research conducted in the last decade. After performing quality appraisal using the Oxford Centre for Evidence-based Medicine's levels of evidence, we synthesized findings from 38 qualifying studies and developed a new conceptual model driven by observation of behaviors indicating pain in persons with dementia unable to self-report. The model represents the cognitive, affective, ethical, and behavioral components of clinical empathy involved in assessing and treating pain, relevant patient outcomes, and contextual factors influencing empathy and outcomes; and provides a framework for testing clinical empathy interventions to improve adverse outcomes in persons with advanced dementia. Understanding the relationship between clinician empathy and the assessment/treatment of pain in persons with dementia may improve care quality and help reduce pain behaviors in this population. This model may be used to inform pain research in persons with dementia and develop clinical interventions and clinician education programs.

SESSION 3026 (PAPER)

PHYSICAL ACTIVITY AND EXERCISE

A LONGITUDINAL ANALYSIS OF SF-36 SCORES WITHIN THE CANDRIVE COHORT: AN EXAMPLE OF SURVIVOR BIAS

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A bias inherent to prospective studies is focusing only on individuals who remain in the study; these individuals may differ from those who leave early. To examine this issue, we analyzed SF-36 scores by completion status for individuals enrolled in the seven-year Candrive cohort. The SF-36 provides a self-reported evaluation of health and well-being along two subscales, the Physical Component Summary (PCS) and the Mental Component Summary (MCS). Of 928 participants in the cohort, 887 had at least two consecutive years of data starting at baseline (age=76.17, SD=4.81; 61.9% male). A total of 142 participants had 7 years of data. Study discontinuation (due to withdrawal, driving cessation, or death) happened least in early years, and peaked after 6 years (n=235). When analyzed according to completion status, patterns of change in SF-36 scores varied. For example, participants with 7 years of data had mean PCS scores ranging from 51.41 (SD=7.92) at baseline to 46.93 (SD=9.46) at year 7, a change of 0.75 points per year. For those with only two years of data, scores were lower and dropped from 45.82 (SD=9.98) to 43.59 (SD=10.90), a change of 2.23 points over a single year (p<.001). Differences are also evident for other groups. While the results indicate relative stability of SF-36 scores among participants who remained in the study, participants who dropped out reported greater deterioration in scores. These results highlight important differences between participants based on completion status.

EXERCISE STRATEGIES FOR OPTIMIZING AEROBIC CAPACITY AND SKELETAL MUSCLE PERFORMANCE IN OLDER ADULTS

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Most older adults do not exercise regularly. Among those who do, the majority only perform one type of exercise, and— as such— are either not getting the benefits of endurance exercise or resistance exercise. The aim of this pilot study was to determine which standalone exercise strategy has the greatest effect on both cardiorespiratory and lower-extremity muscular function in insufficiently active older adults 60 to 75 years of age (N = 14). Participants were randomly assigned to either resistance training (RT, n=5), moderate intensity continuous training on a stationary bicycle (MICT, n=4), or high-intensity interval training on a stationary bicycle (HIIT, n=5) for supervised exercise sessions three times per week for 12 weeks. Maximal oxygen consumption increased a comparable amount in all groups (11.9±11.2% for HIIT vs. 8.0±14.8% for MICT vs 9.8±5.7% for RT). Leg extensor power did not change in the HIIT group (-0.34±5.2%), but increased by 5.2±9.7% in the MICT group and 14.5±26.1% in the RT group. Leg extensor strength decreased by 1.7±22.1% in the HIIT group and 0.6±6.4% in the MICT group, but increased by 27.3±21.2% in the RT group. These findings demonstrate that RT results in improved lower-extremity strength and power, as well as improvements in maximal aerobic capacity comparable to MICT and HIIT in older adults. Thus, RT should be promoted as an essential exercise strategy for older adults, particularly for individuals who are inactive or that are only performing one type of exercise regularly.

PHYSICAL ACTIVITY PATTERNS AFTER RETIREMENT: THE REGARDS STUDY

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Major life events, such as retirement, may lead to dramatic shifts in physical activity (PA) patterns. However, there are limited empirical data quantifying the magnitude of these changes. Our aims were to objectively measure PA before and after retirement and to describe changes in participation in various types of PA. Participants were employed black and white men and women enrolled in REGARDS (REasons for Geographic and Racial Differences in Stroke), a national prospective cohort study (n=581, mean age 64 years, 25% black, 51% women). Participants met inclusion criteria if they retired between their first and second accelerometer wearing

(2009-2013 and 2017-2018, respectively) and had valid accelerometer data (>4 days with >10 hours/day pre- and post-retirement). Accelerometer-based PA was categorized into average minutes per day spent in sedentary, light-intensity, and moderate-to-vigorous PA. Participants reported changes (less, same, more) in 12 types of PA. After retirement, participants decreased both sedentary time (by 36.3 minutes/day) and moderate-to-vigorous PA (by 5.6 minutes/day). Conversely, there was an increase in light-intensity PA (+18.1 minutes/day) after retirement. Participants reported changes in their participation level in various PA activities. For example, 41% reported an increased amount of TV viewing, 42% reported less walking, and 31% reported increased participation in volunteer activities. Findings indicate that retirement coincides with a change in the time spent in each intensity category and the time spent across a range of activity types. Further research is warranted to examine how these changes in physical activity patterns influence post-retirement health status.

THE EFFECT OF THEORY-LED INTERVENTION FOR KNEE OSTEOARTHRITIS IN OLDER ADULTS: A CLUSTER RANDOMIZED TRIAL

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Knee osteoarthritis (KOA) is a common joint disease in people over 60 years old. Exercise therapy is one of the most effective non-pharmacological treatments for KOA, but low exercise adherence needs to be improved. This two-arm cluster randomized trial study was to evaluate the effect of the transtheoretical model-lead home exercise intervention (TTM-HEI) program on exercise adherence, KOA symptom (pain intensity and joint stiffness) and knee function (lower limb muscle strength and balance) in Chinese older adults diagnosed with KOA. A total of 189 community-dwelling older adults with KOA (intervention group: n = 103, control group: n = 86) were enrolled from 14 community centers in Beijing, China in 2018. The intervention was a two-stage and 24-week transtheoretical model-based exercise program, and the control group underwent a same length but non-theory-based exercise program. Exercise adherence was measured at weeks 4, 12, 24, 36, and 48 after the program started, KOA symptoms and knee function were measured at baseline, week 24, and week 48. Results showed that the growth rate of exercise adherence in the intervention group increased 2.175 units compared with the control group (unstandardized coefficient of slope on group B2 = 2.175, $p < 0.001$), and the intervention program maintained participants' exercise adherence with 5.56 (SD = 1.00) compared with 3.16 (SD = 1.31) in the control group at week 48. In addition, TTM-HEI program showed significant effects on relieving KOA symptoms and improving knee function. This study provided an effective strategy for KOA intervention.

TYPE 2 DIABETES REDUCES THE MUSCLE ANABOLIC EFFECT OF RESISTANCE EXERCISE TRAINING IN OLDER ADULTS

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Type 2 Diabetes Mellitus (T2DM) accelerates the incidence and increases the prevalence of sarcopenia in older adults. This suggests an urgent need for identifying effective sarcopenia treatments for older adults with T2DM. It is unknown whether traditional approaches, such as progressive resistance exercise training (PRET), can effectively counteract sarcopenia in older patients with T2DM. To test the efficacy of PRET for the treatment of sarcopenia in older adults with T2DM, 30 subjects (15 T2DM and 15 age- and sex- matched controls) underwent metabolic testing with muscle biopsies before and after a 13-week full-body PRET program. Primary outcome measures included changes in appendicular lean mass, muscle strength, and mixed muscle fractional synthesis rate (FSR). Before PRET, BMI-adjusted appendicular lean mass was significantly lower in the T2DM group (0.7095±0.0381 versus 0.8151±0.0439, $p<0.0001$). As a result of PRET, appendicular lean mass adjusted for BMI and muscle strength increased significantly in both groups, but to a lesser extent for the T2DM group ($p=0.0009$) . Preliminary results for FSR (n=25) indicate that subjects with T2DM had lower basal FSR prior to PRET ($p=0.0197$) . Basal FSR increased significantly in the control group after PRET ($p=0.0196$), while it did not change in the T2DM group ($p=0.3537$). These results suggest that in older adults the positive effect of PRET on muscle anabolism and strength is reduced by T2DM . Thus, older adults with T2DM may require more intensive, multimodal and targeted sarcopenia treatment. Funded by NIH R01AG049611 and P30AG024832.

SESSION 3027 (PAPER)

SENSORY HEALTH AND IMPAIRMENT (PAPER)

A SYSTEMATIC REVIEW OF VISUAL IMPAIRMENT AND COGNITIVE DECLINE AMONG OLDER ADULTS

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Cognitive and visual impairments frequently coexist. With the aging of populations worldwide, the prevalence of these conditions are projected to increase substantially over time. A number of studies suggest that cognitive function and vision impairment are associated, and it is hypothesized to be due to a (1) common cause etiology, where both share common risk factors, and/or (2) causal association, where visual impairment causes cognitive decline. Sensory loss can lead to increased cognitive load, structural and functional changes in the brain, and/or decreased emotional, social, and physical well-being, all of which could potentially increase the risk of cognitive impairment. We conducted a systematic review of the existing literature, examining the association between cognitive and visual impairment among older adults. A total of 80 observational studies that reported a measure of association between visual and cognitive function and met