KINE 4400 8/24/17

Glucose: 6 carbons

Glycerol: 3 carbons

Amino Acids: have Nitrogen

Fatty Acids: even number of carbons

**Four Types of ATP**

Free circulating ATP

Phosphocreatine (pcr): activated in seconds and used within 10 seconds; may regenerate for up to a minute. Most effective use: weightlifting and sprinting

Anaerobic glycolysis: taps into carbohydrates for ATP.

Aerobic glycolysis: able to tap into 95% of ATP in glucose. Carbs, fat and protein all used to make ATP.

75-80% of muscle is made up of water.

Beta-alanine: piece missing to make carnosine which buffers the build of lactic acid, side effects are paresthesia. Sodium bicarbonate (baking soda) makes you more basic and does the same. Beet Juice: high in nitrates that convert to nitric oxide which increases blood flow and oxygen delivery (decreases amount of oxygen you need to have to do the same amount of work)

Three branch chain amino acids: leucine, isoleucine, valine

Citric Acid Cycle

Lipolysis: breaks triglyceride into glycerol and fatty acids. Fatty acids break down further through beta oxidation, fatty acids are liberated from the adipose cell by hormone-sensitive lipase. Lipase activity is increased by glucagon, growth hormone, epinephrine and other hormones.

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Avg amount of sodium in one pound of sweat: 500 mgs

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Leucine, valine, isoleucine are BCAAs

Salivary amylase helps with digestion, amylase breaks down amylopectin and amylose (carbs). Carb digestion does not occur in the stomach – acidity of the stomach (HCL) and pepsin stop the digestion process in the stomach. Protein digestion occurs in the stomach. HCL pepsin denature protein into polypeptides/tripeptides/dipeptides and then the small intestine breaks them down into amino acids.

Pancreas releases bile into small intestine to promote digestion.

Plant proteins are lacking in essential amino acids. One plant protein that is very high quality is soy. Complementary proteins will make up for lacking EAAs (beans and rice).

Amino acids are required for the synthesis of nails, hair, transporters, enzymes, hormones, connective tissues, skin, collagen of bones and teeth.

Deamination must take place (removal of amine group) if body is to use protein to make glucose (energy).

Glycolysis is breaking down glycogen/glucose into ATP. Lypolysis is the breakdown of fat.

Catabolism breaks down your muscles. Anabolism is building up muscles. Testosterone and insulin are anabolic hormones. Glucagon frees glucose into the bloodstream to be used for fuel (antagonist to insulin). Catacolamines = fight or flight phenomenon (glucagon is an example)

After inadequate carb consumption, your body and brain rely on ketones.

Anaerobic or aerobic glycolysis. Aerobic is more efficient and provides more ATP. Anaerobic generates ATP more quickly.

Calculating hydration needs: 1ml/calorie. ½ body weight in pounds = # of ounces baseline.

For one pound of sweat lost you need 20-24 ounces of water. 500 mgs are lost in a pound of sweat.