Last month, we introduced proteins, how much different individuals need, sources, serving sizes, and snack/meal ideas. Although food is your best source of protein, many people turn to protein powders for convenience and amino acid profiles for specific muscle building and recovery needs. Amino acids are the building blocks of protein. Our bodies are capable of producing some of them while some must be obtained through food (called essential amino acids - EAA). Some are particularly important in stimulating protein synthesis, muscle growth, repair and maintenance, especially Leucine, one of the branched chain amino acids (BCAA). If you decide to supplement with a powder – use our handy guide below to look at the differences:

<table>
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<th>PROTEIN POWDER</th>
<th>AMINO ACIDS &amp; ABSORBABILITY/DELIVERY</th>
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| Whey (from milk) Concentrate / Isolate / Hydrolysate | • Complete protein (all essential amino acids present)  
                                      • High in leucine, the powerhouse of the 3 essential branch chain amino acids in protein synthesis and reducing muscle breakdown |
| Casein (from milk)           | • High in glutamine – promotes muscle growth and reduces muscle breakdown  
                                      • Slow and steady release of amino acids |
| Goat Milk                    | • Easily and rapidly digested and absorbed                                                          |
| Soy - Concentrate/Isolate / Hydrolysate | • Has same muscle-building amino acids as whey but about half the leucine content                   |
| Egg                          | • High quality; absorbability between fast-digesting whey and slow-digesting casein                 |
| Rice & Pea Combined          | • Pea protein is rich in BCAA’s and in arginine and glutamic acid which support physical exertion and recovery |

Best taken pre- and post-workout and/or first thing in the morning | Best taken before bedtime or at snack/meal due to slow release | Best taken pre- and post-workout


**What’s the difference between isolates, concentrates and hydrolysates?**

**Concentrates** are 80% protein while **isolates** are at least 90%, since more of the carbohydrates, fat and lactose (in whey only), have been removed. Concentrates are the most economical and nutritionally sufficient if you do not mind the extra carbohydrates and are not lactose-intolerant.

**Hydrolysates** are concentrates or isolates broken down to amino acids, which are absorbed and digested rapidly. Hydrolysates taste bitter, are more expensive and are only minimally more digestible.

**I am a competitive athlete and for tournaments I need fast recovery between games. What’s the best protein source?**

Whey protein concentrate would have the most leucine and the fastest delivery to the muscle. Remember to include 20g of protein and at least 60g of carbs. Keep in mind chocolate milk is an inexpensive alternative to whey protein powder. Milk naturally contains both Whey and Casein.

**Why is it best to take casein protein source at bedtime?** Because of its slow release, research has shown that taking 20-40g of a high quality liquid casein protein source before bed stimulates protein synthesis and suppresses protein breakdown during sleep, which is great for recovery in athletes or older individuals who are trying to maintain muscle mass as they age.

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**Fluffy Golden Protein Pancakes**

Yield: 1 svg: Approx 150 cals; 35 g protein; 0 g fat; carb 15g if add oats  
- ¹/₄ cup pasteurized liquid egg whites  
- ½ scoop protein powder ~13 g protein; fat and carb will vary  
- ½ tsp baking powder

Optional: ¼ cup (or more) oats, vanilla extract, cinnamon, cocoa powder.

Combine ingredients and pour into small fry pan sprayed with cooking spray. Cook both sides on medium heat until fluffy and golden.

Top with fruit, cocoa or cinnamon, nuts/nut butter, or light syrup etc if desired – be creative!