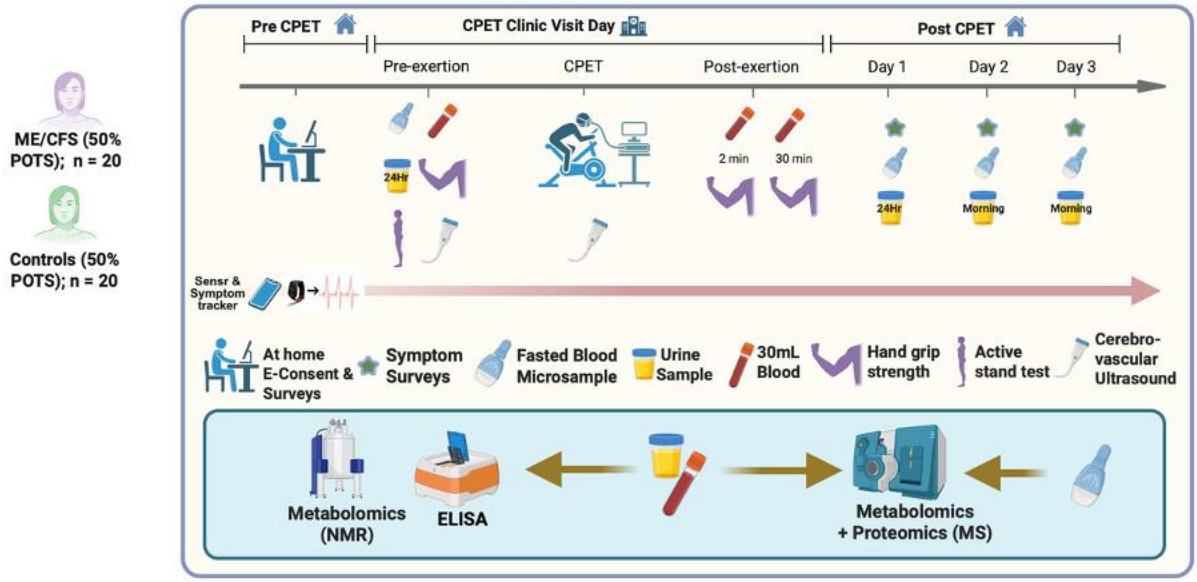
2462

Developing An Integrative Protocol To Address Post-exertional Malaise In Myalgic Encephalomyelitis/ Chronic Fatigue Syndrome (ME/CFS)

Kegan J. Moneghetti[1], Elena M. Christopoulos[2], Erin J. Howden[1], Jack S. Talbot[1], Christopher W. Armstrong[2]. [1]*Baker Heart and Diabetes Institute, Melbourne, Australia.* [2]*University of Melbourne, Melbourne, Australia.* (Sponsor: Jeffrey Christle, FACSM)
(No relevant relationships reported)

PURPOSE: The latest ACSM Guidelines for Exercise Testing and Prescription (March 2025) highlight the importance of considering post exertional malaise (PEM) in exercise prescription for myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS), however the aetiology of PEM remains unknown. Therefore, we aimed to design a protocol to further evaluate the mechanisms underlying PEM to further refine physical activity and pacing recommendations for ME/CFS with and without postural orthostatic tachycardia syndrome (POTS).
METHODS: To further investigate PEM aetiology, participants with ME/CFS with and without POTS (n=10 each), POTS alone (n=10), and 10 healthy controls will complete a cardiopulmonary exercise test (CPET). To explore aetiologies of PEM beyond metabolic dysfunction as identified through a CPET, we included A) comprehensive metabolomic and proteomic analysis of blood and urine collected prior to and for up to 3 days following exertion, B) cerebral blood flow measurement via extracranial doppler ultrasound of the carotid arteries during the CPET and an active stand test to assess orthostatic responses, C) maximal handgrip strength tests pre- and post-exertion to measure neuromuscular fatigue, and D) a heart rate and activity monitor worn to monitor orthostatic related fluctuations. To integrate these techniques to identify aetiologies of PEM, daily symptom questionnaires will be utilized to track PEM and orthostatic intolerance symptoms and match those with biological markers.
RESULTS: We identified a diagnostic technique that integrates metabolic, hemodynamic, molecular, and neuromuscular assessments with symptom tracking in a unified framework to capture the onset and progression of PEM (Figure 1).
CONCLUSIONS: This protocol provides a comprehensive, integrated physiological data set to further define PEM in ME/CFS and clarifies the influence of POTS on PEM severity.



2463

Difference Of Fitness Level Changes By Age Group After Rehabilitation Exercise Program Among Stroke Patients

Dae Gyun Jeong[1], Heeju Kim[1], Jaehak Kim[2], Dae Taek Lee[1]. [1]*Kookmin University, Seoul, Korea, Republic of.* [2]*National Rehabilitation Center, Seoul, Korea, Republic of.*
(No relevant relationships reported)

PURPOSE: To analyze the effects of rehabilitation exercise program (REP) among stroke patients across age groups. **METHODS**: Eighty stroke patients within one year of onset were admitted to the Korea National Rehabilitation Center and recruited in the study. They participated in REP lasting 60 min a session, twice a week for 8 weeks. Exercise intensity was maintained at ratings of perceived exertion of 11-16. REP consists of whole-body strength training, aerobic circuit training, and manipulative exercises such as throwing, catching, striking, and rolling. Before and after REP, muscular strength (Grip Strength; GS), muscular endurance (Arm Curl; AC, Sit-Up; SU), cardiopulmonary endurance (6-Minute Walk Test; 6MWT), flexibility (Sit and Reach Test; SRT), coordination (Visual Reaction Time Test; VRT), and balance ability (Timed Up and Go Test; TUG) were evaluated. Participants were grouped by the age of 10-29 (G20, n=20, 20.4±5.8 yrs, 164.2±13.5 cm, 63.3±15.7 kg), 30-49 (G40, n=20, 41.8±4.6 yrs, 172.0±7.7 cm, 77.3±11.9 kg), 50-69 (G60, n=20, 58.6±5.8 yrs, 165.0±8.1 cm, 65.6±9.2 kg), and 70< (G80, n=20, 78.6±5.5 yrs, 160.5±4.9 cm, 61.4±5.8 kg). **RESULTS**: GS of affected side in G20 (from 12.3 to 16.1 kg) and G40 (from 14.1 to 16.5 kg) improved significantly ($p<0.05$) after REP, but not in G60 and G80. GS of unaffected side of all groups was not changed after REP. AC of both affected (average ranged from 21.4-24.2 to 28.1-32.9 kg) and unaffected (average range from 31.0-32.6 to 38.3-39.0 kg) sides and SU improved (average range from 14.6-18.6 to 18.9-23.3 times) significantly ($p<0.05$) after REP in G20, G40, and G60, but not in G80. Both 6MWT (average range from 298-380 to 361-501 meter) and VRT (average range from 55.0-83.4 to 62.0-90.2 score) improved significantly ($p<0.05$) in all groups after REP. SRT improved (from -0.2 to 3.1 cm) significantly only in G80 ($p<0.05$). TUG improved (average range from 13.9-20.7 to 10.0-17.2 sec) significantly ($p<0.05$) after REP in G40, G60, and G80, but not in G20. **CONCLUSIONS**: Rehabilitation exercise program for stroke patients has a positive effect on overall physical fitness level. However, age specific rehabilitation program for stroke patients may be required, for example muscular strength and endurance for over 70 years old and flexibility for younger than 70 years.