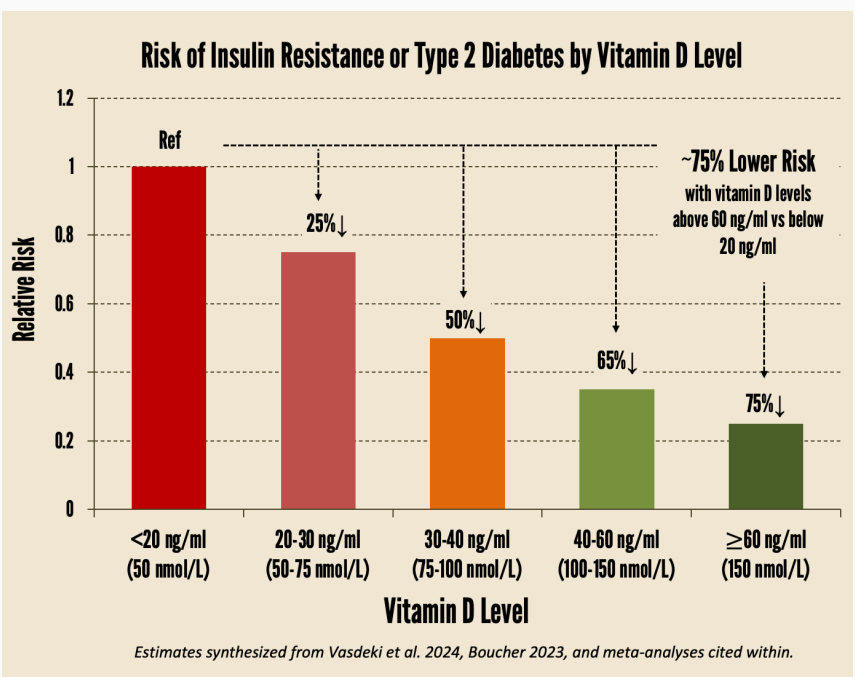
Research shows vitamin D can help prevent insulin resistance, type 2 diabetes & cardiovascular disease.

Optimal Vitamin D Level = Healthier Metabolism!

Research Shows

- **76% reduced risk of diabetes** among prediabetics with a vitamin D level of **at least 50 ng/ml** (125 nmol/L) compared to those with a level of 20-29 ng/ml (50 to 74 nmol/L) - (*Pittas, 2023*)



- A meta-analysis of 99 randomized controlled trials on vitamin D, involving 17,656 participants, found an **average intake of 3320 IU vitamin D per day** was significantly associated with several cardiometabolic benefits when compared to placebo – (*An, 2024*)

How it Works

Low Vitamin D → ↑ Insulin Resistance → ↑ T2DM → ↑ CVD

🧬 **β-Cell Support** – Enhances insulin secretion by activating vitamin D receptors in pancreatic β-cells.
🔓 **Insulin Sensitivity** – Increases insulin receptor expression and activation in muscle & fat tissues.
🔥 **Reduces Inflammation** – Lowers IL-6, TNF-α and increases anti-inflammatory cytokines.
⚡ **Reduces Oxidative Stress** – Maintains mitochondrial health and limits free-radical damage.
🧠 **Epigenetic Protection** – Prevents DNA hypermethylation in β-cells and insulin-responsive tissues.

(*Vasdeki, 2024*; *Boucher, 2023*)

Overall Benefits

- Better systolic & diastolic blood pressure
- Lower overall cholesterol levels
- Lower HbA1c levels & reduced insulin resistance (better blood sugar regulation)
- Lower fasting blood glucose & insulin levels

IMPORTANT! Research confirms the need for personalized doses appropriate for body mass index (BMI), age & ethnicity. (*An, 2024*)

Take Action!

Know Your Level →

Protect Your Health

- Test your vitamin D level by measuring 25(OH)D
- Calculate your personalized dose @ grassrootshealth.net/dcalculator
- Maintain a level between 40–60 ng/mL (100–150 nmol/L)
- Take daily, not intermittent, doses for stable blood levels
- Re-test every 6 months
- Combine with healthy diet & exercise
- Learn more at www.grassrootshealth.net

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