Vitamin D was related to VO2 but not Anthropometric or Quality of Life in Healthy Males

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Abstract

Vitamin D potentially influences skeletal muscle function. Recent research examining Vitamin D and anthropometrics have correlated closely with poor aerobic and anaerobic function, and quality of life measures. In order to determine if there is an association between serum 25(OH)-Vitamin D levels and exercise, anthropometrics, and quality of life measurements, data was collected from BMI, VO2max, body weight, and percent body fat. Serum Vitamin D levels, percent body fat, and body fat percentage were collected for 30% 1-RM. Salivary PredV2 (25(OH)-Vitamin D levels) and Predicted VO2 were collected. The Depression Scale (CES-D), General Health Survey (SF-36), and Yale Physical Activity Survey (YPAS) were also used. Positive correlations were seen between Vitamin D and Predicted VO2 and SF-36, CES-D, and BMI; and BMI and YPAS. Negative correlations were found between CES-D and the physical (PCS) and mental (MCS) summaries of the SF-36, %BP with BMI and WHR; and PCS with BMI, WHR, and YPAS.

Methods

• Parallel design, double-blinded supplementation of either Vitamin D3 or a Placebo.
• Subjects were screened, and after admittance, underwent at random 3 different acute exercise protocols.
• Screening involved a submaximal VO2 max treadmill test and a one-repetition max (1-RM) measure for squat, bench press, lat pull down, and leg press
• Exercise protocols last for one hour and include mild stretching, aerobic exercise at 50% VO2max on the treadmill, and resistance training with repetitions set at 50% 1-RM.
• Three day diet records, food frequency questionnaire, physical activity questionnaire, a depression questionnaire, and general health questionnaire were collected twice.
• Anthropometric measures of height, weight, waist to hip ratio, BMI, and body fat percentage were collected during the screen.
• Body Fat Percentage will be determined with skin calipers.
• During 4 week treatment period of Vitamin D and Placebo subjects were contacted weekly and asked about adverse effects.
• After treatment, subjects come in again for the exercise protocols.
• Dietary data was compiled and analyzed using Nutritionist Pro software.

Conclusions

Individuals with a higher BMI psychologically identify themselves as more depressed with a lower mental health status and recognize themselves as having a poor physical health status. Individuals that not only present as being healthier in BMI, WHR, and percent of body weight lifted in bench press also perceive themselves to be in good physical shape. Serum 25(OH)-Vitamin D was not correlated to any measures of quality of life or other physical measure in this data set. Higher Vitamin D levels may improve aerobic muscular function, but not anaerobic muscular function.

References


Demographics

Table A: Averages

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
<th>SD</th>
</tr>
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<tbody>
<tr>
<td>Age</td>
<td>64.9±10.1</td>
<td>1-RM Percentile</td>
</tr>
<tr>
<td>Body Fat % 7 Site</td>
<td>18.5±6.7</td>
<td>% of wt Bench</td>
</tr>
<tr>
<td>BMI</td>
<td>27.3±6.0</td>
<td>Dep Score</td>
</tr>
<tr>
<td>WHR</td>
<td>0.9±0.1</td>
<td>Fitz Score</td>
</tr>
<tr>
<td>VldSerum</td>
<td>28.6±11.1</td>
<td>PCS</td>
</tr>
<tr>
<td>NfraVldSerum</td>
<td>67.9±54.0</td>
<td>MCS</td>
</tr>
<tr>
<td>PredV2</td>
<td>35.4±6.0</td>
<td>Yale PA</td>
</tr>
</tbody>
</table>

We used Pearson Correlation Coefficient to test possible linear correlations amongst all measures. We used a nominal significance level of p<0.05.