I. **Announcements**  Update on Anatomy Lab. New cadavers just in, so our 1st visit next Thurs during class. Other t? 2-4 Mon + Thurs, > 4 Fri?

II. **Article Group Discussion**  Squat depth+…NSCA

III. **Anterior-Posterior Superior-Inferior Balances!**  Body builder’s syndrome?

IV. **Continuous Breathing**  Valsalva’s maneuver?

V. **Benefits & Myths of Weight Training**  Group + class discussion

VI. **Anatomy of Squat-Push-Pull Exercises**
   A. Squat, lunge, leg/knee extension & curl
   B. Bench press, military press
   C. Lat pull, bent-over row, rowing variations

…Patience is a virtue!
Anterior - Posterior Balance

Leg extension

Leg curl

Superior - Inferior Balance

Bench press

Squat
Body Builder’s Syndrome!
Breathe Continuously!
BREATHE CONTINUOUSLY

EXHALE
CONCENTRIC PHASE

INHALE
ECCENTRIC PHASE
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.
Weight Training Enhances 4 of 5 Components of Health-Related Fitness!!

Cardiorespiratory Endurance

Muscular Strength/Endurance

Flexibility

Neuromuscular Relaxation

NB: %Fat not pictured.
…but Improvements in CV Fitness are Minimal!

AEROBIC ACTIVITY

ANAEROBIC ACTIVITY

HEART RATE

TIME

RHR

5 Min

70% MHR

100%

85%

RHR

5 Min

70% MHR

100%

85%
...even with Circuit Weight Training!
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**

Muscle contracts ≠ Fat stores survival fuel!

Muscle & fat are not magically interchangeable!
Myth 6: Spot Reduction
Squat!
Lower Body!
COG to periphery!
Front Squat

Hip
Thigh front
back
inside
Lower back

Gluteal group
Quadriceps
Hamstrings
Adductors
Erector spinae
Sprinters rely upon explosive hip & thigh strength emanating from the Center of Gravity!
IT Band Syndrome?
Sciatic n. runs beneath! Sciatica?
Deeper Gluteal Muscles Look Like Pizza Slices!!
Superficial to Deep: *Maximus, Medius, Minimus!*


The gluteus medius and minimus muscles look like slices of pizza!
L thigh anterior

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

**NB:** worked last 10-15° of knee extension
Vastus medialis
L. great, vast, huge medial extensor!

Gracilis
L. slender adductor

Sartorius
L. tailor

NB: torqued laterally

Rectus femoris
L. straight thigh muscle, also extensor

Vastus medialis
L. great, vast, huge medial extensor!

Patella ≡ kneecap
L. shallow dish/pan, sesamoid or island bone
L thigh
posterior

Hamstring Group

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

Lateral

Medial

Quadratus femoris
Gluteus maximus
Sciatic nerve
Adductor magnus
Gracilis
Tensor fasciae latae
Vastus lateralis
Semimembranosus
Semitendinosus
Tibial nerve
Gastrocnemius
R lower back & hip quadrant

- Trapezius
- Deltoid
- Teres minor
- Teres major
- Fascia over infraspinatus
- Rhomboideus major
- Latissimus dorsi
- Triceps
- External oblique muscle of abdomen
- Lumbodorsal fascia
- Gluteus medius
- Gluteus maximus
R lower back & hip quadrant

Latissimus dorsi

Erector spinae beneath fascia

External oblique

Gluteus maximus
Leg Press

- Lower back

Muscles Involved:
- Hip
- Thigh front back inside
- Gluteal group
- Quadriceps
- Hamstrings
- Adductors
Lunge
Avoid Overstriding!
Leg Extension

Point your toes toward your face!

Front of thigh = quadriceps
Leg Curl

Posterior thigh = hamstring group

Calf = gastrocnemius (minor involvement)
Push!
Upper Body!
Multi-Joint Action!
Agonistic!
Bench Press

Chest
Shoulder front
Arm back

Pectoral group
Anterior deltoid
Triceps brachii
Q. Wide grip vs. elbows near side?
R chest anterior
Latissimus Dorsi Most Heavily Activated in *Hammering Plane*!
Common grips used in weight training

- Pronated / Overhand
- Supinated / Underhand
- Alternate / Spotting
What are upper & lower extremity climbing muscles?
Shoulder-width grip → more Latissiumus dorsi

Wider grip → more Rhomboids, middle Trapezius
Rhomboid muscles include Major & minor

Courtesy S. Dawson, U of O
Military Press
Shoulder – front & middle
Arm – back
Neck

Anterior & Middle Deltoid
Supraspinatus
Triceps Brachii
Anterior neck muscles
Sternocleidomastoid
Posterior neck muscles
Upper trapezius
Levator scapula
Military Press Muscle Activation

- Trapezius
- Deltoid
- Teres minor
- Teres major
- Fascia over infraspinatus
- Rhomboideus major
- Latissimus dorsi
- Triceps
- Sternocleidomastoid
- Pectoralis major (clavicular portion)
- Pectoralis major (sternal portion)
- Deltoid
- Biceps
- Brachialis
- Serratus anterior
- External oblique muscle of abdomen
Contract abdominals, bend knees, widen stance to reduce back stress!
Pull!
Upper Body!
Multi-Joint Action!
Antagonistic!
Bent-over Row

**NB**: Engages muscles exactly inverse to bench press. Upper back, back of shoulder, front of arm, back of forearm. Great for supersetting!
Seated Row! Wow Possibilities!?  

*NB:* Engages muscles inverse to bench press with a bit more lower back! Still good for supersetting! Variable grip and pull?
Latissimus dorsi grip vs wider rhomboid, mid-trapezius grip. Posterior deltoid?
Pronated vs supinated?

SOURCE: www.fitworkz.com