

PHYSICAL PERFORMANCE IN WOMEN WITH VITAMIN D DEFICIENCY

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Introduction

VD deficiency is associated with the atrophy of muscle fibers (predominantly type II). This leads to decreased muscle strength and general physical performance.

Objectives

To analyse the relationship between the serum concentration of 25hydroxy D (25OHD), balance and physical performance in women with VD deficiency.

To study the effect of medium-term (6 months) supplementation with native VD or treatment with an active VD analog.

Material and methods

1. Study sample

We analysed 105 women with VD deficiency defined as a serum concentration of 25 hydroxyD (25OHD) below 30 ng/ml.

2. Methods

We recorded the results of the balance Tinetti scale, chair-rise test (CRT) and timed-up-and go test (TUG), at baseline and after treatment.

3. Intervention

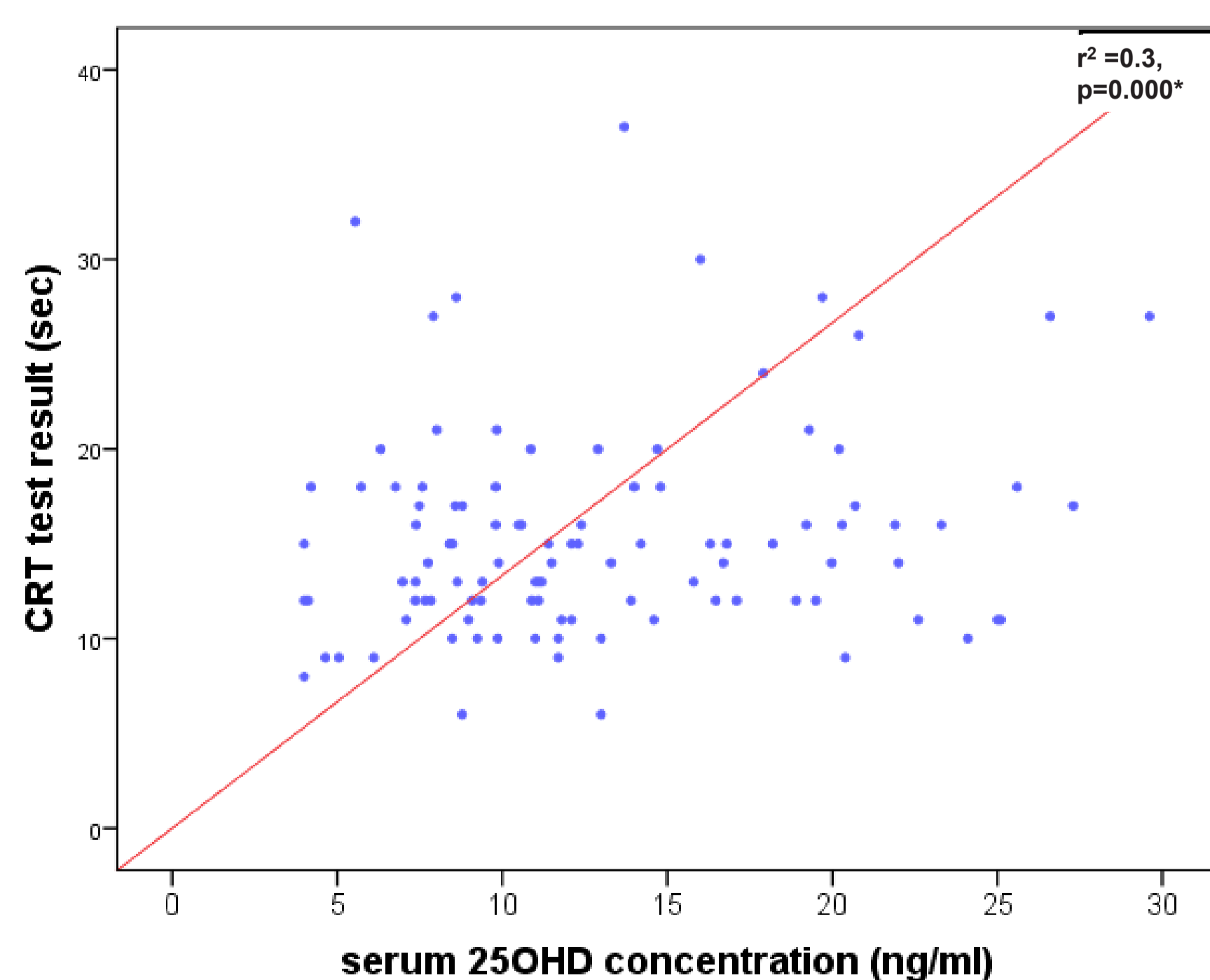
The patients were randomised to receive colecalciferol 1000 IU daily or alphacalcidol 1 mcg daily, both associated with 500 mg calcium for 6 months.

Results

-baseline-

The 105 women studied were of different ages, between 20 and 83 years old (mean± SD 51.95 ± 12.77 years). All were VD deficient; the mean baseline 25OHD concentration was 12.68 ± 5.77 ng/ml (mean± SD).

The Tinetti balance subscore was significantly correlated with the concentration of 25OHD (p=0.024). Also, the results for the CRT and TUG tests were highly significantly correlated with the serum 25OHD concentration (after age-correction of data) (p=0.000*)-see below.



The mean results at the TUG, CRT and Tinetti tests at baseline are detailed in the following table.

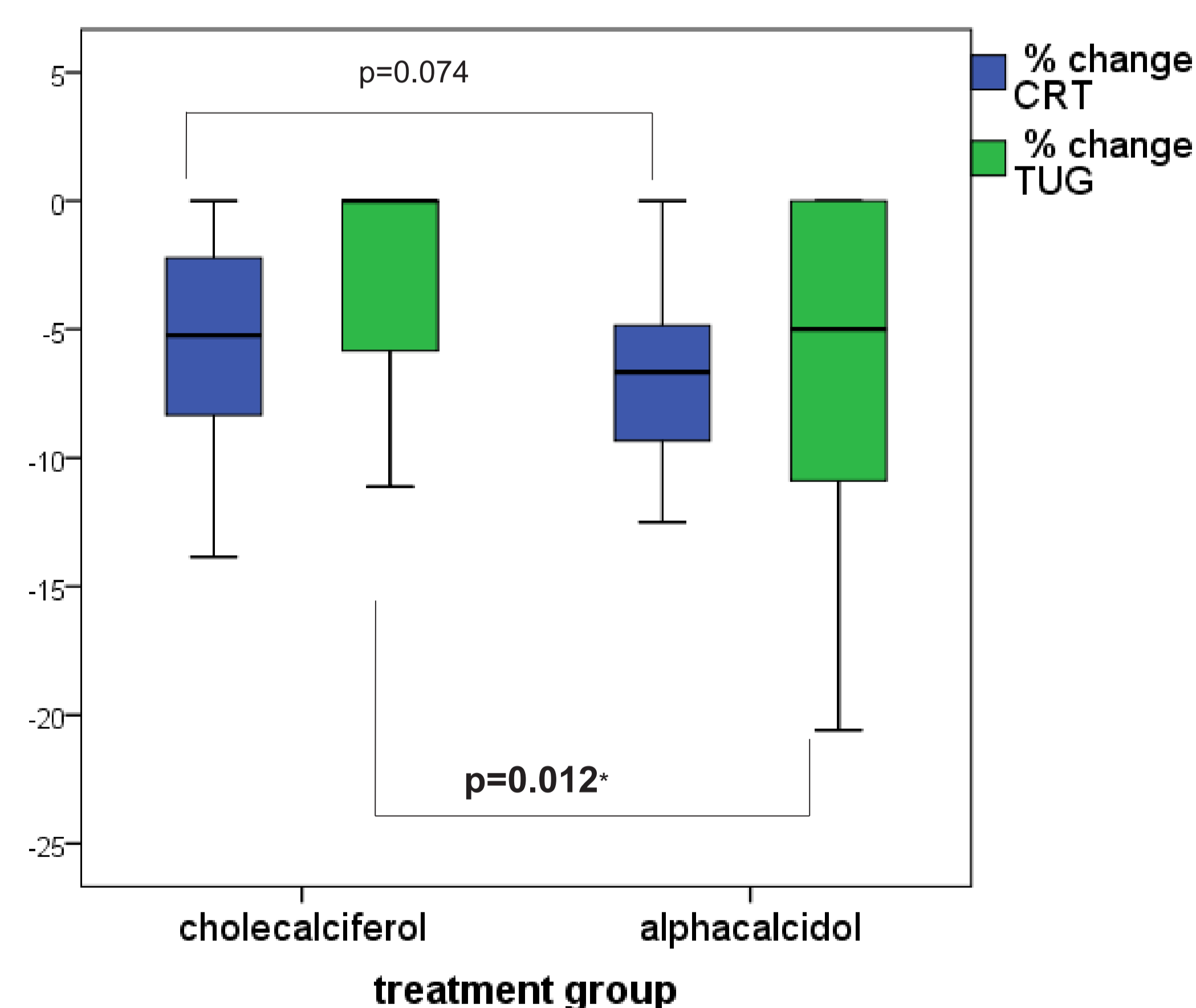
	Before treatment	After treatment	p
CRT (sec)	15.34 ± 5.58	14.56±5.56	0.000**
TUG (sec)	8.91 ± 2.46	8.5±2.17	0.000**
Tinetti total	25.68 ± 2.47	26.27 ± 2.14	0.000**
Tinetti balance	14.31 ± 1.72	14.85 ± 1.36	0.000**
Tinetti posture	11.38 ± 0.9	11.3 ± 1.4	0.033*

After treatment, the mean results at TUG and CRT test decreased significantly (see table), representing a mean change of -4.9 and -7.33%, respectively (p=0.000* compared to baseline).

The global Tinetti score and the subscores for balance and posture also improved significantly compared to baseline- see table.

The results were significantly better in the subgroup treated with alphacalcidol compared to the subgroup offered colecalciferol for TUG (p=0.012) but not for CRT (p=0.074)- see below.

No difference was noted in the evolution of the Tinetti score between the treatment subgroups.



Conclusions

The major finding of the present study is that VD deficiency is significantly correlated with poor physical performance and impairment of balance. These effects are partially reversible with either VD supplementation or treatment with active VD analogs (alphacalcidol).

