

Vitamin D Status And Aerobic And Anaerobic Performance In Division III Women Cross Country Runners – a Follow-up Study

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Introduction

- Vitamin D deficiency is more common among athletes than previously recognized
- Vitamin D deficiencies are most prevalent during winter months
- Vitamin D deficiency in geriatric populations is correlated with a decrease in muscle strength

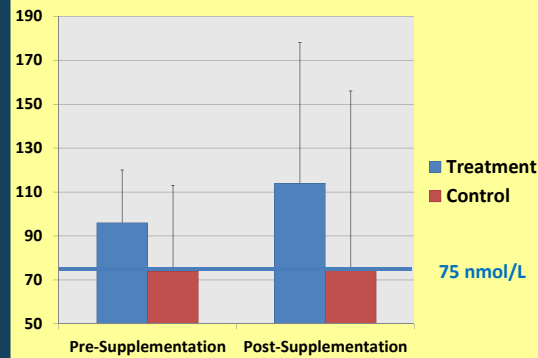
Purpose

1. Determine if two weeks of vitamin D supplementation of 2000 IU/day in mid-January restores serum vitamin D in female cross country athletes to optimal levels [$> 75\text{nmol/L}$]
2. Determine whether the increase in vitamin D affects aerobic and anaerobic performance

Methods

- IRB approval and informed consent obtained
- Women were randomly assigned to vitamin D (treatment, 2000 IU) or thiamin (control) for fifteen days
- Blood collections and anaerobic and aerobic tests were conducted before and after 15 days of supplementation
- ELISA kit (ALPCO) was used to measure vitamin D3 25(OH) levels
- 20 meter sprint and an anaerobic treadmill test (7mph, 20% incline until exhaustion) to assess anaerobic performance
- 3k time trail indoors to assess aerobic performance

Serum Vitamin D Levels (nmol/L) of Treatment vs. Control Pre and Post Supplementation



	Initial Treatment	Final Treatment	Initial Control	Final Control	P Value
20 m sprint (sec)	3.08 ± 0.14	3.08 ± 0.11	3.15 ± 0.16	3.08 ± 0.19	0.152
Anaerobic treadmill test (kJ work)	16.9 ± 7.7	11.5 ± 14.5	19.6 ± 5.9	20.5 ± 10.0	0.175
Aerobic 3k (min)	11.9 ± 0.7	11.7 ± 0.4	12.3 ± 0.7	12.0 ± 0.6	0.681



Results

- Data were analyzed by repeated measures ANOVA
- Vitamin D levels between the groups were not statistically different
- No significant differences were obtained for any of the performance measures (sprint test, anaerobic treadmill test, and 3k time trial) between the treatment and control groups

Conclusion

- 47% of participants were already taking a supplement containing vitamin D prior to the start of this study
- This was a follow-up study – previous work with the team influenced athletes to use vitamin D supplements
- As a result - Vitamin D levels were higher during January than previously observed (total mean $85.8 \pm 49.4\text{nmol/L}$)
- Participants on average started and finished this study with optimal serum vitamin D levels; vitamin D supplementation under these conditions did not have any measureable effects on performance

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