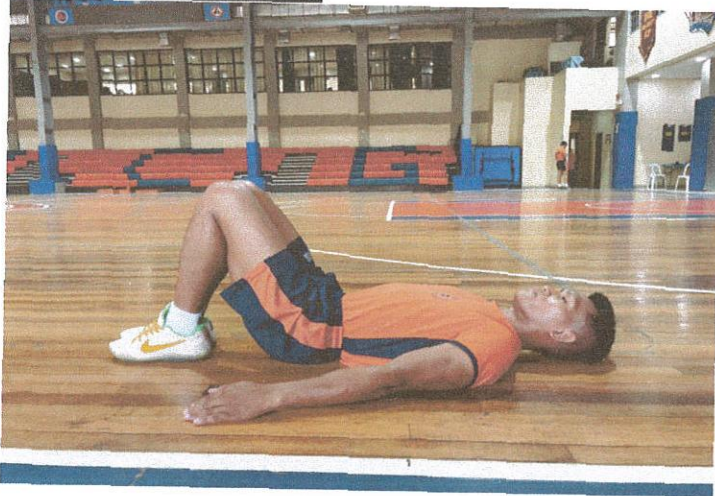
Pistol Squat



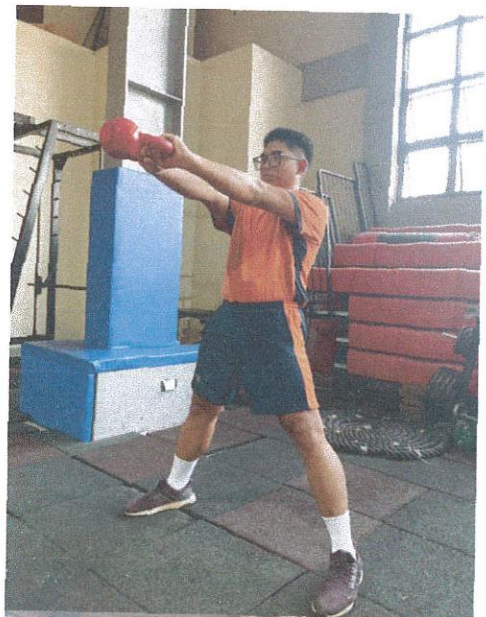
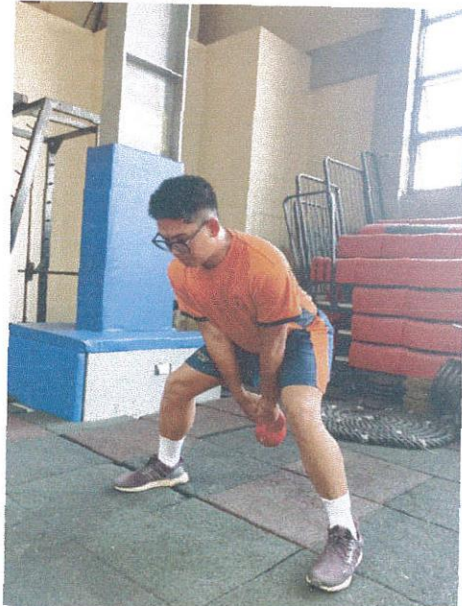
Barbell Sumo Squat



D. HINGE
Glute Bridges



Kettlebell Swings

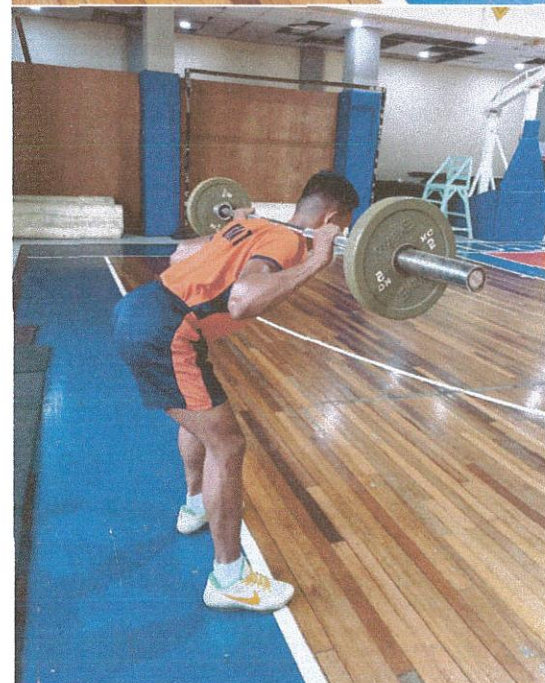
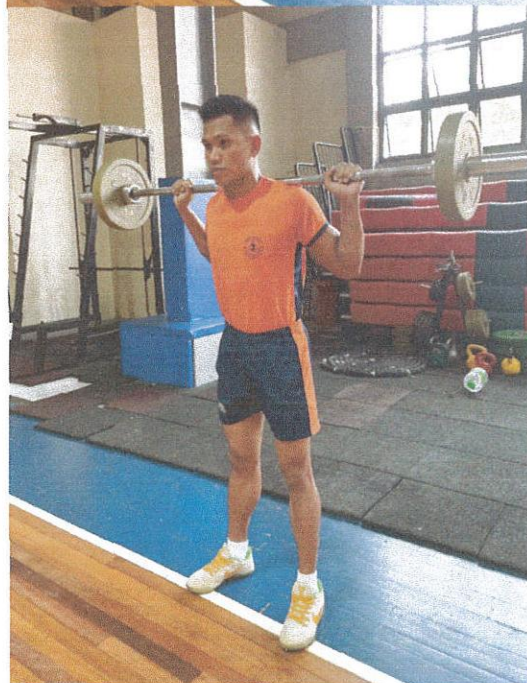
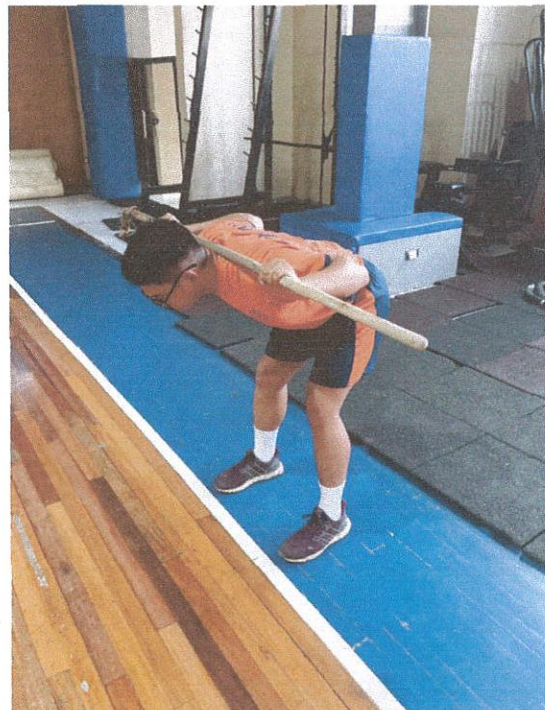
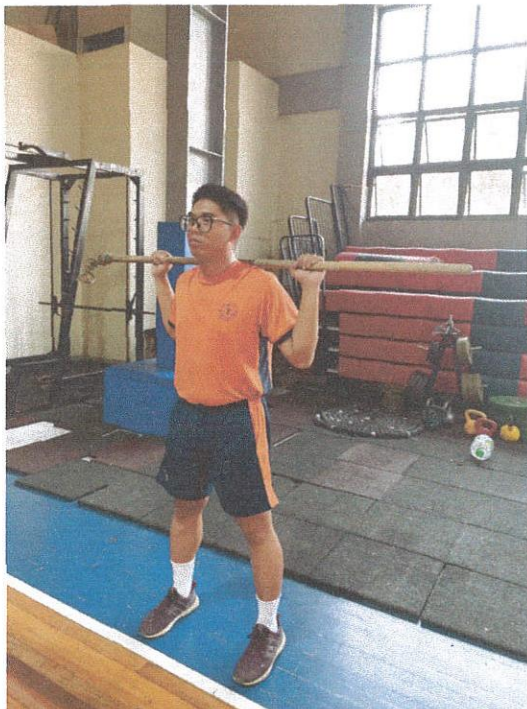


Bent-knee Good Morning

- Setup with feet shoulder-width apart.
- Maintain a slight knee bend.
- Hinge at hips, keep back straight, and lower torso.
- Stretch hamstrings, then return to upright.
- Start with 3 sets of 10-12 reps.

Progression:

- Add weight with a barbell or dumbbells.
- Increase reps/sets gradually.
- Work on deeper bends and better flexibility.
- Try single-leg good mornings for advanced training.
- Focus on controlled tempo and prioritize recovery.



Deadlift

Deadlift Basics:

Setup: Feet hip-width, neutral spine, bar over mid-foot.

Form: Chest up, core engaged, drive hips forward.

Lower: Hip hinge back, bend knees, lower with control.

Start with 3 sets of 8-10 reps.

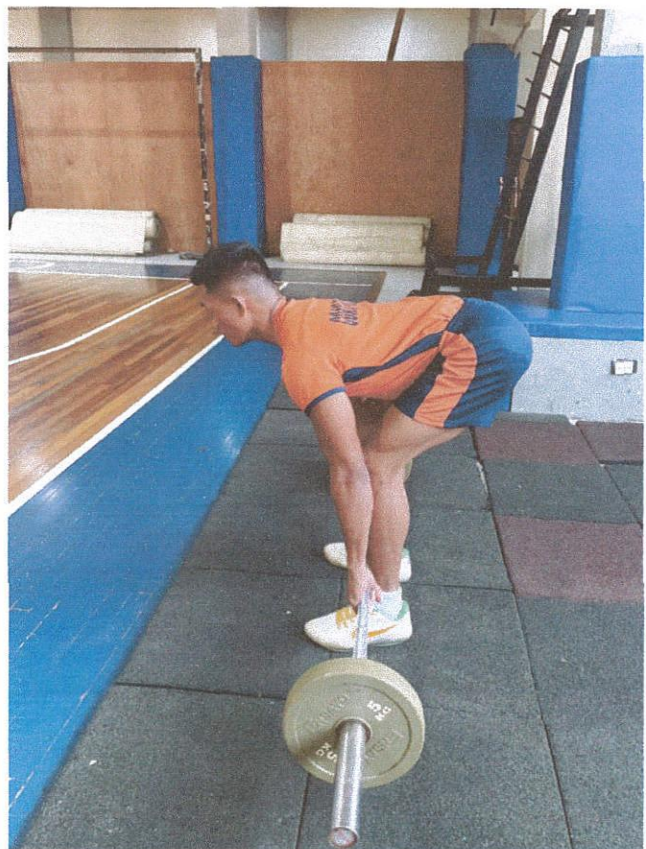
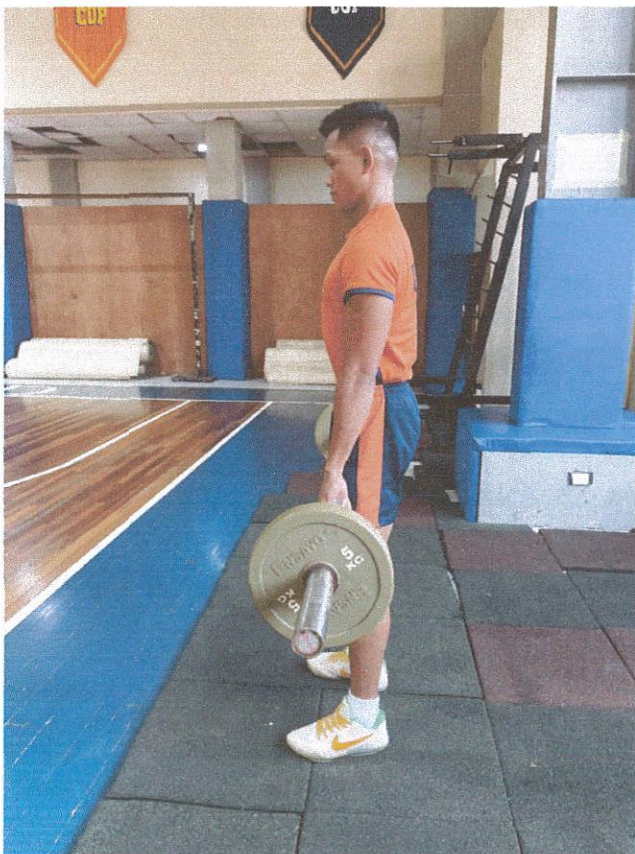
Progression:

Increase weight gradually.

Try variations like sumo or trap bar deadlifts.

Consider deficit deadlifts or rack pulls.

Ensure proper rest for recovery.



Hip Thrusters

- Sit with back against bench, barbell on hips.
- Form: Feet shoulder-width, lift hips up, squeeze glutes.
- Lower hips with control, touch lightly, then lift.
- Start with 3 sets of 8-12 reps.

Progression:

- Add weight with heavier barbells.
- Try single-leg or elevated feet variations.
- Pause at the top for added challenge.
- Increase sets/reps gradually.
- Prioritize proper rest for recovery.



XVII. References

- Fitness for Life 7th Edition Cloth With Web Resource. (n.d.). Human Kinetics.
Retrieved October 19, 2023, from <https://us.humankinetics.com/products/fitness-for-life-7th-edition-cloth-with-web-resource>
- Davidson, K. (2021, August 16). 14 Benefits of Strength Training, Backed by Science.
Healthline. <https://www.healthline.com/health/fitness/benefits-of-strength-training>
- U.S. Department of Health and Human Services. (2018). Physical Activity Guidelines
for Americans 2nd edition. In *health.gov*. https://health.gov/sites/default/files/2019-09/Physical_Activity_Guidelines_2nd_edition.pdf
- PHYSICAL FITNESS STATUS OF PEOPLE ATTENDING RECREATION CENTRES IN
GBOKO LOCAL GOVERNMENT AREA OF BENUE STATE.* (n.d.). Retrieved
October 19, 2023, from <https://www.projectreserve.com/2018/10/physical-fitness-Status-of-people.html>
- Jackson, A. S., & Pollock, M. L. (1978). Generalized equations for predicting body
density of men. *British Journal of Nutrition*, 40(3), 497-504.
- Jackson, A. S., Pollock, M. L., & Ward, A. (1980). Generalized equations for
predicting
body density of women. *Medicine and Science in Sports and Exercise*, 12(3),
175-181.
- Heyward, V. H., & Wagner, D. R. (2004). Applied body composition assessment.
Human Kinetics.
- Li, Xuan. (2020). Research on Reconstruction of the Concept of "Physical Fitness"
in
the Context of New Crown Epidemic. doi:
10.1109/ICMEIM51375.2020.00075

American College of Sports Medicine. (2018). ACSM's Guidelines for Exercise Testing and Prescription (10th ed.). Wolters Kluwer.

Kisner, C., & Colby, L. A. (2017). Therapeutic Exercise: Foundations and Techniques (7th ed.). F.A. Davis Company.

Wells, K. F., & Dillon, E. K. (1952). The Sit and Reach—A Test of Back and Leg Flexibility. *Research Quarterly for Exercise and Sport*, 23(1), 115-118.

American College of Sports Medicine. (2018). ACSM's Guidelines for Exercise Testing and Prescription (10th ed.). Wolters Kluwer.

Jones C.J., Rikli R.E., Measuring functional fitness of older adults, *The Journal on Active Aging*, March April 2002, pp. 24–30

Wells, K. F., & Dillon, E. K. (1952). The Sit and Reach—A Test of Back and Leg Flexibility. *Research Quarterly for Exercise and Sport*, 23(1), 115-118..

Manikandan, S. (2014, December). Effect of Fartlek Training on Cardio Respiratory Endurance and Muscular Endurance Among Handball Players. Retrieved from https://www.worldwidejournals.com/paripex/recent_issues_pdf/2014/December/December_2014_1420186958_52.pdf

Palanisamy, A. (2020, February). Effect Of Fartlek Training On Muscular Endurance Among Cross Country Runners. Retrieved from

https://www.researchgate.net/publication/339375341_Effect_Of_Fartlek_Training_On_Muscular_Endurance_Among_Cross_Country_Runners

<https://www.olyrun.com/fartlek-training-advantages-and-disadvantages/>

<https://www.olyrun.com/fartlek-training/>

What is Diabetes? - Belinda N. Mays. <https://belindamays.com/2014/07/blog/>

<https://www.fnri.dost.gov.ph/index.php/publications/writers-pool-corner/57-food-and-nutrition/204-nutritional-guidelines-for-filipinos-a-prescription-to-good-nutrition>

<https://journals.lww.com/acsm->

[csmr/fulltext/2019/04000/sports_training_principles.2.aspx](https://journals.lww.com/acsm-csmr/fulltext/2019/04000/sports_training_principles.2.aspx)

<https://www.mayoclinic.org/healthy-lifestyle/fitness/in-depth/fitness-training/art-20044792>

[https://www.cohaf.edu.au/rounded-fitness-](https://www.cohaf.edu.au/rounded-fitness-routine/#:~:text=A%20well%2Drounded%20routine%20has,interval%20training%20and%20strength%20training.)

[routine/#:~:text=A%20well%2Drounded%20routine%20has,interval%20training%20and%20strength%20training.](https://www.cohaf.edu.au/rounded-fitness-routine/#:~:text=A%20well%2Drounded%20routine%20has,interval%20training%20and%20strength%20training.)

<https://www.livestrong.com/article/528015-how-to-create-a-balanced-workout-routine/>

<https://www.precisionphysio.com.au/five-fundamental-training-principles/>

RESTING HEART RATE CHART

MEN (Beats per Minutes)							
Age	Athlete	Excellent	Great	Good	Average	Below Average	Poor
18 - 25	49 - 55	56 - 61	62 - 65	66 - 69	70 - 73	74 - 81	82+
26 - 35	49 - 54	55 - 61	62 - 65	66 - 70	71 - 74	75 - 81	82+
36 - 45	50 - 56	57 - 62	63 - 66	67 - 70	71 - 75	76 - 82	83+
46 - 55	50 - 57	58 - 63	64 - 67	68 - 71	72 - 76	77 - 83	84+
56 - 65	51 - 56	57 - 61	62 - 67	68 - 71	72 - 75	79 - 81	82+
65+	50 - 55	56 - 61	62 - 65	66 - 69	70 - 73	74 - 79	80+

WOMEN (Beats per Minutes)							
Age	Athlete	Excellent	Great	Good	Average	Below Average	Poor
18 - 25	54 - 60	61 - 65	66 - 69	70 - 73	74 - 78	79 - 84	85+
26 - 35	54 - 59	60 - 64	65 - 68	69 - 72	73 - 76	77 - 82	83+
36 - 45	54 - 59	60 - 64	65 - 69	70 - 73	74 - 78	79 - 84	85+
46 - 55	54 - 60	61 - 65	66 - 69	70 - 73	74 - 77	78 - 83	84+
56 - 65	54 - 59	60 - 64	65 - 68	69 - 73	74 - 77	78 - 83	84+
65+	54 - 59	60 - 64	65 - 68	69 - 72	73 - 76	77 - 84	84+

Source: <http://templatehaven.com/resting-heart-rate-chart/>

BODY FAT NORM RATING

Jackson-Pollock 3 Formula for Males

Body density = $1.10938 - (0.0008267 \times \text{sum of skinfolds}) + (0.0000016 \times \text{square of the sum of skinfolds}) - (0.0002574 \times \text{age})$

Body Fat Percentage (%) = $(495 / \text{Body Density}) - 450$

Jackson-Pollock 3 Formula for Females

Body Density = $1.0994921 - (0.0009929 \times \text{sum of skinfolds}) + (0.0000023 \times \text{square of the sum of skinfolds}) - (0.0001392 \times \text{age})$

Body Fat Percentage (%) = $(495 / \text{Body Density}) - 450$

Women – % Bodyfat / Age

	20-29	30-39	40-49	50-59	60-69
Low (Increased Health Risk)	<14	<14	<14	<14	<14
Excellent/Fit (Healthy)	<=16.5	<=17.4	<=19.8	<=22.5	<=23.2
Good/Normal (Healthy)	16.6-19.4	17.5-20.8	19.9-23.8	22.6-27	23.3-27.9
Fair/Average (Healthy)	19.5-22.7	20.9-24.6	23.9-27.6	27.1-30.4	28-31.3
Poor (Increased Health Risk)	22.8-27.1	24.7-29.1	27.7-31.9	30.5-34.5	31.4-35.4
High (Increased Health Risk)	>27.2	>29.2	>31.3	>34.6	>35.5

Men – % Bodyfat / Age

	20-29	30-39	40-49	50-59	60-69
Low (Increased Health Risk)	<8	<8	<8	<8	<8
Excellent/Fit (Healthy)	<=10.5	<=14.5	<=17.4	<=19.1	<=19.7
Good/Normal (Healthy)	10.6-14.8	14.6-18.2	17.5-20.6	19.2-22.1	19.8-22.6
Fair/Average (Healthy)	14.9-18.6	18.3-21.3	20.7-23.4	22.2-24.6	22.7-25.2
Poor (Increased Health Risk)	18.7-23.1	21.4-24.9	23.5-26.6	24.7-27.8	25.3-28.4
High (Increased Health Risk)	>=23.2	>=25	>=26.7	>=27.9	>=28.5

Source: <http://pennshape.upenn.edu/files/pennshape/Body-Composition-Fact-Sheet.pdf>

2.4 KM NORM RATING

The 1.5-mile (2.4 km) run

The Cooper Institute Test. Since 1968. Recently validated as still relatively accurate

Age	Gender	Very Poor	Poor	Fair	Good	Excellent	Superior
13-19	Males	>15:31	15:30-12:11	12:10-10:48	10:48-9:41	9:40-8:37	<8:36
	Females	>18:31	18:30-16:55	16:54-14:31	14:30-12:30	12:29-11:50	<11:50
20-29	Males	>16:01	16:00-14:01	14:00-12:01	12:00-10:46	10:45-9:45	<9:44
	Females	>19:01	19:00-18:31	18:30-15:55	15:54-13:31	13:30-12:30	<12:29
30-39	Males	>16:31	16:30-14:44	14:43-12:31	12:30-11:01	11:00-10:00	<9:59
	Females	>19:31	19:30-19:01	19:00-16:31	16:30-14:31	14:30-13:00	<12:59
40-49	Males	>17:31	17:30-15:36	15:35-13:01	13:00-11:31	11:30-10:30	<10:29
	Females	>20:01	20:00-19:31	19:30-17:31	17:30-15:56	15:55-13:45	<13:44
50-59	Males	>19:01	19:00-17:01	17:00-14:31	14:30-12:31	12:30-11:00	<10:59
	Females	>20:31	20:30-20:01	20:00-19:01	19:00-16:31	16:30-14:30	<14:29
60-69	Males	>20:01	20:00-19:01	19:00-16:16	16:15-14:00	13:59-11:15	<11:14
	Females	>21:01	21:00-20:30	20:31-19:31	19:30-17:30	17:30-16:30	<16:29

Source: <https://joesgarage.io/tests-and-measures>

BEEP TEST NORM RATING

Bleep Test Summary Information

Level	Shuttles	Speed (km/h)	Shuttle Time (seconds)	Cumulative Distance (m)	Cumulative Time (min and seconds)
1	7	8	9	140	01:03
2	8	9	8	300	02:07
3	8	9.5	7.58	460	03:08
4	9	10	7.2	640	04:12
5	9	10.5	6.86	820	05:14
6	10	11	6.55	1,020	06:20
7	10	11.5	6.26	1,220	07:22
8	11	12	6	1,440	08:28
9	11	12.5	5.76	1,660	09:31
10	11	13	5.54	1,880	10:32
11	12	13.5	5.33	2,120	11:36
12	12	14	5.14	2,360	12:38
13	13	14.5	4.97	2,620	13:43
14	13	15	4.8	2,880	14:45
15	13	15.5	4.65	3,140	15:46
16	14	16	4.5	3,420	16:49
17	14	16.5	4.36	3,700	17:50
18	15	17	4.24	4,000	18:54
19	15	17.5	4.11	4,300	19:56
20	16	18	4	4,620	21:00
21	16	18.5	3.89	4,940	22:03

source: <http://www.5-a-side.com/fitness/the-beep-test-a-comprehensive-guide/>

	men	women
excellent	> 13	> 12
very good	11 - 13	10 - 12
good	9 - 11	8 - 10
average	7 - 9	6 - 8
poor	5 - 7	4 - 6
very poor	< 5	< 4

source: <https://instructorcourses.skinewgen.com/keep-track-fitness/>

SIT AND REACH NORM RATING

	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

Source: <https://www.topendsports.com/testing/norms/sit-and-reach.htm>

BACK SCRATCH NORM RATING

Men's Results

Age	below average	normal (inches)	above average
60-64	< -6.5	-6.5 to 0	> 0
65-69	< -7.5	-7.5 to -1.0	> -1.0
70-74	< -8.0	-8.0 to -1.0	> -1.0
75-79	< -9.0	-9.0 to -2.0	> -2.0
80-84	< -9.5	-9.5 to -2.0	> -2.0
85-89	< -10.0	-10.0 to -3.0	> -3.0
90-94	< -10.5	-10.5 to -4.0	> -4.0

Women's Results

Age	below average	normal (inches)	above average
60-64	< -3.0	-3.0 to 1.5	> 1.5
65-69	< -3.5	-3.5 to 1.5	> 1.5
70-74	< -4.0	-4.0 to 1.0	> 1.0
75-79	< -5.0	-5.0 to 0.5	> 0.5
80-84	< -5.5	-5.5 to 0	> 0
85-89	< -7.0	-7.0 to -1.0	> -1.0
90-94	< -8.0	-8.0 to -1.0	> -1.0

Source: <https://www.topendsports.com/testing/tests/back-scratch.htm>

PLANK TEST NORM RATINGS

Rating	Time
Excellent	> 6 minutes
Very Good	4-6 minutes
above average	2-4 minutes
Average	1-2 minutes
below average	30-60 seconds
poor	15-30 seconds
very poor	< 15 seconds

source: <https://www.topendsports.com/testing/tests/plank.htm>

SQUAT TEST NORM RATINGS

Squat Test (Men)

Age	20-29	30-39	40-49	50-59	60+
Excellent	> 34	> 32	> 29	> 26	> 23
Good	33-34	30-32	27-29	24-26	21-23
Above average	30-32	27-29	24-26	21-23	18-20
Average	27-29	24-26	21-23	18-20	15-17
Below Average	24-26	21-23	18-20	15-17	12-14
Poor	21-23	18-20	15-17	12-14	9-11
Very Poor	< 21	< 18	<15	<12	<9

Squat Test (Women)

Age	20-29	30-39	40-49	50-59	60+
Excellent	>29	>26	>23	>20	>17
Good	27-29	24-26	21-23	18-20	15-17
Above average	24-26	21-23	18-20	15-17	12-14
Average	21-23	18-20	15-17	12-14	9-11
Below Average	18-20	15-17	12-14	9-11	6-8
Poor	15-17	12-14	9-11	6-8	3-5
Very Poor	<15	<12	<9	<6	<3

source:<https://www.topendsports.com/testing/tests/home-squat.htm>

PUSH-UPS NORM RATINGS

Ratings for Women (Modified Push Ups), based on Age

	20-29	30-39	40-49	50-59	60+
Excellent	>48	>39	>34	>29	>19
Good	34-48	25-39	20-34	15-29	5-19
Average	17-33	12-24	8-19	6-14	3-4
Poor	6-16	4-11	3-7	2-5	1-2
Very Poor	< 6	< 4	< 3	< 2	< 1

Ratings for Men (Full Push Ups), based on Age

	20-29	30-39	40-49	50-59	60+
Excellent	> 54	> 44	> 39	> 34	> 29
Good	45-54	35-44	30-39	25-34	20-29
Average	35-44	24-34	20-29	15-24	10-19
Poor	20-34	15-24	12-19	8-14	5-9
Very Poor	< 20	< 15	< 12	< 8	< 5

Source: <https://www.hputx.edu/wp-content/uploads/2021/02/Fitness-Self-Assessment-for-HPU-1.pdf>