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**Effect of a moderate-intensity continuous training program and cognitive behavioral psychotherapy over the endothelial dysfunction genes expressions in overweight and obesity children****Gabriela Y C Moreno**

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**Background:** The worldwide obesity epidemic has stimulated interest to find early interventions that could be implemented in childhood and adolescence, with consideration of biomarkers that are potentially predictive of cardiometabolic complications present at later ages. Interventions such as moderate-intensity continuous training program (MCIT) and cognitive behavioral therapy (CBT) are the mainstay of treatment for this condition. Such interventions may lead to changes at the molecular level in the expression of genes involved in endothelial dysfunction such as PRMT1, DDAH1 and ADMA.

**Objective:** This study evaluated the effect of moderate-intensity continuous training program and cognitive-behavioral program over gene expression associated with endothelial dysfunction in children aged 6-12 years who were overweight or obese.

**Methods:** We recruited 26 patients with overweight and obesity diagnosed according to the CDC tables between 6-12 years, of which peripheral blood was obtained. One group had the MCIT intervention (n = 13), and the other group with MCIT + CBT intervention (13), both groups were treated for 12 weeks. Anthropometric and biochemical variables were measured, gene expression was quantified by the real-time PCR technique.

**Results:** Both groups had a decrease in the anthropometric parameters such as BMI, waist, WHtR ( $p < 0.05$ ), the group of MCIT + CBT also decreased the WHR and triglycerides ( $p < 0.05$ ). Regarding gene expression, mRNA levels of PRMT1, DDAH1 behaved differently in each group since the group of MCIT + CBT had an overexpression of DDAH1 and ADMA in contrast to the group of CBT that lowered their expression significantly ( $p = 0.001$ ,  $p = 0.039$  respectively).

**Conclusions:** The intervention of MCIT represents an effective intervention to decrease endothelial damage and cardiometabolic complications, by increasing the levels of expression of DDAH1 and having a downward trend of the PRMT1 gene both are ADMA regulators, that is a potentially marker of cardiovascular risk.

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