VITAMIN D: THE SUNSHINE-SUPPLEMENT
IS EXERCISE THE RAY OF SUNSHINE THIS VITAMIN NEEDS?

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HOW DEFICIENT ARE WE AS A NATION?

Living in Scotland you are 3x more likely to be vitamin D deficient compared to the south of the UK. Vitamin D deficiency is associated with numerous health conditions – with older adults more at risk.

There is a strong seasonal influence on vitamin D status, with deficiency high across the year.

Research aims:
1. Determine baseline vitamin D levels in a Scottish population
2. Explore the effect of age on Vitamin D Receptor (VDR) expression
3. Investigate whether a single bout of exercise can modulate VDR expression

THE VITAMIN D METABOLIC PATHWAY – WHERE CAN WE INTERVENE?

Vitamin D has to go through numerous metabolic conversions to be “active”. Then it can be transported to the target cells within target organs.

Inside the cell - the activated form of vitamin D binds to the Vitamin D Receptor (VDR). This complex can then regulate the expression of genes and thus... key proteins for optimal health.

Mechanical stress, i.e. exercise, could increase the expression of VDR.

So here is what we did:

...to answer these questions: Are we more VDR deficient as we age? And could exercise increase VDR expression?

WHAT DID WE FIND?

VDR expression is lower in older adults, whereas vitamin D status remained unchanged with age.

Exercise induced an increase in VDR expression, which remained elevated for 1 hour after the exercise bout.

THE IMPACT OF THIS RESEARCH

- Scotland is a vitamin D deficient nation
- We have shown for the first time that exercise can affect the pathway further downstream with an elevation in VDR expression in vitamin D-deficient adults
- This presents a strategic intervention to combat the consequences of vitamin D deficiency and increase our ‘health span’
- Exercise could be the ray of sunshine that vitamin D needs!

References:

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