

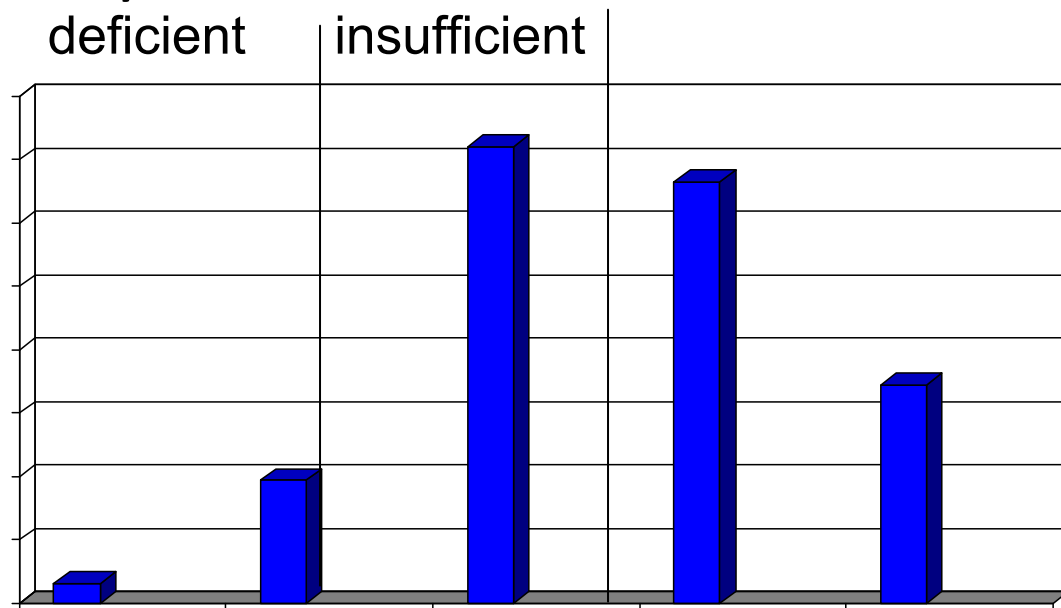
Prevention of depression and poor physical function in older persons with vitamin D supplementation



Longitudinal Aging Study Amsterdam

(LASA) Vitamin D-status in 1319

participants >65 yr

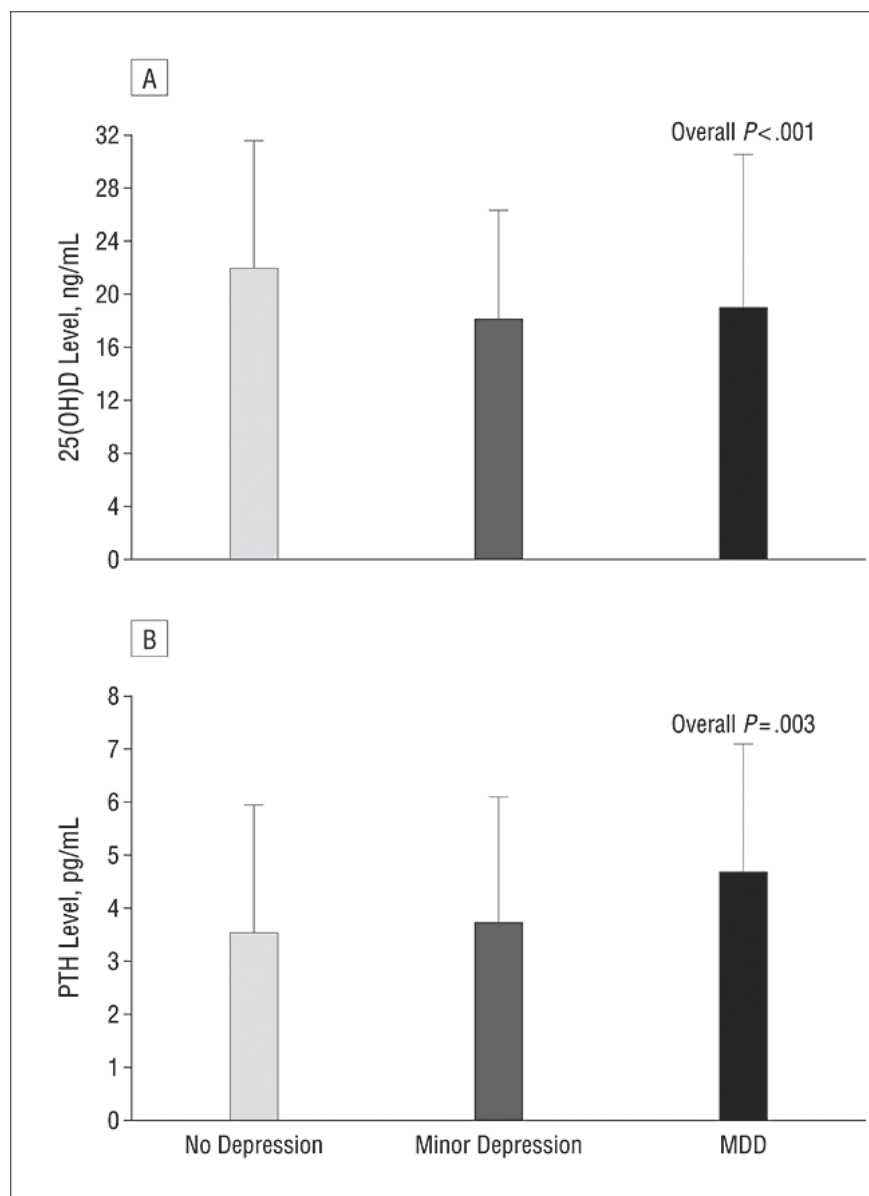


25-hydroxyvitamin D nmol/l

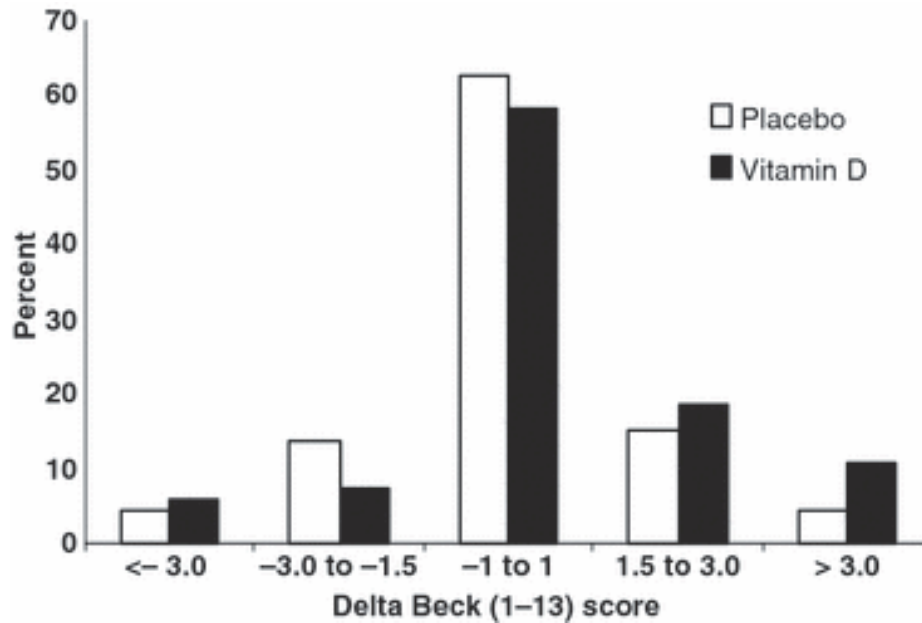
Association with depression

- Longitudinal Aging Study Amsterdam (LASA)
- 1282 subjects
- CES-D and diagnostic interviews
- Serum 25(OH)D was 14 % lower in minor and major depression
- Serum PTH was 5 % and 33 % higher in minor and major depression ($P=0.008$)

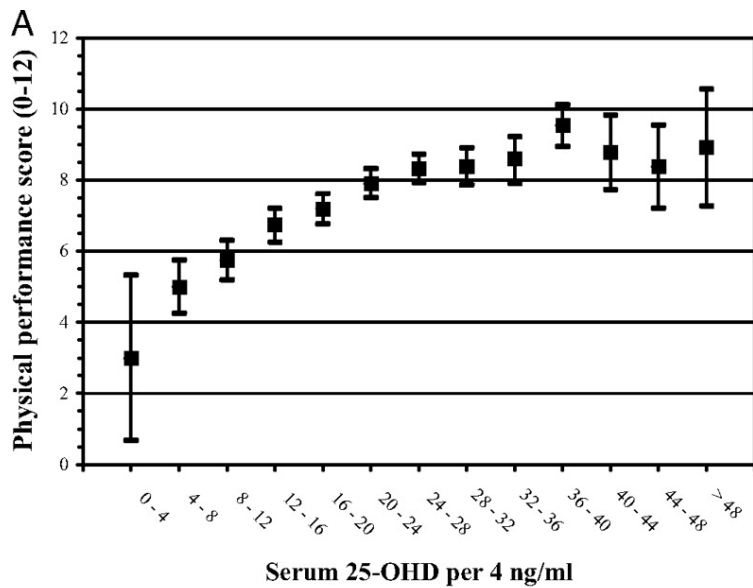
Hoogendijk W et al Arch Gen Psychiatry
2008; 65: 508-12



Effects of vitamin D supplementation 20 000 or 40 000 IU per week vs placebo on symptoms of depression in 400 overweight subjects (Beck depression inventory)

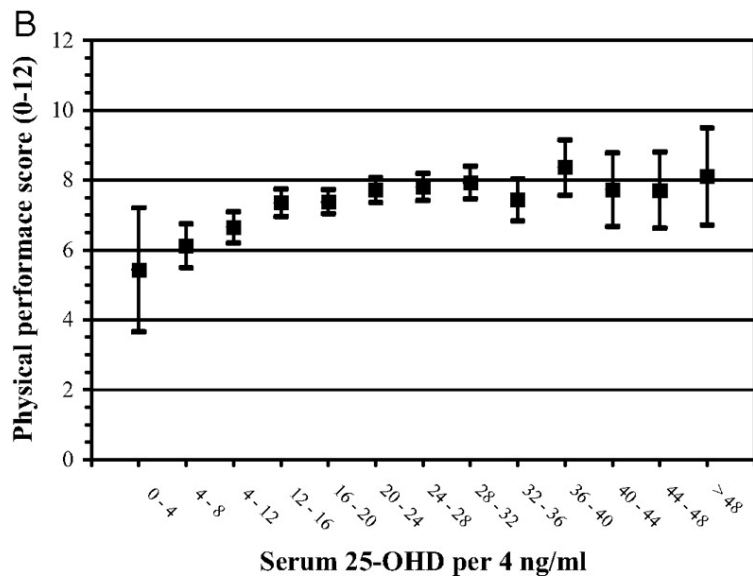


R Jorde et al J Intern Med 2008; 264: 599-609

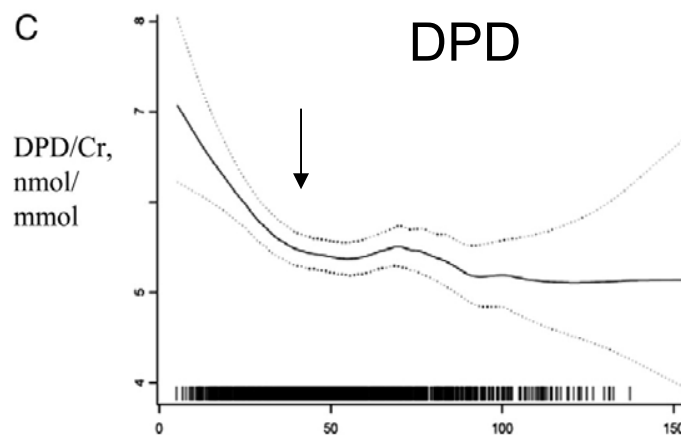
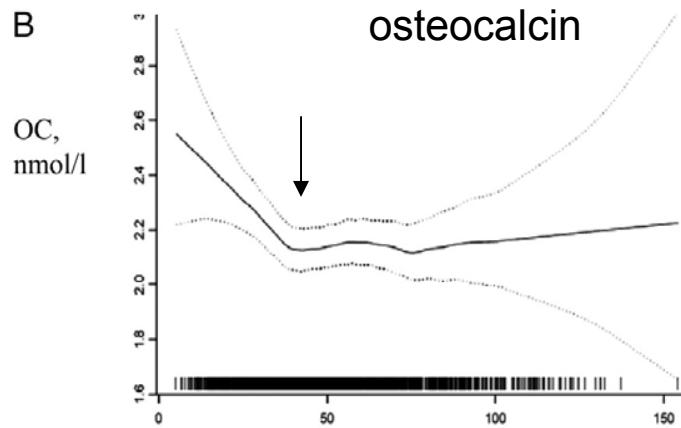
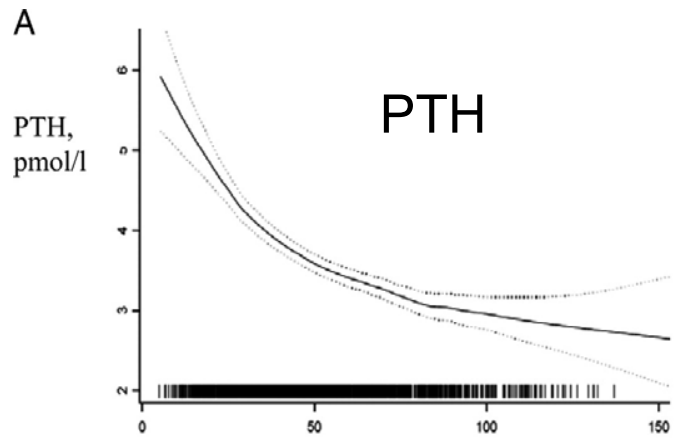


unadjusted

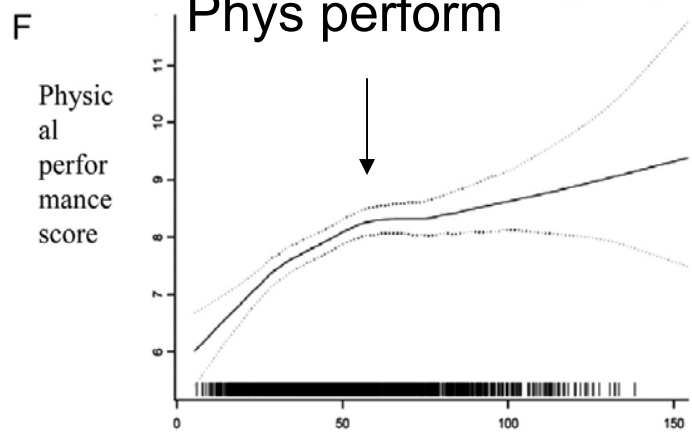
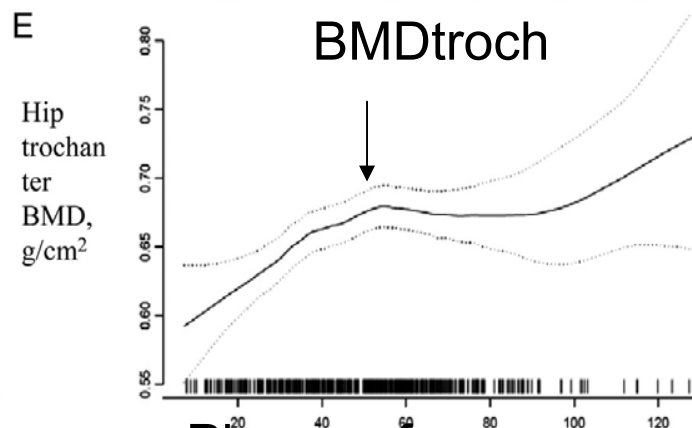
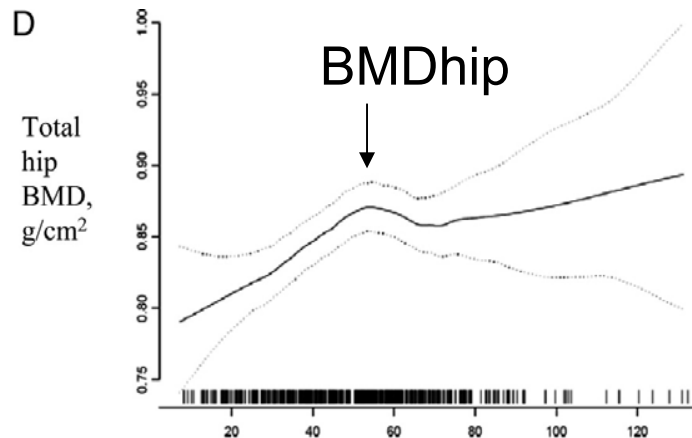
Physical performance score (0-12, walking test, chair stands, tandem stand) in LASA



adjusted for age, sex, chronic diseases, BMI



Serum 25(OH)D, nmol/l



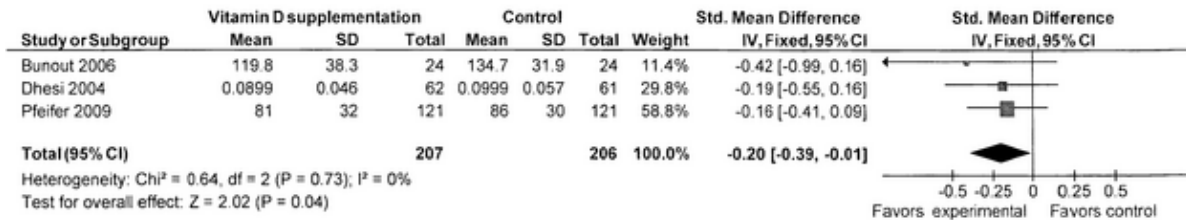
Serum 25(OH)D, nmol/l

Serum 25(OH)D thresholds for PTH, BMD, bone turnover and physical performance in the Longitudinal Aging Study Amsterdam LOWESS plots

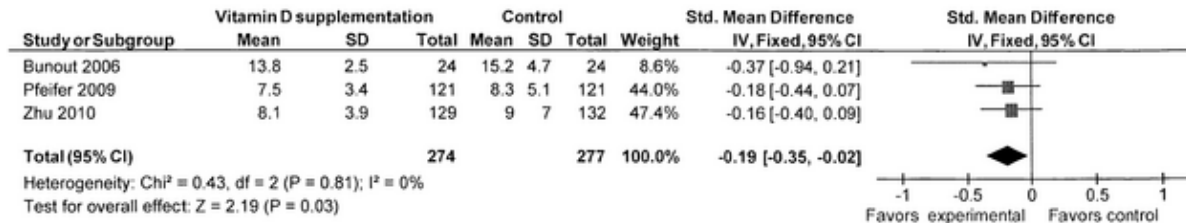
Kuchuk NO et al J Clin Endocrinol Metab 2009

Effect of vitamin D supplementation on muscle strength, gait and balance in older adults: meta-analysis

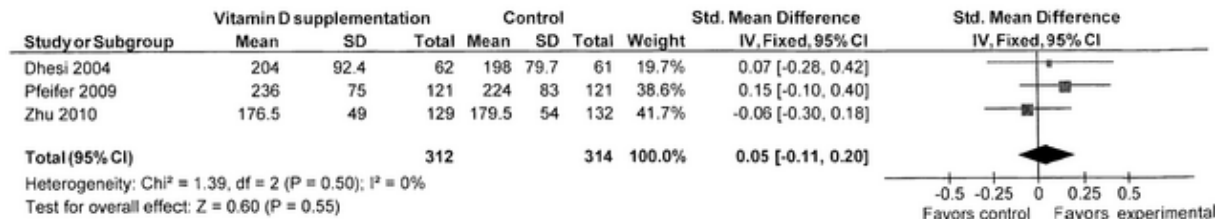
Balance Sway



Timed Up & Go Test

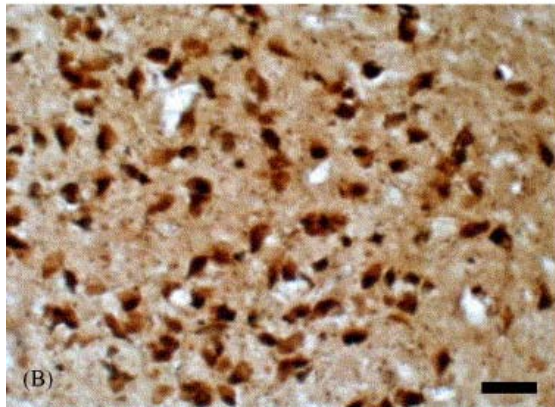
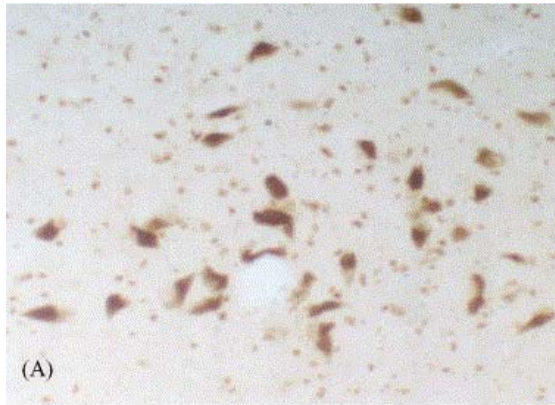


Lower Extremity Strength



- Muir S et al J Am Geriatr Soc 2011; 59: 2291-2300

Vitamine D receptor (A) en 1- α hydroxylase (B) in hypothalamus (immunohistochemie)

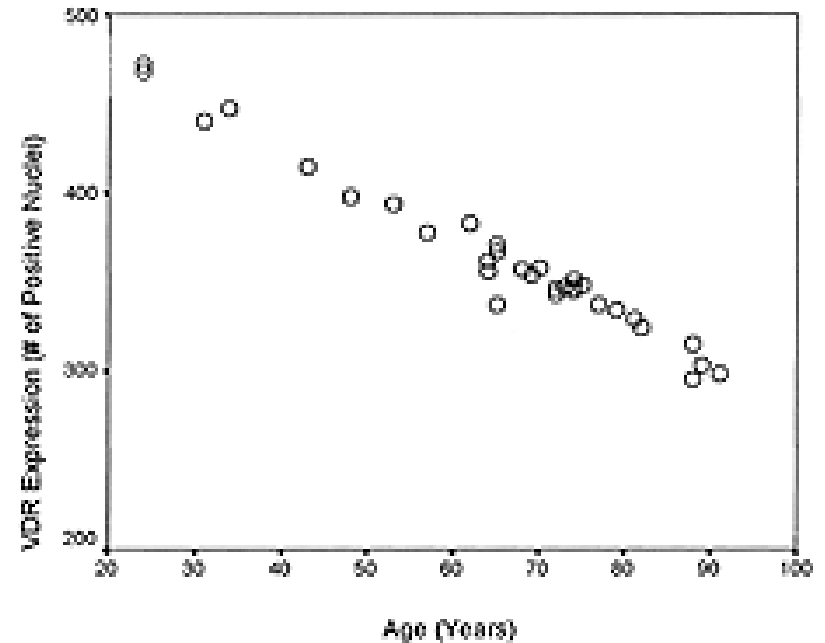
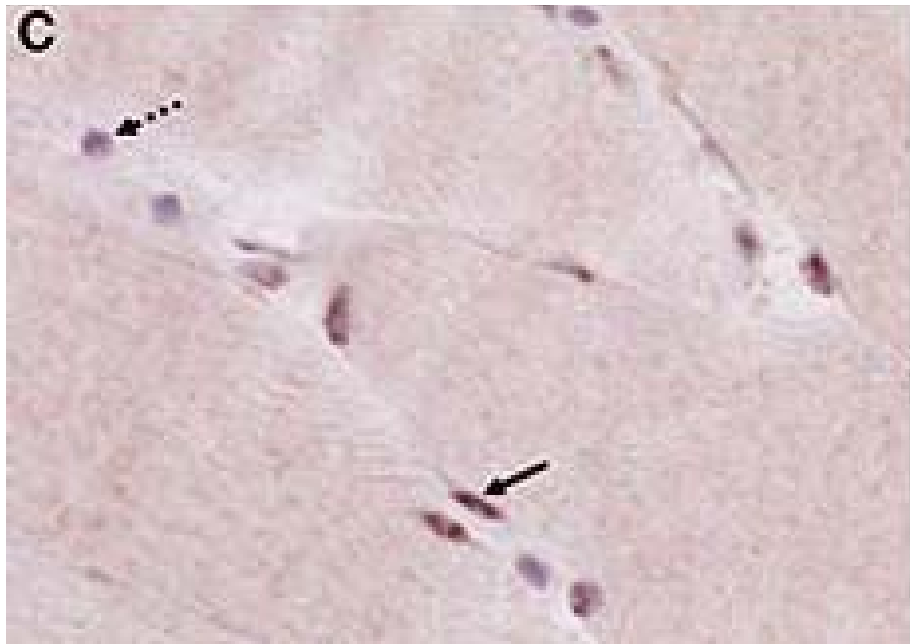


Brain region	VDR immunoreactivity	1 α -OHase immunoreactivity
Caudate/putamen	+++	+++
Amygdala	+	++
Thalamus	++	++
Substantia nigra	++++	++++
Lateral geniculate nuclei	+++	+++
Hypothalamus		
Supraoptic nucleus	+++	++++
Paraventricular nucleus	+++	++++
Dorsal region	++	++
Lateral region	++	++
Ventromedial region	+++	++
Cerebellum	-	++



Vitamin D receptor expression in human muscle tissue decreases with age

A study in muscle biopsies of 32 women by immunohistochemical staining of the VDR



Vitamin D, emotional and physical function

Low vitamin D status

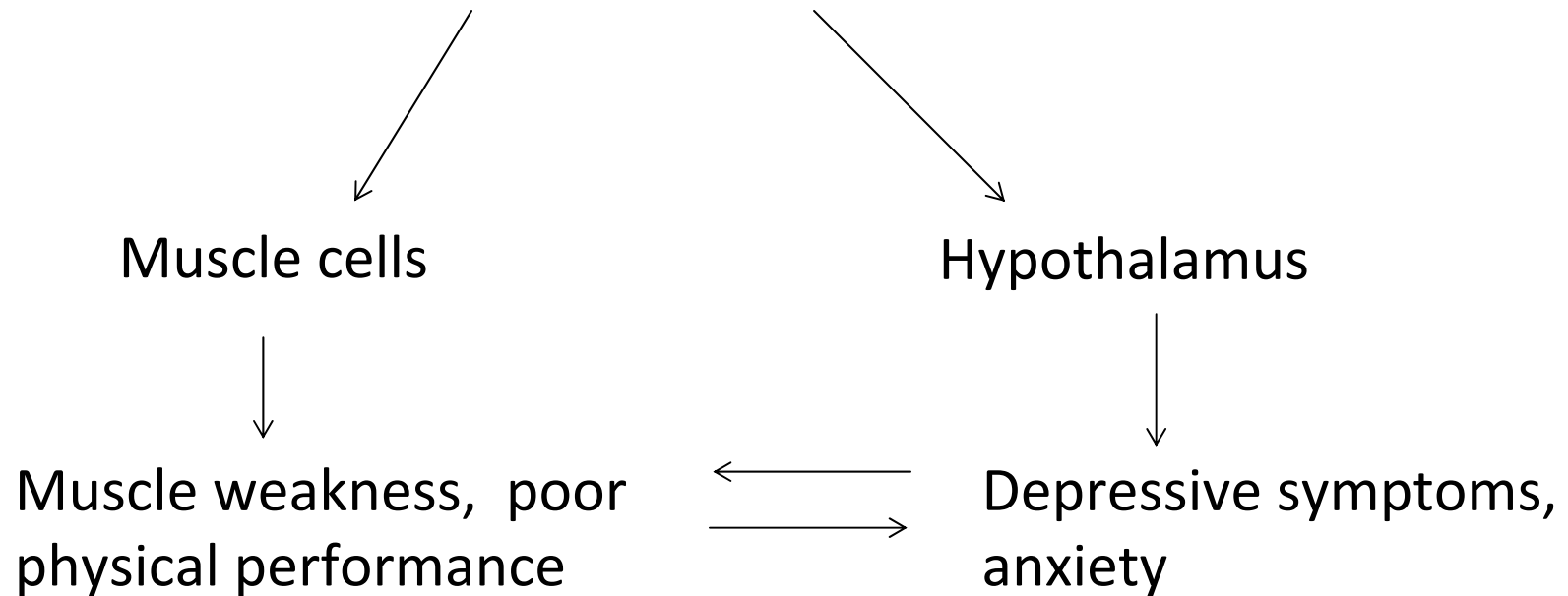


Figure 1. Pathophysiological background

Vitamin D supplementation to prevent depression and improve physical performance

- Randomized clinical trial
- Participants 60 – 80 years
- Inclusion: depressive symptoms, i.e. CES-D ≥ 16 , functional limitations ≥ 1
- Exclusion: nursing home residents, osteoporosis
- Randomization: vitamin D3 8400 IU/week versus placebo

Vitamin D supplementation to prevent depression and improve physical performance

- Study duration 1 year
- Outcome criteria: change in CES-D, change in physical performance
- Secondary outcomes: anxiety, quality of life, 6 minutes walk test
- Sample size: $n = 150$ per group

Flow chart of the study

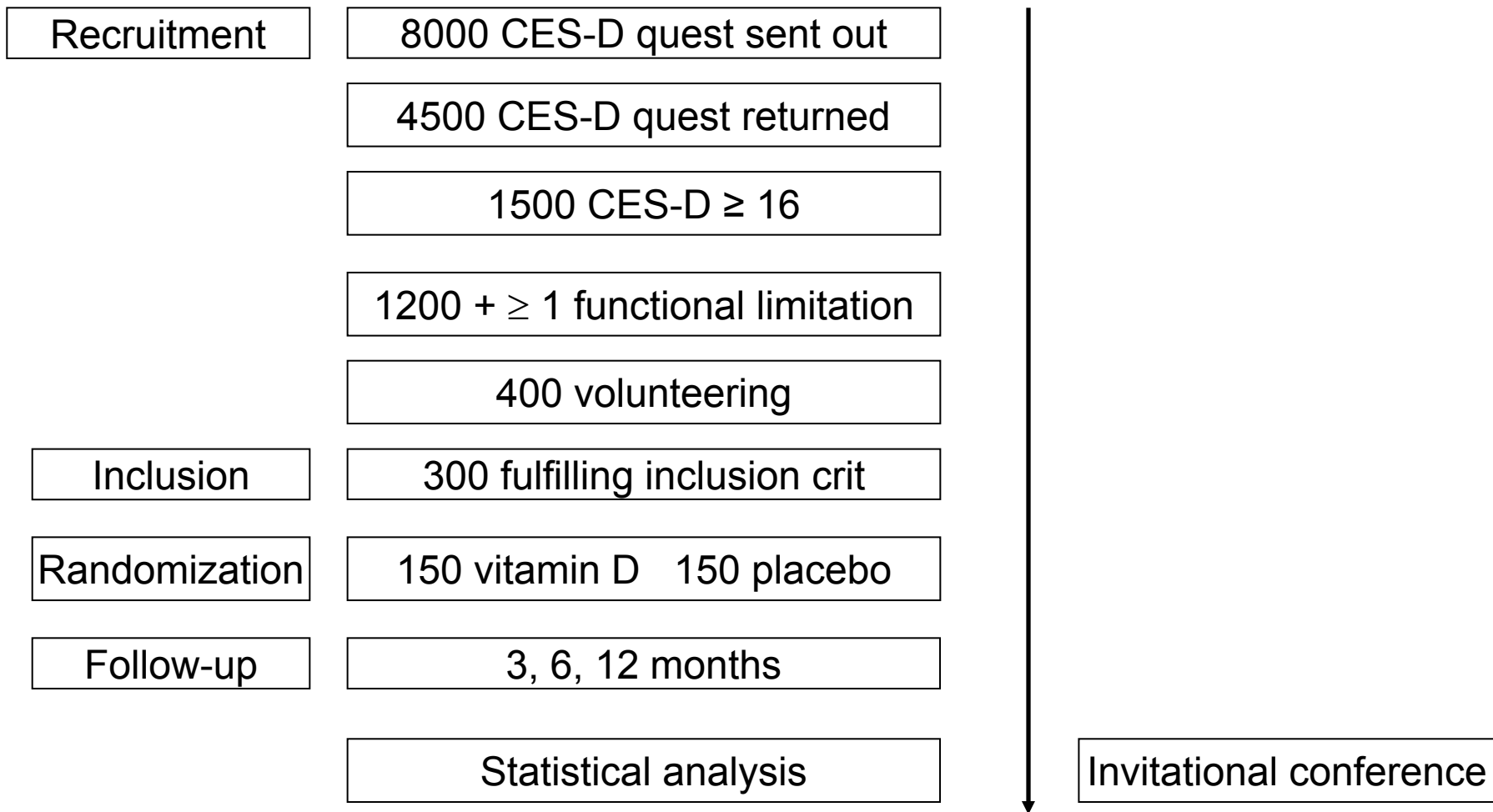


Figure 2. Flow chart of the study. Numbers are based on the West-Friesland Depression Study