UNIT 1

- SECTION 1: HEALTH AND SAFETY IN A BARRE ENVIRONMENT
- SECTION 2: EMERGENCY PROCEDURES IN A BARRE ENVIRONMENT
- SECTION 3: RISK MANAGEMENT AND ASSESSMENT
- SECTION 4: ROLES AND RESPONSIBILITIES

SECTION 1 HEALTH & SAFETY

Health and safety is an important aspect in the planning and delivery of fitness classes. Barre Burn teachers need to understand the organization's health & safety policies and procedures, emergency actions, risk assessments and the everyday operations of the facility. Understanding all policies, procedures and risk assessments ensures the safeguarding and well-being of all barretenders and staff.

HEALTH & SAFETY LEGISLATION

To ensure a safe and effective environment, all Barre Burn classes must consider the health and safety standards of the country in which a Barre Burn class is being held . There are different laws and legislations across all regions and states, and these must always be taken into consideration when planning and delivering Barre Burn classes.

Legal Requirements
Always understand, and where possible implement, the specific legal requirements for fitness facilities and training environments. A suitable environment for the delivery and practice of Barre Burn classes is essential for a positive experience for your barretenders.

Duty of Care
A Barre Burn teacher has a duty of care to protect every barretender under their guidance. This includes creating a safe environment, providing clear and accurate instructions and monitoring the class throughout the class to prevent any injuries. It is extremely important that barretenders are safeguarded at all times.

Updates and Amendments
All Barre Burn teachers must complete mandatory CPD updates that are delivered by Barre Burn to ensure compliance with safety, teaching and general updates related to the delivery of Barre.

Welfare Facilities
Welfare facilities are important when maintaining a safe and healthy environment. Wherever a Barre Burn class is delivered, there must be adequate welfare facilities, at a minimum this should include:

- changing facilities
- toilets
- showers
- clean & safe drinking water

In addition, there must be first aid kits and trained first aid personnel during sessions in case of an emergency.

Promoting mental health and wellbeing is equally as important as welfare facilities. To ensure a positive environment is created, all Barre Burn classes must provide an inclusive environment that is accessible to all.

HEALTH & SAFETY IN BARRE

When conducting a Barre Burn class, there are many safety considerations for a teacher to keep in mind. These include:

ENSURING THE FACILITIES ARE SAFE TO USE

It is important that accidents and injuries are always prevented. Prior to starting a class, Barre Burn teachers must ensure the facility they are using is inspected and free from any obvious hazards. This includes checking the floor for any slip or trip hazards, adequate lighting is available, and temperate and ventilation ensures a comfortable environment. Where it is felt that the facility is not safe for use, the class should not commence and you are responsible to address your concerns immediately with the owner/manager.

ENSURING EQUIPMENT IS SAFE TO USE

In addition to the facility checks, it is important that Barre Burn teachers check equipment prior to use. This includes the barre, balls, mats, weights, resistance bands and any other equipment that barretenders may use. It is also important that all equipment used by barretenders and teachers is cleaned and sanitized, ensuring hygiene procedures are maintained to prevent the spread of germs.

DEALING WITH MEDICAL EMERGENCIES

Barre Burn teachers must be prepared to handle accidents or incidents that involve injuries or illnesses. Teachers must know the emergency procedure for the facility they are using, and it is good practice to hold a relevant first aid qualification.

HEALTH & SAFETY CONSEQUENCES

HEALTH & SAFETY LEGISLATION

Failing to adhere to health and safety legislation may have severe consequences which include: **Fines - Legal Actions - Sanctions**

In addition to legal consequences, there is also brand reputation and trust that could be damaged, which may lead to loss of future earnings due to a lack of uptake in classes. Neglecting health and safety could result in injury or illness to barretenders which could have both legal and financial consequences.

IMPLEMENTING HEALTH & SAFETY

Implementing health and safety standards requires a systematic approach to ensure the well-being of all barretenders. All Barre Burn teachers are expected to conduct a risk assessment, or request one from the facility where the class is being held, to ensure all risks are managed as far as reasonably practicable.

In addition to risk assessments, teachers must be aware of the operating procedures, emergency plans and policies of the facility they are using when delivering Barre Burn classes.

EMERGENCY PROCEDURES

As a Barre Burn teacher, you must make yourself aware of the policies and procedures of the venue and organizations you are representing. Emergency procedures are typically detailed in an Emergency Action Plan (EAP) which is in place to make everyone aware of what to do in an emergency e.g. fire, bomb threat, gas leak, or where an evacuation is necessary. The EAP will detail the measures taken in an emergency, and include factors such as;

- Assessing the risk
- Individual roles and responsibilities
- Emergency exit routes
- Warning, and communications procedures
- Following the EAP

There will be many different people with different roles who you encounter when delivering Barre Burn classes, all of which have a duty to uphold safety standards, these roles can include:

Management teams hold the overall responsibility of health and safety within a venue and ensure all users are adhering to health and safety.

Health and Safety Officers will implement the policies and procedures surrounding safety and is responsible for ensuring the relevant people are suitably trained.

First aiders are designated people with appropriate qualifications who can provide first aid care during an emergency.

Teachers have a duty of care to their barretenders and are responsible in ensuring health and safety practices are carried out.

RISK MANAGEMENT & ASSESSMENT

Risk Assessment

A risk is the likelihood of a person being harmed by a hazard. There are many potential hazards in a Barre environment which could relate to facilities, equipment, manual handling, or cleanliness. It is therefore essential that risk assessments are conducted to evaluate factors that may pose a threat to safety and have any necessary control measures implemented.

There is a 5-step process for controlling risks in the workplace:

1. IDENTIFY HAZARDS
2. DECIDE WHO IS HARMED AND HOW
3. EVALUATE THE RISK
4. RECORD YOUR FINDINGS
5. REVIEW THE CONTROLS

Supervision of a Barre Burn Environment

During a Barre Burn class, all teachers are responsible for overseeing the health, safety and wellbeing of all barretenders. The area to be used must be clean, organized and free of hazards.

During the class, Barre Burn teachers must ensure that barretenders are performing exercises correctly to avoid injury and making adjustments to barretenders that require additional support.
All barretenders must be wearing appropriate fitness attire, and have the correct equipment when starting the Barre Burn class.

Control Measures are the actions that are put in place to reduce or remove hazards. This enables a safer environment for both the teacher and the barretenders.

Below are some examples of potential hazards and control measures.

Potential Hazards	***Controls***
Loose Wires	• Use wireless technology • Cover and secure wires
Slips, Trips, Falls	• Ensure floor is clear of water, dust, and debris • Carry out a pre-class check • Remove all trip hazards • Store equipment in designated areas
Damaged Equipment	• Remove from use • Purchase new equipment (if needed)
Loose Barre	• Remove from use • Replace • Repair and secure
Dirty Equipment	• Follow hygiene procedures • Develop a cleaning protocol • Clean equipment prior to and after use

Below are some other examples of how a Barre Burn teacher can help control the risks and manage the safety of their barretenders in the classes they oversee:

- **Keep all areas clean and safe** (follow the sanitary practices that have been established as part of the studio policy)
- **Ensure barretenders are performing exercises correctly**
- **Ensure barretenders are wearing correct clothing**
- **Being aware of your teaching position to ensure all barretenders are visible to you**

ROLES & RESPONSIBILITIES

EMPLOYER RESPONSIBILITES

Employers have a duty of care to ensure the **safety** and **wellbeing** of their employees and barretenders.

To fulfil this duty, employers must:

- Issue a comprehensive health and safety statement (including EAPs)
- Conduct regular risk assessments and implement precautions to mitigate potential hazards
- Provide and maintain an environment that is safe and fit for purpose
- Offer appropriate training and supervision as necessary
- Ensure that employees and barretenders are not subjected to unnecessary risks
- Provide access to first aid facilities

TEACHER RESPONSIBILITES

The roles and responsibilities of a Barre Burn teacher are set out to specify and clarify the tasks of a teacher. This makes the Barre teacher responsible for delivering a successful Barre Burn class. Listed below are some key responsibilities:

Equipment Checks

It is the teacher's role to carry out maintenance checks on equipment to ensure it is safe and fit for use before the start of a class. They also are responsible for putting out all the equipment that is going to be used at each barretenders' station (as well as providing suggestions for equipment being used based on a barretender's injuries/needs). Where you are working with a front-of-house team you must assign responsibilities accordingly. Using faulty equipment could cause harm to barretenders, so to reduce this risk, it is recommended a pre-class checklist is used to record findings.

Maintaining Cleanliness

A single piece of equipment could be used by multiple barretenders on any given day or week. It is the teacher's responsibility to maintain the cleanliness of equipment, below are some recommended steps to implement;

- Provide antibacterial wipes, spray, or sanitizer that are available to use
- Ask class members to clean their equipment at the end of their session
- Complete a thorough clean of equipment at the end of the day

Data protection

Teachers must ensure they are handling personal data appropriately, with barretenders from all over the world, it is important to familiarize yourself with local data protection laws to be compliant.

The teacher may have access to the following personal data:

- **Names**
- **Addresses**
- **Date of Birth**
- **Health considerations**
- **Financial information**
- **Other sensitive information**

To keep personal data safe, teachers should implement measures for protecting both physical and digital records. This can be measures such as not keeping data for longer than you need, establishing data retention and deletion policies, backing up data, using strong passwords and using secure networks.

Professional Conduct

As a Barre Burn teacher it is your responsibility to always act in a positive and professional manner. It is imperative that you are appropriately qualified and consistently uphold the highest ethical and professional standards, usually through following a code of conduct and demonstrating professional competence by upholding your skills and knowledge by taking part in Continuous Professional Development (CPD). In addition to this, Barre Burn teachers should consider individual needs and strive to accommodate every barretender to the best of their abilities.

Participation and Inclusion

Inclusion has been defined in the Oxford Dictionary as "the action or state of including or of being included within a group or structure." As a Barre Burn teacher, it is your responsibility to include, challenge and where possible meet the needs of your barretenders within your classes.

It is best practice for inclusion to be embedded within all stages of a Barre Burn class including, planning (Roadmap), delivery and evaluations. As a result you will not only comply with your countries legal requirements but also help increase enjoyment. keep your barretenders returning for more. Regular participation in Barre classes has many benefits, including:

- ***Living a healthy lifestyle***
- ***Improved strength and tone***
- ***Better Posture***
- ***Increased endurance***
- ***Core stability***
- ***Enhanced mind-body connection***
- ***Creating social benefits***
- ***Managing long-term health conditions***
- ***Improved mental and physical wellbeing***

AS A BARRE BURN TEACHER IT IS YOUR RESPONSIBILITY TO ALWAYS ACT IN A POSITIVE AND PROFESSIONAL MANNER.

UNIT 2

- **SECTION 1:** UNDERSTANDING BODY SYSTEMS, SKELETAL SYSTEMS AND HOW THESE ARE USED IN BARRE TECHNIQUES
- **SECTION 2:** UNDERSTANDING THE MUSCULAR, RESPIRATORY AND CARDIOVASCULAR SYSTEM IN RELATION TO BARRE
- **SECTION 3:** UNDERSTANDING THE EFFECTS OF EXERCISE ON THE CONNECTIVE TISSUE SYSTEM
- **SECTION 4:** UNDERSTANDING THE DIFFERENT BONE AND MUSCLE SYSTEMS USED IN BARRE INCLUDING THE SPINE AND CORE

A FEW WORDS ON ANATOMY...

Our anatomy and physiology units provide a brief overview to help contextualize the human body for teaching a Barre Burn class. As you learn, you may naturally become more curious and seek additional information to expand your knowledge.

THE BODY IS FASCINATING!

Grasping the fundamentals of anatomy and physiology and their application to a Barre Burn class is vital, as they directly impact movement. Anatomy is structure. Physiology is function. Our goal in providing these key elements is to improve your approach to sequencing and ensure a safe and successful experience for your barretenders.

The Barre Burn Manual is structured by each muscle group. Whether you explore the body's inner workings in depth or prefer a more practical approach, the following sections will offer valuable insights and help you master the art of intelligent sequencing.

What is movement?

At its core, it's the change in our body's position in space. In simple terms, muscles move bones, supported by soft tissue and fascia, while the nervous system coordinates this process with messages from the brain. The energy required for movement comes from the food we eat and the oxygen we breathe. Every part of the body, including all our senses, plays a role in facilitating movement.

A little anatomy tip...

Before you start Unit 2, it's important to note these four sections are designed to provide you with the information that will equip you with what you need to conduct a Barre Burn class and become an amazing Barre Burn teacher. The world of anatomy is vast and forever changing because of advancements in scientific research. So, this is just the beginning! We are providing you with the basic anatomical information, specific to what your needs are for this course. We strongly encourage you to take more anatomy courses, especially on topics that interest you!

LEARN THE ANATOMY LINGO

TERMS FOR THE BODY

Medial: Referring to movements going towards the centre of the body

Midline: The centre of the body

Lateral: Referring to movements going away from the centre of the body

Distal: Away from the trunk (distant)

Proximal: Towards the trunk (near the origin)

Anterior: Front of the body

Posterior: Back of the body

Superior: Referring to “higher”

Inferior: Referring to “lower”

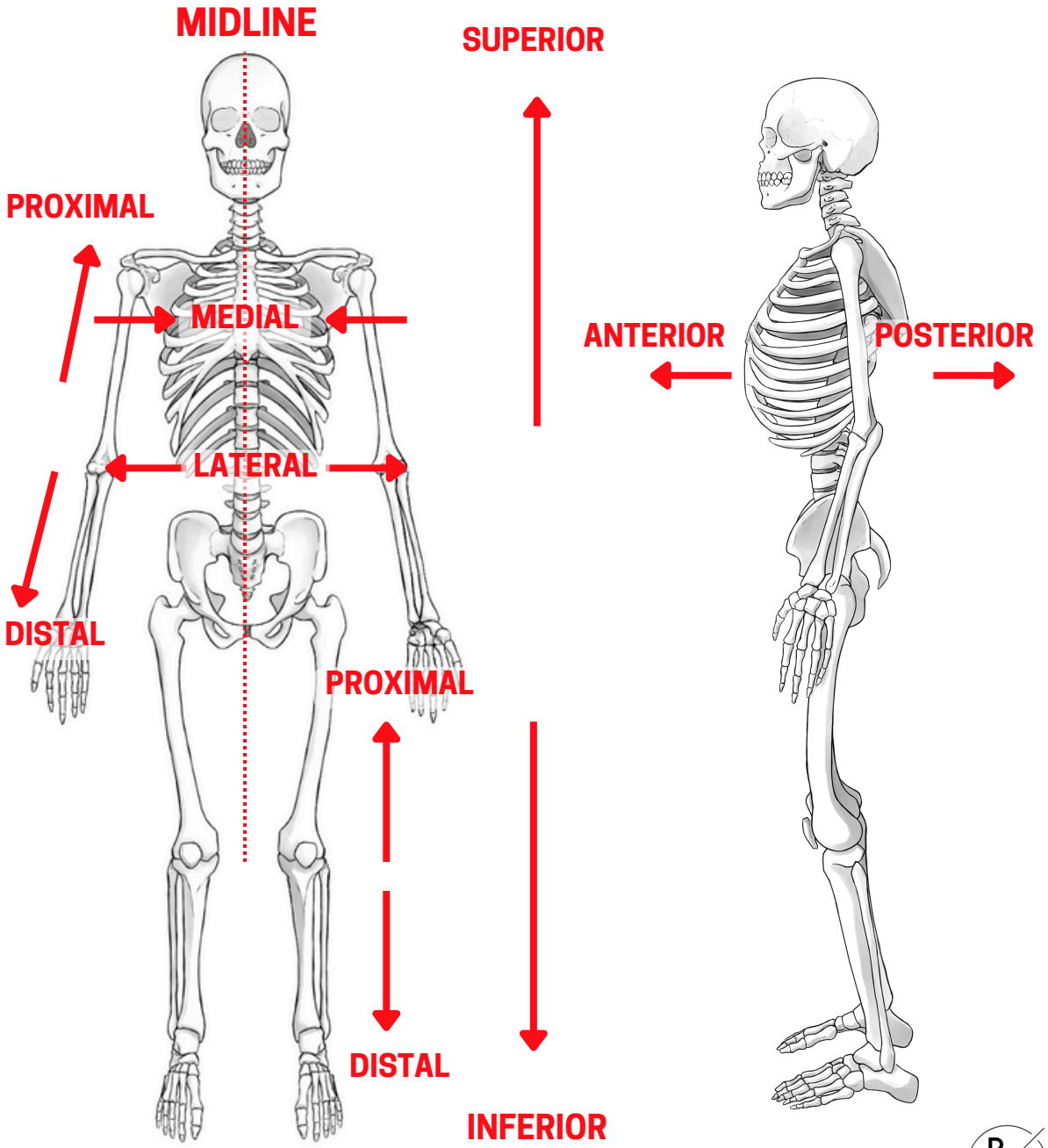


FIGURE 1

LEARN THE LINGO FOR THE FEET

INVERSION
The sole of the foot is turning inwards towards the midline of the body

EVERSION
The sole of the foot is turning outwards, away from the midline of the body

DORSIFLEXION
Pointing the toes up to the sky (flexing the foot)

PLANTARFLEXION
Pointing the toes down to the floor (pointing the foot)

SKELETAL SYSTEMS

The skeletal system is the body's internal framework and has many functions such as providing the shape of the body and protecting our vital organs and internal systems. The skeleton also provides movement of the body and our bones even store minerals such as calcium.

There are two main structures of the Skeletal System:

1. Bones: Hard and rigid tissue that forms the skeleton. There are **206** bones in an adult body and these are connected by joints.

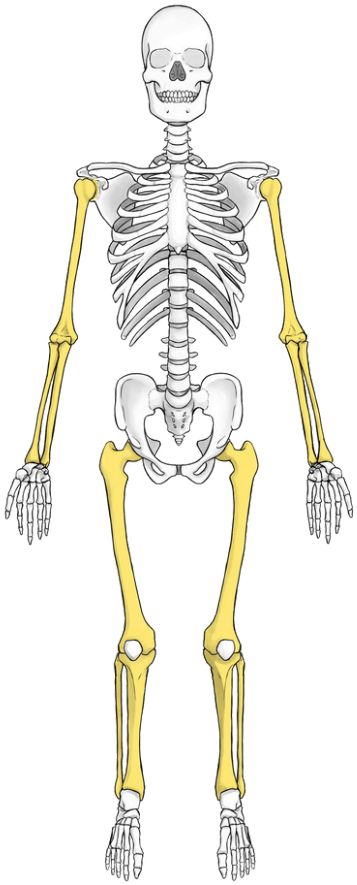
2. Cartilage: Strong yet flexible tissue that protects bones and joints.

MAJOR BONES

The bones in our body are classified based on their shape as outlined below and are illustrated on the following page in **Figure 2.**

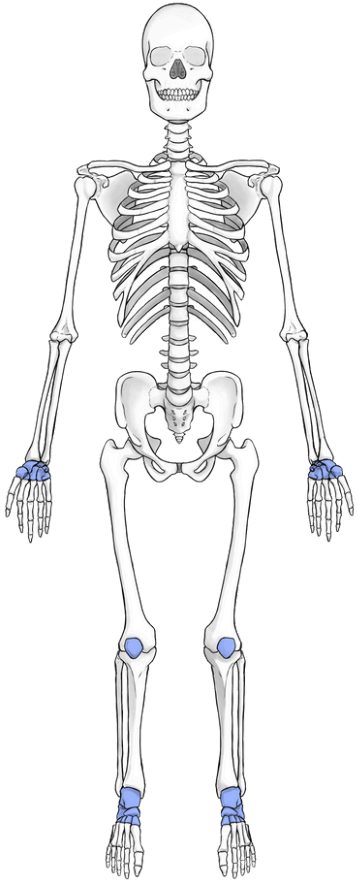
Name	Description	Examples
Long Bones	Hard and dense bones with a shaft and two ends. They provide strength, structure, and mobility.	femur, fibula, tibia, humerus, ulna and radius
Short Bones	Mostly spongy bone that are shaped roughly as a cube. They provide support and stability.	carpals, knee cap and tarsals
Flat Bones	A layer of spongy bone between two thin layers of compact bone. These bones are often thin and curved	sternum, scapula, ribs and skull
Irregular Bones	Are varied in their structure and shape	vertebrae and heel bone

MAJOR BONES



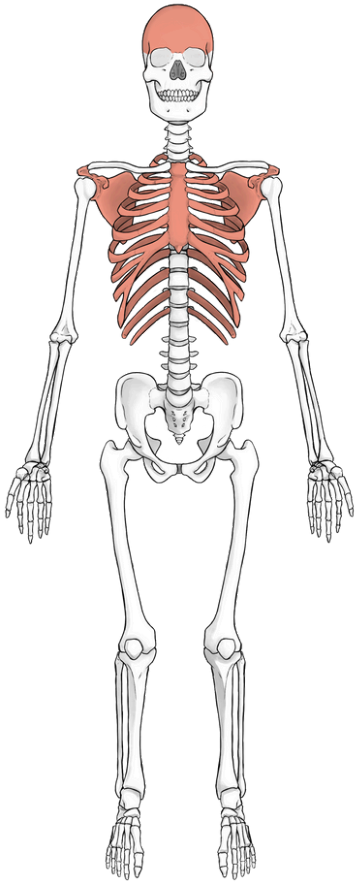
LONG BONES:

- femur
- fibula
- tibia
- humerus
- ulna
- radius



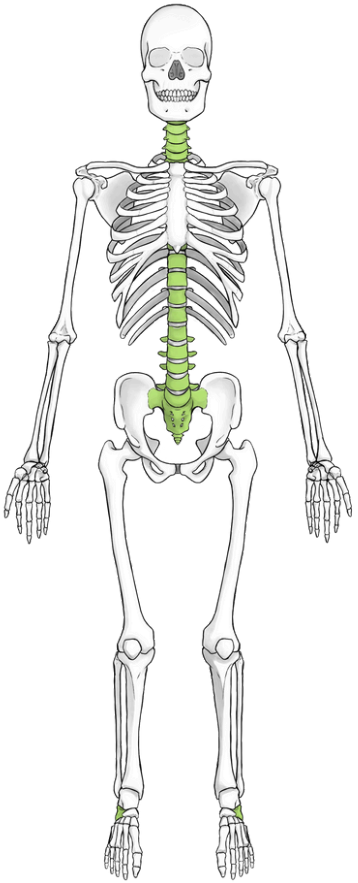
SHORT BONES:

- carpals
- knee cap
- tarsals



FLAT BONES:

- sternum
- scapula
- ribs
- skull



IRREGULAR BONES:

- vertebrae
- heel bone

FIGURE 2

TEACHER TIP

It's important to note, we cannot change our SKELETABILITY (bone structure)! Depending on the shape of your bones, the mobility of individuals may be larger than others.

For example, the Acroniom bone in the shoulder will be a major factor when looking at the range of motion in the shoulder. If this bone is long and sticks out in an individual, it will be hard for them to raise their hand overhead. This could affect movements like Shoulder Raise **(page 81)**, Overhead Press **(page 81)**, Skull Crusher **(page 78)** or Down Dog **(page 120)**. Let's also consider the hip joint. Depending on the structure and relationship between the

And because we cannot see them, we have to be aware that everyone will look slightly different (because their bones are different).

Since we can't see bones and we can only see our barretenders in their Barre poses, we have to be aware that everyone will look slightly different (because they all have different skeletabilities). Thus, a Barre Burn teacher will modify poses based on the barretender's comfort level, target muscle engagement and of course, ensure the barretender is pain-free and enjoying the BARRE BURN!

JOINT SYSTEMS

Joints are the connections between two or more bones in the body that allow for movement and provide support. The joint systems in the body play a crucial role in fitness and movement, allowing for flexibility, stability, and strength during exercise. Below are the **three** types of joints in the body:

NAME	RANGE OF MOTION	EXAMPLES	POSSIBLE MOVEMENTS (see page 26)
Synovial Joints	moves freely (see **Figure 3, Page 25**)	shoulders, hips, knees, elbow	abduction (away), adduction (towards), extension (open), flexion (close), and rotation
Cartilaginous Joints	moves slightly	vertebrae, pubic	smooth gliding actions as joints flex. Also helps with shock absorption
Fibrous Joints	NOT moveable	skull	joints are not moveable

POSSIBLE MOVEMENTS OF SYNOVIAL JOINTS

pivot joint
between C1 and C2 vertebrae

hinge joint
elbow

saddle joint
between trapezium and 1st metacarpal bone

ball and socket joint
hip joint

condyloid joint
between radius and carpal bones of wrist

plane joint
between tarsal bones

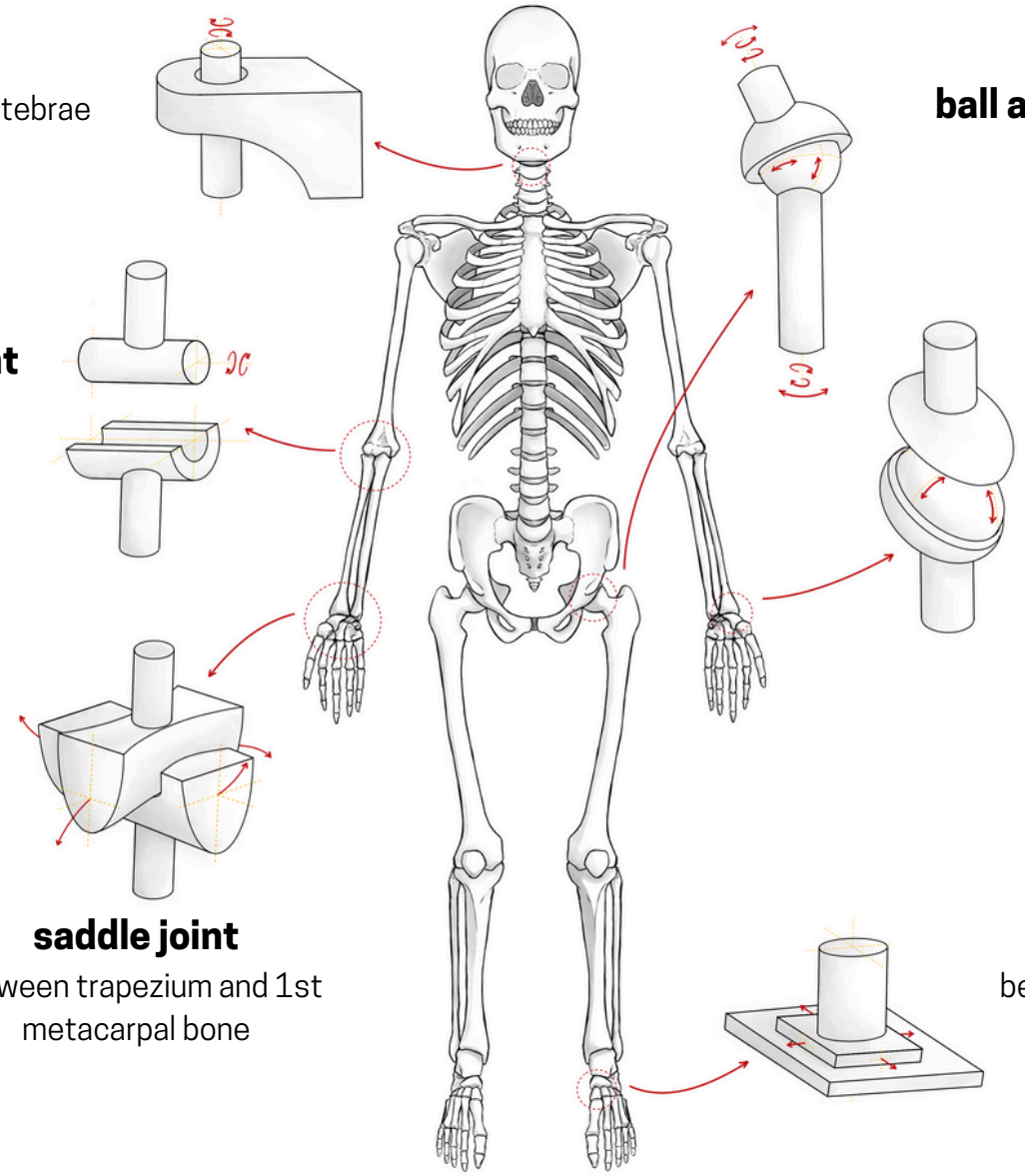


FIGURE 3

LEARN THE ANATOMY LINGO OF JOINTS

JOINT MOVEMENTS

- **Flexion:** Decreasing the angle between two bones, such as bending the elbow or knee. Example: Upward motion of bicep curl
- **Extension:** Increasing the angle between two bones, such as straightening the elbow or knee. Example: Downward motion of a bicep curl.
- **Abduction:** Moving a limb away from the midline of the body, such as lifting the arm or leg to the side. Example: Outward motion of the leg in Hairpin
- **Adduction:** Moving a limb towards the midline of the body, such as lowering the arm or leg back to the side. Example: Downward motion of the leg in a Hairpin
- **Circumduction:** Moving a limb in a circular motion, such as rotating the arm in a windmill motion. Example: Rotating the leg in small circles during Foldover
- **Rotation:** Turning a bone around its axis, such as turning the head side to side or rotating the torso. Example: Twisting the torso during a Lunge
- **Internal (medial) rotation:** Rotating towards the center of the body. Example: Toes in heels out variation during Calf Raises
- **External (lateral) rotation:** Rotating away from the center of the body. Example: Toes out, heels in during Wide 2nd
- **Supination:** Rotating the forearm so the palm faces upward or forward. Example: Preacher Bicep Curl
- **Pronation:** Rotating the forearm so the palm faces downward or backward. Example: Palms facing up during Tricep Extension
- **Dorsiflexion:** Bending the foot upward at the ankle, decreasing the angle between the foot and the shin. Example: Flexing the foot during Glute Kick Back
- **Plantarflexion:** Bending the foot downward at the ankle, increasing the angle between the foot and the shin. Example: Pointing the toes during Sun Bird.
- **Inversion:** Turning the sole of the foot inward, towards the midline.
- **Eversion:** Turning the sole of the foot outward, away from the midline.
- **Elevation:** Raising a body part, such as shrugging the shoulders.
- **Depression:** Lowering a body part, such as relaxing the shoulders after shrugging.
- **Protraction:** Moving a body part forward. Example: Scapular protraction at the top of a Push-up.
- **Retraction:** Moving a body part backward. Example: Scapular retraction at the bottom of a Push-up.

JOINTS IN THE UPPER SKELETON

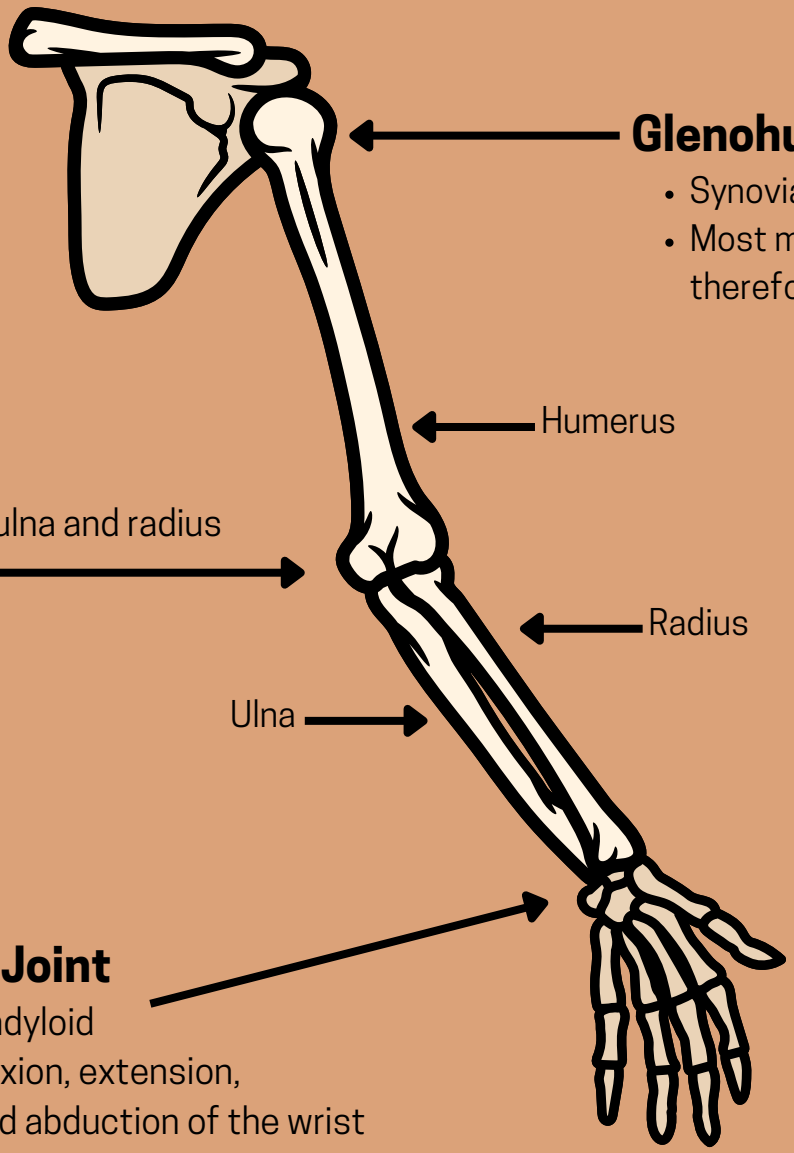
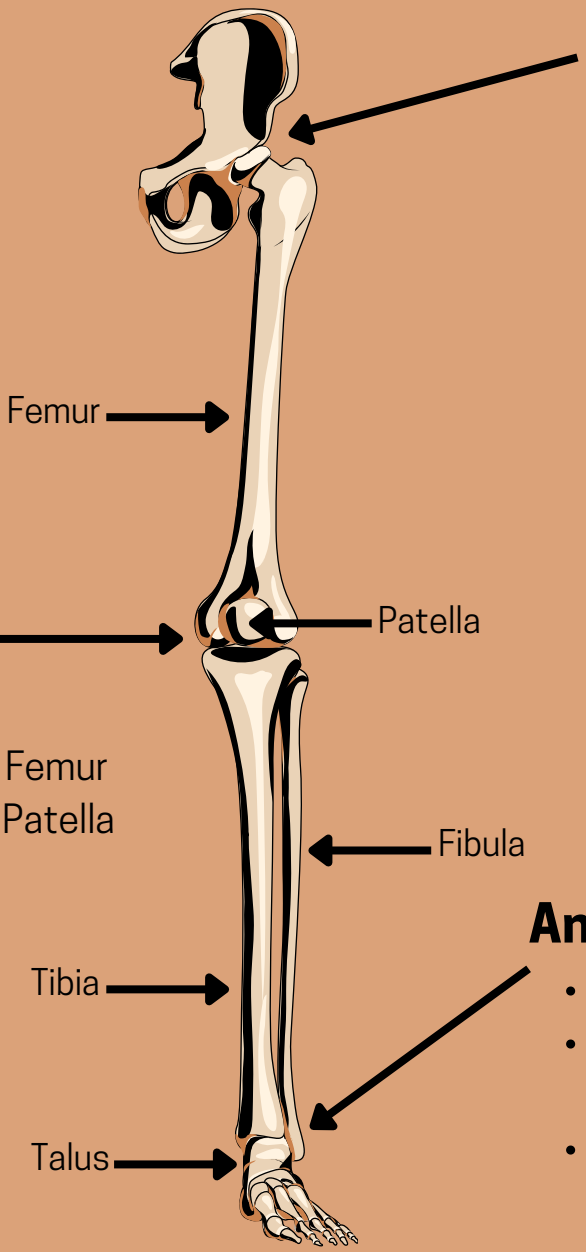


FIGURE 4

JOINTS IN THE LOWER SKELETON

Hip Joint

- Synovial: Ball and Socket
- Very stable with extensive movement



Knee Joint

- Synovial: Bi-condylar
- Allows for flexion and extension
- Large and complex joint that connects Femur (thigh bone), Tibia (lower leg bone) and Patella (kneecap)

Ankle Joint

- Synovial: Hinge
- Connects the formed by the talus, tibia and fibula bones
- Main movements are plantarflexion and dorsiflexion

FIGURE 5

Let's talk about hyperextension!

Hyperextension simply means there is an excessive movement of a joint in one direction (usually when it is being straightened). Hyperextension commonly happens at the knees and elbows. As a Barre Burn teacher being aware of this is important to safely monitor any barretenders with hyperextension because over time, the tissues around the joint may become damaged.

TEACHER TIP

So, what do you do if you see hyperextension in your class? The typical response is to suggest to your barretender to 'microbend' her knee or elbow, but that's not entirely accurate. It's important to note that's everyone's bones differ, sometimes bone structures are aligned internally even if they don't appear to externally. If you have the opportunity to talk to your barretender after class you can speak about muscle engagement around their hyperextension. For example, engaging the quads and the hamstrings to stabilize the knee and/or the biceps and triceps to stabilize the elbow. You can also strongly "cue" these engagements if you notice hypertension occurring amongst barretenders in your class.

BULLETPROOF YOUR JOINTS

HOW TO PROMOTE HEALTHY JOINT MOBILITY AT THE BARRE?

Regular exercise and participation in Barre classes can help promote healthy joint mobility, activities to promote and include in your routine to keep joints healthy include:

- Stretching
- Having good posture
- Maintaining a healthy weight
- Eating a balanced diet
- Avoiding repetitive motions
- Good bones (which you can't change but should be aware of!)

LET'S TALK ABOUT WHAT MUSCLES DO

Before we dive into the muscular systems let's quickly discuss the role of muscles. Simply put, muscles can move in an eccentric, concentric and isometric pattern.

Concentric movement occurs when the tension in the muscle increases and therefore the muscle fibers contract and get shorter in length. For example, when you perform a bicep curl, the concentric part of the movement is when the weight gets closer to your shoulder, this is when the muscle is shorter and the tension in the muscle has increased.

Eccentric movement occurs when the muscle fibers are lengthening and there is minimal tension (also known as the negative part of the movement). For example, if we take the same movement of the bicep curl, the eccentric part of the movement is when the weight is lowered down to the level of the hips, this is when the muscle is lengthened.

Isometric movement is simple! You stay still! That means, there is no lengthening or shortening of the muscle. For example, we can hold the bicep curl at a 90-degree angle where the wrist is in line with the elbow. These types of movements help to strengthen different ranges of motion.

HOW MUSCLES WORK

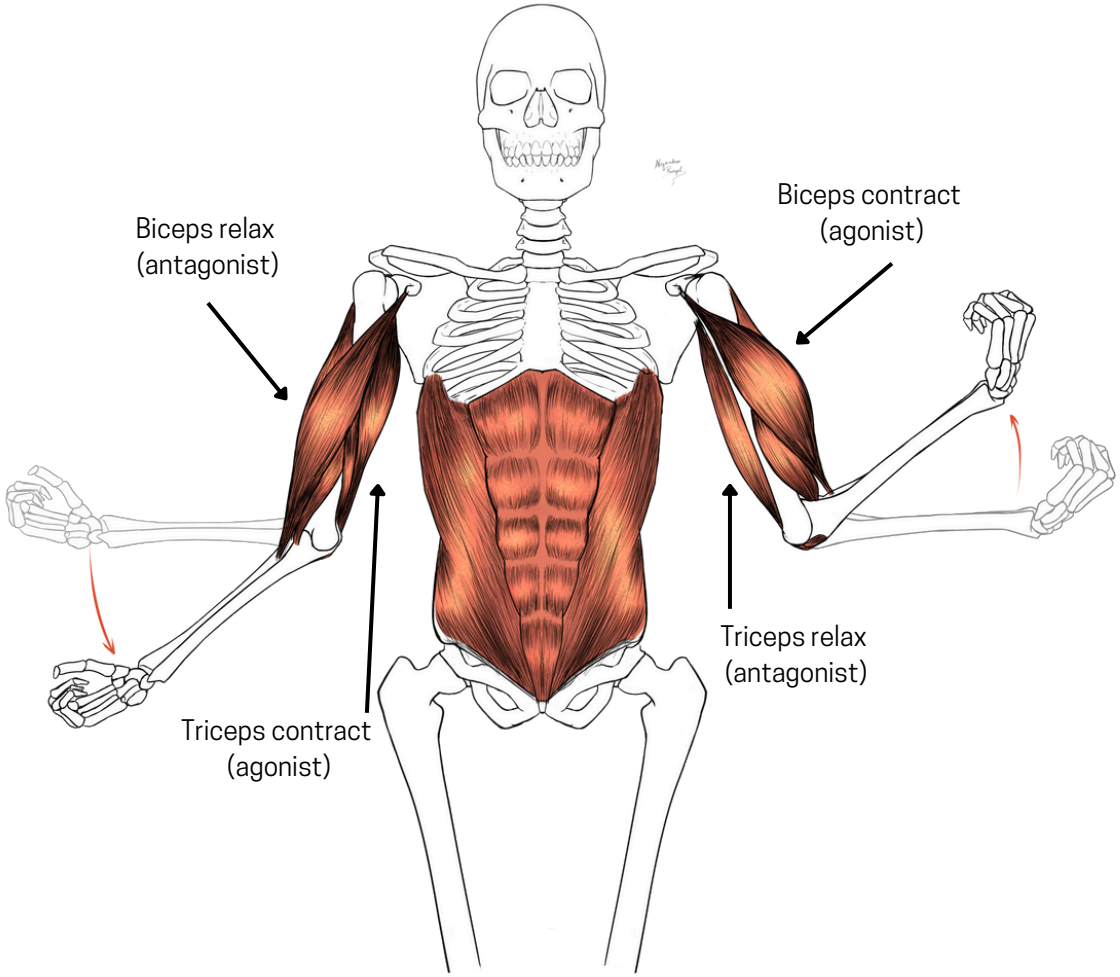


FIGURE 6

WHAT IS THE BARRE BURN?

We love and live for that Barre Burn! But what exactly is it? Simply put, it's lactic acid, a by-product of glucose metabolism (the breakdown of sugar in our muscles). When you exercise and deplete the energy stored in your muscles, they need more fuel to keep going. If we don't provide them with the necessary fuel, lactic acid starts to build up, which is completely normal during an intense or prolonged workout. This build-up of lactic acid causes the "burning sensation" in your muscles—that's our beloved Barre Burn.

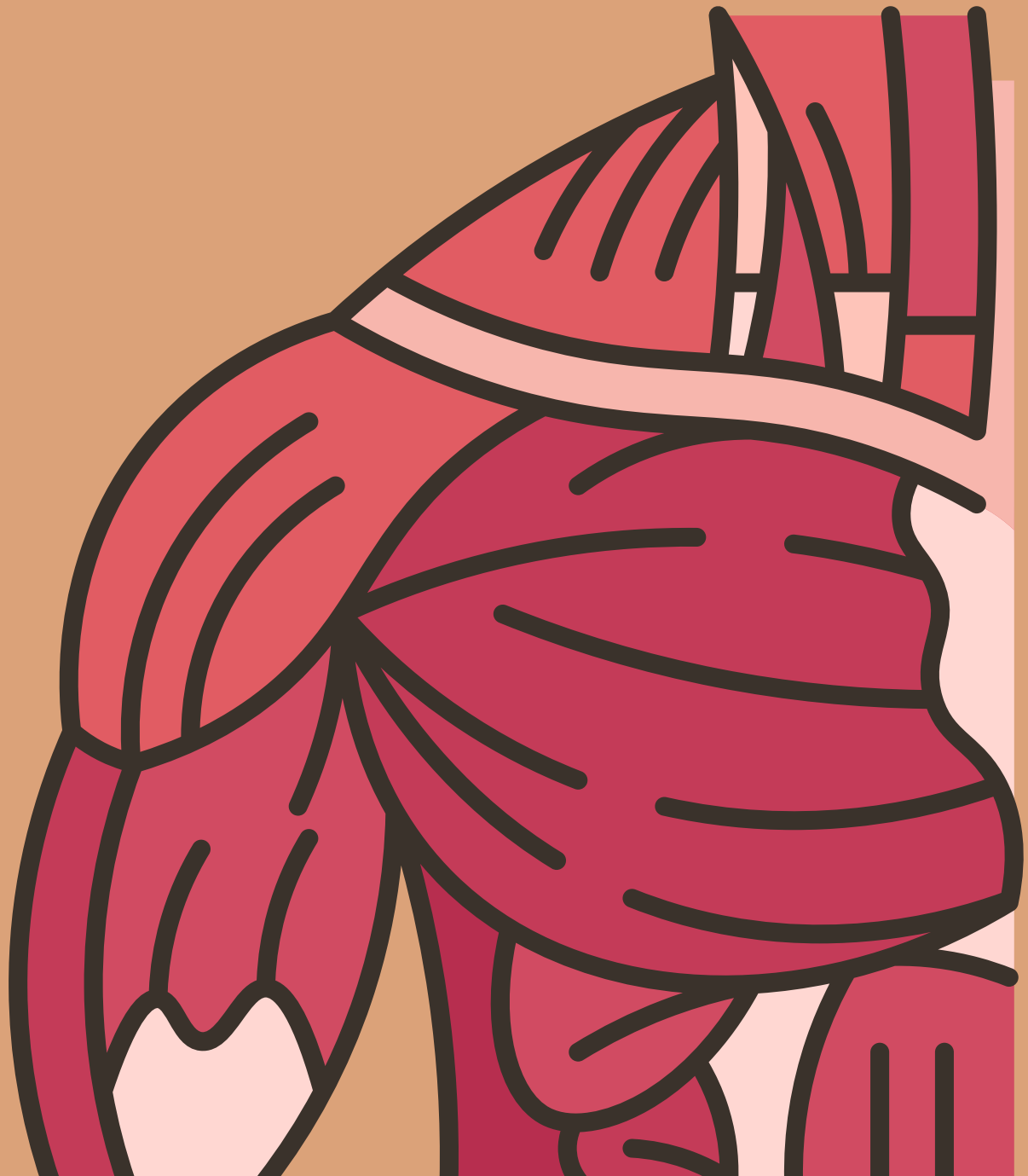
After a workout, it's important to rest, cool down, stretch, stay hydrated with water, and eat nutritious food to help regulate the lactic acid buildup and aid in muscle recovery.

MUSCULAR SYSTEMS

EIGHT MAJOR MUSCLE GROUPS

When delivering a Barre Burn class there are eight major muscle groups you can target and work on during your class. The muscles can be isolated and worked on individually or they can be incorporated into a full-body workout. The muscle groups include:

- SHOULDERS
- ARMS
- CHEST
- CORE
- BACK
- GLUTES
- THIGHS
- CALVES



TYPES OF MUSCLES

These **three** types of muscles work together to perform essential functions for movement, organ function, and overall bodily processes.

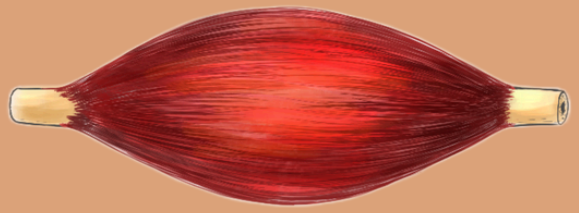
Name	Location	Function	Control	Appearance
Cardiac	Found exclusively in the heart	Responsible for the involuntary contraction of the heart, which pumps blood throughout the body	Involuntary, controlled by the autonomic nervous system and specialized pacemaker cells within the heart	Striated like skeletal muscle, but with unique structural features such as intercalated discs that allow for synchronized contraction
Smooth	Found in the walls of internal organs such as the stomach, intestines, blood vessels, & bladder	Responsible for involuntary movements such as the contraction of the digestive tract, blood vessel constriction, and bladder control	Involuntary, meaning it is controlled automatically by the autonomic nervous system	Non-striated, with a smooth appearance under the microscope
Skeletal	Attached to bones by tendons	Responsible for voluntary movements such as walking, running, and lifting objects	Voluntary, meaning it is consciously controlled by the nervous system	Striated (striped) due to the arrangement of actin and myosin filaments

MUSCLE FIBERS

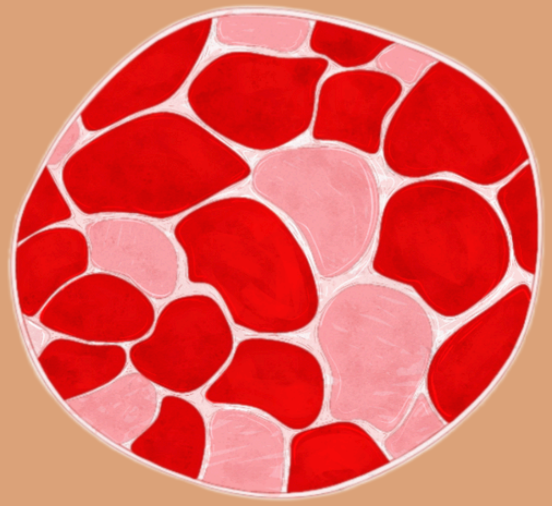
Skeletal muscle fibers are classified into fiber types: **slow twitch** versus **fast twitch.** Our slow twitch muscles are endurance based as they contract slowly and can do so for a long time. Our fast twitch muscles are speed based as they contract quickly but fatigue more rapidly. Generally, Barre poses have a strong focus on slow twitch muscles fibers.

Slow Twitch Muscle Fibers

(red muscle fibers) are highly activated in a Barre Burn class during low-impact, high repetition movements, such as pulsing in a chair or sustained with lighter weights.

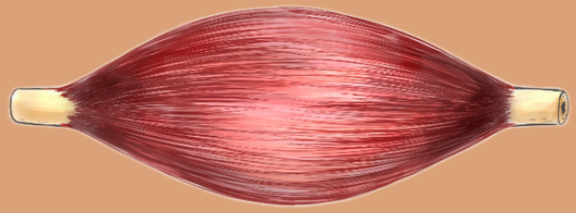


Endurance



Fast Twitch Muscle Fibers

(white muscle fibers) are targeted during movements using a higher weight load and lower repetition such has squats, deadlifts or burpees.



Strength

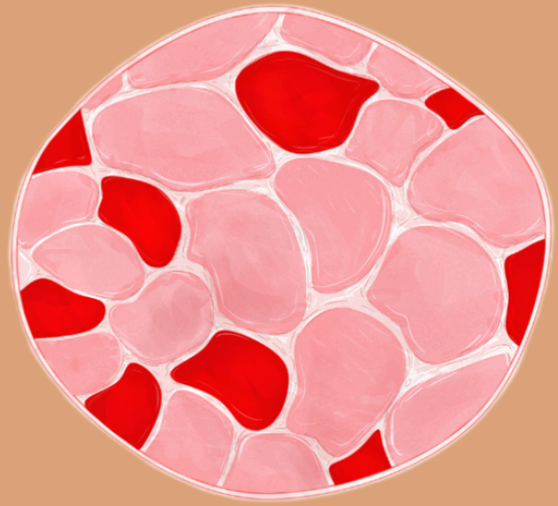


FIGURE 7

MUSCLE FUNCTIONS & ROLES IN MOVEMENT

Understanding the roles of different muscles and how they interact is essential for effectively designing and conducting Barre classes, and ensuring safe and effective workouts.

A muscle has a point of origin and a point of insertion. The origin is where the muscle attaches to a stationary bone, and the insertion is where it attaches to a moving bone. When a muscle contracts, the insertion moves toward the origin. Muscles usually work in pairs or groups to facilitate movement.

Agonists/Prime Movers:

These muscles cause movement by contracting.
They create the normal range of movement in a joint.

- Example: During a bicep curl, the biceps are the agonists. See **page 30, Figure 6**

Antagonists:

These muscles oppose the movement generated by the agonists and help return a limb to its initial position.

- Example: During a bicep curl, the triceps act as the antagonists. See **page 30, Figure 6**

Synergists/Neutralizers:

These muscles assist the agonists in performing the same joint motion. They help stabilize a joint to ensure the movement is smooth and within the desired plane.

- Example: During a bicep curl, the brachialis acts as a synergist to the biceps.

Fixators/Stabilizers:

These muscles provide the necessary support to stabilize the body while movement occurs.

- Example: During the Criss Cross exercise, the core muscles act as stabilizers to maintain the pelvis's stability while the knee comes in and the upper body twists across.

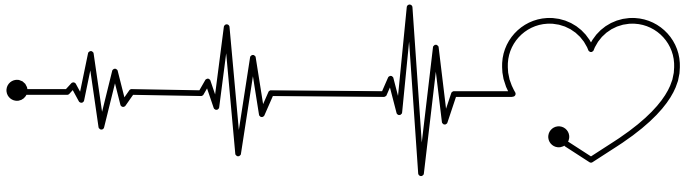
Group Muscle Action

A group of muscles that work in concert to provide a specific movement.

- Example: The quadriceps (rectus femoris, vastus medialis/intermedius/lateralis) and the hamstrings (biceps femoris, semimembranosus, semitendinosus) work together as muscle groups.

STRUCTURE & FUNCTIONS OF THE HEART

The heart is the muscular organ that constantly works to pump blood to all parts of the body through arteries, veins and capillaries. There are four chambers within the heart. There are two upper chambers: The right atrium and the left atrium. There are two lower chambers: the right ventricle and the left ventricle.



THE MAIN FUCTIONS OF THE HEART

- **Circulating oxygenated blood to the body** - The heart receives deoxygenated blood from the veins and pumps it to the lungs for oxygenation which is circulated to the body through the arteries

- **Circulating hormones and other nutrients to the body**- this helps organs to function correctly

- **Maintaining a healthy blood pressure -** The pumping action of the heart creates pressure and this force is essential in maintaining a normal blood flow through the body

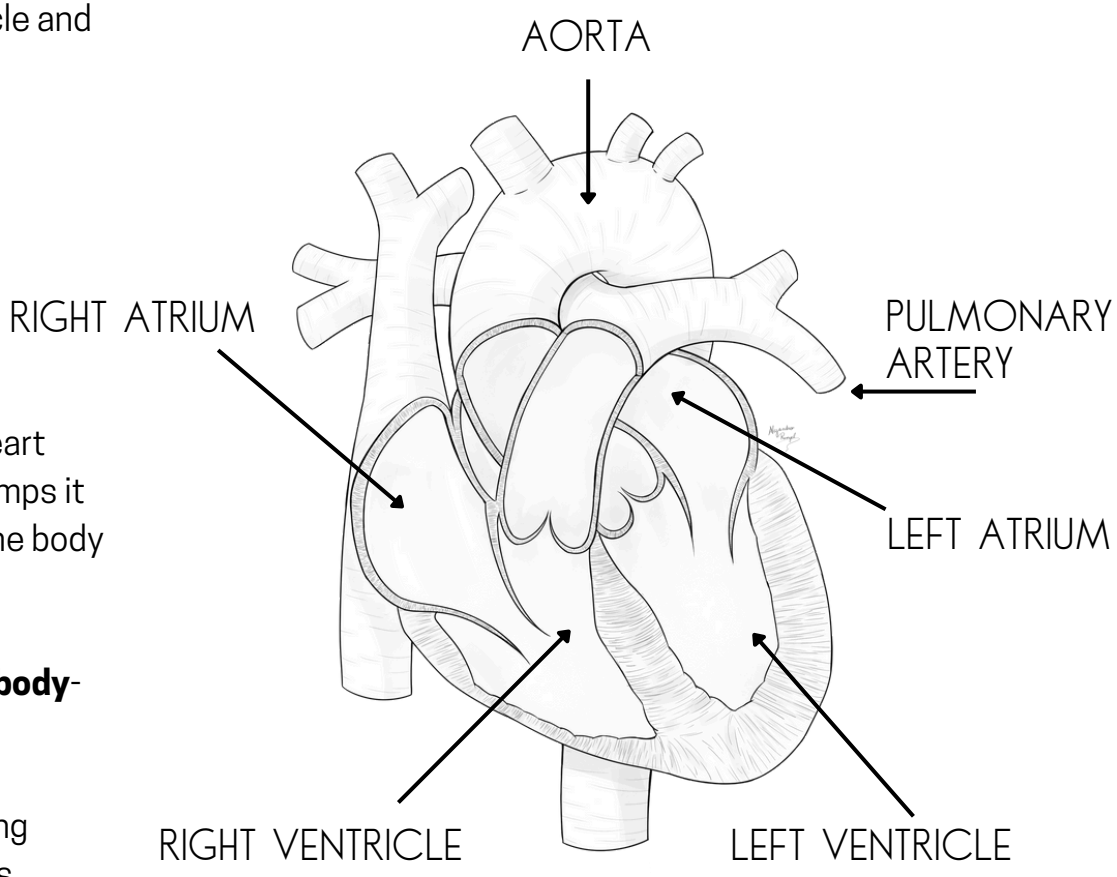


FIGURE 8

STRUCTURE & FUNCTIONS OF THE LUNGS

During your Barre Burn classes you should include activities and cues to bring the breath under conscious control as part of your practice. The breath (respiratory system) is responsible for taking oxygen into the body and removing waste (carbon dioxide).

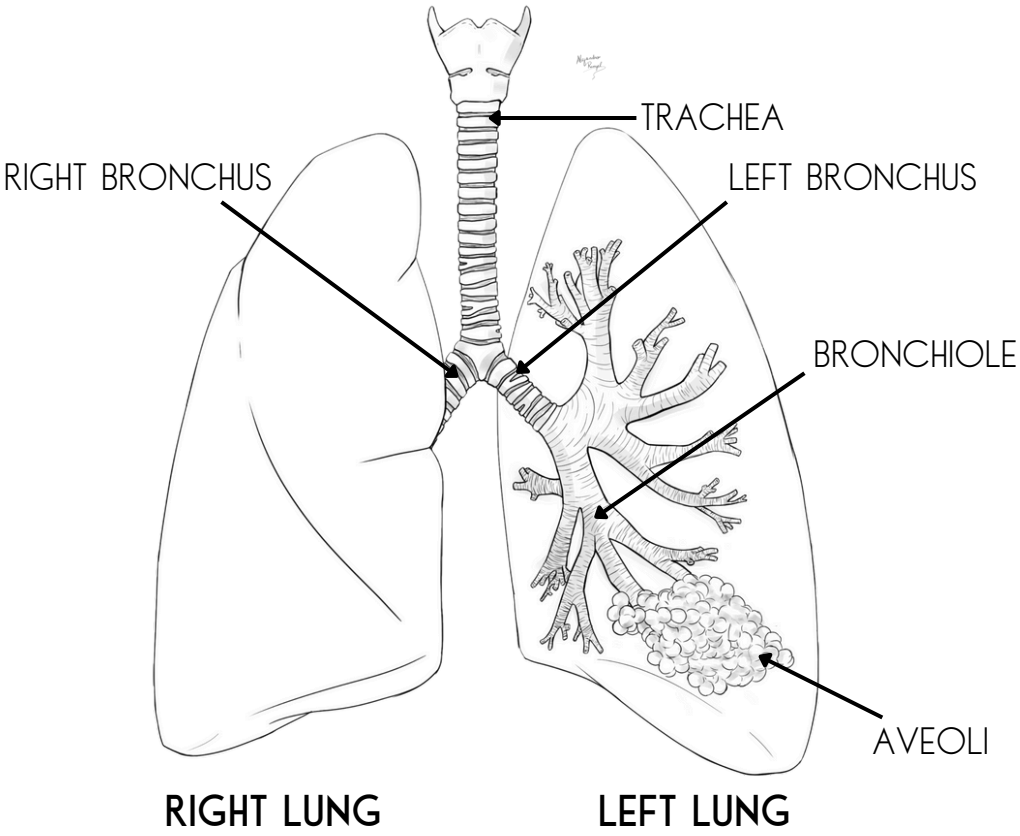


FIGURE 9

The two main phases of the breathing cycle are inspiration (drawing air into the lungs) and expiration (expelling air from the lungs). This process is made possible through a network of muscles working together. Below are the Primary (main) and Secondary (supporting) muscles involved in the respiration process:

- **Thoracic muscles (Primary) -** These muscles are responsible for raising the ribcage during the breath and include the internal and external intercostal muscles.
- **Diaphragm (Primary) –** makes breathing possible by moving up and down to aid the expansion and contraction of the lungs
- **Neck muscles (Secondary) –** helps raise the sternum during inhalation and supports the external and internal intercostals
- **Pectoral girdle muscles (Secondary) –** helps provide structural support
- **Abdominal muscles (Secondary) –** helps pull the ribs down during active expiration

TWO PHASES OF BREATHING

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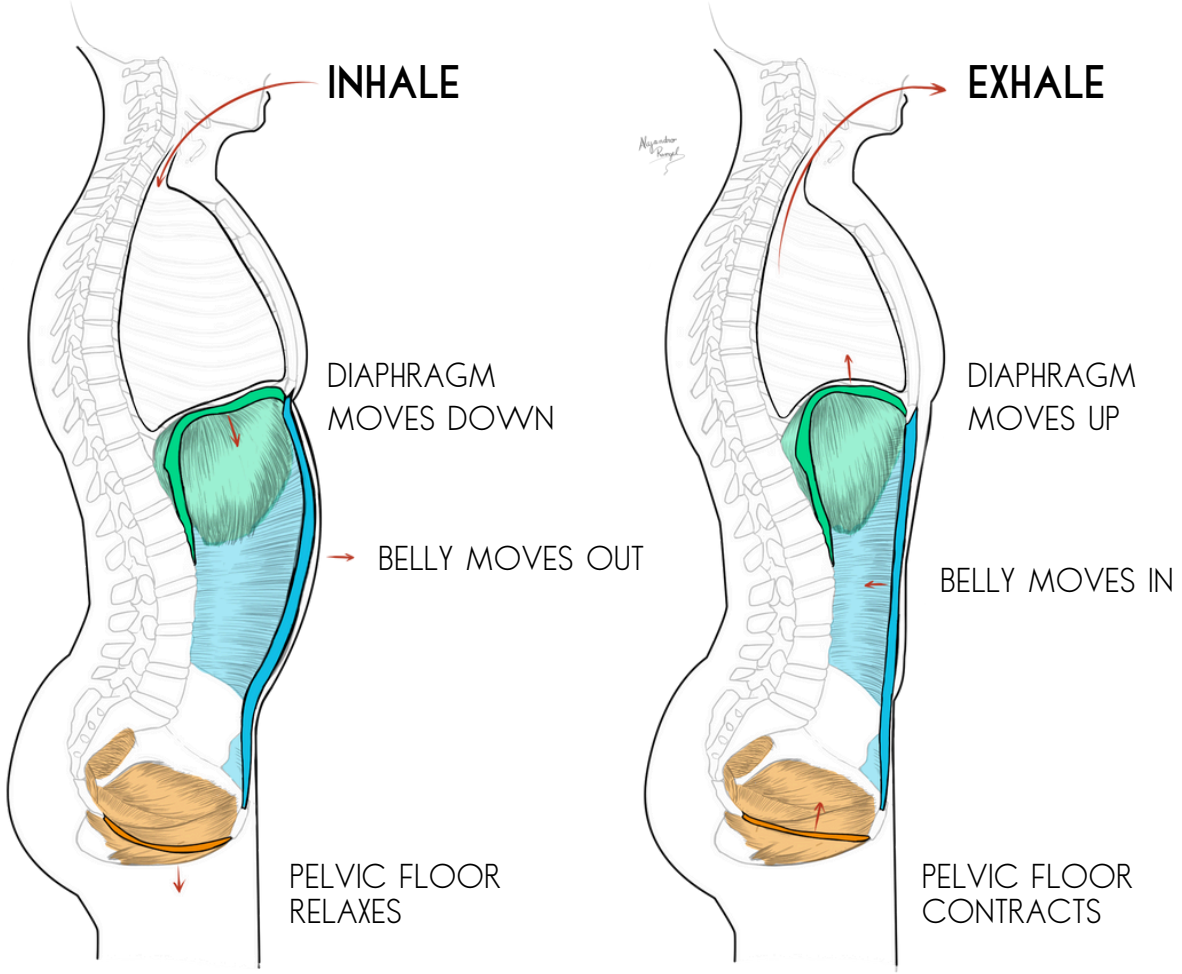


FIGURE 10

FOUR TYPES OF BREATHING

EUPNEA
[QUIET BREATHING]

- Occurs naturally at rest
- Does not require input or thought from the individual
- The diaphragm contracts and expands at a natural rate

DIAPHRAGMATIC
[BELLY BREATHING]

- Requires the diaphragm to contract which subsequently helps the core to expand and contract
- Promotes relaxation, reduces stress and lowers the heart rate
- The diaphragm contracts and expands with a larger range of movement

COSTAL
[SHALLOW BREATHING]

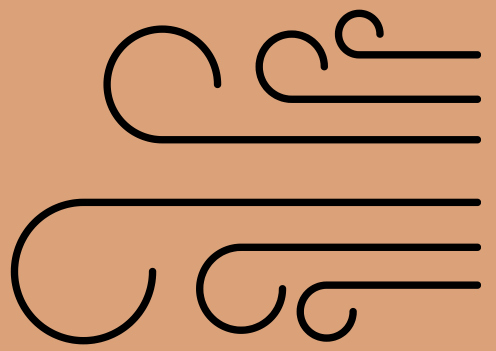
- Uses the intercostal muscles so that air passively leaves the lungs
- The diaphragm contracts and expands with a smaller range of movement

HYPERNEA
[FORCED BREATHING]

- Can happen during a Barre class or exercise
- Requires the active manipulation of breathing by muscle contractions

Types of Hyperpnea include:

- **Nasal breathing** (breathing through the nose)
- **Mouth breathing** which can be great for a quick intake of oxygen
- **Box breathing** a technique that uses four equal parts e.g. for 4 seconds each, inhale, hold, exhale, hold. This can enhance focus and reduce stress.
- **Pursed-Lip Breathing** a technique that involves inhaling through the nose and exhaling through pursed lips. This helps promote good ventilation and improves shortness of breath.



EFFECTS OF EXERCISE ON THE SYSMTEMS

System	Short Term Effects	Long Term Effects
Cardiovascular	• Increase in stroke volume • Increase in heart rate • Increase in cardiac output Increase in blood pressure	• Increased stroke volume • Decrease in resting heart rate Increase in cardiac output • Increase in the number of red blood cells • Increased size and strength of the heart • Drop in resting blood pressure
Respiratory	• Increase in breathing rate Increase in tidal volume	• Increased strength of the respiratory muscles (internal and external intercostals and diaphragm) • Increased lung capacity and volume • Increased number of functioning alveoli
Muscular	• Increase in temperature of muscles • Increased flexibility • Increased muscle fatigue	• Increase in size, strength and endurance of muscles and ligaments • Increased resistance to fatigue (tolerance to Latic acid) • Increase in bone density this is more skeletal but beneficial to minimize the risk of fractures and osteoporosis

Tissue Systems

During your Barre classes you will be strengthening and stretching multiple tissues in the body. This will contribute to your barretender's overall health by improving flexibility, and stability and help prevent injury. There are four main types of tissue to be aware of:

Connective Tissue:
Supportive tissues that bind other tissues together, such as lymph or bone

Muscle Tissue:
Includes voluntary muscles that move the skeleton and smooth muscle, such as the muscles that surround the stomach

Epithelial tissue:
Provides a protective layer and covering, the main example being the skin but also includes the linings of the various passages inside the body

Nervous Tissue:
Made up of nerve cells and carries messages and signals to the body

FUNCTIONS OF CONNECTIVE TISSUE

During a Barre Burn class you will be delivering exercises that improve your barretenders' mobility through strengthening the connective tissue. The connective tissues (outlined in **Figure 11**) have several functions including:

- Repairing damaged tissues
- Transporting nutrients
- Transporting waste
- Supporting cells
- Storing fat

The connective tissue supports other tissues and a key element of this is the Fascia. It has a web-like texture and connects every organ, bone and muscle in the body. During a Barre Burn class we are stretching this tissue which has many benefits including; reduced the risk of injury, improved range of motion and improved circulation.

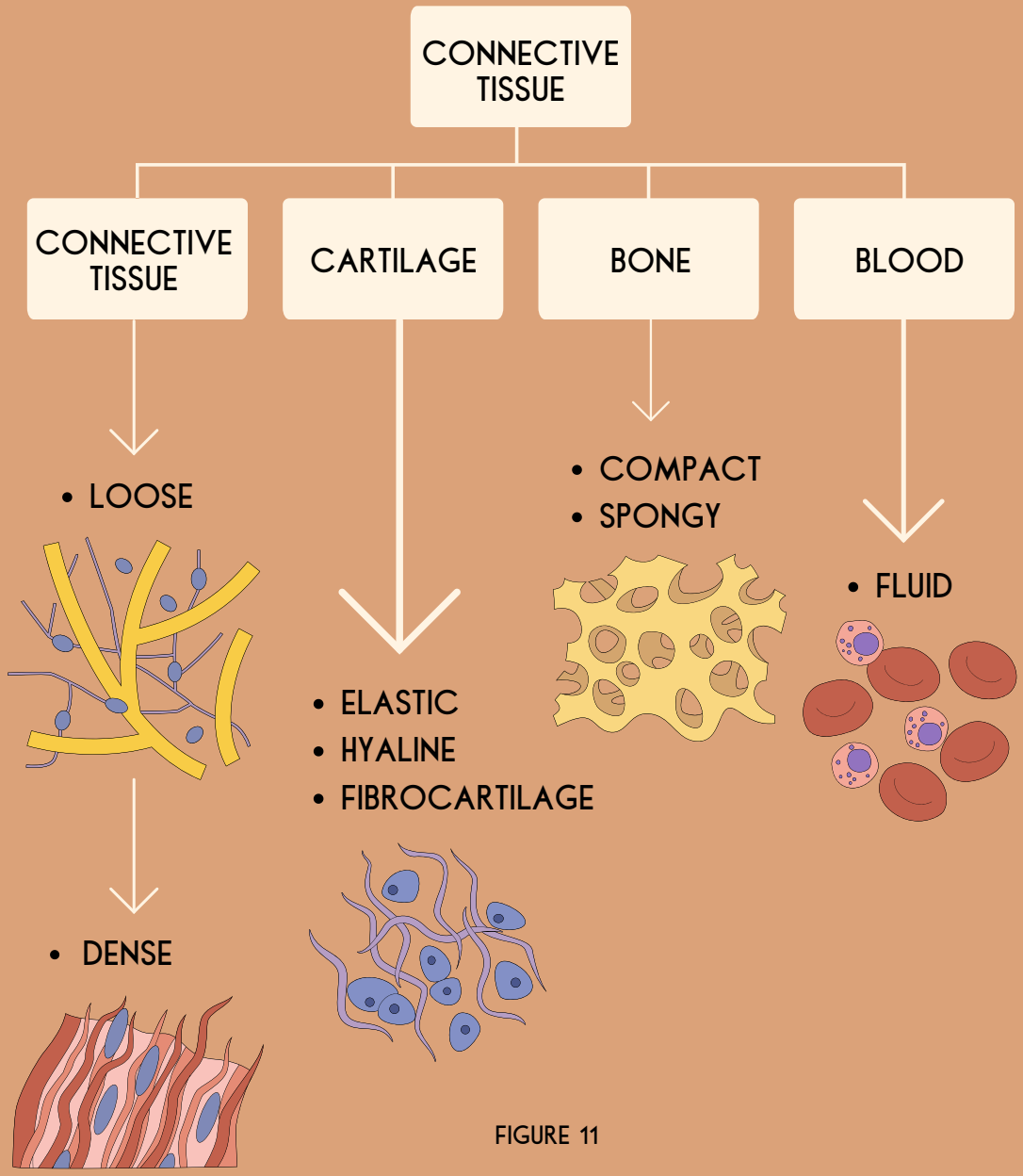


FIGURE 11

THE SPINE

The spine is a connection of **33** vertebrae (small bones), joints, ligaments, discs and muscles that facilitate movement. The spine protects the spinal cord and has four natural curves with varying degrees of movement.

The **CERVICAL** curve uses 7 vertebrae to provide the body with a healthy range of movement including rotation, lateral flexion and extension, and flexion and extension.

The **THORACIC** curve uses 12 vertebrae to provide the body with flexion and extension movements, however there is less range of movement than the cervical vertebrae.

The **LUMBAR** uses 5 vertebrae providing the body with a limited range of movement.

The **PELVIC** and coccyx 3-5 vertebrae are fused and provide no movement.

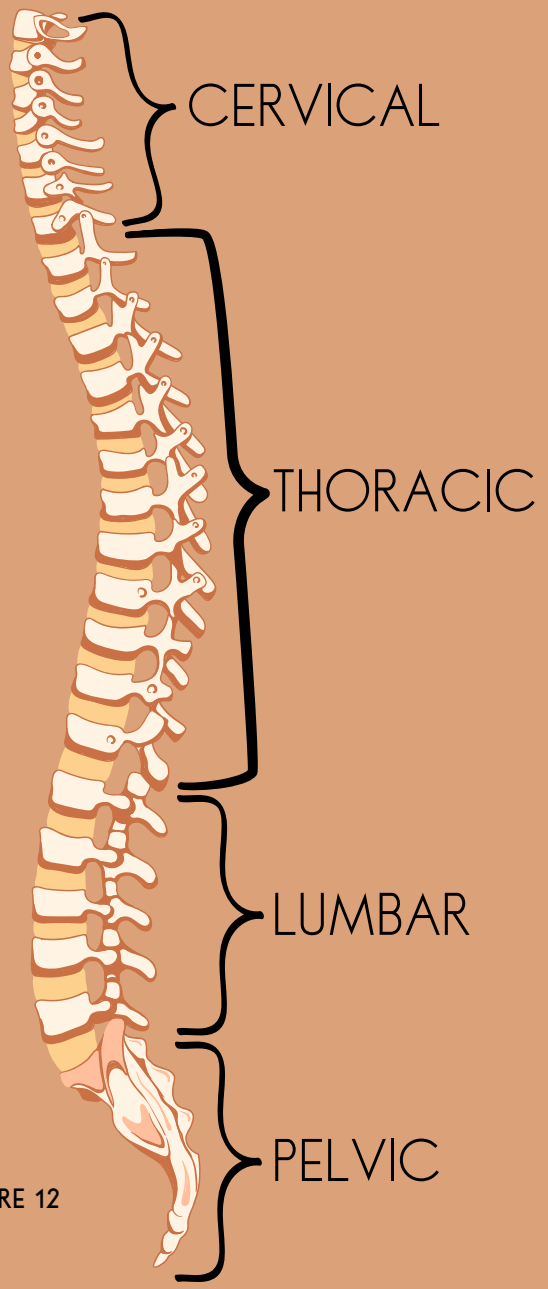
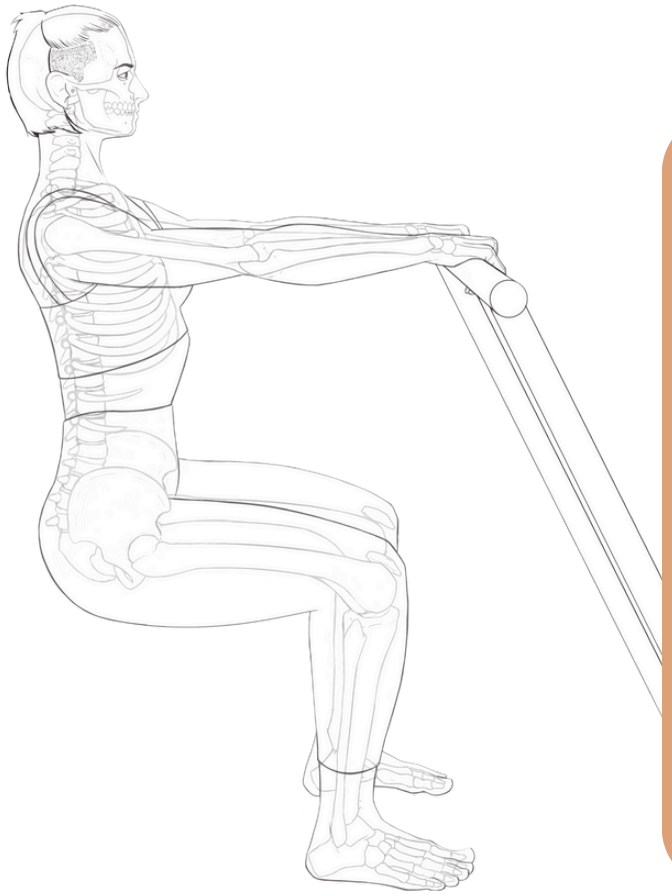


FIGURE 12

LET'S TALK ABOUT POSTURE

TEACHER TIP

Is there a "perfect" posture for the human body? The simple answer is "No"! Of course, we want to stand upright and have our shoulders rolled back as we confidently stride through life! The reality is the "perfect" posture can be limited by our bones (genetics), our injury history, and even our repetitive behavioural patterns throughout the day. So, as a Barre Burn teacher, we have certain Barre cues that we give to our barretenders to get into poses, but some of them may never be able to get into the poses based on their skelatability.



INJURY HISTORY:

We all have a history, especially when it comes to injuries and scar tissue and life experiences. In Barre Burn classes, it's common for barretenders to seek your guidance if they suffer from slipped/bulged disc or lower back pain. Remember one thing, we do NOT work though pain. As soon as a barretender is experiencing pain, we try to modify poses as best as we can to remove the pain. They may need to skip certain moves based on their injuries and at the rate of which they are recovering (or not). The good news is, there are so many variations to target the same muscle groups in a Barre Burn class, so there will be another option!

POSTURE CONTINUED...

BEHAVIORAL PATTERNS

We can change our posture based on the way we move! How cool is that? For example, if you are someone who is working at a desk all day, you will likely have rounded shoulders and a rounded upper back because it's so hard to stay seated upright (in "perfect posture") for long periods. In this case, our bones are not the determining factor for the posture, but our fascia (our connective muscle tissue), is being "molded" or "trained" in a certain manner that is shaping our postural appearance.

TEACHER TIP

The takeaway about posture! As a Barre Burn teacher, it is essential to understand the cues for guiding barretenders into poses. However, we should prioritize the muscle groups we are targeting rather than aesthetics. Our goal is to ensure barretenders feel pain free and proud of their unique movements and abilities.

TEACHER TIP

BONE GENETICS

We can't deny our bones! Let's take the hips for example in a Wide 2nd pose **(page 92)**. In this Barre pose, we are required to stand completely upright with the toes turned out. Depending on where the ball and socket joint of the hip is located on the pelvic girdle (more to the side or more towards the front of the body), it will impact how wide an individual can stand, as well as their degree of alignment of the spine. **Figure 13** highlights two pelvic variations that have slightly different shapes. It's all connected, and although we cue a barretender to get into a "perfect" Wide 2nd pose, we have to accommodate their anatomy and genetics.

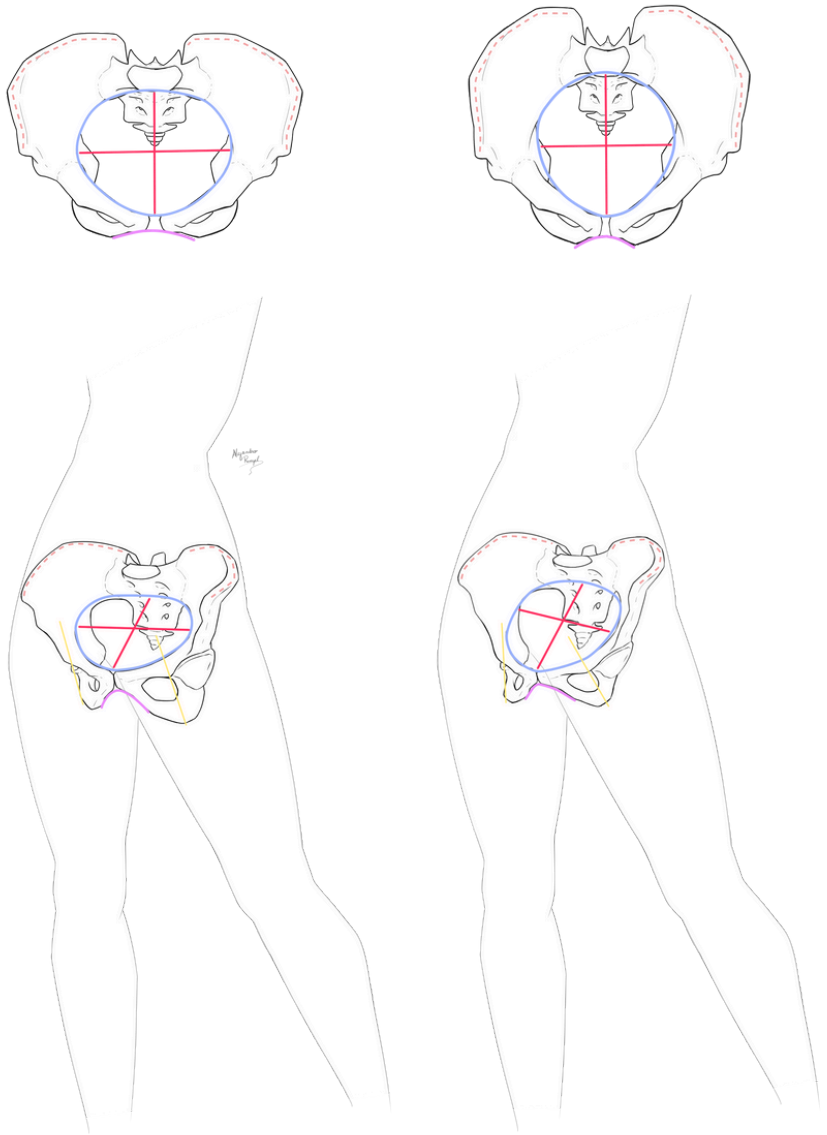


FIGURE 13

THE CORE - WHAT IS IT?

The core contains **five** groups of muscles that work together to support the spine and aid movement. The primary core muscles include; the core, back, hip, pelvic floor and diaphragm. Below are the specific muscles within each group:

Rectus Abdominis: (RA)
These are the 'six-pack' muscles that help bring the pelvis and ribcage close together when the spine is flexed. Exercises that target the RA include Upper Body Crunches and Jack Knives.

Transverse Abdominis: (TVA) "corset muscle"
This muscle is wrapped around the spine and is crucial for core stability and spine protection. To effectively engage the TVA you can incorporate exercises such as Sun Bird, Planks and Dead Bugs. These exercises will be accompanied by breathing activation cues.

Obliques (External & Internal):
These are the muscles at the sides of the core that help in rotating and bending the core. Along with the Quadratus Lumborum, the obliques help initiate lateral movements of the body. Exercises that target the obliques are Side Planks, Side Bends, Standing Oblique Crunch or Russian Twists.

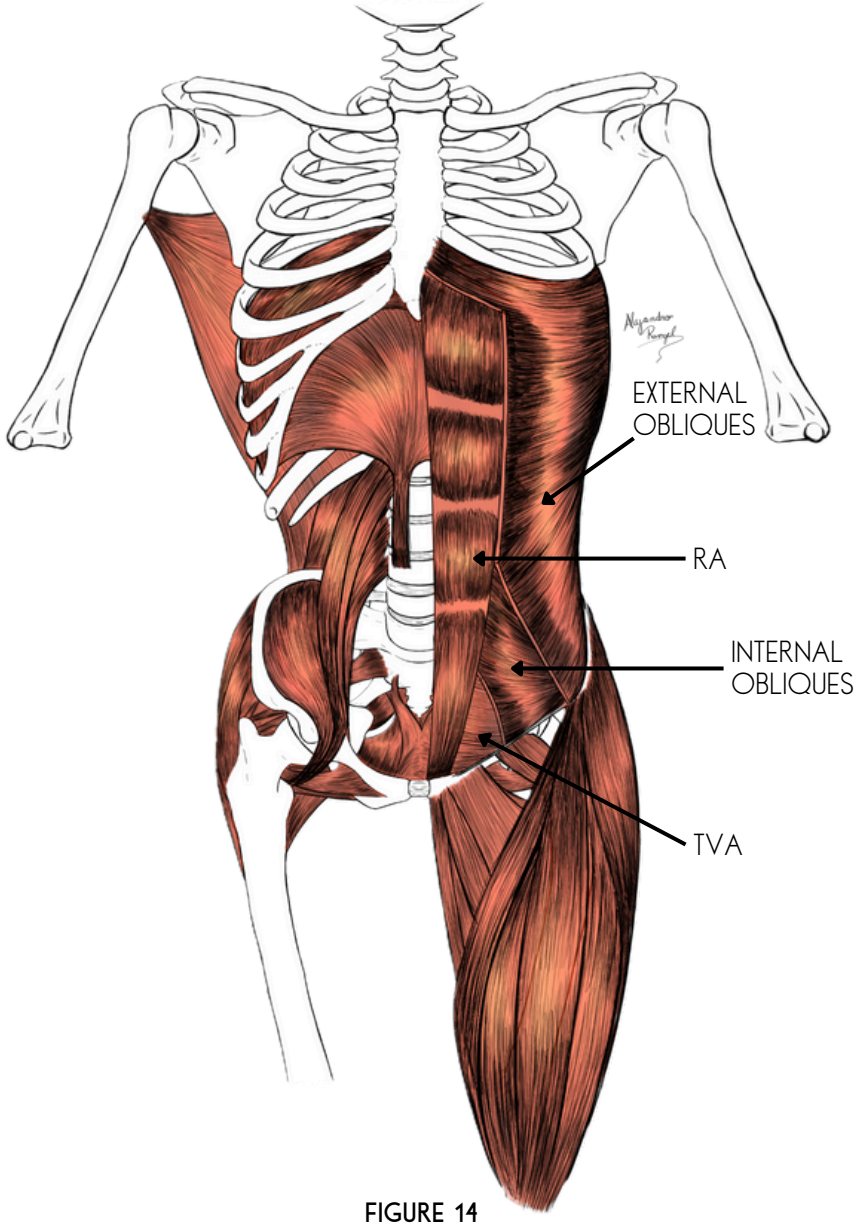


FIGURE 14

THE BACK

Don't forget that our core is 360 degrees, just like an apple core. Consider including exercises such as Back Extension, Sun Bird and Bridge.

Erector Spinae:
These are the muscles that surround the spine, they help support good posture and in extending the spine.

Multifidus:
These are the muscles that surround the vertebrae, they help in stabilizing the spine.

Latissimus Dorsi (Lats):
These are the muscles in the middle and lower back, they help support core strength and movement of the shoulder.

Quadratus Lumborum (QL):
These are deep muscles in the back that originate from the iliac crest and attach to the lower ribs. These muscles are responsible for lateral movements (all of our side bends)!

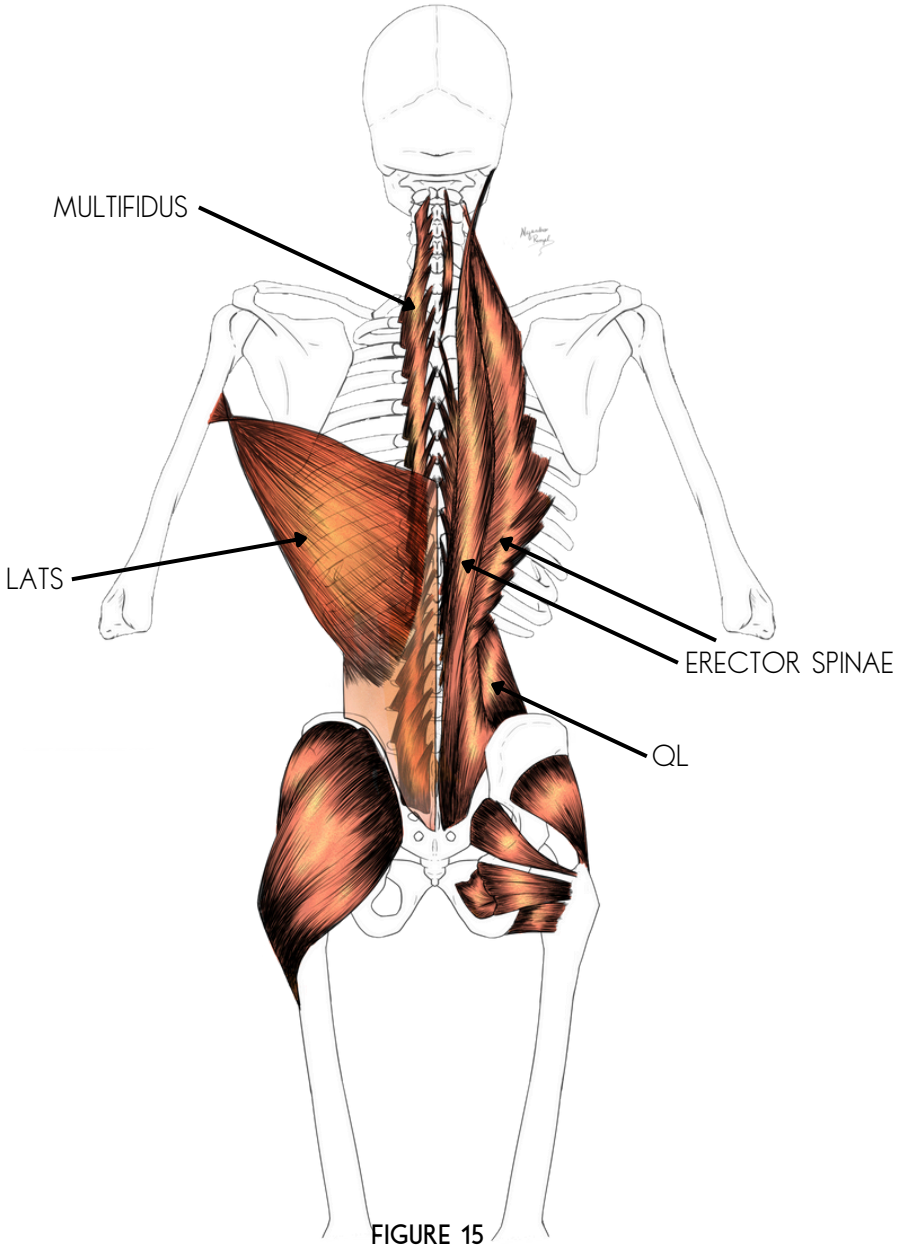
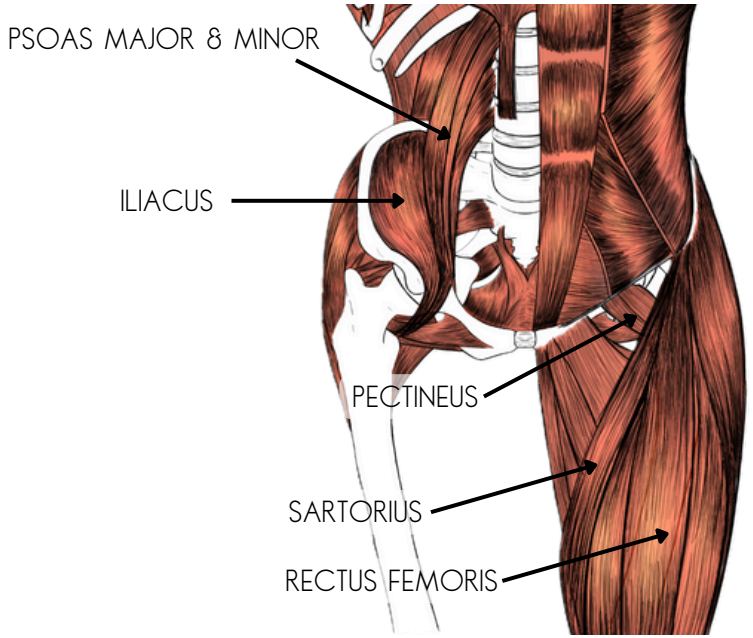


FIGURE 15

THE HIPS

Hip Flexors:
These are the muscles (iliacus, psoas major, psoas minor, pectineus, sartorius, rectus femoris) at the front of the hip and support movement and bending at the waist and lifting the thigh. Standing Knee Lifts, Bicycle Crunches or Leg Lifts will help strengthen the hip flexors during core work.



Gluteus Maximus, Medius, and Minimus:
These are the muscles in the buttocks. The glutes contribute significantly to core work by stabilizing the pelvis and spine, generating force, supporting posture, enhancing balance, and ensuring comprehensive core engagement. Incorporating exercises that activate the glutes can lead to more effective and well-rounded core workouts.

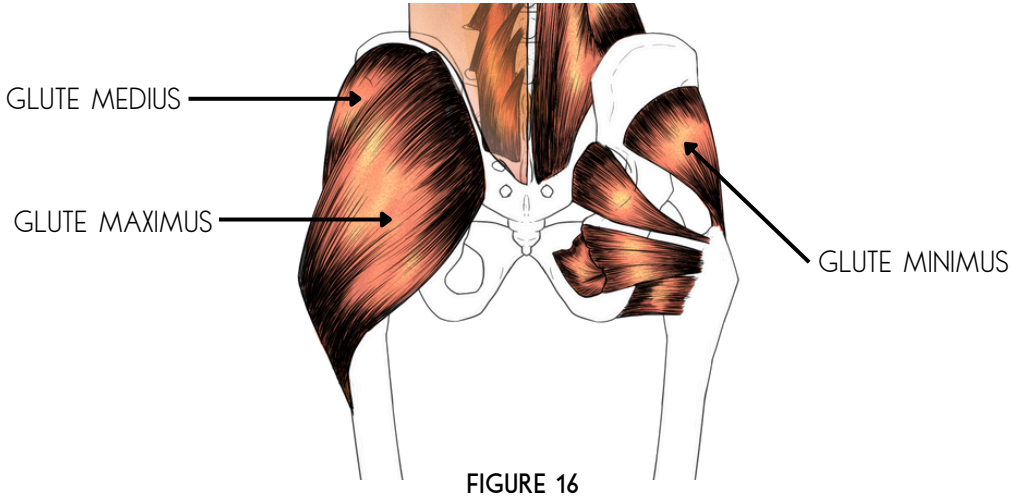


FIGURE 16

TEACHER TIP

A quick note on the hip flexors and the core: During some abdominal exercises, the barretenders may feel a strong sensation in the hip flexors! Don't worry! Remember that not every core exercise works for everyone, and some of the abdominal exercises can "flare" or "irritate" the hip flexors.

Try to adjust the exercise by adding additional tools (such as a ball), or change the height of the leg that is being lifted (sometimes the lower the leg(s) can advance the exercise to a point where the barretender is compensating to try to control the movement). **Bottom line: provide options/variations for all of the different anatomical needs in your barre class!**

The first step is to modify the exercise by incorporating additional tools, like a ball, or by adjusting the height of the leg being lifted (often lowering the leg(s) can make the exercise more challenging, causing the barretender to compensate to control the movement). In essence, offer options and variations to accommodate the diverse anatomical needs in your Barre class!

THE DIAPHRAGM

The Diaphragm:
This is found at the base of the lungs, it works with the abdominal muscles to stabilize the core and is a key muscle used in the respiratory process.

THE PELVIC FLOOR

Levator Ani:
These muscles form the pelvic floor, supporting the pelvic organs and help with core stability. In specific, the pelvic floor muscles support the bladder, bowel and the uterus (womb). The urethra, anus, and genitalia all pass through the pelvic floor muscles. You can think of the pelvic floor muscles as a "wrapping" around these passages (the back and front) to help keep them all shut. If the pelvic floor it too tight or too loose, there may or may not be signs of disfunction related to these passages (pain during sex, urinary leaking, constipation, etc).

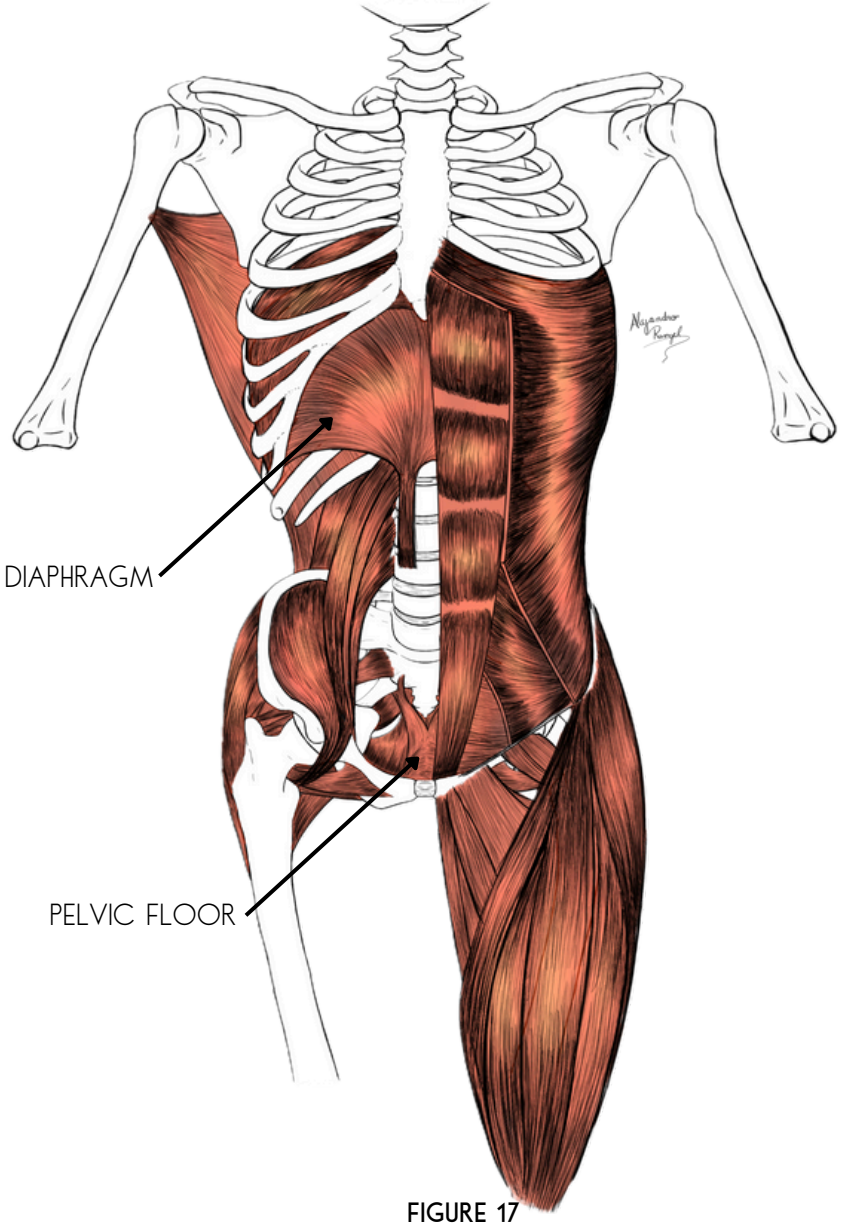


FIGURE 17

TEACHER TIP

A quick note on pre and post-natal barretenders and the pelvic floor. Many women experience symptoms pre or post-birth such as incontinence (urinary leaking), pain, constipation, or overall discomfort. The pelvic floor can be weakened by pregnancy and childbirth, so during a Barre Burn class, **LESS is MORE!**

Having barretenders complete more gentle breathing or abdominal work is much more supportive and effective in regaining the strength of the pelvic floor. A woman is pregnant for a total of 10 months, so she may need that amount of time to reconnect, or even more. If a barretender comes up to you and shares her concerns about her pelvic floor, we highly recommend you encourage them to see a pelvic floor physio, you can also teach them some gentle breathing exercises for them to do during the abdominal section for the Barre Burn class.

Finally, women do not need to have gone through a pregnancy to have a dysfunction in their pelvic floor. Most Pilates, yoga and fitness teachers experience incontinence because their pelvic floor is overly tight. The pelvic floor is a muscle, so that means we need to contract it and relax it (most women don't know how to relax or "let go" of the pelvic floor as we are always taught to "suck in the belly".

BENEFITS OF BARRE FOR YOUR CORE

It is important to incorporate core and stability exercises into your Barre Burn class.
There are many health benefits to improved core strength including:

Improved posture - Strong core muscles will support the spine and reduce the risk of back injuries.

Improved balance – Strong core muscles will aid the performance of different Barre poses and complex movement skills.

Improved fitness – Strong core muscles will aid the performance in both day-to-day activities and exercise classes. They will help to provide power and strength in movements such as running, lifting and twisting.

THE PELVIC GIRDLE

WHAT YOU NEED TO KNOW

The pelvic girdle makes up the base of the core and is a structure of bones and muscles that connect the bottom of the spine to the lower body. The pelvic girdle largely supports the weight of the body, facilitates the ability to walk or run on two feet and in an upright position, and protects vital organs, such as the urinary bladder, part of the large intestine, and the internal reproductive organs.

Understanding the workings of the pelvic girdle and incorporating exercises during your Barre Burn class that strengthen this structure will help your barretenders improve their movement, balance and stability.

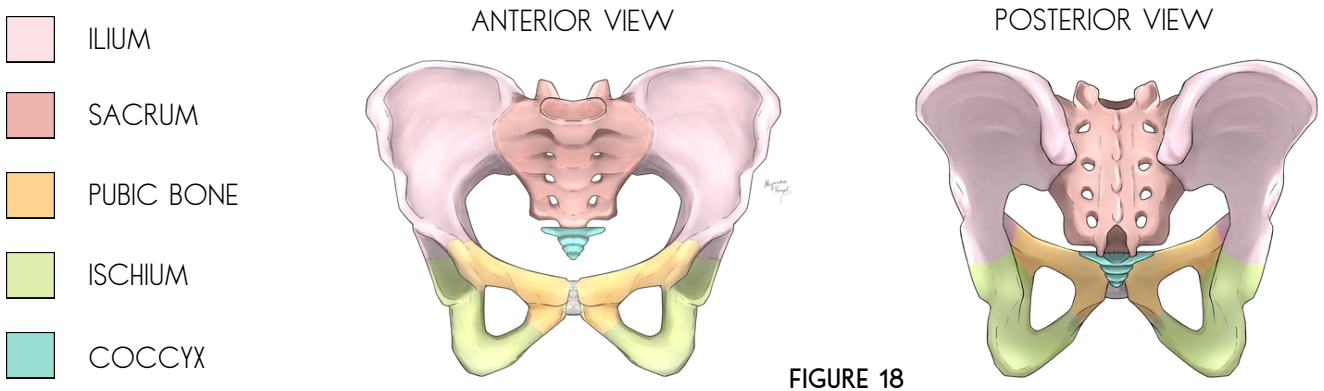


FIGURE 18

The pelvic girdle is made up of three key bone structures; the hip bones (the ilium, pubis and ischium), the coccyx and the sacrum. (See **Figure 18**)

There are two key interconnected muscles that form the pelvic floor muscles; **the Levator Ani and Coccygeus.** (See **page 51**, **Figure 17**) The Levator Ani is made up from three main components, pubococcygeus, puborectalis and iliococcygeus. These muscles stretch all the way from the front of the body to the coccyx at the back, this creates a hammock like structure the supports and holds the body's internal organs.

THE LEG MUSCLES

During your Barre Burn classes there is a significant importance on the leg movements as they provide the foundation of movement during exercises. By incorporating a range of leg exercises, your barretenders' overall health and fitness will improve.

Below are the key muscles and bone structures in the leg to be aware of:

Name	Location, Function and Range of Movement	Barre Pose Examples
Adductors	• Five different muscles located in the inner thigh • Moves the leg(s) inwards towards the centre of the body	Squeezing the ball between thighs, Grounded Inner Thighs
Abductors	• Three primary muscles located on the outer thigh • Moves the leg away from the body	Clam Shell, Pretzel, Hairpin
Quadriceps	• Four different muscles located in the front of the thigh • Extends the leg from the knee and flexes the thigh from the hip joint	Upright Thighs, Chairs, Thigh Dancing
Hamstrings	• Three different muscles located at the back of the thigh • Flexes the leg from the knee and extends the leg from the hip joint	Squeezing the ball or holding a dumbbell behind the knee, Squats
Soleus	• Located in the calf • Responsible for plantarflexion of the ankle	Calf Raises, lifting the heels during Thigh poses

MORE LEG MUSCLES

Name	Location, Function and Range of Movement	Barre Pose Examples
Tibialis Anterior	• Located in the front lower leg • Responsible for dorsiflexion and inversion of the ankle	Flexing the feet during Chairs
Gastrocnemius	• Located at the back of the lower leg • The gastrocnemius with the soleus, is the main plantar flexor of the ankle joint • The muscle is also a powerful knee flexor	Calf Raises, lifting the heels during Thighs Poses
Gluteus Maximus	• The largest of the gluteus muscles that extends from the pelvis to the femur • Extends and externally rotates the thigh at the hip joint	Foldover/TT parallel glute work, Glute Bridge
Gluteus Medius	• Located above the gluteus minimus • Rotates and abducts the thigh	Mermaid, Hairpin, Side Plank
Gluteus Minimus	• The smallest of the gluteus muscles • Stabilizes and abducts the hip	Mermaid, Hairpin, Side Plank
Sartorius	• The longest muscle in the body spanning both the hip and knee joint • Attaches laterally to the hip and crosses the inside of the leg and attaches to the medial side of the knee • Flexes, external rotates and abducts the leg from the hip joint • F lexes the knee joint and rotates the tibia inward, or medial against the femur	Clam, Side Thigh Abduction, Squats

THE LEG BONES & FUNCTIONS

FEMUR

The femur is located at the top of the leg and is the longest, heaviest and strongest bone in the human body. The main function of the femur is weight bearing and stability of gait. It also allows for many sturdy attachment points for the powerful muscles of the hip and knee that contribute to propulsive movements like walking and jumping.

PATELLA

Also known as the kneecap, it is a flat, inverted triangular bone located on the front of the knee joint. It is the largest sesamoid bone and acts as a pulley for the quadriceps muscle.

TIBIA

The tibia is located in the lower leg and is a weight bearing bone transferring weight from the knee to the foot. This large long bone connects the knee and ankle joints.

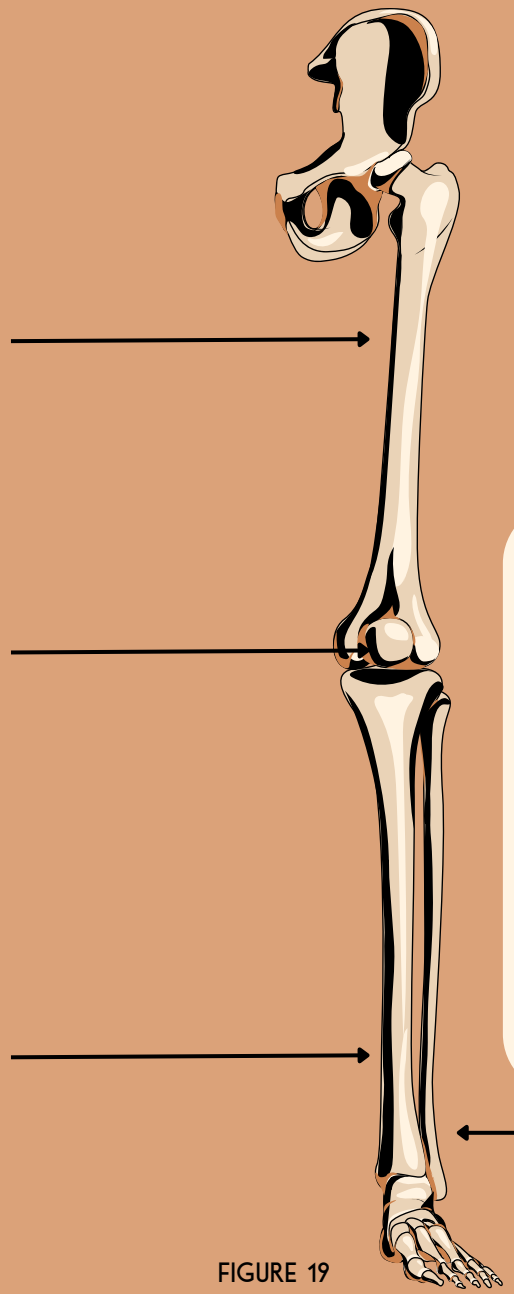


FIGURE 19

FIBULA

The fibula is located in the lower leg and acts as an attachment for muscles, as well as providing stability of the ankle joint. Although it is less involved in weight-bearing compared to the tibia, it still supports a small portion of body weight, especially when the knee joint is flexed.

THE LEG MUSCLES & BONES

ADDUCTORS:

- ADDUCTOR LONGUS
- ADDUCTOR BREVIS
- ADDUCTOR MAGNUS
- GRACILIS
- PECTINEUS.

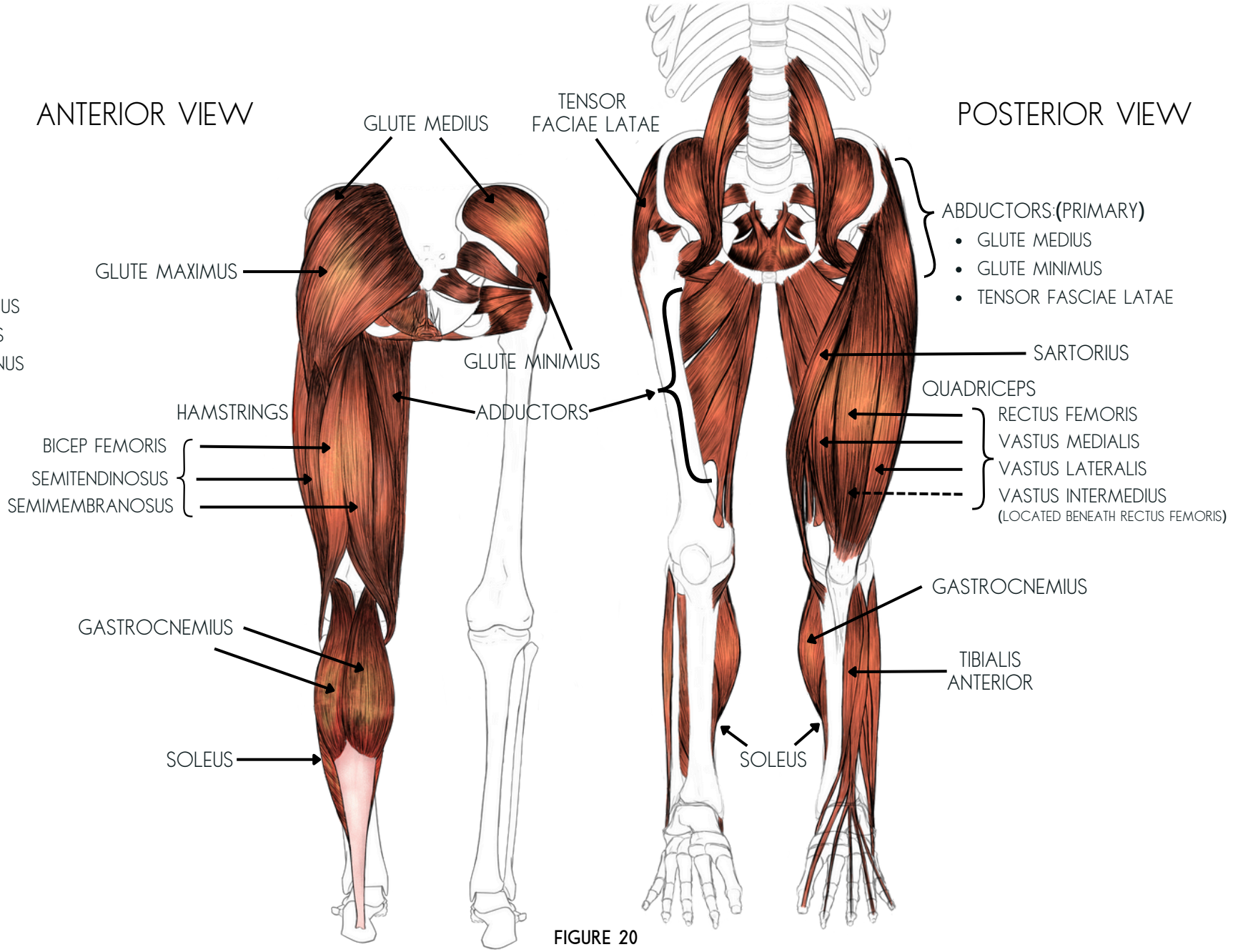


FIGURE 20

THE SHOULDER MUSCLES

The shoulder girdle is crucial in supporting the upper body during a Barre Burn class. By strengthening these muscles during your classes your barretenders will strengthen and improve their range of movement in the upper body.
See **page 61**, **Figure 21.**

Below are the key muscles and bone structures in the shoulder to be aware of:

Name	Location, Function and Range of Movement	Barre Pose Examples
Rotator Cuff	• Four different muscles located at the top right and left of the shoulders • Helps rotate the shoulder. • Provide strength and stability during movement of the shoulder are used in a variety of upper extremity movements including flexion, abduction, internal rotation and external rotation	Lateral Shoulder Raise, any row/rotation exercises
Pectoralis Major	• Also known as the chest muscles or 'pecs'. • Large muscles in the upper chest that help with movement such as flexion, adduction and rotation	Chest Press with dumbbells, Push-ups at the barre or on the floor, Chest Fly
Pectoralis Minor	• Located under the pectoralis major • Help with movements such as depression, abduction stabilization and rotation	Chest Press with dumbbells or the band , Push-ups at the barre or on the floor, Chest Fly

MORE SHOULDER MUSCLES

Name	Locatio, Function and Range of Movement	Barre Pose Examples
Deltoids	• The three parts of the deltoids are located on the front, back and side of the shoulder joint • Help strengthen and stabilize of the shoulder joint and move the arm in different directions (forwards, backwards and sideways)	Lateral Shoulder Raise, Front Shoulder Raise, Shoulder Press
Trapezius	• Located on the upper back and spine and span the majority of the width of the upper back • Help maintain good posture and with movement of the shoulder blades and neck • Support the spinal column allowing it to remain erect while standing	Rows, Reverse Fly

THE SHOULDER BONES

CLAVICLES (Collar Bones)

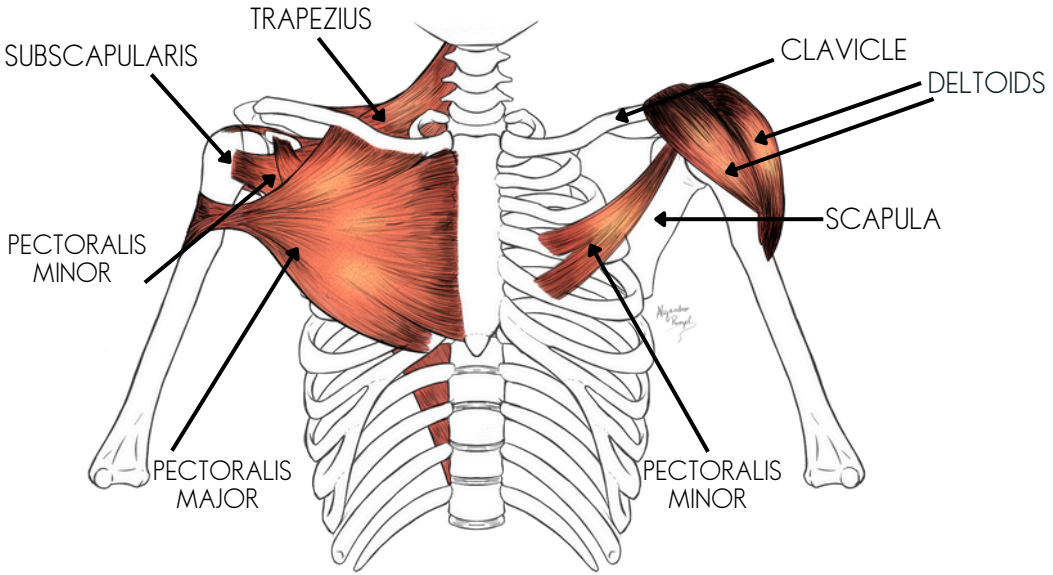
- Located below the neck
- Supports the upper body
- Allows the transfer of weight from the upper body to the back and chest

SCAPULAE (Shoulder Blades)

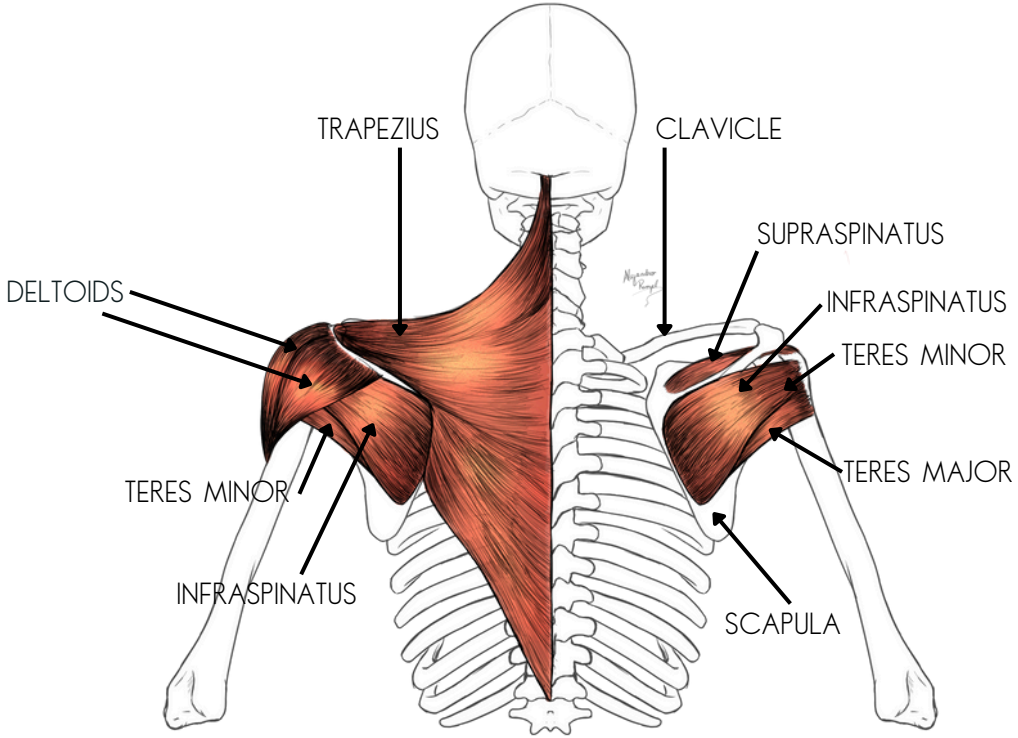
- Located at the upper back
- Allows for multiple ranges of motion including protraction, retraction, elevation and rotation

THE SHOULDER MUSCLES & BONES

ANTERIOR VIEW



POSTERIOR VIEW



ROTATOR CUFF MUSCLES

- SUBSCAPULARIS MUSCLE
- SUPRASPINATUS MUSCLE
- INFRASPINATUS MUSCLE
- TERES MINOR MUSCLE

FIGURE 21

THE ARM MUSCLES

During your Barre Burn classes you will be providing your barretenders with a full-body workout. By incorporating arm workouts, you will help build strength and tone in the upper body. See **page 63, Figure 22.**

Below are the key muscles and bone structures in the arm to be aware of:

Name	Range of Movement	Barre Pose Examples
Tricep Brachii	• Located in the back of the upper arm • Extends the elbow	Tricep Kick Backs, Tricep Dips, Tricep Push-ups on the floor or at the barre
Bicep Brachii	• Located in the front of the upper arm • Flexes the elbow	Bicep curls (any variation), Bicep Push-ups at the barre or on the floor

THE ARM BONES

HUMERUS

- Located at the top of the arm
- Helps with a range of movements such as extension, rotation and flexion. This bone also provides support for the shoulder

ULNA

- Located in the forearm
- Supports the forearm and wrist with movements such as rotation and flexion

RADIUS

- Located in the forearm
- Supports the movement of the wrist and elbow in many ways such as; adduct, abduct, extend, flex and circumduction

THE ARM MUSCLES & BONES

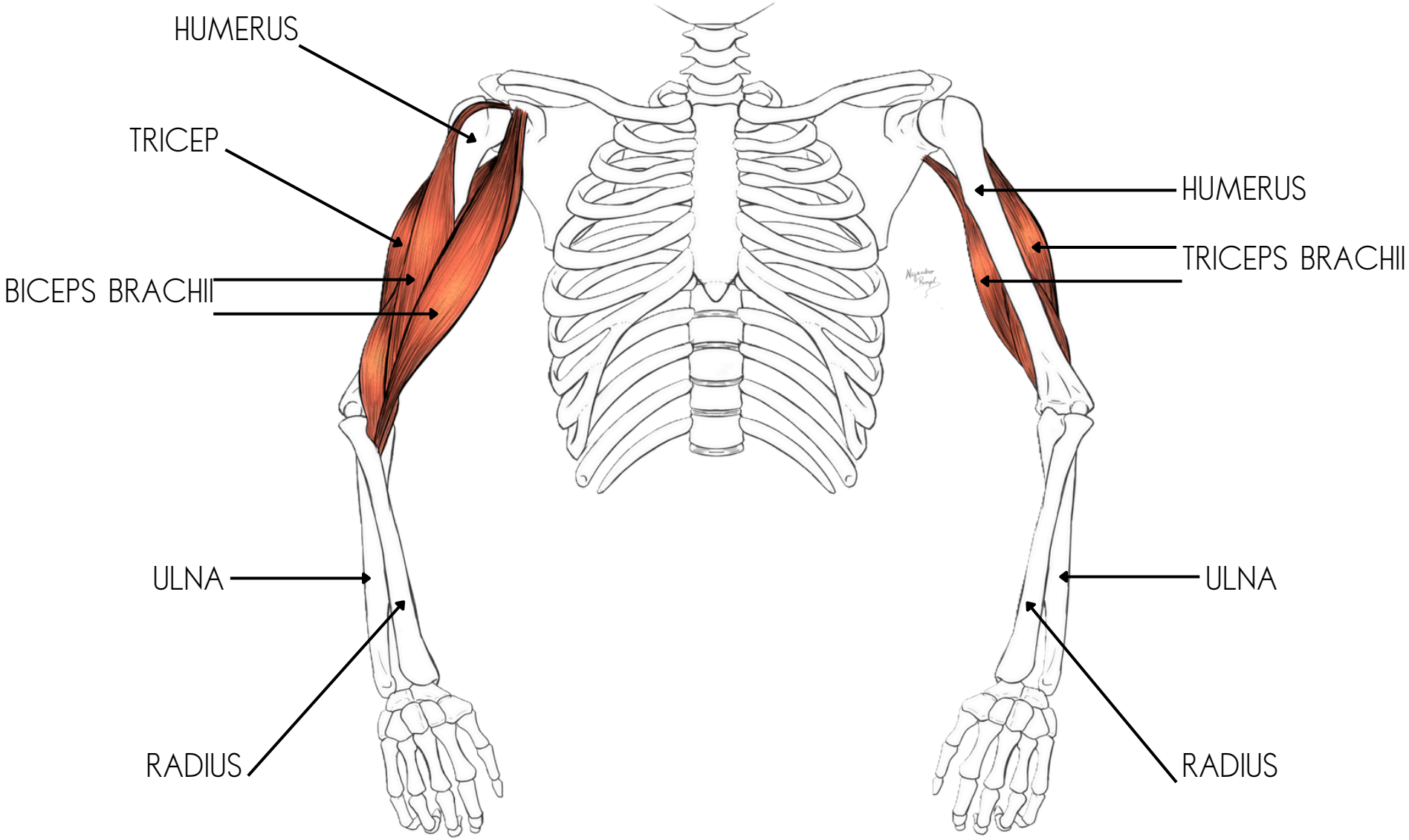


FIGURE 22