

**METHODS:** Each of 17 active astronauts completed a  $VO_{2pk}$  test with the mouthpiece (first) and the mask (second) for their AFA. The  $VO_{2pk}$  test was conducted on a cycle ergometer with a metabolic cart. The nominal protocol started with a 3 minute warm-up at 50 Watts (W) and increased 25W every minute until volitional fatigue (Light: 45W start; 15W increase). The  $VO_{2pk}$  were compared between tests and the expected day-to-day variation ( $\pm 5\%$ ) was used as the threshold for determining agreement between tests. Submaximal values were plotted and evaluated visually for deviations between mask and mouthpiece.

**RESULTS:**  $VO_{2pk}$  values were more than 5% different, despite similar test times, between mouthpiece and mask in 6 of 17 comparisons, 3 of which were higher with the mask ( $9.0 \pm 5.9\%$ ) while 3 were lower ( $-10.8 \pm 2.0\%$ ) with the mask. The submaximal data did not indicate a leak in either apparatus during these tests. An Astronaut Strength & Conditioning Rehabilitation specialist confirmed that the measured differences in  $VO_{2pk}$  of these 6 astronauts was consistent with observed changes in exercise habits during the year that separated the two tests.

**CONCLUSION:** After being presented with the results of this data mining effort the mask was accepted for use in all tests, accepting that, if a leak is detected without resolve, the test will be repeated (if schedule allows) and remaining tests will be completed with the mouthpiece.

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3379 Board #67 June 1 9:30 AM - 11:00 AM

### What Type Of Exercise Is Appropriate For An Optimistic Affective Mind-set?

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(No relationships reported)

**PURPOSE:** "Affective mind-set" is a mental frame or lens that selectively organizes. Previous reports proved that activation of the left anterior brain region is linked with the optimistic affective mind-set. Aerobic exercise such as moderate-intensity interval training (MIT) and moderate continuous training (MCT) activates the frontal area of the left hemisphere, which gives euphoric feelings. However, whether interval training is appropriate for stimulating an optimistic affective mind-set is unknown. We hypothesized that interval, rather than continuous, training activates the left brain. This study aimed to evaluate which exercise can activate the left brain more by using three different kinds of bicycle exercise.

**METHODS:** The participants were six healthy male volunteers. The three bicycle exercises used were MCT, MIT, and high-intensity interval training (HIT). Exercise intensity was considered in the assessment of the peak heart rate (PHR) induced by the cardiopulmonary exercise test. A 70% PHR was defined as moderate intensity; and 90% PHR, as high intensity. The MCT protocol included 3 min of warm-up (WU) and 40 min of moderate-intensity (70% PHR) continuous exercise, 3 min of cooldown (CD), and 10 min of rest. The MIT protocol was composed of a 3-minute WU, 4 term of moderate-intensity (70% PHR) exercise, active rest (45% PHR), 5-min CD, and 10-min rest. The HIT protocol was composed of a 3-min WU, 4 term of high-intensity (90% PHR) exercise with active rest (70% PHR), 3-min CD, and 10-min rest. Brain activity was measured using electroencephalography (EEG; NegPos, Neuro Sky). EEG was performed during each session. Data were the mean values obtained at WU, CD, and 5-min rest.  $\Delta CD$ -WU and  $\Delta Rest$  5-min WU were calculated. The three groups were compared via one-way analysis of variance, with the Bonferroni test for post hoc comparison.

**RESULTS:** A slight difference was observed among the three groups in  $\Delta Rest$  5-min WU (MIT:  $42.0 \pm 42.6$ , HIT:  $-19.5 \pm 48.6$ , MCT:  $-3.8 \pm 14.8$ ,  $p < 0.057$ ).  $\Delta CD$ -WU was not significantly different among the groups (MCT:  $-2.7 \pm 15.8$ , MIT:  $39.1 \pm 43.7$ , HIT:  $-16.2 \pm 51.1$ ,  $p < 0.11$ ). WU and CD showed no significance differences among the three groups (WU:  $p < 0.25$ , CD:  $p < 0.51$ ).

**CONCLUSION:** MIT is the most appropriate exercise for an optimistic affective mind-set. I have no financial relationships to disclose.

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3380 Board #68 June 1 9:30 AM - 11:00 AM

### Test-retest Reliability Of An Isokinetic Fatigue Test

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(No relationships reported)

By performing muscular testing, such as an isokinetic fatigue test, it is possible to assess anaerobic capacity and measure how muscles perform when isolated. This might also identify weak points and which movements might be related to compensation. However, test-retest reliability is key to obtaining consistent results of muscular function.

**PURPOSE:** To establish isokinetic fatigue test-retest reliability when testing without familiarization.

**METHODS:** 22 masters (53 $\pm$ 5 years), competitive female cyclists completed 2 separate 50-repetition knee extension tests (T1 and T2) on a Biodex isokinetic dynamometer, separated by one-week with no familiarization.

**RESULTS:** Test-retest reliability (intra-class correlation coefficients; ICC), were calculated between T1&T2 scores for fatigue index (T1 38.8 $\pm$ 9.5%; T2 43.7 $\pm$ 6.9%), time to peak torque (T1 280.5 $\pm$ 59.8ms; T2 284.1 $\pm$ 69ms) average power (T1 99.0 $\pm$ 19.4W; T2 100.5 $\pm$ 20.6W), and average peak torque (T1 36.6 $\pm$ 6.3N-m; T2 37.5 $\pm$ 7.1N-m). ICCs between trials exhibited excellent reliability (.93-.97) for all variables except time to peak torque (ICC=.35) and fatigue index (ICC=.65).

**CONCLUSION:** There was strong test-retest reliability for strength and power measurements in masters female cyclists during an isokinetic knee extension fatigue test. However, the test was unreliable for its purpose in determining rate of fatigue. Practitioners should seek other forms of knee extension fatigue measurement.

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3381 Board #69 June 1 9:30 AM - 11:00 AM

### Forearm Circumference as a Sarcopenic Indicator in Older Mexican Population. A Preliminary Study

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The 10.5% of the total Mexican population is 60 years and older, and it is expected that by the year 2050, the older adult population reaches 28.7 million inhabitants. The "fragility phenotype in the older adult", characterized by sarcopenia or loss of skeletal muscle mass and dynapenia or loss of muscle strength, affect functional capacity by impairing neuromuscular functions.

**PURPOSE:** To determine the association between handgrip muscle strength and anthropometric variables associated with muscle mass in a sample of female Mexican older adults.

**METHODS:** Volunteers were 40 healthy women (Age =  $61.15 \pm 6.1$  yr.; Body Mass Index [BMI] =  $27.9 \pm 7.4$  kg/m<sup>2</sup>) residing in Ensenada, Baja California, Mexico. A hand dynamometer (BioRadio, Great Lakes NeuroTechnologies, Cleveland, OH), was used to measure handgrip strength on the dominant hand. The maximal circumference of the dominant forearm was measured following the protocol by the International Society for the Advancement of Kinanthropometry. Bioelectrical impedance analysis (InBody 770; Cerritos, CA) was used to measure body composition. Appendicular skeletal muscle (ASM) relative to BMI and skeletal muscle index (SMI) relative to height (m<sup>2</sup>) were analyzed as anthropometric sarcopenic indicators.

**RESULTS:** The older adult's mean handgrip strength and forearm circumference were  $17.0 \pm 3.3$  kg and  $25.5 \pm 2.3$  cm, respectively. The ASM relative to BMI was  $0.6 \pm 0.1$  and the SMI relative to height was  $6.7 \pm 0.8$ . Handgrip strength was related to arm circumference ( $r = 0.56$ ,  $p = 0.0001$ , 95% CI = 0.31, 0.75,  $R^2 = 0.32$ ), and SMI relative to height ( $r = 0.37$ ,  $p = 0.01$ , 95% CI = 0.08, 0.62,  $R^2 = 0.14$ ). The ASM relative to height was unrelated to handgrip strength ( $r = 0.12$ ,  $p = 0.45$ , 95% CI = -0.20, -0.42,  $R^2 = 0.01$ ).

**CONCLUSIONS:** Reduced handgrip strength and SMI were observed in the female participants compared to international norms. Forearm circumference and SMI relative to height might be considered appropriate assessment measures to explore sarcopenic condition in female Mexican older adults.