▤ IMAGING AND DIAGNOSTIC TESTING

DIRECT ASSOCIATION BETWEEN SERUM VITAMIN D LEVEL AND CARDIORESPIRATORY FITNESS IN HEALTHY ADULTS.

ACC Poster Contributions
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Background: Poor cardiorespiratory fitness predicts cardiovascular disease (CVD) risk. Low serum vitamin D level is also associated with an increased prevalence of CVD risk factors and all-cause mortality. Whether low serum Vitamin D level independently predicts cardiorespiratory fitness in healthy adults without CVD is not known. The aim of this study was to determine the relationship between serum 25-hydroxy vitamin D [25(OH)D] concentration and cardiorespiratory fitness in healthy adults.

Methods: Healthy adults (n=195; 54% female; mean age 40±14; range 20-73 years) free of overt cardiovascular and metabolic disease and not taking lipid-lowering or hypertension medications were recruited for a double-blind clinical trial investigating statins and muscle performance. Maximal aerobic exercise capacity (VO2max; an index of cardiorespiratory fitness) was measured using a Parvomedics metabolic gas analysis system. Total hours of moderate to vigorous physical activity per week (ModVigPA) were assessed using the Paffenbarger Physical Activity Questionnaire. ModVigPA was centered to control for its significant interaction with 25(OH)D. Simple and multiple linear regressions were used to examine the association between serum 25(OH)D and VO2max, adjusting for age, gender, weight and centered ModVigPA.

Results: Mean serum 25(OH)D concentration was 34.3± 13 nmol/lit (range 11-82), and 93% of women and 85% of men had serum 25(OH)D less than 50 nmol/L. Serum 25(OH)D concentration had a significant positive relationship with VO2max (r =0.23, p < 0.01). Incorporation of weight, age, gender and centered ModVigPA (which were all significantly related to VO2max) into the model did not affect the relation between VO2max and serum 25(OH)D level. Adjustment for seasonal variations in serum 25(OH)D also did not significantly affect the relationship between 25(OH)D and VO2max.

Conclusion: These results provide the first evidence that serum Vitamin D level is a significant predictor of cardiorespiratory fitness in adults free of CVD. Factors that reduce Vitamin D level (e.g., disease) may thus negatively affect cardiorespiratory fitness and ultimately increase the risk of CVD.