in quitting smoking [85% and 83% respectively ($p = 0.20$)]. Time commitment to the program was considered to be "not at all a burden" [88% in both conditions ($p = 0.84$)]. Participants indicated they would "strongly agree" to recommend the program to a friend [95% and 92% respectively ($p = 0.06$)].

CONCLUSIONS: A combination of individual smoking cessation counseling, nicotine replacement therapy, and a community-based PA or wellness program was acceptable to smokers but did not appear to improve long-term abstinence rates above what has been seen with nicotine replacement therapy in previous studies.

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195 Board #16 May 31 11:00 AM - 12:30 PM

Gesture Analysis for Yoga Alignment in Young Adults

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INTRODUCTION: Biomedical research aimed toward a deeper understanding of yoga's benefits and physiological mechanisms has become an active area of study. To decrease disparity between populations who can readily access yoga classes and therapies, benefits of yoga could be implemented in an exergame format at clinical or home environments. This platform could be installed with low cost hardware using the Cloud for analytics and data collection.

PURPOSE: Objective was to analyze yoga posture alignment using a 3D room sensor to produce a physical activity exergame for specific groups, such as young adults. This research utilizes gesture analysis software to provide skill improvement feedback to students in a yoga course setting.

METHODS: We measured yoga posture alignment over the course of a 10-week period using Kinect SDK 2.0. A convenience sample of 12 undergraduate students with minimal yoga experience were recruited under an IRB approved protocol.

RESULTS: Five yoga postures were captured from seven yoga teachers, as a gold standard for comparison and used for training supervised machine learning algorithms. Default settings in Kinect Visual Gesture Builder produced solutions with high True Positives (99.5%) and low False Positives (0.03%) for most yoga postures sampled. Depth stream and skeleton coordinates for the 12 participants were acquired and analyzed against this trained solution. Analysis showed sensitivity for True Positives was greatest for "Side Bend" (0.496) and "Upward Salute" (0.141) and most postures had specificities for True Negatives near 1.0. Based on these results the higher the gesture score, the closer the postures were to the "gold standard".

DISCUSSION: Gesture analysis for yoga alignment training may be a useful tool for the development of home and clinical yoga therapy for hard to reach populations. The exergame developed here provides a tool that scores the performance of yoga postures and improvement. Prior research has shown that even short-term yoga based lifestyle interventions were efficacious in weight loss, inflammation and stress and positively influenced cardiovascular risk factors.

CONCLUSION: Our plans are to target special populations, study the potential effects of body mass and age on posture alignment, and assess breathing, heart rate and limb stretch.

196 Board #17 May 31 11:00 AM - 12:30 PM

Effects of a Dog Walking Intervention on a University Campus: A Pilot Study

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(No relationships reported)

A great deal of research has focused on implementing walking interventions with the intent of increasing employee well-being and decreasing organizational healthcare costs. The inclusion of dogs within a walking intervention can not only facilitate walking adherence, but also increase health benefits.

PURPOSE: To assess the benefits experienced by university staff members after walking local shelter dogs during their lunch breaks.

METHODS: Staff members at a local university were recruited through a campus listserv. Seven full-time staff members (100% female, 100% white, 27-66 years of age) completed the study. Shelter dogs were transported to campus weekly for four weeks in the Spring of 2016. One week was canceled due to rain. Participants were paired and instructed to walk their assigned dog for 30 minutes using the sample walking routes provided. Accelerometer data (hip-worn ActiGraph GT3X) were collected during each walk to document intensity levels and post-intervention interviews were conducted upon completion of the study to assess participant's perceived benefits from the intervention.

RESULTS: Eighty-six percent of participants completed all walking sessions. Participants averaged 24.9 ± 7.4 minutes of moderate-to-vigorous physical activity (range 12-37 min) during the walk. Interview data revealed that participants sat anywhere from 3-7.5 hours out of their 8-hour workday. Participants self-reported being somewhat physically active outside of the workplace setting, but all wanted to find ways to be more physically active throughout the workday. Thematically, qualitative analysis suggested that participants signed up for the study because of their love of dogs, looked forward to their Friday walks, had fun during the walks, returned to work happy, and wanted the program to continue.

CONCLUSION: Incorporation of dogs into a university-based walking program can encourage program adherence and promote moderate intensity walking among women staff members.

197 Board #18 May 31 11:00 AM - 12:30 PM

Effects Of Elastic Resistance Band Exercise On Older Women With Nonspecific Chronic Low Back Pain

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(No relationships reported)

Nonspecific chronic low back pain (NCLBP) is a common ailment in older adults. It is possible that simple and inexpensive exercise programs could reduce pain and improve physical function, fitness and body composition in older women with NCLBP.

PURPOSE: To analyze the effects of a short-term elastic band resistance program (EBRP) on pain, spine function, fitness and body composition in older adults with NCLBP.

METHODS: 20 sedentary older women (70.9 ± 5.9 yr) with NCLBP for at least 6 months were randomly divided into two groups: control group (CG) (n=9) that continued normal activities without exercise; and EBRP group (EBRPG) (n=11) that performed an 8-wk EBRP on 2 d/wk with 6 multi-articular standing exercises for upper and lower extremities for 4 sets of 10 repetitions (8-9 perceived effort) with 60 s of recovery between sets. Participants did not consume any nutritional supplements and none had any pathology that was currently being treated. Measures assessed pre- and post-training were: visual analogue scale of pain (VAS); Oswestry disability index (ODI); categorized sciatica pain (CSP); back performance tests: pick and lift repetitions tests (PT and LRT, respectively); Schober flexion's test (SFT); timed up and go test (TUGT); six-minute walk test (6MWT); isometric strength tests: vertical row (VRT), squat (SQT) and trunk curl (TCT); body fat percentage (BF) and fat-free mass (FFM) (via bioelectric impedance).

RESULTS: CG did not change from pre- to post-testing while EBRPG significantly ($p < 0.05$) improved all variables analyzed. Percentage differences are provided for CG and EBRPG, respectively: VAS +9.4 vs. -70.3; ODI +6.0 vs. -49.1; CSP +4.2 vs. -100; PT +66.7 vs. -85.7; LRT -4.2 vs. +26.4; SFT -2.6 vs. +4.6; TUGT -2.74 vs. -25.4; 6MWT -1.5 vs. +16.6; VRT -7.2 vs. +14.1; SQT -5.2 vs. +23.5; TCT -14.8 vs. +33.2; BF +1.6 vs. -2.4; FFM -1.1 vs. +2.44. Intergroup post-training significant differences were found on VAS, ODI, CSP, PT, LRT, and TUGT.

CONCLUSION: An intense EBRP applied in a short time period appears to help reduce pain and improve spine function, physical fitness and body composition in older women with NCLBP. Further research is needed regarding the long-term impact of this program on NCLBP.

198 Board #19 May 31 11:00 AM - 12:30 PM

Effects of Combined Aerobic and Resistance Training: A Randomized Controlled Trial

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Limited data are available on the effect of combined aerobic and resistance training (combined training) in Asian populations.

PURPOSE: To determine the effect of combined training on fatness and fitness outcomes, including body fat mass, waist circumference, muscle strength, and flexibility; and also clinical outcomes, including blood pressure, brachial-ankle pulse wave velocity and fasting blood glucose in Japanese women.

METHODS: Forty-one women were randomized to a training group, $n = 23$ (age 47.3 ± 6.5 years) or control group, $n = 18$ (age 46.7 ± 6.5 years). The intervention included participation in a 24-minute circuit training session (combining aerobic and resistance training, each of which lasted 30 seconds) and 6-minute stretching 3 times per week for 16 weeks. The aerobic exercise was stepping on a step board while executing resistance training, using 12 different hydraulic devices developed for females to increase their muscle strength. During this training, the participants measured their heart rates once every 8 minutes based on the instructor's guidance to maintain them at 60 to 80% of their maximal heart rates throughout training by adjusting training intensity levels. All outcomes were measured at baseline and after the intervention.

RESULTS: Although there was no statistically significant change in the control group, there were significant reductions in waist circumference (91.0 ± 6.3 to 89.8 ± 6.5 cm) ($p = 0.045$), systolic blood pressure (127.5 ± 18.9 to 123.3 ± 19.5 mmHg) ($p = 0.038$), fasting blood glucose (101.0 ± 19.4 to 95.3 ± 13.2 mg/dL) ($p = 0.015$), and brachial-ankle pulse wave velocity (1315 ± 181 to 1271 ± 173 cm/s) ($p = 0.009$) in the combined training group. Also, significant increases in the knee extension strength (858 ± 184 to 1140 ± 216 watts) ($p < 0.001$) and flexibility (33.7 ± 6.4 to 35.9 ± 6.4 cm) ($p < 0.001$) only in the training group.

CONCLUSIONS: The results of this randomized controlled trial showed that a 16-week combined training significantly improved the fatness and fitness outcomes and the clinical outcomes in Japanese women.

199 Board #20 May 31 11:00 AM - 12:30 PM

Combination Of Sling Exercise Training And Nutritive Administration Of Carbohydrates And Protein By Food As A Strategy To Increase Strength In Older Men And Women

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(No relationships reported)

PURPOSE: After the age of 60, muscle strength is reduced by 1-1.5% per year increasing to 3% per year. However, strength training can counteract age related loss of strength. Sling training, a specific type of strength training, has positive effects on balance and functional mobility. However, knowledge about its effects on force and strength is limited. Malnutrition may be part of aging; especially the uptake of proteins can be below nutrition recommendations which may result in reduced muscle mass. Therefore we investigated in this study combined effects of protein and carbohydrate intake by food immediately after sling training on the training response in older people.

METHODS: 31 subjects (25 female and 6 males, age: 65.9 ± 4.9) conducted a sling training (three times 30 minutes per week for 12 weeks). Immediately after training the intervention group received a meal consisting of 110 g sour milk cheese with two slices of whole meal toast and 250 ml of buttermilk. The nutritional values of these meal consisting of 38.95 g protein, 23.2 g carbohydrates and 2.9 grams of fat ($= 1190$ kJ / 278.5 kcal). Prior and after the intervention, maximum strength of trunk and leg muscles was tested.

RESULTS: Sling training resulted in a significant increase of strength in the control group as well as the intervention group. Average strength increased between 20 to 30% for leg and chest strength up to 40% to 130% for trunk strength (ventral, dorsal and lateral). For all kinds of trunk strength nutritive protein carbohydrate uptake resulted in an additive training effect which was significant for the left lateral trunk strength. Interestingly all volunteers like to have a common meal after training.

CONCLUSIONS: Our results indicate that a combination of sling training and nutritive protein and carbohydrate uptake by food may be a suitable strategy to counteract age related loss of strength and muscle mass and improve the quality of life in the elderly.

200 Board #21 May 31 11:00 AM - 12:30 PM

Effect of a Group Exercise Program in Symptoms of Depression and Physical Activity: Pilot Study

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(No relationships reported)

Depression has the highest incidence among mental illnesses. Physical activity (PA) and exercise has been associated with lower symptoms of depression (SD). However evidence of the effectiveness of a group exercise program combining aerobic and resistance exercise in this population is scarce.

PURPOSE: To evaluate the effect of a 6-weeks group exercise program combining aerobic and resistance exercise in SD and moderate to vigorous physical activity (MVPA).

METHODS: Seven college students (5 females and 2 males, 21 (21-23) years of age) with a score ≥ 17 in the Beck's Depression Inventory-II (BDI-II) volunteered for the study. Participants underwent a 3 day per week combined aerobic and circuit resistance 6 week group exercise program. Before and after the exercise program participants completed the BDI-II and wore an accelerometer for 7 days. Tests to assess health related physical fitness (HRF) were also performed (% body fat, $\dot{V}O_2$ max, leg and chest 1RM/lb body weight, isometric relative strength, push-ups and curl-ups) and results converted into a score. Wilcoxon Signed Rank were conducted to determine differences between pre- and post-tests, and Spearman's correlations to determine associations between SD, PA and HRF.

RESULTS: Differences were found between pre- and post BDI scores (pre=26 (23 - 27) vs. post=7 (5 - 9), $p = 0.02$), MVPA (pre= 275.5 (255.63 - 296.27) min/week vs. post= 250.55 (150.27 - 243.43) min/day, $p = 0.04$), and HRF scores (pre= 4 (4 - 6) vs. post= 7 (6 - 9), $p = 0.02$). Differences were also found between pre- and post HRF results: % body fat (pre= 34.4 (25.2 - 48.5) vs. post=28.8 (24.4 - 48.4)%, $p = 0.02$), $\dot{V}O_2$ max (pre=23.5 (21.1 - 27.6) ml/kg*min⁻¹ vs. post= 27.2 (21.2 - 29.9) ml/kg*min⁻¹, $p = .03$), 1RM bench press (pre=.43 (.41 - .83) lb/bw vs. post=.50 (.48 - .97) lb/bw, $p = 0.02$), 1RM leg press (pre=1.51 (1.36 - 2.44) lb/bw vs. post= 1.99 (1.84 - 2.68) lb/bw, $p = 0.02$), and push-ups (pre=5 (3 - 13) vs. post=11 (4-20), $p = 0.02$). No significant correlations were found between SD, PA and HRF.

CONCLUSION: A 6-week group exercise program can help achieve a reduction of SD and can improve the HRF components in young adults with SD. Exercise training plays an important role in the reduction of SD in physically active young adults.