



THE UNITED STATES OLYMPIC COMMITTEE

Vitamin D and the Body

Vitamin D is a fat soluble vitamin which helps support bone health, muscle function, cell growth and immunity.

Vitamin D is obtained in three ways:

1. Consuming vitamin D-containing foods
2. Exposure to ultraviolet (UV) light
3. Ingestion of supplemental vitamin D

Risk Factors for Poor Vitamin D Status:

- Indoor sport or winter sport
- Dark or extremely fair skin
- Living and training at northern latitudes
- Sunscreen use
- Limited sun exposure
- Low dietary vitamin D intake
- Low or high body fat levels



Assessment of Vitamin D Status:

- Status varies seasonally
- In the blood, **25 hydroxy vitamin D3** or 25(OH) D should be assessed
- At the end of the summer (or early fall) and winter months are the best time to assess
- Baseline testing is justified at any time of the year, especially if low status may be suspected

Importance of Vitamin D on Performance

- Sufficient levels are needed to maintain bone health and aid in injury repair
- Vitamin D helps enhance the ability of muscle to make quick, explosive movements
- Adequate vitamin D allows the body to fight off common upper respiratory infections often caused by a high volume of training at high intensities
- Vitamin D status may positively effect velocity and jump height

Symptoms of Vitamin D Deficiency in Athletes:

- Low bone mass
- Stress fractures
- Fatigue
- Unexplained muscle and joint pain
- Frequent illness



How much vitamin D is enough?

Institute of Medicine Recommends:

Individuals 14-50 years old = 600 IU/day

Dietary sources of vitamin D are important to support vitamin D status; however, it is challenging to meet daily needs with dietary sources alone.

Dietary needs are much higher to restore status if blood levels are low.

Keep in mind, dietary supplementation, recommended by a health professional, may be necessary in addition to food sources to improve status.

Sun exposure can be an important contributing source to build vitamin D stores. On average, the skin can synthesize about 10,000-20,000 IU of vitamin D in less than 30 minutes of exposure.

The amount of vitamin D synthesized from sun exposure depends on the individual. Furthermore, these factors decrease an athlete's ability to synthesize vitamin D as effectively:

- Living in northern latitude
- Winter season
- Day light outside 10:00am -2:00pm
- Darker skin color
- Clothing that covers large body areas
- Sunscreen use
- Body fat

Vitamin D in Training Meals and Snacks

Food sources of vitamin D	IU
Wild salmon – 3.5 oz.	981
Sun dried mushrooms – 1 oz.	400-500
Cod liver oil – 1 tsp.	400
Mackerel – 3.5 oz.	388
Canned sardines – 3.5 oz.	270
Farmed salmon – 3.5 oz.	249
Ahi Tuna – 3.5 oz.	164
Fortified milk – 8 oz.	100
Soy milk, fortified – 8 oz.	100
Orange juice, fortified – 8 oz.	100
Cod – 3.5 oz.	80
Cereals, fortified – amount varies	40-100
Egg yolk – 1	25-40

Simple ways to improve vitamin D status

- *Include vitamin D-rich fish in 2-3 meals per week*
- *Pair 1-2 hard-boiled eggs with fortified cereal and orange juice for a vitamin D-rich breakfast*
- *Top pasta, rice or quinoa with mushrooms*
- *Grill up salmon burgers for dinner and add leftovers to salads and tacos throughout the week*
- *Add fortified milk to fruit smoothies for a snack*
- *Aim for 5-30 minutes of sun exposure per day (without sunscreen) to help build up vitamin D stores; allow sunlight to reach arms, legs and trunk for greatest benefit*
- *If you have a history of skin cancer and melanoma, unprotected sun exposure is contraindicated*

Athlete Recommendations:

