

## **Workout Nutrition**

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### **Energy Sources for Muscular Work**

- a. Power – ATP, Creatine phosphate
- b. Speed – Muscle glycogen and glucose. Carbohydrates stored needed.
- c. Endurance – Muscle and liver glucose and glycogen; muscle and adipose lipids. Fats/protein needed – glycogenolysis.
- d. Fast for long periods of time – use both

\*\*\* Exercise causes the anterior pituitary to secrete **growth hormone** thus increasing muscle size. Increase fat breakdown with Arginine and Ornithine.

### **Training State**

\*\*\* Glycogen-sparing aids endurance. Glycogen stores are limited and fat stores are abundant. More fat burned the less protein is used.

- Endurance training increases VO<sub>2</sub>max
- Raises the threshold at which lactic acid accumulates
- Increases the muscle's capillary density

### **Treatment for muscle soreness:**

- \*\*\* Increase carbohydrate intake (post-exercise within 2 to 4 hours), protein intake due to an increase in protein catabolism, should be taken on a continual bases.
- Increase antioxidant intake – protects membranes from breaking and also anti-inflammatory
- \*\*\*\* Use of Omega-3 fatty acids (EPA) 1500 mg-3000mg. (DHA has to be high 1200 anti-inflammatory, EPA 2000-2500 – muscle breakdown, protects cell membrane
- Other antioxidants: CoQ10 – 200mg, Alpha Lipoic Acid – 100-200mg, pilnuginol- 100mg.

Vitamins A, C, E zinc and selenium

### **Protein**

- Increases in muscle mass must be supported by increased dietary protein.
- During early phases of training protein is used and broken down. Increased protein need exists to support protein synthesis in skeletal muscle.
- Significant amounts of nitrogen are secreted in sweat during exercise.
- Protein: **for mass/strength** – also exercise to release GH to build muscle. (0.8 gm protein/kg body wt/day)
- Athletes – **1.6 kg body wt/day, no more than 2.5** as can cause kidney damage. Protein raises pressure in blood stream. This pressure clogs up the plasma and over works the nephrons of the kidney.

### **Branched-Chain Amino Acids (BCAAs)**

- **Leucine, Isoleucine, and Valine** increased nitrogen retention making muscle – nitrogen loss breaks this down. Look for (+) Nitrogen Balance. (B6/ L-carnatine 100mg/day)
- When exercising there is breakdown of muscle. This produces a decrease in nitrogen. Decreased levels of Leucine and Isoleucine during exercise.
- \*\*\* Vitamin **B6 / L-carnatine** (100 mg) is essential in the metabolism of the BCAA's – every athlete needs these.
- \*\*\* The decrease nitrogen loss becomes a **Catabolic Effect** and the muscle remains intact.

### **Creatine Monohydrate**

Used primarily to increase strength and lean body mass.

- Creatine phosphate is utilized in skeletal muscle as a means of storing high energy phosphate bonds.
- It is made from **Arginine, Glycine and SAMe**.
- Used for depression and osteoarthritis.
- \*\*\* Put B6, 12 and Folic Acid with use of SAMe. (Required to recycle homocysteine back to methionine)
- Hydrolyzed homocysteine and adenosine.
- These cofactors are therefore important for the full benefit of Creatine and protection from homocysteine, only if you use arginine and SAMe.
- Muscle absorbs Creatine; it also brings in water intracellular, resulting in a larger, fuller muscle.
- Helps to accelerate the synthesis of new protein as well as decrease the protein degradation.

### **Arginine**

- \*\*\* Increase Nitro Oxide (Metabolites into)
- \*\*\* Stimulates growth hormone secretion and insulin-like growth factor – 1, improves nitrogen balance.
- Arginine is required for Creatine synthesis.
- Lowers urinary hydroxyproline, increases cartilage, repairs cartilage and diminishes cartilage breakdown.
- Soft pimento increases sex drive.

### **Ornithine Alpha Keto-Glutarate (OKG):**

- \*\* Goes to make Nitro (NO)
- Used in burn, traumatized and surgical patients and in chronically malnourished patients.
- Increases synthesis and decreases protein degradation – catabolic effects.
- Increases the synthesis of metabolites – Glutamine
- \*\*\* Used with Viagra – inhibits no destruction, prolongs erection

**Siberian Ginseng** – allows better Oxygen use, improves endurance

**Adrenal Stress Profile: BHD #201**

- Adrenal glands produce the complementary hormones cortisol and dehydroepiandrosterone (**DHEA**). Cortisol and DHEA are involved in the physiology of virtually every cell.
- Assesses the levels of cortisol and of the sulfate form of DHEA-S. Chronic degenerative disease is an often insidious and debilitating stressor.
- \*\*\* Chromium, ginseng regulates insulin levels
- DHEA- 30 mg for women, 60 mg for men, not for kids except if overweight.

**DHEA**

- It is a precursor to hormone and to numerous metabolic pathways.
- \*\*\* If there is not enough DHEA it will be taken from other pathways “steal” generally from the sex hormone pathway leading to the loss in libido. \*\*\* Major reason for loss of sex drive.

**Stage I Adrenal Exhaustion**

- Increased excitatory stimulus to the adrenals, increased cortisol output and prolonged decrease in DHEA. \*\*\* DHEA is being stolen from other pathways to support the adrenals.
- Decrease in libido, menstruation, weight gain occurs especially in women.
- Other pathways must compensate to facilitate the production of sufficient cortisol. Compensation is often a shunt or “steal” of pregnenolone from the DHEA/sex hormone.
- Decrease in DHEA and its metabolites, which include testosterone and the estrogens.
- Progesterone either remains normal or decreases, and cortisol increases