RESULTS: Twenty-one older adults (11 men, 10 women; age 70 ± 6 yrs.) completed the study. There were no significant correlations for BF% ($r^1 = 0.19$, $p^1 = 0.41$), LBMS ($r^1 = -0.07$, $p^1 = 0.78$), and PF ($r^1 = 0.14$, $p^1 = 0.55$) on WE at the 0.45 m·sec⁻¹ speed. Correlations were also not significant on WE at the 0.89 m·sec⁻¹ speed [BF% ($r^2 = -0.22$, $p^2 = 0.34$), LBMS ($r^2 = 0.01$, $p^2 = 0.96$), and PF ($r^2 = 0.18$, $p^2 = 0.44$)] and the 1.34 m·sec⁻¹ speed [BF% ($r^3 = 0.09$, $p^3 = 0.71$), LBMS ($r^3 = 0.14$, $p^3 = 0.54$), and PF ($r^3 = -0.26$, $p^3 = 0.25$)].
CONCLUSION: BF%, LBMS, and PF may not be associated with age-related decrements in WE with older adults during treadmill walking. Future research is needed to better determine the interactions of these variables on WE in older adults.

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Passive Mobilization-induced Vascular Function: Adaptations In Bedridden Oldest-old.

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(No relevant relationships reported)

PURPOSE: With aging, vascular function (VF) declines. Indeed, a conspicuous number of oldest-old individuals are in chronically bedridden, and literature indicates that chronic immobility exacerbates VF decline. Although studies have suggested that passive mobilization of the limbs (PM) may improve local VF, the effect of PM on nitric oxide (NO)-mediated VF has not been studied yet. Therefore the aims of this study were determine whether PM is effective to counteract VF worsening in bedridden oldest- old. We hypothesized that bedridden patients who underwent a month of PM would have gained significant improvement in NO-mediated VF.
METHODS: Twenty bedridden individuals (86±7 yrs) were randomly assigned to PM or control (CT) group, treated with standard therapies only. PM groups underwent a program of 30 min of passive knee (flexo-extension) mobilization (4-week, twice a day/5 days a week) in addition to their standard therapies. Pre and post treatment, NO-mediated VF was measured by means of single passive limb movement (sPLM) test.
RESULTS: All PM patients completed all sessions. Concerning sPLM test, PM group improved significantly sPLM$_{peak}$ (+33%), ΔPLM (+55%), as well as Area Under the Curve (AUC, +200%). CT group did not exhibit any change in VF.
CONCLUSIONS: Results suggest that the reduction in VF exhibited in chronically bedridden oldest-old individuals can be reversed by a PM program. PM seems to be an effective strategy to counteract the deleterious effects of bedridden.

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Comparing Post-Exertional Symptoms Following Serial Exercise Tests

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Post-exertional malaise (PEM) is an exacerbation of symptoms that leads to a reduction in functional ability. Recognizing the triggers, onset, symptoms and duration of PEM is important for the diagnosis of Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (ME/CFS). PEM following serial exercise tests has not been examined.
PURPOSE: To compare descriptions of symptoms by ME/CFS and control subjects after two maximal exercise tests, each separated by 24 hours.
METHODS: Open-ended questionnaires were provided to 11 control subjects and 49 ME/CFS patients who underwent two maximal exercise tests, 24 hours apart. Each subject evaluated how they felt immediately after the first exercise test, before and immediately after the second exercise test, and in the week following the tests. Responses were analyzed and categorized by two reviewers, blinded to subject diagnosis. Repeated measures ANOVA was used to examine differences between groups.
RESULTS: Over the two days of testing, ME/CFS subjects reported an average of 15.4±7.7 symptoms compared to 5.5±1.8 in the control group. Following the tests, ME/CFS subjects reported an average of 5.0±2.8 symptoms compared to 0.1±0.3 in the control group. Among the ME/CFS subjects, fatigue, cognitive dysfunction, and sleep problems were reported with the greatest frequency. Out of the eighteen symptom categories, ME/CFS subjects reported seventeen at a higher frequency than control subjects. The largest differences were observed in cognitive dysfunction, headache, light-headedness, muscle/joint pain and weakness. Other symptoms included decreased function, pain, flu-like and gastrointestinal symptoms. Forty-nine percent of ME/CFS subjects recovered within an average of 4.5 days while fifty-one percent had not recovered by day seven. In contrast, all but one control subject recovered within 1 day.
CONCLUSION: A standardized exertional stimulus produces prolonged and more diverse symptoms in ME/CFS subjects compared with those seen in control subjects. Understanding PEM more comprehensively may provide clues to the underlying pathophysiology of ME/CFS and lead to improved diagnosis and treatment.

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Exercise Ventilatory Limitation To Exercise In Dyspneic Iraq And Afghanistan Veterans

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(No relevant relationships reported)

Veterans of Iraq and Afghanistan frequently report dyspnea on exertion following deployment despite the presence of normal pulmonary function testing. Determining underlying causes of exertional dyspnea is difficult due to the variety of potential contributing factors, but a ventilatory limitation to exercise is one factor that may contribute to the perception of dyspnea.
PURPOSE: The goal of the present study was to determine the frequency of ventilatory limitation to exercise and compare pulmonary function between those individual with (VL+) and without (VL-) ventilatory limitation.
METHODS: 83 deployed Iraq and Afghanistan Veterans (43.5±9.8 years; 72 men and 11 women) were referred to our dyspnea clinic and completed pulmonary function and cardiopulmonary exercise testing (CPX). VL+ during CPX was defined as a peak exercise ventilation (VE) that was ≥ 80% of the maximal voluntary ventilation (VE/MVV > 0.80). All Veterans completed pulmonary function testing (PFT) including body plethysmography, spirometry, diffusing capacity and forced oscillometry testing (FOT). Veterans with abnormal baseline PFTs and current smokers were excluded from analysis.
RESULTS: 30.1% of our sample (25 of 83) demonstrated VL+ during exercise. Groups were similar in age (VL+ vs. VL-; 43.9±9.9 vs. 43.2±9.7 years) and body mass index (31.7±5.6 vs. 30.3±3.7 kg/m^2). In comparison to VL-, Veterans with VL+ had a reduced total lung capacity (TLC % pred; 90.5±9.3 vs. 97.4±13.8, p = 0.027); however, all other pulmonary function indices were similar between groups. CPX patterns differed between groups such that Veterans with a VL+ demonstrated greater peak exercise capacity (Peak VO2 % pred: 90.6±18.0 vs. 73.4±13.7%, p < 0.001) and ventilatory anaerobic threshold (% of peak VO2: 57.2±11.5 vs. 48.9±12.1%, p = 0.015).
CONCLUSIONS: Approximately 30% of our clinical sample referred for evaluation of dyspnea demonstrated a ventilatory limitation to exercise (VL+). However, pulmonary function was similar between groups, and CPX performance was superior in those with VL+. Given the persistence of respiratory symptoms across both groups, these data may suggest that VE/MVV is an insensitive method to evaluate exertional dyspnea in this population.

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The Validity of an Energy Cost Prediction Equation for Unloaded Cycling

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(No relevant relationships reported)

American College of Sports Medicine (ACSM) metabolic equations estimate energy cost from known workloads. These equations may be used in healthy and clinical populations for exercise testing and prescription to determine the metabolic cost and required intensity associated with a desired level of energy expenditure. A constant of 3.5 mL/kg/min is used in the

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