9th GRADE LECTURES
LECTURE 1
INTRODUCTION TO THE FITNESS CENTER

MUSCLES: hamstrings (back of upper leg - knee flexion) & quadriceps (thigh - knee extension)

1. Do not write on the equipment, floors, mats, etc.

2. Do not use the equipment without teacher supervision.

3. Use the equipment as instructed. The hip machine is not a swing.

4. Technique is more important than weight.
   A. good posture
   B. make proper seat adjustments
   C. full range of motion
   D. align pivot point to body's pivot point (joint)

5. Rep = repetition = lifting weight once = 3 seconds per rep

6. Set = number of reps done at one time

7. Do not max out. That can damage your joints.

8. Do not hold your breath; exhale when lift lifting (blow the weight up); inhale when the weight goes down

9. Fully insert the key making sure it points down. Do not remove key if weights are suspended. Do not attempt to release jammed weights. Notify teacher.

10. Do not drop the weights. They can break.

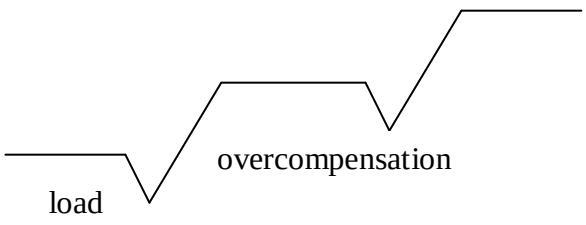
11. Do not put ANYTHING (pens, pencils, fingers, etc) in between the weights

12. Do not touch the machine while someone else is lifting.

LECTURE 2 (9th)
OVERLOAD PRINCIPLE

MUSCLES: bicep (front of upper arm - elbow flexion) & tricep (back of upper arm elbow extension)

I. Overload Principle – placing a load (or stress) on a body system that is greater than it is used to causing overcompensation
   A. Body system - a group of organs or tissue that work together for a common purpose
   B. Load (or stress) on a body system
      1. immune system – illness or vaccine
      2. muscular system – workout
      3. skeletal system – workout
      4. cardiovascular system – workout
   C. Diagram overcompensation



II. How to use the Overload Principle
   A. In the weight room
      1. increase reps
      2. increase weight
      3. increase sets
      4. decrease rest time
   B. Aerobics (FITT)
      1. increase frequency – how often
      2. increase intensity - how hard
      3. increase time - how long
      4. type - what kind

LECTURE 3 (9th)

CARDIOVASCULAR FITNESS

MUSCLES: pectoralis major (chest - shoulder flexion) & trapezius (upper back and neck - shoulder extension)

I. Components of physical fitness
   A. Cardiovascular fitness – *how well the heart and lungs work in delivering oxygen to working muscles*
   B. Muscular strength – *force a muscle can exert*
   C. Muscular endurance – *ability of a muscle to continue working for a long time*
   D. Flexibility - *moving a joint through a full range of motion*
   E. Body Composition – *percent of body weight that is fat compared to that which is not fat such as muscles and bones*

II. Definitions
   A. cardio = heart; vascular = vessels of the circulatory system
   B. CV system = heart + lungs + vessels (circulatory + respiratory systems)
   C. CV fitness – ability to provide oxygen to working muscles over a longer period of time
   D. CV disease – leading cause of death in the US; more deaths than all other causes combined

III. Activities that reduce risk of CV disease
   A. Aerobic – with oxygen
      1. 50% - 80% intensity level
      2. continuous steady pace for longer period of time
   B. Anaerobic – without oxygen
      1. 90 – 100% intensity
      2. fast, powerful lasting for a short time

IV. Continuum

power lifting, sprint, soft-ball, volley-ball, basket-ball, soccer, Distance run, bike, swim, ski

I-X---X-------X------X-----------X--------------X------------------------------X--I

Anaerobic **Aerobic**

V. Requirements for an activity to be aerobic using the Overload Principle
   Frequency – 6 times per week
   Intensity - breathe heavier but not out of breath (talk test)
   - heart must be in target heart rate zone
   Time - continuous for at least 20 minutes
   Type - must involve the large muscles
   - sweat

VI. Computing your target heart rate zone

1. start with 208
2. minus (.70 x age)

Lower limit

3. multiply by .65

Upper limit

3. multiply by .90

Examples

12 year old

12 x .70 = 8.4 208 – 8 = 200 200 x .65 = 130 200 x .90 = 180

13 year old

13 x .70 = 9.1 208 – 9 = 199 199 x .65 = 129 199 x .90 = 179

14 year old

14 x .70 = 9.8 208 – 10 = 198 198 x .65 = 128 198 x .90 = 178

15 year old

15 x .70 = 10.5 208 – 11 = 197 197 x .65 = 128 197 x .90 = 177

Compare to the six-second pulse taken after a cardio run where zone is 13 – 18.

LECTURE 4 (9th)
MUSCULAR STRENGTH AND ENDURANCE

MUSCLES: deltoid (shoulder - shoulder abduction) & latissimus dorsi (middle back - shoulder adduction)

I. Definitions
   A. Muscular strength – amount of force that a muscle can exert in one contraction; allows individual to lift heavy load (backpacks, furniture)
   B. Muscular endurance – ability of a muscle to continue working for a longer time; allows individual to keep going in an activity (long bike ride)

II. Continuum

	power lifting, sprint,	soft-ball	volley-ball	basket-ball	soccer	Distance run, bike, swim, ski	
Strength	I-X---X------X------X---------X-----------X----------X-I						**Endurance**
Anaerobic							**Aerobic**
More weight							**Less weight**
Less reps							**More reps**
Increase intensity							**Decrease intensity**
Decrease distance							**Increase distance**

III. In the weight room, how to train for
   A. Strength
      1. increase weight
      2. decrease reps to 7-8
   B. Endurance
      1. decrease weight
      2. increase reps to 12-15

IV. How to train for running/biking type activities
   A. Strength (Speed)
      1. increase intensity (speed)
      2. decrease distance
   B. Endurance
      1. decrease intensity
      2. increase distance

LECTURE 5 (9th) FLEXIBILITY

MUSCLES: hip adductors (inner thigh - hip adduction), hip abductors (outer hip - hip abduction), gluteus maximus (buns - hip extension), hip flexors (front of hip - hip flexors)

I. Flexibility is the ability to move the body's joints through a full range of motion

II. Benefits
- A. improves performance
- B. reduces risk of injury
- C. reduces muscle soreness
- D. decreases stress and tension – both physically and emotionally
- E. improves posture
- F. helps reduce low back pain

III. Ways to stretch
- A. Dynamic
  1. with movement
  2. examples are warm-up throws, warm-up laps, warm-up set, form drills
  3. warm-up dynamically to avoid injury
- B. Static
  1. without movement
  2. hold for 15 seconds
  3. examples are quad stretch, butterfly, tricep stretch, heel cord stretch
  4. cool down statically when muscles are warm
- C. Ballistic
  1. bounce
  2. avoid as it can damage muscles

IV. Safety
- A. stretch within own limits to avoid injury caused by overstretching
- B. avoid outside hurdle stretch as it can cause knee damage; do inside hurdle
- C. avoid having knee tighter than a 90 degree angle when weight bearing

V. Treatment for injury

R I C E

Rest

Ice

Compression control swelling

Elevation

VI. Overload Principal and Flexibility
- A. Body system – muscular; skeletal
- B. that is greater than it is used to – stretch a little farther each session
- C. overcompensation – greater flexibility

V. PIES and Flexibility

Improves all aspects of fitness: physical, intellectual, emotional, social

LECTURE 6 (9th)
NUTRITION
MY PYRAMID
TRACKER WORKSHEET

Name_____Period_____Score_____

Log on to mypyramid.gov. Check off each step as it is completed.

_____Click on My Pyramid Plan on left side and fill in your information.

_____ Print the plan for your results.

_____ Print two copies of Meal Tracking Sheet.

_____Fill out the worksheets for two different days (1 school day and 1 weekend day).

_____Click on My Pyramid Tracker on left side of home page. Click on Assess Food Intake and follow links to set up account.

You can use the site bar at the top of the page to guide you through each step.

_____Go to Assess Food Intake and enter foods eaten for the day (use meal tracking sheet). Select quantity and select servings. Save and analyze.

_____Repeat for day 2.

_____Calculate and Print Dietary Guidelines for one day.

_____Calculate and Print Nutrient Intakes for one day. Indicate where you did well and where you need to improve.

_____Print My Pyramid Recommendations.

_____View graphs for Eating History (view food groups as well as nutrient intake).

_____Click on Assess your Physical Activity and enter your activity for one of your days.

_____ Select duration for each activity. Save and analyze.

_____Repeat for your second day.

_____Calculate and Print physical activity score for 1 day.

_____Analyze Energy Balance. View caloric intake and expenditure summary.

_____Attach the following to this paper in this order: My Plan, 2 completed Meal Tracking Forms, 1 copy of Dietary Guidelines, copy of 1 day's Nutrient Intakes showing where you did well and what you need to improve on, 1 copy of My Pyramid Recommendations, copy of 1 day's Physical Activity Score.

LECTURE 7 (9th)
BODY COMPOSITION
&
COMPONENTS OF PHYSICAL FITNESS

MUSCLES; rectus abdominus (stomach - torso flexion) & back extensors (lower back - back extension)

I. Body composition is the percentage of body weight that is fat compared to lean.
   - A. Lean body mass – muscles, bones, organs, fluid
   - B. Healthy body composition
     1. males – 9% - 20%
     2. females – 14% - 26%

II. Factors that influence body composition
   - A. Heredity
   - B. Metabolism
     1. the amount of energy your body needs to function at rest
     2. affected by age, heredity, muscle mass
   - C. Gender
   - D. Early fat composition
   - E. Diet (See Lecture 6)
   - F. Physical activity – 60 minutes/day

III. Components of Physical Fitness
   - A. Cardiovascular fitness
   - B. Muscular strength
   - C. Muscular endurance
   - D. Flexibility
   - E. Body Composition