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## CHANGES IN THE RELATIONSHIPS BETWEEN AEROBIC CAPACITY AND HEMATOLOGICAL VARIABLES AFTER A DIET AND EXERCISE INTERVENTION

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**Introduction** The relationships between maximum oxygen uptake (VO<sub>2</sub>max) and hematological variables related to oxygen transportation are obviously established, but it is unknown if these associations are different between responders and non-responders to VO<sub>2</sub>max. The aim of this study was to evaluate whether VO<sub>2</sub>max relate to hemoglobin and hematocrit measured before and after a weight loss program (WLP) intervention, in responders and non-responders to VO<sub>2</sub>max

**Methods** One hundred eighty-six overweight (W) and obesity (O) (body mass index [BMI] 25-34.9 kg/m<sup>2</sup>), aged from 18 to 50 years, performed an incremental test until exhaustion on a treadmill, using a modified Bruce protocol, before (pre) and after (post) the 22 weeks of diet and exercise intervention. Blood samples were taken to measure hematological parameters (1). Responders to VO<sub>2</sub>max were defined as those who achieved an increase higher than 5% in VO<sub>2</sub>max and non-responders those who achieved less than 5%. Relationships between VO<sub>2</sub>max, hemoglobin and hematocrit were measured using Pearson's correlation coefficient in responders and non-responders. The significant level was set at 0.05. Results Maximum oxygen uptake was associated with hemoglobin in non-responders, both pre intervention ( $r=0.606$ ,  $p<0.001$ ) and post intervention ( $r=0.596$ ,  $p<0.001$ ). There was also a positive relationship between VO<sub>2</sub>max and hemoglobin in responders, even though this association was greater both pre and post intervention ( $r=0.754$ ,  $p<0.001$ ;  $r=0.623$ ,  $p<0.001$ , respectively). Non-responders had lower correlations between VO<sub>2</sub>max and hematocrit than responders pre weight loss program (WLP) ( $r=0.574$ ,  $p<0.001$ ;  $r=0.732$ ,  $p<0.001$ , respectively), while the relationship was similar in both groups post WLP ( $r=0.567$ ,  $p<0.001$ ;  $r=0.555$ ,  $p<0.001$ ). Discussion Applying Fick's law, these results suggest that the improvements in VO<sub>2</sub>max obtained post WLP in responder group could be due to an increase in the use of oxygen and / or an improvement of local vascularization.

**References** 1. Zapico et al.: Nutrition and physical activity programs for obesity treatment (PRONAF study). Methodological approach of the project. BMC Public Health 2012 12:1100.