

TeamJet Hawaii Marathon Clinic 2009 Newsletter

"We are different, in essence, from other men. If you want to win something, run 100 meters. If you want to experience something, run a marathon."

Emil Zatopek

This Weeks Workouts:

Tuesday: Hill repeats. These will help you develop some running strength that we can translate later to endurance and speed!!

Thursday: We will be increasing the distance of the speed intervals. As you get stronger these will get easier. The idea behind speed workouts is to "train hard and race easy!".

Sunday: 6:30am Botanical Gardens, 10 miles. See the TeamJet website for details!

<http://www.teamjethawaii.com/calendar.php>

On My Mind: Basic Nutrition

In this section I will cover some of the mineral/vitamin concerns with running distance. Next week I will cover energy and food requirements. If you have any questions please feel free to ask me!!

Essential Nutrients for Endurance Sports

Nutrient intake sufficient for the general population is not always sufficient for athletes. Calcium is needed to offset hormonal deficit and speed bone repair. Athletes lose more electrolytes like magnesium, potassium and sodium due to perspiration. Extra iron is needed when athletes become anemic, as they commonly do. Antioxidants like vitamin E can help protect muscle cells from oxidative damage. Since muscle tissue is broken down, more proteins are needed for repair. Some amino acids like glutamine can also help maintain the athlete's immune health.

Minerals

Calcium

More critical than any other nutrient for the athlete is calcium. In a survey of over 10,000 athletes male and female, age 7 - 50, less than half consumed 1000 mg. of calcium daily. Recommended dietary intake ranges from 1000 - 1500 mg./day.

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In female athletes, this is even a greater concern. Excessive training in young girls causes the hormonal declines that lead to amenorrhea. This hormonal decline also compromises bone formation possibly leading to "premature, irreversible osteoporosis." Recent findings have shown that male endurance athletes of all ages also experience hormonal deficit. Loss of testosterone in men can cause osteoporosis.

Athletes should diligently ingest 1200 - 1500 mg. of calcium daily from food and / or supplements.

Iron

For the casual athlete training under 4 hours per week, iron deficiency is no more of a concern than for a sedentary counterpart. For athletes, training aerobically for 6+ hours per week, iron deficient anemia is common. Whether or not iron should be supplemented is still controversial. Mild anemia (low hematocrit) is thought by some to be an adaptive response to training. Correcting a mildly depressed hematocrit in athletes of either gender does not benefit performance. However, female athletes who are unable to correct such mild anemia through dietary strategies, do benefit through supplementation.

Athletes have been shown to turn over iron stores more quickly than non-athletes do. Considering the severe neurologic effects of anemia on the young, children and teens engaging in rigorous sports should be counseled to assure adequate dietary iron.

Magnesium

Magnesium is an intracellular cation involved in post contractile muscular relaxation, ATP production from fatty acid oxidation, bone remineralization and diphosphatidyl glycerol (DPG) production. Low magnesium can acutely lead to early fatigue, nausea and muscle cramps. Chronic deficiencies can lead to osteoporosis risk and anemia.

Athletes are known to lose magnesium via sweat and urine. Athletes' diets are usually low in magnesium. Those on calorie restricted diets are especially prone to deficiencies.

Recommended intake for endurance athletes is 600 - 900 mg./day. Higher doses can cause diarrhea.

Potassium

Potassium is the main anion in intracellular fluid. It is lost through mainly sweat and urine during exercise. In a study of athletes running 40 minutes at 70 degrees Fahrenheit, potassium loss was estimated at 435 mg. / hour. The rate of potassium

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loss is approximately 200 mg./kg. of weight loss.

Potassium is released from inside the cells to the blood stream. Its serum levels elevate with exercise, possibly as an instigator of fatigue. This elevation is less in trained athletes and is reduced by carbohydrate intake. Potassium supplementation after short events (less than 2 hours), and during and after long events, is warranted. For post activity replacement, ~435 mg./ hour or 200 mg./kg. of weight loss should be ingested. As much as 150 mg. /hour during activity can be tolerated by most athletes.

Supplementation during training does increase markers of recovery, but will not aid performance minimally.

Sodium

For events lasting greater than 5 hours, especially those in hot weather, hyponatremia (dangerously low sodium) is a real concern. The largest group this applies to is first time/slower marathoners. Most organized event's aid stations offer salty snacks. If you are out for more than a few hours, especially on a warm day, consume salt from snacks and from fluid replacement beverages.

A prospective study was performed on 36 athletes during a 3-4 hour triathlon and 64 athletes at an Ironman race (9-15 hours). No athletes were hyponatremic following the shorter race, but 27% were hyponatremic following the Ironman. At the Ironman, an average of 17% of the participants required medical attention, most commonly due to hyponatremia.

Zinc

Both male and female athletes have shown to have decreases in serum zinc compared to sedentary individuals. Studies have correlated endurance exercise with periods of compromised immunity. Zinc depletion may be one of the mechanisms behind this.

Those who train without days off lose zinc even more quickly. This parallels cortisol elevations in chronic training. In a study of cyclists, zinc excretion and cortisol production were studied. Half of the group underwent intense training for two months, at which time, both groups were restudied. The exercising group showed an increase in zinc excretion proportionate to cortisol elevation. The control group showed no increase in zinc excretion or cortisol output. Cortisol elevation reflects metabolic stress and tissue catabolism.

The recommended dose of zinc for athletes is 30 - 60 mg. daily. Zinc picolinate or monomethionate are more easily tolerated.

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Protein/Amino Acids

Protein

The current recommended daily allowance (RDA) for protein is 60 mg. per day for adults (specifically 0.8 g/kg. body weight/day). This recommendation is based on information obtained from sedentary individuals. Recent studies indicate that protein needs are increased for those engaging in strenuous activity. This applies to both strength and endurance sports.

Endurance athletes need the additional proteins for different reasons than strength athletes. Endurance athletes primarily use protein for maintaining aerobic metabolism as opposed to the increased tissue repair needs in strength athletes. When intake is inadequate, the body sequesters the needed proteins from lean tissue giving overtrained endurance athletes a 'gaunt' appearance. Protein deficit also gives athletes poorer recovery times and delayed wound healing.

Research has recommended endurance athletes to consume about 1.2-1.4 g./kg./day of protein. For a 155 (~70 kg.) athlete, this would mean 85 - 100 grams per day. A minority of studies recommends as high as 2.0 g/kg./day.

We will cover other food requirements/caloric intake and protein/fat/carb. content in more detail another day, so stay tuned!!! As a quick reminder I would like to encourage everyone to bring water bottles to work-outs, as well as an after work-out snack (try to eat something within ½ hour after; during the stretching/yoga is ideal).

(References for all this data is available if you'd like the reading!)

You should never pass a water fountain nor be able to pass a washroom!! This will reduce fatigue and prevent injury as well.

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