

# Sodium

## Physiological Functions

Sodium is the primary electrolyte that regulates the extracellular fluid levels in the body. Sodium is essential for hydration because this mineral pumps water into the cell. In turn, potassium pumps the by-products of cellular processes out of the cell, eventually eliminating these “wastes” from the body.

In addition to maintaining water balance, sodium is necessary for osmotic equilibrium, acid-base balance and regulation of plasma volume, nerve impulses and muscle contractions.

## Factors Affecting Availability

Considering that the sodium level of the typical American diet ranges from 3,000-5,000 mg daily, most people actually consume far more sodium than that required for health. However, endurance athletes (exercising  $\geq 2$  hours in duration) have increase sodium levels due to excessive sweat losses). On the other hand, hypertensive individuals are recommended to limit their sodium intake  $< 2,400$  mg daily (along with eating a low-fat diet rich in fruits, vegetables, whole grains and low-fat dairy foods) for blood pressure management.

## Deficiency

Since the minimum physiological requirement for sodium is only 500 mg daily, Americans well exceed their sodium intake. However, athletes who eat mostly fresh foods and consume water (versus sports drink) during exercise maybe at risk for hyponatremia characterized by lethargy, confusion, muscle twitching, seizures and coma. Hyponatremia may also be due to excessive intake of fluid especially those experiencing renal insufficiency.

## Toxicity

Excessive consumption of sodium on a regular basis is often associated with hypertension and edema. High intakes of sodium can also lead to osteoporosis because sodium can increase urinary calcium losses.

No upper safety limits for sodium have been established because the body generally excretes excess sodium through the kidneys. But health organizations

recommend daily consumption of sodium  $\leq 2,400$  mg per day (about half of that found in the typical American diet).

### Requirements

The Food and Nutrition Board recommended a sodium intake of  $\leq 2,400$  mg/day for adults. Although the exact minimum requirements of sodium are not known the table below provides a list of the estimated **minimum** requirements for sodium:

Age	Recommended Sodium Requirements (mg)
Months	
0 – 5	120
6 – 11	200
Years	
1	225
2 – 5	300
6 – 9	400
10 – 18	500
>18	500

### Dietary Sources

Common dietary sources of sodium are often processed food to which salt is added during preparation, such as cheeses, soups, pickles and pretzels. Additionally, processed, commercially prepared or restaurant foods are generally high in sodium.

Sodium Content of Food	
Food	Sodium (mg)
Table Salt , 1 tsp	2358
Pickles, dill, 1 large	1731
Canned chicken soup, 1 cup	850
Sauerkraut, 1/2 cup	780
Pretzels, 1 oz	486
Cottage cheese, 1/2 cup	459
Sardines, 3 oz	429

Deli ham, 1 oz	341
Deli turkey breast, 1 oz	335
Soy Sauce, 1 tsp	304
Cheese, American, 1 oz	304
Cornflakes, 1 cup	298
Olives, black, 5 large	192
Deli bologna	295
Potato Chips, 1 oz	183