

ATHLETES GUIDE TO NUT TRIJETORI JON OFFERING AN INFORMED CHOICE



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Introduction

There are two types of athletes in this world: those who think they know what optimal nutrition is, and those who actually do know what optimal nutrition is. The distinction between these two is that while the former may achieve great feats, they will have to work much harder than the latter, and they still may never reach their full potential. In today's world of science, it has become increasingly evident what an important role nutrition has in determining athletic performance. Indeed, if you want any chance of keeping up with your competitors, you'd better start taking nutrition seriously! Fortunately, you have just stumbled upon gold! For, within the next few pages, you will have a foundation on nutrition that can, and will, take your performance to new heights.

Defining and understanding the role of Macro and Micronutrients

Many athletes today will just consume food, without any idea of what they are even consuming, or even why they are consuming it. Guess work with your nutrition will not cut it, and may lead to under or over consumption of unnecessary calories.

Now the nutrients we get from food can be divided into two broad categories: macro and micronutrients. The former are nutrients needed in large amounts through diet and include proteins, carbohydrates, and fats. While the latter are nutrients needed in smaller amounts and include minerals and vitamins. The next few paragraphs will discuss what these are in detail, how you should get them through diet, and how much you should consume.

Proteins

As you are no doubt aware, proteins, which are composed of 20 amino acids, are the building blocks of muscles. In fact, studies indicate that over 80% of the anabolic (muscle building) response from a meal is the result of the protein content! Further, more and more research is coming out showing the benefits of a high protein diet including decreases in diseases such as diabetes, and cardiovascular disorders; as well as greater performance, lean body mass, recovery, and less fat.

Additional Factors 20%

Amino Acids 80%

Figure 1.0 Factors in a meal responsible for muscle protein synthesis

Yet, we have this wide chasm of recommendations between the RDA and the athletic population. The RDA for protein is 0.8 g/kg, while athletes are known to consume up to 10 times this amount! So who is right? Well, studies seem to suggest that it is probably somewhere in-between. Based on the research, it can be advised for athletes to consume about 1 gram of protein per pound of bodyweight, with no adverse effects, and a multitude of benefits. High quality sources of protein include whey, eggs, milk, and meats such as chicken and fish.

Summary: Protein is made up of 20 Amino Acids that repair and promote muscle growth. An Athlete should consume 1g of protein per pound of bodyweight (i.e. 180 lb Athlete should consume 180g of protein per day) from high quality sources such as eggs, milk, chicken, fish or whey protein.

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Carbohydrates

Carbohydrates are well documented as the power foods which help our bodies move. Classic research by David Costill and colleagues shows that endurance athletes who are depleted of carbohydrates greatly suffer in athletic performance.

However, there are numerous diets today which restrict, or even eliminate carbohydrates. Why is this? Primarily because of the anabolic hormone insulin. While insulin does promote muscle growth, it also is a powerful inhibitor of fat metabolism, and can increase fat storage. So where is the happy medium between optimal performance and maintaining a lean muscular body?

Research at the University of Illinois has proposed a carbohydrate threshold in which people who consume less than 150 grams of carbohydrates per day, and higher protein are significantly leaner and gain more muscle than higher carbohydrate, lower protein diets. Thus, for optimal leanness, we would advise consuming 150 grams of carbohydrates in the diet. However, whether this threshold rises for elite athletes is unknown. It is likely that endurance athletes can get away with a much higher amount of carbohydrates and still stay lean. It will also depend on your body type and metabolism – whether you are someone who is more or less prone to gain fat. We therefore advise that a range be used between 200-600 grams of carbohydrates daily for the elite athlete, depending on their goals and body type. Those who tend to gain fat may want to stay towards the lower end; while those who are naturally lean, may go towards the higher end.

The majority of your carbohydrates should come from foods high in dietary fiber that are slower digesting. This will minimize the insulin response and maintain your energy and satiety (duration of fullness between meals) much longer. The only exception would be after a long strenuous workout; during this time it would be wise to consume faster digesting carbohydrates such as simple sugars, or whole foods with minimal fiber content such as pasta. Quality slow digesting carbohydrates include: potatoes, oatmeal, whole grains, and fruits and vegetables.

Summary: Carbohydrates are well documented as the power foods which help our bodies move. While carbohydrates are important for performance, as well as recovery and muscle growth, over consumption of them can lead to fat gain through secretion of the hormone insulin. Research shows that keeping your carbohydrate intake below 150 grams daily will keep you leaner and healthier. However, elite athletes, particularly endurance athletes, likely require more carbohydrates, ranging from 200-600 grams daily. Those who tend to gain fat may want to stay towards the lower end; while those who are naturally lean, may go towards the higher end.

Fats

Fats are the ugly step child of our macronutrient buddies. Outcasts if you will. They have been purported to increase mortality, clog your arteries, and of course, make you fat! In reality, these claims are not supported by evidence. Contrary to this, many fats have actually been shown to improve indicators of health and increase fat loss and muscle growth. Indeed, fat plays a key role in body function including production of hormones which increase growth and support a positive affect (mood). They also play an important role in tissue repair and maintenance.

"Good fats" include monounsaturated fats (particularly olive oil) and polyunsaturated fats (particularly omega 3 fatty acids). Both of these fats are purported to promote a healthy heart and body. While saturated fats have commonly been considered "bad fats", there is little evidence actually supporting the claims that they increase risk for cardiovascular disease. Contrary, they are important for the production of anabolic hormones such as testosterone. While the majority of your fats should come from monounsaturated and polyunsaturated fats, don't be afraid to consume some saturated fats.

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Summary: While many have claimed consumption of fat leads to increase incidence of heart disease and even death, there is little support for these claims. On the contrary, consuming fat, particularly the right kinds of fats, can promote health and performance. The best kinds of fats are monounsaturated fats (particularly olive oil) and polyunsaturated fats (particularly omega 3 fatty acids); while saturated fats have commonly been considered "bad" fats, there is little evidence actually supporting the claims that they increase risk for cardiovascular disease. Contrary, they are important for the production of anabolic hormones such as testosterone. So don't be afraid to include some meat in your diet.

Lastly, while we do advocate moderate consumption of fats during the day – especially healthy fats – we strongly advise against "junk food" restaurants, which are not only loaded with saturated fat, but also sugar. Junk food is also extremely calorie dense, meaning you can eat thousands of calories of junk without even knowing it!

Vitamins and Minerals

Vitamins and minerals play integral roles in body functions which we often take for granted such as digestion, nutrient transport, and fluid regulation. While we clearly need to be consuming vitamins and minerals, overconsumption of them can be a serious issue, which results in many side effects. Further, there are virtually no studies which support mega doses of vitamins, including the much hailed prima donna vitamin C.

Without getting overcomplicated, in order to get your daily requirements of vitamins and minerals, consume plenty of greens, in addition to your daily intake of carbohydrates and proteins, and you should be fine. A multi-vitamin is likely unnecessary unless your food intake is very restricted or limited for one reason or another. Some sodium replenishment post workout would be advisable as well. Sodium helps regulate fluid volume, and will help replenish the water your lost during exercise, keeping your body hydrated. Calcium supplementation may also be necessary, as people are commonly deficient in this mineral.

Summary: Vitamins and minerals play integral roles in body functions which we often take for granted such as digestion, nutrient transport, and fluid regulation. With a properly balanced diet, you should be able to consume an adequate amount of vitamins and minerals without supplementation. The only supplements you may require are calcium, and sodium, particularly around your workouts for optimal hydration.

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Advanced Nutrition Questions

Optimal Meal Frequency

On one hand, we have the traditional diet of 3 square meals a day. And on the other hand, we have the athletic proposed diet of 6 or more meals a day. Which is right? Well, one way to think about it is how long do these nutrients last after a meal? If you are consuming a well balanced meal consisting of proteins, carbohydrates, and fats, then these types of meals may last 3-4 hours in the blood, providing your body with nutrients during that time span. So based on this, we would advise eating at least every 3-4 hours, or about 5-6 meals daily.

Nutrient Timing

"Grandad, it ain't what you eat, it depends when you eat it - that's how muscles grow!" - Michael J. Rennie

A flood of research has indicated that there is a short window of opportunity in which nutrients are used purely for growth, fuel, and replenishment; while fat gain is much less likely. These times are pre and post workout.

In brief, what the evidence shows is that 3 hours pre-workout, you should consume a slow digesting carbohydrate and regular source of protein for sustained energy. Within 30 minutes of your workout, you should spike plasma amino acids with a rapid digesting amino acid supplement. While post workout, you should consume a fast digesting whole protein such as whey protein, and fast digesting carbohydrates, along with a small amount of sodium (1/4 of a tablespoon) and a large amount of water (4 cups or more). There are specially formulated protein shakes with a blend of macro & micro nutrients that can supply the athlete with all these nutrients.

Effective and safe Dietary Supplements

People have often asked us, "I want to get serious with my training, so what kind of supplements should I look for, and what should I avoid?" Well, our response to this is, if you want to get serious about your training, then you should get serious about your diet, first. Therefore, before investing money into supplements, we strongly advise applying the correct dieting techniques discussed above; otherwise, your money will go to waste. Supplements are only a part of the equation, but if you do have everything else in place, they certainly can help. The following supplements may be advantageous to athletes:

Whey protein powder – this is a high quality, fast digesting protein powder well documented to support leanness, health, and performance.

Joint Support Supplements – there are some high quality joint support supplements which help strengthen cartilage and decrease inflammation. These can be vital for sustaining a long, health career.

Meal replacement powders or protein bars – these formulas can be a life saver, especially if you are in a rush and can't grab a whole meal. Having emergency meals like these around would be wise so you don't miss any meals.

Calcium – calcium is vital to bone health, but people are often deficient in this. You should get at least 1.5 grams of calcium daily, through a combination of diet and supplementation.

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Eating Considerations and Diet for Optimal Performance

Pre-Workout Nutrition

- Eating a meal 1-2 hours before
- Taking a supplement 15-45 mins before *Both depend on individual's metabolism

Pre-play meal should consist of:

- Fruit (bananas, oranges)
- Low to moderate GI (glycemic index) carbohydrate (brown rice, multi-grain bread/pumpernickel, whole grain bagel w/natural peanut butter, whole grain pasta, oatmeal)
- Protein (eggs, chicken, fish, tuna)
- ESA (essential fatty acid)

Post-Workout Nutrition

- Some nutrition should take place immediately following exercise or competition

*This is most easily accomplished by a shake because liquid absorbs faster; or snack bar. Not meant to be a full meal

- Larger meal should take place 1-1.5 hours after

Goals of Post-Workout Nutrition

- **1. Rapidly Replenish Glycogen Stores.** High GI carbohydrates to replace carbs you burned during exercise/play (potatoes, carrots)
- 2. Stop Protein Breakdown. Muscle fibers tear and break down during activity so protein is needed stop this and start muscle rebuild
- **3.** Increase Protein Synthesis (muscle growth or maintenance during intense stages of play/competition). Amino acids needed to assist proteins in helping muscles build and recover (BCAA's)

Post-workout meal (1-1.5 hours after)

- Purpose is to further aid the muscles in recovery and growth
- Low GI carb
- High protein
- Carb Examples: whole wheat pasta, whole wheat bread, sweet potatoes, brown rice, green vegetables
- Protein Examples: chicken breast, lean beef, fish, eggs, nuts, green vegetables

During Workout Nutrition

- If pre and post workout meals are planned efficiently the only thing that should be consumed during activity should be water. Extra protein or carbs can cause increase blood flow to the stomach which means less will go to the muscles during activity. This can also lead to and feeling of nausea.
- Proper hydration should also be started at least an hour before a workout. Should be a staple in a preworkout meal.
- A galloon a day is recommended (128 ounces) for athletes.

Sample meal by meal breakdown for entire day on the next page

Sample Meal Breakdown

Breakfast

- Fruit
- 2-3 eggs
- Whole grain toast/bagel

Snack

- Fruit
- Oatmeal
- Natural peanut butter

Lunch

- Fruit
- Whole grain pasta, bread, bagel
- Lean white meat for sandwhich
- Chicken, tuna
- Green salad mix (not iceburg)

Snack

- Fruit
- Eggs
- Vegetables
- Hummus
- Rice cakes w/natural peanut butter

Dinner

- Chicken
- Fish
- Lean beef with little fat
- Potatoes (lower GI, slowing burning and absorption rate)
- Nuts
- Brown rice
- Green vegetables

Snack

- Fruit
- Vegetables
- Hummus
- Rice cakes w/natural peanut butter
- Eggs

Questions? Visit www.TrueAPNutrition.com or contact Rob Rose – rrose@trueap.com