

progressively through one video session per week. The participants performed these exercises at home for the rest of the week. A home visit immediately after 16th week was arranged to collect post intervention parameters. Results showed an average 20% decrease in fall risk post intervention. An overall large effect size with Cohen's *d* of 0.90 was reported for fall risk. Significant difference in TUG time ($Z = -4.610$, $p < 0.000$), stride velocity ($Z = -5.035$, $p < 0.000$), stride length ($Z = -5.867$, $p < 0.000$), time taken to stand ($Z = -7.363$, $p < 0.000$) and time taken to turn ($Z = -6.079$, $p < 0.000$) was observed in the post-test measurements as compared to pre-test measurements. Therefore, we conclude that video assisted exercise programs can be highly beneficial as alternatives to in person exercise intervention to prevent falls during COVID-19 isolation.

EFFECTS OF DIFFERENT 16-WEEK EXERCISE INTERVENTIONS ON BONE MINERAL DENSITY OF SEDENTARY OLDER WOMEN

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Multicomponent exercise that includes both resistance and aerobic training is recommended to prevent loss of bone mineral density (BMD) in postmenopausal women. However, optimal training frequency has not been determined. Sixty-three non-osteoporotic sedentary women ages 60y and older were randomized to one of three exercise groups for sixteen weeks: 1) one resistance and one aerobic session per week, 2) two resistance and two aerobic sessions per week, or 3) three resistance and three aerobic sessions per week. Resistance exercise included supervised sessions on weight machines, and aerobic exercise was treadmill walking. BMD of the hip and lumbar spine (L1-L4) was assessed by dual energy X-ray absorptiometry (Prodigy, GE Medical Systems Lunar, Madison, WI, software version 6.10.029), and *z* scores were calculated from a reference population adjusted for age and sex. Among the total cohort with BMD measurements at week 16 ($n=58$; 83% white), *z* scores improved for the trochanter, Ward's triangle, total hip, L1 and L4. Within-group comparisons showed improvement at the trochanter, total hip, and L1 for group 2 only, while only group 1 demonstrated an increase at L4 ($p < 0.05$ for all). However, no time-by-group interactions were observed. Sixteen weeks of combined resistance and aerobic training is effective for improving BMD of older adult women. Results suggest training frequency of two sessions per week may be optimal. Postmenopausal women should be encouraged to do aerobic exercise such as walking plus resistance training at least once weekly to prevent osteoporosis.

EFFECTS OF TAI CHI ON BIOMARKERS AND THEIR IMPLICATION TO NEUROREHABILITATION – A SYSTEMIC REVIEW

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Introduction: As an effective holistic therapeutic exercise program, Tai Chi (TC) has been widely used for patients with

a variety of neurological disorders. In last 1-2 decades, there has been an increase in the number of research studies that examined the TC effects on biomarkers andIntroduction: As an effective holistic therapeutic exercise program, Tai Chi (TC) has been widely used for patients with a variety of neurological disorders. In last 1-2 decades, there has been an increase in the number of research studies that examined the TC effects on biomarkers including inflammatory cytokines, oxidative stressors, and neurotrophic factors. Thus, the purpose of this article is to review such effects and their possible implications to neurorehabilitation. Method: In this systematic review, we searched TC-related articles from the last 15 years until July 2020 that had investigated changes of biomarkers after TC practice. The search identified 24 studies that were included in our analysis. Results: It is found that TC practice is able to 1) reduce pro-inflammatory and increase anti-inflammatory cytokines (including Interleukins -1, 6, 10, 12, tumor necrosis factor, the nuclear factor kappa-light-chain-enhancer of activated B cells, and the C-reactive protein); 2) decrease oxidative stress factors (like plasma 8-isoprostane, malondialdehyde, and protein carbonylation); and 3) increase neurotrophic factors (brain-derived neurotrophic factor (BDNF), and N-Acetylaspartate). Conclusions: TC may take effect on patients with neurological dysfunctions through anti-inflammation, anti-oxidative stress, and neural health promotion.

FIT FOR THE NEXT FIFTY EXERCISE PROGRAM: 25 YEARS OF REFLECTIONS, RESULTS, AND PARTNERSHIPS

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Consistent exercise provides a multitude of physical, social, and emotional benefits. Common barriers to regular exercise for older adults include time, transportation, risk of injury, existing limitations, and negative experiences or attitudes about exercise. Fit for the Next Fifty is a comprehensive exercise and wellness program designed to address barriers and excuses. The program, based in CNY, has an impressive 25 year history of providing a unique mix of aerobic, strength training, yoga, and balance-based ballet. Participants (100-120) attend up to 5 classes per week at no charge during summer months and continue through winter months for a small fee. Developing and sustaining funding partnerships has been critical to the long-term success of Fit for the Next Fifty. Participants, ages 60-96, are active providers of feedback and suggestions, a key component to keeping the music, movements, and fellowship enjoyable and meaningful for over two decades. Program details, participant pictures and testimonials, research results, surveys across the years, and partnering/funding strategies provided. Of special interest is the social support dimension of the program. Participants have developed a sophisticated network to support each other outside of the exercise and wellness programs provided by Fit for the Next Fifty.

PERCEIVED EXERTION IN PHYSICAL ACTIVITY MEASUREMENT ACROSS THE LIFECOURSE: RESULTS FROM SWAN

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