ACSM notes

1. ATP-PC phosphagen system: 25-30 secs of high intensity work (sprints, weight lifting)

5to 10 seconds ATP-PCr, after 10 seconds fast glycol sis, 45 second and above oxidative reaction.

Lactic acid is during anaerobic reaction where as private acid after lactic acid with oxygen activity.

1. Anaerobic glycolysis: breakdowns carbohydrates (glycogen/glucose) into pyruvate. 200m or a 400m sprint or activities that can’t be continued for more than 90 secs.
2. Oxidative system: 2 systems (Most ATP produced):

A: Krebs cycle

B: Electron transport system

Fitness testing order:

1. Resting measures
2. Body compositions (body fat, girth measures, BMI)
3. Cardio fitness
4. Muscular
5. Flexibility

Ankle Edema- Swelling of the ankle

Syncope- loss of consciousness

Orthopnea- shortness of breath while lying down (1-2 hours before sleep)

Paroxysmal nocturnal dyspnea- loss of breath during sleeping after 2 hours or more. Wakes the person up and have to sleep upright.

* Initial phase for cardio program: 4 weeks
* 3-5 days per week to increase cardio fitness
* breath during concentric phase of an exercise
* resistance training promotes muscular strength in adolescents
* FITTE: frequency, intensity, time, type, enjoyment
* Cool down returns pooled blood back to central circulation
* Hamstrings: hip extensors
* **For the Bruce protocol test, HR should be assessed at least 2 times. Done at the end of each stage in order to obtain steady state. BP should be done at the last minute of each stage.**
* A routine of both cardio and resistance training (short rest, high intensity aerobic 4-10 exercises) is called circuit training
* Light to heavy weight after each set or vise versa is called Pyramid training.
* Supersets: having done 1 set of exercise (bicep curls) then immediately the antagonist muscle (tricep pushdown).
* ACSM recommends at least 30 mins on most or all days of the week.
* The pre-dominate factor causing increases in strength during the initial weeks of training is due to improvements in neuromuscular adaptation.
* **Isometric: no change in length of the muscle**
* The classic periodization: increases in volume and intensity over time
* Periodization: systematic variation in training program design.
* Order of heat related injuries from mild to severe: Heat Syncope (little or none core temp elevation)--🡪 Heat exhaustion (37-40 C)--🡪 heatstroke (over 40 C)
* *Pregnant woman should avoid the SUPINE position, extended periods of motionless standing or the Valsalva maneuver after the first trimester when venous return can become compromised.* 
  + Intensity of exercise should be gauged using the BORG scale (12-14; conversation should still be able to be kept up)
  + Avoid belly or supine exercises
* Suggested order of an exercise session: Warm-up-->Endurance Phase--->Cooldown-->stretch
* **Children are less tolerant of heat because of higher threshold for sweating but can participate in resistance training**. (both have same amount of sweat glands)
* ***Muscles strengthen for a healthy back: Abdominals, quadratus lumborum, and erector spinae****.*
* **PNF stretching**: 3 types- A)hold relax phase B) contract-relax phase C)hold relax with agonist contraction.
* Tricuspid value- prevents backflow of blood to the right atrium
* Long term resistance training (changes in muscle size) is due to increases in muscle fiber cross-sectional diameter.
* Increase in heart rate will increase work rate and oxygen uptake (linearly relationship)
* **Pathway of blood flow**: vena cave-->right atrium (deoxygenated blood)-->tricuspid value-->right ventricle---> pulmonary system (to the lung)--->left atrium (oxygenated blood)------>Mitral(bicuspid) value--->left ventricle--->aortic value--->body
* **Rotator cuff-** **supraspinatus**, Infraspinatus, Teres minor, Subscapularis
* Eccentric contraction elicit delayed onset muscles soreness
  + Also **buildup of lactic acid could create muscle soreness**
* **Stretching techniques** from low injury to high injury: Slow static, proprioceptive neuromuscular facilitation (PNF), Ballictic (high injury)
* Chronic aerobic training DECREASES plasma triglyceride levels
* Cardiac output= heart rate x stroke volume
* **Order of spinal column from superior to inferior**: Cervical-->Thoracic-->Lumbar-->sacral-->coccyx
* **IIiopsoas** is ANTAGONIST to the hamstrings
* High Altitude: For most people effects of altitude appear at and above 3950ft. Moderate altitude is 3950-7900 ft, High altitude is 7901-13,125 ft, Very high altitude is over 13,125 ft.
* During dynamic exercises Heart Rate and Systolic blood presssure will increase but not Diastolic BP (remain unchange)
* Lateral raises will work the middle Deltoid (**supraspinatus** muscle).
* **DCER** (Dynamic Constant External Resistant Training ) (pg.90-91): most common method of resistance training, weight lifted does not change throughout ROM
* Isokinetics - designed to train only single joint movements, performed at a constant angular limb velocity
* Plyometric Training - quick powerful movements that involve a rapid stretch of a muscle
* **Valsalva maneuver** **may** elicit an increase in intrathoracic pressure and increase systolic blood pressure
* **Android** obesity (abdominal) (apple) is related to having a higher chance of metabolic diseases.
* ***People with Arthritis should*** *1) duration of activity should be emphasized over increase intensity 2) physical activity should be completed at the same time every day 3) avoid all joint movement during periods of acute inflammation.*
* For a general public, RPE (borg scale) should be between 12 and 16 (11-16 to improve Cardio**)(pg.70).????**
* **3 training principles** that should be used in your client are **Overload, Specificity, and Progression**
* For a healthy individual, cardiorespiratory exercise should be at an intensity of **60-90% HRmax**, duration of 20-60 mins, and frequency of 3-5 days a week.
* The Health Belief Model assumes that people will begin exercising when there is a perceived threat of disease. That person believes that the consequences are severe and feel personally vulnerable.
* Beta-blockers: blocks endogenous catecholamine (epinephrine and norepinephrine) as well as stress hormones from activating the sympathetic nervous system.
  + Decrease heart rate and sympathetic nervous system
* *As a result of chronic exercise, a decrease HR in rest and an increase in stroke volume at rest is noticed. However there is* ***no change in cardiac output at rest****.* 
  + **Kids have higher heart rates** than adults; but lower stroke volumes
  + Kids are more prone to heat related illnesses since their sweat glands are not as developed.
* 1 MET is energy cost of resting (sitting quietly), 3-6 is moderate, >6 is vigorous
* burn 1000 Kcal to reduce disease risk, 2000 Kcals to maintain weight, >3000 Kcal to lose weight (or 250-300 mins of mod-vig activity)
* If a client performing a bench press, they should exhale during the concentric phase of the movement.
* Fat soluble vitamins include A D E and K (water soluble are vitamins C and B-complex)
* Diet: 55-65% carbs, 25-30% fat, 10-15% proteins.
* To reduce exercise induced asthma: 1**) breath through the nose (will warm and moisten the air)** 2) stay out of cold, dry air. If outdoors, wear a face mask/scarf to warm the inhaled air. 3) try to exercise indoors and participate in lower-intensity sports.
* Muscle spindles protect the muscle and tendon from stretching too much.
* Order of Electrical conduction of the heart: SA node-->AV node---> bundles of His--->Purkinje fibers.
* **In cross bridges**, calcium binds to troponin. Then the myosin head (with ADP and P) binds to the actin myofiliaments. ADP **and P is released when the myosin head starts to contract**. Then the bond is broken when ATP comes and binds to the myosin head. Then the ATP releases energy to make the myosin head go back into position (now has ADP and P). (Youtube it!)
* The sarcoplasmic reticulum contains larges stores of calcium. Releases calcium ions during contractions and absorbs them during relaxation.
* A motor neuron (axon) releases acetylcholine to the muscle cell which allows the sodium to flow inside the muscle cell (potassium to reverse it).
* **Muscle fibers**: Type 1= slow twitch, oxidative (good for long running). Type IIA = both slow and fast but can fatigue faster than type 1 (ex. 400 meter sprint). Type IIB (X) high intensity power. **Can convert type IIB to type IIA ONLY**.
* Tidal volume: amount of air entering and leaving the lungs per breath.
  + ***Chronic exercise leads to decrease in Tidal Volume***
* Sympathetic vs parasympathetic: sympathetic turns on the “flight or fight” which **increase heart rate**, **blood pressure,** pupils dilate etc. parasympathetic controls the homeostasis of the body and puts it into **a relax state** (decrease heart rate, blood pressure, constrict pupils etc).
* Cortisol (pg.**269**): High levels of cortisol (from too much stress) influence free fatty acid levels in the plasma. Cortisol contributes to the accumulation of fat in the *abdominal region* and this ***visceral fat*** is readily released into the bloodstream.
* **Too much stress has been correlated with a reduction in natural killer cells (NK**) and NK activity. NK combat cancerous tumor cells and monitor neoplastic (new and abnormal) growth.
* Elevated levels of glucocorticoids are associated with degeneration of the hippocampus, including dendritic (branches of a neuron) atrophy, memory impairment and hippocampal atrophy.

HFS

* Clients health screening should be done before any physical activity
* A consent document provides a documentation of a good faith to educate your clients
* relative contradictions are conditions when professional judgement about the risk and benefits should be determine to whether to conduct an assessment
* flexibility is a measure of pain free ROM about a joint
* Informed consent is **not a legal document**, doesn’t provide legal immunity, or relieve the HFS/facility to do everything possible to ensure the safety of the client. **Negligence is NOT in the informed consent**.
* under water weighting ASSUMES standard densities for bones, muscle, and fat
* increasing in age is often accompanied by decondition and disease
* most accurate screening method for sign and symptoms of CAD is maximal exercise using a 12-lead ECG
* **OSHA**: a federal agency that sets standards for staff and patient safety in terms of blood related contamination, and blood born diseases.
* **HIPAA** –privacy rule
* Safety plans should include annual practices of emergency situations, posted emergency plans and emergency numbers and maintenance of CPR.
* people usually quit after 3 to 6 months after starting an exercise program (50% drop out rate)
* manager/director is in charge of program design and implementation
* **category 1 medications include Lidocaine, oxygen and Epinephrine**
  + If someone is taking any medication, just assume that they will most likely have a lower or altered heart rate.
* An emergency plan MUST be written, should outline each specific action, and staff should be prepared and trained.
* An exercise staff role when an emergency happens should control the situation and take charge.
* The U.S legislation that is critical for operators of fitness facilities to understand and adhere to regarding safety is the Americans with disabilities Act
* if someone is having a seizure, do not restrain the person but be sure they are in a safe area
* in cleaning the facility and equipment, you should be aware if solutions and cleaning materials are safe for the skin and hypoallergenic
* emergency procedures should be posted under each phone
  + ***FALSE: Emergency numbers should be under a supervisors desk***
* Carbs :4 kcals, Proteins: 4 Kcals , **Fat 9 Kcals**, Alcohol 7 Kcals, **Water 0 Kcals**
* Hypoglycemia = low blood sugar <50 mg/dL Hyperglycemia = >200 mg/dL
* self-determination theory: must have Competence(a sense of being able to complete the task), relatedness (being abel to connect to the social world), and autonomy (feel like you are in control) (intrinsic motivation)
* **General adaptation syndrome**: stress goes from 3 stages: Alarm a fight and flight reaction involved --> resistance –metabolism , hormone , and immune changes generated -->exhausted-no longer able to mount a defense to the stressor.
* **Allostatic load** model **(pg. 268):** the ability to achieve stability through change! But too much activation of allostatic load with no rest after a stressor can increase the risk of atherosclerosis and a myocardial infarction.
* **CoAES**: A standard guideline that helps students seek employment in the health industry. Basically taking classes and research.
* HFS SHOULD have a “General” and “Professional” liability insurance that can protect you from negligence claims. (General= ordinary negligence) (Professional = giving people advice negligence)
* **3 keys laws HFS** should be well informed are 1) Sexual harassment 2) workplace safety 3) maintain privacy information about each client
* *Title VII of the civil rights act of 1974:* Prohibits sex discrimination
* Civil rights act of 1964: Prohibits discrimination basis of race, color, gender, religion, etc.
* ***Contract Law (p.294)***
* ***ADA (American with disability Act) (p.295****) ,addresses the “Dos and Don’t’s “regards pre employment inquiries.*
* **Good Samaritan Law** *(p.****287)*** *\*know this!* Good Samaritan laws generally provide basic legal protection for those who assist a person who is injured or in danger. In essence, these laws protect the “Good Samaritan” from liability if unintended consequences result from their assistance. All 50 states and the District of Columbia have some type of Good Samaritan law. Who is protected under these laws (physicians, emergency medical technicians, and other first responders) and how these laws are implemented vary from state to state. In addition, some states extend Good Samaritan liability protection to cover business and nonprofit entities acting during an emergency.
  + Immunity will be granted to those persons who in good faith try to protect, serve, and tend to others who are injured or ill
  + DOES NOT apply to HFS while on the job
* **Transtheoretical model** has been researched the most but the self-determination has been receiving greater interest. Proposes that individual moves through a series of stages of change during physical activity adoption. Pre contemplation, contemplation, preparation, action, and maintenance.
* **Intrinsic rewards** tend to be more sustainable over time because they don’t rely on an outside source. So extrinsic rewards are important to keep up the intrinsic rewards. Example of extrinsic rewards are > muscle tone , weight loss , trophy.
* Intrinsic (Pre contemplation, contemplation, preparatio,) Extrinsic (adaptation, and maintenance .)

* Self-regulation/self-monitoring: a process where an individual observes and manually monitors his/her own behavior (ex. Keeping a written log, calendar, recording progress)
* Social support: individuals share goals with family members or friends. They tend to follow with a goal by sharing it to get rid of the fear embarrassment or shame.
* Motivational interviewing: individual become more committed to what they say to themselves then what they hear from others. The purpose of MI is to help individuals explore and resolve their **ambivalence** about possible change (ask open-ended questions).
* Visual imagery: visualizing in your “mind’s eye” that you can achieve a specific goal. Can be internal (emotional; how they feel about doing a task) and external (physical). Appearance imagery is more frequently used with younger adults to look better for their significant other (extrinsic reward).
* Relapse prevention: the goal is to prevent an individual from retuning to an inactive lifestyle after establishing a regular exercise routine. To prevent Relapse, HFS must do regular check-in and **anticipate** events or circumstances that could ultimately lead to a relapse.
* Active listening: demonstrates a more complete comprehension of the message by repeating back to the speaker the information that was given to ensure accuracy of interpretation (this method is better than passive listening).
* **Tort and negligence (pg.288**): A wrongful act whether intentional or accidental which results in insults, injury, or death to another person or organization. Can be sued over improper care which can result in a negligence law suit (litigation).
* **HIPAA (pg.292**): a law to protect the privacy of health information of a client. If you share any information to anyone else besides the client, you can be sued.
* Strategic planning (pg.313): requires understanding the relevant history of the decision at hand, including factors that helped or hindered the process up until the present day.
* A balance sheet indicates the financial status of a business at any given time and is separated into assets, liabilities, and owners’ equity.
* Membership fees generate 75-85% of total revenue for a facility
* 2 types of budgets: 1) **Zero-based budgeting**: uses assumptions of business expenses and revenues to develop a budget rather than relying on previous years’ numbers. 2) **Tread-line budgeting**: Uses previous years’ financial data to develop the budget for the current and upcoming years.
* Once you establish a fitness business, first thing to do is to perform a demographic analysis to understand the people most likely to go to the facility
* Also identify the stake holders (employees, maintenance staff, etc.) that will be invested in your company. This should be the first thing you should do if you plan to run a business.
* Referrals: Most effective way to get new clients
* Email/direct mail: Direct mail produce return rates of 1-3%. Emails return rates are 5-15% return rates.
* Television: High cost impact but high impact to get to new clients.
* What is NOT included in the profit and loss statement **(p.331)?**
* Net Revenue: all profit gained without taking into account losses and expenses
* Employee vs. Independent Contractor:
  + Employee: company has more control over an employee’s hours, exercise regimen, etc.
  + Independent Contractor: bottom line is the most important thing; how you get there (exercise regimen, training methods, etc.) is up to you
* Management Styles (p.309-310)
* Improvised management (low concern for people production) ,country club management ,Authoritarian mgt, middle of the road mgt, team or democratic mgt .
  + ***Put on notes***
* **Premature ventricular contractions:**
  + **On Test!!! Look up in book!!!**
* For a person who is new to a strength training program, what exercise regimen should be prescribed?
  + 1 set of 8 to 10 reps with 8 to 10 exercises using both upper and lower body
* What exercises isolate the soleus muscle?
  + Seated calf raises (must make sure knee is flexed)

**MANAGEMENT MODELS (Pg.303-314) Read them all!**

(just a few important ones but I recommend you know them all)

***Transactional model:*** Productivity is consider an outcome of “good” management any employee that had a role in good management was not recognized (ex. We don’t care about employees, just the results)

Visionary model: employees/followers are to contribute the leaders “vision.”

Trait theory: Great leadership is either genetic or can awaken their dormant leadership skills over time.

***Transformational leadership:*** Leaders give individual attention and inspire others to excel and stimulate people to think new ways.

***Transactional leadership:*** individual interest in the leader and is not concerned about the collective interest of followers.

**Behavioral Approach theory (pg.312):** Leadership could be learned and those that do not learn it will always be subordinate. Its important to understand the job than to follow instruction blindly. Mary Paker (who created this theory) also made up the Human resource management department.

ACSM CODES OF ETHICS

Section 1: Members should strive continuously to improve knowledge and skill and make available to their colleagues and the public the benefits of their professional expertise.

Section 2: Members should maintain high professional and scientific standards and should not voluntarily collaborate professionally with anyone who violates this principle.  
  
Section 3: The College, and its members, should safeguard the public and itself against members who are deficient in ethical conduct.

Section 4: The ideals of the College imply that the responsibilities of each Fellow or member extend not only to the individual, but also to society with the purpose of improving both the health and well-being of the individual and the community.

Maintaining certification: Once you pass the test you have 3 years duration of keeping the certification after that you must do the following to keep your accreditation:

* Accumulate 60 continuing education credits (CECs)
* Maintain current CPR cert.
* Pay the require fee to get recertified
* OR have the option to repeat the HFS test ( w/o doing 60 CECs)

**Risk Factors**

Age

Men > 45 yrs

Women > 55 yrs

Family History

Sudden death, myocardial infarction, coronary revascularization before 55 yr in father or other male first degree, or before 65yr in mother or other female first degree

Cigarette smoke

current or quit within the last 6 mo

Sedentary lifestyle

not participating in at least 30min of mod intensity (40-60% Vo2R) on at least 3d of the week for at least 3 months

Obesity

BMI > 30 kg\*m^-2 or waist girth >102cm men or >88cm women

Hypertension

Systolic > 140mm Hg and/or diastolic > 90mm Hg or antihypertensive meds

Dyslipidemia

LDL > 130mg\*dl^-1

HDL < 40mg\*dL^-1

or total serum cholesterol >200mg\*dL^-1

Pre-diabetes

fasting plasma glucose > 100mg\*dL^-1 and < 125mg\*dL^-1

add risk factor if glucose is missing or not given ???

Negative risk factor

HDL > 60mg\*dL^-1

If missing, count as a positive risk EXCEPT in the case of prediabetes. Only count as risk factor if

* Client is 45 years or older
* OR client’s BMI is 25 kg/m^2 with additional risk factors for pre-diabetes (ex. Family history, hypertension, sedentary lifestyle etc.)

**Contraindications to Exercise Testing**

Absolute

-recent significant change in resting ECG suggesting significant ischemia

-recent myocardial infarction (within 2d) or other acute cardiac event

-unstable angina

-uncontrolled cardiac dysrhythmias

-symptomatic severe aortic stenosis

-uncontrolled symptomatic heart failure

-acute pulmonary embolus or pulmonary infarction

-acute myocarditis or pericarditis

-suspected or known dissecting aneurysm

-acute systemic infection

-client asks to stop

Relative

-left main coronary stenosis

-moderate stenotic valvular heart disease

-electrolyte abnormalities

-severe arterial hypertension SBP >200 or diastolic BP>110

-Tachydysrhytmia or bradydysrhythmia

-hypertrophic cardiomyopathy

-neuromotor, musculoskeletal or rheumatoid disorders exacerbated by exercise

-high-degree atrioventricular block

-ventricular aneurysm

-uncontrolled metabolic disease

-chronic infection disease

-mental or physical impairment

**General indications for stopping an exercise test**

-onset of angina

**-drop in SBP > 10 mm Hg with increase work rate**

-excessive rise in BP SBP >250mm Hg DBP >115 mm Hg

-Shortness of breath, wheezing, leg cramps or claudication

-Signs of poor perfusion, light headedness, confusion, ataxia

-Failure of HR to increase with increased exercise intensity

-noticeable change in heart rhythm by palpation

-subject requests stop

-physical or verbal signs of severe fatigue

-failure of testing equipment

YMCA sit and reach

feet should be 10-12inches apart, heels of the feet about 15 inches away,

**take the highest result (measure two times)**

has been said to measure hamstring flexibility better then lower back flexibility

hamstrings are a limitation

**Rotator cuff muscles**

supraspinatus - abducts the arm

infraspinatus - externally rotates arm

teres minor - externally rotates arm

subscapularis - internally rotates humerus

**know planes of motion (ex. Frontal, sagittal, transverse planes)**

Conversion

1kg = 2.2lbs

1mph = 26.8m/min

1 foot = 12 inches

1 inch= .0254 meter (WILL NEED in order to calculate someone’s BMI)

1 MET = VO2 / 3.5

* ***Know how to calculate work rate!!! (kp x RPM x Rev) or 1.5 x 60 x 6m*** 
  + ***Tusctini bike = 3m per Rev; Monarch = 6m per Rev***

Drugs:

* Beta blockers- Decreases Cardiac Output, decreases heart rate, decreases blood pressure, and decreases VO2 max
* Nitrates- Increases HR, decreases BP, increases exercise capacity with patients w/ angina but with patients w/o angina exercise capacity stays the same.
* Caffeine- Cardiac Output remains the same, HR and BP increases, increases exercise endurance
* Nicotine Replacement Therapy- Increases HR and BP. Exercise capacity can either stay the same or decrease.
* Alcohol- HR stays the same. Chronic use may increase BP or even drinking before exercise. Decreases performance and VO2 max.

If somebody has a heart attack 2 weeks ago and you see signs of moderate depression what should you do? Make sure they see their own physician to help them. To counsel on someone is outside of the HFS profession scope of practice. You’re and exercise specialist, not a psychologist.

**Know metabolic formula!!! (p. 62)**

How to calculate someone’s Kcals: Information you MUST KNOW!

Know their:

-Vo2

-Weight in Kg

-1 liter = 1000 mL

-For 1 Liter there is 5 kcals per 1 minute (ill explain later)

-conversion of time (ex. 1 hour = 60 mins)

1lb =3500 kcal

EXAMPLE 1

Bob ross’ VO2 is 26 ml x kg- x min. His resting heart rate is 77 and blood pressure is 130/82 and weights 150 lbs. How many kcals will he burn if he’s on a leg ergometer for 30 mins?

Step 1: multiply his vo2 by his weight in Kg

(26 ml x kg- x min) X 68 kg = 1768 ml x min (Since 150 lb/2.2 = 68kg)

Step 2: now you want it in LITERS so you divide it by 1000!

(1768 ml x min) / 1000 ml = 1.768 L x min

Step 3: now you want to multiply it by 5 kcals to find out how many kcals you burn in 1 minute (there is 5 kcals per liter)

(1.768 L x min) X 5 kcals/1L = 8.84 kcals x min (REMEMBER THIS IS ONLY FOR 1 MINUTE)

Step 4: multiply your answer by however many minutes the question is asking you (for example, they are asking you for 30 mins)

(8.84 kcals x mins) X 30 minutes = **265.2 Kcals** <-------FINAL ANSWER

\*the reason why I added bob’s HR and blood pressure is because they will give you information that is irrelevant to the problem so BE CAREFUL what information you want to use.

Example 2

Missy elliott’s METs is 7.5 as she works out 30 mins, 3 times a week. She weights 180 lbs. how many kcals will she burn if she continues to work out for 5 weeks?

\*\*\*Notes that I did not give you her VO2 but you can figure that out by multiplying her METs by 3.5 since 1 MET = 3.5 VO2. So (7.5 METS x 3.5 VO2/MET = **26.25 VO2**)

Step 1: 26.25 x 81.81 = 2147 mL x min (convert weight 180/2.2= 81.81)

Step 2: (2147 mL x min) / 1000 = 2.147 L x min

Step 3 : (2.147 L x min) x 5 Kcals/1L = 10.73 kcals x mins

Step 4 : now you want to add up all the minutes. Ask yourself, how many mintues is she working out total for a whole week? What about the total of 5 weeks?

30 mins x 3 times a week = 90 mins per week

so…

90 mines per week x 5 times a week = 450 mins TOTAL

step 5: calculate total Kcals for 5 weeks.

(10.73 Kcals x mins) X 450 minutes = **4,828.5 Kcals** total <----FINAL ANSWER

**Extra question!!!**

Now that you know Missy Elliott’s total kcals for the whole 5 weeks, how many pounds did she lose (assuming her calorie intake was the same)?

**YOU MIGHT GET THIS ON THE TEST.** So how do we solve this? Simple. Remember that 1 lb is equal to 3500 Kcals. So….

4.828.5/3500 = 1.37 lbs

so she will have lost 1.37 pounds I those 5 weeks. Looks like she needs to work harder to lose more weight (if that was her goal).

**Review Behavioral Strategies**

Bandage vs. Gauze

* Gauze covers the wound
* Bandage keeps it in place