

Heck Yeah! Fun again!



BI 199 APWT Discussion 4

- I. Announcements **No class Thursday. Next Monday night Treasure Hunt II in Anatomy Lab!** Meet directly outside B63B Klamath again just prior to 8 pm. Q?
- II. Review of Anatomy Lab I Treasure Hunt
- III. Optimal Breathing Techniques + Valsalva's
- IV. Benefits & Myths of Weight Training
Group + class discussion
- V. Anatomy of Gastrocnemius-Soleus Complex
- VI. Knee & Leg Muscle Stress?
 - A. Calf raise – straight knee
 - B. Calf raise – bent knee
- VII. Q? Open Discussion?

Anatomy Lab Treasure Hunt I. Question 1!

Identify *posterior thigh muscles/hamstrings* worked by the squat and front squat and in more isolation by the *leg curl exercise*.

Name and identify *four subdivisions of the posterior thigh*.

What is a tendon? What do tendons do?

A section of the *tendon* of which of these four hamstrings subdivisions might be used in the reconstruction of the *anterior cruciate ligament/ACL*? Why might it be selected?

L thigh
posterior

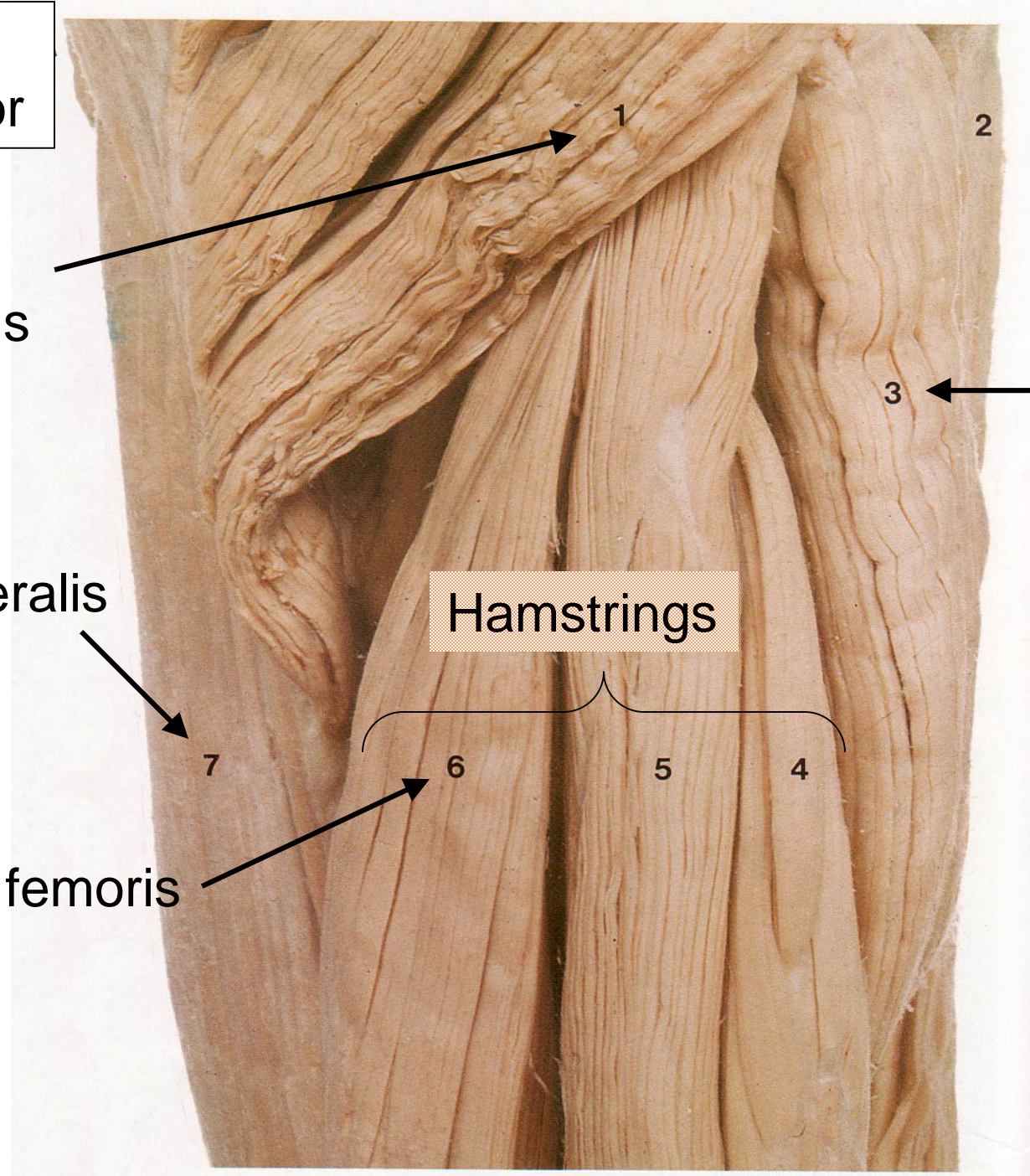
Gluteus
maximus

Vastus lateralis

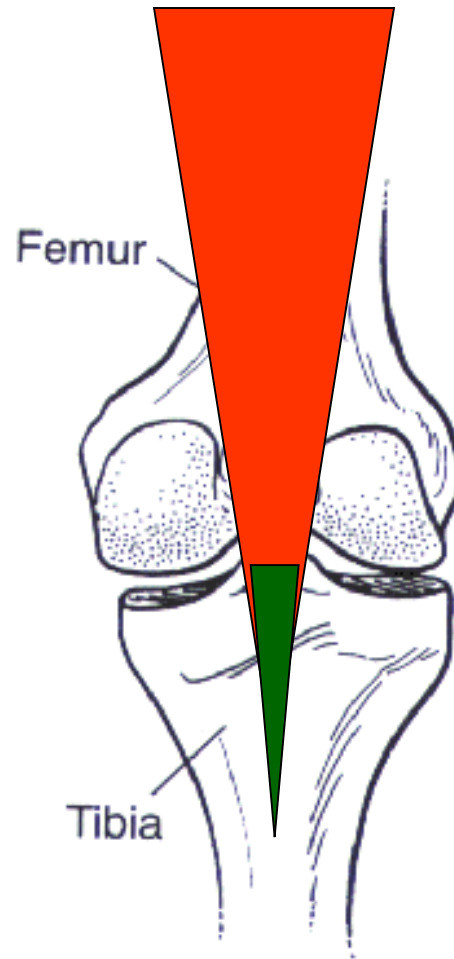
Biceps femoris

Hamstrings

Adductor
magnus



Muscles: Cross Joints by Way of Tendons



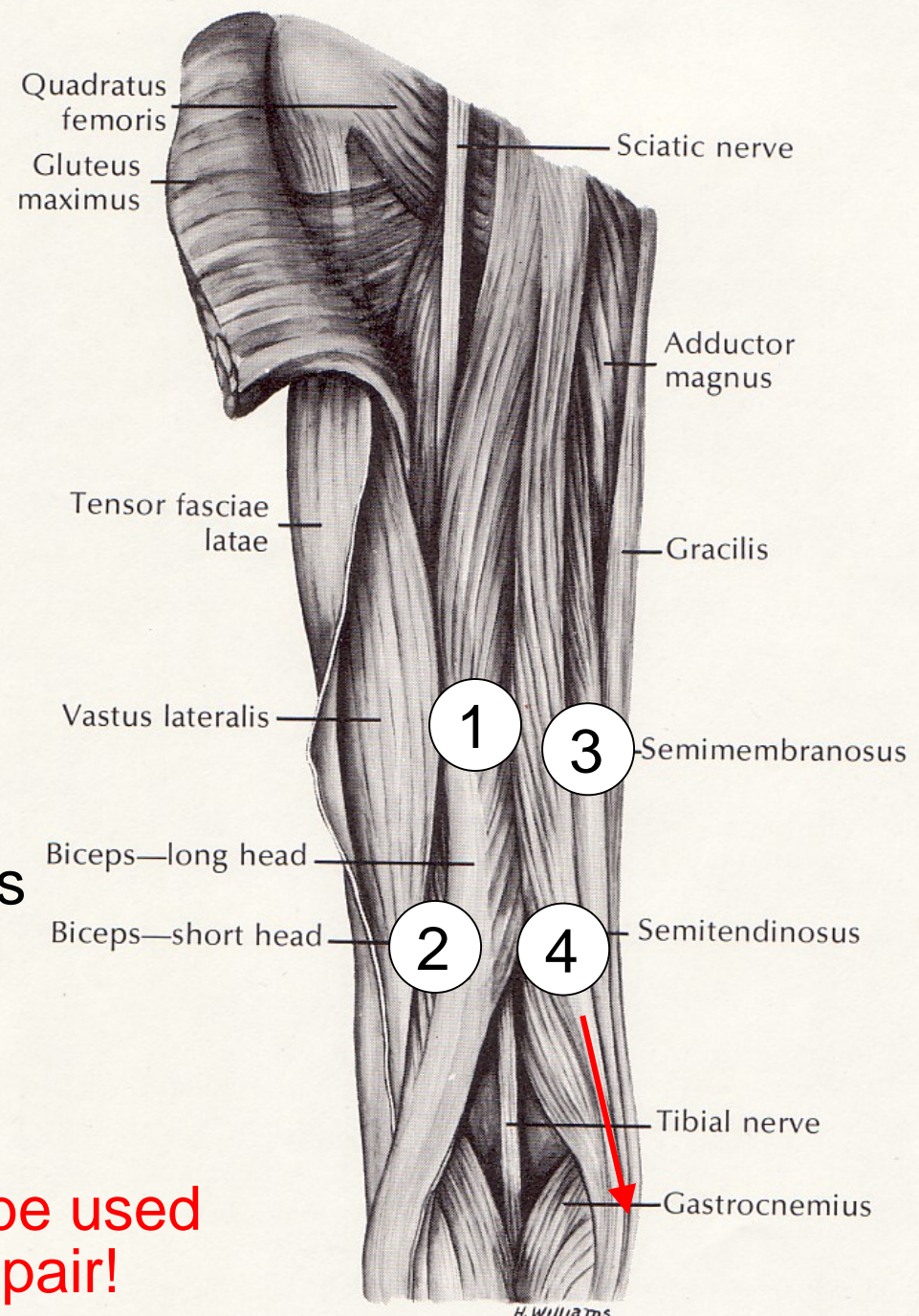
Tendons: Staple Muscles to Bones!

L thigh posterior

Hamstring Group

- ① Biceps femoris (long)
- ② Biceps femoris (short)
- ③ Semimembranosus
- ④ Semitendinosus

Section can be used for ACL repair!



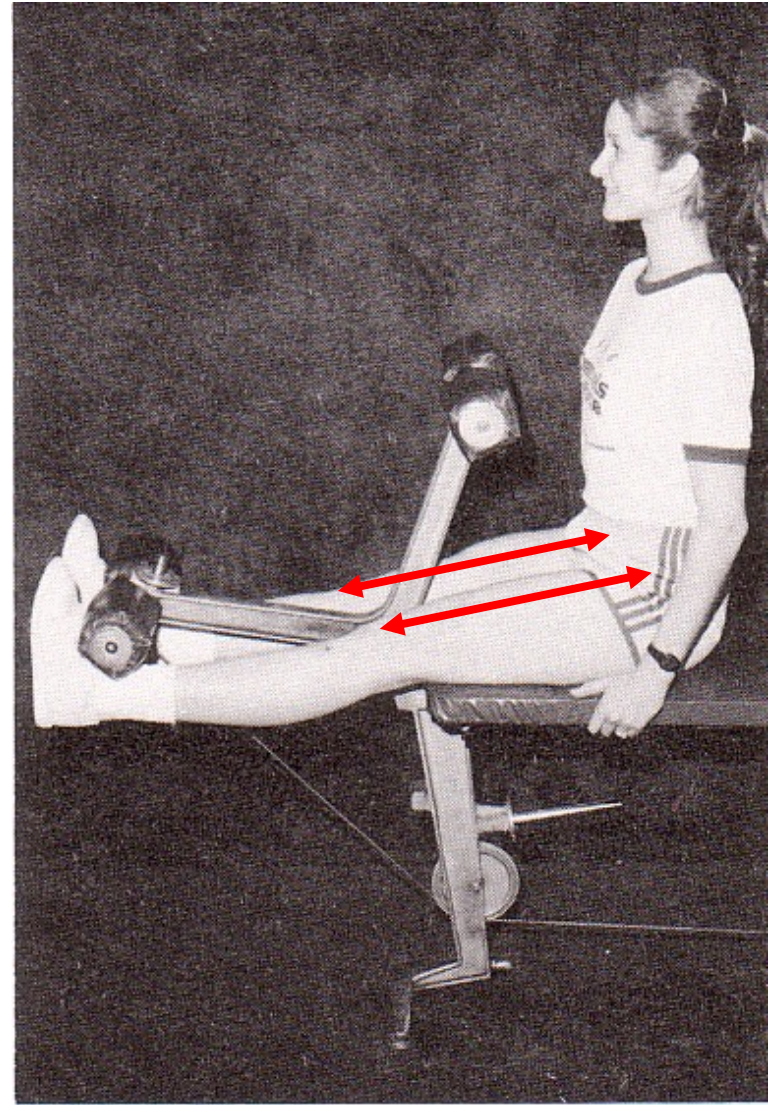
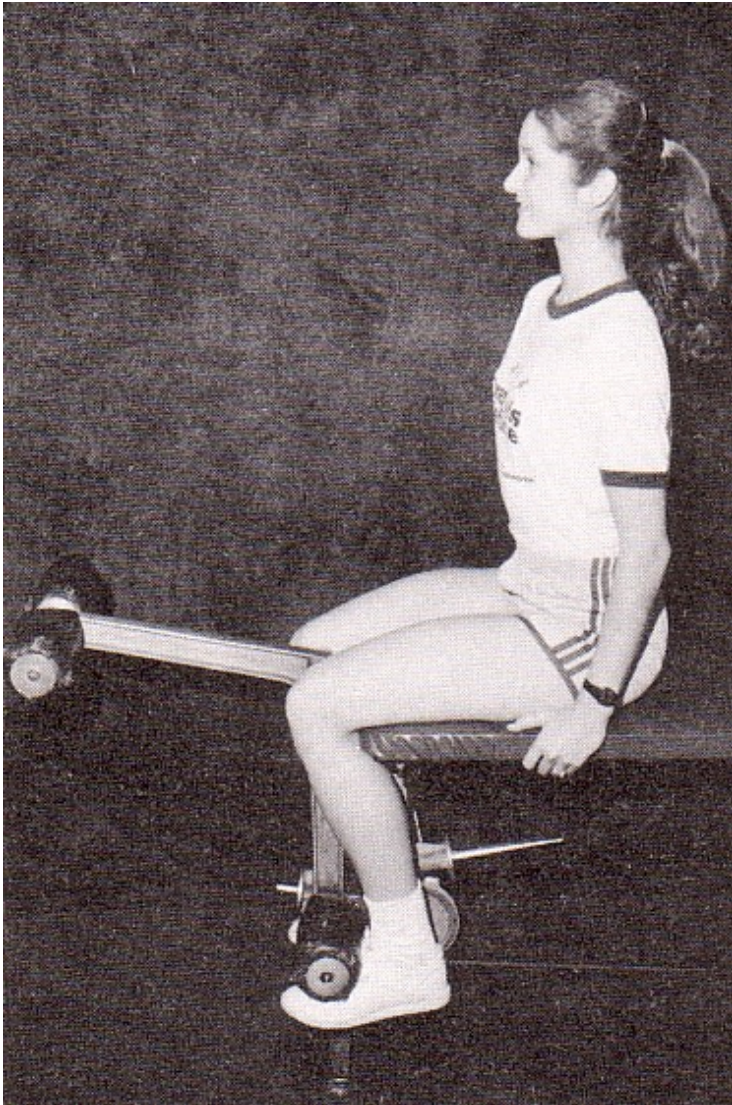
Anatomy Lab Treasure Hunt I. Question 2

Identify *anterior thigh muscles* worked by the *leg extension exercise*.

Name these *four anterior thigh muscles* specifically in the space below.

Which of these four (sub-) muscles is worked specifically by the last 10-15° of the leg extension?

Leg Extension



Front of thigh = quadriceps

Schematic of Anterior (L) Thigh



Rectus femoris



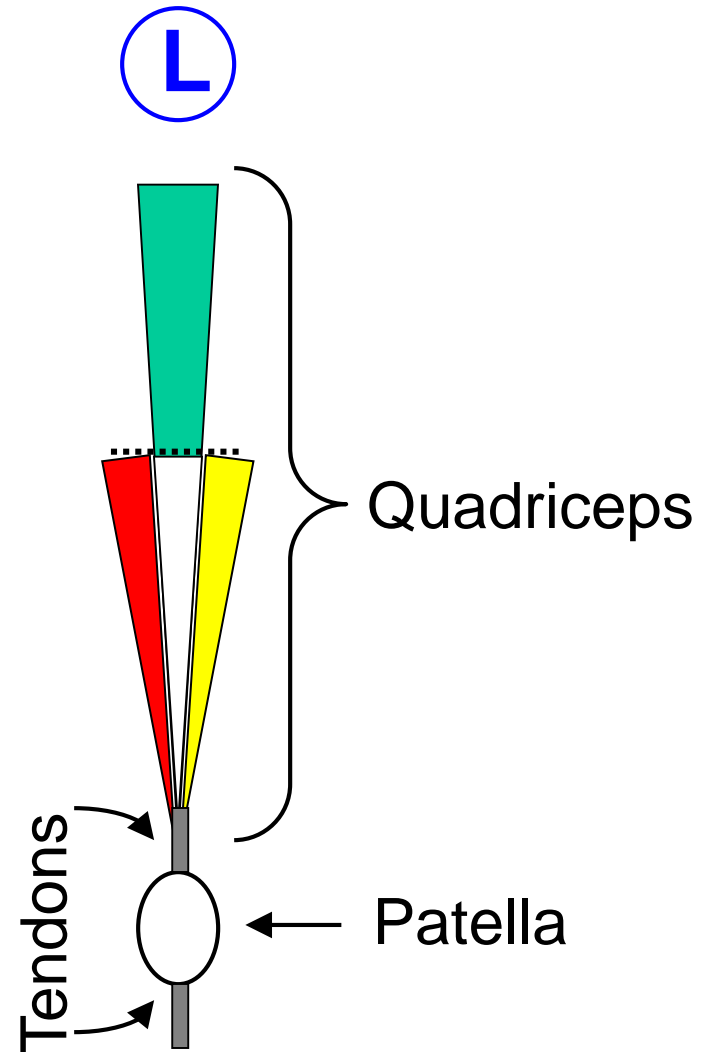
Vastus intermedius



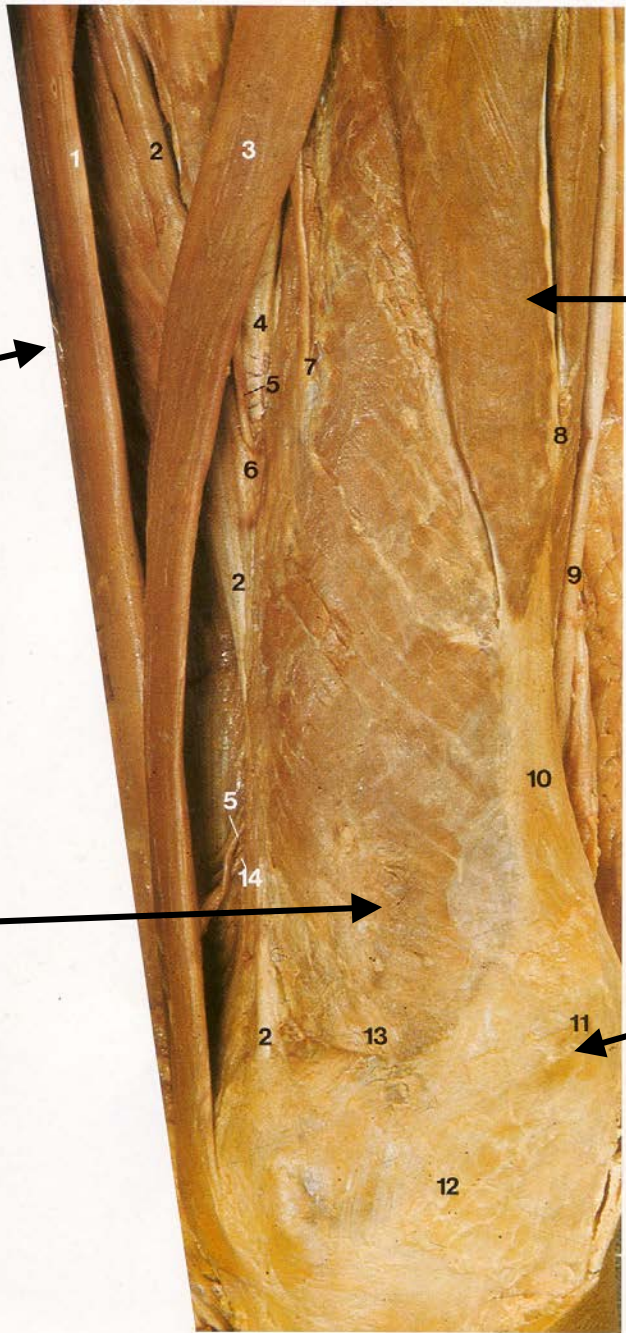
Vastus lateralis



Vastus medialis



L thigh anterior
& medial



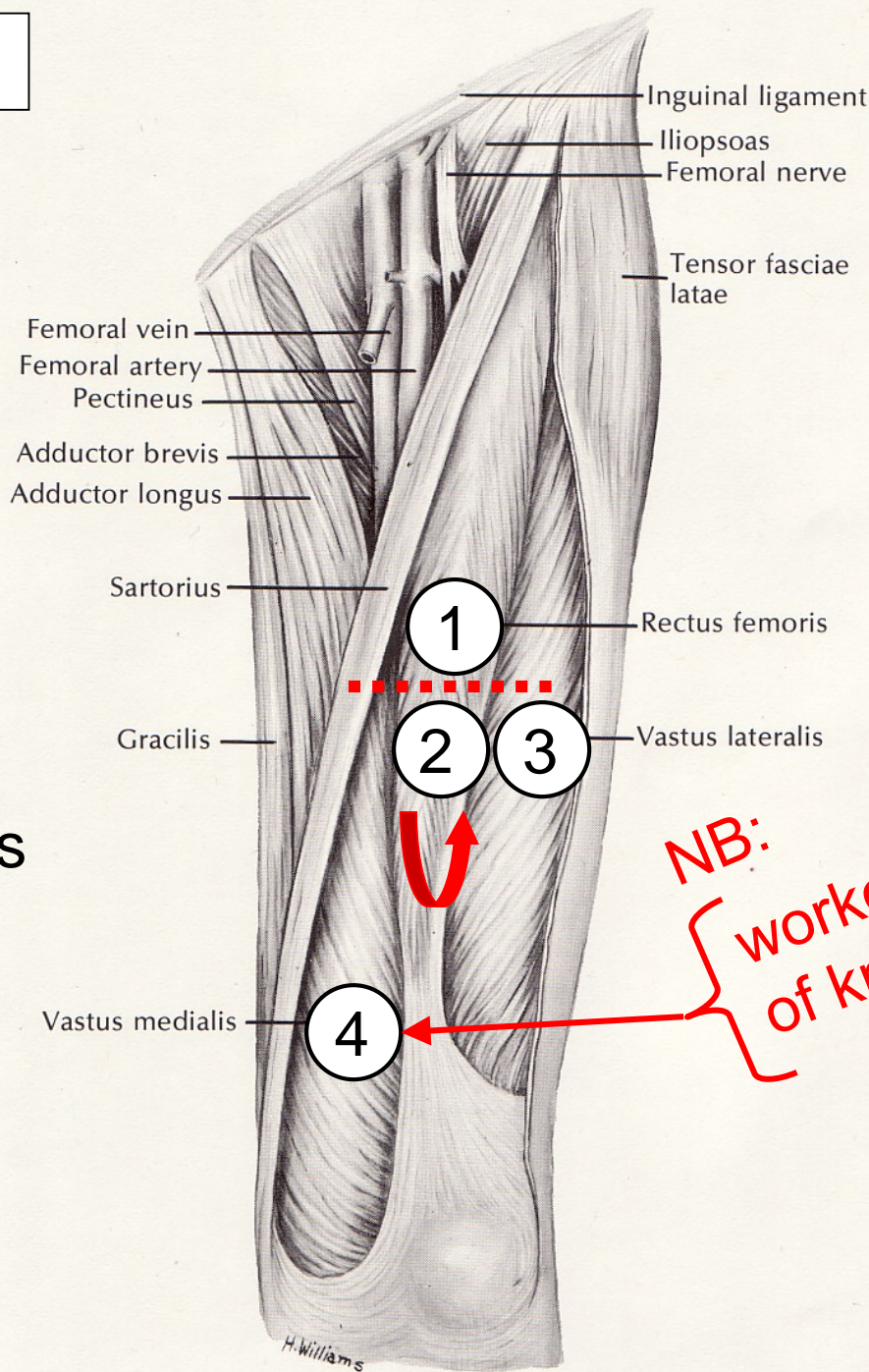
Rectus femoris

Adductor
Gracilis

Vastus medialis

Patella/kneecap

L thigh anterior



Quadriceps

- ① Rectus femoris
- ② Vastus intermedius
- ③ Vastus lateralis
- ④ Vastus medialis

NB:
worked last 10-15°
of knee extension

Anatomy Lab Treasure Hunt I. Question 3

Find and identify muscles that are worked by the *chest fly*.

Why is this exercise described like “hugging an oak tree”?

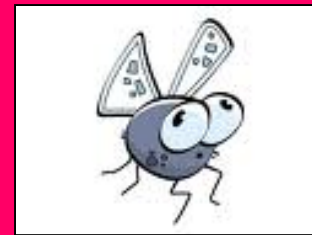
Which *joint/joints* should be stabilized *during the chest fly*?

What muscle groups are activated by the *bench press*, but not by the *chest fly*?

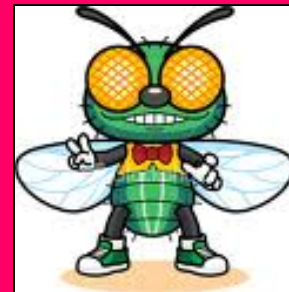
What about a chest fly?



?

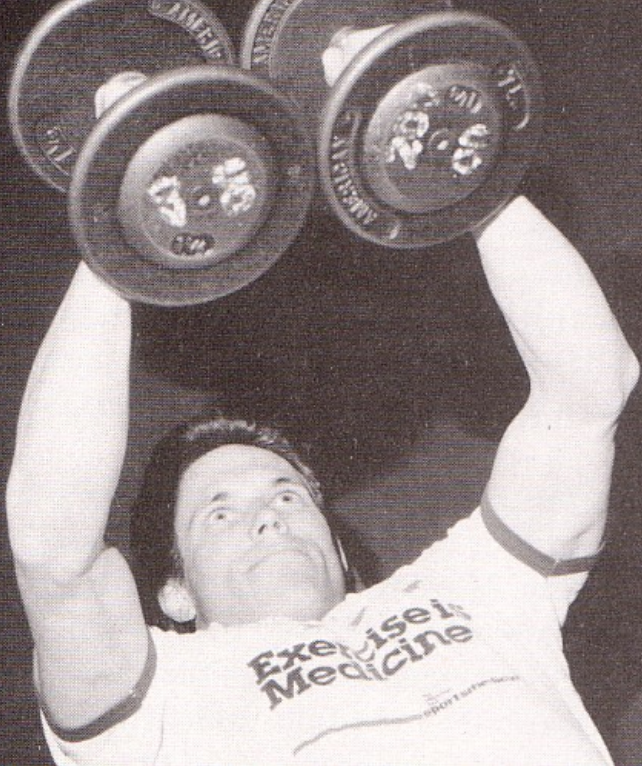


?



?

1



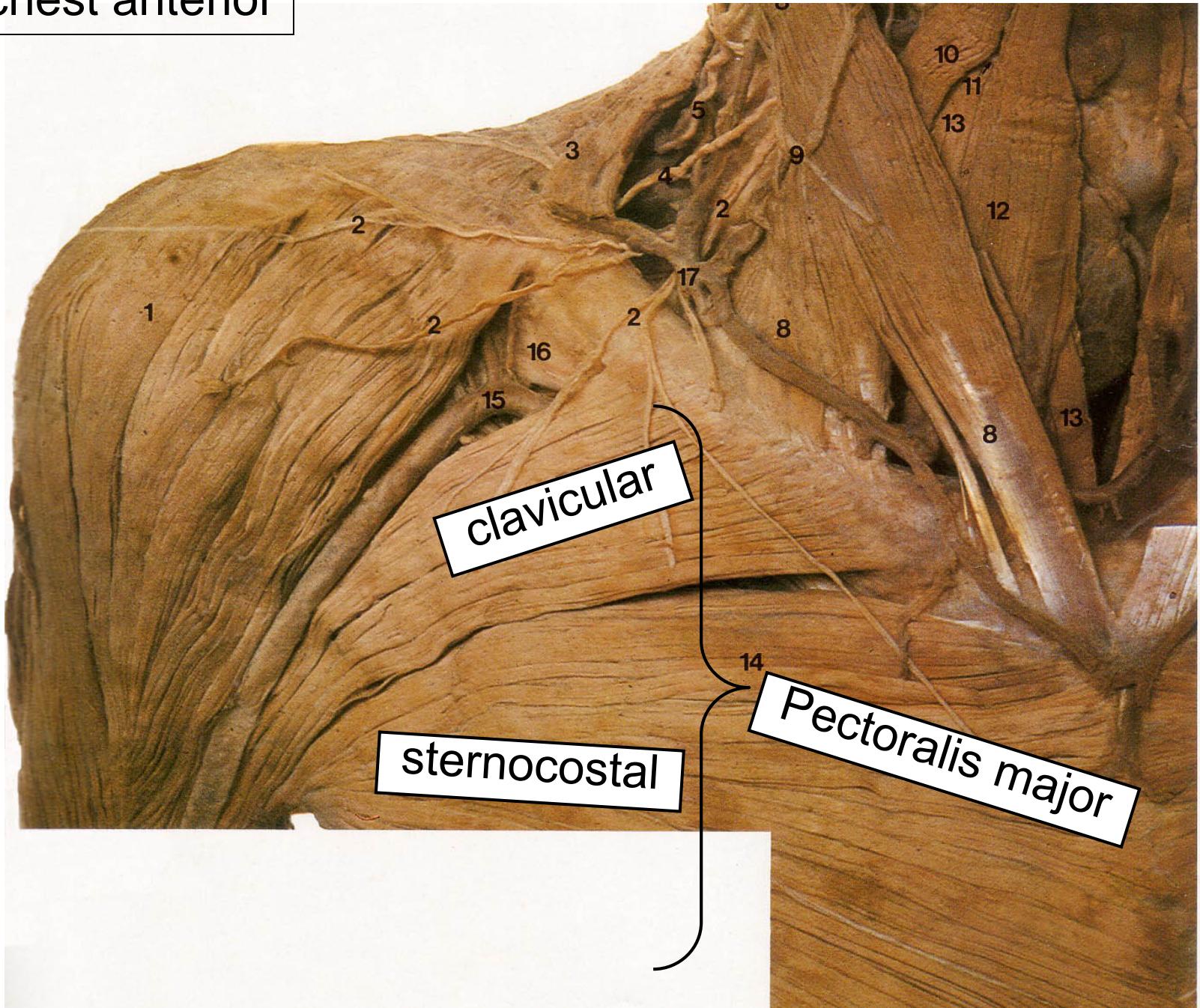
Chest Fly

Pectoral group
Anterior deltoid

2

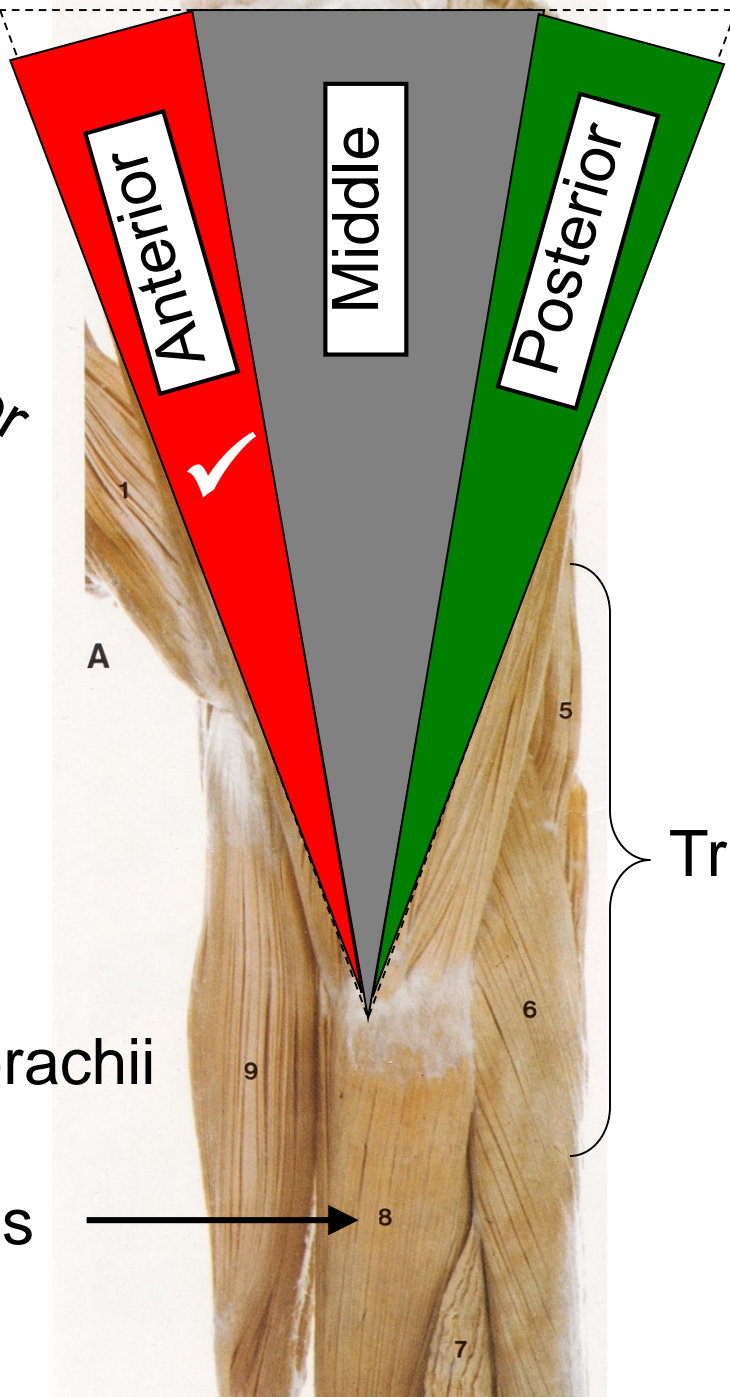


R chest anterior



L arm lateral

Pectoralis major



Deltoid

Triceps brachii

Biceps brachii

Brachialis



A

1

5

6

9

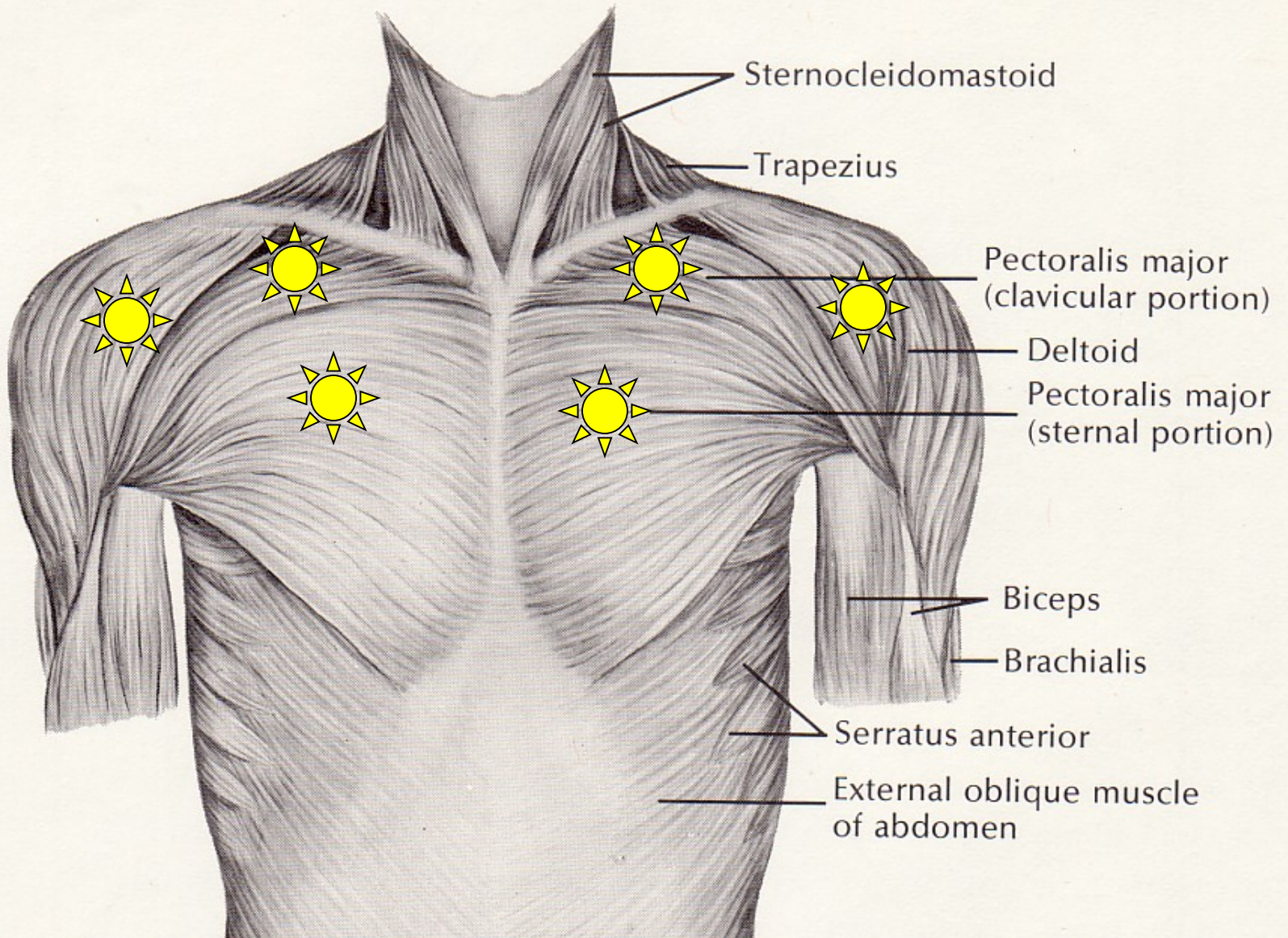
8

7

Correct Fly Technique: Hug the Oak Tree!!



Pretty good technique, but keep those wrists straight!



Chest Fly or Press?



<http://asp.elitefts.com/qa/default.asp?qid=37598&tid=104>

Comments on the technique?

Anatomy Lab Treasure Hunt I. Question 4

Find and identify *three major muscle groups* worked by the *military press*.

Classify this exercise as *squat* or *push* or *pull*.

Which muscle groups activated by the *military press* are not exercised extensively by the *bench press*?

Which muscle groups worked by the *bench press* are not exercised extensively by the *military press*?



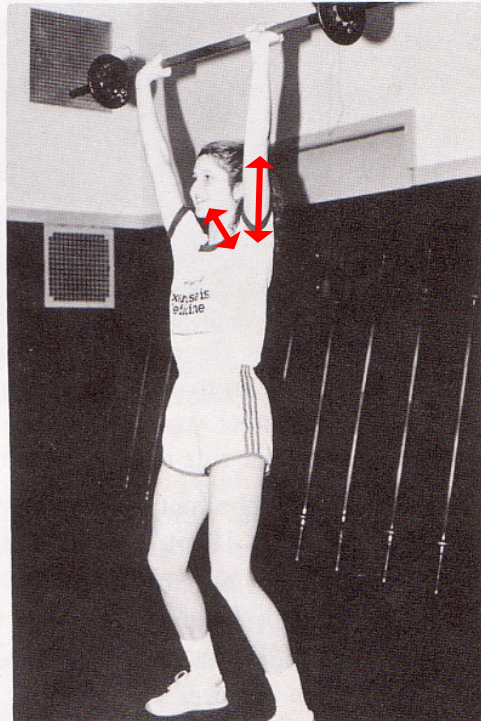
A

Military Press

Shoulder – front & middle
 Arm – back
 Neck



B



C

Anterior & Middle Deltoid
 Supraspinatus
 Triceps Brachii
 Anterior neck muscles
 Sternocleidomastoid
 Posterior neck muscles
 Upper trapezius
 Levator scapula

Bench Press

Chest

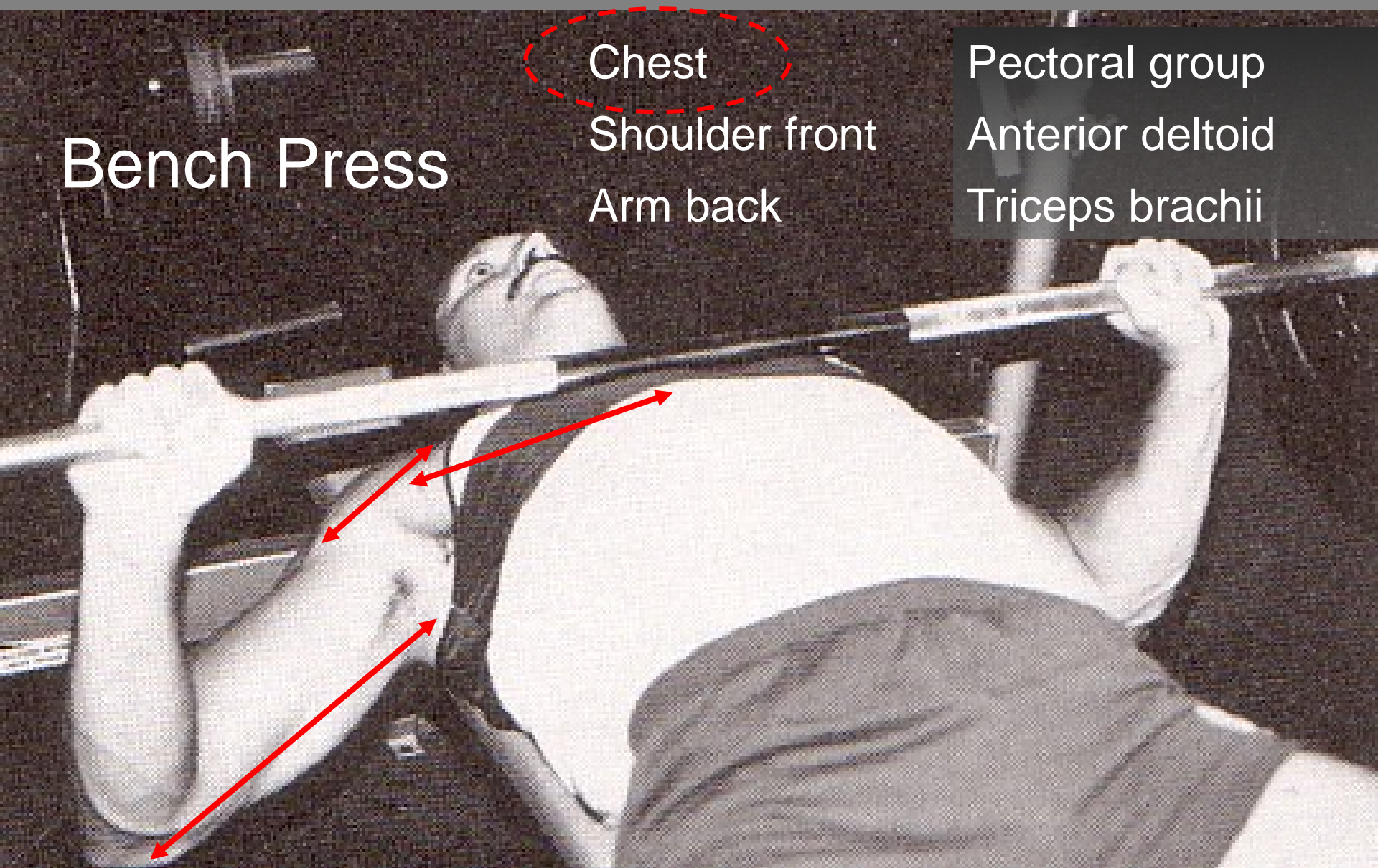
Shoulder front

Arm back

Pectoral group

Anterior deltoid

Triceps brachii



Anatomy Lab Treasure Hunt I. Question 5

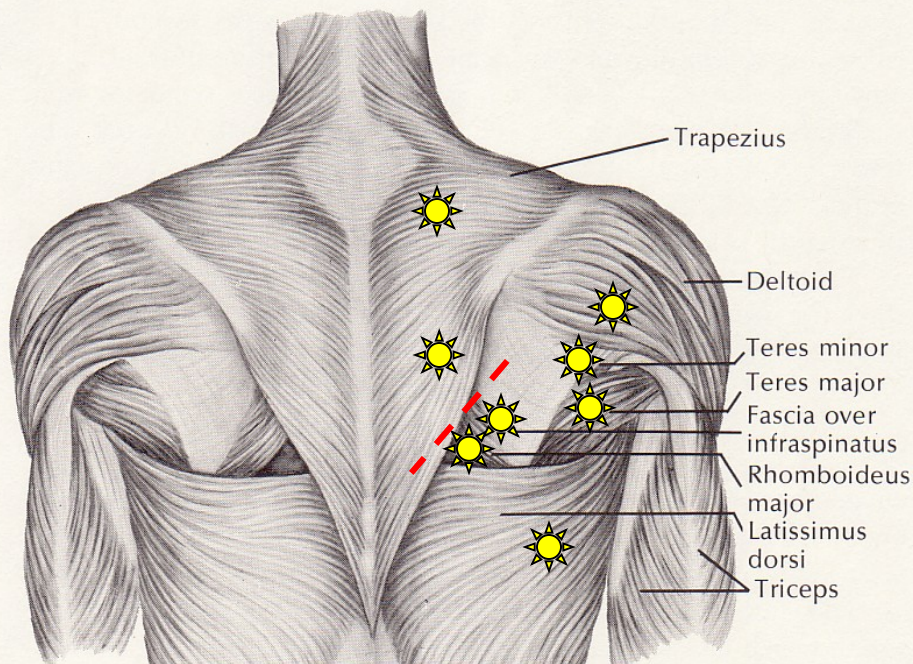
Identify and list below at least *three major muscle groups* worked by the *lat pull*.

Classify this exercise as *squat* or *push* or *pull*.

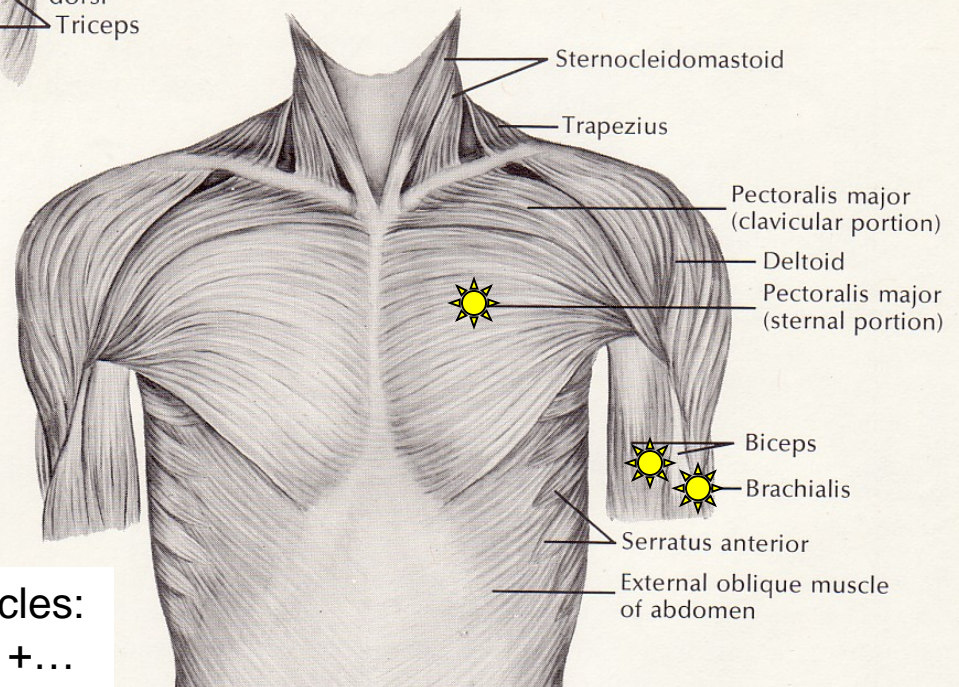
Can you find *subsections* or *unique parts* of any of these major muscle groups? If so, *identify them*?

Can the *subsections* you've chosen be *isolated* based on the specific *exercise* or *grip* performed?

Lat Pull/Pull-up Muscle Activation

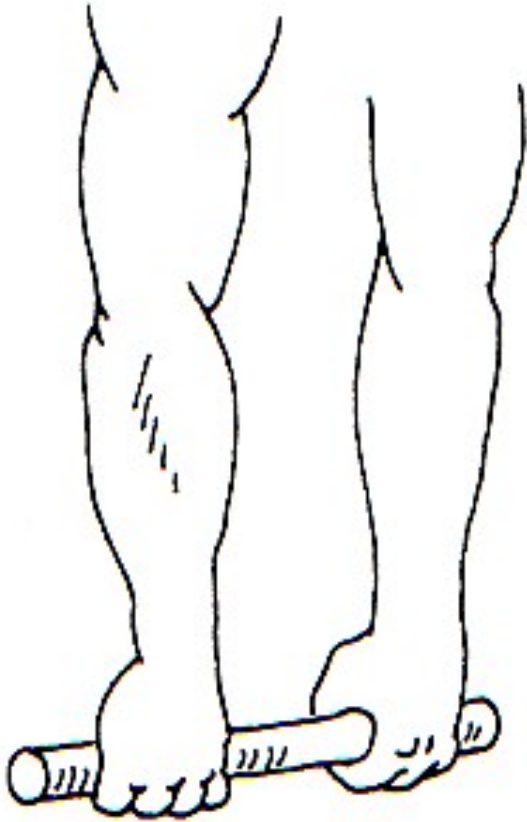


Back – upper
Chest
Shoulder – back
Arm – front
Forearm – back

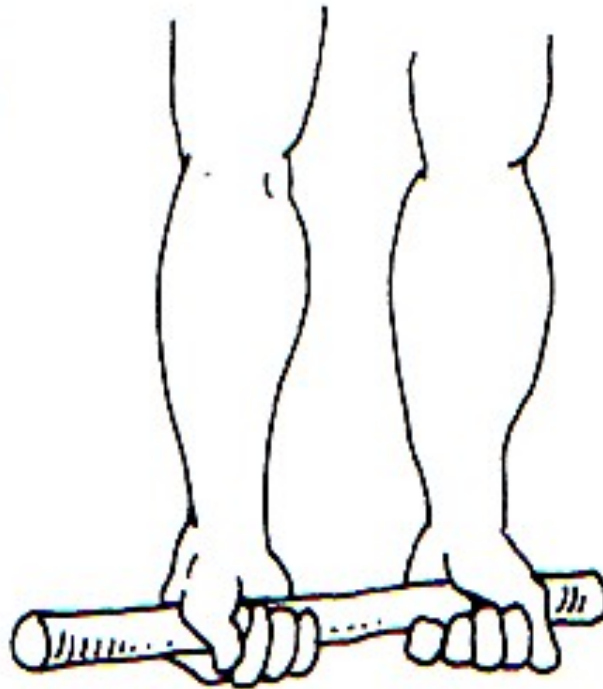


NB: + forearm muscles:
brachioradialis +...

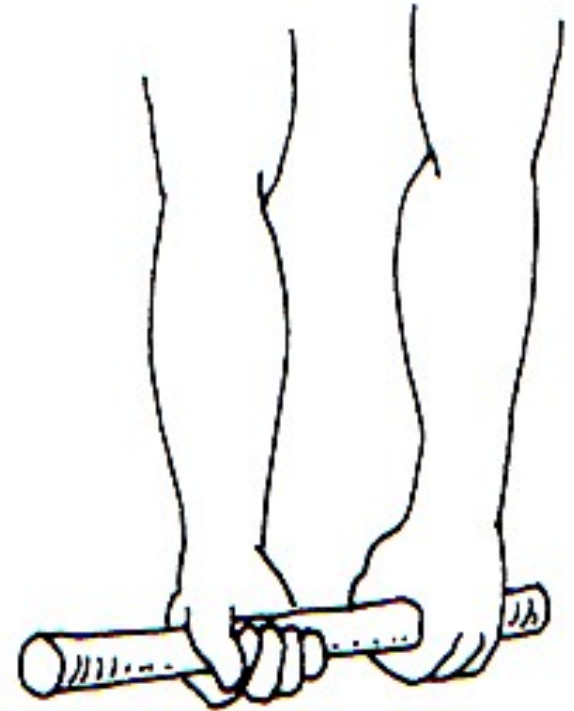
Common grips used in weight training



Pronated
/Overhand

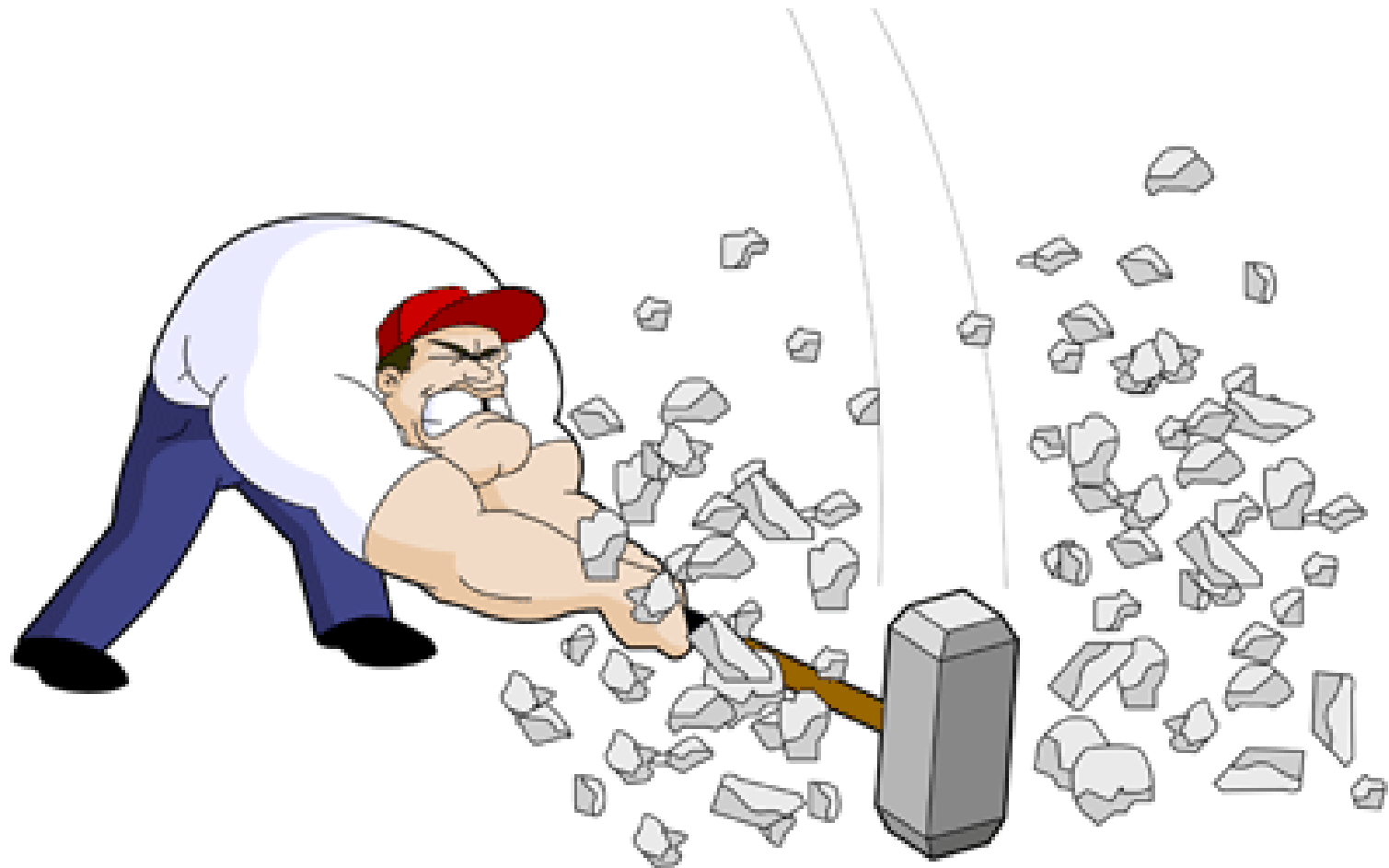


Supinated
/Underhand

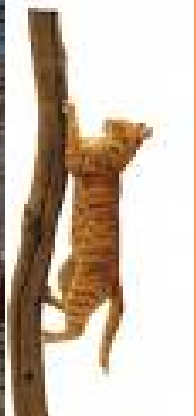


Alternate
/Spotting

Latissimus Dorsi Most Heavily Activated in *Hammering Plane*!



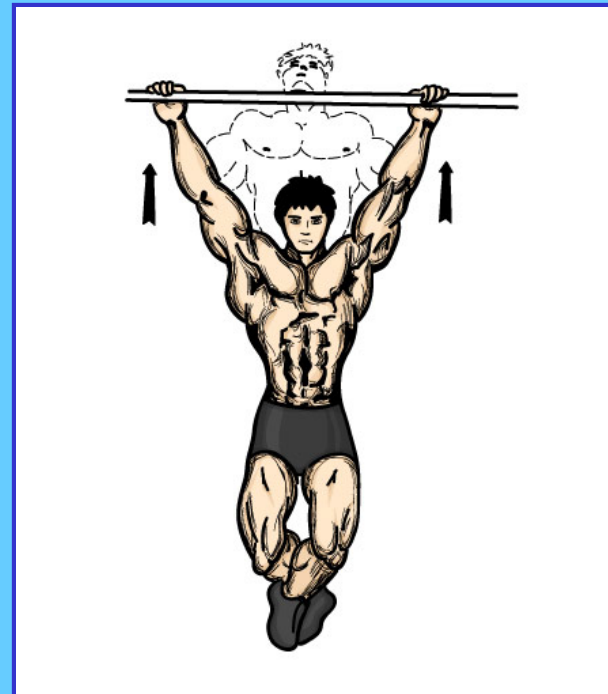
What are upper & lower extremity climbing muscles?



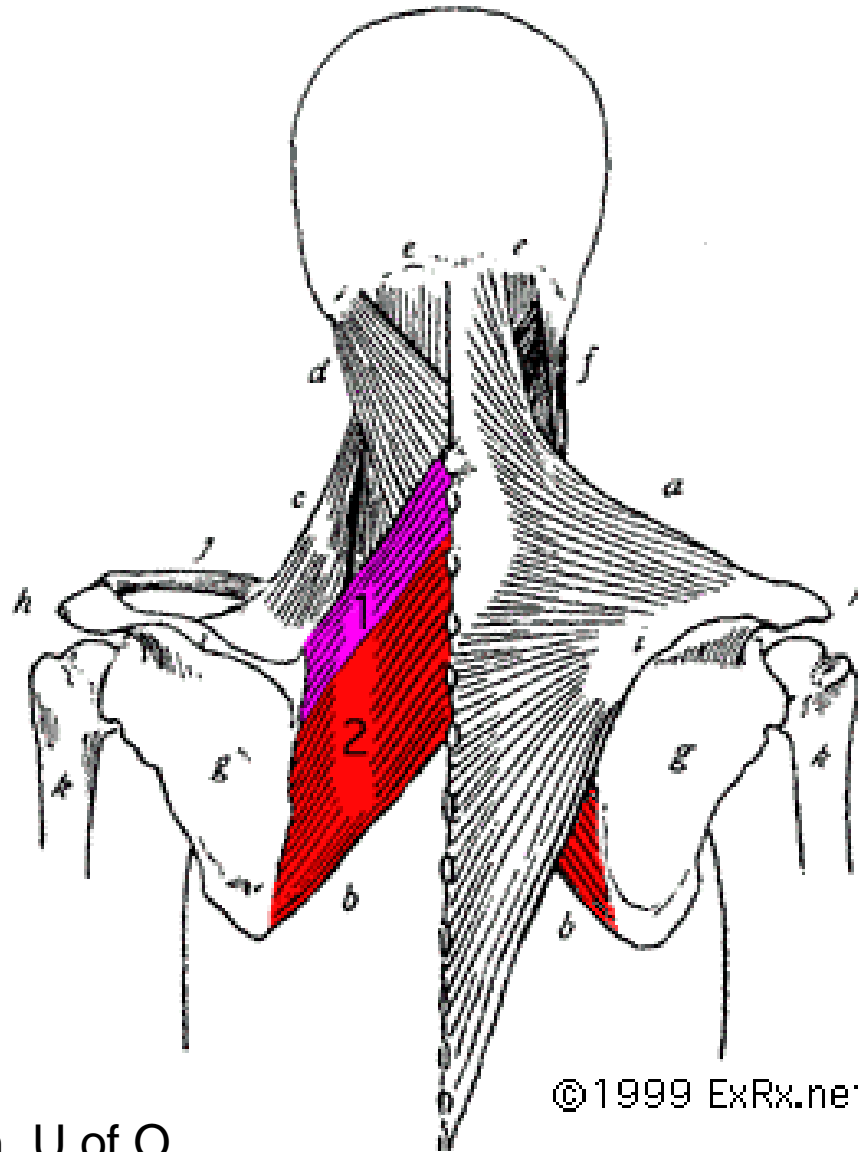
**Shoulder-width grip →
more Latissiumus dorsi**



**Wider grip → more
Rhomboids,
middle Trapezius**



***Rhomboid muscles include
Major & minor***



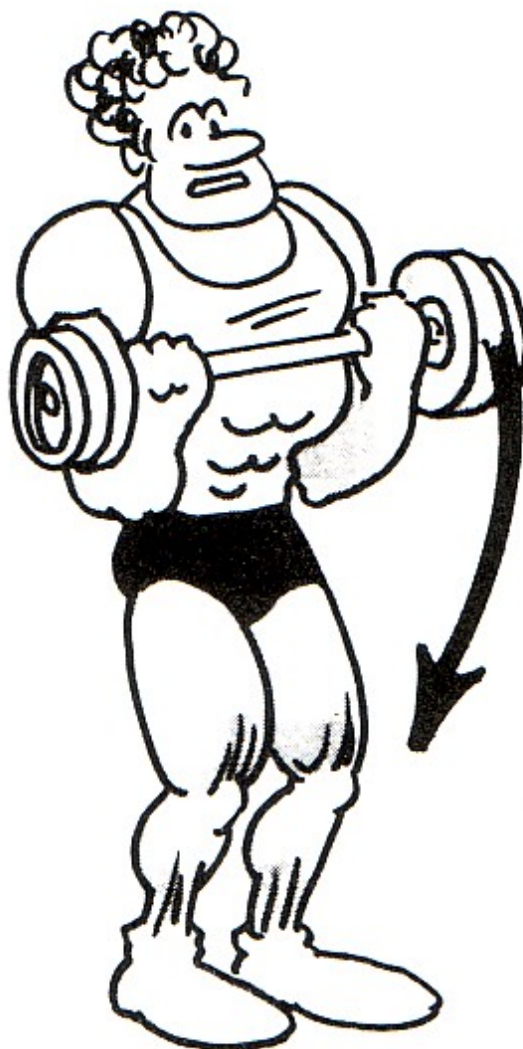
©1999 ExRx.net

Courtesy S. Dawson, U of O

BREATHE CONTINUOUSLY

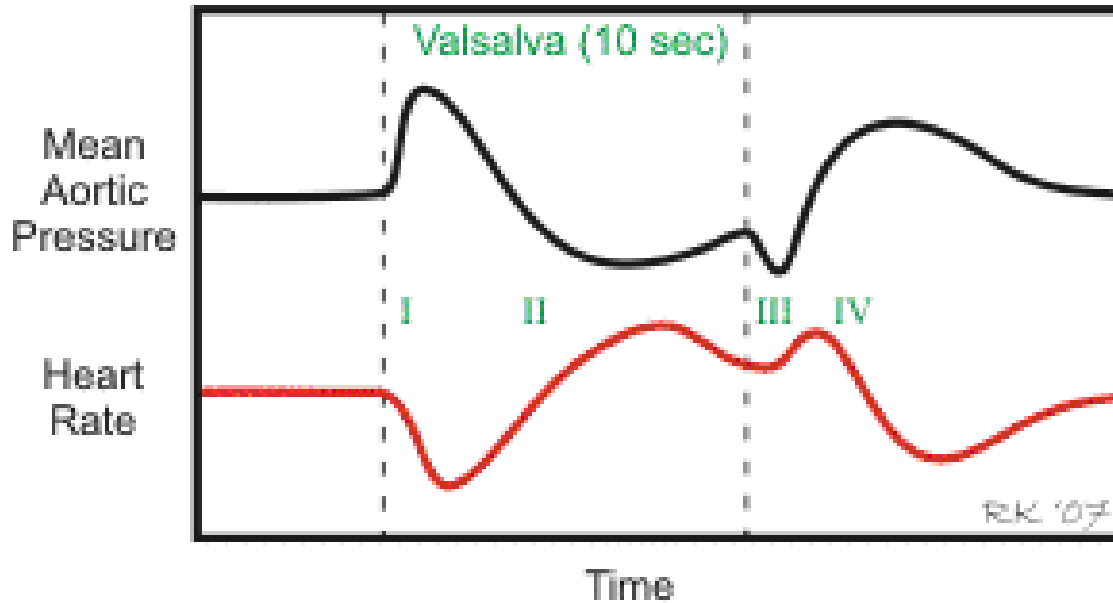


EXHALE
CONCENTRIC PHASE



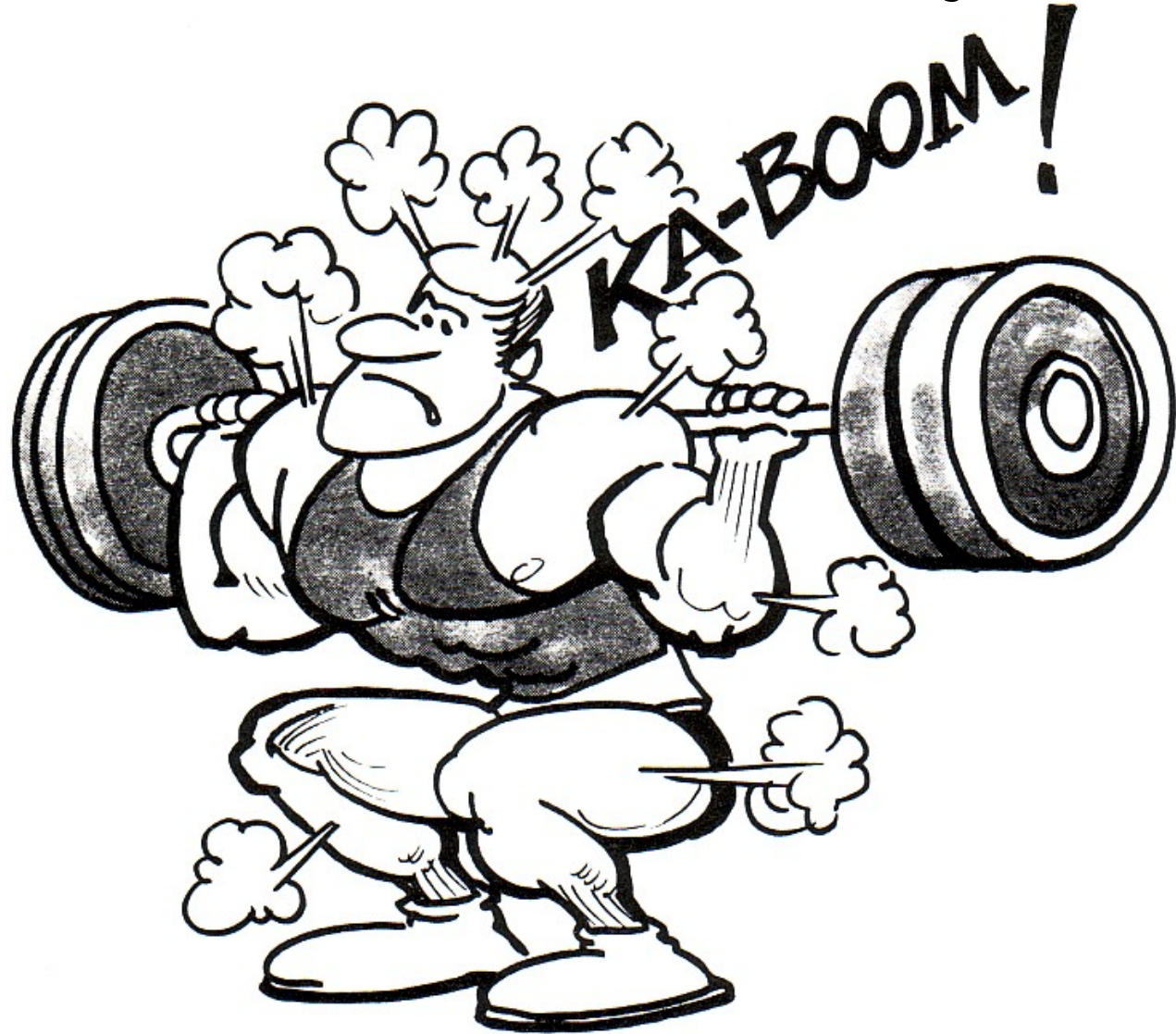
INHALE
ECCENTRIC PHASE

Antonio Maria Valsalva *Italian Anatomist, 1666 - 1723*

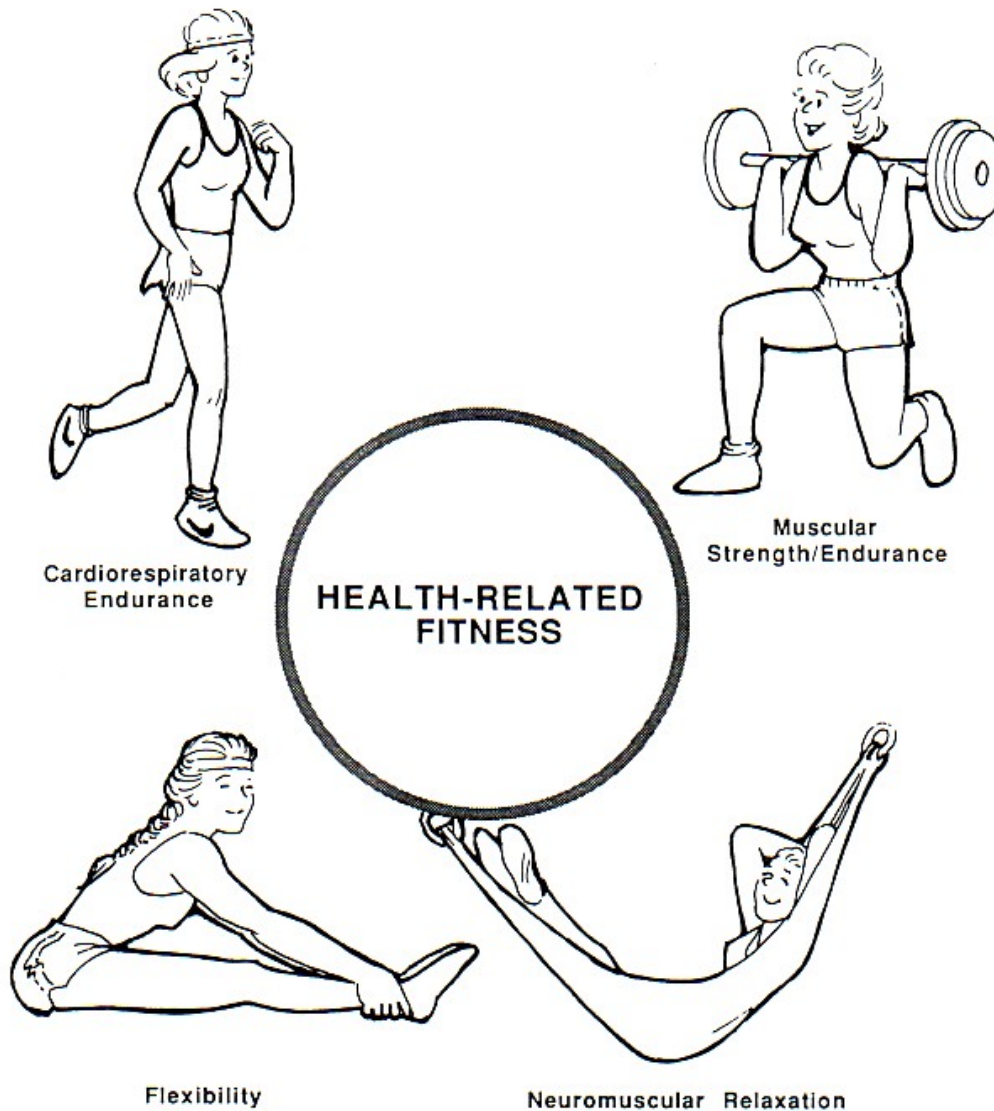


Forcibly exhaling against a closed glottis (vocal cords), which closes off the entrance to the trachea (windpipe) and increases pressures in the chest and abdomen.

Breathe Continuously!



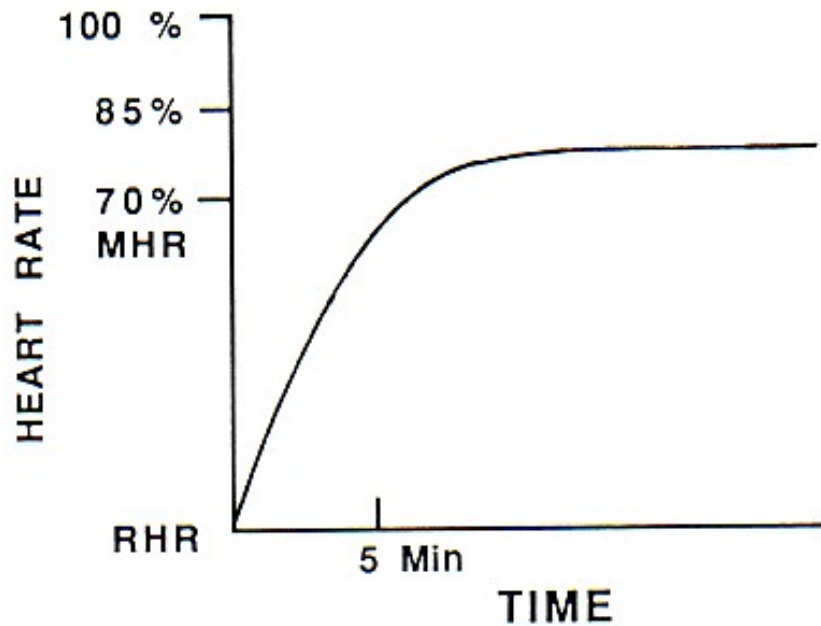
Weight Training Enhances 4 of 5 Components of Health-Related Fitness!!



NB: %Fat not pictured.

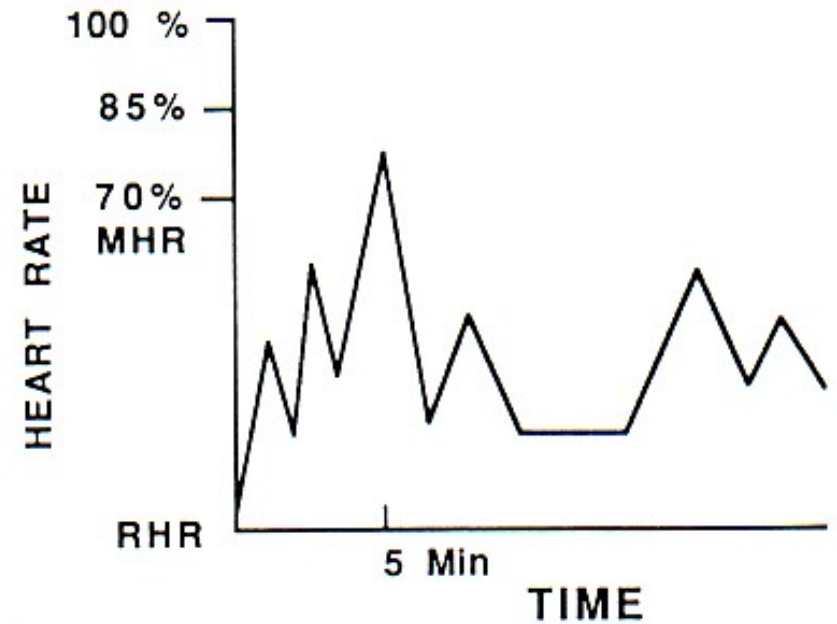
...but Improvements in CV Fitness are Minimal!

AEROBIC ACTIVITY



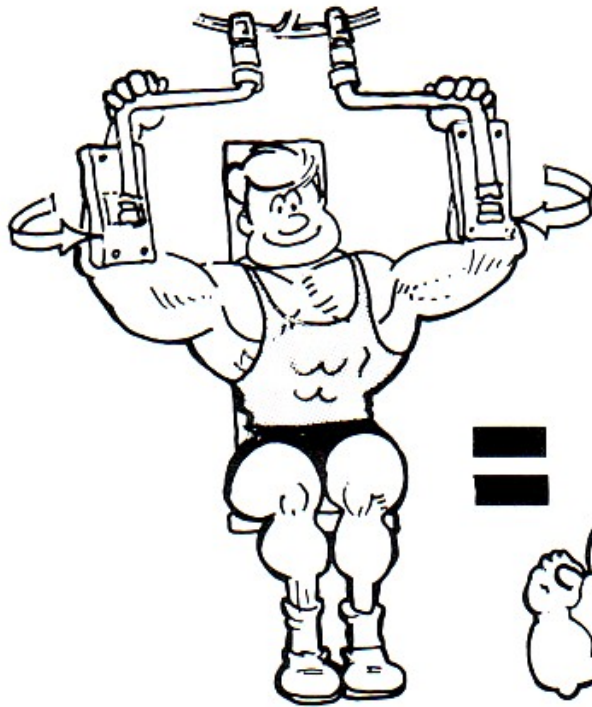
A

ANAEROBIC ACTIVITY



B

...even with Circuit Weight Training!



=

**Circuit Weight
Training**



**JOG
JOG**

(12 min/mile)

=

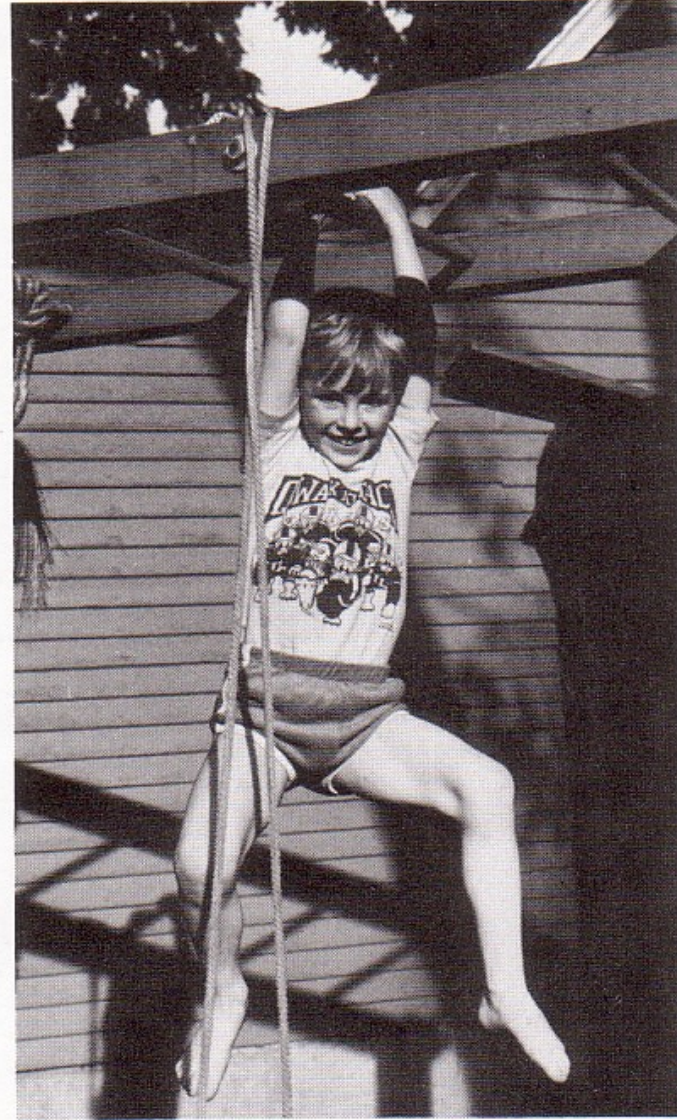


Tennis

Myth 1: Weight Training Injures Joints



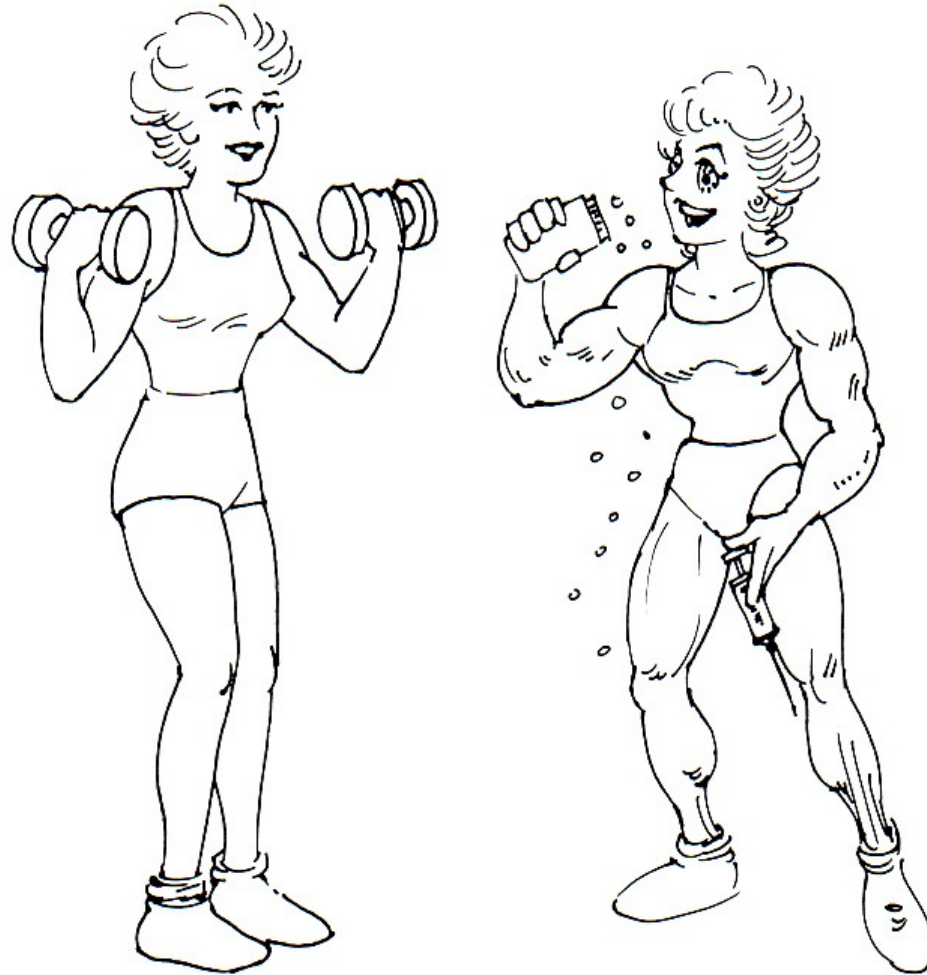
Myth 2: Weight Training Depresses Growth & Development



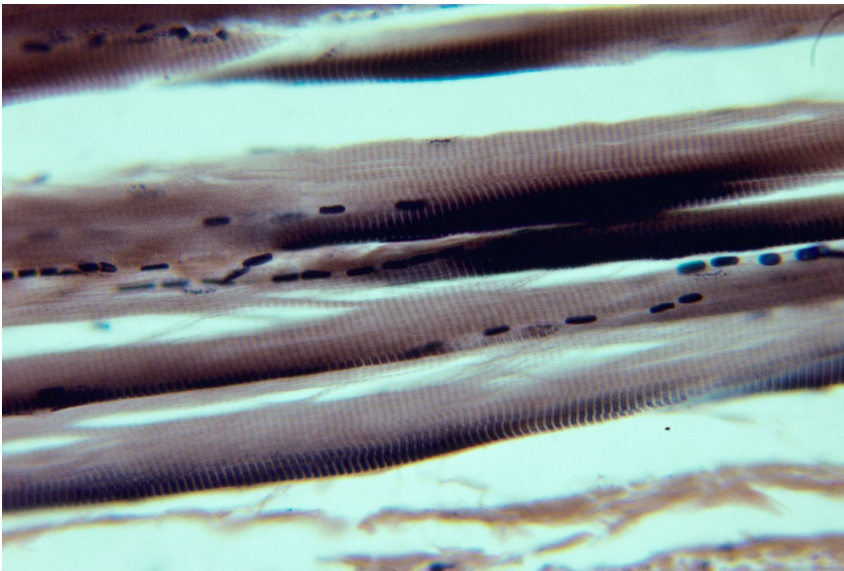
Myth 3: Loss of Speed, Flexibility & Coordination



Myth 4: Women Hypertrophy as Much as Men

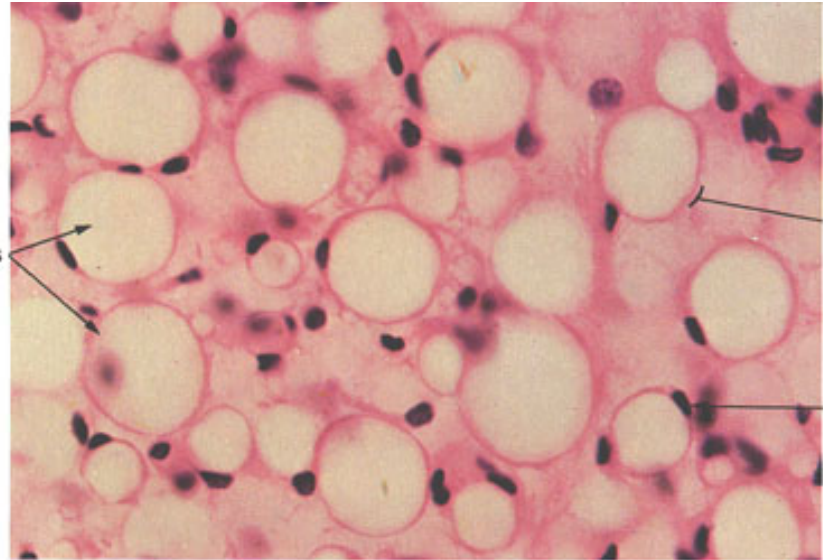


Myth 5: Muscle Turns to Fat



Fat globules

≠



Fat cell cytoplasm

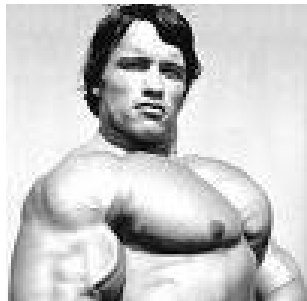
Fat cell nucleus

20 μm

Muscle contracts

Fat stores survival fuel!

Muscle & fat are not magically interchangeable!



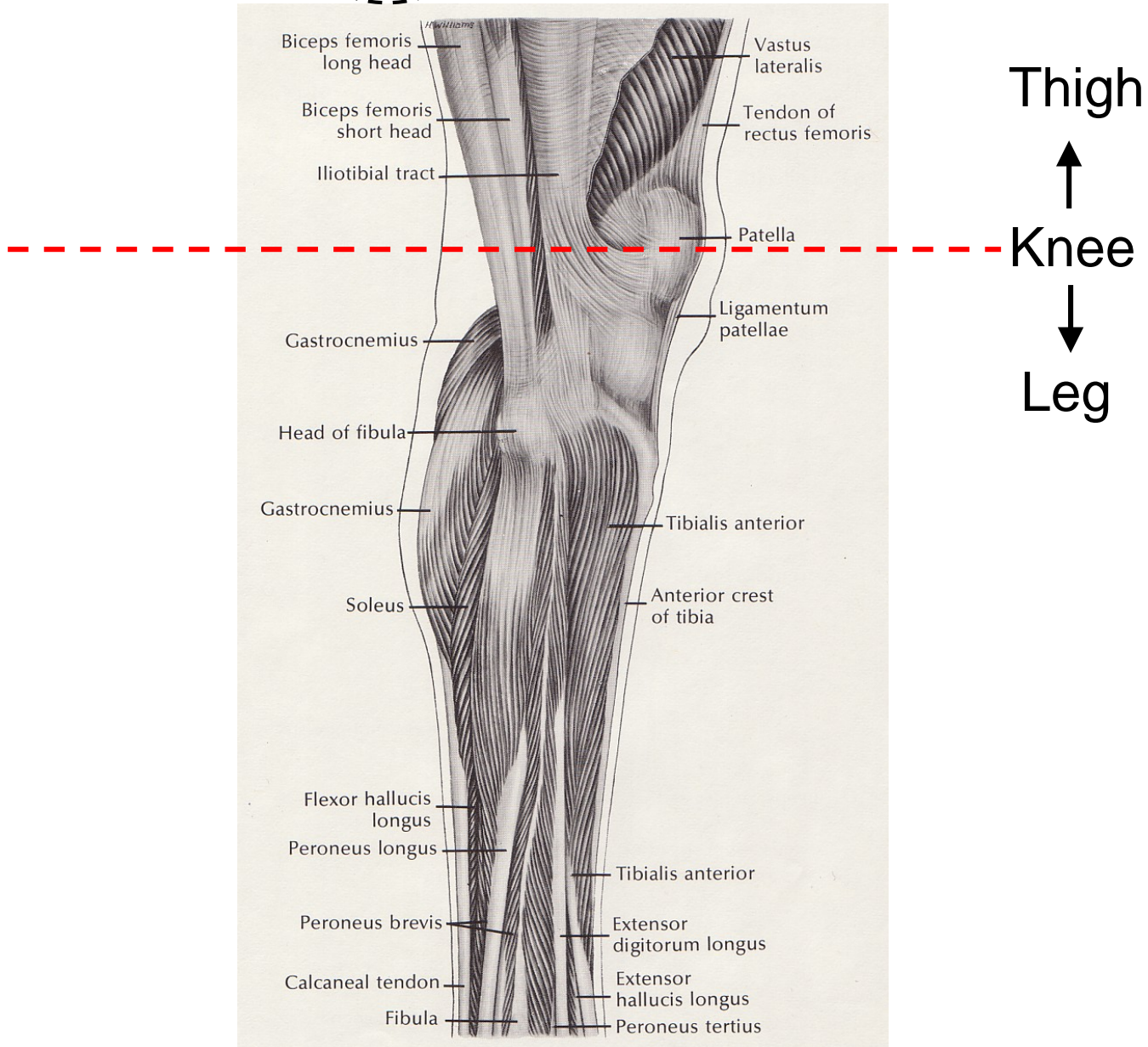
≠



Myth 6: Spot Reduction



Right Leg Muscles - Lateral

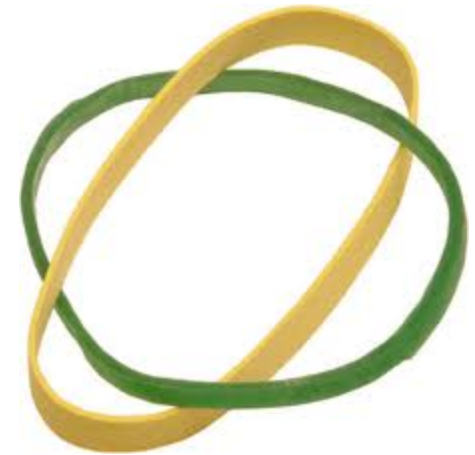


Left Leg Muscles - Lateral

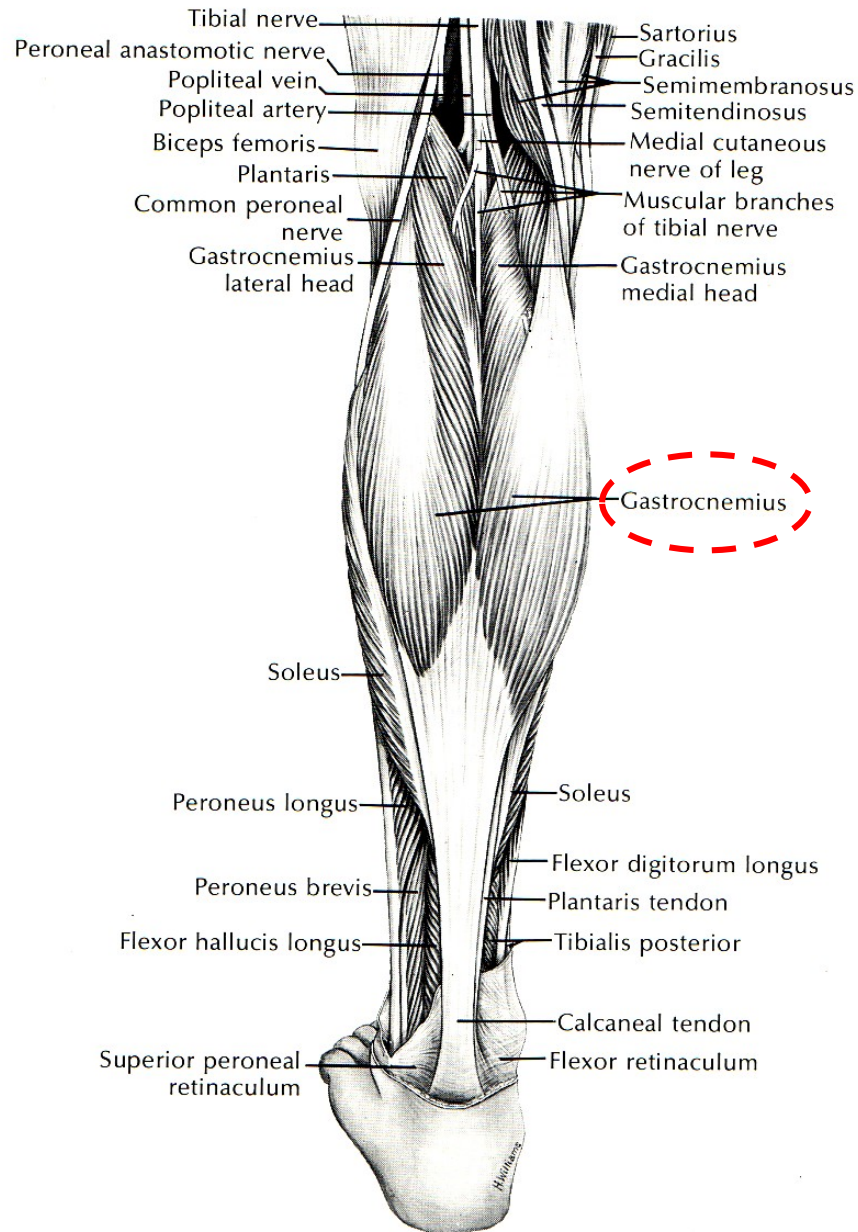


Retinaculum?
L. v. retinere
to retain or to halt

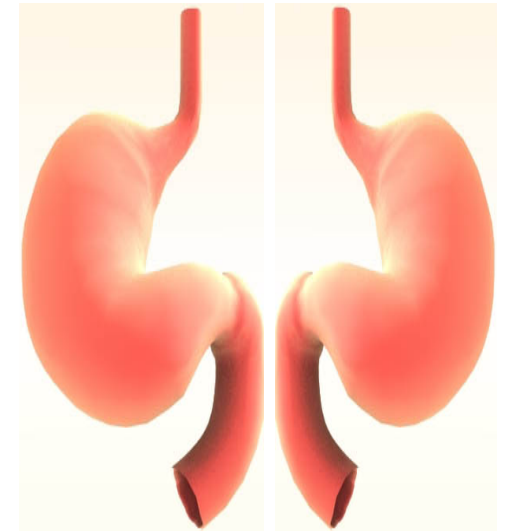
~Rubber bands!



Left Leg Superficial Muscles - Posterior

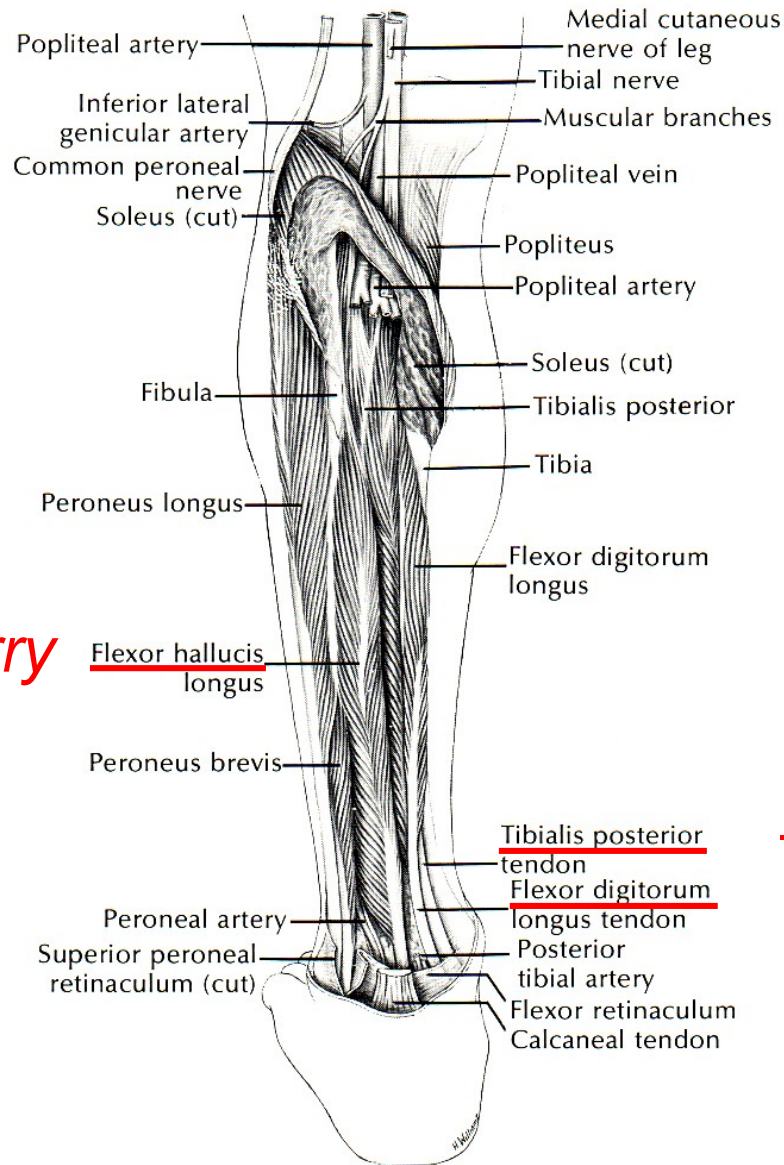


Gastrocnemius



"stomach-shaped of the leg"

Left Leg Deep Muscles - Posterior



Hallicus = Harry

Tom = Tibialis

Dick = Digitorum

Technique Analyses of Internet Pictures



Knees straight \rightarrow 1^o gastrocnemius

Technique Analyses (continued)



Knees bent $\rightarrow 1^{\circ}$ soleus

Discussion

+ Q?