Metagenics Sports Nutrition Protocol

I. Resistance
II. Fitness
III. Endurance
IV. Injury Management

I. Optimizing Resistance Training

1) Pre-Workout

Objective: Adequate energy levels for intense training.

a) To eat or not to eat before the workout?
   i. Is it glycogen or is it blood sugar fueling the workout?
   ii. Length of workout (*a small meal may be needed*)
   iii. Ultimate Primary Goals Drive the Strategy
      - Mass (Ingest Carbohydrates)
      - Lean and Fit (probably refrain from ingested carbohydrates)
      - Strength (ingest carbohydrates)

2) Post-Workout

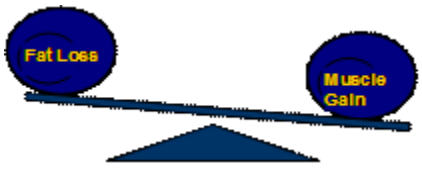
Objective: Maximize Recovery

a) What to eat?
   i. Recognizing the rebuilding process
   ii. The "Golden Hour" opportunity and challenges
      - Need to raise insulin
      - Need to provide protein for building blocks-striving to increase Net Protein Balance
   iii. Understanding the role of protein type, and macronutrient ratio for maximizing growth

3) Overall Nutritional Approach

Objective: To provide the metabolic environment for growth

a) Constant feeding (*Net Protein Balance/Positive Glycogen*)
   i. Adequate caloric consumption
   ii. A formula for protein intake= Approximately 0.8 grams per lb of body weight
b) Working the right side of the spectrum



4) Nutritional Protocols

a) Pre-Workout: (*30-90 minutes depending on Length*):
   - Small mixed meal with carbs and protein at about 15-20%. Food or **Pro Gain®** (*1-2 Scoops*)

b) During Workout:
   - Not usually needed (*maybe for longer training sessions*)

c) Post Workout:
   - **Pro Gain®** (*3 scoops*) & **Perfect Protein®** (*1 scoop*) (*500 calories-Carbohydrates 89 grams-Protein 33 grams*)

d) Increasing Overall Net Protein Balance (NPB):
   i. Supplemental help:
      - **Perfect Protein®**
      - **Protein Fusion® Bars**

5) Key Supplement Highlights

a) **Pro Gain®**
   - Selective Carbohydrate mixture design to maximize the replenishing of glycogen.
   - Hydrolyzed Whey Protein designed to allow for more rapid protein utilization during recovery phase.

b) **Perfect Protein®**
   - Hydrolyzed whey and whey protein isolate as an easily digested high yield protein.

II. Fitness and Body Composition

1) Key Strategies

Objective: To improve the muscle to fat ratio

a) Working the left side of the spectrum

b) Nutrition for workouts
   - Target lower (*but adequate*) glycogen for resistance training
   - Time cardio exercise to have lower glycogen stores for optimal fat burning

c) Lower calorie

2) Guidelines

a) Guidelines (*meal*)
   - Low GL = *10 or less*
   - Medium GL = *11- 19*
   - High GL = *20 or more*

b) Guidelines (*daily intake*)
   - Low Daily GL < *8*
   - High Daily GL > *120*

3) Nutritional Protocols

a) Pre-Workout: (*30-90 minutes depending on Length*):
   - Small mixed meal with carbs and protein at about 15-20%. Food or **Pro Gain®** (*1-2 Scoops*)

b) During Workout:
   - Not recommended

c) Post Workout:
   - **Pro Gain®** (*3 scoops*) & **Perfect Protein®** (*1 scoop*) (*220 calories-Carbohydrates 31 grams-Protein 21 grams*)

a) Increasing Overall Net Protein Balance (NPB):
   i. Supplemental help:
      - **Perfect Protein®**
      - **Protein Fusion® Bars**

III. Endurance Training

Objective: Maintaining glycogen stores and proper hydration

a) Diet aimed at keeping glycogen stores up
b) Workout nutrition
   i. Pre-Workout: Carbohydrate and fluid loading
   ii. During Workout: Events over an hour continue drinking carbohydrates at 30-60 grams per hour
   iii. Post Workout: Carbohydrates and protein in a 4-6:1 ratio

1) Pre-Workout

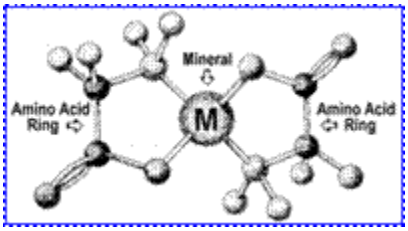
a) Carbohydrate Loading 1-3 days out
b) Fluid loading a couple of hours before event
   - Adequate levels during 24h prior
   - 17 ounces approximately 2hrs before event
c) Pre-workout meal
   - High carbohydrate approximately 3h before the event

2) During Workout

a) Rehydration:
   - Need to replace more than water
   - Key electrolytes sodium, potassium, and magnesium are important
   - Concentration of carbohydrate 4-8% range typically

b) Magnesium is key:

- Athletes have low levels
- It effects the status of the other key electrolytes
- It effects energy metabolism and performance
- A more recent finding: it even lowers lactate levels



c) Problems with digestion:
   - Magnesium intake can have a laxative effect –especially during training

d) The advantages of chelated magnesium:
   - Activated mineral complex is absorbed via a mechanism similar to amino acids and, unlike mineral salts, is not dependant on stomach acidity.
   - This allows for significant levels of magnesium to be ingested helping to maintain electrolyte balance

e) The **Endura®** Advantage
   - Dynamically advanced electrolyte formula developed for use during strenuous exercise
   - Endura® delivers essential electrolytes, including high levels of magnesium, through an activated co-transport system making them readily available in the bloodstream to maintain and optimize cellular metabolism.

f) Who Should Use Endura®?
   - Use by professional athletes has demonstrated the effectiveness of the advanced technology found in Endura®. The following groups may benefit from using Endura®:

     i. Persons needing assistance in preventing muscular cramps and spasms.
     ii. People seeking assistance with stamina, endurance and maintaining peak performance.
     iii. Athletes and individuals who are unable to meet their body's fluid requirements and endurance demands, leaving them dehydrated and vulnerable to muscular damage.

3) Post Workout

a) Recovery still key

- Higher carbohydrate to protein ratio ok
- Endura Optimizer® 2 -4 scoops immediately after training
- Post -exercise meal within 60-90 minutes
- Back to glycogen loading

b) Electrolyte loading (for extended time events)
- 2 servings of Endura® over the next 24 hours

IV. Injury Management

1) The 3 Phases of Care:

- Swelling
- Joint Stability and Soft Tissue Support
- Maximizing Range of Motion

a) Phase I: Reduce Swelling

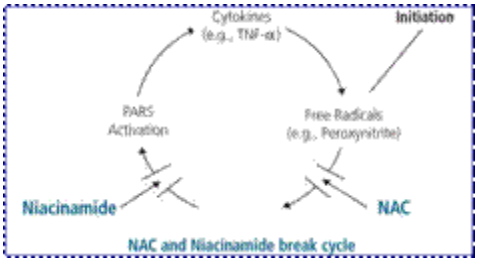
- Trypsin & Chymotrypsin (Proteolytic Enzymes)
- Studies show that patients who received proteolytic enzymes demonstrated a significant reduction in swelling, pain and inflammation, and experienced faster recovery rates compared to placebo groups.

b) Phase II: Joint Stability & Soft Tissue Support

- Glucosamine & Chondroitin Sulfates
- These well-researched nutrients help to form the "shock-absorbing" components of cartilage (proteoglycans and glycosaminoglycans) and to heal articular surfaces.
- Glucosamine and chondroitin sulfate have been shown to reduce pain and inflammation and slow cartilage loss.
- Providing a full compliment of required nutritional factors helps chondrocytes to generate cartilage and other soft tissues.
- Amino acids - Research shows that providing amino acids (predominately glycine, proline and lysine) supports healthy collagen fiber formation.
- Micronutrients - Vitamin C, B6, B5, L-taurine, silica, zinc, iron, copper and alpha-ketoglutarate are examples of the micronutrients required for healthy collagen formation.

c) Phase III: Maximize Range of Motion

- Niacinamide & N-acetylcysteine
- Niacin and N-acetylcysteine (NAC) are known to interrupt the production of poly (ADP-ribose) synthetase, also known as PARS. Inhibiting PARS promotes healthy joint tissues, reduces minor pain and improves joint range of motion.



2) Nutritional Protocols

a) Inflammation and Pain:
- **Kaprex®** (loading dose 4 per day for 5 days). Wean off of medications no "cold turkey"
- Swelling: **Protrypsin®** (2 tablets 1-3 time daily)

b) Joint Stability and Soft Tissue Support:
- **Collagenics®**: (2 tablets 1x-3x daily)
- **Chondrocare®**: (2 tablets 3x daily)

c) Maximizing Range of Motion:
- **Alapars®** (1 tablet 3x daily)