Conclusion: The YC-PEM Brazil has acceptable initial psychometric properties and is a valid option to evaluate the participation of young Brazilian children, with or without disabilities, in clinical practice and research.
Implications: The instrument can help health professionals to identify the levels of participation of children aged 0 to 5 years and plan interventions aspired at improving participation in different contexts. In addition, caregivers, who are active agents in the child's support process, can learn about participation and develop skills that promote greater management of their children's levels of functionality and autonomy.
Keywords: Child Health, Social Participation, Data Reliability

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Acknowledgment: Not applicable.
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PEAK EXPIRATORY FLOW AS A PREDICTOR OF DYNAPENIA IN COMMUNITY-DWELLING OLDER ADULTS: A CROSS-SECTIONAL STUDY

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Background: Aging brings damage to the musculoskeletal system, which may result in a decline in neuromuscular strength, a condition called dynapenia. Additionally, there may be impairment of strength and/or respiratory function, which promotes negative outcomes and can potentiate or accelerate the onset of dynapenia in older adults. Previous studies have shown the association of respiratory variables with sarcopenia, as well as suggesting cut-off points as diagnostic criteria for this condition. However, the identification of the association between peak expiratory flow (PEF) obtained by means of the *peak flow meter* with dynapenia, as well as the proposition of cut-off points to predict it in brazilian older adults, have not yet been found in the available literature.
Objectives: To compare the values of PEF between dynapenic and non-dynapenic older adults, to assess the association of PEF with the diagnosis of dynapenia, and to establish cutoff points for PEF to predict dynapenia.
Methods: Cross-sectional study conducted with 382 (70,03±7,30 years) community-dwelling older adults from the urban area of Macapá, Amapá. Peak expiratory flow (PEF) obtained using a *Peak Flow Meter* and dynapenia based on handgrip strength were evaluated, considering three diagnostic criteria: 1(<26 kg for men and <16 kg for women), 2(<30 kg for men and <20 kg for women), and 3(based on the sample's BMI and sex). The Student's t-test was used for group comparisons, and crude and adjusted analyses using a binary logistic regression model were performed to verify the association between PEF and dynapenia ($p<0,05$). Receiver Operating Characteristic (ROC) curves with parameters of area under the ROC curve (AUC), sensitivity, and specificity, with a 95% confidence interval and a significance level of 5%, were generated to identify potential PEF cut-off points as discriminators of dynapenia.
Results: Lower PEF values were observed in those with dynapenia when compared to those with non-dynapenia ($p<0,001$); and in the adjusted analysis, there was an inverse association between PEF and dynapenia, independent of the cutoff point considered ($p<0,05$). Cutoff points were established for PEF as a discriminator of dynapenia, namely: 1 (PEF≤260L/min; AUC=0.631; sensitivity=70.42%; specificity=49.20%), 2 (PEF≤280L/min; AUC=0.624; sensitivity=71.94%; specificity=45.27%) and 3 (PEF≤250L/min; AUC=0.640; sensitivity=70.37%; specificity=52.82%).
Conclusion: The elderly with dynapenia had lower PEF values compared to the elderly without dynapenia. In addition, PEF cut-off points have been proposed to predict dynapenia, results which demonstrate that PEF seems to influence the dynapenia process.
Implications: The identification of the association and the diagnostic criteria for dynapenia based on PEF, using the *peak flow meter*, a portable device widely used by physical therapists, can help to screen for this condition and based on this, propose measures for prevention and care of the elderly respiratory health.
Keywords: Aged, Muscle strength, Peak Expiratory Flow Rate

Conflict of interest: The authors declare that there are no conflicts of interest.
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VENTILATORY VARIABILITY IN HEART FAILURE, CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND HEART FAILURE PLUS CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Background: Ventilatory variability (vVE) constitutes the dynamic and complex breath-to-breath oscillation of pulmonary ventilation. However, vVE has only recently been investigated in heart failure and chronic obstructive pulmonary disease (COPD) using the Poincaré approach. Briefly, the Poincaré analysis generates, through scatter plots, two pieces of information: called SD1 (standard deviation 1) and SD2 (standard deviation 2); SD1 is defined as the dispersion of data points perpendicular to the line of identity across the plot's centroid and is a short-term variability descriptor; SD2 describes the dispersion of points along the line of identity and reflects the long-term variability of the signal.
Objectives: the present study aims to perform Poincaré analysis to distinguish vVE patterns between healthy controls and patients diagnosed with COPD, heart failure (HF) and heart failure with COPD during cardiopulmonary exercise testing (CPET).
Methods: Patients with COPD, heart failure, COPD + HF and healthy subjects participated in this research. Lung function was performed according to the recommendations of the American Thoracic Society/European Respiratory Society and adjusted to the Brazilian reference values. Standard echocardiography followed the recommendations of the American Echocardiography Society. A symptom-limited incremental CPET was performed on a cycle ergometer, with increments per minute of 5–10 W for patients and 10–15 W for healthy controls. Poincaré´ analysis was used to calculate vVE using a custom R program (http://www.R-project.org),

with breath-by-breath aliquots to obtain SD1 and SD2 values, normalized by the number of points in VE. All procedures were approved by the Local Ethics Committee (51596221.4.0000.5076).
Results: Demographic and anthropometric data including age, height, weight and BMI were not significantly different between groups ($P > 0.05$). SD1 and SD1/SD2 for VE were significantly different for heart failure and heart failure-COPD compared to COPD and controls ($P > 0.05$). SD2 did not differ between groups ($P>0.05$). Surprisingly, COPD and controls shared very similar mean values for SD1, SD2, and SD1/SD2, and HF-COPD showed similar vVE to heart failure alone ($P>0.05$).
Conclusion: Our results demonstrated increased vVE in chronic heart failure applying the Poincaré approach.
Implications: Despite the small number of patients, our preliminary results support the measurement of vVE by the Poincaré´ method as a promising tool in clinical physiology.
Keywords: Ventilation variability, COPD, Cardiac insufficiency, Heart failure

Conflict of interest: The authors declare no conflict of interest.
Acknowledgment: Not applicable.
Ethics committee approval: Evangelical University of the State of Goiás - 51596221.4.0000.5076.

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ACUTE HEMODYNAMIC RESPONSES DURING RESISTANCE TRAINING WITH BLOOD FLOW RESTRICTION: A SYSTEMATIC REVIEW AND META-ANALYSIS OF CROSS-STUDIES

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Background: Studies using resistance training with partial restriction of blood flow (BRF) have shown significant gains in muscle performance, such as gains in strength and hypertrophy, however, few studies have evaluated the hemodynamic effects after using the technique.
Objectives: It consists of analyzing whether the BFR significantly alters the hemodynamic variables (HR, SBP, DBP) in comparison with the passive control (PC) and active control (conventional resistance training - CRT) groups.
Methods: The present study is a systematic review with meta-analysis registered in PROSPERO (No. CRD42021234757) and follows the Cochrane standard recommendations and the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) guidelines.
Results: A total of 15 randomized crossover studies with 466 participants were eligible for analyses. Our data demonstrated that BFR significantly increased HR compared to the PC condition (mean difference [MD] = 7.25, 95% CI: 2.15−12.35 bpm, $I^2 = 12\%$), considering all data pooled (6 studies, 7 comparisons, n = 192 subjects); however, BFR showed no significant differences from the CRT condition) (MD = −4.75, 95% CI: −12.70 at 3.20 bpm, $I^2 = 83\%$) (10 studies, n = 276 subjects). Considering all data pooled (5 studies, 7 comparisons, n = 186 subjects), BFR significantly increased SBP (MD = 11.67, 95% CI: 6.17−17.17 mmHg, $I^2 = 0\%$) compared to the condition of PC. In contrast, there was no difference when compared to the CRT condition (MD = 2.17, 95% CI: −5.62 to 9.96 mmHg, $I^2 = 77\%$) (10 studies, n = 264 subjects). Similar to SBP, BRF significantly increased DBP (MD = 6.93, 95% CI: 1.24−12.61 mmHg, $I^2 = 41\%$) (5 studies, 7 comparisons, n = 186 subjects) compared to PC condition while there was no difference when compared to the CRT condition (MD = 1.41, 95% CI: −6.49 to 9.31 mmHg, $I^2 = 89\%$) (11 studies, n = 306 subjects).
Conclusion: Our data demonstrated that, despite causing remarkable hemodynamic responses compared to no exercise, BFR modulates all hemodynamic parameters HR, SBP and DBP, similarly to CRT.
Implications: The present research provides evidence supporting the use of BFR associated with RT in healthy subjects.
Keywords: Hemodynamics, Resistance training, Blood flow restriction

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EFFECTIVENESS OF GAMIFIED EXERCISE PROGRAMS ON THE LEVEL OF PHYSICAL ACTIVITY IN ADULTS WITH CHRONIC DISEASES: A SCOPING REVIEW

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Background: Non-communicable chronic diseases are characterized by their slow progression and long duration. They usually require ongoing management. The practice of regular physical exercises is recommended due to the already proven benefits; however, it still has low adherence by patients. In view of this, we currently observe the increasing use of technologies with the aim of reducing sedentary behavior to improve disease management, as well as prevent them in this population.
Objectives: To map and understand the state of the art in the use of gamified exercise programs in the level of physical activity, sedentary behavior, and quality of life in patients with chronic non-communicable diseases. In addition, to investigate whether there is a difference in the benefits of programs with or without professional exercise supervision.
Methods: In this scope review, searches were performed in the following databases: PubMed, EMBASE, PEDro, LILACS and Cochrane Library. Randomized clinical trials with adults or elderly people with chronic diseases undergoing gamified exercise programs that investigated the effect of gamified exercise programs compared to usual exercise on physical activity level, sedentary behavior and quality of life were included. The methodological quality (via PEDro, 0 to 10pts), the description of the intervention (via TIDier, 0 to 20pts) and the quality of health applications (via MARS, 0 to 20pts) of the included studies were evaluated.
Results: Nine studies were included (n=901; 61±5 years) including three studies in individuals with cancer, one with stroke, one with multiple sclerosis, one with COPD, two with Diabetes Mellitus, and one with knee and hip osteoarthritis. In three studies, gamification was performed via a smartphone application. The intervention was supervised in six of the nine studies. The scores of the studies in PEDro and TIDieR were 5.5±1.3 (ranging from 0 to 8 pts) and 16.11±3.14 (ranging from 10 to 20 pts), respectively. MARS (ranging from 10,9 to 16,9 pts) was applied in three studies and the score was 13.4±9.75. Supervised gamified interventions increased the level of physical activity (movement time, daily steps and distance walked in 6 minutes) compared to usual supervised exercises.