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Coach Swift
Wellness 9 per. 1
6 / 9 / 15

Notecard Review

Cardiovascular Fitness

- heart:
    - blood enters from right atrium
    - blood is pumped to lungs from right ventricle (to pulmonary artery)
    - blood is received in left atrium (from pulmonary vein)
    - blood is pumped out to body from left ventricle (to aorta)
    - size of fist
    - has 5-6L of blood circulating body
    - pumps 30 times its weight each minute
    - arteries go from heart; veins to heart; capillaries are oxygen/nutrients/waste exchange sites and are where arteries and veins meet
    - arteries are pumped by heart; veins are "pumped" by muscles when we move, and have valves (so it is important that we move to get blood flowing)
- benefits of cardiovascular fitness
    - (these benefits only happen if exercising for more than 15 minutes at a time)
    - strengthens heart (more efficient, larger, lower RHR)
    - decrease risk of cardiovascular endurance
    - improved energy
    - improved body composition
    - helps relieve strain associated with stress
- vocabulary:
    - cardiovascular fitness: the ability of the heart, lungs, and circulatory system to deliver enough oxygen and nutrients to the body's cells and muscles
    - aerobic: with oxygen
        - involves slower, longer activities
    - anaerobic: without oxygen
        - shorter, more explosive exercises
    - pulse: caused by pressure of blood on an artery wall that corresponds to a heartbeat
        - easily found on wrist (radial) or neck (carotid)
    - resting heart rate (RHR): heart rate when waking up, without doing any exercise
        - lowers as fitness levels improves (10-20 bpm slower in a more fit person)
    - recovery heart rate period: time it takes for HR to get close to RHR (below 100-120 bpm)
        - usually 5-10 minutes of cooldown after an exercise, but if it is not lowered, continue to cool down
        - the more fit, the less time it takes
        - 15 bpm lower = 570,024,000 beats saved in a lifetime
    - maximum heart rate: heart rate that should not be exceeded during exercise
        - approximately 220-age
    - target HR range (THR): range that should be reached and maintained during cardiovascular exercise to obtain training benefits
    - blood pressure: measure of blood force against walls of arteries
        - top is systolic (contracted)
        - lower is diastolic (relaxed)
        - normal is 120/8

    - hypertension: high BP
        - heart has greater resistance
        - over 50 mil Americans
        - risk factor for stroke and heart attack
        - 140/90 BP
    - FIT (3-5 d/w; 60-90% THR; 15-60 minutes)
- diseases/conditions:
    - cardiovascular disease affects many inactive people
        - #1 cause of death in US
        - risk factors:
            - controllable: smoking, obesity, hypertension, high LDL, stress, inactivity
            - uncontrollable: age, genetics, gender
    - heart attack: when artery supplying heart becomes blocked
    - stroke: when artery supplying brain becomes blocked
    - arteriosclerosis: hardening of the arteries
    - atherosclerosis: narrowing of the arteries

Muscular Fitness

- muscular strength: amount of force a muscle can produce in a single maximum effort (1RM)
- muscular endurance: ability to sustain a given level of muscular tension for a long period of time (i.e. hold or repeat contraction
- FIT (2-6 d/w; ME 30-50% 1RM, MS 60-90% 1RM; 1-3 sets: ME 12-20 reps. MS 5-8 reps)
- only when reaching upper limit of all sets increase intensity
- measuring muscular fitness exercise:
    - repetition: completion of single, full ROM of the body part being used
    - set: a group of repetitions performed one after the other
    - tempo: the speed at which you go through full ROM (4020)
        - 4 seconds concentric
        - 0 seconds hold
        - 2 seconds eccentric
        - 0 seconds hold
- safety:
    - warm up, cool down
    - start with endurance training for first two weeks
    - check weight, seat height, and collars (especially when working with partners; on machines)
    - breathe
    - use correct form (no bouncing)
    - always use a spotter (not on machines)
    - go through full ROM
    - train muscles on both sides (of body and part)
    - train from large muscle groups to small muscle groups
    - put equipment away after use
- types of exercise:
    - isometric: contraction with no change in length (i.e. no movement)
        - disabled people/rehabilitation
    - isotonic: shortening and lengthening of muscle through full ROM with no change in weight
        - most common, like most of the ones we do in class

    - isokinetic: shortening and lengthening of muscle through full ROM *with* change in weight
        - using heavy chains, resistance bands
- muscle fiber types:
    - slow-twitch (red) muscle fibers
        - jogging, swimming
        - contracting for long periods of time
        - most recruited
        - low intensity endurance events
    - fast-twitch (white) muscle fibers:
        - a lot more force/power
        - sprinting
        - poor aerobic endurance
        - short, high intensity events
- atrophy: wasting away or decreasing in size of body part, especially muscle
- hypertrophy: increase in size of muscle fiber, usually stimulated by muscular overload
- myths about muscular training:
    - it does not always give you a muscle-bound physique
    - it is not unfeminine
    - muscle doesn't turn into fat and vice versa
    - strength does not mean size
    - no nutritional supplement will make someone stronger
        - creatine gives you more energy (pulls water into cells), but causes cramping and could cause kidney failure
        - hydroxycut has a lot of caffeine and increases your BP, HR, and causes sweating and dizziness
        - whey protein shake stores muscle glycogen, repairs damage to muscles; helps the most (if you exercise)
        - anabolic steroids
            - physiological effects:
                - abnormal bleeding/blood clotting
                - acne
                - masculinization in females, feminization in males
                - decreased HDL
                - elevated BP
                - increased risk of heart disease, liver cancer
                - worse immunity
                - nosebleeds
                - stunted growth in children
            - physiological effects
                - depression
                - increased aggressiveness
                - personality changes
                - mood swings
- successful weight training:
    - SMART goals
    - needs: injuries and limitations
    - choose right equipment
    - how much time are you able to commit?

    - safety (train both sides of body and part; train large to small muscles)

Nutrition

- the study of nutrients in foods and in the body, and of related behaviors
- nutrients: substances in food that your body needs to function properly to grow, to repair itself, and to supply you with energy
- Calories (kilocalories):
    - fats: 9C/g
    - carbs: 4C/g
    - proteins: 4C/g
    - water, minerals, vitamins: 0 (no energy for body)
- factors influencing diet:
    - stress/emotions
    - nutrition
    - availability/convenience/cost
    - advertising/media
    - culture/religion/family
    - taste/smell/looks
    - celebrations
    - lifestyle/sleep/hunger
    - allergies
- fad diets:diets with no nutritional value and promote weight loss without sound nutritional practices
    - Atkins (high fat; low carbs)
    - tapeworm
    - juice
- GMOs: foods with altered DNA: 70% processed foods have GM ingredient
- (5) aspects of nutritious diet
    - adequacy: enough of each essential nutrient, fiber, and energy
    - balance: no overemphasizing one nutrient/food type at expense of another
    - calorie control: correct amount of energy (no more; no less)
    - moderation: no excess fat, salt, sugar, other
    - variety: differ from day to day
- essential nutrients: nutrients required for normal body functioning that we cannot produce
- carbohydrates: sugars and starches in body; preferred source of energy
    - simple: sugars in fruits, vegetables, sweets, milk
    - complex: starches in grains, seeds, nuts, legumes
        - fibers:no energy
        - bulky (fullness)
        - move waste through system
    - glucose: chief fuel
    - glycogen: starchlike storage form for glucose in liver and muscle
    - glycemic index: classifying carbohydrates (by rate of sugar release)
        - higher is bad, causing quick release and decline in sugar levels (refined grains, sweets)
        - lower is better: slow release and decline (whole wheat)
    - excess carbs, proteins, fats stored as fat
- proteins: nutrients made of amino acids that help build and maintain body tissues
    - builds, repairs body tissue (especially when growing or injured)

    - can provide energy
- fats
    - insulates and cushions
    - major storage form of energy
    - 3 types:
        - trans (hydrogenated): artificial, used to extend shelf life
            - BAD: increase LDL and lower HDL
        - saturated: animal fats that are solid/semisolid at room temp.
            - too much associated with heart disease
        - unsaturated: healthy liquid (vegetable oils)
            - omega-3 found in many kinds of fish, good for heart
    - cholesterol: fat-like substance made in liver of animals; can make yourself
        - for production of hormones
        - for vitamin D synthesis
        - recommended <200 mg/dL
        - increase HDL, lower LDL
        - decrease LDL by increasing fiber, switch to unsaturated fats
        - increase HDL by increased unsaturated fat, exercise, stop smoking
- vitamins: organic compounds that help regulate many vital body processes including digestion, absorption, and metabolism of other nutrients
    - no calories
    - catalyze energy-producing reactions
    - most are essential (cannot be synthesized)
        - Vitamin D: sunshine vitamin: made by skin when exposed to sun
    - water soluble:
        - C, 8-B complex
        - extra urinated, in bloodstream, needs replenishing often
    - fat-soluble:
        - A, D, E, K
        - buildup is toxic
        - stored and transported in fat
- minerals: inorganic compounds that body cannot manufacture but act as catalysts for many vital processes
    - 20 essential minerals
    - most commonly missing for Americans: Mg, Fe, Ca
- water: most important
    - transportation
    - chemical reactions
    - solvent
    - shock-absorption
    - lubrication
    - temperature regulation
    - 60-70% body weight
    - 2.4L water a day
    - mL water for calorie burned
- weight loss
    - 3500 C/lb
    - weight gain/loss by calorie intake/output
    - safe: 1-2 lb/w through cardio and weight training

- body composition: ratio of fat to muscle, bone, other body tissues
    - essential, non-essential fat
    - overweight: body weight above recommended (adjusted height-weight table)
    - obese: excessive accumulation of body fat (over 25% male, 32% female)
    - found with:
        - BMI (least accurate, no regards to density)
        - skin folds
        - underwater weighing (most accurate, gets density)
- eating disorders:
    - anorexia: severe loss of body weight, fear of eating and gaining weight/becoming “fat”
    - bulimia: uncontrollable binge eating, extreme purge (puking, extreme exercise)
- somatotypes
    - endomorph (pear-shaped)
    - mesomorph (muscular)
    - ectomorph (thin)
- Harvard food pyramid
    - daily exercise, weight control at base
    - whole grains, plant oils, vegetables, fruits, at bottom
    - nuts/legumes, then fish/poultry/eggs, then dairy/calcium
    - lastly red meat, butter, white rice/bread, potatoes and pasta, sweets
    - vitamin supplement
    - alcohol in moderation
- know muscular fitness exercises