EVALUATING AND PRESCRIBING PHYSICAL ACTIVITY AND EXERCISE IN HEALTH CENTERS FOR INDIVIDUALS WITH METABOLIC SYNDROME –MOVING FROM PILOT STUDY TO BROAD IMPLEMENTATION

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01. INTRODUCTION

Physical activity (PA) and exercise are vital for health promotion (Ács et al., 2020; Blue, 2017). Regular exercise, combined with dietary advice, significantly improved to normal values the metabolic syndrome (MetS) factors (Magalhães et al., 2023; Teixeira et al., 2022). Thus, the health centres should provide PA assessment and prescription, ensuring trained personnel, dedicated space, and regular follow-up for patients (Bragada et al., 2023).

02. OBJECTIVE

This project aims to include physical activity, exercise and nutritional monitoring in primary healthcare centers as a primary intervention for cardio-metabolic diseases.

Research issue

- The exponential increase of MetS conditions such as obesity, dysglycemia, dyslipidemia and hypertension, will impose an medical expenses on healthcare systems with indirect costs in labour productivity and missed work days (Hone et al., 2019; WHO, 2021).
- This global problem can only be solved with health education and exercise-based primary prevention (Hone et al., 2019).
- In this context, it would be highly beneficial if health centres had the necessary resources and qualified personnel to assess and prescribe physical exercise for specific population groups who, based on medical advice, should increase their engagement in exercise and physical activities (Magalhães et al., 2023; Teixeira et al., 2022).

03. METHODOLOGY

Eight participants (49.9 ± 6.1 years) completed a 3-month intervention program, all of them with the MetS diagnosis with 3 or more of the joint interim statement (JIS) criteria (Alberti et al., 2009):

- **High abdominal circumference (≥ 102 cm in men; ≥ 88 cm in women);**
- **Reduced HDL cholesterol (< 40 mg/dL in men; < 50 mg/dL in women);**
- **Increased triglycerides (≥ 150 mg/dL);**
- **High blood pressure (or anti-HTA medication) (SBP ≥ 130 mmHg; DBP ≥ 85 mmHg);**
- **High fasting glycaemia (or medication for hyperglycaemia) (≥ 100 mg/dL).**

Changes in weight, lean body mass, body fat mass, HbA1c and heart rate recovery for 1 minute in StepTest4all were monitored during 3-month intervention (Bragada et al., 2023).

04. RESULTS

MetS risk factors: We found that regular PA and exercise, combined with dietary counselling, had a significant impact on improving MetS risk factors, particularly fasting blood glucose, diastolic blood pressure, and systolic blood pressure.

Body composition: Anthropometric variables showed improvements in weight, lean body mass, and body fat mass.

Clinical analysis: In regard to glycated hemoglobin (HbA1c), there was a clinically significant reduction in the majority of participants.

Heart rate recovery: Exercise led to an improvement in heart rate recovery after exercise, reflecting an increase in cardiovascular capacity

ID	Weight (△kg)	Lean_Mass (△%)	Fat_Mass (△%)	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

INTERVENTION PROGRAM

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®).

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05. CONCLUSION

The intervention strategies of health centres can take into account the following aspects: (1) set up multidisciplinary task force with a qualified physical exercise professional or exercise physiologist, a nutritionist and a nurse; (2) providing a suitable and dedicated space for conducting physical activity and dietary counselling consultations; (3) acquiring essential basic equipment for assessments; (4) having the family physician refer the patient to the PA consultation during their visit; (5) conducting regular assessments of physical activity levels and clinical analyses; (6) implementing longitudinal follow-up.

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