

Vitamin D and Calcium for Bone Health: Nutritional Tips for Dancers

Calcium and Vitamin D are important for the health of your bones. You need calcium to build and maintain your bones and you need Vitamin D for your body to absorb calcium. In other words, without enough vitamin D, you may not be building strong bones, even if you eat enough calcium. Strong bones are important to help prevent injuries like fractures and osteoporosis.

Dancers have a higher risk of stress fractures, especially in the bones of the feet. The healthier the bones are, the less risk a dancer has of developing these injuries. Osteoporosis is a condition in which the bones are not dense enough, putting you at risk for fractures from minor falls. It usually develops after menopause however, it can also develop as early as the teenage years, especially in combination with poor diet. When you are not getting enough food as fuel it can cause an imbalance in hormones that can lead to a loss of the menstrual cycle and thinning of the bones. Loss of the menstrual cycle could indicate a problem that should be checked by your doctor.

Calcium

You can keep building the density of your bones (peak bone mass) until age 25 - 30. Around age 40 bones start to thin. Eating enough calcium during your school years is important (Table 1). The best source is from foods that naturally contain calcium, as your body is better able to absorb and use it properly. The best dietary sources of calcium are dairy products such as milk, yogurt, and cheese. It can also be found naturally in smaller quantities in almonds, soybeans, broccoli, brussel sprouts and some other foods. There are also foods that have it added, such as calcium-fortified orange juice.

It is best to calculate how much calcium you are getting on a daily basis by reading food labels and calculating by the quantity you eat. You need to make sure you meet the recommended daily allowance for your age (Table 1). If you are not able to eat enough calcium, then taking it as a supplement may help. However, supplementation has been found to be less effective than consuming it naturally and may be risky in adults over the age of 45. Also, your body cannot absorb more than 500mg at a time, so if you do choose a supplement, take only 500mg at a time with food to help with absorption.

Table 1: Institute of Medicine Recommended Calcium Intake

Age	Calcium (mg/day)	Calcium (mg/day) Upper Level Intake
1 – 3	700 mg	2500
4 – 8	1000 mg	2500
9 – 18	1300	3000
19 – 50	1000	2500
51 – 70	1200	2000
> 70	1200	2000
Osteoporosis	1500	2500

Vitamin D

The best source of vitamin D is from the sun, specifically UVB rays. The amount of Vitamin D you get from the sun depends on the season, latitude at which you live, and skin color. The closer you are to the equator, the better the chance of getting Vitamin D year-round from the sun. The further away from the equator, the less vitamin D one gets from the sun during the winter months. Also, melanin (the pigment which is responsible for skin color) blocks UVB light which lowers Vitamin D production. Dancers with darker skin need longer sun exposure (up to 10 times as much) to produce enough Vitamin D. Also, sunblock or sunscreen with SPF greater than 8 blocks UVB light which prevents Vitamin D formation. Ideally, if skin cancer is not a high risk and your doctor has said you can be in the sun, then you should allow your arms and legs to have at least 20 minutes of sun exposure from 10 am – 3pm for lighter skin and increase the amount for darker skin for up to 3.5 hrs.

During the winter months, for those dancers living at latitudes greater than 42 degrees (like Chicago), you will probably need to take Vitamin D supplements (Table 2). The only natural sources of vitamin D are from fatty fish (salmon, canned mackerel or tuna), cod liver, egg yolks, and mushrooms that have been treated with UVB light. Some foods, such as dairy products and cereals, are fortified with Vitamin D, but this varies by country, so be sure to check the labels.

Vitamin D levels are measured in the laboratory by checking the 25-hydroxyvitamin D level in the blood. However, this does not need to be tested unless a physician recommends it based on concerns of having low levels. A physician may recommend higher levels of Vitamin D to reach normal levels for a short period of time. Taking more than the recommended allowance should only be done under the guidance of a physician.

In the US, current guidelines define deficiency as a level <12 ng/ml, insufficiency as 12 – 20 ng/ml and normal as 20 – 50 ng/ml. In 2010, the Institute of Medicine increased the Vitamin D adequate intake levels (Table 2) and has not changed the recommendations since. Your physician will make this determination based on your blood level testing and give you recommendations on how to supplement if advised.

Table 2: Institute of Medicine Daily Adequate Intake of Vitamin D

Age	Vitamin D (IU)
0 – 1	400
1 – 70	600
> 70	800
Pregnancy and Lactation	600

Conclusion

Vitamin D and calcium are key to building healthy strong bones. Your best chance of building the strongest bones possible are during your youth, especially the teenage years. The goal is to prevent fractures, especially during dance and as you age. Working with your physician will help you to determine the best sources of calcium and Vitamin D for your particular needs.

Disclaimer: The information on Vitamin D, Calcium and bone health contained in this paper is intended to help guide and inform the dancer. It is not meant to take the place of the advice of a medical professional.

This information is provided by Dance/USA Task Force on Dancer Health.

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