

1233 Board #359 May 27 1:30 PM - 3:00 PM

Extreme Duration Low Intensity Exercise Not Cause Additional Weight Loss For Patients With Metabolic Syndrome

Marton Dvorak¹, Laszlo Babai², Miklos Toth¹. ¹University of Physical Education, Budapest, Hungary. ²Lifestyle Medicine Center, Budapest, Hungary.

Email: dvorak.marton@gmail.com

(No relationships reported)

Common medical advice for patients with obesity and metabolic syndrome (MS) is weight loss through negative energy balance: eat less and do more physical activity. Guidelines suggest that moderate to vigorous intensity physical activity (MVPA) is better than low intensity physical activity (LPA). However, patients with morbid obesity and metabolic syndrome have difficulties to achieve MVPA level, particularly when they take beta-blockers.

PURPOSE: To monitor long-time weight loss of a patient with morbid obesity and MS who underwent regular exercise and energy-restricted diet.

METHODS: This case study followed a male patient (age 65y, baseline weight 131.0kg, BMI 43.8) with MS (obesity, high blood pressure, dyslipidemia, prediabetes) for 12 months. He took medication for every disease and also beta-blockers. His program was assisted by medical doctor, nutritionist and exercise therapist, has regular blood tests. All the trainings (1628 sessions) were monitored by heart rate activity tracker (POLAR A300).

RESULTS: In the first 7 months the patient's weight loss was variable but permanent (23.1kg, BMI decrease to 35.8). His energy intake was consistently 1800 kcal/day, training hours of the week increased from 13.3 hours to 22.6 hours, from which he spent in MVPA activity 182 minutes a week at the baseline, and 469 on the peak which resulted increase in energy expenditure. There were positive changes in resting heart rate, blood pressure, blood sugar, HgA1c, cholesterol levels. In the months 8-12 the bodyweight was constant despite of the extreme increase in training to 37 hours a week but with moderate decrease in MVPA to 195 minutes. Statistic analysis of weight loss and time spent in intensity zones shows positive significant correlation in case of MVPA ($r=0.52$ $p<0.001$) and negative in case of LPA ($r=0.47$ $p<0.01$).

CONCLUSIONS: The energy-restricted diet and exercise therapy caused large weight loss but the LPA (<60% max hr) exercise had no effect. It seems that after achieving higher fitness level, extreme duration of LPA is not capable of long term weight loss although it plays a huge role in negative energy balance. MVPA would be more effective for patients with metabolic syndrome, but beta-blockers and the risk of heart attack or hypoglycaemia make the intensity-increase difficult. Supported by TUDFO/51757/2019-ITM

1234 Board #360 May 27 1:30 PM - 3:00 PM

Cardiometabolic Benefit Of A Family-Oriented Exercise And Nutrition Intervention On Overweight And Obese Children

Gigi Lee¹, Cynthia Villalobos¹, J Mark VanNess¹, Stephanie Ta¹, Paul D. Vosti², Courtney D. Jensen¹. ¹University of the Pacific, Stockton, CA. ²St. Joseph's Medical Center, Stockton, CA.

Email: g_lee29@u.pacific.edu

(No relationships reported)

One third of U.S. children are overweight or obese. Without intervention, they experience an elevated risk of developing type 2 diabetes and cardiovascular disease as adults. Poor blood glucose and lipid profiles are indicators of adult onset, and early intervention can reduce the likelihood of future diagnosis. Thus, it is important to identify programs capable of improving these parameters in at-risk children.

PURPOSE: To examine the effect of a family-oriented exercise and nutrition intervention on blood glucose and lipid profiles in overweight and obese children.

METHODS: 12 children (age 7-16 yr) were referred to a weight loss intervention by their primary care physician; 6 males and 3 females completed the program. They performed biweekly sessions of structured exercise (45 min) and nutritional counseling (30 min) for 18 weeks. At baseline and follow-up, blood samples were drawn, measuring triglycerides (TG), total cholesterol (TC), high-density lipoproteins (HDL), low-density lipoproteins (LDL), and blood glucose (BG). Paired-samples t-tests compared pre to post differences in these variables.

RESULTS: At baseline, subjects were 12.3±2.4 years old with a body mass index of 29.8±4.5 kg/m². Blood samples revealed TG of 118.4±50.1 mg/dL, TC of 172.0±21.2 mg/dL, HDL of 52.6±10.2 mg/dL, LDL of 97.8±24.9 mg/dL, and BG of 117.25±5.4 mg/dL. From baseline to follow-up, non-significant improvements were detected in TG ($p=0.104$), TC ($p=0.085$), and LDL ($p=0.132$). Significant changes were detected in HDL (increased 6.8±2.2 mg/dL, corresponding to a 13.1% improvement; $p=0.009$) and BG (decreased 17.7±5.0 mg/dL, 14.8% improvement; $p=0.026$).

CONCLUSION: Despite the absence of external incentives, the program's retention was 75% over 18 weeks. Children who completed the full duration of exercise training and nutritional counseling experienced significant improvements in HDL and BG. These findings support the growing evidence that earlier cardiometabolic interventions are warranted.

1235 Board #361 May 27 1:30 PM - 3:00 PM

COMBINED TRAINING IMPROVES LUNG MECHANICS AND LUNG INFLAMMATION IN OVERWEIGHT WOMEN

Anamei Silva Reis¹, Renilson Moraes Ferreira¹, Victor Hugo Souza Palmeira², Maysa Alves Rodrigues Brandão-Rangel¹, Rodolfo Paula Vieira³. ¹Federal University of Sao Paulo (UNIFESP), Santos, Brazil. ²Brazilian Institute of Teaching and Research in Pulmonary and Exercise Immunology, São José dos Campos, Brazil. ³Universidade Brasil / Anhembi Morumbi University / UNIFESP, Santos, Brazil.

Email: anameisreis97@gmail.com

(No relationships reported)

PURPOSE: The prevalence of obesity has grown over the years around the world. The accumulation of fat in the abdominal region is strongly associated with changes in pulmonary function and mechanics, as well as pulmonary inflammation that can lead to the development of respiratory diseases. Several studies have evidenced that aerobic exercise and resistance training promote numerous benefits in the respiratory system. However, no study have evaluated the effects of combined training program (aerobic + resistance) on lung mechanics and inflammation of overweight women.

METHODS: 100 overweight women were recruited, according to the classification of body mass index (BMI) proposed by the World Health Organization. The combined training protocol (aerobic + resistance) was performed 3x/week for 12 weeks, 1 hour/session. Inclusion criteria: no respiratory diseases, nonsmokers, no reprimed infections in the last 30 days, without musculoskeletal diseases. Nitric oxide levels in exhaled air were evaluated using the NOBreath portable nitric oxide monitor. Lung mechanics (by impulse oscillometry) was evaluated according to American Thoracic Society recommendations by using IOS Masterscreen Jaeger (Germany). Graph Pad Prism 5.0 was used to perform statistical analysis and $p<0.05$ were considered significant.

RESULTS: The data shown here are from 15 women, as the program is still ongoing. Combined training resulted in reduced pulmonary inflammation, as measured by the levels of exhaled nitric oxide (pre: 16.67±7.66 ppb; post: 8.27 ± 4.54 ppb; $p=0.0014$). In addition, combined physical training significantly improved the pulmonary mechanics of these obese women, as improvements in the impedance of the respiratory system (Z5 Hz, pre: 4.35 ± 1.41, post: 0.55 ± 0.15, $p<0.0001$), total resistance of respiratory system (R5 Hz, pre: 4.03 ± 1.28, post: 0.52 ± 0.14, $p<0.0001$) and proximal airway resistance (R20 Hz, pre: 3.00 ± 1.08, post: 0.41 ± 0.12, $p<0.0001$) were observed. In the distal region of the lung, the combined training protocol significantly reduced the elastance (X5, pre: -1.55 ± 0.67, post: -0.18 ± 0.05, $p<0.0001$) and the resistance of the small airways (R 5 Hz - R20 Hz, pre: 1.03 ± 0.45, post: 0.11 ± 0.06, $p<0.0001$).

CONCLUSIONS: Combined training improved lung mechanics and inflammation of overweight women.