



## SPORTS DRINKS

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The relationship between exercise and the level of fluids present in the body is as important as any to effective athletic performance. The intensity and duration of the exercise are variables to be considered on the exercise side of the equation. Factors such as heat, humidity, physical illness, all substances ingested by the athlete prior to the event, and the types of fluids consumed during competition will also impact on this relationship. Fluid replacement may involve a number of distinct products—water will be the common component of any exercise fluid.

Exercise by its nature requires the body to generate energy to perform the required movements. Energy is produced by the body in one of three specific systems: the aerobic, the anaerobic lactic, and the anaerobic alactic systems. Each of these processes involves the cardiovascular system & the network of blood vessels. Blood is the transportation system within which the raw material for human energy-producing fuel is carried. The fluid component of blood is plasma is 90% water by volume. The maintenance of this level in the blood plasma is therefore essential to the ability of the body to produce energy. When the plasma loses some of its water volume, it does not move as quickly through the blood vessels, and it tends to coagulate more readily. The minerals essential to a variety of exercise functions, such as sodium, potassium, and calcium are all dependent upon the cardiovascular system to function properly.

The connection between practice and the amount of liquids present in the body is as significant as any to a viable athletic execution. The force and span of the activity are factors to be considered on the activity side of the condition. Factors, for example, heat, moistness, physical

disease, all substances ingested by the competitor before the occasion, and the sorts of liquids expended during competition or practice will likewise have a affect on this relationship. Liquid substitution may include various items—water will be the main ingredient of any exercise fluid.

Exercise by its nature requires the body to generate energy to perform the required movements. Energy is produced by the body in one of three specific systems: the aerobic, the anaerobic lactic, and the anaerobic alactic systems.. Every one of these procedures includes the cardiovascular framework and the system of veins. Blood is the transportation framework inside which the crude material for human vitality delivering fuel is conveyed. The liquid segment of blood in plasma is 90% water by volume. The maintenance of this level in the blood plasma is therefore essential to the ability of the body to produce energy. At the point when the plasma loses a portion of its water volume, it doesn't move as fast through the veins, and it will in general coagulate all the more promptly. The minerals essential to a variety of exercise functions, such as sodium , potassium, and calcium are all dependent upon the cardiovascular system to function properly.

Fluid loss happens because of sweat and is the essential methods by which the liquid inside the body is drained during exercise. Other mechanisms through which fluid loss takes place is removal of toxins from the body as urine.

Fluid loss as low as 2% of complete body weight hinders temperature guideline and diminishes continuance limit and high-impact execution. More elevated levels of drying out weaken alertness, sharpness, strength and perseverance, physical work limit, and increment dangers for heat injury.

The normal individual will just experience thirst after the body has lost 500 ml of liquid, or over 10% of the measure of water in blood plasma. A huge diminishing in execution results when fluid loss is equivalent to 1-2% of all the body weight. It is thus that competitors execute hydration methodologies that incorporate the utilization of proper liquids previously, during, and in the wake of practice or competition

## HOW TO ESTIMATE FLUID LOSS IN THE BODY

- Working out your sweat rate
- Record your nude pre-training weight (in kg)
- Record your nude post-training weight.
- Opt for a 30- or 60-minute session, during which you don't consume fluid.
- Subtract your post-training weight from pre-training weight to work out the weight lost, and multiply by 1,000 to convert to grams.
- The amount you lost in grams is equal to the amount of fluid you lost during that session. If you did a 30-minute session, multiply by two to get your ml per hour figure.
- This is the amount you should aim to consume in subsequent sessions.

### WHAT U LOOSE OUT IN SWEAT

The electrolyte composition of sweat is variable but comprises of the following components:

Sodium ,Potassium ,Calcium ,Magnesium ,Chloride ,Bicarbonate ,Phosphate ,Sulphate .

A litre of sweat typically contains 0.02g Calcium, 0.05g Magnesium, 1.15g Sodium, 0.23g Potassium and 1.48g Chloride. This composition will vary from person to person.

### HOW DO I REPLCE MY LOST FUID CONTENT.

Think to drink. Train to drink. Satisfactory hydration postpones exhaustion and gets the competitors ready to perform well. Since thirst is blunted by serious exercise and liquid balance is basic for ideal athletic execution, competitors need to prepare themselves to consume liquids previously, during, and after exercise. Time and practice are required to train the competitors to build the usage of huge volumes of liquid. Planning liquid admission for the duration of the day is particularly significant during times of overwhelming preparing and various instructional courses every day. Sports Drinks contain explicit suggestions with respect to oral rehydration liquids.

## WHAT IS A SPORTS DRINK

A sports drink is a refreshment intended to help competitors rehydrate those who are exhausted in the wake of preparing or competition. Electrolyte replacement promotes proper rehydration, which is important in delaying the onset of fatigue during exercise. As the primary fuel utilized by exercising muscle, carbohydrates are important in maintaining exercise and sport performance. Drinking fluids during exercise also reduces the increase in body temperature and the amount of stress on the cardiovascular system, especially important when exercising in hot environments.

### What to consume ? WATER OR SPORTS DRINK

Consumption of excessive amounts of water can cause water intoxication a potentially fatal imbalance of electrolytes in the body. It might occur, for example, during intense exercise when heavy sweating removes water and electrolytes from the body, but only large quantities of water are consumed to replace what has been lost. The resulting low concentration of electrolytes adversely affect central nervous system function.

Since that is the case, the athlete must rely on his own knowledge of what is a sports drink and what a properly formulated sports drink should contain. FIRST THING IS to identify the desired glycemic response. The body will immediately respond to the instructions it receives via the glycemic response and nutritional-dynamics of the drink you select. The object is to get your body to respond to the biochemical instructions you give it. You are actually targeting a specific biochemical reaction.

### Category Glycemic Response Required---

I - Low: Use a low glycemic sports drink

II - Moderate: Use a mixture of low and moderately-high glycemic sports drink

III - High: Use a high glycemic sports drink taken 45 minutes prior to event

Athletic Event	Duration	Glycemic Response Required (Category)
Power Lift (1 single lift)	Less than 10 seconds	III
50 Meter Sprint	6-7 seconds	III
100 Meter Sprint	10-12 seconds	I
Triathlon	2 hours +	I
Marathon	3 hours +	I
Ultra Endurance Event	Up to 8 hours	I
Cycling/Bike Race	1-30 minutes	II
Long Distance Bike Race	31 minutes to 4 hours	I
Bodybuilding Contest	0-1 hour	I
Weight Training Session	Up to 1 hour	I
Intense Training Session (with or without weights + aerobic exercise)	Up to 2 hours	I
Aerobic Exercise	Up to 2 hours	I
Intense Rowing	Less than 30 minutes	II
Intense Rowing	31 minutes to 5 hrs	I
Golf	1 to 5 hours	I

## FLUID CONSUMPTION BEFORE EXERCISE

- Consume a balanced diet and drink adequate fluids during the 24-hour period before exercise.
- Drink about 500 ml (about 16 ounces) of fluid about two hours before exercise.

- Goal: promote proper hydration before exercise or competition.

## FLUID CONSUMPTION DURING EXERCISE

- Start drinking early.
- Drink fluids regularly.
- Consume cool, flavored fluids to encourage fluid intake.
- During intense exercise lasting longer than one hour: Carbohydrate ingestion at a rate of 30-60 grams per hour is recommended to maintain carbohydrate oxidation and delay fatigue. Electrolyte (sodium chloride) addition in the fluid helps maintain the osmotic drive for drinking.
- Goal: replace fluid at a rate that equals water loss from sweating.

## FLUID CONSUMPTION AFTER EXERCISE

- Recovery drinks are designed to maximize post workout refueling of muscle glycogen. Research shows that athletes who want to store maximal amounts of carbohydrate for peak performance might profitably shift their intake of nutrients to immediately after workouts. They should also use a carbohydrate-protein combination in place of carbohydrate alone to enhance the muscle glycogen storage and amino acids for muscle cell repair and synthesis.
- . Most of these recovery drinks contain carbohydrate and protein as this has been found to be an effective way to replenish muscle glycogen and to encourage amino acid uptake by the muscle. These drinks also have key carbohydrate and energy metabolizers including sodium, potassium, magnesium, zinc and vitamins.

The 3 things a sports drink should accomplish:

Hydrate effectively , Replenish electrolytes, Provide energy for working muscles to enhance performance and speed recovery.

## TYPES OF SPORTS DRINKS

There are three types of Sports Drinks all of which contain various levels of fluid, electrolytes and carbohydrate.

**Isotonic** - quickly replaces fluids lost by sweating and supplies a boost of carbohydrate. sports drinks contain similar concentrations of salt and sugar as in the human body. This drink is the choice for most athletes - middle and long distance running or team sports. Glucose is the body's preferred source of energy therefore it may be appropriate to consume Isotonic drinks where the carbohydrate source is glucose in a concentration of 6% to 8% -

**Hypotonic** - quickly replaces fluids lost by sweating .sports drinks contain a lower concentration of salt and sugar than the human body . Suitable for athletes who need fluid without the boost of carbohydrate - jockeys and gymnasts.

**Hypertonic** - used to supplement daily carbohydrate intake normally after exercise to top up muscle glycogen stores.sports drinks contain a higher concentration of salt and sugar than the human body. In ultra distance events high levels of energy are required and Hypertonic drinks can be taken during exercise to meet the energy requirements.

What's not in a sports drink is almost as important as what is in it.

CARBOHYDRATES--The sports drinks have a profound effect on an athlete's ability to compete.

Athletes consuming less than the required amount of carbohydrates per day will eventually experience progressive weakness, exhaustion of glycogen stores, overtraining syndrome, and catabolism (use of muscle protein for fuel). Sports drinks made with high glycemic fruit juices can reduce performance.

Electrolytes-- Many are essential minerals & they help maintain the acid-base balance required for normal cellular activities .The three main electrolytes are sodium, potassium and chloride.

Sodium-- The only sodium you want in a sports drink is the amount needed to balance the other

electrolytes. Excess salt causes edema (retention of water), which is the last thing an athlete needs. It slows you down.

Potassium-- Potassium is the most important component of a properly made sports drink. Potassium converts glucose into glycogen for storage and later use. It's also essential to muscle contraction, hormone secretion, and nerve transmission. Ideal levels of potassium in a sports drink are 200-250 mg of potassium per 16 ounces of drink.

Chloride--Chloride works synergistically with sodium and potassium. It controls electrolyte and fluid balance. In a sports drink, the acceptable level of chloride should be less than 100 mg per 16 ounces of sports drink.

Now a days we find a varied variety of sports drink in the market but not all can afford using the same for day to day routine. This is how you can prepare a sports drink of your requirement in the most simplest way.

Want to make your own?

**Isotonic** - 200ml of orange squash (concentrated orange), 1 litre of water and a pinch of salt (1g). Mix all the ingredients together and keep chilled

**Hypotonic** - 100ml of orange squash (concentrated orange), 1 litre of water and a pinch of salt (1g). Mix all the ingredients together and keep chilled.

**Hypertonic** - 400ml of orange squash (concentrated orange), 1 litre of water and a pinch of salt (1g). Mix all the ingredients together and keep chilled.

**Recovery drink**-- carbohydrate protein ratio of 4:1 up to 3:1.

Skim milk fruit yogurt, liquid yogurt drinks, or chocolate skim milk are other ways to encourage post workout refueling with LIQUID forms of carbohydrate protein combinations.



## References:

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