

# EVERYTHING YOU NEED TO KNOW ABOUT.... PROTEIN

## What is protein?

Next to water, protein is the most plentiful substance in the body – 45%. Muscles, skin, eyes, individual cells and your immune system are just a few of your body parts comprised primarily of protein. All protein contains 4 calories per gram.

Protein is the main building block of your body. It is essential that your entire body gets enough protein from food to ensure proper growth and maintenance.

## How does your body use protein from food?

Protein helps to maintain and replace the tissues in your body, and it's found in almost every living cell and fluid. Your muscles, organs and many of your hormones are made up of protein, and it is also used in the manufacturing of hemoglobin, the red blood cells that carry oxygen to your body. Protein is also used to manufacture antibodies that fight infection and disease and is integral to your body's blood clotting ability.

## How Much Protein Do You Need From High Protein Foods?

It has been shown in many studies that those who attempt to improve their health, lose fat and/or tone their muscles, will get the best results when they consume approximately **1 gram of protein per Kg of bodyweight a day.**

It's recommended that your diet should contain 25 to 35 percent protein for weight loss and between 20 to 25 percent protein for weight maintenance. In either situation, the protein in the food should be high quality.

Protein requires more energy to digest than other foods - helping you use more calories and therefore may help with weight loss.

Also, protein helps to preserve lean muscle tissue while you lose fat. If your body doesn't get enough protein, and the important essential amino acids on a daily basis, it will simply take the protein from existing muscle tissue. This isn't favourable!

Foods rich in protein also help to slow down the absorption of glucose into the bloodstream. This in turn reduces hunger by reducing insulin levels and making it easier for the body to burn fat. So make sure that every time you eat carbohydrate-rich foods you also eat a protein-rich food with it.

## What are amino acids?

Think of lego....proteins are chains of lego pieces (or amino acids). Simply put, amino acids are the building blocks of protein strands. Your body manufactures 13 nonessential amino acids, which aren't available from food. For the body to process protein properly, the foods that you eat must contain the 9 essential amino acids that are available only from dietary sources.

**9 essential amino acids:** (must come from the diet)

Phenylalanine	Lysine	Isoleucine
Methionine	Threonine	Leucine
Tryptophane	Valine	Histadine

**12 nonessential amino acids:** (produced in the body)

Alanine	Asparagine	Aspartic acid
Cysteine	Glutamic acid	Glycine
Proline	Glutamine	Arginine
Cystine	Serine	Tyrosine

**There are two types of proteins:** Proteins are considered either complete proteins (which supply enough essential amino acids) or incomplete proteins (which lack adequate essential amino acids). Meat, eggs and dairy products are considered complete proteins, but vegetables, beans and other plant products are considered incomplete proteins. However, some incomplete proteins can be combined to create a complete protein - rice and beans, peanut butter and jelly, and corn and beans are examples of complete-protein meals.

- a) **HIGH QUALITY PROTEIN** = complete
  - contain ALL of the nine essential amino acids in proper proportions
  - best form because they are absorbed more efficiently
  - EGG = best composition
  - Other sources: meat, poultry, fish, milk, yogurt, cheese
  
- b) **LOW QUALITY PROTEIN** = incomplete
  - missing one or more essential amino acids or have unbalanced amounts of amino acids
  - grains, nuts, seeds, legumes (beans, peas, lentils)

**Complete Proteins – excellent sources**

- whey (supplement found in health food stores)
- chicken breast
- turkey breast
- salmon
- tuna
- cottage cheese
- lean ground turkey, chicken or beef
- haddock
- round steak
- swordfish
- sirloin steak
- quinoa
- eggs
- pork
- crab
- lobster
- shrimp
- buffalo

**COMPLIMENTARY PROTEINS**

*Complementary proteins* are two incomplete proteins in a food that compensate for one another's shortfalls when combined.

Vegetable proteins (grains, legumes, nuts, seeds, and other vegetables) are *incomplete proteins* because they are missing, or do not have enough of, one or more of the essential amino acids. That's not such a big deal. You already know that grains and legumes are rich in

complex carbohydrate and fiber. Now you learn that they can be an excellent source of protein as well; it just takes a little bit of work and know-how. By combining foods from two or more of the following columns—voilà—you create a self-made complete protein. You see, the foods in one column may be missing amino acids that are present in the foods listed in another column. When eaten in combination, at the same meal (or separately throughout the day), your body receives all nine essential amino acids.

You can combine the following vegetable proteins to make complete proteins.

### Sources of Complementary Proteins

<i><b>Grains</b></i>	<i><b>Legumes</b></i>	<i><b>Nuts/Seeds</b></i>
Barley	Beans	Sesame seeds
Bulgur	Lentils	Sunflower seeds
Cornmeal	Dried peas	Walnuts
Oats	Peanuts	Cashews
Buckwheat	Chickpeas	Pumpkin seeds
Rice	Soy products	Other nuts
Pasta		
Rye		
Wheat		

### Combinations to Create Complete Proteins

<i><b>Combine Grains and Legumes</b></i>	<i><b>Combine Grains and Nuts/Seeds</b></i>	<i><b>Combine Legumes and Nuts/Seeds</b></i>
Peanut butter on whole-wheat bread	Whole-wheat bun with sesame seeds	Humus (chickpeas and sesame paste)
Rice and beans	Breadsticks rolled with sesame seeds	Trail mix (peanuts and sunflower seeds)
Bean soup and a roll	Rice cakes with peanut butter	
Salad with chickpeas and cornbread		
Tofu-vegetable stir-fry over rice or pasta		
Vegetarian chili with bread		

Also, by adding small amounts of animal protein (meat, eggs, milk, or cheese) to any of the groups, you create a complete protein. Here are some examples:

- Casserole with a small amount of meat
- Salad with beans and a hard cooked egg
- Yogurt with granola
- Bean and cheese burrito
- Macaroni and cheese
- Oatmeal with milk

## What Role does Protein Play in Special Diets?

Although many good sources of protein are found in meat or animal products, vegetarians can still consume adequate amounts of protein. Vegetarians who eat dairy products and eggs can still choose from a variety of plant and animal protein sources. Vegans who eat only plant sources of food can still rely on tofu, soy products, oats, beans, lentils and peanut butter for protein.

People who eat too much protein may be at risk for high cholesterol or gout, a joint disorder. High-protein diets, such as the Atkins Diet and Protein Power, have also been implicated in kidney problems because of the extra effort the body must expend to process large amounts of protein. High-protein diets may also be high in fat and may lead to heart disease, according to the American Heart Association.

### Summary – We need proteins to:

- a) grow and repair of body tissues – protein provides the structural matrix for many body tissues including muscles, tendons, ligaments, skin, hair and nails.
- b) increase caloric expenditure (ability to burn calories)
- c) decrease fat storage
- d) suppress appetite until the next meal

### Exercise AND Protein: MYTH of the DAY

“Exercising on an empty stomach is the most effective way for all to lose unwanted body fat”

WRONG: Exercising on an empty stomach is more detrimental than beneficial. Your proteins will be broken down once your muscle glycogen (carbohydrate) is all used up! This defeats the purpose as we need our proteins for calorie burning and fat loss!

# Healthy Choices for Meals and Snacks

**MEALS:** Choose one item from each column.

**SNACKS:** Choose one item from either carbohydrate column and one from the protein column.

Starchy Carbohydrates	Fibrous Carbohydrates	Proteins
100% Whole Wheat Bread	<b>Most Vegetables:</b>	1% or Fat Free Cottage Cheese
Stone-Ground Bread	Choose darker colors more often:	Low Fat Cheese (20% or less milk fat)
Whole Wheat Wraps	Asparagus/Broccoli/Brussels Sprouts/Beets	Almonds, Walnuts, Hazelnuts, Soy Nuts
All Beans (canned or dried)	Carrots/Cucumber/Cabbage	Peanut Butter (all natural is best)
Cereals:	Peppers/Pickles/Peas	1%, Skim or Soy Milk
Kashi Go-Lean	Romain/Radishes/Spinach//Tomatoe/Zucchini	Fruit Yogurt – fat & sugar free
All-Bran	<b>Most Fruits:</b>	Fish (salmon, tuna, sole, seafood, etc.)
Fibre First	Apples	Skinless or Ground Turkey
Oat Bran	Bananas	Skinless or Ground Chicken
Oatmeal (not instant packs)	Blueberries/Blackberries/Raspberries	X-Lean Beef (sirloin, flank, inside round)
Whole Grain Crackers	Any type of Melon	Deli: Oven Roasted Chicken or Turkey
Brown or Wild Rice	Lemons	Veal
Whole Wheat or Kamut Pasta	Grapefruit	Back Bacon
Quinoa	Grapes	Legumes
Corn	Cherries	Omega 3 Eggs
Sweet Potatoes/Yams	Oranges	Tofu
Fruit Yogurt (fat & sugar free)	Peaches/Plums	Breyers Premium Fat Free Ice Cream
	Strawberries	Nestle's Legend No Added Sugar

Drink water every time you eat, before, during and after exercise: at least 8 glasses a day.

For every glass/cup of caffeine or sugar containing beverages you drink, drink an extra glass of water.

# Reference Guide

\*\* Each time you eat a carbohydrate, eat protein with it (and vice versa).

\*\* limit the times you eat out!

\*\* pack your lunch and snacks every evening for the next day - be sure you take the time to do this!

## **BREAKFAST OPTIONS:**

- 1 cup cereal (high fibre i.e.: bran flakes, Kashi Go Lean, Natures Path, Fibre One, etc.) and 1% or skim milk
- 1-2 slices whole grain toast and natural peanut or almond butter
- one whole wheat English muffin or wrap or ½ a whole grain bagel and all natural peanut or almond butter or light cream cheese
- 1-2 egg/s on whole grain product (toast, bagel, wrap, English muffin)
- one fruit and ¾ cup yogurt
- oatmeal with cut up apples, a sprinkle of cinnamon or brown sugar or peanut butter

## **LUNCH GUIDELINES:**

- sandwich or wrap with lean ham, turkey, chicken, tuna, salmon or egg AND 1 cup raw vegetables
- bowl of soup and sandwich/wrap
- bowl of homemade chilli
- salad with protein on top (chicken, chick peas, low-fat cheese, fish, lean ham, nuts, etc...)
- subs – with lean meat, lots of vegetables and whole grain sub bun (no sauces – just mustard)

## **SNACK / small meal OPTIONS:**

- ONE fruit and yogurt (or, yogurt on its own)
- ONE fruit and granola bar (Kashi or Nature Valley)
- hard boiled egg and ONE slice whole grain toast or ½ of a whole wheat English muffin
- ONE fruit or 1 cup of raw veggies and cheese (one BabyBel Light or Skinny Cow Light OR ½ cup of 1% cottage cheese)
- ONE fruit or 1 cup of raw veggies and 8-10 almonds/walnuts or natural peanut or almond butter
- Whole grain crackers and low-fat cream cheese or natural peanut or almond butter
- Kelloggs Oat-bran bar, Kashi, or Nature Valley Chewy Granola Bar & a glass of 1% or skim milk
- 1/2 whole wheat bagel with light cream cheese or natural peanut/almond butter
- Soy nuts can be eaten on their own (carb & protein) 1/4 cup
- 1/2 cup Mixed beans (bean medley in can – drained) (carb & protein) these are great on their own, in salads or soups

## **DINNER GUIDELINES:**

- fish, chicken, steak, pork, (lean meats are best) with vegetables and with either small potato, ½ brown or basmati rice, or 1 cup whole wheat, rice or kamut pasta
- whole wheat, kamut or brown rice pasta dish with protein on top (chicken, pork, fish, light feta, etc...) and lots of vegetables (primavera of sorts)
- any lunch idea is fine for dinners too
- Stir Frys with lots of veggies, water chestnuts, chicken, lean beef, or shrimp/scallops

## **WHAT FOOD TO KEEP IN A FRIDGE AT WORK (just in case):**

- a loaf of whole grain bread, wraps OR a sleeve of English muffins
- a jar of natural peanut or almond butter
- fresh fruit and raw veggies
- yogurt
- your lunch (to keep it fresh)
- Kashi, Nature Valley Granola Bars or All-Bran bars

## **FOODS FOR THE ROAD**

- fruit, Kashi granola bars (won't melt!), trail mix (make your own!)
- box of whole grain crackers, mixed nuts

# Protein Intake Log Sheet

Every gram of protein contains 4 calories

Time: \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

Day	Breakfast		Morn. Snack		Lunch		Aft. Snack		Supper		Total Grams of Protein
	Food	Grams of Protein	Food	Grams of Protein	Food	Grams of Protein	Food	Grams of Protein	Food	Grams of Protein	
MON											
TUES											
WED											
THURS											
FRI											
SAT											
SUN											

Out of your total calories per day, 20-25% should come from protein.

Body Weight \_\_\_\_\_ lbs divided by 2.2 = \_\_\_\_\_ kg x 1 = \_\_\_\_\_ grams of protein/day