WholyFit Anatomy 102 Course of Study

Session 1: Music of Anatomy, Muscle Machinery, Basics of Flexibility Training
Session 2: Body Actions
Session 3: Advanced Body Action Concepts
Session 4: Advanced Body Action Concepts (continued)
Session 5: “Music Theory”
Session 6-10: Names of Muscles, Actions of Muscles
Session 11: Practice Test
Session 12: Practice Test & Bony Landmarks Chart
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Your activity or fill in the blank questions are on this side of the slide.

Use the “Anatomy Notes” accompanying each session to record your answers and place them in a notebook (either physical or laptop) that you can bring with you to the seminar.

First look at this side. Your read-along information is on this side of the slide. You will find the answers to the activity questions here.

Look up all muscles in anatomy book.
Fitness Professional’s Guide Text:

You must use an anatomy book along with this Anatomy Course, so you can see pictures of the muscles.

You must use all of your senses to really understand anatomy.

Visual: Look at a picture

Kinesthetic: Feel the muscle. Use the muscle.

Auditory: Say the name of the muscle out loud

Fitness Professional’s Guide to Musculoskeletal Anatomy

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Introduction: Prayer

Pray for wisdom and understanding.

James 1:5
*But if any of you lacks wisdom, let him ask of God, who gives to all generously and without reproach, and it will be given to him.*

Anatomy is not hard. It is the study of God’s wonderful creation. Look at it as an adventure. We will go through each concept together.

Ask the Lord for confidence and to open your emotions to be willing to receive new understanding.

Lord, you have said that if we ask for wisdom, you will give it to us generously and without reproach. I ask for knowledge of how You created the human body. Lord, please draw near and lead me in this adventure. In Jesus’ Name, amen.
The Music of Anatomy

Anatomy is Like Music

Learning to use and apply anatomy is like learning to read music. First one learns the names of the notes: where they are on the keyboard and what they sound like.

Learning anatomy is like learning to read music in many ways because it is the actual practice and hands-on application that builds skills to a point where it becomes enjoyable.
The Music of Anatomy

1. Familiarize yourself with muscle attachments and you will know how a muscle moves.

Familiarize yourself with muscle attachments (where on the bone the tendon of the muscle attaches, etc..) and you will know how a muscle moves.

Imagine the muscle shortening and the bones will be pulled into a position.

More later on the attachments, which are sometimes called “insertions and origins.”

Learning to read notes is the foundation for reading music. Learning insertions and origins gives you a foundation for exercise analysis.
The Music of Anatomy

Anatomy is Like Music

At first a sheet of music makes no sense until you hear it. If you do not practice at this point, and experience the notes on a page they will remain lifeless forever.

But as you practice, apply, hear and “feel” the sounds represented by the notes, you start to hear how they work together and experience the satisfaction of beautiful music.

At first anatomy, like music, is tedious, and you will have to play each note to experience the sound. But with practice you will be able to “hear” the melody in your head just by looking at the notes on a page of sheet music.

Learn the muscles responsible for moving the body in anatomical position first. Then you will learn which muscles are responsible for actions in other positions. We will learn the names of the muscles later.

2. Learn the muscles responsible for moving the body in _____________ position first.

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The Music of Anatomy

3. If you persevere in anatomy study, eventually you will be able to “hear” the music of God’s wonderful creation: the ________ ________.

Anatomy is Like Music

Hands-on practice of the piano is like hands-on practice of anatomy. Ya gotta feel it!

After enough practice on the keyboard, eventually the musician is able to look at a page of notes, and even without playing them, the musician can “hear” the music in her head. This is like the satisfaction that applied anatomy will give you.

Lord, you have created our bodies wondrously and my soul knows it very well.

Persevere to learn the “notes” of anatomy through hands-on practice in Anatomy 102!

Eventually you will be able to “hear” the music of God’s wonderful creation of the human body.
Muscle Basics:

1. Contractibility: muscles can Shorten
2. Extensibility: muscles can Lengthen
3. Elasticity: muscles can Stretch
4. Tonicity: muscles are electrically stimulated by the nervous system to be in some degree of contraction at all times.
Muscle Machinery

5. Tendons connect muscle to _____.

6. Ligaments connect bone to _____.

Muscles make the bones move. Muscles do that by being attached to the bones and pulling on them to move the body part.

Muscles are attached to bones by connective tissue like tendons and fascia. Fascia is a white fibrous material sheet (like what you see on raw chicken meat.)

Note: Ligaments connect bone to bone.
Muscle Machinery
What Muscles Look Like

7. Skeletal muscles are __________ ed.

8. “Voluntary Nerve Control” means that we ______ move the muscle by using our brains.

We will be dealing primarily with just one of the three types of muscle:

Skeletal Muscles that are Striated and move by Voluntary Nerve Control.

“Skeletal Muscles” mean that the muscles are connected to bones of the skeleton.

Composed of what could be described as a group of rubber bands bound with plastic wrap. Look at a raw rump roast at the store and look at how the meat is composed of many “strings” of muscle.

“Voluntary Nerve Control” means that we deliberately move the muscle by using our brains. We will a muscle to move and the brain sends out an electrical/chemical signal to the muscle to move through the spinal chord and nerves that travel all through the body.
Muscle Machinery

9. Muscles work like levers or pulleys. One end of the muscle is attached to a fixed end. The other end of the muscle will move when the muscle is shortened. For example, in the picture below the pink muscle group shortens and causes the hip joint to flex. The legs then get hoisted up.
Muscle Machinery: Chain Reactions

10. We do not _______ muscles, but use the whole body in a coordinated way.

Muscles were designed by the Creator to be a system, not to work independently. If a muscle pulls on a bone in one part of the body, it affects the whole body.

This is one reason for the Multi-joint exercises we do in WholyFit. (We use many muscles to involve more than one joint.)

In WholyFit exercises, we do not seek to work muscles in an isolated way, one at a time, but instead use the whole body in a coordinated way.
Muscle Machinery:
Posture

Posture affects the whole body and starts from the ground upward. What is happening at the feet is especially crucial because stance affects the pelvis, which affects the shoulders, head and neck.

For example, did you know that your posture can cause depression?

Pronated arches (standing with the inside of the arches pressing into the floor) causes the knees to turn inward, and rotates the thigh bones inward, which flips the tailbone up, which rounds the shoulders and makes the upper arm bone rotate inward, which makes the head fall forward and “closes” the chest.

Standing this way can cause low back pain because the low back muscles have to contract chronically to hold the pelvis in this unnatural position. The neck and shoulder muscles spasm too from holding the 15 pound head forward. The heart, internal organs and nervous system don’t get enough oxygen in this cramped position and this can cause depression.
Muscle Machinery:  
Muscle Balance

12. If a muscle shortens on one side, it ______ on the other side.

Muscles were designed by the Creator to work TOGETHER.

This concept will open a world of knowledge to you.

If a muscle shortens on one side of the body part that is moving, the muscle on the other side has to lengthen to allow the movement.

In the picture at the left, the pink muscles shorten, but only if the green muscles lengthen.
During one movement, the Agonists are the muscles responsible for making the body part move.

Antagonists are the muscles that oppose that action so that the contraction is controlled.

For example, in this picture the back muscles (agonists) shorten to arch the back and the abdominal muscles (antagonists) lengthen to allow the arch and to control it.

There are also assistors, stabilizers and fixators. (We will not worry about "synergists" because too much disagreement between experts.) The core muscles are always stabilizing the body.
14. In WholyFit, we work to balance the muscles in countering pairs: we work the front then back to prevent muscle __________.

If a muscle group on one side is stronger or stays tighter than the other side, it creates an “imbalance” and pulls on the bones in an uneven way.

For example, if the iliopsoas (pink) is tight or is spasmed due to some injury, it pulls the top of the hip bones forward because the iliopsoas is connected to the top of the hip bones. This anterior tilt of the pelvis causes the hamstrings (green) to overstretch because they are attached at the bottom of the hip bones. This anterior tilt of the pelvis causes the quadriceps (pink) to be too long. When the quads have too much slack, they cannot pull on the bones. So... the nerves send a signal to the quads to bunch up and they get spasmed too!

In WholyFit, we work to balance the muscles in countering pairs: we work the front then back to prevent muscle imbalances.
15. Working the muscles in countering pairs prevents muscle imbalances. This is called _______.

In WholyFit, we work to balance the muscles in countering pairs. Working the muscles in countering pairs prevents muscle imbalances. This is called “countering.”
Basics of Flexibility Training

There are 2 types of stretching:

1. Stretching can be done simply to gain normal range of motion when we are stiff; for example, just getting out of bed in the morning.

2. Flexibility Training. Training to lengthen the muscles permanently requires a warm-up and opening postures. For example, the pose on the left was done after an extensive warm-up and a string of carefully sequenced body opening postures.

Most important: Simple stretching does not need a warm-up; however, warm-up is ESSENTIAL for effective flexibility training.

16. Warm-up is essential for effective _______ ________
Basics of Flexibility Training

If there is not enough strength, the muscle won’t have the stability to stretch. The Golgi Tendon Organs (see teacher’s manual) sense instability and will send a nerve signal that keeps the muscle from stretching.

If there is too much tone (a hard muscle or chronically spasmed muscle), the muscle will not have the length to stretch.

If the muscle does not have the length or elasticity to stretch, it pulls on the bones in a screwy way and messes up the posture which can affect the whole body.

In this pose activate the iliopsoas to stabilize the hip joint.
Basics of Flexibility Training

18. In WholyFit, we also balance _________ with flexibility.

In WholyFit, we also balance strength with flexibility.

Most poses require both strength and flexibility.
Basics of Flexibility Training

19. The rule is ______________ first, then stretch.

Strengthening exercises help to relieve spasms by getting oxygen to the muscle, and removing lactic acid buildup in the muscle. Strengthening exercises also warm the muscle, thereby relaxing the spasm and generating synovial fluid that lubricates the joint.

The rule is strengthen, then stretch.

NOTE: Stretching a spasmed muscle is counterproductive because this will just pull the body out of proper alignment and overstretch the opposing muscle group. I highly recommend chiropractic care and massage therapy.

This pose would be harmful if there were any spasms in the body.
Warm-up is essential for effective stretching.

Strengthening exercises, like those in the warm-up of Cycle 1, help to relieve spasms by:

- getting oxygen to the muscle
- removing lactic acid buildup in the muscle
- warming the muscle, thereby relaxing the spasm
- stimulating synovial fluid that lubricates the joint.
Basics of Flexibility Training

21. Proper stretching _________ is vital, because of chain reaction function.

Sequencing refers to the order in which muscle groups are stretched.

Proper stretching order is vital, because of chain reaction function.

All WholyFit routines are pre-designed with proper sequencing.
The muscles being stretched must have proper stability to induce a neurological readiness. The nervous system will send a signal for the muscle to relax and lengthen if the joint is stable.

Rule 2: Stretch while consciously activating the muscle to create stability.

For example, in this pose it is necessary to activate the iliopsoas and piriformis of the front leg. (To find the iliopsoas stand up and lift your knee. The muscle that raises the knee is the iliopsoas.) (In the seminar you will learn to activate the piriformis.)
Anatomy 102
Session 2

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WholyFit Anatomy 102
Session 2:

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Fitness Professional’s Guide Text:

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Visual: Look at a picture

Kinesthetic: Feel the muscle. Use the muscle.

Auditory: Say the name of the muscle out loud
NOTE on BODY ACTIONS TERMINOLOGY

In this session, we will be describing the POSITION OF THE __________ using terms like
- Flexion
- Extension
- Rotation
- Abduction
- Adduction
- Etc...

For our purposes in this session, we will be describing the POSITION OF THE JOINT-- NOT WHAT THE MUSCLES ARE DOING.

This is important because some texts will use body action terminology to describe which way the muscular energy is going.

For example, a joint may be in flexion, but the muscle may be trying to extend that joint.

For example, in “Fire Extinguisher” pictured, the elbow joint is in flexion, but the triceps are working toward extension to counter gravity. STOP...Think about that for a minute.
Session 2: Body Actions Review

Directions: Using the Body Action terms describe the following postures in anatomical terms.

(Level: easy)

1. Posture: Belt, Level 1
   - Head-Neck: ex
   - Arm-Shoulder: fl
   - Hip-Leg: ex
   - Spine: ex
   - Elbow: ex
   - Knee: fl
   - Wrist: ex
   - Ankle: dorsi fl
   - Other: pelvis neutral
Body Actions Worksheet

Directions: Using the Body Action terms, describe the following postures in anatomical terms. (Use abbreviations.)

(Level: hard--multi-joint, 3-dimensional)

2. Butterfly Level 1
   - Head-Neck: ex
   - Arm-Shoulder: ex
   - Hip-Leg (MULTIPLE):
     - fl, lat ab, ext rot
   - Spine: ex
   - Elbow: fl
   - Knee: fl
   - Ankle: dorsi fl
Body Actions Worksheet

Directions: Using the Body Action terms describe the following postures in anatomical terms. (Use abbreviations.)

3. Shield Level 1
   - Head-Neck: (slight) super ex
   - Arm-Shoulder: fl
   - Hip-Leg: fl
   - Spine: ex
   - Elbow: ex
   - Knee: fl
   - Ankle: plantar fl
   - Wrist: super ex
Directions: Using the Body Action terms, describe the following postures in anatomical terms. (Use abbreviations.)

4. Posture: Fire Extinguisher, Level 2
   - Head-Neck: slight super ex.
   - Arm-Shoulder: ex
   - Hip-Leg: fl
   - Spine: ex
   - Elbow: fl 90degrees
   - Knee: fl
   - Wrist: super ex.
   - Ankle: plantar fl
   - Other: pelvis neutral
Directions: Using the Body Action terms, describe the following postures in anatomical terms. (Use abbreviations.)

5. Posture: Fire Extinguisher, Level 3
   - Head-Neck: slight super ex.
   - Arm-Shoulder: ex
   - Hip-Leg: ex
   - Spine: ex
   - Elbow: fl (90 degrees)
   - Knee: ex
   - Wrist: super ex.
   - Ankle: dorsi fl
   - Other: pelvis neutral
Body Actions Worksheet

Directions: Using the Body Action terms, describe the following postures in anatomical terms. (Use abbreviations.)

6. Posture: Shield, Level 2
   - Head-Neck: ex
   - Arm-Shoulder: fl
   - Hip-Leg: ex
   - Spine: ex
   - Elbow: ex
   - Knee: fl
   - Wrist: super ex.
   - Ankle: plantar fl
   - Other: pelvis neutral
7. Posture: Shield, Level 3
- Head-Neck: slight s. ex.
- Arm-Shoulder: fl
- Hip-Leg: ex
- Spine: ex
- Elbow: ex
- Knee: ex
- Wrist: super ex.
- Ankle: dorsi fl
- Other: pelvis neutral
WholyFit Anatomy 102
Session 3:

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Auditory: Say the name of the muscle out loud
Session 3: Learning the “Music”

Apply the patterns you already know and go a step further with Body Positions, bones and joints.

- Abdomen Compression
- Rib Elevation and Depression
Respiratory Diaphragm

1. On inspiration the diaphragm _______.

The Respiratory Diaphragm is:
- Shaped like a large dome
- Divides the thorax from the abdomen
- Inserts on its own central tendon
- Has three origins

Attachments:
- Sternal: xyphoid process of the sternum
- Costal (ribs): deep surfaces of ribs 7-12
- Vertebral (spine): on each side of the spine in the lumbar L 1-3

Breathing:
- The lower surfaces of the lungs attach to the top surface of the diaphragm.
- On inspiration (inhale) the diaphragm contracts, the dome moves down, pulls on the lungs and increases the volume so that air is “sucked” in.
Respiratory Diaphragm

2. On expiration the diaphragm ________.

The Respiratory Diaphragm is:
- Shaped like a large dome
- Divides the thorax from the abdomen
- Inserts on its own central tendon
- Has three origins

Attachments:
- Sternal: xyphoid process of the sternum
- Costal (ribs): deep surfaces of ribs 7-12
- Vertebral (spine): on each side of the spine in the lumbar area (L1-3)

Breathing:
- On expiration (exhale) the diaphragm relaxes, the dome moves up, the volume of the lungs decreases and air is pushed out.
Abdomen Compression

3. Transverse abdominus attaches to the spine and pelvic bones, thus influencing _______.

Abdomen compression is an aspect of core control. The core muscle we focus on most in WholyFit is the transverse abdominus.

Read page 92 in Anatomy of Movement (optional textbook).

It is the deepest of the abdominal wall muscles and looks exactly like a girdle.

The fibers are circular with a fibrous “aponeurosis” in the front so contraction pulls the abdominal area in.

One reason for the importance of Transverse abdominus to WholyFit is that it attaches to the spine and pelvic bones, thus influencing posture and is important for core stabilization.

The fibers of the respiratory diaphragm merge and combine with the fibers of the transverse abdominus.
4. During inhalation the ribs move upward. This is elevation.

During exhalation the ribs move back down to the normal place. This is depression.

The position of the spine affects the ribs.

For example, during flexion of the upper spine, (caved in chest) the ribs move closer together. Perpetually “hunched” shoulders limit good breathing.

“Chest opening” exercises cause the ribs to expand, important for maintaining rib flexibility.
5. In Overcomer Extended, rib elevation on the top side of the body is the “tattle tale” for unwanted lateral spinal __________.

Subconscious movement of the ribs during breathing happens on its own, but conscious control of the ribs during exercise is important too.

For example, in “Overcomer Extended” keep the spine straight. Keep out lateral flexion. Do not allow the ribs to expand, spread or elevate on the top side. An obvious curve in the top side of the body indicates rib elevation which is the “tattle tale” for unwanted lateral spinal flexion.

On spinal twists keep spine straight, do not flex, so that ribs do not overly depress on one side.
You must use all of your senses to really understand anatomy.

Visual: Look at a picture

Kinesthetic: Feel the muscle. Use the muscle.

Auditory: Say the name of the muscle out loud
Session 4: Learning the "Music"

Apply the patterns you already know and go a step further with Body Positions, bones and joints.

- Pelvis
- Sacroiliac Joint
1. The ASIS stands for the _________ _________ of the Ilium.

We will use the ASIS as the point of reference for movements of the Pelvis.

ASIS= Anterior Superior Iliac Spine of the Ilium (the top bone of the innominate)

The ASIS is the bone you can feel at the front “pockets” on jeans, at the front of your ilium bones on both sides.

Although the book refers to pelvic movements as “movements of the hip,” this is confusing because the hip joint is not the focus. The femur is not moving. The movement we are talking about is the movement of the innominate bones, specifically the direction of the ASIS.
2. Pelvis orientation is about movements of the ______, not the hip-leg joint.

Although the book refers to pelvic movements as “movements of the hip,” this is confusing because the hip joint is not the focus. We will not be talking about movement of the femur. Instead, we will assume the femur is “fixed.” So we will refer to movement of the pelvis as “Pelvis Orientation” instead of “Hip movement.”

Pelvis Orientation is about the movement of the whole pelvis, specifically the direction of the ASIS. (Later we will consider movements within the pelvis itself).
We have a saying in WholyFit: “Pelvis orientation is everything.”

Why? Because the pelvis controls the whole spine. Think of it as the steering wheel of the body. The ASIS on both sides could be considered the “grips” of the steering wheel.

Elvis was called “Elvis the Pelvis,” because when he danced he used all of the following movements: anteversion, retroversion, lateral flexion, medial flexion, etc...

**Anteversion:**
Flipping the tail bone up so that the lower back arches like a “ski slope” makes the ASIS move forward. This is an **anterior tilt** of the pelvis which causes “lordosis” (curvature) of the lumbar spine.

Technically this is rotation: **anterior rotation** of the whole pelvis. It is also called, “anteversion.”
Pelvis Orientation

4. Retroversion
   = _________
   = posterior rotation

Retroversion:
“Tucking” the tail bone under (like a dog with its tail between its legs) flattens out the lower back because the ASIS are tilted posteriorly. This is Posterior rotation, or “retroversion” of the whole pelvis.

Lateral & Medial Flexion:
This is easy because you already know the definition of lateral & medial flexion. In Lateral flexion ONE ASIS drops down, moving toward the outside of the body while the other ASIS moves up, toward the inside of the body.

Footnote: Fitness Professional’s Musculoskeletal Anatomy and Human Movement, by Golding & Golding

See picture page 191 Anatomy of Movement (Optional Textbook)
In the previous slides we have been talking about the movements of the whole pelvis. Now we will consider movements within the structure of the Pelvis itself.

The Sacroiliac joint is technically a “Synarthroses” joint, capable of limited movement. Some experts say adult SI joints doesn’t move, others say it does. We believe that it can a little bit if it’s kept healthy. In some inactive people the sacroiliac joint becomes calcified and hardens up.

The articular surfaces of the ilium and sacrum have jagged etchings that mate and it can be painful to move a frozen or misaligned sacral joint even a little bit.¹ Sacroiliac sprains can occur in the tough ligaments that bind the SI.

In WholyFit we work toward keeping the S.I. joint healthy and supple, correctly mated in the joint. Moving this joint is important in order to avoid calcification. Age doesn’t freeze joints – lack of movement does!

¹. *Anatomy of Hatha Yoga by H. David Coulter*
6. The expert, French orthopedist I.A. Kapandji, calls this slight slippage of the SI joint and its effects _________ and counternutation.

Women who have had children have a SI joints that has moved considerably. During the last stage of childbirth when the pelvic outlet increases the two sitz bones abduct which causes both ilium to adduct. The pubic symphysis moves toward the coccyx. The top of the sacrum moves forward, the coccyx moves back. The book calls this “adduction” of the pelvis using as reference the “Wings” of the pelvis, the Ilium, which move medially.

Calias calls the opposite “abduction” because the “wings” move laterally. This happens at the beginning stages of childbirth when the baby begins to pass through the pelvic inlet.

These movements are complex and very 3-D because the SI articular surfaces are “ear shaped” shaped and the pelvic bones are not flat. The expert, French orthopedist I.A. Kapandji calls this slight slippage in the SI joint and its effects, “nutation” and “counternutation.”

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Nutation & Counternutation

7. In wide angle, the advanced practitioner initiates sacral nutation by rolling forward over the sitz bones, aiming the ASIS _____ and ________. Nutation is an important concept for WholyFit because we rely on the subtleties of sacral nutation to perform advanced postures like “wide angle” level 3.

In wide angle, the advanced practitioner initiates sacral nutation by rolling forward over the sitz bones, aiming the ASIS forward and downward. This spreads the sitz bones slightly and allows for the torso to flatten to the floor in between the legs.

In wide angle “Boat” learned in a later recertification routine, sacral nutation is the only way to achieve a flat back position.

The opposite happens in a core supported back bend. Though the body naturally goes into nutation, muscular energy is exerted by the practitioner to bring the sitz bones together in counternutation in order to protect the lower back. Advanced female practitioners can bring the sitz bones together by about an inch or so.3

3 IBID
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Session 5: “Music” Theory

Exercise analysis is determining what muscles are responsible for what movement.

Exercise analysis is like learning to harmonize and build chords. Now that you’ve learned the “notes,” let’s learn some “music theory.”
Here is the question asked in exercise analysis: Which muscles are responsible for what?

We know what the body is doing, but we need to know how it is doing it in order to know if we are accomplishing the intended purpose of an exercise using proper technique.

This course is needed in order to apply the principles in the texts to WholyFit because the texts were designed primarily to analyze conventional concentric exercise. WholyFit exercises are mostly eccentric. (See explanation of eccentric and concentric in teacher’s manual and next slide.)

Since movement is limited in WholyFit because all our poses are static (held in place), it is very difficult to determine which muscles are in fact doing the work. This is why mind-body focus is important.
Body position does not tell us which muscles are responsible. For example, arms may be flexed, but extension may be the source of the greatest muscular energy.

For example, in Fire Extinguisher, the elbows are flexing as you lower your body down, but the muscles that are working are the extensors (triceps) because they are acting like BRAKES so that your body does not crash into the ground!

Mind-body focus is important because muscular energy may be directed to a body action (like extension) but you may not be able to see it. You will however FEEL IT.

Here also, the latissimus dorsi is working hard to keep the lower ends of the scapula down and the shoulders away from the ears. The abdominals must be contracted to keep the spine straight. These important actions must be a focus of conscious effort.
Concentric and Eccentric

3. Eccentric contraction happens when the muscle __________ while it works.

Traditional exercises like a “bicep” curl builds muscle by shortening it under pressure (an external weight plus gravity). This shortening phase is concentric contraction, according to the kinesiologist.

When the elbow joint returns to “start” position by lengthening with the continued resistance of the weight and gravity, this is eccentric contraction. Eccentric contraction happens when the muscle lengthens while it works.

In traditional exercise the concentric phase is usually emphasized. In WholyFit the eccentric phase is emphasized.

In WholyFit, if we did the bicep curl, first of all we would call it “elbow flexion” because the elbow flexors are the muscles responsible, not just the bicep. (In fact the brachialis is the better elbow flexor.) Secondly, the eccentric “return” phase would be emphasized. Thirdly, mind-body focus and purposeful muscular energy would be added to the eccentric phase. On top of all that, we would hold the elbow flexion in a static contraction at the point just before the full return was accomplished.
Concentric and Eccentric

4. In WholyFit exercises are “_______” – held in place to accomplish goals

Conventional exercise is “kinetic” – it depends on movement to accomplish its goals. In WholyFit exercises are “static” – held in place to accomplish goals. An example of how conventional, concentric exercise differs from WholyFit eccentric exercise is the lunge.

The traditionalist would emphasize the kinetic return phase because it is concentric: On the return to standing (by stepping the back foot to the front foot) the hamstrings and gluteals work in the front leg, contracting and shortening to accomplish extension of that leg.

The “stand up’ extension of the front hip-leg joint, is accomplished by the “extensors” of the hip-leg. On the contrary, in WholyFit the front knee flexion would be emphasized and accomplished by the knee extensors in an eccentric contraction. On top of that, in the WholyFit version this position would be held in a static contraction. This is “Overcomer.” The emphasis in the front leg is the eccentric static contraction (the quad muscle is lengthening but working hard). Although the front leg is in knee flexion we would make a mind-body effort to generate muscular energy in the knee extensors working in an eccentric contraction.
The title of this slide sounds boring but don’t turn your mind off! You will understand this, I promise!

The origin is the “fixed” end of the muscle and the “insertion” is where it goes to, the part that moves, usually a distal point. Why do we care? Because if you know where the muscle is attached on both ends, you can imagine what would happen if it shortens. Do that, and you now know what the muscle’s purpose is!!!!

Take a visual approach: See page 90 in the Goldings’ book to see the attachments of the glute maximus to the bone. See how shortening the gluteal would create hip extension by pulling the insertion and origin closer together. The picture at the left shows the right hip in extension.

Please note that the origin and insertion can change dependent upon body position. We purposefully use non-traditional body positions in WholyFit in order to change up the “fixed” end (for example, upside down, etc...). (Those listed in the book are based on “traditional” body postures.)

It is important to understand which end is fixed and which end moves to understand “trigger points” which we will learn about later. An understanding of “trigger points” will help you understand how chronic spasms affect the whole body from the feet upward. More later...
6. If the muscle crosses ______ joints, like Gastrocnemius does, it affects those two joints.

See the calf muscle, the Soleus page 56 of the Golding book. It attaches at the heel and the top of the calf bone so if it shortens, it extends the ankle (also called “plantar flexion”). In the picture at the left, the right foot is plantar flexed.

Now see the other calf muscle, the Gastrocnemius page 54. It attaches to the heel and the femur so if it shortens it can extend the ankle and also can flex the knee.

This example shows how origins and insertions affect joint by where they attach. **If a muscle crosses just one joint, like Soleus, it affects one joint. If the muscle crosses two joints, like Gastrocnemius, it affects those two joints.**