SESSION 7680 (SYMPOSIUM)

EVIDENCE-BASED EXERCISE INTERVENTIONS AND FITNESS TECHNOLOGIES FOR OLDER ADULTS WITH INTACT OR IMPAIRED COGNITION

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Effective exercise training and regular physical activity (PA) practice are important for healthy aging and are key modalities for chronic disease management. Approaches that enhance exercise prescriptions and adherence for older adults should be innovative and based on evidence. Thus, the exercise prescription should be tailored accordingly to the person's health status, functional capacity, and living arrangements. To properly achieve the desirable health outcomes, the PA should be performed at higher intensity, greater frequency, and longer duration. National PA Guidelines recommend at least 150 minutes of moderate-intensity aerobic activity or 75 minutes of vigorous-intensity aerobic activity and at least two days of muscle-strengthening activities per week. Each prescribed modality (aerobic exercise, strength training, flexibility/stretching exercises, and balance training) has unique benefits. Therefore, it is critical to investigate and integrate novel techniques and tools to ensure adherence to the recommended PA guidelines. One of the presentations in this symposium, will highlight the research that has been evaluating for the last 15 years the effectiveness of the exercise randomized trial for older adults with/out cognitive impairments. The second presentation will introduce a novel technology paradigm designed to improve guidelines for exercise training as well as our understanding of how technology may motivate exercise behavior for older adults. The last presentation will discuss the design and methodological flaws that impact the outcomes of the exercise intervention by addressing the interpretations of non-findings and key factors affecting the desirable outcomes.

EVIDENCE-BASED EXERCISE RECOMMENDATIONS FOR OLDER ADULTS WITH COGNITIVE IMPAIRMENTS

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Since the publishing of our meta-analysis evaluating the effects of randomized exercise trials on cognitive function of Older Adults with Cognitive Impairments (OAwCIs) (Heyn et al 2004), several meta-analysis reviews were published addressing similar question. We currently appraised this evidence and preliminary synthesis of twelve, well-designed meta-analysis reports resulted in 193 RCTs and 15,614 participants over the age of 65 years old diagnosed with MCI or Alzheimer's disease (AD). Exercise prescription paradigms averaged 156 minutes per week for 20-week. The combined cognitive function outcome mean effect size was medium; 0.67 (0.06-1.34 95% CI). Grounded in this unique umbrella study results, sustained and prolonged exercise training might provide an effective intervention for the maintenance or enhancement of cognitive function for MCI and AD. This comprehensive meta-analysis umbrella offers valuable and strong exercise recommendations for OAwCIs. This study results will be of great significance to professionals involved in the care of OAwCIs.

DEVELOPING AN EXERGAME INTERVENTION TO PREVENT ALZHEIMER'S DISEASE

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Delaying the onset of Alzheimer's Disease by five years could save the U.S. ~$89 billion by 2030. Aerobic exercise and cognitive training are two promising interventions for AD prevention and the two together may have a synergistic cognitive effect than either alone. The purposes of this study were to develop an integrated virtual-reality cognitive training (VRCT) and cycling intervention known as exergame and test its feasibility in older adults with subjective cognitive decline (SCD). The VRCT included grocery shopping from a list, flower shopping from a list, dinnerware sorting, book sorting, and postage estimation. Twelve participants enrolled in the 1-month program (12 sessions) achieved 81.2% session adherence and 81.4% adherence to the exercise prescription. The exergame was well accepted by 75% of the participants and 100% were satisfied with the exergame quality and delivery. To conclude, exergame is a flexible intervention that is feasible for older adults with SCD.

SELF-DETERMINATION THROUGH TECHNOLOGY: UNDERSTANDING PHYSICAL ACTIVITY ENGAGEMENT FOR OLDER ADULTS

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Despite the known health benefits of exercise, only 30% of older adults (65-75 years) and 18.5% (85 years+) meet the recommendations for exercise. Barriers include difficulty accessing facilities, and lack of motivation and social support. Research results indicate that exercise adoption and adherence is higher among older adults when basic psychological needs are met. Technologies (e.g., exergames, activity trackers) have the potential to satisfy the three basic needs as indicated by the Self-Determination Theory. Technology may satisfy a user's need for autonomy by offering different activities to choose from (biking versus resistance training) or intensity and duration options. They may promote competence by allowing for individualized goal setting and tracking. Technologies have the potential to promote relatedness through virtual instruction, subsequently removing the accessibility barrier. The application of this theory provides design guidelines for exercise technologies and a greater understanding of how technology may motivate exercise behavior for older adults