



30th EUROPEAN CONGRESS ON OBESITY

17-20 May 2023 | The Convention Centre Dublin | Dublin, Ireland

POSTER SESSION

- PO1.092** **Telomere Length and Exposures to PM10 in Individuals with Overweight/Obesity**
Luisella Vigna, Michele Carugno, Dario Consonni, Angela C Pesatori, Elisa Borroni, Valentina Ballati
- PO1.093** **Analysis of the efficacy and the long-term metabolic and nutritional status of sleeve gastrectomy with transit bipartition compared to Roux-en-Y gastric bypass in obese rats**
Clément Baratte, Willemetz Alexandra, Lara Ribeiro, Claire Carette, Simon Msika, André Bado, Sébastien Czernichow, Tigran Poghosyan, Maude Le Gall
- PO1.094** **Circulating and methylation levels of osteopontin during a very low-calorie ketogenic diet in blood from patients with obesity**
Paula M Lorenzo, Andrea G Izquierdo, Ignacio Sajoux, Maitane Nuñez Garcia, Javier Baltar, Gemma Rodriguez Carnero, Daniel De Luis, Francisco J Tinahones, Felipe F Casanueva, Ana B Crujeiras
- PO1.095** **Ldlr^{-/-}-Leiden mice develop neurodegeneration, age-dependent gliosis and obesity-induced changes in microglia immunophenotype which are partly reversed by complement component 5 neutralizing antibody**
Elorine Seidel, Kees Fluiter, Robert Kleemann, Nicole Worms, Anita Van Nieuwkoop, Martien Caspers, Nikolaos Grigoriadis, Amanda J. Kilian, Frank Baas, Iliana Michailidou, Martine C. Morrison
- PO2.001** **Barriers and enablers to signing up for a weight management program after receiving an opportunistic referral from a General Practitioner**
Chiara Gericke, Sterling Rippy, Danielle D'lima
- PO2.002** **Physical activity, strength training and nutritional support in patients with metabolic syndrome from a Northeast Portuguese primary health care: A pilot community intervention program**
José Augusto Bragada, José Araújo Teixeira, João Pedro Bragada, Carlos Manuel Duarte, João Henrique Pontes, Laissa Sousa Saldanha, Pedro Miguel Magalhães
- PO2.003** **Eating behavior features in persons with cardiac pathology**
Sofya Olegovna Eliashevich, Anastasia Vladimirovna Orekhova, Elena Mikhailovna Filichkina, Elena Borisovna Yarovaya, Oxana Mikhailovna Drapkina
- PO2.004** **Trends in body weight status and weight management practices among the first-year university students**
Vilma Kriaučiūnienė, Janina Petkevičienė, Asta Raskilienė
- PO2.005** **Changes in weight, attitudes and behaviors in Mexican adults living with obesity after almost two years of the COVID-19 pandemic**
Verónica Vázquez Velázquez, Alexandra Rodríguez González, Sofía Sánchez Román, Héctor Velázquez Jurado, Ahidée Guadalupe Leyva López
- PO2.006** **Weight Change after Smoking Cessation and Risk of Cardiovascular disease, Lung cancer and All-Cause Death: A Nationwide Cohort Study in South Korea**
Kyoung Hwa Ha, Yun Jung Jung, Dae Jung Kim
- PO2.007** **The effect of sleep mismatch and sleep duration on obesity in the different age groups in Korea: Nation-wide cross sectional study**
Yang Hyun Kim, Koh Eun Shin

PHYSICAL ACTIVITY, STRENGTH TRAINING AND NUTRITIONAL SUPPORT IN PATIENTS WITH METABOLIC SYNDROME FROM A NORTHEAST PORTUGUESE PRIMARY HEALTH CARE: A PILOT COMMUNITY INTERVENTION PROGRAM

J. BRAGADA ^{1,3}, J. E. TEIXEIRA ^{1,2}, J. BRAGADA ⁴, J. DUARTE ¹, J. PONTES ¹, L. SALDANHA ¹, P. MAGALHÃES ^{1,3}

1 Sports Science Department, Polytechnic University of Bragança, Portugal (IPB)
2 Sports Science Department, Polytechnic Institute of Guarda, Portugal (IPG)
3 Research Centre in Sports, Health and Human Development, Portugal (CIDESD)
4 North East Local Health Unit – Health Care Unit of Santa Maria, Bragança, Portugal (ULSNE)



INTRODUCTION

Metabolic syndrome (MetS) is a common metabolic disorder characterized by a cluster of factors such as central obesity, dysglycemia, dyslipidaemia and hypertension (1). The combination of these factors increases the risk of metabolic and cardiovascular diseases. The prevalence of MetS has been increasing in the Portuguese population (2). Primary prevention using physical activity (PA), exercise and healthy lifestyles seems to be adequate (3).

The combination of a restricted diet, with aerobic exercise and general strength training may control or reverse some risk factors associated with MetS (4).

AIM

Aim: Current study aimed to measure the effect of physical activity, exercise and nutritional support on health-related parameters in adults and elderly with MetS in a North-Eastern Portuguese primary health care.

Research Questions:

- Is an Intervention program with the prescription of PA ($\geq 10,000$ steps + ≥ 10 floors of climbing, per day, with 1 long walk per week $\geq 15,000$ steps + ≥ 15 floors of climbing), strength training (2 times a week), and nutritional counselling sufficient to cause significant improvements in MetS risk factors?
- Which risk factors are most sensitive to the prescribed program?

RESULTS

Regarding PA parameters at the end of the three-month program, the average number of daily steps was 11,818, the number of daily floors was 15.35 and moderate to vigorous PA was 253 minutes/week. Related with MetS risk factors, an improvement occurred in values after intervention program in almost all subjects in the following variables: fasting glucose (FG), diastolic blood pressure (DBP) and systolic blood pressure (SBP). In the anthropometric variables, it were observed an improvement in weight, lean body mass, fat body mass. In relation to glycated hemoglobin (HbA1c) a clinically important reduction was observed in almost all subjects. Regarding to heart rate recovery (HRR) after exercise, there was an increase in cardiovascular capacity, expressed by the expressive reduction in HR after exertion (Table 2).

Total cholesterol (TC), HDL, TG, and waist circumference (WC) were the variables in which a clear trend in modification was not observed. It will probably take a more rigorous program or longer duration for significant changes to occur.

Table 1. Values of MetS risk factors that suffered the most relevant changes during de intervention program.

ID	FG Pre	FG Post	DBP Pre	DBP Post	SBP Pre	SBP Post
1	108	108	84	67	124	103
2	95	91	40	80	127	123
3	123	122	83	69	139	118
4	172	124	77	80	141	151
5	88	83	78	77	125	105
6	-	93	82	73	124	114
7	114	106	97	83	172	139
8	161	109	104	85	168	122

Table 2. Changes in weight, lean body mass, body fat mass, HbA1c and heart rate recovery for 1 minute in StepTest4all (see ref. 5) for each subject.

ID	Weight (Δ kg)	Lean_Mass (Δ %)	Fat_Mass (Δ %)	HbA1c Pre	HbA1c Post	HRR_1min Pre	HRR_1min Post
1	-3.1	+2.8	-3.2	5.7	5.4	57	64
2	-4.4	+3.2	-3.6	5.4	4.9	51	52
3	-2.6	+3	-3.2	6.2	6.3	57	37
4	-1.2	+3	-3.1	10.5	6.2	16	23
5	-2.6	+1.1	-1.2	5.4	5.1	21	28
6	-0.3	+1.6	-1.6	-	5.2	29	-
7	-1.7	+2	-3	6.3	-	21	-
8	-4.4	+6	-6.3	7.1	5.8	19	24

METHOD

Eight participants completed the three-month intervention program. A pre- and post-intervention follow up was conducted. Nutritional and dietary evaluation was recorded. The program included: (i) evaluation and prescription of PA (steps/day and floors/day); (ii) nutritional and dietary support; (iii) aerobic and strength training sessions; (iv) blood testing; (v) anthropometric and body composition assessment. The aerobic exercises prescribed were: 10,000 steps daily (including a longer session on the weekend with 15,000 steps), plus 10 floors daily. The designed strength training program was: (i) frequency of 2x/week; (ii) 8 to 10 exercises, in order to work the main muscle groups; (iii) 2 sets of 10 to 12 repetitions; (iv) 60 to 70% of one maximum repetition. Blood samples evaluated HbA1c, FG, TG, HDL, cholesterol, and TC. It was also evaluated SBP and DBP with an electronic blood pressure monitor, as well as body weight (kg), lean body mass (kg) and fat mass percentage (%) by a bio-impedance scale (Tanita MC 780-P MA®). MetS parameters was defined by joint interim statement (JIS) criteria (5).

CONCLUSIONS

- Clinically relevant improvements were observed in the following MetS-related risk factors: FG, HDL, SBP, and DBP.
- Relevant improvements were also observed in glycemic control, with an overall reduction in HbA1c.
- Greater effect on sedentary individuals and subjects who followed the training program more rigorously.
- Weight reduction was observed to the detriment of the decrease mainly in fat mass alone.
- Strength training in gym may have been important in increasing lean body mass.
- The data also suggest an improvement in cardiorespiratory capacity, observed by the reduction in HR at rest and in the one-minute recovery HR after exertion.

ACKNOWLEDGEMENT

This study is a result of the project “GreenHealth - Digital strategies in biological assets to improve well-being and promote green health” (Norte-01-0145-FEDER-000042), supported by North Portugal Regional Operational Programme (NORTE 2020), under the PORTUGAL 2020 Partnership Agreement, through the European Regional Development Fund (ERDF)”.

REFERENCES

- 1 - Scuteri A, Laurent S, Cucca F, Cockcroft J, Cunha PG, Mañas LR, et al. Metabolic syndrome across Europe: Different clusters of risk factors. *Eur J Prev Cardiol.* 2015;22:486–91.
- 2 - Teixeira, J.E.; Bragada, J. A.; Bragada, J. P.; Coelho, J.; Pinto, I. G.; Reis, L. P.; Magalhães, P. (2022). The prevalence of metabolic syndrome and its components in Bragança District, North-Eastern Portugal: a retrospective observational cross-sectional study. *Revista Portuguesa de Endocrinologia, Diabetes e Metabolismo.* ISSN 1646-3439. 17:1-2, p. 51-57
- 3 - Liang M, Pan Y, Zhong T, Zeng Y, Cheng ASK. Effects of aerobic, resistance, and combined exercise on metabolic syndrome parameters and cardiovascular risk factors: a systematic review and network meta-analysis. *Rev Cardiovasc Med.* 2021 Dec 22;22(4):1523-1533. doi: 10.31083/j.rcm2204156. PMID: 34957791.
- 4 - Zhou Y, Wu W, Zou Y, Huang W, Lin S, Ye J, Lan Y. Benefits of different combinations of aerobic and resistance exercise for improving plasma glucose and lipid metabolism and sleep quality among elderly patients with metabolic syndrome: a randomized controlled trial. *Endocr J.* 2022 Jul 28;69(7):819-830. doi: 10.1507/endocrj.EJ21-0589. Epub 2022 Feb 22. PMID: 35197411.
- 5 - Bragada JA, Bartolomeu RF, Rodrigues PM, Magalhães PM, Bragada JP, Morais JE. Validation of StepTest4all for Assessing Cardiovascular Capacity in Young Adults. *Int J Environ Res Public Health.* 2022 Sep 8;19(18):11274. doi: 10.3390/ijerph191811274. PMID: 36141547; PMCID: PMC9517667.
- 6 - Alberti KG, Eckel RH, Grundy SM, Zimmet PZ, Cleeman JJ, Donato KA, Fruchart JC, James WP, Loria CM, Smith SC Jr; International Diabetes Federation Task Force on Epidemiology and Prevention; National Heart, Lung, and Blood Institute; American Heart Association; World Heart Federation; International Atherosclerosis Society; International Association for the Study of Obesity. Harmonizing the metabolic syndrome: a joint interim statement of the International Diabetes Federation Task Force on Epidemiology and Prevention; National Heart, Lung, and Blood Institute; American Heart Association; World Heart Federation; International Atherosclerosis Society; and International Association for the Study of Obesity. *Circulation.* 2009 Oct 20;120(16):1640-5. doi: 10.1161/CIRCULATIONAHA.109.192644. Epub 2009 Oct 5. PMID: 19805654.

CONTACT INFORMATION

José Bragada (jbragada@ipb.pt)

EASO
European Association for the Study of Obesity

ASO
Association for the Study of
Obesity of the United Kingdom



30th EUROPEAN CONGRESS ON OBESITY

17-20 May 2023 | The Convention Centre Dublin | Dublin, Ireland



PROGRAMME BOOK

DOWNLOAD YOUR
MOBILE APP
"ECO23"

