

# CHAPTER 1

## Nutritional Supplements

**Nutritional supplements are the products used to improve the diet.** These products are developed to provide essential nutrients that may otherwise not be consumed in sufficient quantities in the food like proteins, vitamins, minerals, enzymes and other nutritional substances.

**These products are usually available in the form of powder, capsules, tablets, pills, liquid or in other forms.**

Some of these products also act as “antioxidants”. Antioxidants are natural substances in food that might help to protect you from some diseases. Foods like “Beta-Carotene, Selenium, Vitamin C & E, etc.

### Are These Nutritional Supplements Safe?

The nutritional supplement products must have been “**manufactured under the specific quality standards**” set by the U.S. (FDA), FSSAI or FOSCO (India), or that particular Food and Drug controlling authorities of respected countries where the product was manufactured. If these products are manufactured according to the norms then they must guarantee that the supplement facts on the label are accurate and that the container holds what it says it does.

**The supplement that seemed to help your neighbor, friend or relative might not work for you, hence purchasing it with “checking the science, your body type and according to your desired fitness goal”.**

**Some products are also available with “Product Testing Lab Reports”**

People take dietary supplements for a number of reasons, including

1. Maintain their general health
2. **Improving their performance activity (for strength, endurance, flexibility, growth and recovery)**
3. Improving mental performance.
4. Providing immune system support.

**Steroids are unethical practices which are used for performance enhancing activity, These steroids are majorly banned in sports areas and hence it do not come under the nutritional supplement category.**

### Categories of Nutritional Supplements

Generally it can differentiate in between two categories

**A. Essential Supplements :** Nutritional products having essential nutrients which the human body is not able to produce, but requires in performing intense activities like sports & fitness.

**A. Conditionally Essential Supplements :** Nutritional products having nutrients which the human body is able to produce, but requires in excess quantities in performing intense activities like sports & fitness.

# Essential Nutritional Supplements

## CHAPTER 2

### MULTIVITAMINS

**Multivitamins** - Supplements containing three or more vitamins and minerals that do not include herbs, hormones, or steroids. All the doses are below the tolerable upper intake level means they should be in the level of RDA. **Multivitamins basically help to bridge some nutrient gaps, so you can utilize the complete amount of nutrients you intake.**

Multivitamin supplements may have almost **All Essential vitamins** (Vit A, B, C, D & K), **Macrominerals** (calcium, phosphorus, magnesium, sodium, potassium, chloride and sulfur), and **Trace minerals ingredients** (iron, manganese, copper, iodine, zinc, cobalt, fluoride and selenium).

**It may be better to take “Multivitamins” daily in the morning with an empty stomach.**

#### Benefits of Multivitamins

1. Increase energy level & Boost the immune system (Digestion & Absorption)
2. Keeps organs healthy & Helps in producing various types of hormones
3. Maintains skeletal & cardiovascular muscles strength.
4. Keeps bones and teeth strong
5. Improves brain function. Reduce stress and depression
6. Help in releasing various types of enzymes
7. Beneficial in prevention of various types of diseases.

## CHAPTER 3

### OMEGA 3 (FISH OIL)

**Omega 3** - It is also called **Omega 3 Fish Oil**. It contains 3 polyunsaturated fatty acids. The term “polyunsaturated” refers to their chemical structure, as “poly” means many and “unsaturated” refers to double bonds. Together they mean that Omega 3 fatty acids have many double bonds. The type of fat your body is not able to make, but it is very essential fat hence required to consume in supplementation.

**It may be better to take “OMEGA 3” supplements daily in the night before going to bed.**

**Suggested dose is not more than 3g per day of EPA & DHA combined.**

**Alpha Linolenic Acid, EPA (Eicosapentaenoic Acid), & DHA (Docosahexaenoic Acid)**

### **Benefits of Omega 3**

1. Reduce symptoms of depression, Improving heart and mental health.
2. Decreasing liver fat, it also improves brain development and its function.
3. Slowing the development of plaque in the arteries, reduces the inflammation.
4. Reduces the chance of abnormal heart rhythm & likelihood of heart attack and stroke.

## **CHAPTER 4**

### **WHEY PROTEIN BLENDS**

**Whey protein blends** - If any one is not able to get enough protein through food sources (meals) then these supplements are beneficial to consume to get an adequate amount of protein (Amino Acids) needs of the body.

#### **Benefits of Protein Supplements**

1. Protein helps to Build Muscle & Maintain Muscle Mass.
2. It Repairs & generates Muscle Tissues. (Stem Cells & Satellite Cells).
3. Making various types of Enzymes and Hormones.
4. Sometimes it is also used as a backup energy source. (Gluconeogenesis)

#### **Sources of Protein Powders (Dietary Supplement)**

**A. Whey Protein Powder** - Whey protein is one of the primary proteins found in dairy products; it's a by-product of the cheese making process. Whey protein provides substantial amounts of the essential amino acids that are needed to carry out the functions that the proteins perform in the body.

#### **THREE TYPES OF WHEY PROTEINS**

**Whey Protein Concentrate** - WPC contains some levels of carbohydrates (Lactose) & Fats. The percentage of protein in WPC depends on how concentrated it is. Concentration levels tend to have in-between 30% to 90%

**Whey Protein Isolate** - WPI is further processed to remove all the fat and lactose. WPI is usually at 90% of protein concentration.

**Whey Protein Hydrolysed** - WPH is considered to be the "Pre-digested" form of whey protein. It has already undergone a partial "Hydrolysis Process" Hydrolysis is the process necessary for the body to digest and absorb protein.

**24gm Protein to 30gm Serving Size is considered identical formulation.**

**It may be better to take “Whey Protein” Supplement daily after your workout sessions.**

**The Biological & Bioavailable value entirely depends upon which source of whey protein is used in the product. WPH is the best source followed by WPI & then WPC.**

**B. Casein Protein Powder** - Casein is a slow- digesting dairy protein. It releases amino acids slowly, so people often take it before going to bed to help with recovery and reduce muscle breakdown while they sleep. It prevents the body from entering a catabolic state.

**It may be better to take a “Casein Protein” Supplement daily in the night before going to bed.**

**C. Plant Based Protein** - Grains, Legumes and Seeds are typical sources of plant based proteins. It is also called “**Vegan protein**”. Pea, Brown Rice, Hemp and Soya are the common source of plant based protein powders.

**It may be better to take “Plant Protein” Supplement daily after your workout sessions.**

**D. Egg White Protein Powder** - This powder is made from dried egg whites.

**It may be better to take an “Egg Protein” Supplement daily after your workout sessions.**

## **CHAPTER 5**

### **MASS GAINERS**

**Mass Gainers** - Supplements containing protein sources like Whey, Milk, Soya, Casein, etc. These **sources of proteins** are generally **combined with Simple carbohydrates** (Sucrose, Maltose, Corn, etc) as **well as Complex carbohydrates** (Oat Fibers, Waxy Maize, etc).

**If any one is not able to get enough calories from food sources (meals) then these supplements are beneficial to consume to get an adequate amount of calorie needs of the body.**

**It may be better to take a “Mass Gainer” Supplement daily after your workout sessions.**

**Muscle Mass Gainer Powder – Protein to carbs ratio (1:7) (1:5) (1:4) & (1:3)**

These ratio formulations are recommended according to the fitness goals.

**Various Protein Bars & Energy Drinks are also useful.**

## Benefits of Mass Gainer Supplements

1. It helps in maintaining muscle mass.
2. It provides fuel to generate glucose to create ATP.
3. It helps in gaining weight & muscle mass of the body.
4. Fulfills an adequate amount of calorie needs.

## CHAPTER 6

### BCAAs (Branch Chain Amino Acids)

**BCAAs** - Group of 3 essential amino acids L-Leucine, L- Isoleucine and L-Valine are called BCAAs ( Branched Chain Amino Acids) that are metabolized by the body and used as sources of muscle energy.

It may be better to take “BCAAs” Supplement daily before or in between your workout sessions.

## Benefits of Branched-Chain Amino Acids

- Bring on muscle growth
- Ease muscle soreness
- Feel less exercise fatigue
- Prevent muscle wasting
- Boost your appetite if you're malnourished or have cancer
- Ease symptoms of hepatic encephalopathy due to cirrhosis
- Protect people with cirrhosis from getting liver cancer
- Treat certain brain disorders
- Improve mental function

## CHAPTER 7

### CREATINE

**Creatine** - Creatine is a substance that is found naturally in muscle cells. It helps your muscles to produce energy (ATP) during a heavy lifting or high intensity exercise schedule. On workout days, research

shows that it may be better to take creatine shortly before or after your intense exercise schedule.

**It may be better to take “Creatine” Supplement daily before your workout sessions only.**

### **Benefits of Creatine Supplements**

1. It improves strength & helps the muscle to recover more quickly during exercise.
2. It helps to increase lean muscle mass.
3. It helps the athlete to improve athletic performance.

## **CHAPTER 8**

### **ARGININE**

**Arginine** - L-Arginine is an conditionally essential amino acid that helps the body to build protein synthesis. Your body usually makes all the L- Arginine it needs, but if you are doing any intense physical activity then your body needs additional supply of L-Arginine.

**It may be better to take “Arginine” Supplement daily before & after your workout sessions.**

### **Benefits of L-Arginine Supplements**

1. Increases blood flow which increases your energy level.
2. It opens blood vessels which help to reach Nitric Oxide into the muscle cells.

## **CHAPTER 9**

### **L- CARNITINE**

**L- Carnitine** - Carnitine is a substance that is found naturally in muscle cells. It is mainly involved in boosting your body's metabolic activity. It is a Vitamin-like Amino Acid nutrient.

## **Benefits of L- Carnitine Supplements**

1. Carnitine transports long chain fatty acids into mitochondria of the cell for energy production.
2. It helps to convert fat into energy.
3. Best fat burner which supports weight loss.

## **Conditionally Essential Nutritional Supplements**

### **CHAPTER 10**

#### **EAA's**

**EAA's "Essential Amino Acids Fuel the Muscle Protein Synthesis that allows your body to perform, recover and grow. Research has shown that supplementing with Essential Amino Acids pre-workout can increase your body's Anabolic (Muscle Building) response to exercise!"** Essential Amino Acid Supplements are made of specific Amino Acids that are considered Essential. Out of the 20 Amino Acids, 9 are considered as Essential. Those are **Leucine, Isoleucine, Valine, Lysine, Methionine, Phenylalanine, Threonine, Histidine and Tryptophan**. Each amino acid is separately, or in combination responsible for various functions in your body.

We require Amino Acids for all sorts of important reasons and while our bodies can manufacture some amino acids on its own, there are others that it cannot. Essential Amino Acids are those Amino Acids that our bodies cannot make and that we; therefore, need to consume through foods, supplements or both.

## **Benefits of EAA Supplement**

1. Essential Amino Acids Fuel Muscle Protein Synthesis
2. Improve your Anabolic Exercise Response
3. Create a positive protein balance and result in a muscle building (anabolic) state
4. Allows you to recover and build muscle more easily.

## CHAPTER 11

### GLUTAMINE

**Glutamine** - Supplement containing three or more vitamins and minerals. Glutamine is a type of amino acid. It's produced in the muscles and helps your body with a wide range of functions. Glutamine is actually the most abundant amino acid in the body, and we usually get all we need from what our body produces and from what we eat. There are actually two types of glutamine: L-glutamine and D-glutamine. It's thought that L-glutamine is the most important for cell function and many more bodily functions. Most of the glutamine supplements you see on the shelves are L-glutamine for this reason.

#### Benefits of Glutamine Supplements

1. It improves strength & helps the muscle to recover more quickly during exercise.
2. Improves exercise performance and helps to gain muscle.

## CHAPTER 12

### Energy Drink

## CHAPTER 13

### PRE-WORKOUTS

**Fat cutter** - Supplement containing three or more vitamins and minerals

## CHAPTER 14

### FAT CUTTER / FAT BURN

**Pre-workouts** - Supplement containing three or more vitamins and minerals

## CHAPTER 15

### GLUTATHIONE

**Glutathione** - Supplement containing

## CHAPTER 16

### COLLAGEN



**Collagen** - Supplement containing three or more vitamins and minerals

## CHAPTER 17

### TEST BOOSTERS

**Test boosters** - Supplement containing three or more vitamins and minerals

## CHAPTER 18

### ZMA

**ZMA** - Supplement containing three or more vitamins and minerals

## CHAPTER 19

### CCM

**CCM** - Supplement containing three or more vitamins and minerals

## CHAPTER 20

### CLA

**CLA** - Supplement containing three or more vitamins and minerals

## CHAPTER 21

### HERBS EXTRACTS

**Herbs extracts** - Supplement containing three or more vitamins and minerals