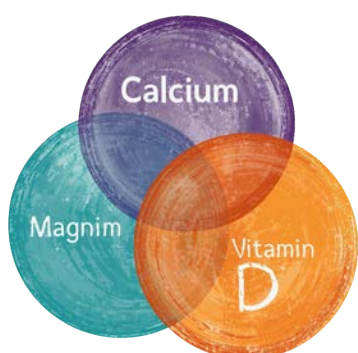


BALANCE MATTERS: HOW CALCIUM, MAGNESIUM, AND VITAMIN D WORK TOGETHER



THE CORE CONCEPT

- These three nutrients work together. Imbalance—especially high calcium + low magnesium—disrupts vitamin D metabolism and increases calcification risk.

WHY MAGNESIUM IS ESSENTIAL

- Required for vitamin D, vitamin D receptor (VDR) interactions, and activation (conversion to calcitriol).
- Modulates vitamin D receptor signaling.
- Acts as a natural calcium regulator inside cells.
- Low magnesium = higher risk of calcium-related adverse effects.



WHAT HAPPENS WITH HIGH CALCIUM + LOW MAGNESIUM

- Common in Western diets.
- Vitamin D increases calcium absorption → more calcium enters the bloodstream.
- Without magnesium to balance it, calcium can deposit in soft tissues (kidneys, blood vessels, brain, prostate).
- Physiological control of the vitamin D-PTH system is impaired when the Ca: Mg ratio is imbalanced.



HOW VITAMIN D FITS IN

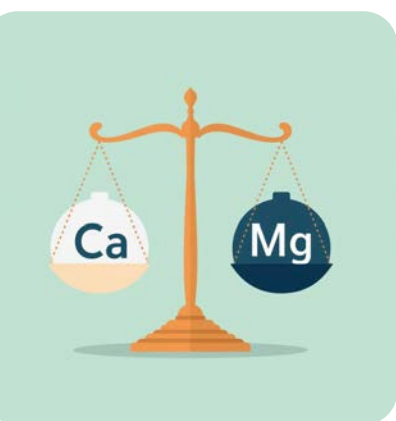
- Boosts intestinal calcium absorption.
- Able to properly modulate PTH when minerals are adequate.
- Works properly only when magnesium levels are sufficient.
- Excessive calcium + low magnesium + higher 25(OH)D = greater calcification risk.



BALANCE IS IDEAL

Keeping calcium and magnesium in balance (optimal Ca:Mg around 2.1:1) supports:

1. Healthy vitamin D function
2. Optimal PTH regulation
3. Strong bones
4. Reduced risk of vascular & soft-tissue calcification
5. Better whole-body mineral homeostasis



Vitamin D is most effective and safest when magnesium is sufficient and the calcium-to-magnesium ratio is balanced.

MEASURE YOUR VITAMIN D AND MAGNESIUM LEVELS AT GRASSROOTSHEALTH.NET

