BI 199 APWT Discussion 11

…Update on Outlines & Presentation Dates!

I. ***Announcements*** **This Thursday group Quiz @ 10 am, Anatomy Lab 7 pm! Big Day!! Update on outlines & presentation dates. Q?**

II. ***Review of Anatomy Lab 2 Exploration***

III. ***Exercise Physiology & Nutrition in the News***

30 lb 30 d? Magic? Lose 179 lb in 32 wk? Is this possible? Fasting? What is considered reasonable weight loss?

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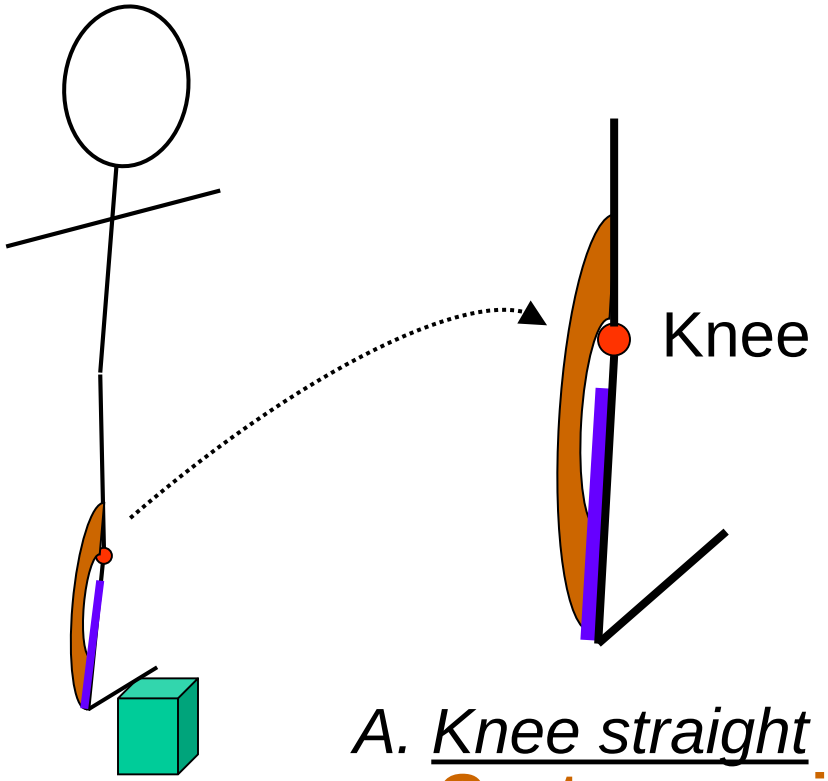
IV. ***Intermediate to Advanced Program Design?***

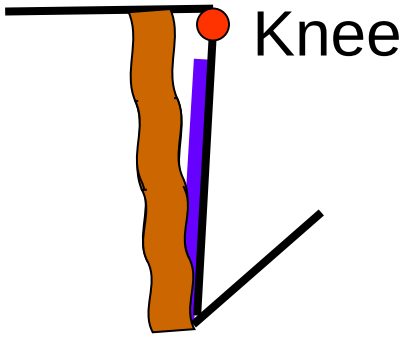
V. ***Exercise & System Classifications***

VI. ***Q? Open Discussion + Getting to Know You***

Anatomy Lab 2 Exploration. Question 1

Identify & list *muscles* that are *worked specifically* by the *straight & bent-knee calf raise*.
Which muscles are stressed most by which *unique form* of the calf raise?





A. *<u>Knee straight</u>*
Gastrocnemius stretched & engaged!

B. *<u>Knee bent</u>*
Gastrocnemius slack, **soleus** engaged

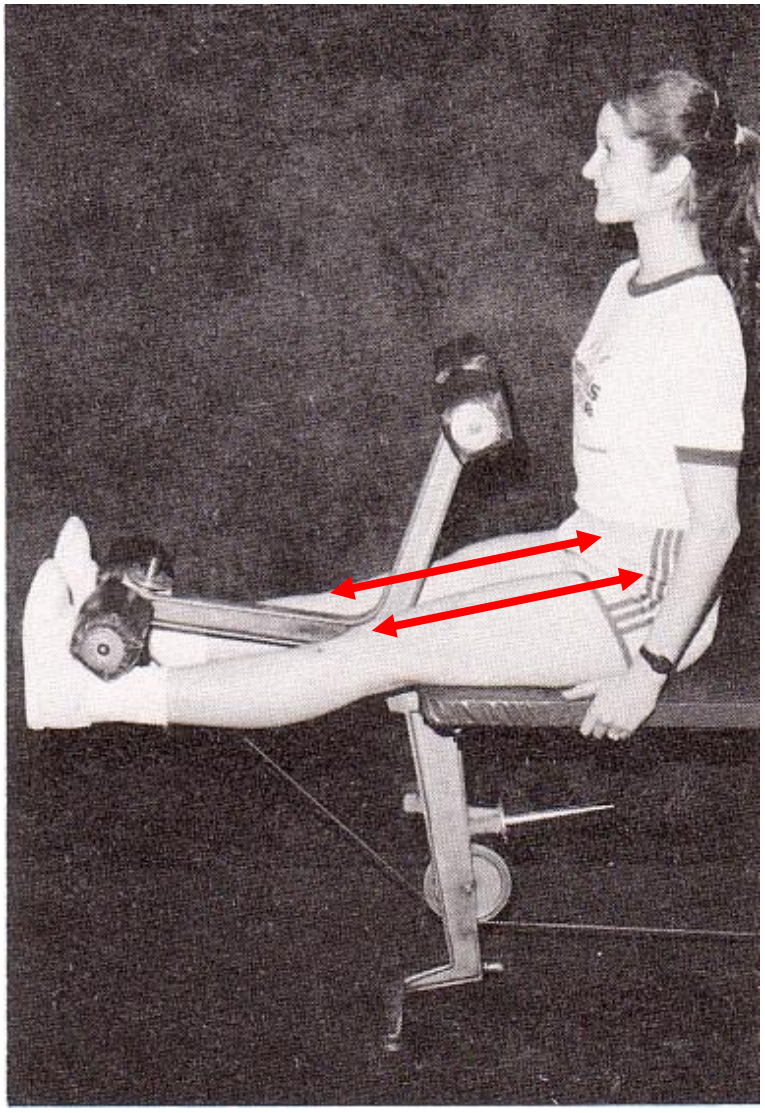
Anatomy Lab 2 Exploration. Question 2

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

Name these *four anterior thigh muscles* specifically.

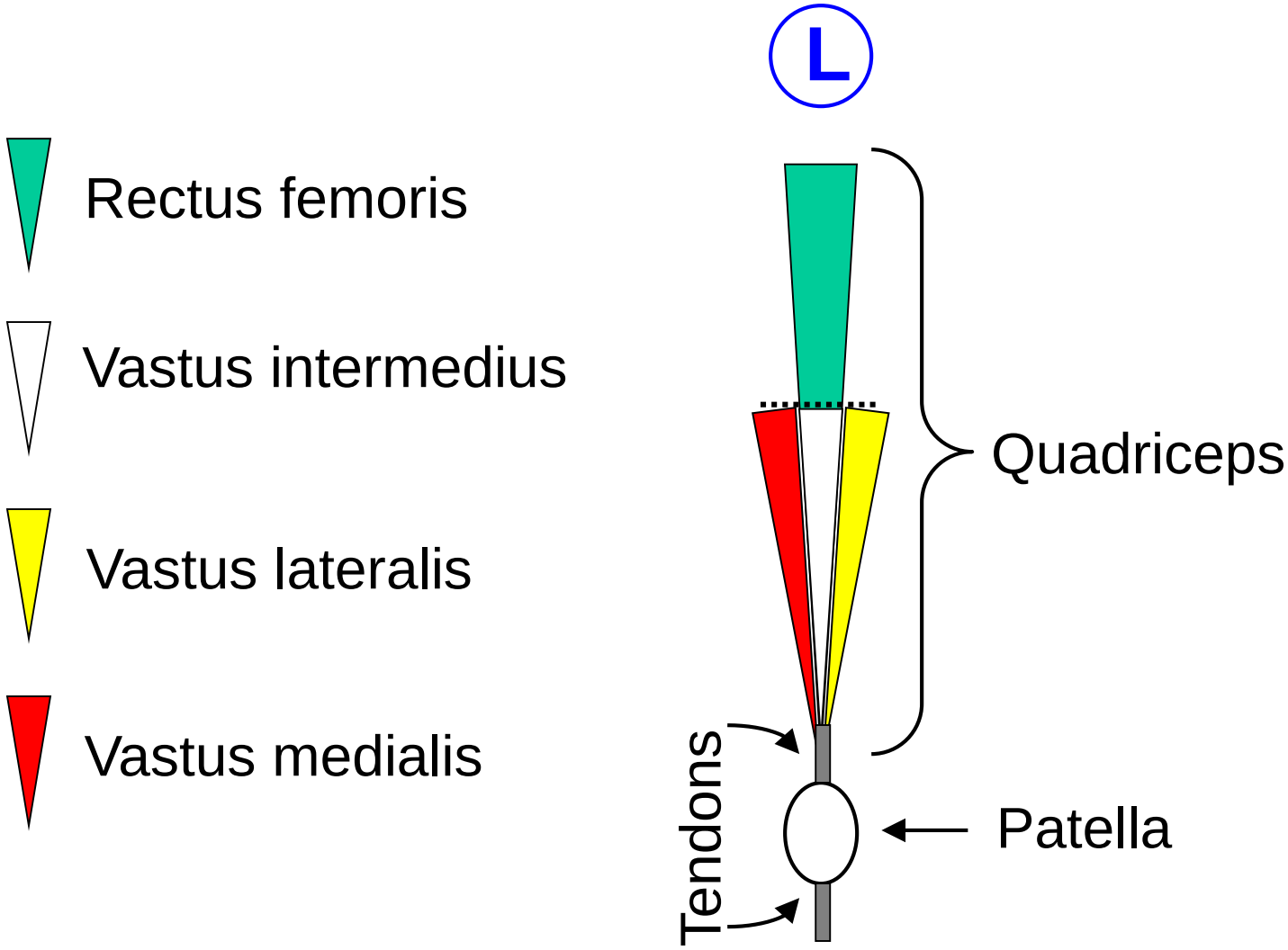
Which of these four (sub-) muscles is worked specifically by the last 10-15^{0} of the leg extension?

Leg Extension

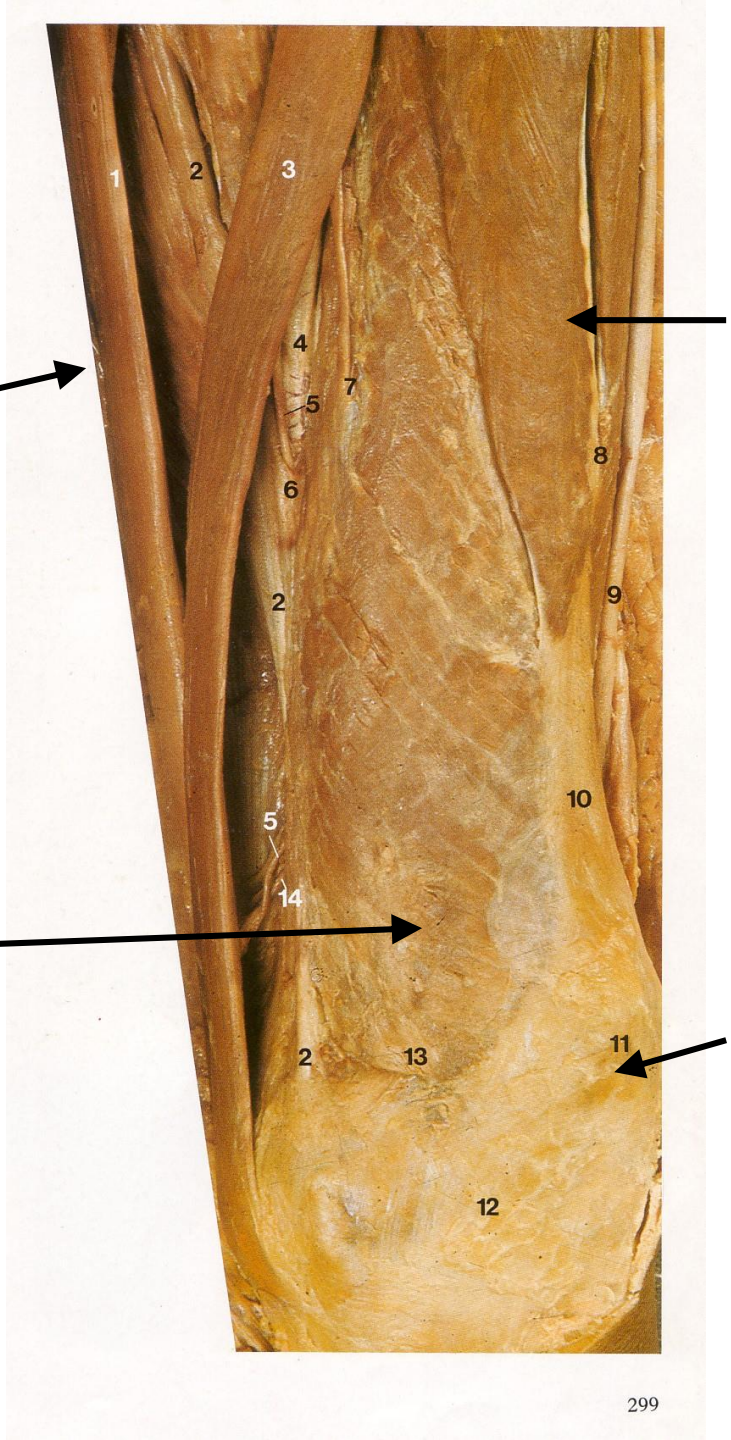


Front of thigh = quadriceps

Schematic of Anterior (L) Thigh



L thigh anterior & medial



Rectus femoris

Adductor
Gracilis

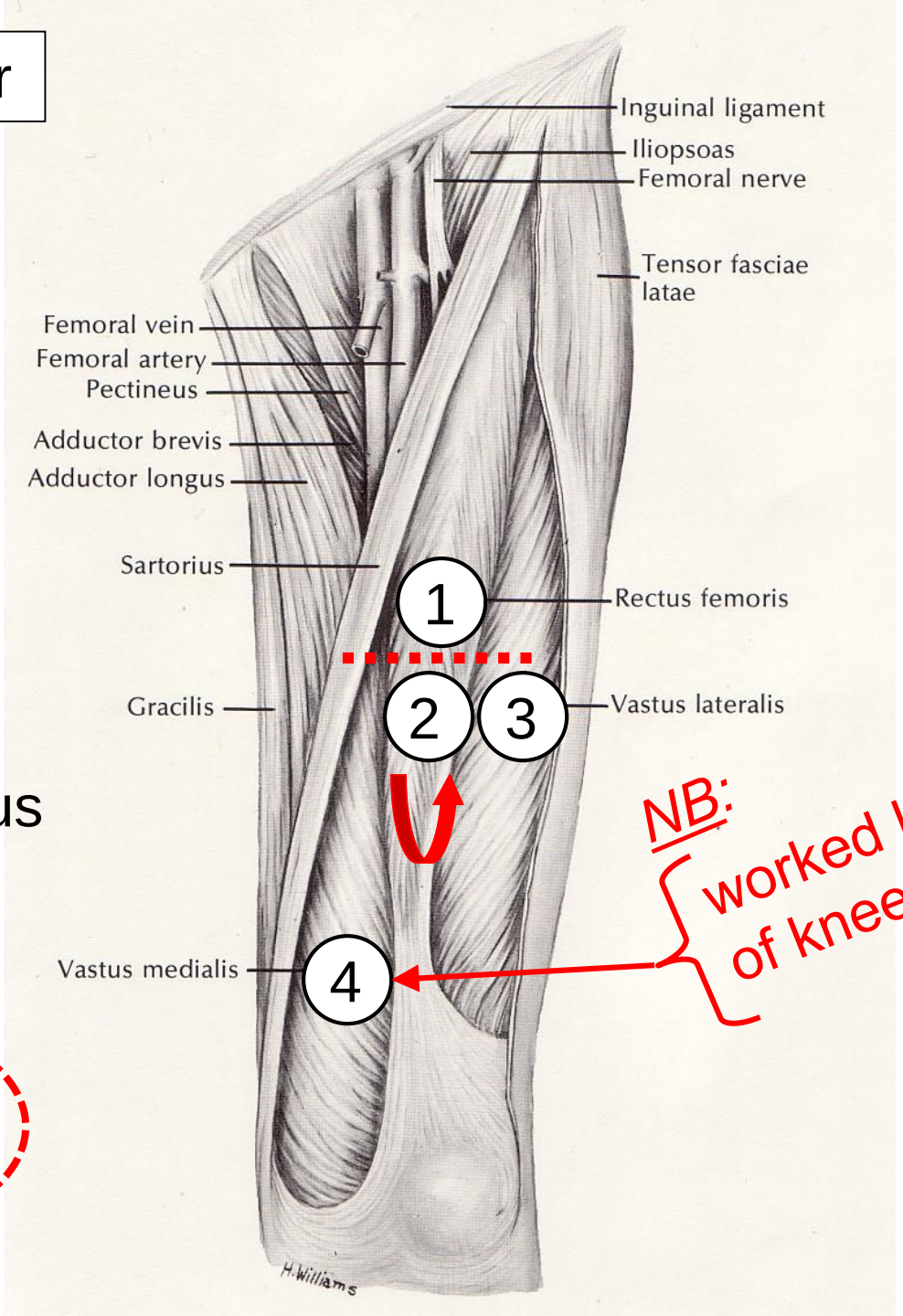
Vastus medialis

Patella/kneecap

L thigh anterior

Quadriceps

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



NB: worked last 10-15^0 of knee extension

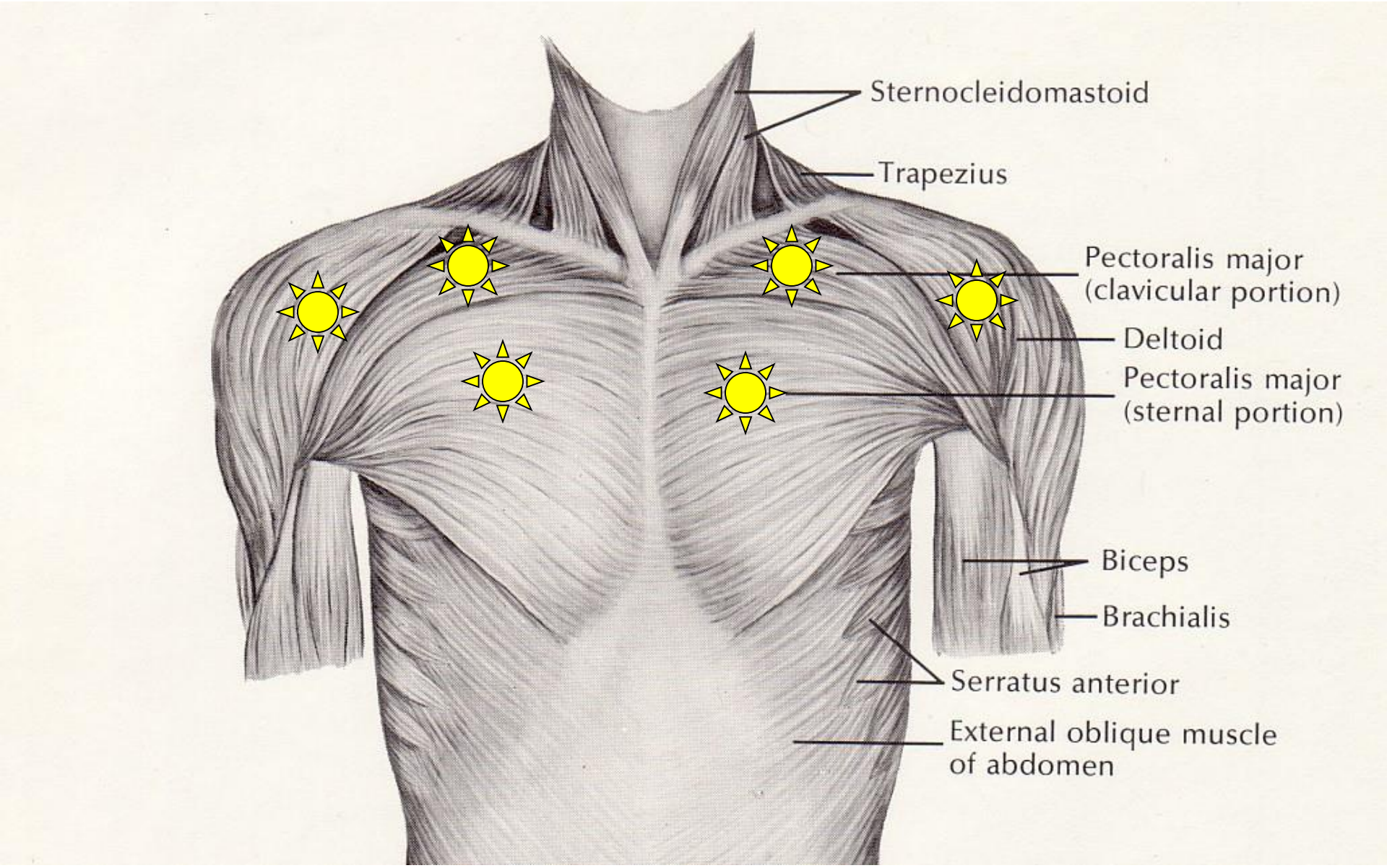
Anatomy Lab 2 Exploration. Question 3

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

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

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

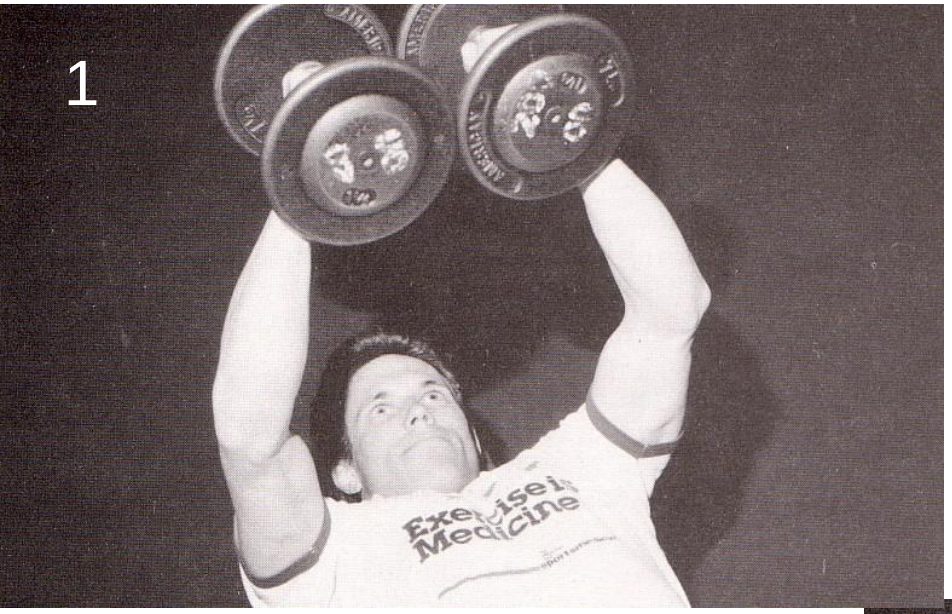
What muscle groups are activated by the *bench press*, but not by the *chest fly*?


Sternocleidomastoid
Trapezius
Pectoralis major
(clavicular portion)
Deltoid
Pectoralis major
(sternal portion)
Biceps
Brachialis
Serratus anterior
External oblique muscle
of abdomen

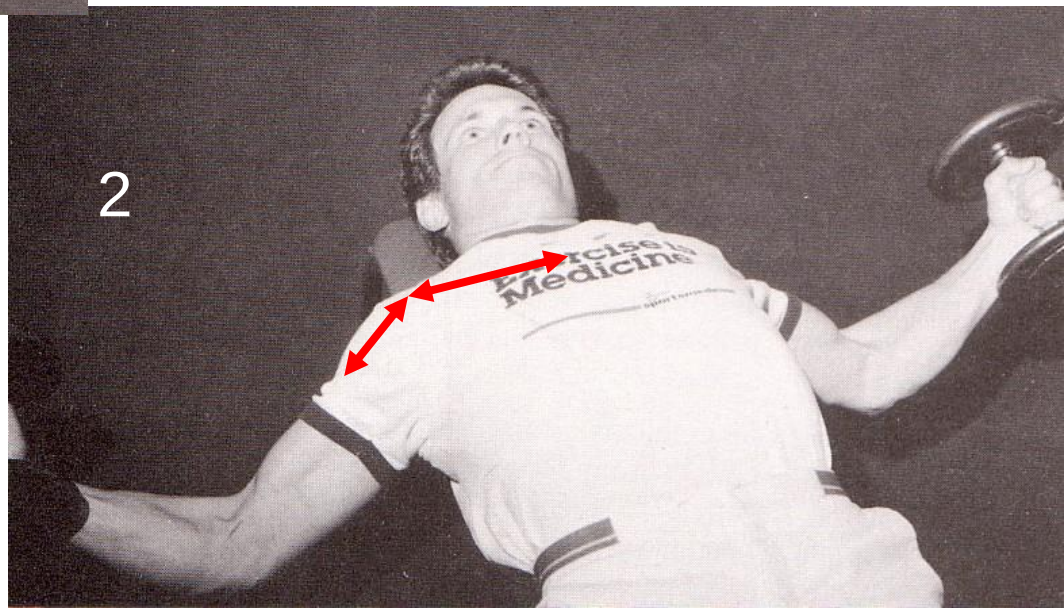
Correct Fly Techique: Hug the Oak Tree!!

Which of the following single-joint action exercises is best for working the pectoral group and eliminates the triceps brachii?

a. Lat pull b. Chest fly c. Military press d. Bench press



Chest Fly does not activate the triceps (except isometrically) whereas *Bench Press* does!

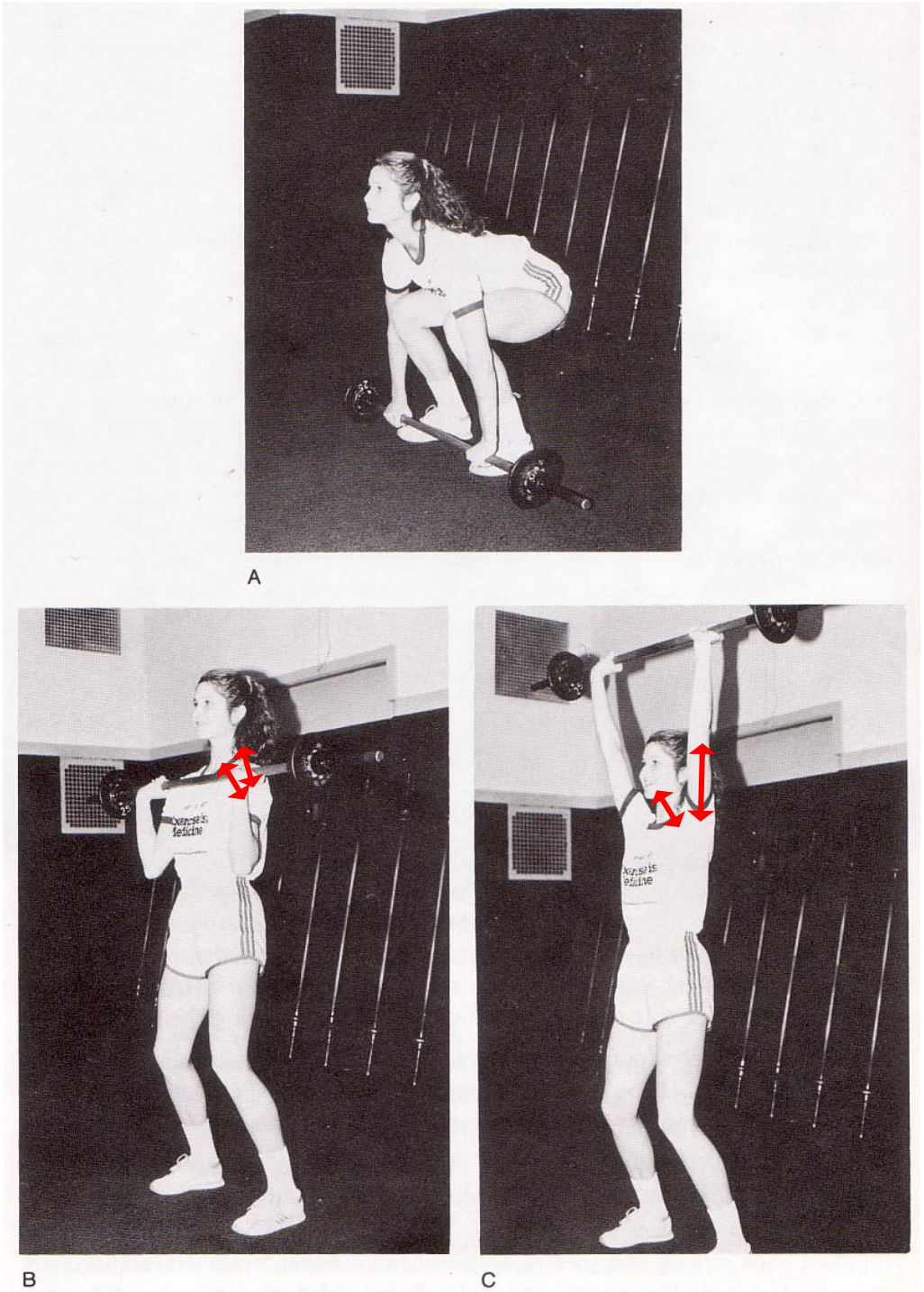


Anatomy Lab 2 Exploration. Question 4

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*?



Military Press

Shoulder – front & middle

Arm – back

Neck

Push Exercise
Does not active chest/ pectoral muscles

Anterior & Middle Deltoid

Supraspinatus

Triceps Brachii

Anterior neck muscles

- Sternocleidomastoid

Posterior neck muscles

- Upper trapezius
- Levator scapula

Anatomy Lab 2 Exploration. Question 5

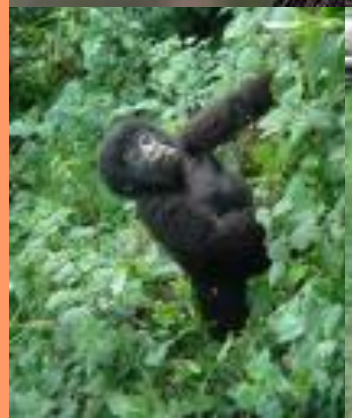
Identify at least *three major muscle groups* worked by the *lat pull*.

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

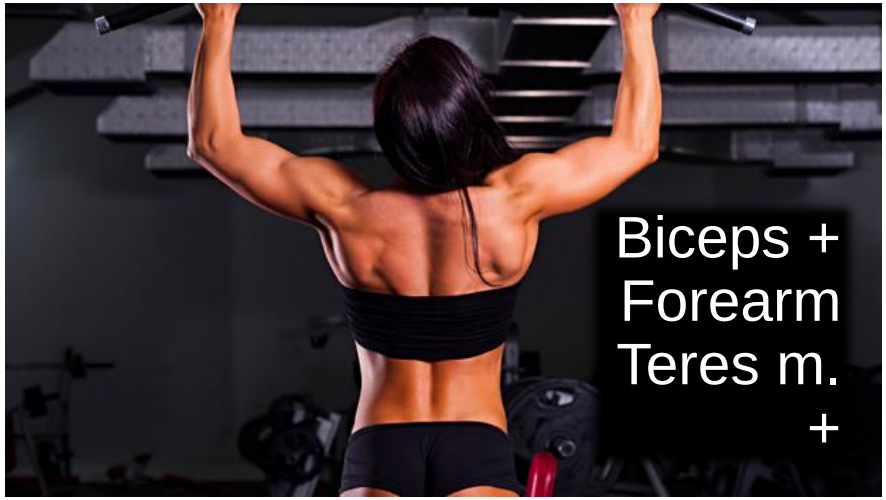
Can you find *subsections or unique parts* of any of these major muscle groups? If so, *identify them* below?

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

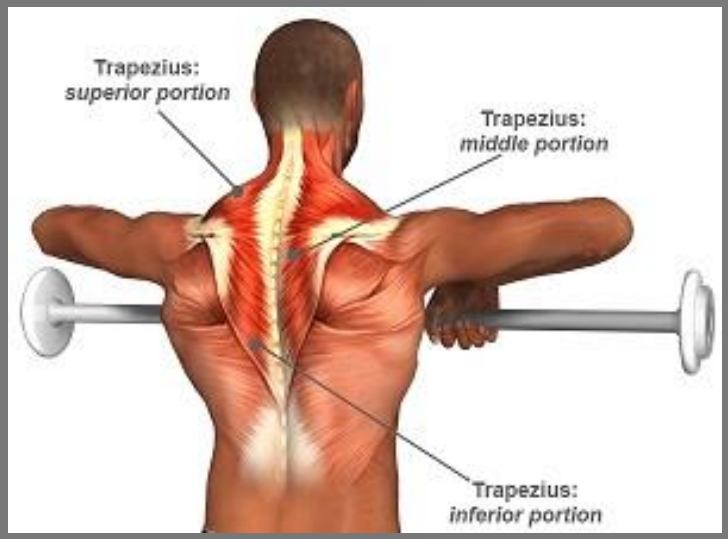
What are upper & lower extremity climbing muscles?

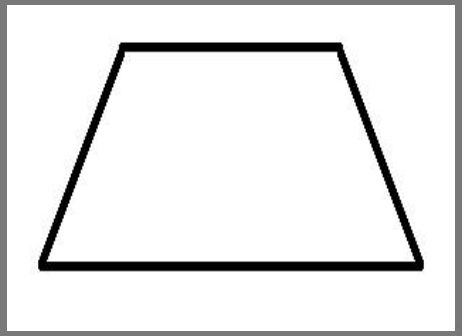


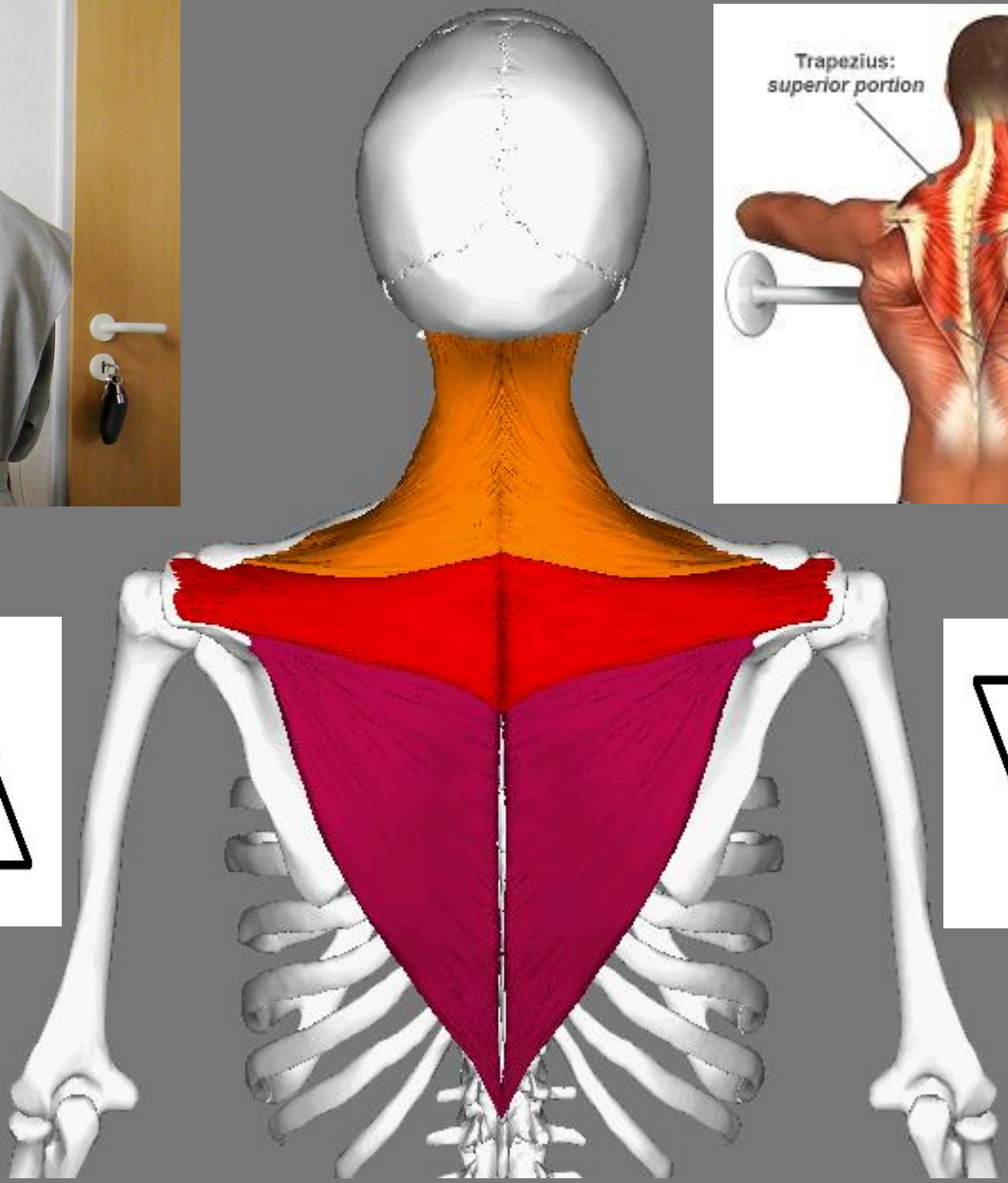
Some Muscles the Lat Pull & Row Activate

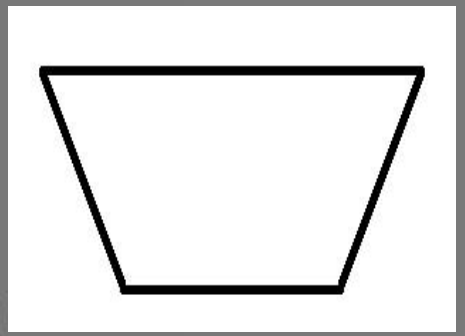


Trapezius = Shaped like a *Trapezoid*

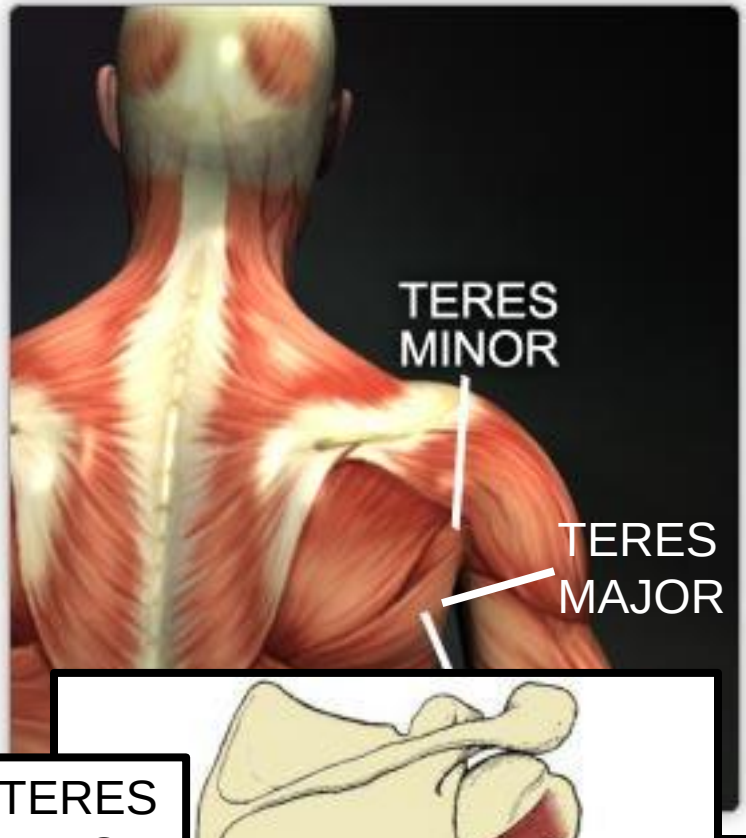


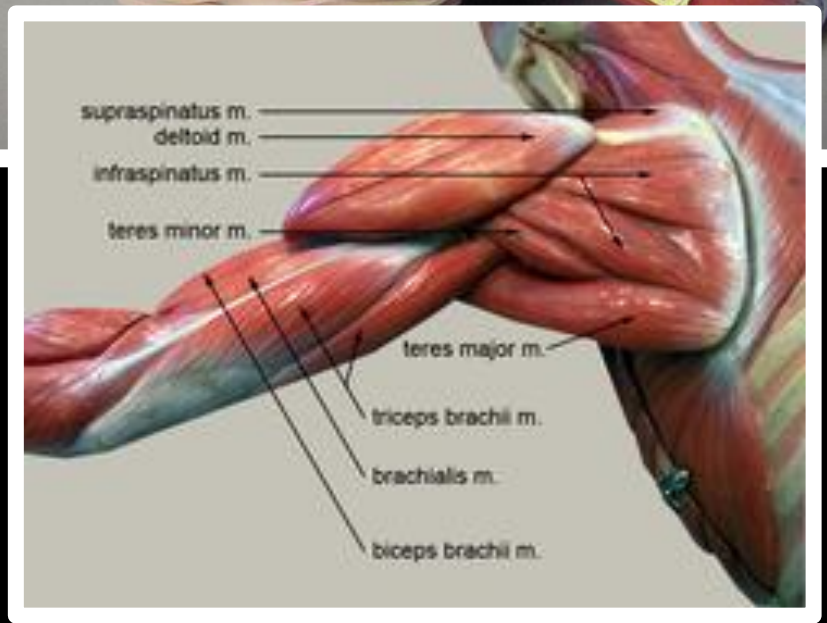


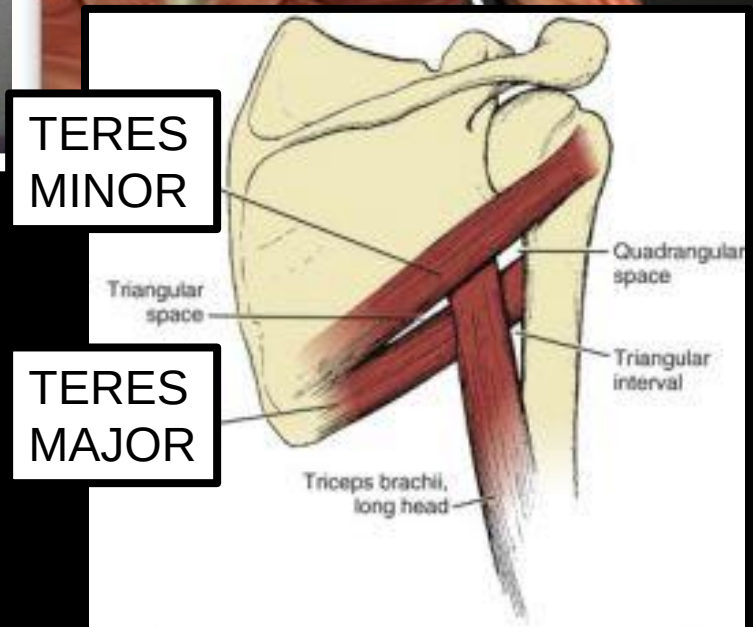




Teres Minor above the Major!





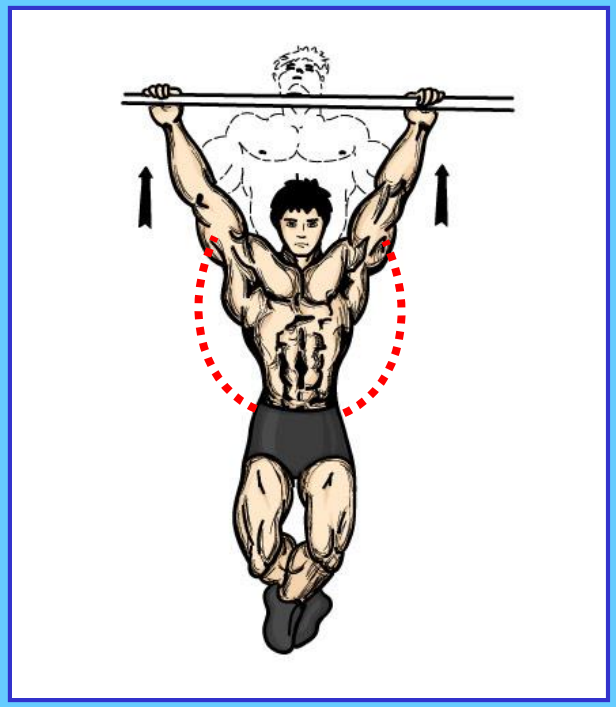


Which *grip* is best for isolating the *latissimus dorsi muscles*?

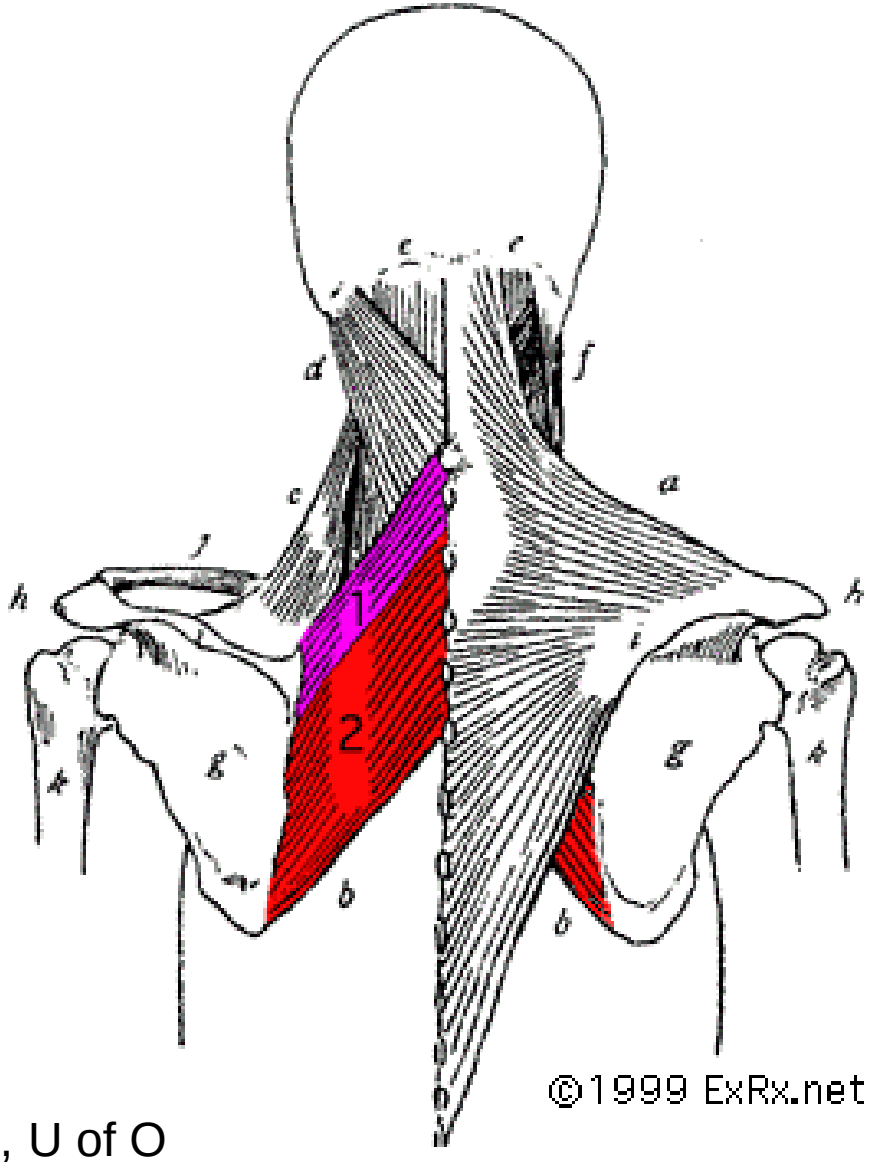
a. Supinated wide b. Pronated shoulder-width c. Alternate wide d. Pronated wide

<u>Shoulder-width grip</u> →
more Latissiumus dorsi

<u>Wider grip</u> → more
Rhomboids,
middle Trapezius

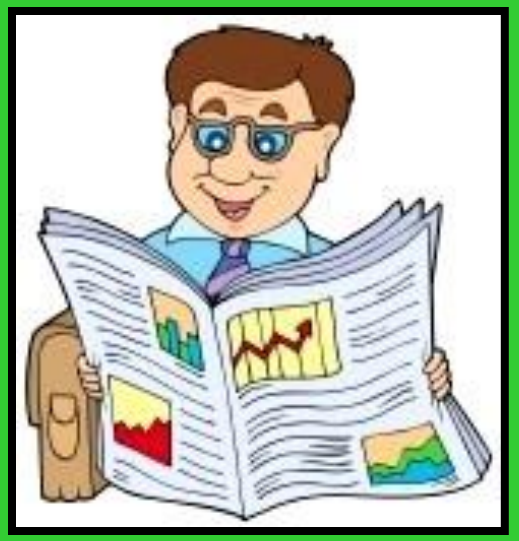


Rhomboid muscles include Major & minor



Courtesy S. Dawson, U of O

Physiology & Nutrition in the News!



Lose 30 lb in 30 days, Magic?

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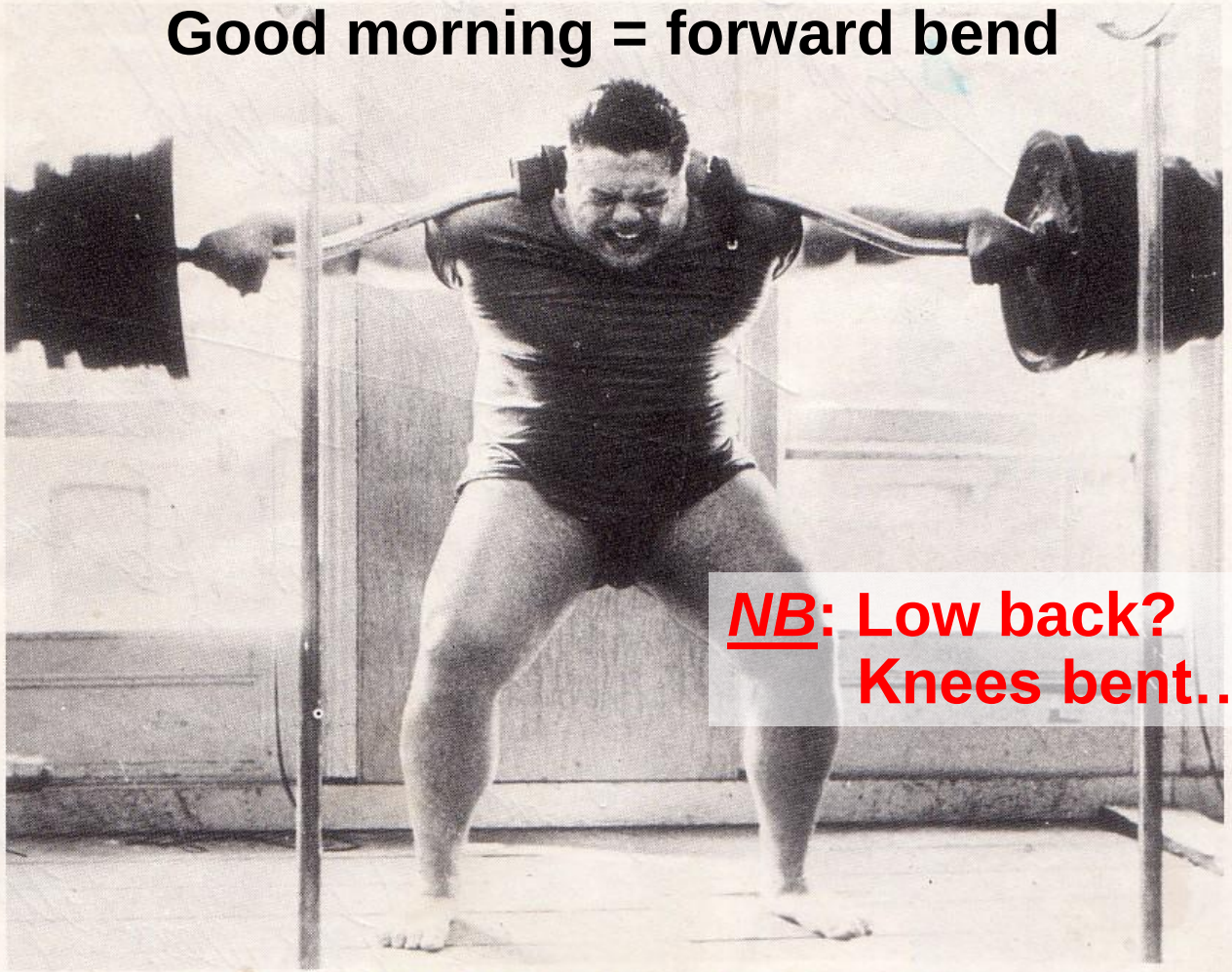
Independent Distributor

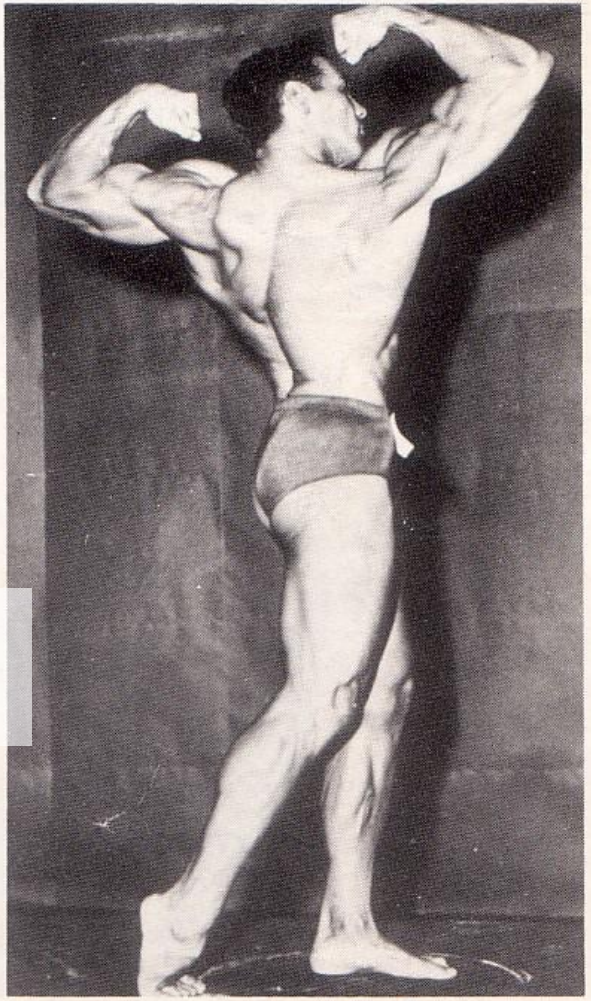
32-wk Transformation?!! 401 lb to 222 lb!
179 lb in 224 d ≡ 0.8 lb/d ≡ 5.6 lb/wk ≡ 22.4 lb/mo

Good morning = forward bend

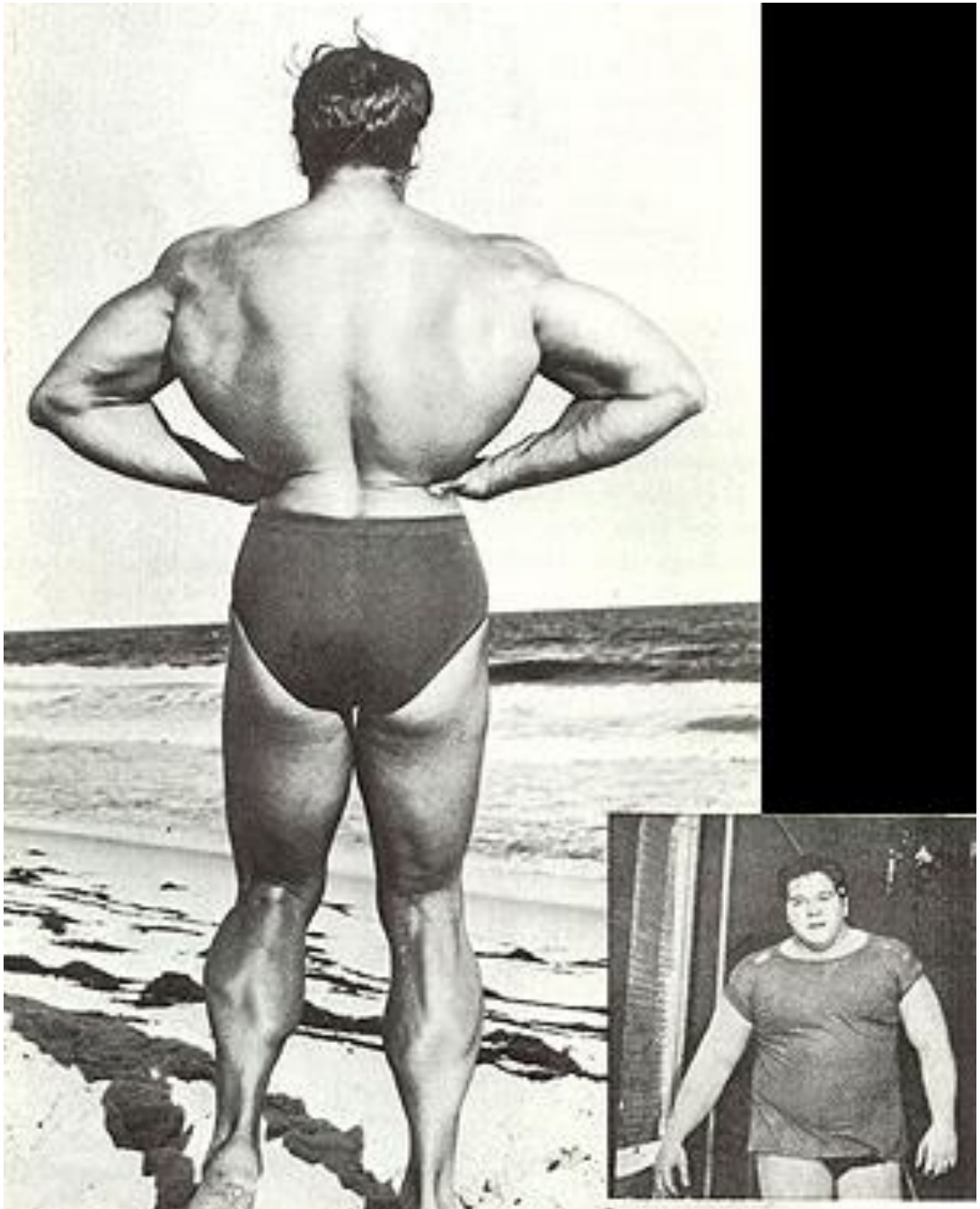


***NB*: Low back?**
Knees bent…

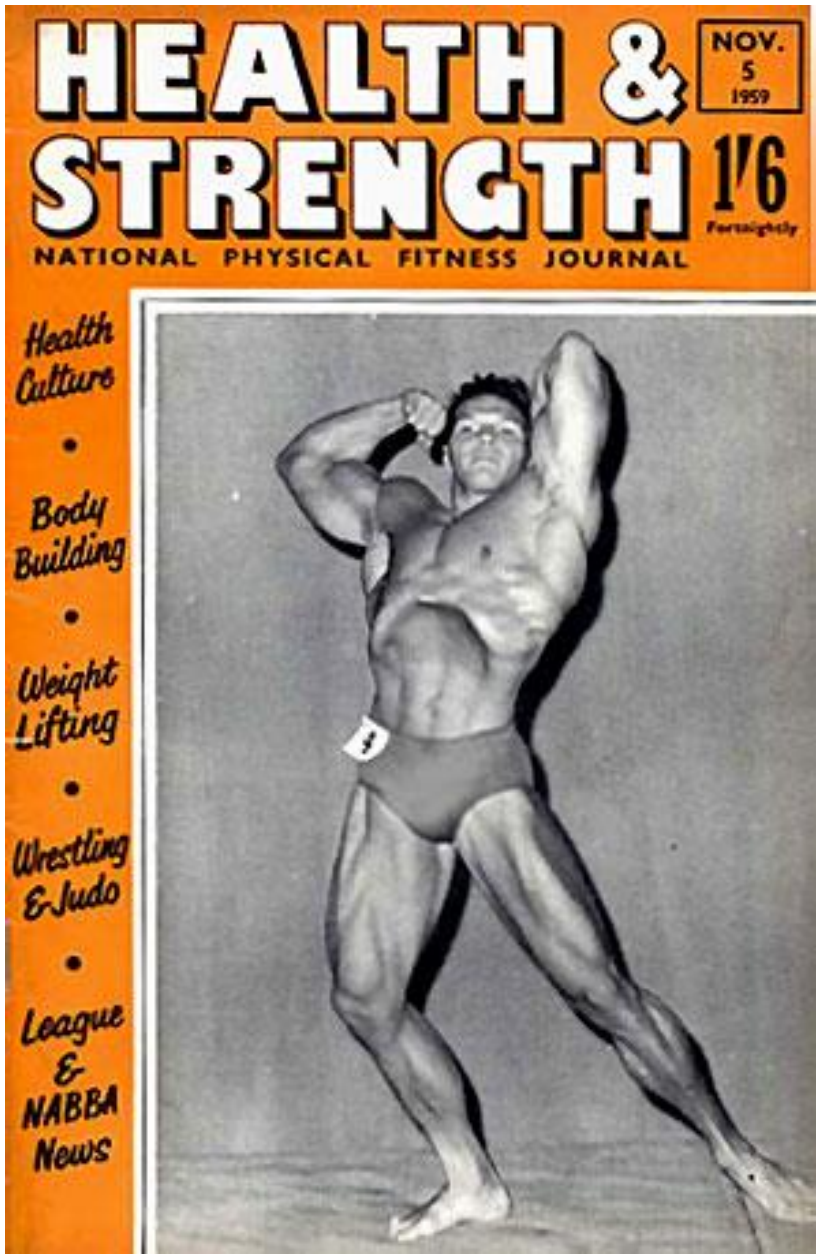
Bruce Randall as he appeared when he weighed over 401 lbs. performing a Forward Bend exercise with 685 lbs.

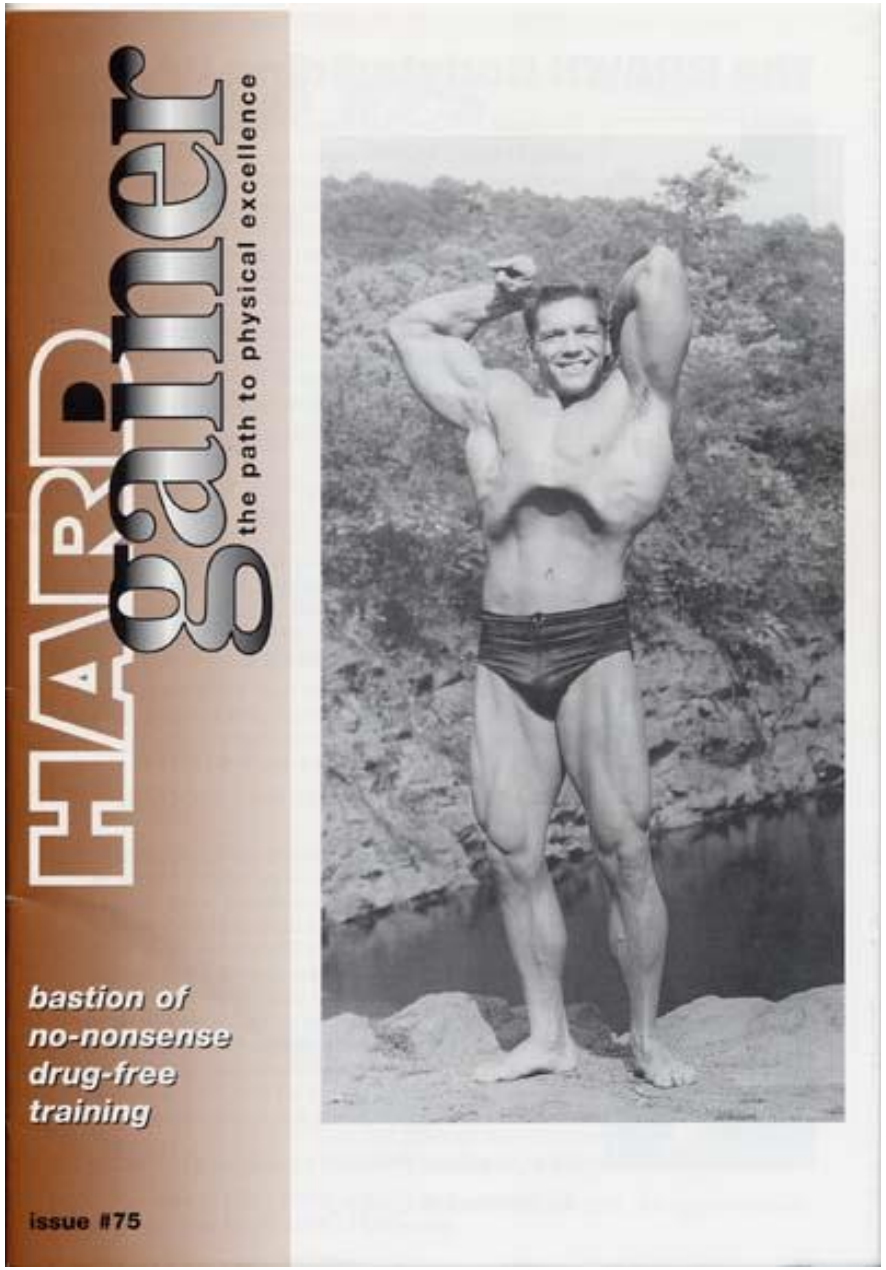


and Bruce Randall as he looked when he won the Mr. Universe Contest at a bodyweight of 222 lbs.



Bruce Randall 1959 NABBA Mr. Universe





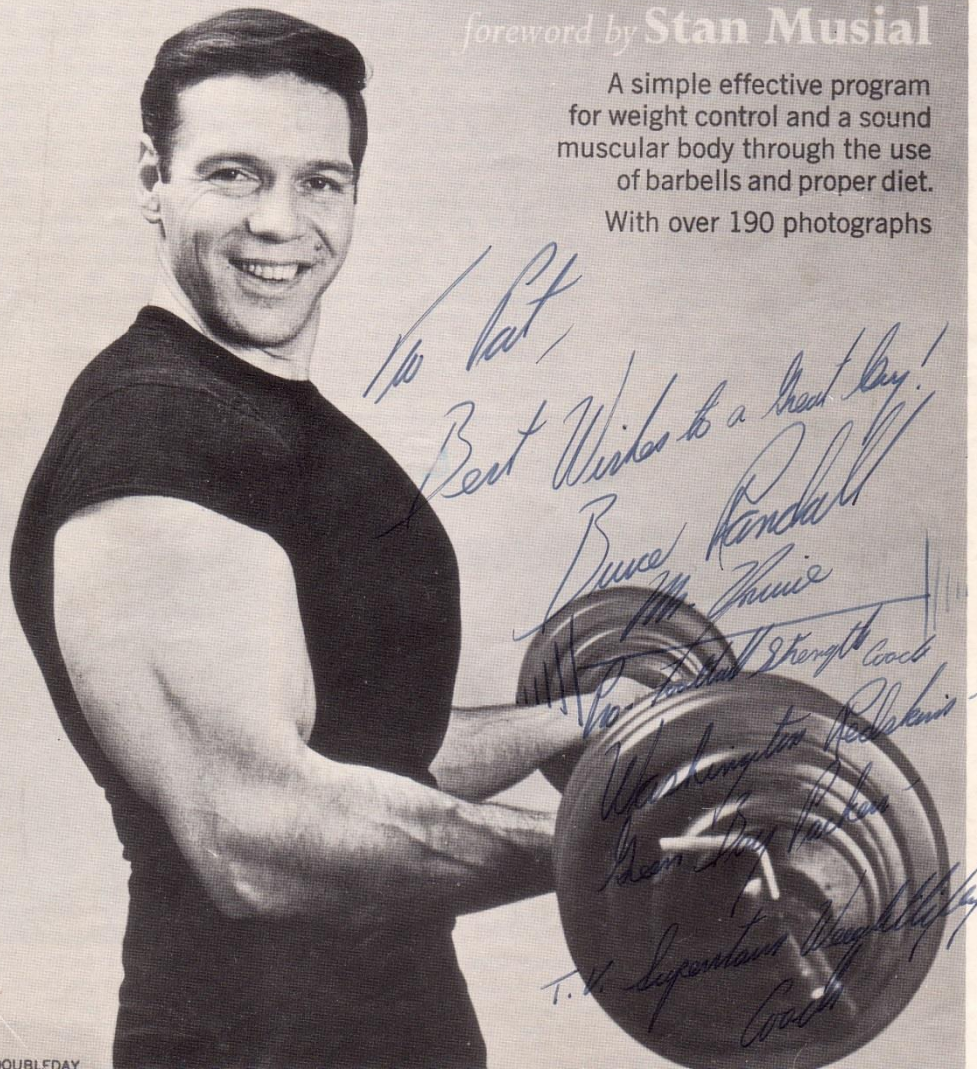
THE BARBELL WAY TO PHYSICAL FITNESS

Bruce Randall (Mr. Universe)

foreword by **Stan Musial**

A simple effective program for weight control and a sound muscular body through the use of barbells and proper diet.

With over 190 photographs



DOUBLEDAY

I'm not sure I believe you! Why can't I just starve to lose weight?

TOTAL FAST = No Energy Nutrients (No Carbohydrates, Fats or Proteins)

ONLY

1. Water
2. Vitamins
3. Minerals

ML Pollock & JH Wilmore, 1990.

60-day Fast???

Lost 60 lb!! Wow!!

Yet

76.7% { **26 lb Water**
20 lb Lean Body Mass

14 lb Fat

Fat < ¼ total wt loss!

You can lose weight by starving – but it's mostly water & muscle! Also, there can be complications!

Potential Complications of Total Fasting

Nausea, diarrhea, persistent vomiting, postural hypotension, nutritional deficiencies, menstrual irregularities, and…sudden death.

Positive Aspect??

General loss of appetite within first 2 days, maintained throughout fasting period.

ML Pollock & JH Wilmore, 1990.

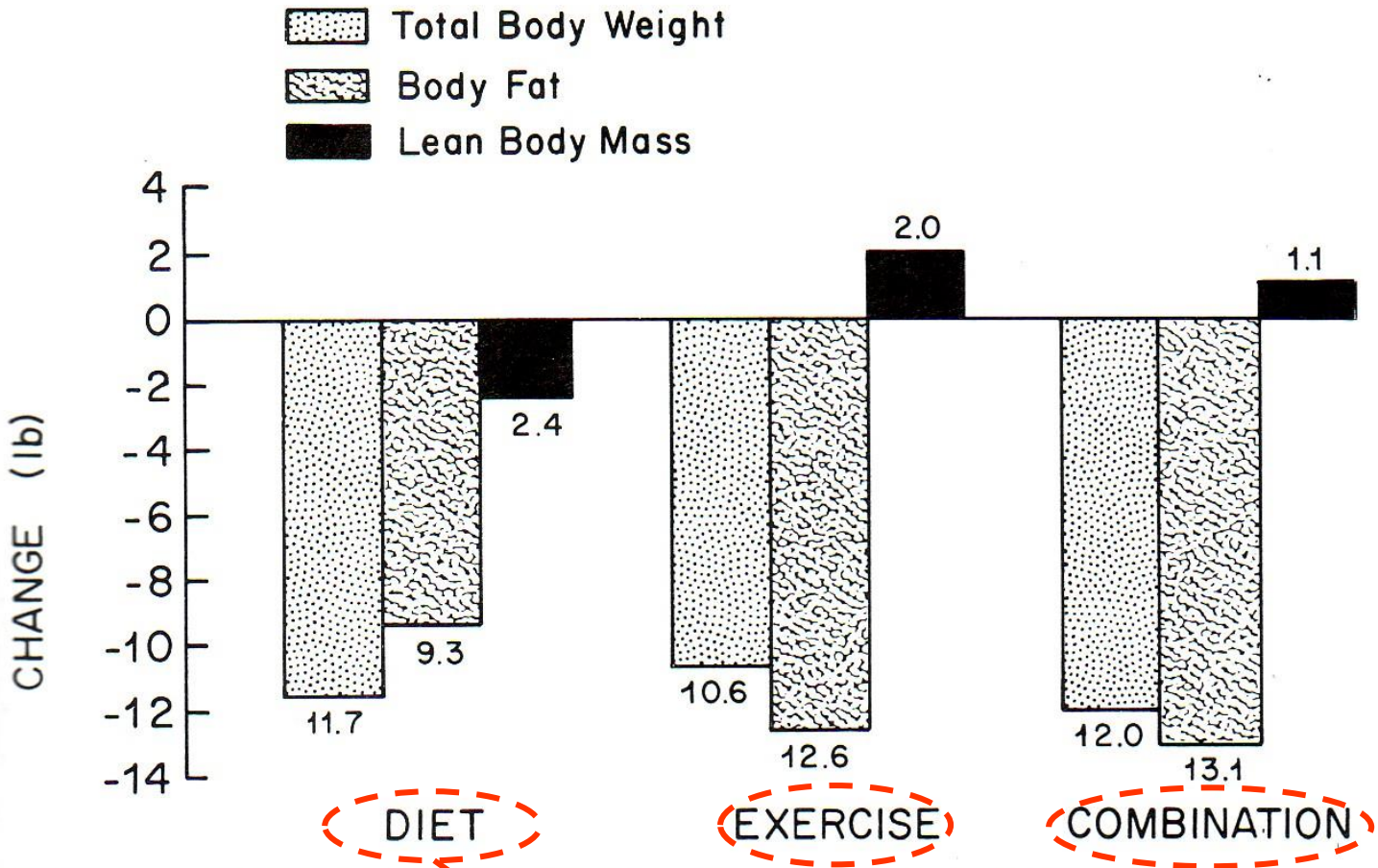


Figure 4–9. Changes in body weight, body fat, and lean body weight for diet, exercise, and combination groups. (From Zuti W. B., and Golding, L. A.: Comparing diet and exercise as weight reduction tools. **Phys. Sportsmed.** 4:49–53, 1976.)

***NB*: Each group 500 kcal deficit/day, 16 weeks**



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Compared to dieting, *exercise is superior* in inducing % body fat reduction & preserving lean body mass!

Lose no more than 2.2 lb or 1 kg/wk!

AMERICAN COLLEGE of SPORTS MEDICINE
LEADING THE WAY

Your Prescription for Health
ExeRcise is Medicine™
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NETWORK

ACSM CERTIFIED PERSONAL TRAINER℠

Table H.1 Sample Exercises for Major-Minor, Agonistic-Antagonistic, and Superior-Inferior Programs

Program Type	Muscular Regions	Sample Exercises
Major-Minor (M-M)[a]	Chest and lower extremity	Bench press and accessory chest; squat and accessory thigh and leg exercises.
	Back, shoulder, and arm	Lat pull, military press, biceps curl, triceps extension, and accessory SJA exercises[d]
Agonistic-Antagonistic (A-A)[b]	Chest, shoulder, and triceps	Bench press and accessory chest; military press, triceps extension, and accessory SJA exercises
	Lower extremity, back, and biceps	Squat and accessory thigh and leg exercises; lat pull and accessory back exercises
Superior-Inferior (S-I)[c]	Chest, shoulder, back, and arm	Bench press and accessory chest; military press, lat pull, biceps curl, triceps extension, and accessory SJA exercises
	Lower extremity	Squat and accessory thigh and leg exercises

NB: Some bodybuilding routines push-pull over separate days.

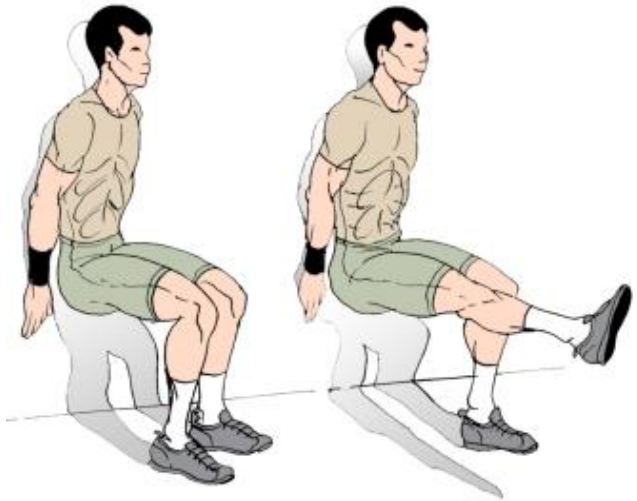
Table 3.1 Characteristics of Weight Training Exercises and Systems

Characteristic	Exercise or System		
	Isometric	**Isotonic**	**Isokinetic**
Type of Contraction/ Synonym	Static	Dynamic	Dynamic[a]
Relative Expense	None or low	Low[b] to high[c]	High
Maintenance	None or low	Low[b] to moderate[c]	Moderate to high
Portability	Not required	Easy[b] to difficult[c]	Moderate to difficult
Concentric loading	Yes	Yes	Yes
Eccentric loading	No	Yes	No[d]
Accommodation	No	No[b]/Yes[c]	Yes
Intramuscular tension	Low to high?	Moderate[b] to high[c]	Moderate to high
Potential for delayed muscle soreness	Low	High	Low
Potential for rehabilitation	Limited	Moderate to high	High

[a]Since the velocity on isokinetic devices may be set to zero, static contractions are also possible.
[b]For free-weight barbells, dumbbells, and most other constant load devices.
[c]For isotonic dynamic accommodating resistance (DAR) devices.
[d]New isokinetic devices by Chattecx (Kincom) and Loredan (Lido) have built-in options for constant velocity eccentric loading. These are exceptions to typical isokinetic machines.

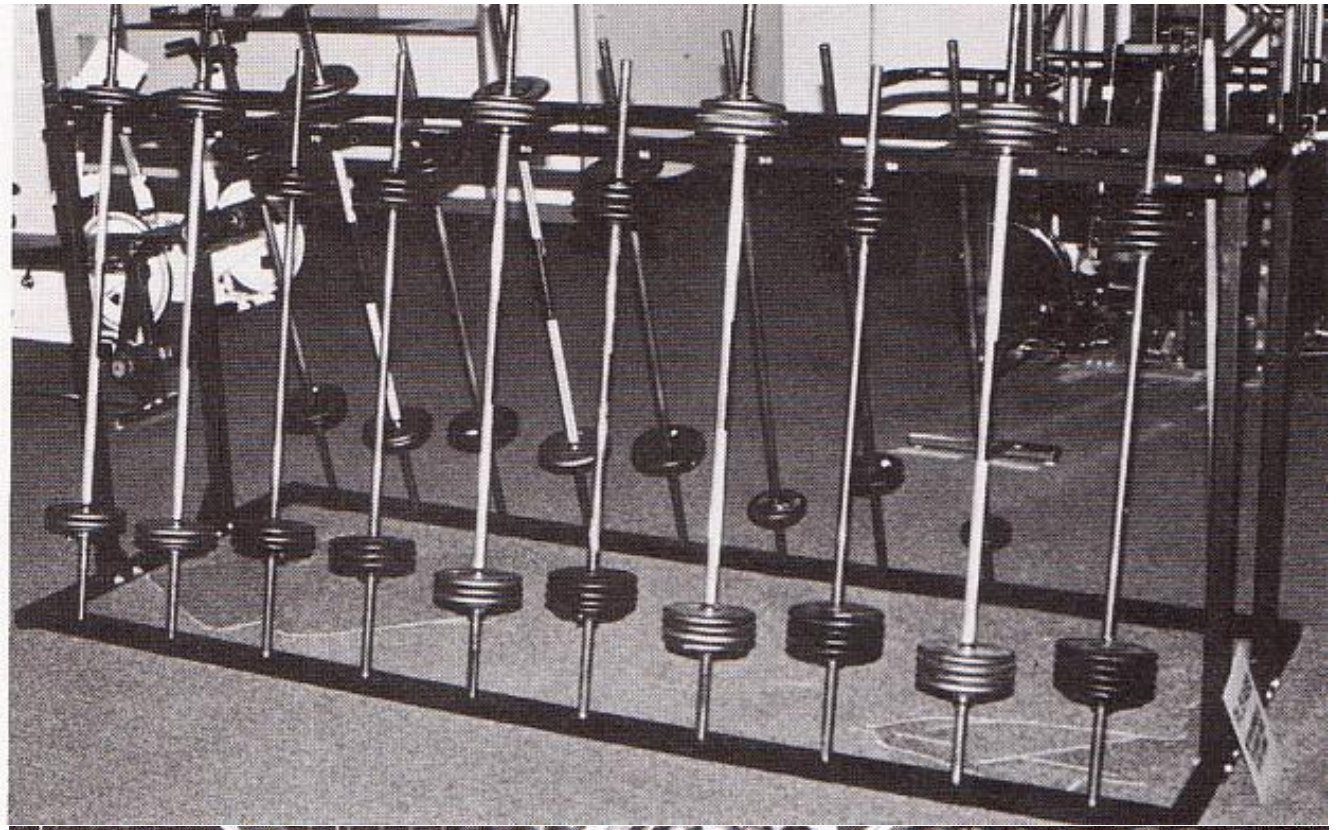
Isometric Squat Works Very Limited Range, But Can Help with Sticking Points

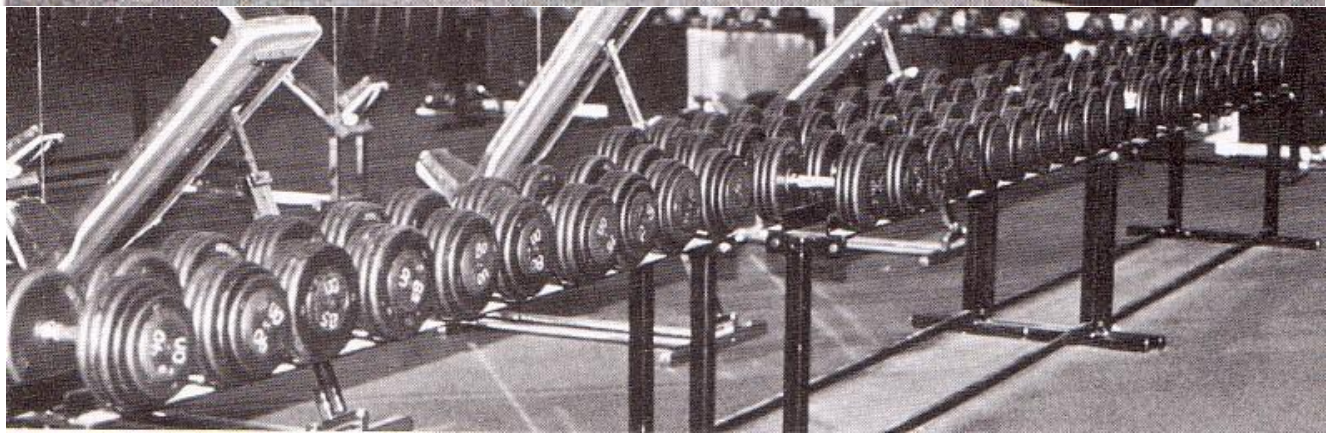
NB: ≈ 5-10 ^{0} around set <, → limited functionality!



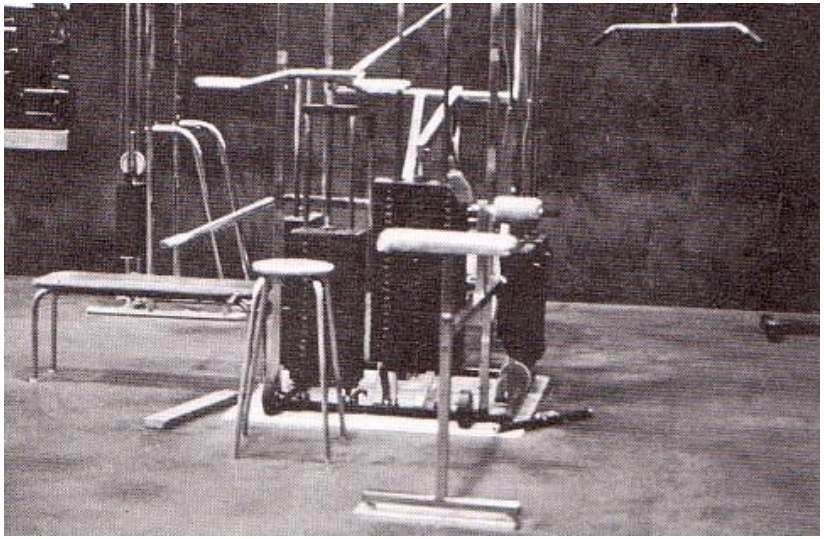
Functional isometrics at an early age!

Isotonic Barbells & Dumbbells

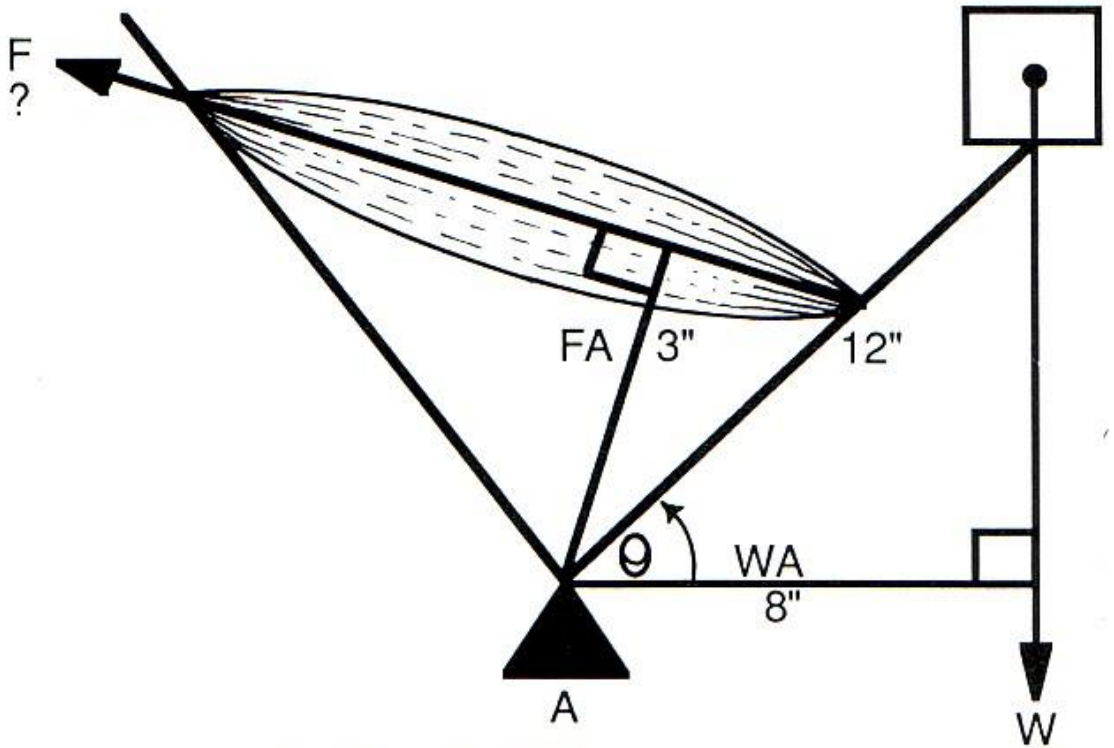




Most CWT Machines & WT Equipment Isotonic



Force x Force Arm = Weight x Weight Arm



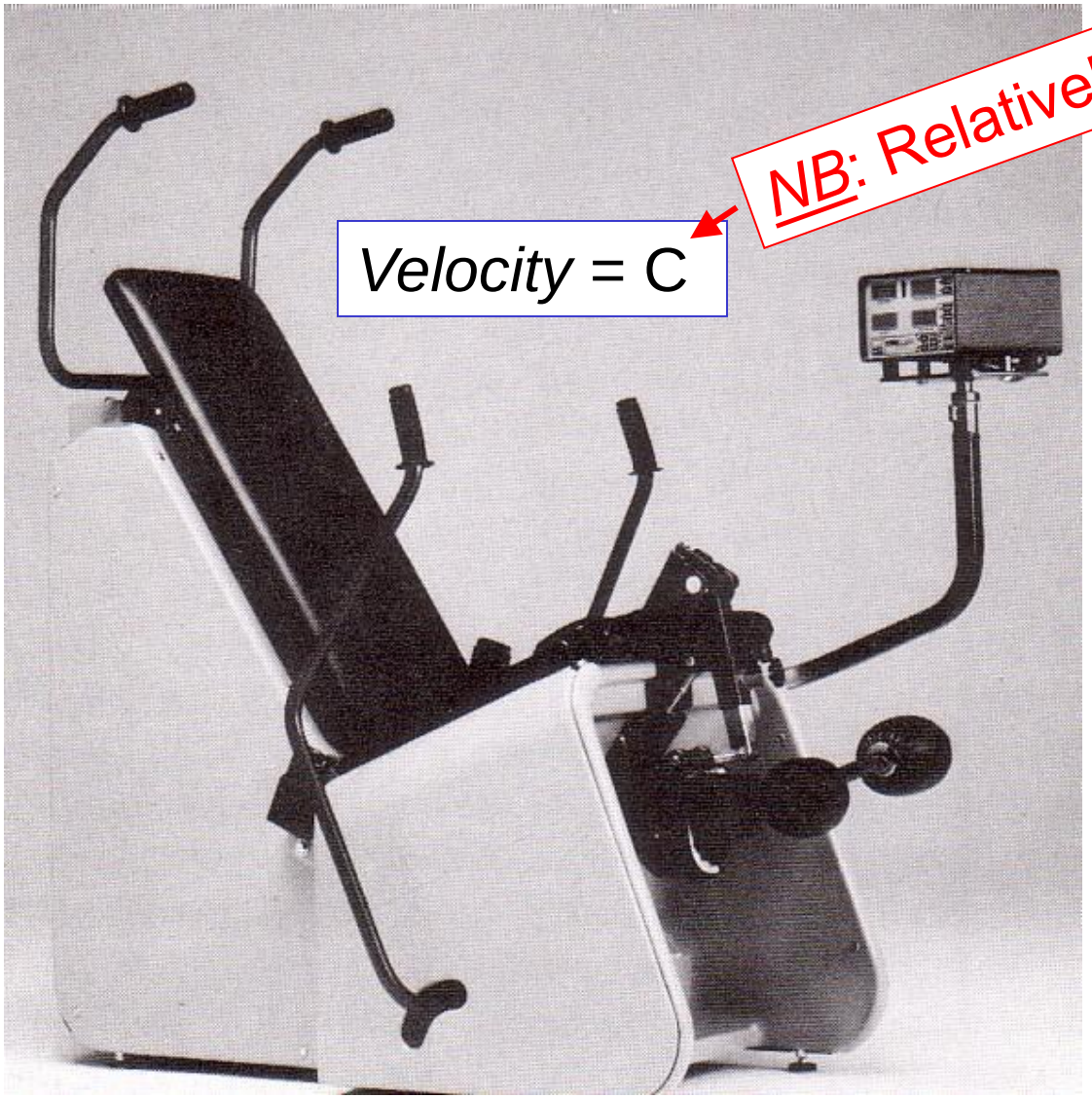
$$F \times FA = W \times WA$$

$$F = \frac{W \times WA}{FA}$$

$$F = \frac{10 \text{ lb.} \times 8"}{3"}$$

$$F = 26.67 \text{ lb.}$$

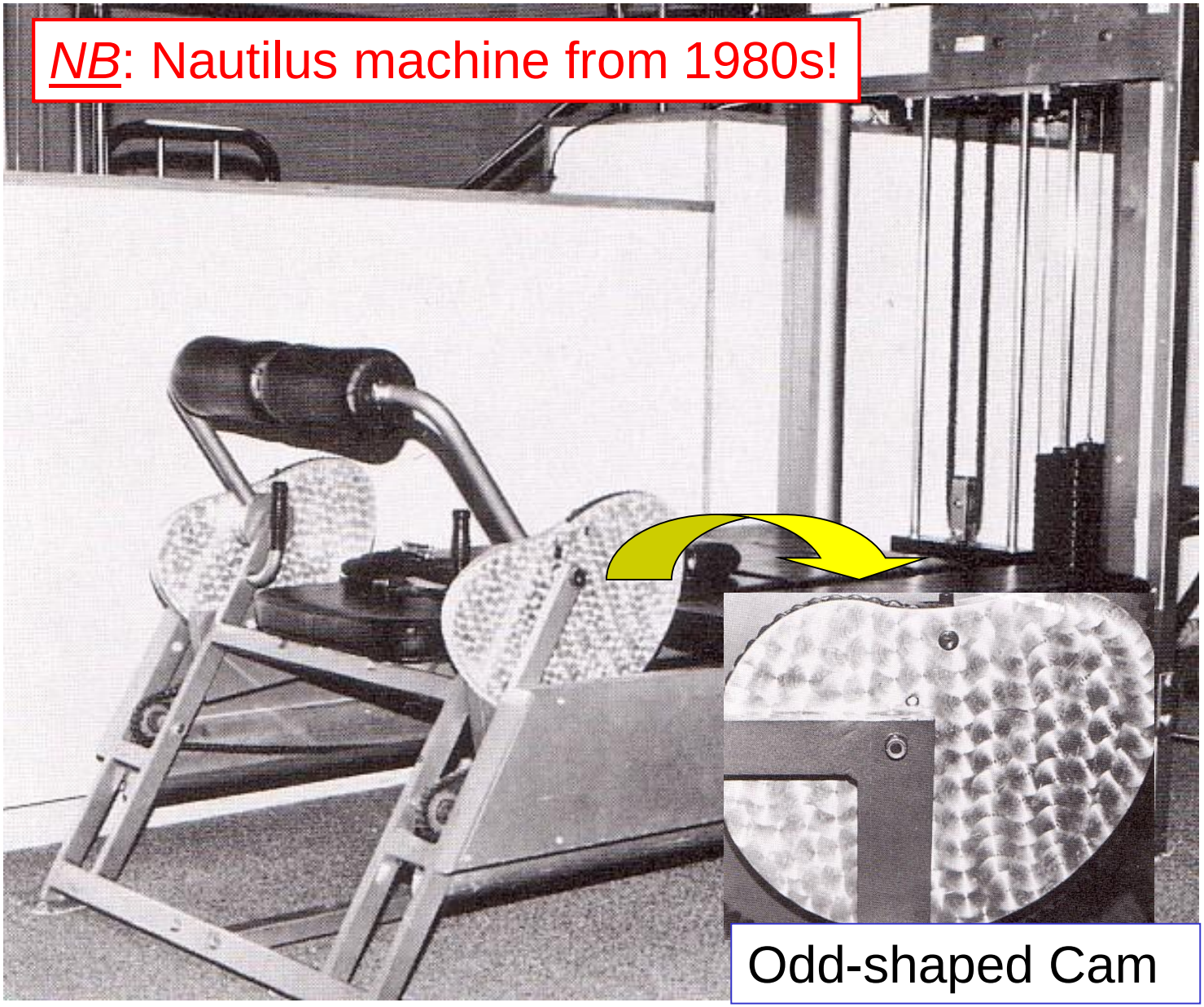
Isokinetic Omni-tron: Concentric-Concentric



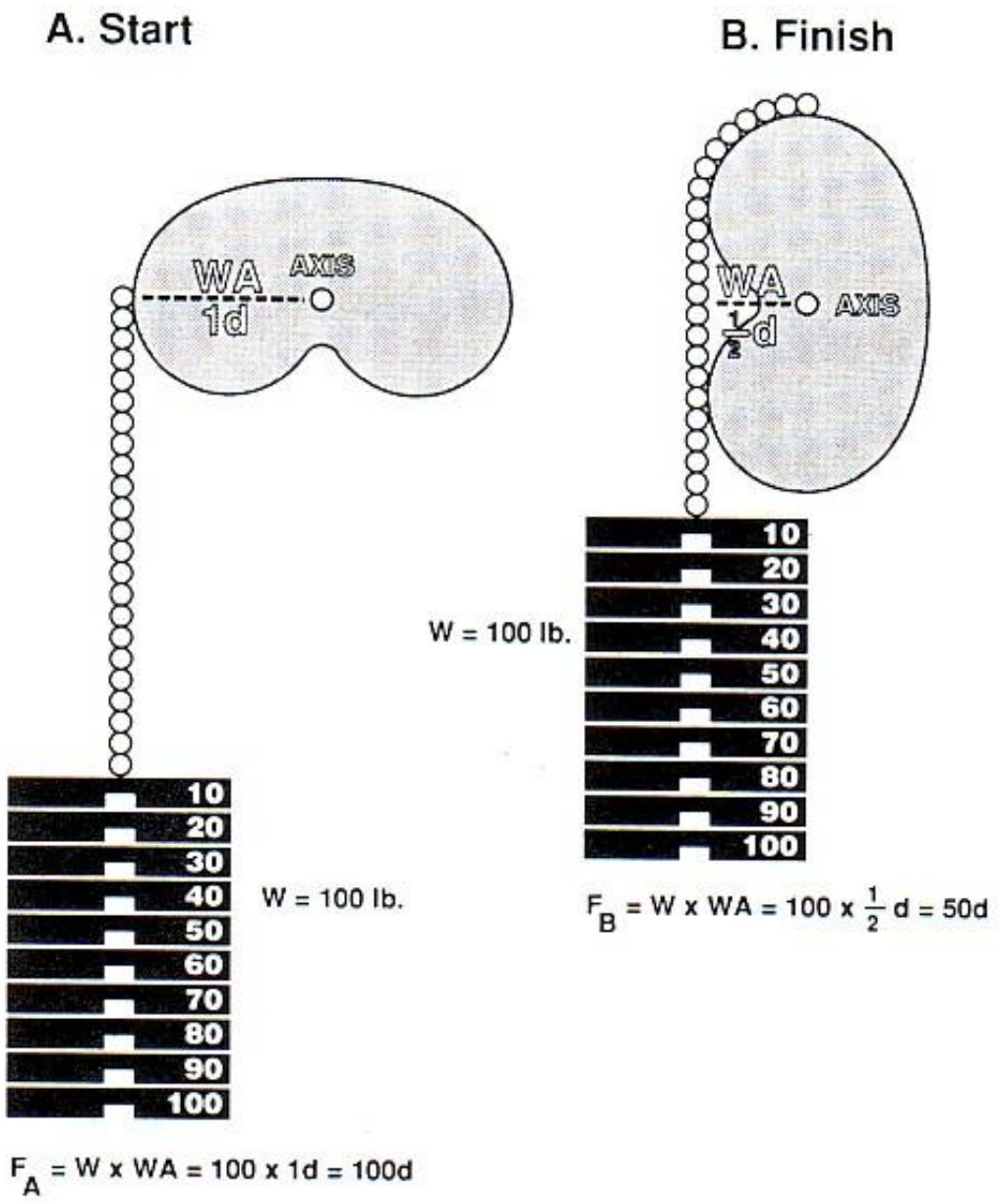
Can these also evolve into Isometric?

Yes, if you handle more weight than you can overcome or set $\vec{v} = 0$!

Dynamic Accommodating Resistance (DAR)



Simplified Cam System



Group Overview of Presentations