UNIT 5: FITNESS – BASIC ANATOMY & PROPER STRETCHING TECHNIQUE

TOPIC 1:  BASIC ANATOMY – MAJOR MUSCLE GROUPS & BONES

TOPIC 2:  PROPER STRETCHING TECHNIQUE
UNIT 5 — FITNESS: BASIC ANATOMY & PROPER STRETCHING TECHNIQUE

TOPIC 1
BASIC ANATOMY – MAJOR MUSCLE GROUPS & BONES

OBJECTIVES:
• Students understand the names of major muscles and bones
• Students recognize the function of major muscles and bones in the human body and their relevance to movement

LEARNING OUTCOMES:
• Students can list the names some of the major muscle groups and bones
• Students can identify the location of major muscles and bones on the human body

RESOURCES:
• Human Movement – Major Muscles & Bones handout
• Human Movement – Major Muscles & Bones Answer Key
• Muscle Mania worksheet
• Muscle Mania Answer Key
• Human Muscles and Bones Answer Key

TOPIC 1
BASIC ANATOMY – MAJOR MUSCLE GROUPS & BONES

CLASS DISCUSSION

Q. What percentage of your body weight do you think is made up of muscle?

A. 40%

Q. How many different muscles does the human body contain?

A. 600 different muscles
Q. What is the primary function of muscles?

A. Muscles are what make it possible for you to move. Every time you run, go for a walk, jump, bend your arms or legs, catch, throw, take a breath, blink or smile, you’re using your muscles. Muscles work together by contracting (getting shorter) and relaxing (getting longer) which enable you to make movements, both big and small. Muscles come in all shapes and sizes, like the large ones in your legs to the tiny muscles that you use to blink.

Because muscles are responsible for every move you make, it is important to take care of them, keep them healthy with proper nutrition, and strong with proper exercise.

Q. There are three main types of muscles according to what they do in your body. What are the three types?

A. 1. **Skeletal Muscles** – these muscles are attached to your bones with tendons and they are responsible for allowing movements that you choose to do. They only work if you decide you want to use them. You use these muscles when you kick a soccer ball, wave at a friend, clap your hands, etc. Skeletal muscles are also known as “voluntary muscles” because you use them when you voluntarily choose to do so.

2. **Smooth Muscles** – these muscles are used unconsciously, meaning they contract and relax without you having control over them. They are used in around all your organs to make sure your organs function properly (including your lungs used for breathing), in your eyelids when you blink, your intestines for digesting food, and your blood vessels to move blood throughout your body, etc. Smooth Muscles are also known as “involuntary muscles” because you do not choose when you want to use them.

3. **Cardiac Muscles** – These muscles are only found in and around your heart and they control the pumping mechanism of your heart. The Cardiac muscle is also known as an “involuntary muscle” because you do not have control over your heart beating.
Q. Skeletal muscles are the muscles you use when exercising, so we will focus on those muscles for the rest of this unit. What are some examples of these muscles specifically found in your arms, torso, and lower body?

A. Arms:
   - *Biceps* – these muscles are found on the front part of your arms and make it possible for you to bend your arms; these are the muscles that flex when they lift up a dumbbell
   - *Triceps* – these muscles are found at the back of your arms and used to straighten your arms
   - *Deltoids* – these muscles are found in your shoulders and let you move both your shoulders and your upper arms, for example when you shrug

Torso:
   - *Pectorals* – these are upper chest muscles that make it possible to move your shoulders and arms forward
   - *Abdominals* – these are your stomach muscles that you find under your ribcage and you use these when sit up or suck your stomach in

Lower Body:
   - *Gluteus Maximus* – these are your bum muscles and are actually your strongest muscles; you use these muscles to straighten your leg from the hip while running, walking, or climbing, for example when you go up the stairs
   - *Quadriceps* – these muscles are located on the front of your leg above your knee; you use these muscles when you want to straighten your leg and extend your knee
   - *Hamstrings* – these muscles make up the back part of your legs from your bum (gluteus maximus) to the knees; you use these muscles when you bend your knees and they also help keep the knee joint stable when you move your legs

Q. How many bones are there in the human body?

A. There are more than 200 bones in the human body.

Q. What is the main function of bones?

A. Bones make up the human skeleton and they work like a frame for your muscles. They make up the structure and shape of your body and also play a big part in protecting your organs, such as the brain and lungs.
Different bones are connected to each other with ligaments, and they work in a team with your muscles and tendons (the parts that connect your muscles to your bones) to make it possible for you to move your body.

While your muscles help you move, your bones hold/support your body and objects up when you are exercising. It is important to have healthy bones through proper nutrition (calcium) to allow them to hold up your body comfortably, especially later in life.

Q. **What are some examples of the main bones in your body?**

A. **Skull**
   - Think of your skull as the body’s helmet – the bones that make up your forehead and at the back of the head prevent injury to your brain
   - Bones around your face give your face a frame and structure

**Spine**
   - Your spine makes up the length of your back and actually contains 26 small bones, also known as your vertebrae
   - Your spine lets you stand up straight and protects the nerves in your back that are found in your spinal chord

**Ribs**
   - You can feel your ribs move in and out when you take a breath – give yourself a hug and try it out!
   - Your ribs protect your heart, lungs, and liver

**Arms**
   - The bones in your arms are connected to the scapula - the bone that makes up your shoulder blade
   - Your arm has a total of three main bones:
     - humerus or your “funny bone” that connects your shoulder to your elbow
     - radius connects your elbow and wrist
     - ulna also found underneath your elbow

**Legs**
   - Bigger bones that carry your body’s weight are located in your legs
   - Leg bones are connected to your hip bones, or pelvis
   - Main bones:
     - femur – your biggest bone, connects the knee to the pelvis
     - tibia and fibula – the two bones between your knee and ankle bone
TOPIC 1
BASIC ANATOMY

ACTIVITIES

ACTIVITY 1:

Photocopy and provide each student with a copy of the Human Movement – Major Muscles & Bones worksheet. Arrange students into pairs to complete the activity. Have select groups share their answers with the class.

ACTIVITY 2:

Photocopy and provide each student with a copy of the Muscle Mania worksheet to complete.

ACTIVITY 3:

Arrange students into pairs (it might be suitable to pair girls with girls and boys with boys for this one) and provide each pair with a five foot long piece of paper form the jumbo roll. Using a felt marker, have the students take turns tracing the outline of their partner’s entire body onto the jumbo paper.

Once both partners are traced, have each student draw in the different major bones on the front of their own ‘body’:

<table>
<thead>
<tr>
<th>Skull</th>
<th>Ribs</th>
<th>Humerus</th>
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</thead>
<tbody>
<tr>
<td>Radius</td>
<td>Ulna</td>
<td>Pelvis</td>
</tr>
<tr>
<td>Femur</td>
<td>Tibia</td>
<td>Fibula</td>
</tr>
</tbody>
</table>

Once the bones are in place, have each student draw a line or arrow to the areas that contain major muscle groups:

<table>
<thead>
<tr>
<th>Biceps</th>
<th>Pectorals</th>
<th>Deltoids</th>
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</thead>
<tbody>
<tr>
<td>Quadriceps</td>
<td>Abdominals</td>
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</table>

Check students’ work using the Human Muscles and Bones Answer Key.
HUMAN MOVEMENT – MAJOR MUSCLES & BONES

Beside each body part record whether it is a muscle or a bone in the human body.

<table>
<thead>
<tr>
<th>BODY PART</th>
<th>MUSCLE OR BONE?</th>
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<tbody>
<tr>
<td>Femur</td>
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<tr>
<td>Biceps</td>
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<td>Triceps</td>
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<tr>
<td>Ribs</td>
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<td>Pelvis</td>
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<tr>
<td>Gluteus Maximus</td>
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<td>Hamstrings</td>
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<tr>
<td>Pectorals</td>
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<tr>
<td>Skull</td>
<td></td>
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<tr>
<td>Spine (vertebrae)</td>
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<tr>
<td>Deltoids</td>
<td></td>
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<tr>
<td>Humerus</td>
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<td>Femur</td>
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<td>Tibia</td>
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<td></td>
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**HUMAN MOVEMENT – MAJOR MUSCLES & BONES**

*ANSWER KEY*

Beside each body part record whether it is a muscle or a bone in the human body.

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<td>Muscle</td>
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<tr>
<td>Tibia</td>
<td>Bone</td>
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<tr>
<td>Abdominals</td>
<td>Muscle</td>
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</tbody>
</table>
MUSCLE MANIA

How many different muscles does the human body contain?

What is the primary function of muscles and how do they carry out that function?

What are five physical activities you can do that would use “voluntary muscles”?

1.
2.
3.
4.
5.

What are two examples of “involuntary muscles”?

1.
2.
MUSCLE MANIA - ANSWER KEY

How many different muscles does the human body contain?

600

What is the primary function of muscles and how do they carry out that function?

Muscles are the part of your body that make it possible for you to move. Muscles work together by contracting (getting shorter) and relaxing (getting longer) which enable you to make movements, both big and small.

What are five physical activities you can do that would use “voluntary muscles”?

Kicking a soccer ball
Throwing a ball
Doing a sit-up
Skipping with a skipping rope
Jogging
Playing tennis
Arm wrestling
Etc

What are two examples of “involuntary muscles”?

Cardiac muscle – your heart muscle that controls the physical function of your heart
Muscles that you use when you blink
Muscles around your lungs that help you breathe
Muscles around your various organs that helps them function
Etc
MUSCLES AND BONES - ANSWER KEY

BONES

- skull
- humerus
- radius
- ulna
- femur
- tibia
- fibula
- pelvis
- 24 ribs

MUSCLES

- deltoid
- pectoralis
- biceps
- abdominal
- quadriceps
UNIT 5 — FITNESS: BASIC ANATOMY & PROPER STRETCHING TECHNIQUE

TOPIC 2
PROPER STRETCHING TECHNIQUES

OBJECTIVES:
• Students recognize the importance of keeping muscle stretched and active
• Students understand how stretching contributes to a healthy body

LEARNING OUTCOMES:
• Students can describe the physical health benefits of stretching
• Students can physically perform a range of stretches

RESOURCES:
• Safety First: Rules of Stretching
• Your Guide To A Full Body Stretch
• My Fitness Goal Tracker worksheet

TOPIC 2
STRETCHING

CLASS DISCUSSION

Q. Why is it important to stretch your muscles?

A. Proper stretching can take as little as 5-10 minutes or as long as you want and it is important to stretch regularly because it:
• Improves blood circulation and therefore helps your body recover faster after exercising
• Decreases soreness and pain after exercising
• Decreases tension in your muscles
• Increases/improves your range of motion
• Improves your posture, helping to prevent potential back and neck problems later in life
Q. **When is the best time to stretch?**

A. Immediately before AND after your exercise. You can also choose to stretch even if you’re not exercising, as it still holds the same health benefit as listed above. In the last decade stretching and strength classes such as yoga and pilates have become very popular because of the health benefits associated with stretching.

Q. **What is another specific reason why it is important to stretch right before you exercise?**

A. Stretching before your exercise increases body temperature and blood flow which helps carry oxygen and nutrients to the muscles so the muscles are ready to be used actively.

Q. **What is another specific reason why it is important to stretch immediately after you exercise?**

A. Stretching immediately after you’re done exercising helps your muscles cool down which will ultimately prevent muscle pain (which usually will occur the following day if post-exercises are not carried out). It also helps both your tendons and muscles relax and loosen which means they are less likely to become tight.

Q. **What are the five rules of stretching?**

A. **1. Stretch slowly.**
   
   Every stretch should be performed at a very slow and even pace. Hold every stretch for 15-30 before slowly returning back to normal position.

2. **Do not bounce.**
   
   Never bounce into or out of stretch as this has the potential to over-stretch your muscles and cause damage. Stretching should be a smooth, fluid motion.

3. **Be balanced.**
   
   Always stretch muscles of both side of your body. Don’t ever stretch just one leg or one arm. If unbalanced stretching continues to occur over time, it can cause muscle pain that becomes difficult to get rid of.

4. **Do not over-stretch.**
   
   Only stretch your muscles until it is slightly no longer comfortable. Don’t ever stretch far enough that you feel pain. You should feel a slight pull on the muscle once you’re in a proper stretching position.

5. **Breath.**
   
   Be sure to remain breathing at your regular pace during all stretches.
TOPIC 2
STRETCHING

ACTIVITIES

ACTIVITY 1: SAFETY FIRST

Photocopy and provide each student with a copy of the Safety First: Rules of Stretching handout to complete. Review all rules with students.

ACTIVITY 2: IN THE GYM OR OUTDOORS

OPTION 1: Based on the stretching examples on the Full Body Stretch handout, lead a full-body stretch for the entire class. Have all students stand a few feet apart from one other preferably wearing comfortable and loose clothing with appropriate footwear. Follow each stretch step by step and remind student what muscles each stretch engages as they go through the motions.

OPTION 2: This activity is designed to have each student take the responsibility of leading a small group of their classmates in a series of stretches.

1. Split your classroom into four groups.
2. Instruct each group in 1/4 of the stretches so that that Group A learns the first two stretches, Group B learns the next two and so forth.
3. Once you are confident that each student has a sufficient grasp of each stretch, assign them into groups of four, such that each member knows a different set of stretches.
4. In your final groups of four, each student will take turns teaching the stretches to their classmates.
   a. Group A member teaches the first two stretches to members from Groups B, C and D and so forth until each stretch has been taught to one another.

And the end of the exercise, photocopy the Full Body Stretch handout and provide to each student to take home with them.
ACTIVITY 3: MY FITNESS GOAL TRACKER

Review the goal setting lesson from unit 2. Photocopy and provide each student with a My Fitness Goal Tracker worksheet to complete and take home with them. Have students report back at the end of the month if they were able to achieve their fitness goal. Remember, all goals must be SMART:

Specific: What exactly do you want to achieve? Clearly define the result.
Measurable: Use actual numbers, target dates, or specific events to show when your goal has been achieved.
Action-Oriented: Make your goal challenging but still realistic.
Realistic: Your goals should be achievable and be truly important to you and not just what others expect of you.
Timely: Set time deadlines for your goal. This will keep you on track.
SAFETY FIRST: RULES OF STRETCHING

1. STRETCH SLOWLY
   Every stretch should be performed at a very slow and even pace. Hold every stretch for 15-30 before slowly returning back to normal position.

2. DO NOT BOUNCE
   Never bounce into or out of stretch as this has the potential to over-stretch your muscles and cause damage. Stretching should be a smooth, fluid motion.

3. BE BALANCED
   Always stretch muscles of both side of your body. Don’t ever stretch just one leg or one arm. If unbalanced stretching continues to occur over time, it can cause muscle pain that becomes difficult to get rid of.

4. DO NOT OVER-STRETCH
   Only stretch your muscles until it is slightly no longer comfortable. Don’t ever stretch far enough that you feel pain. You should feel a slight pull on the muscle once you’re in a proper stretching position.

5. BREATHE
   Be sure to remain breathing at your regular pace during all stretches.
YOUR GUIDE TO A FULL BODY STRETCH

SIDE STRETCH
Sitting or standing, clasp your hands straight up overhead, palms facing the ceiling. Gently lower to the right side until you feel a stretch down your left side. Switch sides and repeat.

TRICEPS STRETCH
Bend the left elbow behind your head and use the right hand to gently pull the left elbow in further until you feel a stretch in your tricep. Switch sides and repeat.

BICEPS STRETCH
Take your arms out to the sides, slightly behind you, with the thumbs up (as in The Fonz). Rotate your thumbs down and back until they are pointing to the back wall to stretch the biceps.

SHOULDER STRETCH
Take right arm straight across your chest and curl the left hand around your elbow, gently pulling on the right arm to deepen the stretch in the shoulders. Switch sides.
QUADRICEP STRETCH
Stand and hold onto a wall for balance if needed. Grab the top of the right foot and bend your knee, bringing the foot towards the buttocks, knee pointing straight at the floor. You should feel a stretch right down the front of your leg. Squeeze your hips forward for a deeper stretch. Switch sides.

HAMSTRING STRETCH
Take your left foot forward and tip from the hips, keeping the back flat. Lower down until you feel a stretch in the back of the leg. Repeat on the other side.

CHEST AND SHOULDER STRETCH
Sit or stand and clasp your hands together behind your back, arms straight. Lift your hands towards the ceiling, going only as high as is comfortable. You should feel a stretch in your shoulders and chest.

UPPER BACK
Clasp your hands together in front of you and round your back, pressing your arms away from your body to feel a stretch in your upper back.

ROBERTO LUONGO’S FAVOURITE PRE-GAME STRETCH ROUTINE:
Roberto is sure to move his body through a very wide range of stretches. He begins by doing a slow bike ride on a stationary bike and then spends 10 minutes stretching as many muscles as he can while doing lunges, rotations, balance exercises, running patterns, as well as lateral, backward, and forward movements.
MY FITNESS GOAL TRACKER

My Goal:

________________________________________________________________________

________________________________________________________________________

It is important to me because:

________________________________________________________________________

________________________________________________________________________

PLAN OF ACTION:

Outline all the steps to achieve the goal. The goal needs to be broken down into small manageable tasks, each with its own deadline.

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<td>4.</td>
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<td>3.</td>
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<td>2.</td>
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List the challenges you may face while trying to achieve the goal and ways of dealing with them

<table>
<thead>
<tr>
<th>Potential Challenges</th>
<th>How to Conquer</th>
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Chart your progress in a diary, calendar, log book or agenda.