Conversation Corner
With Neal Spruce

apex
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Pre-season Considerations for Winter Athletes

Nutrition

Being a football, baseball & basketball guy I don't know a lot about winter sports themselves, but I do know that generally football is played outdoors through the late fall and early winter when it can be quite cold. Basic nutrition recommendations are not designed around weather but around the type of activity. See the chart below for activity-specific nutrition and place your winter sport into the appropriate category. For example, cross country skiing would be more on the aerobic side and downhill may be more anaerobic, while alpine skiing may be a little of both. Hockey falls into the latter as well.

That stated, depending on the winter activity and location, there are food & drink considerations that may be important, especially for serious winter sports enthusiasts.

Energy/calorie requirements

For elite cross-country skiers whose sport involves not just typical arm and leg movements but also requires the torso muscles to be in play, energy needs may be greater than other aerobic endurance activities and can be as high as 35 kcal/LB/d (based on size) with carbohydrate needs between 3.5-5.5gms/LB/d.

Total energy expenditure is often increased in a cold, high altitude environment due to the increased weight of required clothing, shivering, and the clumsy way in which the body performs work while moving in a cold snowy environment. Shivering is a series of involuntary muscle contractions that are naturally initiated in order to help keep the body temperature where it needs to be for life functions; the act of shivering can consume up to 400 kcal/hr. Therefore, dressing warmly (including head wear as over 30% of body heat production can be lost through the head) is paramount to the prevention of wasting energy to the environment, thus saving valuable calories for an optimal training or activity outcome.

Vitamin and Mineral Status

Elite alpine and cross-country skiers are monitored regularly for iron status. Iron is the key mineral in the oxygen carrying blood that is so important to most all athletes. When iron stores are low, less oxygen gets to the working muscles, thereby significantly hampering performance.

Higher altitudes have less oxygen and therefore the goal is to create more hemoglobin levels and red cell mass (oxygen carrying blood cells) in order to shuttle all available oxygen, despite the lower atmospheric content. The ultimate outcome for any endurance athlete is to increase serum erythropoietin (EPO), hemoglobin and red blood cell mass to a maximum, which leads to the ability to optimize oxygen delivery and increase endurance performance. And, of course, injecting EPO is an Olympic no-no, but now you know why endurance athletes do it – whether in high altitude or not, the more EPO, the more oxygen carrying blood, the greater the performance.

Let's hope all you winter enthusiasts are still taking your Apex multiple vitamin & mineral formula—Apex was about the only company that left iron in the MVM formulas (now other companies are following suit since the overblown scare of iron overload or related heart issues has passed). As much as iron deficiency is probably more common than all other mineral deficiencies, no one should use a *singular* iron supplement unless testing or pregnancy demands it. The amount of iron contained in all Apex MVM formulas is safe and probably very important for the general population.

As long as mineral stores are kept to or near the maximum, by training in high altitudes over time the body will naturally increase its EPO and red blood cells, which is why athletes will exercise at higher altitude levels than where they will end up competing.

Fluids

Although athletes in cold temperatures do not sweat as much as their warm weather counterparts (all things equal sweat losses are 50% less), their fluid requirements for participating in extended bouts of activity can be just as high or higher. Cold temperatures and high altitudes can accelerate normal bodily fluid losses by increasing urinary output and respiratory water removal. That is, cold air contains less water than warm air, and as you inhale the body must warm the cold, less hydrated air by using fluids. This results in the body exhaling greater amounts of water than under temperate conditions.

Complicating things for the novice cold temperature exerciser or athlete is the fact that cold, high altitude conditions can blunt thirst mechanisms, resulting in involuntary dehydration; whereas elite athletes are made aware of this phenomenon and hydrate accordingly, using overall body weight as a daily guide.

Winter Appetite

The average person, including exercisers and athletes, may find themselves gaining weight during the winter. People often get hungrier in the winter or anytime they remain cold for extended periods. This phenomenon is not because the body burns or needs more calories due to training or living in the cold (in fact you can argue that in the overall seasonal picture most people burn less calories in the winter), but it's more of a natural response by the body to drive you to eat in order to keep your body temperature where it wants to be. A decrease in body temperature often leads to an increase in appetite because soon after you consume food the body generates 10% more heat, which is a result of the digestion and absorption process. Many of us have experienced this increase in body heat anytime of the year following a big meal – lots of food, lots of heat!

In support of "the temperature driven appetite" theory, exercising swimmers tend to lose less weight than runners, walkers etc., who may expend the same amount of calories simply because the prolonged exposure to cold water can dissipate more body heat than exercising in warmer temperatures. This condition may lead swimmers to consume more calories--not necessarily to solely raise body heat but to help build a layer of protective fat beneath the skin that will help insulate from the regular cold environment. In fact, the University of Florida found that men who exercised in cold water consumed 300 calories more the subsequent hour than men who performed the same exercise in warm water!

Notwithstanding the above, weight gain during the winter is most likely due to the weather restricting our normal movement/activities combined with the holiday festivities that increase our food intake.

Safety

I am definitely not an expert on winter sport safety but from a nutritional standpoint you should always be prepared for anything. For instance, if you are cross country skiing, hiking or camping you should always carry lower volume (size – less weight), higher energy (calorie dense) extra foods for emergencies in case of an accident, you get caught in a storm or wander off trail, all of which can keep you away from food longer than expected. Nutrition bars in the Apex Fit category and the Apex Breakfast Square are a perfect fit for your pockets or backpack and can supply all you need for quite a while. Additionally bring your cell phone and this time I won't mind if you use it – but of course there will probably be "no signal" – just like in the movies.

Have fun and we'll see you next month!

Neal

Sport	Carbohydrates	Protein	Fat
Aerobic	2.7 – 4.5 g/lb/day approx 55-75% of total caloric intake (TCI)	.7 - .9 g/lb/day approx 15-20% of TCI	remaining calories approx 10-25% of TCI
Anaerobic	2.3 –4.5 g/lb/day approx 45-60% of Total caloric intake (TCI)	.7 - .9 g/lb/day approx 15-25% of TCI	remaining calories approx 20-35% of TCI
Combination (both aerobic and anaerobic)	2.7 – 4.5 g/lb/day approx 55-65% of Total caloric intake (TCI)	.7 - .9 g/lb/day approx 15-25% of TCI	remaining calories approx 15-25% of TCI