UNIVERSITY OF DELAWARE
HEALTH SCIENCES

RESEARCH & INNOVATION DAY *2025*

ABSTRACTS

First Poster Session: 10:30 – 11:45 am

1A

Stressors and Coping Methods in Caregivers of Toddlers Experiencing Socioeconomic Disadvantage

Nick Bendel; Hannah Feng; Freda Patterson, PhD; Lauren Covington PhD, RN

Abstract: Background: Raising young children is stressful, especially in families experiencing socioeconomic disadvantage. Financial limitations coupled with the demands of toddlerhood may significantly increase stress levels in caregivers. The aim of this study is to identify the specific challenges caregivers face and the coping strategies they employ to gain insight into the day-to-day dynamics of young families experiencing socioeconomic disadvantage. Methods: The Family Stress and Sleep Study enrolled 69 caregiver-toddler dyads who were eligible for federally funded programs (e.g., WIC, Medicaid). Caregivers completed two-weeks of daily electronic diaries reporting experienced stressors, their severity, stress management strategies and their effectiveness, as well as their morning mood. Qualitative content analysis was used to assess mothers' overall stress experience. Results: Caregivers were 97% mothers, 40.6% single, 62.3% Black, 25% had < high school education, 37.7% were employed full-time and their mean age was 33 years (SD=5.1). Their toddlers were 50% male and toddler mean age was 1.9 years (SD=1.0). Our qualitative results indicate that caregivers experienced stress daily and the utilization and effect of coping mechanisms were limited. Despite this, caregivers frequently provided effective bedtime routines and had neutral to positive morning moods. Conclusion: Caregivers of toddlers experiencing socioeconomic disadvantage feel stressed out daily. Healthy stress management strategies at the individual level are not effective, suggesting the need for broader structural changes. Future work is needed to better understand how coping strategies are employed and what structural changes will better support toddler caregivers.

3A*

Addressing Disordered Eating and Body Image: Perceptions, Programming Needs, and Comparisons Between Student-Athletes and Athletics Staff

Delaney Moore, Elizabeth Orsega-Smith, PhD, Carly Pacanowski, PhD, RD, Serena Schade, Bridget O'Donnell

Abstract: INTRODUCTION: Eating disorders (ED) are a concern among collegiate student-athletes, leading to negative outcomes such as injury, nutrient deficiencies, and impaired performance. Approximately 25% of student-athletes report subclinical risk factors (i.e., disordered eating [DE]). ED risk is influenced by internal (e.g., knowledge, attitudes) and external (e.g., sport type, sex, coaching pressure) factors. This study assesses student-athletes' and athletics staff's perceptions of current DE resources and additional support needed at UD. METHODS: A mixed-methods needs assessment included a web-based survey of athletes (n=351) and semi-structured interviews with student-athletes (n=20) and athletics staff (n=11). Thematic analysis identified key themes related to perceptions of current resources and unmet needs. RESULTS: Student-athletes reported that nutritionists (80%) and sports psychology (30%) were the most helpful currently available resources. Themes also reflect that teaching practical skills (85%) and one-on-one programming (80%) would help manage DE/body image in this population. A conceptual model was created displaying the most helpful resources needed to manage DE/body image as identified by athletes. Interviews with athletics staff emphasized the need for DE training/education (72.3%), improved screening (36.4%), and additional staff (45.5%) to address problematic and disordered eating among UD athletes. Thematic analysis shows similarities (i.e., desire for additional DE education/training) and differences (i.e., student-athletes

desire practical skill-based group workshops) in perceptions of DE resources across groups. CONCLUSION: Results provide recommendations for implementing resources for the prevention, identification, and management of DE among UD Division I student-athletes.

5A

"She's Not a Couch Potato Anymore." Feasibility/Acceptability Reports from a Novel Nintendo Switch Exergaming Intervention

Jacob Corey, Jung-Mei Tsai, Swetha Kathiravan, Hanna Starner, Anjana Bhat

Abstract: Purpose/Hypothesis: Exergaming (video games promoting exercise) has shown promise in improving motor performance in children with intellectual and developmental disabilities (IDD). However, little is known about stakeholder (children, caregivers, trainers) attitudes, beliefs, and experiences with exergaming. This is crucial as children with IDD often prefer sedentary activities, and caregivers may have negative views of videogaming. This study examines stakeholder perspectives on a Nintendo Switch exergaming intervention. We hypothesize that stakeholders will find the intervention satisfactory, beneficial, and enjoyable, with interest in continued use. Subjects: Survey data was collected from 14 children with autism spectrum disorder (ASD), 14 parents, and 5 trainers. Materials and Methods: A feasibility and acceptability survey included Likert scale (1–5) and open-ended questions. Open-ended responses underwent thematic analysis (Braun & Clarke, 2006), while Chi-squared tests analyzed Likert scale data. Results: Four key themes emerged: multi-system benefits, high feasibility/acceptability, increased real-world physical activity (PA), and areas for improvement. Quantitative data showed 92% of children sustained high enjoyment, and >75% of parents/trainers found the intervention highly beneficial, innovative, and satisfactory. Additionally, 90% expressed interest in continued use. Conclusion: Families viewed exergaming as a cost-effective, engaging intervention to promote PA in children with ASD. Exergaming may serve as a bridge to increased real-world PA. Clinical Relevance: Clinicians should consider exergaming as a feasible intervention for children with IDD, particularly those initially resistant to PA, as it may foster long-term participation.

7A*

Associations between Child Language, Problem Behavior, and Caregiver Communicative Repairs

Maura O'Fallon, Ph.D., CCC-SLP, Emma Grindle, B.A., Rebecca Alper, Ph.D., CCC-SLP

Abstract: Despite stable longitudinal relationships between children's language and problem behavior, the impact of problem behavior on interaction quality has been under-studied. Children with language impairments experience frequent communication breakdowns, or instances where their message is not understood by a communication partner, which may elicit maladaptive behavior. We examined the association between child language ability and caregiver use of repair strategies during early interactions. We predicted that caregivers' use of repairs would be negatively associated with children's language ability after controlling for the impact of behavior. We used data from 32 monolingual English-speaking caregiver-child dyads to address this question. Children were 16 to 47 months old (M=22.78, SD=8.66); 26 children had typical language and 6 had delayed language. To measure use of communicative repair strategies, we coded recorded caregiver-child interactions to count the total number of repairs used by caregivers. We used standardized assessments for our measures of child language ability and problem behavior. Preliminary inspection of data guided our use of a zero-inflated negative binomial regression model in analyses. There was no association between language and communicative repairs. Yet, there was a significant positive association between child problem behavior and caregiver repairs (b=0.034, p=.010). Complete model output will be presented. Our findings did not support our prediction, as there was no significant association between child language ability

and caregiver use of communicative repairs. Although, we did observe that more severe problem behaviors were associated with more communicative repairs from caregivers. Clinical implications will be discussed.

9A

Veterans and Collegiate Athletes Together (VCAT): Dual-Task Balance Performance and Functional Health Assessments Pre-Exercise Intervention

Scott W. Passalugo, Caitlin A. Gallo, Abigail M. Fisher, Lauren J. Cardone, Thomas A. Buckley.

Abstract: Veteran's (Vets) experience elevated rates of functional limitations compared to age matched adults including clinical balance measures such as tandem gait (TG). TG is completed either Single-Task (ST) or with a concurrent cognitive task termed Dual-Task (DT). PURPOSE: To assess TG time to completion between Vets and student-athletes (SA) at the start of an exercise intervention. METHODS: We enrolled ten SA (age: 22.6 + 1.4 y.o., HT: 178.3 + 4.1 cm, 80.3 + 6.0 kg) and eight Vets (age: 53.1 + 6.1 y.o., HT: 176.2 + 6.5, WT: 92.2 + 19.5 kg). Participants self-reported active years in sport and/or military service, then completed four trials of ST-TG and DT-TG. A linear regression compared active years and a one-way ANOVA for group versus ST-TG (s) and DT-TG time (s). RESULTS: Active years significantly correlated with and ST-TG ($F = 4.56$, $p = 0.05$, $B = 0.48$) and DT-TG ($F = 6.59$, $p = 0.02$, $B = 0.55$). No significant group differences were found for ST-TG (SA: 12.4 + 3.8 s, V: 14.5 + 4.8 s, $p = 0.35$, $d = 0.49$) and DT-TG (SA: 14.2 + 3.5 s, V: 17.5 + 5.3 s, $p = 0.15$, $d = 0.73$). CONCLUSIONS: Preliminary findings suggest performance declines as active years increase. Despite moderate/large effect sizes, group differences may be due to enrollment. This data provides the foundation for post-intervention comparison.

11A*

Health Literacy and its Relationship to the Vital Conditions for Health and Well-being

Grace Hrustich, Elena Lynn, Katlyn Culhane-Suluai, MPS, Alexandra Wynn, PhD, Yendelela Cuffee, PhD, MPH, and Jennifer Horney, PhD, MPH, CPH

Abstract: Introduction: Health literacy is how individuals find, understand, and use information and services to make informed decisions about their health. The Delaware State Health Assessment (SHA) is the foundation for improving residents' health, rooted in the Vital Conditions for Health and Well-being framework. Understanding the relationship between health literacy and the vital conditions is crucial for the SHA to address the underlying causes of health disparities in Delaware. Methods: From September 2022 to July 2023, the University of Delaware Epidemiology Program collected data for the SHA. This consisted of focus groups and primary survey data (a Community Assessment for Public Health Emergency Response [CASPER]) collected in all three counties. Secondary data was also used to assess population-level public health needs and identify health disparities. The SHA results provided multiple ways to think about health outcomes related to health literacy. Results: The SHA identified several health trends. Based on the social and structural components of health literacy, it is a mediator of poorer health status, health care access, and seeking out preventative care, potentially explaining health outcomes in the SHA (DeWalt et al., 2004). These outcomes are influenced by vital conditions, the basic needs and opportunities people need to thrive. Conclusion: The State Health Improvement Plan (SHIP) will focus on health literacy as it relates to vital conditions and its contributing role to health disparities identified in the SHA. Efforts will focus on providing tools to empower residents to navigate the healthcare system, aiding in overcoming barriers and addressing disparities.

13A

Impact of Time-Restricted Eating on Emerging Adult Women's Diets

Mary A. Adewoye, Diane Vizthum, Carly R Pacanowski

Abstract: INTRODUCTION: Diet is a major contributor to cardiovascular disease (CVD), the leading cause of death among U.S. women. Dietary habits formed in emerging adulthood (ages 18–29) influence long-term CVD risk. Time-restricted eating (TRE) limits food intake to a 6–12-hour daily window and is associated with better cardiovascular health. This study examined changes in emerging adult women's dietary intake between baseline and the end of a 4-week TRE intervention. METHODS: 14 emerging adult women participated in 1 week of baseline and 4 weeks of TRE (10-hour eating window ending by 8:00 PM). Diet was assessed via 3-day food logs at baseline and end of TRE. Changes in components of dietary intake (carbohydrate, fat, protein, saturated fat, added sugar, fiber) were analyzed using paired t-tests ($\alpha = 0.05$). RESULTS: Total energy intake (kcal) was significantly lower at end of TRE compared to baseline (1687 baseline ± 361, 1374 Tre ± 340, $p = 0.002$, $d = 1.01$). Carbohydrate, protein and total fat significantly decreased as well (CHO baseline =177.1g ± 55.1, CHO Tre =154.0g ± 50.2, $p = 0.030$, $d = 0.55$; Protein baseline =73.2g ± 23.0, Protein Tre = 60.7 ± 25.7, $p = 0.024$, $d = 0.58$; Total fat baseline =74.9g ±22.4, Total fat Tre =57.1 ± 18.9, $p = 0.009$, $d = 1.42$). No changes were observed in % calories from macronutrients, saturated fat, fiber, or added sugar. CONCLUSION: Energy intake was lower after the TRE intervention compared to baseline, suggesting TRE may be a promising dietary strategy for lowering energy intake and potentially reducing CVD risk in emerging adult women.

15A

Title: Perception of Sleep Health and Chatbot-based Sleep Intervention Among Adolescents with Autism Spectrum Disorder

Fatou Marong, BS, Abigail Strang, MD, Seema Rani, MD , Lauren Covington, PhD, RN, Sarah Mallory, PhD 3 , Heidi Hildick, RN, Stuart Mary, RN, Farzana Mohseni, Xiaopeng Ji, PhD, RN

Abstract: Introduction: Sleep disturbances are common among adolescents with autism spectrum disorder (ASD). Artificial intelligence (AI) chatbots can simulate human conversation and provide automated sleep interventions but have not been adapted for this population. This study explored perceptions about sleep health and the use of an AI sleep coaching chatbot in this population. Methods: We conducted two focus groups with 8 dyads of autistic adolescents (ages 14-17, 62.5% males) and their parents/caregivers. The focus groups queried perceived threat of poor sleep, facilitators/barriers to healthy sleep, self-efficacy, and perceptions of utilizing a sleep chatbot app to promote sleep health. We utilized Dedoose software for thematic and content analysis. Results: Participants recognized difficulty falling asleep and waking up, and excessive daytime sleepiness as major sleep issues, affecting emotion, behavior, appetite, sustained attention, and daytime functioning. Barriers to good sleep included irregular sleep schedules, socialization and screen time, over-or-under-stimulation during the day, and medication side effects. Sleep facilitators included comfort items, comfortable sleep environment, physical activity, adherence to schedules, relaxation techniques, and parental reinforcement. The majority expressed moderate-to-high self-efficacy in using a chatbot-based intervention to develop good sleep habits. Participants expected the chatbot to offer personalized sleep reports, motivational talks, education on healthy sleep and other health behaviors, reminders, interactive games, and a reward points system for motivation. Conclusion: There is enthusiasm in using a sleep chatbot app among adolescents with ASD. Study findings will guide prototype development, and provide an accessible and autonomous approach to enhance sleep health in this population. Funding: This project is funded by the Maggie E. Neumann Health Sciences Research Fund pilot research grant.

17A

A Gamified mHealth Intervention to Promote Physical Activity and Reduce Sedentary Behavior in Autistic Adults: Protocol for a Remotely Delivered Pilot Intervention Study

McNulty LK , Kathiravan S , and Lee D

Abstract: Background: Despite the health benefits of regular physical activity (PA), many autistic adults remain insufficiently active. Gamified mHealth interventions offer a promising avenue for PA promotion. This study aims to (1) formulate gamification and behavior change techniques for PA promotion and (2) assess the feasibility and acceptability of a gamified mHealth app, PuzzleWalk (PW) 2.0, in increasing PA and reducing sedentary behavior (SB) among autistic adults. Methods: Participatory co-design workshops with autism stakeholders (n=9), which included individual interviews and online surveys, were conducted to guide the development of PW 2.0. Seventy-five autistic adults (M age 33.2±9.6; 78.7% female) are currently participating in the 8- week field deployment study to assess the feasibility and acceptability of PW 2.0 in real-world settings by measuring sedentary time, step counts, PA intensities, and user engagement. Repeated measures ANCOVA will examine changes in participants' objective levels of PA and SB. Results: Usability beta testing revealed that nine workshop participants highly valued the app's step-tracking feature, leaderboard, and visual design, which boosted their motivation for PA engagement and fostered competition among users. Most participants felt the app increased PA, reduced SB, and provided a sense of achievement. Autistic traits like perfectionism and competitiveness influenced the level of engagement, sometimes enhancing motivation but also causing discouragement due to difficulty of puzzle games. Conclusions: The gamified, user-centered app PW 2.0 shows promise as an effective tool for enhancing both PA motivation and intervention engagement through tailored gamification and behavior change strategies.

19A

Examining the relationship between Food Insecurity and Cardiovascular Health using Life's Essential 8 Metrics: National Health and Nutrition Examination Survey (NHANES) 2011-2018

Fadzai Nicola Dube*, Annaliese Peña*, Jee Won Park

Abstract: Food insecurity influences cardiovascular health (CVH) through multiple pathways. Despite substantial evidence of this association, gaps remain in understanding its impact when evaluated using Life's Essential 8 metrics. This study examined the association between food insecurity and CVH overall, and evaluated how race/ethnicity and Supplemental Nutrition Assistance Program (SNAP) participation influence the association. We analyzed National Health and Nutrition Examination Survey (NHANES) data from 2011 to 2018, including 14,045 participants (age ≥20 years). CVH was assessed using the American Heart Association's Life's Essential 8, which includes factors such as diet and cholesterol. Adjusted multinomial logistic regression analyses examined CVH (high/moderate/low) based on food security levels (full/marginal/low/very low). We evaluated effect measure modification (EMM) by SNAP participation and race/ethnicity by including product terms in the model. Adjusted ORs (95% CIs) for high and moderate versus poor CVH, comparing very low to full food security, were 0.29 (0.18-0.47) and 0.55 (0.44-0.68), respectively. There was some evidence for EMM by race/ethnicity. Comparing very low to full food security, the adjusted estimates for high versus poor CVH among non-Hispanic White, Hispanic/Latino, Other, and non-Hispanic Black/African-American participants were 0.17 (0.07-0.41), 0.38 (0.21-0.71), 0.37 (0.14-1.01), and 1.00 (0.56-1.18), respectively. Minimal EMM by SNAP participation was observed. We observed a strong negative association between food insecurity and CVH. Individuals with very low food security are less likely to achieve high CVH; however, no association was observed among Black/African-American participants. This warrants

further examination into other factors (e.g., behavioral, medication use) that may explain the observed differences.

21A

HEALTH for All: Reaching underserved communities in Delaware to promote health equity

Christine G. Sowinski, Heather M. Milea, Deepika Chowdary Kanagala, Emma Mathias, Laurie Ruggiero

Abstract: INTRODUCTION: The University of Delaware Partnership for Healthy Communities HEALTH for All (H4A) capitalize program provides community screenings and delivers comprehensive care to community members through a mobile health initiative. Guided by community partner needs, H4A addresses diverse health issues through initial screenings, health education, ongoing care provided through a nurse practitioner, and referrals to a "medical home" and social support resources. METHODS: The purpose is to describe H4A screening participants to better understand the characteristics of those served and inform future programming, especially related to diabetes. Screening participants representing a sample of convenience were invited to take a brief voluntary anonymous survey including questions on social determinants of health, health status, diabetes risk factors, and health behaviors. Basic descriptive analyses are described. RESULTS: Characteristics (n= 145) of the sample included: 49% African American, 60 years on average, 43% income <$40,000, 25% < High school education, 28% reported food insecurity, and 20% reported not seeking health care in past year due to cost. In addition, 21% reported poor-fair health status; 22% had diabetes; 56% hypertension; and 37% without diabetes had elevated diabetes Risk Test Scores (>5) and 38% aware of Diabetes Prevention Program); Self-reported lifestyle factors included: 40% eat 5 fruits/vegetables/day; 63% get regular physical activity; and 72% avoid sugary beverages. CONCLUSIONS: Findings confirm that H4A reaches minority and socioeconomically disadvantaged individuals to help promote health equity. Future efforts will focus on providing diabetes screenings, comprehensive diabetes education and supporting individuals interested in improving lifestyle behaviors to enhance their health.

22A*

Quantity of Toddler Bedtime Activities and Routine Effectiveness in Socioeconomically Disadvantaged Families

Hannah Feng, Nicholas Bendel, Lauren B. Covington, PhD, RN

Abstract: Introduction: Many studies support the positive association between consistent bedtime routines and toddler sleep and development. Yet, socioeconomically disadvantaged families may struggle to implement consistent routines due to structural barriers (e.g., shift-work, lack of support). Not known are the quantity and types of bedtime activities that help toddlers fall asleep. This study explores pre-bedtime activities and their effectiveness in toddlers from socioeconomically disadvantaged families. Methods: Forty-nine caregiver-toddler dyads participated in the Family Stress and Sleep Study. Caregivers completed daily diaries, answering open-ended questions about pre-bedtime activities with their toddler, and rating activity success with a like rt scale. Descriptive statistics quantified frequency of specific bedtime activities, mean number of activities and perceived effectiveness. Pearson correlation estimated the association between number of activities and perceived effectiveness. Results: Primary caregivers were 92% mothers, 53% Black, and mean age 33 years. Around 80% of caregivers completed a consistent number of bedtime activities with their toddler (>3 nights/week). Top nightly activities included play (92%), screentime (84%), reading, and eating (67% each). Caregivers performed on average 2.1 (± 1.2) nightly pre-bedtime activities, with an average success rating of 3.3 (± 1.2). There was a significant positive correlation between the number of nightly pre-bedtime activities and perceived effectiveness ($r=0.187$, $p<0.001$). Conclusions: Our correlational findings suggest that caregivers

may find that implementing >1 pre-bedtime activity as effective in getting their toddler to sleep. More work is needed to fully understand the pre-bedtime context in socioeconomically disadvantaged families.

23A

Mood Instability and Microvascular Function in Perimenopausal Women

Jumaris D. Hernandez 1 , Allyson I. Schwab 1 , Jody L. Greaney 2 , Megan M. Wenner 1

Abstract: Menopause is associated with greater mood instability (MI) and depression prevalence, two emerging non-traditional risk factors for cardiovascular disease. Previous evidence suggests that greater daily-stress and depression symptoms are associated with reductions in microvascular function in adults with major depressive disorder. However, the relationship between MI and microvascular function has not been examined in perimenopausal women (PERI). Therefore, the purpose of this study was to test the hypothesis that greater MI would be associated with decreased microvascular function in PERI. Cutaneous vasodilatory responses to local heating were measured using laser Doppler flowmetry during microdialysis perfusions of lactated Ringer's as a measure of microvascular function in twenty-three healthy PERI (Age: 50±3yrs; BMI: 25±3kg/m 2). Cutaneous vascular conductance was normalized to maximal vasodilation (CVC%max) achieved by perfusion of sodium nitroprusside and heating to 43°C. MI was recorded via a menopausal symptom questionnaire using a Likert scale that assessed symptom severity and frequency on a scale of 0-5. Total scores ranged from 0-70, with 70 being the greatest frequency and severity of MI. Simple linear regressions were used to assess the relationship between total MI scores and microvascular function. In all PERI, MI was not related to CVC%max (r=-0.172; P>0.1), however in early PERI, MI was inversely related to CVC%max (r=-0.685; P=0.06). MI was not significantly associated with CVC%max in late PERI (r=0.196; P>0.1). These data suggest that greater MI may be related to decreased microvascular function during the menopausal transition. Continued investigations into the mechanisms relating mood, menopause, and microvascular function are needed.

25A

The Effects of 'Fluent' Environment on Neural Correlates of Auditory Prediction Error

Joseph Koski, Gabrielle Brumond, and Evan Usler

Abstract: Selective attention allows individuals to filter out irrelevant sensory information, yet the extent to which environmental conditions influence this process remains unclear. This study examines how fluency-inducing environments modulate neural responses to auditory prediction error. During a local-global auditory oddball paradigm, typical adult participants played a video game under alternating fluent and non-fluent conditions while brain activity was recorded via EEG. This study aimed to replicate two environments, a 'fluent' environment of minimized distraction and increased engagement, and a 'non-fluent' environment, which included environmental disruptions during the task. For the analysis, we focused on two event-related potential (ERP) components: an early negativity/mismatch negativity (MMN) component and late a positivity/P3 component. According to active inference theory, these two components index auditory prediction error at two distinct hierarchical levels of cognitive processes (i.e., local and global, respectively) Results indicated that the early negativity/MMN response to local deviants was consistent across both fluent and non-fluent environments, supporting the idea that local auditory prediction error processing may be automatic. However, the late positivity/P3 to global deviants was relatively reduced during the fluent environment, suggesting that fluent environments may afford decreased prediction error to task-irrelevant auditory stimuli. Understanding how environmental factors influence prediction error processing has implications for optimizing cognitive performance in educational and occupational settings.

27A*

Supporting complex conversations about vaccinations: innovative communication skill training for community health educators

Authors: Sydney Bouder, Sarah Goldring, Alyssa Whittaker, Jacquelyn Medley, Sana Patil, and Laurie Ruggiero.

Abstract: Background: Community health educators play a crucial role in addressing vaccine hesitancy among underserved populations. Training in communication skills is essential for supporting discussions on vaccines. Methods: This project aimed to enhance communication skills in health educators to address vaccine hesitancy. The virtual training incorporated behavior change communication strategies with an innovative Healthcare Theater experiential component. Voluntary anonymous pre/post brief surveys were administered, covering demographics, practice characteristics, confidence in communication practices, perceived barriers and benefits to vaccinations, readiness to discuss vaccinations, and general feedback. Results: Over 140 community health educators attended a variety of training sessions. The findings from the survey participants for one set of trainings (educational n = 22; Healthcare Theater n = 11) included: 47% African American; 26% Hispanic/Latino; 86% female; 45% served in community settings, 82% in low-resourced communities, and 41% in healthcare. Confidence in using communication skills improved from pre- to post-assessment: open ended questions increased from 6.69 (pre) to 8.10 (post), affirmations increased from 6.68 (pre) to 8.4 (post), reflections increased from 6.84 (pre) to 8.35 (post), summarizing increased from 7.37 (pre) to 8.45 (post), identifying readiness to change increased from 5.79 (pre) to 8.05 (post), and tailoring conversations increased from 6.12 (pre) to 7.83 (post). Nearly all (89%) would recommend the healthcare theater training. Conclusions: Enhancing communication skills boosts community health educators' confidence in addressing vaccine hesitancy in underserved populations. This training model, especially the Healthcare Theater component, may inform future efforts to improve health communication and address vaccine hesitancy more effectively.

29A

The impact of psychosocial stress in diet in young adults

Clarisse M Hunt, Jillian C Trabulsi, Aaron S Autler, Jody L Greaney

Abstract: Daily psychosocial stressors, such as work deadlines and interpersonal conflicts, represent frequent but minor challenges that may accumulate, leading to significant psychological and physiological consequences. More frequent exposure to these stressors can influence health behaviors, including dietary intake, thereby exacerbating long-term health risks. This study tested the hypothesis that greater exposure to stressors is associated with poorer dietary behaviors, such as suboptimal meal patterns and nutrient intake, among emerging adults—a developmental stage characterized by heightened susceptibility to stress and understudied in research. Participants (n=45) aged 18–30 were recruited and designated as a low-stress adult (LSA) or high-stress adult (HSA), based on their responses to the Patient-Reported Outcomes Measurement Information System (PROMIS) Emotional Distress-Depression Short Form at study entry. Participants with a PROMIS raw score of ≤14 were designated as LSA, while those with a score of ≥26 were classified as HSA. Dietary intake was evaluated over eight consecutive days using the Automated Self-Administered 24-hour Recall (ASA24) system. Preliminary findings reveal that, compared to the LSA group, the HSA group demonstrated poorer dietary behaviors including a higher percentage of daily energy intake occurring after dinner (p=0.001), greater total energy intake (p=0.047), higher sodium consumption (p=0.025), and a longer duration in the fed state (p=0.039). These results confirm poor diet attributes in those most susceptible to stress in their everyday lives.

31A

Impact of Sodium Intake on Blood Pressure in Collegiate Athletes and Non-Athletes

Dae Sik Song, Kristina Krieger, Lindsey M. Mirkes, Jacob J. Capin, Shannon L. Lennon

Abstract: Many public health efforts have been made to reduce salt intake, but most have met with failure. High sodium intake can contribute to increased blood pressure (BP). The aim of this study was to examine the relation between sodium intake and BP in collegiate athletes and non-athletes. Cross-sectional data from 152 participants was stratified into two groups: young athletes ([YA], N=108, 63F/45M, 21±2 years), young non-athletes ([YNA], N=44, 30F/14M, 22±2 years). Energy and sodium intake were obtained from 3-day dietary logs. Anthropometrics and seated BP were measured. Group differences were analyzed using an unpaired t-test. Pearson correlations were used to evaluate associations between sodium intake and BP. Sodium intake was significantly higher in YA (4140±1457mg) compared to YNA (3332±1096mg) however both groups exceeded dietary recommendations (p<0.05). Energy intake was not different (YA: 2283±679 vs. YNA: 2111±741 kcal; p=0.09). Systolic (SBP) was higher in YA (124±15 mmHg) compared to YNA (119±15 mmHg; p<0.05), but diastolic BP (DBP) (77±10 vs. 76±9 mmHg; p>0.05) was not. Mean arterial pressure (MAP) was not different between groups (p>0.05), but pulse pressure (PP) was (p=.039). Sodium and SBP were positively correlated (r=0.32, p<0.01) and this remained significant even when controlling for group. There was no association between sodium for DBP (p>0.05) while MAP (r=0.20; p=0.14) and PP (r=0.30; p<0.001) were. In conclusion, our results suggest that higher sodium intake is associated with increased SBP, MAP, and PP regardless of athletic status. Thus, reducing sodium intake may be effective for managing BP in both athletes and non-athletes.

33A

Eating Window Length, Night Eating, and Metabolic Syndrome Risk in Emerging Adults

Diane Vizthum MS RD, Melissa Melough PhD RD, Freda Patterson PhD, Carrie Earthman PhD RD, Carly Pacanowski PhD RD

Abstract: Objective: To assess whether eating window length and night eating predict metabolic syndrome risk in emerging adults. Methods: National Health and Nutrition Examination Survey 2017-2020 prepandemic data were analyzed. Individuals aged 18-29 with ≥1 day of reliable dietary data and complete data for calculating metabolic syndrome severity score (blood glucose, triglycerides, HDL cholesterol, waist circumference, and systolic blood pressure) who were not pregnant, taking metabolic-related medication, or with a history of metabolic disease were included. Multiple linear regression models stratified by sex assessed whether eating window length and night eating (%of calories eaten after 8pm) predicted metabolic syndrome severity score (MSSS, range: -2.07 to 2.68) controlling for age, race, income, food security, physical activity, and sleep. Results: In men (n=181), each additional hour of eating was associated with 0.06 lower MSSS, indicating lower risk (β=-0.06 95% CI -0.09 to -0.03, p=0.0008). On average, men with longer eating windows started eating earlier (6:42am for >14hr eating window vs 2:24pm for <8hr eating window) and had a higher Healthy Eating Index (50.1 for >14hr eating window vs 40.8 for <8hr eating window). Relationships were non-significant in women (n=186). Discussion: Surprisingly, longer eating windows were associated with lower metabolic syndrome risk in men. Men with longer eating windows began eating earlier, consistent with data suggesting that eating breakfast is associated with better cardiovascular health. Men with longer eating windows also had higher diet quality, a protective factor for cardiovascular risk. Longitudinal and intervention studies may uncover reasons for these unexpected cross-sectional findings.

35A

Maternal newborn skills demonstration: A tool for improving confidence and preparedness of senior nursing students entering the inpatient obstetric setting

Amanda Watson & Nicole Donahue

Abstract: Introduction: Competency-based nursing curriculums create deliberate learning experiences that bridge didactic and clinical performance. Novice nurses require mastery of entry-level skills to succeed at the forefront of complex healthcare environments. Maternal and newborn care skills practice were identified as a desired component by senior nursing students entering inpatient obstetric settings. Methods: Over a period of 6 days, N=160 senior nursing students attended a 4-hour Maternal Newborn Skills demonstration followed by two low-stakes return demonstrations of postpartum assessment and newborn assessment. Students were required to complete "pre-work" readings and videos, "pre-skills survey" and a "post-skills survey" to evaluate their confidence and preparedness to provide labor, postpartum and newborn care before entering the clinical setting. Results: Prior to attending Maternal Newborn Skills demonstrations 69.09% of senior nursing students identified they had no experience with labor and birth. Strongly feeling prepared and confident to care for postpartum, newborn and laboring patients increased respectively from 46.66 % to 90.66; 46.66% to 90.0%, and 46.06% to 84.67% after participating in Maternal Newborn Skills demonstrations when compared with completing pre-work reading and videos alone. Conclusion: Maternal Newborn Skills demonstrations taught at a formative level with low-stakes returned demonstration significantly increased student confidence and preparedness before entering the inpatient obstetric clinical setting.

37A

Comprehensive Review on the Role of Folic Acid in Preventing Neural Tube Defects and Other Pregnancy Outcomes

Kolluri Prathyusha

Abstract: Introduction Neural tube defects like spina bifida and anencephaly result when the neural tube does not close up properly during the early fetal development stages. The defects are more prevalent in nations that have no folic acid fortification program. With evidence that folic acid supplementation prior to conception is highly effective at reducing NTD risks, many countries have incorporated it into their mandatory public health program to significantly reduce NTD incidence. Methods To understand the role of folic acid in pregnancy outcomes, read through a series of studies, including clinical trials, observational studies, and public health journals and focused on pre- and post-fortification NTD prevalence worldwide, effectiveness of folic acid supplementation to prevent NTDs, dosage recommendations, and potential benefits outside NTD prevention, including maternal health benefits and prevention of other congenital malformations. Results Studies show that supplementation with folic acid can significantly reduce the risk of NTDs. In countries where fortification has been made mandatory, such as the U.S., Canada, and Australia, rates of NTD have fallen by 20–50%. However, women who are not sufficiently endowed with folic acid before conception are still at higher risk. Some studies also suggest that folic acid can lower the risk of heart defects and orofacial clefts and can even reduce pregnancy complications like preeclampsia. Conclusion Folic acid supplementation and fortification are effective interventions in the prevention of NTDs. All women of childbearing age should have adequate folic acid, and ongoing public health efforts should be directed towards this. More research is needed to determine other advantages.

39A

Elevated Glucose Impairs Endothelial Kir2.1 Channel Function and Degrades the Glycocalyx *in vitro*

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Abstract: Insulin resistance and hyperglycemia are associated with endothelial dysfunction though the mechanisms are not well understood. Endothelial dysfunction is characterized by an impairment of endothelial-dependent control of vascular tone with major contributions from the inwardly rectifying potassium channel Kir2.1. Kir2.1 function is dependent on the glycocalyx, an extracellular matrix composed of proteoglycans (PGs) and
glycosaminoglycans (GAGs) previously shown to be grossly disrupted in obesity and diabetes. In this study, we determined the effects of treating endothelial cells with prolonged exposures to elevated glucose (i.e., 200 mg/dL for 72 hours) using whole-cell patch clamp electrophysiology to study Kir2.1 function. We next tested the presence and expression of specific glycocalyx GAGs and PGs using immunocytochemistry and Western blotting. Our work reveals that endothelial cells exposed to elevated glucose exhibit reduced Kir2.1 function and reduced presence or expression of specific glycocalyx components, namely heparan sulfate GAGs and syndecan-1 PG. Similar findings were observed when cells were treated with mannitol, however the biologically inactive L-glucose had no effect. Furthermore, Kir2.1 impairment appears to be independent of osmotic stress as assessed by challenging cells with elevated NaCl. As neither glucose nor mannitol influenced Kir2.1 expression, we infer that alterations to the glycocalyx may underly channel dysfunction in the presence of these monosaccharides. Ongoing work in our lab aims to determine if restoring heparan sulfate or syndecan-1 expression will rescue Kir2.1 function in the presence of increased sugars.

41A

Exploring a Potential Relation Between Vitamin D and Blood Pressure Variability in Young Black Women

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Abstract: Vitamin D (VitD) deficiency and cardiovascular diseases (CVD) are both known to disproportionately affect Black women (BLW). Previous studies suggest a causal role for VitD in BP regulation. Increases in beat-to-beat (BPV) have also been shown to precede elevations in BP . However, there is limited data on BPV in young BLW and if BPV is associated with VitD. PURPOSE: To (1) characterize morning beat-to-beat BPV in young BLW and (2) to explore a potential relation between VitD and BPV. We hypothesized that lower serum VitD concentrations would be associated with higher BPV. METHODS: Healthy young BLW between the ages of 18-30 yrs were recruited. Serum VitD concentration was clinically quantified using a fasted venous blood sample. Beat-to-beat BPV was calculated as standard deviation (SD) and average real variability (ARV). RESULTS: Associations between VitD and beat-to-beat systolic BPV were trending in the hypothesized direction [SD (r=-0.30;p=0.097) and ARV (r=-0.31;p=0.086)]. There were significant negative associations between VitD and beat-to-beat diastolic BPV [SD of BPV (r=-0.40; p=.02) and ARV (r=-0.39;p=0.032)]. CONCLUSION: Preliminary results revealed weak-to-moderate inverse associations between VitD and parameters of morning beat-to-beat BPV in young BLW. SIGNIFICANCE/NOVELTY: BPV is an emerging biomarker of BP regulation that may precede elevations in BP, especially in young and at-risk groups. Further studies are needed to better understand the relation between VitD levels and autonomic control of CV function.

43A

Altered Peripheral Artery Function and Wave Reflection in Boys with Duchenne and Becker Muscular Dystrophy

Alexs Matias, Krista Szymanski, Michele D'Agata, Mena Scavina, Michael McCulloch, Julio Chirinos, David Edwards, Melissa Witman

Abstract: Duchenne (DMD) and Becker muscular dystrophy (BMD) are rare muscle-wasting disorders with a high cardiovascular mortality. Peripheral artery dysfunction is linked to null dystrophin on vascular smooth muscle and endothelial cells in DMD/BMD. Arterial dysfunction alters wave reflection, increasing left ventricular load and contributing to heart failure. However, peripheral artery function and wave reflection remain underexplored in boys with DMD/BMD. PURPOSE: To characterize peripheral artery function and wave reflection in boys with DMD (n=26) and BMD (n=10) as compared to typically-developing controls (n=33). METHODS: Using an oscillometric-cuff device, pulse wave analysis was used to calculate augmentation index normalized to a heart rate of 75 (AIx75). Wave separation analysis assessed forward (Pf) and reflected (Pb) pressure waves, with reflection magnitude (RM) calculated as Pb/Pf. In a subset of boys, reactive hyperemia index (RHI) was measured using finger pulse amplitude tonometry following 5 minutes of cuff occlusion. RESULTS: A main effect of group was observed for AIx75 (p<0.001,n 2 =0.53). Namely, there was a stepwise increase in AIx75 from Controls to BMD (p=0.007, Control:-2.4±10.9 vs. BMD:10.0±14.9%) to DMD (p<0.001, Control:-2.4±10.9 vs. DMD:30.5±18.5%; p=0.004, BMD:10.0±14.9 vs. DMD: 30.5±18.5%). A main effect of group was observed for RM (p<0.001,n 2 =0.24). However, only Controls vs. DMD was significantly different (p<0.001, Control:46±6 vs. DMD:56±11%). A main effect of group was observed for RHI (p=0.001,n 2 =0.12), such that RHI was reduced in boys with DMD vs. Controls (p=0.010; Controls:1.72±0.45 vs. DMD:1.32±0.42a.u.). CONCLUSIONS: Preliminary findings suggest reductions in artery microvascular reactivity in boys with DMD and increased wave reflection in DMD/ BMD.

45A

Association between Age and Functional Connectivity of Sodium Sensing Brain Regions during Acute Hypernatremia

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Abstract: The subfornical organ (SFO) and organum vasculosum lamina terminalis (OVLT) sense changes in the salt concentration of blood and induce changes in sympathetic activity and vasopressin. Thus, salt sensing in these brain regions is critical for blood pressure (BP) regulation and fluid balance. Previously, we demonstrated that acute hypernatremia via an intravenous (IV) hypertonic saline infusion increases the functional connectivity between the SFO and OVLT. Objective: Since salt sensitivity of BP increases with age, we assessed the association between age and SFO-OVLT functional connectivity during acute hypernatremia. Methods: Functional magnetic resonance imaging was performed on 32 healthy adults (27±4 [18-34] yr, 15 women) at baseline and during a 30 min 3% NaCl IV infusion (0.15 ml/kg/min). Functional connectivity was calculated between the SFO and OVLT. We assessed the associations between age and SFO-OVLT connectivity z-score at baseline and the change in SFO-OVLT connectivity z-score from baseline to the last 15 minutes of the infusion using Pearson correlations. Results: Higher age was correlated with a greater increase in SFO-OVLT connectivity (r=0.488, p=0.005). Higher age was correlated with lower baseline SFO-OVLT connectivity, but this did not reach statistical significance (r=-0.316, p=0.078) Conclusion: In young healthy adults, age and change in SFO-OVLT functional connectivity during acute hypernatremia were positively correlated, suggesting

that the effects of acute hypernatremia on the synchronization of these brain regions may be affected by aging. Future studies should seek to validate this finding across a wider age range.

47A*

Microvascular Endothelial Dysfunction in Adults with Major Depressive Disorder: The Role of Mitochondrial-Derived Reactive Oxygen Species

Aaron S Autler, Madison G Evering, Erika FH Saunders, and Jody L Greaney

Abstract: Mitochondrial-derived reactive oxygen species (mtROS) generation in multiple cell types is markedly elevated in adults with major depressive disorder (MDD). Nearly all studies in MDD to date have focused solely on the role of mtROS in causing and exacerbating the core pathological symptoms of MDD (e.g., fatigue), and whether mtROS contributes to blunted nitric oxide (NO)-mediated endothelium-dependent dilation (EDD) in adults with MDD is unknown. We tested the hypotheses that NO-mediated EDD in young-to-middle-aged adults with MDD would be improved by scavenging mtROS. In five healthy adults (HA; 34±11 yrs; 3 female) and five otherwise healthy adults with MDD of mild-to-moderate severity (32±12 yrs; 3 female), red blood cell flux (laser Doppler flowmetry) was measured in response to a standardized local heating protocol (42°C) alone (control, CON) or during concurrent administration of a mitochondrial-specific (MitoTempol, MT), each followed by intradermal microdialysis perfusion of N(G)-nitro-l-arginine methyl ester (L-NAME; 15mM) to quantify EDD. EDD was expressed as a percentage of maximum cutaneous vascular conductance (CVC=flux·mmHg-1) and the relative contribution of NO was calculated as the difference between post-heating and post-L-NAME plateaus in conductance. EDD was blunted in adults with MDD (HA: 95±5 vs. MDD: 75±15% CVC; p=0.01) secondary to reductions in NO bioavailability (HA: 82±11 vs. MDD: 58±15%; p=0.01). MitoTempol was associated with a ~13% improvement in NO-mediated EDD (CON: 58±15 vs. MT: 65±8%; p=0.23). These preliminary data suggest that excessive vascular mtROS may contribute to microvascular endothelial dysfunction in young-to-middle-aged adults with MDD.

49A

Neuroticism is not associated with microvascular endothelial dysfunction in young adults

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Abstract: Neuroticism, a personality domain characterized by a tendency to experience negative emotions, is associated with an increased risk of cardiovascular disease (CVD); however, the underlying mechanisms remain unclear. Although neuroticism is linked to reduced endothelium-dependent dilation (EDD) in older adults with overt CVD, no studies have examined the impact of neuroticism on nitric oxide (NO)-mediated EDD in young adults. Therefore, we hypothesized that neuroticism would be negatively related to NO-mediated EDD. Neuroticism (Big Five Inventory) was assessed in forty-eight healthy young adults (n=30 women; 22±3 years). Red cell flux (laser-Doppler flowmetry) was measured in response to two standard local heating (LH) protocols (39°C and 42°C) to quantify EDD, followed by perfusion of N(G)-nitro-l-arginine methyl ester (L-NAME; 15mM) to quantify NO-dependent dilation. Cutaneous vascular conductance was calculated (CVC=flux/mean arterial pressure) and normalized to maximum (%CVCmax; 28mM sodium nitroprusside+43°C). EDD in response to LH to 39°C was 56±18%CVCmax and in response to LH to 42°C was 82±18%CVCmax; the relative proportion attributable to nitric oxide was 41±17% and 64±18%, respectively. There was no relation between neuroticism (23±5 arbitrary units, range 13-37) and LH-induced EDD in response to either 39°C (r=0.14, p=0.42) or 42°C (r=0.17, p=0.32). Similarly, there was no relation between neuroticism and NO-mediated EDD at either 39°C (r=0.15, p=0.38) or 42°C (r=0.08, p=0.65). Contrary to our

original hypothesis, these data indicate that neuroticism is not related to NO-mediated EDD in healthy young adults, which suggests that young adults may be relatively protected from the cardiovascular consequences associated with neuroticism.

53A

Endothelial Cell CD36 ablation attenuates obesity-induced endothelial dysfunction

Erica J. Johnson, Thanh Nguyen, Sabita Rokka, Emma Hudgins, Ibra S Fancher

Abstract: Endothelial Cell CD36 ablation attenuates obesity-induced endothelial dysfunction Erica J. Johnson, Thanh Nguyen, Sabita Rokka, Emma Hudgins, Ibra S Fancher Abstract: Obesity is a prevalent metabolic condition that is strongly associated with the development of cardiovascular disease. Adipose arteries exhibit robust endothelial dysfunction in diet-induced obese mice. Obesity is also associated with elevated plasma long chain fatty acids (LCFAs), well-established contributors to endothelial dysfunction, which require a receptor to facilitate their uptake. CD36, facilitates LCFA uptake which when in excess contributes to endothelial dysfunction. Our previous work demonstrated that global CD36 ablation restores endothelium-dependent dilations to flow. Therefore, to determine if an upregulation in CD36 expression was driving these differences, we first assessed if obesity alters endothelial CD36 expression using flow cytometry and immunofluorescence imaging. For flow cytometry experiments mesenteric arteries were digested and sorted to identify the endothelial cell population (i.e., CD45-CD31+ cells). En face preparations were stained for VE-cadherin to locate the endothelial cell layer using confocal microscopy. In both experiments, an antibody that detects an extracellular epitope of CD36 was used to detect membrane expression. Obesity did not alter the expression of CD36 in endothelium of mesenteric arteries relative to lean counterpart controls in WT mice. We next aimed to determine if obesity influences the functional capacity of endothelial CD36. First, we measured LCFA uptake in mesenteric arteries from lean and obese WT mice. Arteries were exposed to a fluorescent palmitic acid analogue, BODIPYC-16, and internalized endothelial LCFA uptake was assessed at different time points using confocal microscopy. Arteries from obese mice had elevated endothelial LCFA uptake and lipid accumulation relative to lean controls. To determine if the effects of obesity on LCFA uptake were mediated by endothelial CD36, we repeated the fluorescent LCFA uptake experiments using the Tie2eCreCD36fl/fl model. First, to determine if endothelial cell CD36 was driving obesity induced endothelial dysfunction, mesenteric arteries were isolated from lean and diet-induced obese Tie2eCreCD36fl/fl mice. Arteries from Tie2eCreCD36fl/fl diet induced obese mice exhibited attenuated fatty acid uptake, compared to their lean and obese genotype controls. Next, we measured endothelial function ex vivo via pressure myography. Mesenteric arteries from obese Tie2eCreCD36fl/fl mice exhibited a restored response to flow induced vasodilation relative to respective controls suggesting a role for endothelial cell CD36 in mediating endothelial dysfunction
perhaps through promoting lipid accumulation in obesity. Ongoing work within our lab is aimed at determining the mechanism underlying obesity-induced alterations to endothelial CD36 and how the observed increase in LCFAs may be contributing to reduced endothelial function.

55A*

The Effects of High-Intensity Interval Training and Moderate-Intensity Continuous Training in Sedentary Individuals on Blood Pressure Reactivity

Samuel A.W. Zercher, Bryce J. Muth, Joseph M. Stock, David G. Edwards

Abstract: Regular aerobic exercise improves resting blood pressure (BP) and BP reactivity (BPR). High-intensity interval training (HIIT) reduces exercise time compared to moderate-intensity continuous training (MCT). We

tested whether HIIT and MCT similarly reduce resting BP and BPR. Sedentary adults (5M/11F, age: 29±2) were randomly assigned to 8 weeks (3 sessions/week) of HIIT or MCT. Resting systolic BP (SBP), diastolic BP (DBP) and mean arterial pressure (MAP) were recorded. Beat-to-beat BP was recorded during isometric handgrip exercise (HG) and post-exercise ischemia (PEI) and change from baseline (ΔBP) was used to assess BPR. Resting SBP, DBP and MAP decreased post-training (all main effect of time; $p<0.05$). SBP decreased significantly within both groups (HIIT: 112±4mmHg to 105±3mmHg, $p=0.002$; MCT: 119±2 to 115±3, $p=0.049$) whereas MAP and DBP decreased significantly in MCT only, (88±2 to 85±2, and 73±3 to 69±2 respectively; $p<0.05$ for both). A significant interaction was found for ΔSBP, ΔMAP, and ΔDBP during HG (all; $p<0.05$). BPR decreased post-MCT across all measures (ΔSBP: 24±3 to 18±3 $p=0.039$, ΔMAP:23±2 to 17±2 $p=0.01$, DBP:23±2 to 16±2 $p=0.005$). BPR did not change post-HIIT. A significant interaction was observed across all ΔBP measures during PEI (all $p<0.05$). HIIT augmented ΔSBP (14±3 to 20±4, $p=0.028$) whereas there was no effect of MCT. HIIT and MCT improved resting BP. The divergent effects of HIIT and MCT on BPR suggests a heightened metaboreflex following HIIT.

59A

IMPACT OF PASSIVE-DYNAMIC ANKLE-FOOT ORTHOSES ON POST-STROKE MUSCLE ACTIVITY

Jacob T. Skigen, Shay Pinhey, Elisa S. Arch

Abstract: Background: A common side effect of stroke is weakened plantar flexors of the paretic limb, limiting their walking capacity. Passive-dynamic ankle-foot orthoses (PD-AFOs) are often prescribed to individuals post-stroke to support weakened plantar flexors. We aimed to explore the interaction between PD-AFOs and the post-stroke lower limb system by measuring the electromyographic (EMG) activity of key lower limb muscles during certain phases of the paretic gait cycle with and without a PD-AFO. Methods: Analysis was conducted on four individuals six+ months post-stroke. Participants walked on an instrumented treadmill at a fixed self-selected speed with and without a PD-AFO. EMG data was collected from the paretic soleus and medial gastrocnemius during single limb support; as well as the paretic medial gastrocnemius and rectus femoris, and non-paretic rectus femoris, during pre-swing. Muscle activity was quantified by calculating the mean root mean square (mRMS) of the signal within the desired gait phase and compared on an individual level using single-subject bootstrapping statistical analysis. Results: Overall, the presence of the PD-AFO did not elicit significant changes in the target muscles. Of the 20 mRMS values calculated across all four participants, only two were significantly different with the PD-AFO. The lack of changes in EMG data may represent a lack of substantial engagement with the PD-AFO by the participants. Conclusion: Despite PD-AFOs being designed to support the plantar flexors, results from this study suggest that the introduction of a PD-AFO to the post-stroke lower limb system may not change the behavior of the underlying muscles.

61A

Association of Cardiovascular Health and Endothelial Function in Female Adults

Susmita Basnet; Shannon Robson, PhD, MPH, RD; Melissa M. Melough, PhD, RD; Jody L. Greaney, PhD; David G. Edwards, PhD

Abstract: Background: The American Heart Association (AHA) defines cardiovascular health (CVH) with four health behaviors (diet, physical activity, nicotine exposure, sleep health) and four health factors (blood lipids, blood glucose, blood pressure, body mass index [BMI]). The objective of this study was to examine the association between CVH and endothelial function, as measured by flow-mediated dilation (FMD). Methods: Baseline data from 35 females (41.7±7.2 years, 60% White, 97.1% non-Hispanic) enrolled in randomized controlled trial were included in this analysis. Dietary intake was assessed with 3-day diet records and healthy

eating index total score was calculated. Physical activity was assessed using accelerometry to obtain average daily minutes of moderate-to-vigorous physical activity. Nicotine exposure and sleep health were assessed via self-reported questionnaires. Fasting blood samples were collected to measure glucose and cholesterol, and blood pressure and FMD were measured. Allometric scaling was applied to percent change FMD to account for differences in baseline diameter. CVH metrics were quantified and overall CVH score was calculated, with scores ranging from 0-100 with higher scores reflecting more ideal CVH. A linear regression model examined the relationship between each CVH metric and corrected-FMD, and the overall CVH score and corrected-FMD. Results: CVH metrics ranged from 27.7±11.2 for physical activity and 89.7±18.8 for blood glucose and CVH overall score was 60.1±9.4, with the majority (85.7%) classified as having intermediate CVH status. The mean corrected-FMD was 6.7±4.2. A significant association was observed between CVH overall score and corrected-FMD (b=0.154(0.073), p=0.041). Conclusion: CVH overall score was associated with corrected-FMD.

63A

Impact of Senior Center Healthy Aging Programming on Psychosocial Health Outcomes

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Abstract: Delaware's Division of Aging and Adults with Physical Disabilities provided mini-grants to 16 senior centers to implement healthy aging programs (i.e. exercise, arts). The purpose of this study was to (1) examine the impact of senior center programs on psychosocial health outcomes of loneliness, perceived mental health, and quality of life outcomes and (2) whether the type of program participation is related to the changes in psychosocial health outcomes. Matched participant data from 14 senior centers in Delaware were examined. The program/activity directors of each center administered pre/post program surveys to participants in their own sites. Perceived mental health (SF-12), loneliness (UCLA Loneliness Scale), and quality of life (Satisfaction with Life Scale) were assessed. 567 participants (age:73±9yrs;62.3% female) completed center specific healthy aging programs categorized as "Educational Enrichment, Culture, and Support"(n=155), "Nutrition"(n=111), "Physical Fitness"(n=301). Wilcoxon signed-rank tests examined pre-post program differences and an ANOVA examined between group differences. Perceived mental health (pre 72.0±16.5 v. post 76.8±15.5) was significantly ($p<0.001$) improved, however no significant changes in quality of life (pre 25.5±6.8 v. post 26.1±6.8; p=0.31) or loneliness (pre 3.9 ±1.4 v. post 4.0±1.4; p=0.29) were found. There were no significant group differences by program type on changes in perceived mental health, quality of life, or loneliness. Indicating that these specific senior center program participation of any kind may be related to improvements in perceived mental health, but not changes in loneliness or quality of life. Funding: Delaware Health and Social Services, DSAAPD.

66A

Exploring Changes in Daily Behavior with Changes in Physical Function over 24 Weeks in Adults with Knee Osteoarthritis

Thomas Videtich Bye, Isabella Granetzke, Sydney Liles, Jennifer Copson, Laura Schmitt, Jason Jakiela, and Daniel White

Abstract: Purpose/Hypothesis: Knee osteoarthritis (OA) is a leading cause of functional limitation in adults. Exercise is a recommended treatment but provides only modest symptom improvements. Physical therapists can modify daily behaviors outside of exercise, but it is unclear whether these changes influence function beyond exercise alone. We examined the relationship between daily behaviors and patient-reported

function over 24 weeks in adults with knee OA in a telehealth physical therapy trial. Methods: This secondary analysis used data from the Delaware PEAK trial, a 12-week intervention targeting knee pain and function through physical activity, strength training, and education delivered by a physical therapist or self-paced online materials. Daily behaviors were assessed using posture and physical activity index data from thigh- and hip-worn monitors. Physical function was measured via the Knee Osteoarthritis Outcome Score (KOOS) Activities of Daily Living (ADL) subscale. Multiple linear regression examined associations between changes in daily behaviors and function over 24 weeks, adjusting for demographics and intervention group. Results: 36 participants were included in the sample (Age 59.9±9.0 years, 85% Female, BMI 35.0±9.0 kg/m2, 16% Non-white, 30% Rural). Each 10 min/day increase in light stepping was associated with a 2.6 increase in KOOS ADL (95%CI [0.2, 5.0]) over 24 weeks. Conclusion: More time spent light stepping was related to improvements in patient-reported physical function over 24 weeks in our sample of adults with knee OA.

69A

Neurological Health in Former Amateur Ice Hockey Players: Considerations for Lifestyle Factors and Career Duration

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Abstract: Repetitive head impacts (RHI) in contact sports may increase the risk of cognitive impairment and mental health decline. The Lifestyle for Brain Health (LIBRA) score quantifies modifiable risk factors linked to these outcomes, but its use in former ice hockey players remains unexplored. PURPOSE: Assess the impact of RHI exposure and lifestyle factors on neurological health in former ice hockey players. METHODS: Fifty-two former ice hockey players (age: 54.1±14.4 years, career duration: 26.3±15.7 years) completed an online questionnaire covering demographics, sports participation, and health history. Mental health was assessed using the Apathy Evaluation Scale (AES) and Center for Epidemiological Studies Depression Scale (CES-D); cognitive function was measured via the PROMIS Cognitive Function Short Form 4a (PROMIS CF). LIBRA scores were calculated as in prior studies, with higher scores indicating greater risk (range = -5.9 - 14.6). Linear regressions examined associations between LIBRA scores, career duration, and health outcomes. RESULTS: Higher LIBRA scores (-0.8±2.4) were significantly associated with worse AES (R^2 = 0.14, ß = 0.38, p = 0.006) and CES-D (R^2 = 0.20, ß = 0.45, p = 0.002) scores. Career duration showed no significant associations to mental health but was linked to worse cognitive function (PROMIS CF: R^2 = 0.12, ß = 0.34, p = 0.014). LIBRA scores were not associated with cognitive function. CONCLUSION: Consistent with football studies, LIBRA scores correlated with poorer mental health but not cognitive function. These findings highlight the importance of targeting lifestyle factors to support long-term health in individuals with prior RHI exposure.

71A

Activity-Induced Changes In Pain And Gait In Adults With And Without Knee Oa

Julien A. Mihy, Mayumi Wagatsuma, Katie A. Butera, Elisa S. Arch, Stephen M. Cain, Jocelyn F. Hafer

Abstract: Pain with movement is common with knee osteoarthritis (KOA), but its effect on gait is not well understood. The few studies that measured changes in pain and gait used 20-45 minutes of walking, but adults with KOA rarely meet physical activity guidelines. Stairs are quicker and painful even in early stages of KOA. This study aimed to determine how pain and gait change in response to stair bouts in those with and without KOA. Twenty-two participants, four with KOA, wore sensors on the sacrum, thigh, shank, and foot of the symptomatic (KOA) or right (healthy) leg. Participants completed four walks, before and after two stair bouts (each bout=50 stairs). Participants reported pain on a 0-10 scale during each walk. Outcome variables of

interest were the post-pre stair bout difference in pain, stride velocity, stride length, and lower extremity joint excursions range of motion (ROM). Differences were compared via a 2x2 mixed model ANOVA (group x bout repetition, α=0.05). To determine the effect of pain on this relationship, pain was used as a covariate for all but the pain comparison. The KOA group had a greater decrease in knee ROM following the second bout of stairs compared to their healthy counterparts. Both groups had a greater increase in ankle ROM following the second bout of stairs and pain affected this relationship. These findings indicate stair bouts an mimic treadmill bouts, and the ankle may be of interest to decrease the likelihood of pain in response to bouts of activity.

73A

Pain impairs retention of motor learning regardless of a change in context

Authors: Samuel R Jackson, Ryan T Pohlig, Susanne M Morton

Abstract: Our lab recently showed that pain interferes with retention of motor learning. Conversely, other evidence suggests this effect may not be truly due to pain, but due to a change in context (testing retention in a nonpainful context when learning occurred in pain). To test this, we examined the effect of pain on retention of locomotor learning and directly compared retention with versus without a context change. Thirty young, healthy adults learned a new walking pattern using real-time visual feedback of their step lengths that was distorted to produce a novel 9% asymmetry (SA). Retention of learning was tested 24 hours later. Participants were randomized into a No Pain (NP), Pain during Learning (PL), or Pain during Learning and Retention (PLR) group, named based on when pain was experienced. Pain was induced via topical capsaicin and heat applied to one leg. SA was compared across groups and across baseline, late learning, and early retention timepoints using a marginal linear mixed model. There was a significant group x time interaction for SA (F(4,32.7)=2.97, p=0.03, =0.08). Although all groups successfully learned the asymmetric walking pattern, retention differed between groups based on whether pain was present during learning, but not based on context. Both PL (post hoc, p=0.007) and PLR (p=0.01) groups showed reduced retention compared to the NP group. Thus, individuals experiencing acute pain can learn a new locomotor pattern, but the presence of pain during learning limits its subsequent retention, regardless of the context in which retention is tested.

75A

Chronic Stroke Compromises the Temporal Precision of Proprioceptive Processing

Devin S. Austin, Arianna G. Eimont, Jennifer A. Semrau, PhD

Abstract: In individuals with chronic stroke, how the brain integrates proprioceptive information during upper limb activity remains poorly understood despite its essential role in everyday movements. Stroke-related disruptions in sensorimotor processing may contribute to delayed corrective responses to unexpected perturbations, yet the specific mechanisms underlying these delays remain unclear. Furthermore, active movement tasks often interweave the process of sensing a limb's position with motor-execution, making it difficult to disentangle the distinct roles of sensory and motor processes in the critical timing of corrective responses. We hypothesized that chronic stroke disrupts the rapid integration of proprioceptive information, increasing temporal variability and reducing temporal accuracy during limb localization, with visual feedback minimizing these deficits. We used a passive movement paradigm with the Kinarm Robotic Exoskeleton to test this. Participants signaled when their unseen, passively moved hand reached a visual target with and without visual feedback. This approach isolates proprioceptive contributions of limb estimation while minimizing motor confounds. Preliminary results indicate that compared to controls (N = 5), individuals with stroke (N = 6) exhibit similar temporal accuracy (p = 0.13) but significantly greater temporal variability (p =0.02) without visual feedback. While visual feedback did not significantly alter accuracy (Controls: p = 0.26; Stroke: p = 0.13),

it significantly reduced temporal variability in both groups (p < 0.001). These findings suggest chronic stroke impacts the temporal precision of proprioceptive integration during sensorimotor processing. This information improves our understanding of sensory contributions to corrective responses and may inform rehabilitation strategies to improve functional outcomes.

77A*

Older Adults Activate Muscles Earlier in Response to Activity

Millissia A. Murro, Fany Alvarado, Grace K. Kellaher, Nancy T. Nguyen, Mayumi Wagatsuma, Jeremy R. Crenshaw, Jocelyn F. Hafer

Abstract: In older adults, greater muscle fatigability may result in detrimental changes in function and mobility due to alterations in muscle function in response to bouts of activity. These changes in response to bouts of activity are often assessed by examining changes in gait mechanics, muscle strength, or muscle activation with an assumption that changes in gait may be due to changes in muscle strength or activation. Prior assessment of muscle activation timing is limited but would allow us to understand how flux in muscle activation timing may directly influence the changes in gait mechanics we see. Therefore, the purpose of this study is to examine the changes in muscle activation timing in response to a bout of activity. We captured the timing of peak muscle activation of the knee extensors and ankle plantar flexor during gait before and after a about of activity (n=13). There was significantly (p<0.05) earlier timing of peak activation following the bout of activity in the knee extensor muscles. No differences were found for the ankle plantar flexors (p>0.05). The earlier timing of peak activation of the knee extensor muscles indicates a potential preparatory response during gait due to the bout of activity. This shows that the timing of muscle activation may have an important influence on alterations in gait mechanics we see following a bout of activity. Future research should focus on understanding the timing of peak muscle activation during gait and its relation to the timing of kinematic and kinetic output.

79A

Exploring Carotid Structure and Function in Boys with Duchenne and Becker Muscular Dystrophy

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Abstract: Duchenne (DMD) and Becker muscular dystrophy (BMD) are rare dystrophin gene disorders characterized by skeletal muscle wasting and increased cardiovascular disease risk. Dystrophin is a subsarcolemmal protein expressed in skeletal muscle, vascular smooth muscle, and cardiac muscle, where it maintains structural integrity. The absence of dystrophin may contribute to arterial dysfunction, affecting blood pressure regulation and increasing risk for cardiovascular disease but this has not been thoroughly studied in boys with DMD and BMD. PURPOSE: To assess carotid arterial structure and function in boys (7-21 yrs old) with DMD (n=25) and BMD (n=10) compared to typically-developing controls (n=33). METHODS: Pulse wave analysis was used to estimate brachial blood pressure and applanation tonometry was performed at the carotid artery to estimate carotid pressures. Carotid intima-media thickness (CIMT) and compliance were assessed using B-mode ultrasound. Resistivity index (RI) was assessed with doppler ultrasound and calculated as [(peak systolic velocity – end diastolic velocity)/peak systolic velocity]. RESULTS: A group effect difference was observed for CIMT (p=0.0043,η2=0.14), such that CIMT was lower in boys with DMD vs. Controls (p=0.0120,DMD: 0.48±0.05 vs.Control: 0.54±0.06) and DMD vs. BMD (p=0.0160,BMD: 0.55±0.07). There was a trend for a group effect for carotid compliance (p=0.0709,η2=0.03), with DMD having lower compliance

than controls (p=0.157, DMD: 1.27±0.35, Control: 1.46±0.34), although not significant. A main effect of group was observed for RI (p=0.036, η 2=0.06) and with DMD higher than Controls (p=0.0488, Control: 0.71±0.05 vs DMD: 0.75±0.05). CONCLUSIONS: Preliminary findings suggest carotid structure and function differences in boys with DMD.

83A*

Auditory Cueing Reduces Motor Segmentation in the Surface Electromyogram of People with Parkinson's disease

Rebecca J. Daniels, Christopher A. Knight

Abstract: Some people with Parkinson's disease (PwPD) have regular interruptions in neural excitation (motor segmentation) during rapid contractions that cause transient reductions in the rate of force development (RFD) and prolonged time to peak force. Though strategies including exercise, medication and external cueing have been used to improve rate-based function in PwPD, it is unknown whether an auditory cue can reduce motor segmentation. This study aimed to determine whether auditory cues could improve characteristics of motor segmentation in the mechanomyogram and surface electromyogram (EMG). Thirty-seven PwPD on their usual medications produced rapid isometric finger abduction contractions to 40% of their maximal voluntary contraction (MVC) force with and without a beep cue, and surface EMG was recorded from the first dorsal interosseous in a subset of nine subjects. The number of force segments was calculated from zero crossings in the second derivative of force, and peak RFD was calculated for each segment. EMG was normalized to EMG activity during the MVC, and a 15% threshold was used to determine EMG burst onsets and offsets. The number of EMG bursts were counted to peak force. Wilcoxon signed rank tests were used to test for differences in dependent measures between conditions. PwPD had fewer force segments (p<0.001), and peak RFD was 24% greater in the first segment (p<0.001) during the cued condition. PwPD required fewer EMG bursts to reach peak force (p=0.03) with cueing. Auditory cueing is a successful strategy to reduce motor segmentation and improve initial RFD characteristics in PwPD.

85A

Parental Self-Efficacy in Promoting Physical Activity in Their Adult Children with Moderate-to-Profound Intellectual Disability: A Mixed-Methods Study Guided by the COM-B Model

Lauren Palmer, McKenzie Tubbs, Sophia Kayatta, Lia McNulty, Daehyoung Lee

Abstract: Purpose: Adults with moderate-to-profound intellectual disability (ID) are less likely to engage in regular physical activity (PA), increasing their risk for adverse health outcomes. Parental support plays a critical role in promoting PA participation in this population, yet little is known about parental self-efficacy and their perspectives on capability, opportunity, and motivation (COM) factors to facilitate PA behavior changes. This study aimed to examine parental self- efficacy in regulating PA, perceived COM factors, and their associations with PA and sedentary time (ST) in parents and their adult children with moderate-to-profound ID. Methods: Sixty-five parents (56.1±10.7 years old; 50.8% females) of adults with moderate-to-profound ID were recruited via Qualtrics research services. Data were collected through online proxy-report surveys, including the Self-Efficacy to Regulate Physical Activity (SERPA; Bateman et al., 2024) scale and COM factors-based questionnaires. Pearson's correlation analysis was performed to explore associations between outcome variables. Following an explanatory sequential mixed-methods design, individual interviews are currently underway to further explore key survey findings. Results: Parental self-efficacy was positively associated with parental vigorous PA (r =.484, p<0.001) and negatively associated with parental ST (r =-.562, p <0.001). Parental self-efficacy was also positively associated with children's vigorous PA (r =.552, p <0.001). Higher

opportunity (r =.330, p = 0.007) and motivation (r =.252, p =0.042) scores among parents were linked to increased levels of vigorous PA in their adult children with ID. Conclusion: Enhancing parental self-efficacy and addressing COM factors may be effective strategies to improve PA participation in adults with moderate-to-profound ID.

87A

Dual-Task Reaction Time in Former Athletes With and Without Concussion History

Abigail M. Fisher, Isabella M. Rothwell, Caitlin A. Gallo, Thomas A. Buckley

Abstract: Concussions are a common sports-related injury that can result in cognitive–motor impairments, including reaction time (RT) deficits. While RT is often assessed using computerized neurocognitive tests, evaluating RT during postural control tasks may provide insight into potential neurological deficits, particularly in aging populations. Dual-task (DT) paradigms may be useful in detecting impairments following concussion. Purpose: Evaluate the effects of concussion history on RT during postural control tasks in former athletes. Methods: 18 adults (age: 56.8±6.9 yrs, height: 171.4±9.2 cm, mass: 79.4±15.0 kg) were grouped by self-reported concussion history (Y/N). Participants performed single-task (ST) and DT (motor and cognitive) walking trials. Cognitive tasks included Visual (VS) and Auditory Stroop (AS). The dependent variable was cognitive RT. DT cost (DTC) was calculated as ((DT-ST)/ST) x 100, whereby negative values reflect greater (worse) performance. Independent sample t-test compared DTC RT between groups. Results: There was no significant DTC difference in RT between those with (n=8) and without (n=10) history of concussion for both AS (6.6±21.6 and 12.1±27.3 %, p = 0.642, d=0.22) and VS (-1.9±6.9 and 3.5±9.0 %, p = 0.170, d=0.67). Conclusion: Concussion history was not associated with greater (worse) DTC; however, the trend of greater (worse) performance with medium to large effect sizes in those with concussion history suggests potential neurological deficits with an adequately powered sample. Assessing DT RT may be valuable for detecting later-life impairments in this population.

89A

Associations among Clinical Ratings and Laboratory Measures of Tremor in People with Parkinson's Disease

Daniel R. Vaizman, Rebecca J. Daniels and Christopher A. Knight Department

Abstract: Introduction: The presence and severity of tremor in people with Parkinsons disease (PwPD) are visually rated during motor tasks that are part of the Unified Parkinson's Disease Rating Scale (UPDRS). Selected UPDRS items can also be quantified using wearable devices. However, these methods may not be sensitive to low-amplitude periodicity in motor output that does not overcome the inertia of the distal extremities. Some have quantified tremor with spectral analysis of steady isometric force recordings, but methods vary and rarely test statistical significance of tremor peaks within individuals. Our purpose is to understand tremor assessment by examining the associations between subjective and instrumented ratings of tremor, and laboratory measures of isometric force tremor. Methods: Thirteen PwPD were tested. UPDRS ratings of postural tremor were obtained by a trained researcher, and with the Kinesia One system. Subjects performed 90s index finger abduction contractions at 10% of maximal force. Significant peaks in the frequency range of Parkinson's tremor were determined at the 95% confidence level. Results: All 13 subjects had significant tremor peaks in the frequency spectrum of isometric force recordings. Eleven of 13 subjects had non-zero UPDRS ratings, indicating the presence of tremor (scale = 0-4). Kinesia One identified only 6 subjects with postural tremor >1. Differences in tremor detection were significant (Cochran's Q=11.1, df=2, p<.05). Discussion: While ratings of tremor remain important for clinical assessment, direct measurement of

isometric tremor amplitude provides greater sensitivity. Such sensitivity may allow earlier detection of Parkinson's symptoms.

91A

Mitochondrial CD36 Regulates Lipid Metabolism and Superoxide Production in Endothelial Cells Under Hyperglycemic and obesogenic Conditions

Bhaswati Kashyap, Thanh Nguyen, Emma Hudgins, Erica J Johnson, Ibra S Fancher*

Abstract: Diabetes is a chronic condition with high blood sugar, increasing the risk of cardiovascular events by 2 to 4 times. The vascular endothelium plays a crucial role in regulating vascular tone and maintaining vascular homeostasis. In diabetes, endothelial damage can occur through insulin resistance, hyperglycemia, and low-grade systemic inflammation, independent of other cardiovascular risk factors. The cluster of differentiation 36 (CD36), a fatty acid translocase, scavenger receptor, and glycoprotein, has been shown to be upregulated in obesity and in response to elevated glucose levels. Notably, CD36 has also been identified in mitochondria, suggesting a potential role in cellular respiration. However, the role of mitochondrial CD36 (mitoCD36) in endothelial cells' lipid metabolism has not yet been studied. To address this knowledge gap, we exposed human adipose microvascular endothelial cells (HAMECs) to elevated glucose (200mg/dl), fatty acids (FAs), or both simultaneously for 72 hours to mimic the conditions of obesity and hyperglycemia. Our data revealed that cells treated with glucose and FAs together exhibited significantly increased mitochondrial superoxide production compared to cells treated with glucose or FAs alone. Superoxide production was significantly reduced in glucose and FA-treated cells when CD36 was downregulated using siRNA. Furthermore, glucose significantly upregulated total-CD36 protein expression after 72 hours of treatment, however, this increase was not observed in membrane-localized CD36. Since membrane CD36 expression was not upregulated by glucose treatment, we next quantified CD36 expression in the pure mitochondrial fraction isolated from HAMECs using TOM40-based magnetic cell sorting. CD36 expression was increased in the mitochondrial fraction of glucose-treated cells, which may result in alterations in mitochondrial respiration following sustained high glucose levels. These findings were further confirmed by colocalization of MitoTtracker and CD36. Our study suggests that mitochondrial CD36 plays a pivotal role in oxidative stress in endothelial cells exposed to sustained glucose levels in vitro. Future studies will explore the molecular mechanisms underlying the increase in mitochondrial CD36 expression in response to glucose and its effects on endothelial cell respiration during fatty acid exposure.

93A

Defining the parameters for sorting of RNA cargo into Extracellular vesicles.

Ahmed Abdelgawad**,** Yiyao Huang, Olesia Gololobova, Yanbao Yu, Kenneth W. Witwer, Vijay Parashar, Mona Batish

Abstract: Circular RNAs (circRNAs) have recently garnered attention as a class of regulatory RNAs due to their stability, resistant to nucleases and differential expression in various physiological states of health and diseases. Furthermore, circRNAs are postulated as ideal diagnostic targets and some reports have found them enriched in extracellular vesicles (EVs). Although RNA cargo of EVs has been studied for several years, the mechanistic details about preferential packaging of selective RNA species are not fully understood. In this study, we validated the enrichment of circRNAs in EVs and explored the role of cis and trans factors involved in this enrichment. EVs were isolated from DLD-1 cells and characterized following MISEV guidelines. RNA was extracted from both the EVs and the cells and sent for sequencing. CircRNAs were detected based on the presence of unique back-spliced junctions. Data were analyzed to assess the differential enrichment of linear

RNAs and circRNAs in EVs. We confirmed previous reports of circRNAs enrichment in EVs using where we found the ratio of circular to linear fraction is significantly higher in EVs compared to cells. Published databases such as ExoRBase which contains both circular and linear RNAs in EVs reports more circular RNAs than mRNAs or lncRNAs. Next, we identified cis factors including size, GC%, exon count, secondary structure and coding potential as well as RBPs involved in circRNAs enrichment in EVs. Future research will focus on the mechanistic details of how RBPs mediate circRNAs enrichment in EVs and its interplay with circRNAs cis elements.

95A

Unraveling the Role of Mitochondrial-Encoded Circular RNAs in Tumor Cells: Localization, Expression, and Functional Implications

Maggie Sumerau, Romero Brigette, Mona Batish

Abstract: Circular RNAs (circRNAs) are regulatory molecules that modulate cellular functions. Some roles of circRNA include miRNA sponging, protein scaffolding, transcription regulators, and they serve as biomarkers. While circRNAs are primarily known to originate from the nuclear genome, recent discoveries have revealed that mitochondria also encode circRNAs. These mitochondrial-encoded circular RNAs (mecciRNAs) represent an emerging field of study, with potential implications for mitochondrial function. The study of mecciRNAs and nuclear derived circRNAs may suggest intracellular communication between the mitochondria and nucleus. This study focuses on mitochondria derived circRNA localization within cells, to understand the relationship between the nucleus and mitochondria in tumors, specifically Ewing Sarcoma (EwS). Previous studies have shown that mecciRNAs can regulate mitochondrial functions, potentially affecting energy production, organelle dysfunction, and cell death. However, the localization and function of mecciRNAs in EwS remain unexplored. We employed cellular imaging techniques to analyze the co-localization of a nuclear-derived circRNA, named circZNF609, and mitochondria-derived circRNA, MTND5 with mitochondria in EwS and HeLa cells. Additionally, we used gene amplification methods to determine the expression and regulation of specific mecciRNAs within the EwS cells. Future directions for this project will include understanding the localization and expression patterns of mecciRNAs in nucleus and other cellular organelles which is crucial for uncovering their function. This research may provide insight into the role of mitochondrial circRNAs in cancer biology and potentially identify novel therapeutic targets.

97A*

Computational analysis of Human papillomavirus E2 proteins and biological consequences

Sean Fletcher, Esther Biswas-Fiss, Subhasis Biswas,

Abstract: Human papillomavirus (HPV) is a prevalent viral pathogen responsible for causing a variety of malignancies, including cervical cancer, one of the leading causes of cancer-related deaths among women worldwide. The HPV genome, approximately 8 kilobases in length, encodes three regions. Among these, the early region, particularly the E2 protein plays a central role in the regulation of viral transcription and replication, exerting its function primarily by binding to specific palindromic sequences within the viral long control region (LCR). An additional function of the E2 protein is to modulate the transcriptional repression of the E6/E7 oncogenes, thereby controlling the expression of these critical oncogenic factors. Previous research from our laboratory suggests that mutations in a 12-bp segment of the LCR—encompassing the E2 binding sites (E2BS)—may influence the oncogenic potential of certain HPV strains. Multiple sequence alignments (MSAs) of E2 proteins from Alpha, Beta, and Gamma papillomaviruses were performed to identify conserved regions and correlate these with potential cancer-associated mutations in the coding region. Structural

modeling and visualization revealed that these conserved E2 residues cluster near the DNA-binding surface in the C-terminal domain and critical interaction sites in the N-terminal transactivation domain. Notably, species-specific adaptations, particularly the T309P substitution in HPV52 subfamily beta and variations in the 12-bp spacer, could represent how small sequence changes can modulate oncogene expression. Collectively, these findings refine our understanding of E2's essential role in viral pathogenesis and highlight promising targets for therapeutic intervention in high-risk HPV strains.

99A

Optimizing the isolation and characterization of cytosolic DNA from human cell lines

Maryia Hrynashka, Brigette Romero, and Mona Batish

Abstract: Cytosolic DNA refers to DNA fragments that have leaked out from the nucleus into the cytoplasm, typically due to cellular damage. This damage can result from infections, cancer, or certain drugs, particularly DNA damage repair (DDR) inhibitor drugs, which cause double-stranded DNA breaks leading to chromosome-free DNA. Once broken off, these DNA segments migrate into the cytoplasm, where they are known as cytosolic DNA and serve as indicators of several cancers. The presence and quantity of cytosolic DNA can be used to measure the effectiveness of DDR inhibitor drugs and serve as reliable pharmacodynamic markers. However, obtaining pure cytosolic DNA samples free of mitochondrial and nuclear DNA contaminants remains a challenge. Therefore, the primary goal of this project is to optimize an existing protocol for isolating cytosolic DNA from T98G, a glioblastoma cell line. Additionally, we aimed to visualize and quantify cytosolic DNA using single-molecule fluorescence in-situ hybridization (smFISH). To obtain pure cytosolic DNA, cells were lysed and then treated with proteinase K and RNase A to eliminate protein and RNA contaminants in the sample. To evaluate the purity of the sample, PCR was performed using primers targeting cytosolic DNA, a promoter, and an mRNA such as GAPDH. For the smFISH protocol, we adapted existing methods to image cytosolic DNA. Untreated cells and cells treated with 10 nM cytarabine for 16 hours were grown on glass coverslips, then fixed and permeabilized. Cells were hybridized with primary probes (20-25 oligos of 60 nucleotides in length) containing tails at the 5' and 3' ends. After washing, cells were hybridized with tail probes linked to a fluorophore (Texas Red). Additionally, DNase and RNase treatments were performed to ensure that any signals in the acquired images truly represent cytosolic DNA. The ability to obtain pure cytosolic DNA samples and to visualize and quantify cytosolic DNA will provide a novel basis for the analysis of DDR inhibitor drugs and inform clinical trials. This research has the potential to enhance our understanding of cellular damage mechanisms and improve cancer treatment strategies.

101A

Understanding Genetic Variants in the Regulatory Domains of ABCA4 Associated with Inherited Blinding Disorders

Zachary Davis and Esther Biswas-Fiss

Abstract: Purpose: This study aims to characterize variants of unknown significance (VUS) in the regulatory domains (RD1/RD2) of ABCA4, which remain functionally undefined. ABCA4 is a gene in which variants lead to inherited blinding disorders. There are over 4,000 genetic variants that have been identified, many of which are of unknown pathogenicity. Understanding the potential impact of these variants is crucial for improving variant classification and enhancing genetic risk assessment. Methods: Data were obtained from ClinVar, a publicly available archive of human genetic variants classified based on disease relevance. To focus on the regulatory domains (RD1/RD2) of ABCA4, the start and end positions of these domains were first identified using published structural and sequence annotation data. Variants within these regions were extracted and

structured for further analysis. Results: A total of 94 variants were identified within the two regulatory domains of ABCA4. Of these, 65 (over two-thirds) were classified as variants of unknown significance (VUS). RD1, the larger of the two domains at 128 amino acids, contained 62 variants, while RD2, spanning 74 amino acids, had 32 variants. Within RD1, approximately two-thirds of the variants were classified as VUS, whereas in RD2, this proportion was even higher, with three-quarters of the variants classified as VUS. Conclusion: This analysis highlights the prevalence of VUS in the regulatory domains of ABCA4, underscoring the need for further investigation into their potential functional significance in ABCA4-associated retinal diseases. Additional computational and experimental studies are required to better understand these domains and improve variant classification.

103A

Investigating the Impact of Complex ABCA4 Alleles in Inherited Retinal Degeneration

Masi Sadeghi, Jazzlyn Jones, Subhasis Biswas and Esther Biswas-Fiss

Abstract: Purpose: Complex alleles, consisting of two or more variants in cis, contribute to the variability and severity of genetic diseases. This study examines the phenotypic effects of missense complex alleles in ABCA4, a key gene in inherited retinal degenerations like Stargardt disease (STGD1). We analyzed individual variants and their cis combinations using in silico and in vitro approaches. Methods: Six ABCA4 complex alleles from reported retinal dystrophy cases were studied. Structural analyses utilized AlphaFold2 models and available ABCA4 structures. A virus-like particle (VLP)-based expression system assessed functional consequences, comparing variant proteins to wild-type (WT) ABCA4 in terms of expression, surface localization, and ATPase activities. Results were correlated with patient data and REVEL pathogenicity predictions. Results: Genotype-phenotype relationships were distinct when variants were analyzed as part of complex alleles. Individual variants impacted ABCA4 protein stability and function differently, with cumulative effects in cis combinations. Structural and functional interactions among cis variants led to synergistic effects not accurately predicted by REVEL. Conclusions: Evaluating ABCA4 variants in their complex allele context is essential for understanding their pathogenicity. Our findings highlight the need for combined computational and experimental approaches to improve genetic variant interpretation, aiding disease diagnosis and precision medicine for inherited retinal degenerations.

105A

Systematic Identification And Characterization Of Protein Receptors For Cyclic Nucleotide Signals In Bacterial Antiphage Defense

Alejandra Arango, Julia Perkowski, Mona Batish, Vijay Parashar

Abstract: INTRODUCTION: The Bacterial Cyclic Oligonucleotide-Based Anti-phage Signaling System (CBASS) is an innate immune mechanism that induces bacterial cell death to defend against phage infections. This defense system operates through cyclic nucleotide second messengers that trigger cell suicide to prevent phage replication. Despite its importance, the mechanisms remain poorly understood due to limited knowledge of protein receptors that recognize these signals. This study aims to develop methods for identifying protein receptors for cyclic nucleotides cAAG, cUMP, cGU, and cUA. METHODS: We established a comprehensive workflow combining mass spectrometry-based proteomics using MaxQuant and Perseus software for analyzing pulldown experiments. Candidate proteins were cloned into expression vectors, expressed in E. coli, and purified using Ni-affinity chromatography. Differential Scanning Fluorimetry (DSF) was implemented as a screening method for protein-ligand interactions and validated using the known cAAG-binding SAVED domain as a positive control. RESULTS: The workflow demonstrated successful optimization of

all technical parameters. Using this validated pipeline, we have successfully cloned, expressed, and purified 20 candidate receptor proteins. The DSF-based binding assay provides a reliable platform for detecting ligand interactions through protein thermal stability measurements. CONCLUSION: We have established a robust methodological framework for identifying and characterizing CBASS protein receptors. The optimized methods will be applied to analyze the binding capabilities of 20 purified candidate proteins with cyclic nucleotide second messengers, advancing our understanding of suicide as a bacterial antiphage defense mechanism.

107A

Metabolic Regulation of Cyclic-di-AMP in Mycobacterium tuberculosis

Sattar, K. Parashar

Abstract: Mycobacterium tuberculosis (Mtb) is the etiologic agent of tuberculosis - the leading cause of death worldwide by a single bacterial pathogen. M. tuberculosis genome encodes a single diadenylate cyclase known as DNA integrity scanning protein A (DisA). DisA converts ATP into cyclic di-adenosine monophosphate (cyclic di-AMP), which is an important second messenger in bacteria and archaea. Cyclic di-AMP is involved in many crucial cellular processes such as maintenance of osmotic pressure, response to DNA damage, control of central metabolism, biofilm formation, and bacterial motility. Cyclic di-AMP pathways are often activated when bacterial population is under stressful environment as a coping mechanism for harsh conditions that include sudden changes in ionic homeostasis, lack of essential metabolites, and presence of DNA damaging agents. Interestingly, elevating cyclic di-AMP levels in M. tuberculosis by either overexpression of Mtb DisA results in significant virulence attenuation in a mouse pulmonary TB model. It has also been shown that cyclic di-AMP from Mtb activates autophagy and limits the growth of bacteria within infected cells. These findings indicate that cyclic di-AMP plays a crucial role in TB pathogenesis. Previous work by our collaborators have indicated that Mtb DisA activity is inhibited by the normal cellular concentration of cyclic di-AMP. Therefore, we propose to elucidate the underlying mechanisms for substrate inhibition of Mtb DisA. Our current hypothesis is that this substrate inhibition may be explained by a potential existence of a secondary ATP binding site in DisA that may allosterically inhibit the cyclase activity of the main binding site that converts ATP into cyclic di-AMP. Our main aim is to characterize this secondary binding site using biochemical and structural biology techniques. We will grow crystals of DisA in different stages of its catalytic activity to explain substrate inhibition of the enzyme using the atomic structures. While our primary goal is to characterize the inhibition of DisA, we will extend our focus to the bacterial genome repair pathway, in which both DisA and c-di-AMP play important roles.

109A

ABCA4 Membrane Transporter: A Molecular Approach to Develop a Soluble Model System

Bhoomika Sudharshan, Albtool Alturkestani, Jazzlyn Jones, Esther E. Biswas-Fiss, and Subhasis Biswas

Abstract: ABCA4 is a retina-specific ABC transporter essential for the function of rod-cone photoreceptors. This protein's mutation is linked to vision disorders like Stargardt disease (STGD1), cone-rod dystrophy, and blindness. However, studying the full-length ABCA4 is challenging due to its nature as an integral membrane protein with 12 transmembrane α -helices, which makes purification difficult. A soluble version of ABCA4 was developed using bioinformatics to overcome this. Hydrophobic amino acids in the transmembrane helices (leucine, isoleucine, phenylalanine) were replaced with hydrophilic ones (glutamine, threonine, tyrosine), converting the membrane-bound helices into soluble ones. This allowed the membrane protein to be transformed into a more soluble form. We are now using this soluble construct to characterize disease-

associated ABCA4 variants such as E1087K, R1443H, and S2255I, focusing on their structure and function. This work aims to uncover how mutations affect ABCA4, providing insights into retinal disease mechanics and potential therapeutic approaches.

111A*

E2-Mediated Regulation of E1 Helicase Activity in Human Papillomavirus DNA Replication

Anshul Rana, Esther Biswas-Fiss, and Subhasis Biswas

Abstract: Human papillomaviruses (HPVs) are causative agents of nearly all cervical cancers and a significant proportion of oropharyngeal cancers. Despite the availability of vaccines targeting nine HPV types, persistent infections and HPV-associated malignancies remain a major health concern due to the lack of effective antiviral therapies. HPV, a double-stranded DNA virus, relies on two essential proteins for DNA replication: E1, a DNA helicase, and E2, a replication-initiator protein. The viral DNA replication is initiated by the cooperative binding of E1 and E2 to the viral origin of replication DNA, forming a prereplication complex that facilitates E1 multimerization and thereby initiating DNA melting. To investigate the regulatory role of E2, we characterized E1-E2 interactions using biolayer interferometry (BLI) and found that E2 binds E1 with high affinity. Functional assays revealed that E2 inhibits E1 ATPase and helicase activities, suggesting a role in modulating E1 function. Additionally, ATP and ADP promote E1-E2 dissociation, indicating that nucleotide binding influences the complex stability. These findings suggest that E2 dissociates from the replication fork as E1 helicase binds DNA, allowing efficient unwinding during replication initiation. This study provides mechanistic insights into HPV DNA replication and E1-E2 regulatory dynamics, advancing our understanding of HPV biology. These findings may help identify potential targets for therapeutic interventions against HPV-associated diseases.

113A

Validating Anti-EDC1 And Anti-NBD2 Antibodies for ABCA-4 Protein Analysis

Tayyaba Sajjad, Theresa Edery, Jazzlyn Jones, Esther Biswas-Fiss

Abstract: Purpose: The retina-specific ABCA transporter, ABCA4, is essential for vision, and its genetic variants are associated with a wide range of inherited retinal degenerative diseases leading to blindness, including Stargardt disease. The ABCA4 protein consists of characteristic functional domains: ECD1, ECD2, NBD1, and NBD2, alongside transmembrane domains (TMDs). ECD1 and ECD2 are positioned extracellularly. Meanwhile, NBD1 and NBD2 are found in the cytoplasmic portion of the protein Methods: This study utilized SDS-PAGE and Western blot analyses to evaluate the specificity and efficacy of two recently obtained antibodies that target the ECD1 and NBD2 domains of ABCA4, respectively. Protein samples were analyzed before and after induction to determine ideal conditions. The purpose of this research was to validate newly developed antibodies targeting these domains of ABCA4. The antibodies were tested using western blotting to confirm their specificity and functionality. Results: These new antibodies have never been utilized for SDS-PAGE and western blot analysis. The SDS-PAGE and western blot results demonstrate that the new abbexa antibody can be used to study the ECD-1 domain at an optimal dilution of 1:20,000 for the primary antibody and a dilution of 1:5000 for the secondary antibody. As for NBD-2, a 1:30,000 dilution for primary antibody and a 1:10,000 dilution for secondary antibody would provide optimal results. Conclusions: The utilized antibody dilutions ensure reliable detection of ABCA4 domains, making them useful for future studies on its role in retinal diseases.

115A

Navigating the Shadow Pandemic: Empowering Practitioners and Advocates to Combat Domestic Violence.

Zakariah Robinson, Jennifer Horney, Lauren Camphausen, Ruth Steiner, Susan Miller

Abstract: Introduction: The COVID-19 pandemic triggered a "shadow pandemic" of increased domestic violence (DV), straining support systems, and challenging service providers. DV is known to surge following disasters and emergencies, such as pandemics, tsunamis, and wildfires. This study explored the experiences of DV leaders during COVID-19 to identify lessons for strengthening future responses. Methods: Key informant interviews were conducted with executive directors and other leaders from State and Territorial Domestic Violence Coalitions. Additional data was collected using a web-based survey of a census of domestic violence shelters and service providers. All study materials were approved by the University of Delaware Institutional Review Board (1597257). Results: Key informant interviews with leaders from National Network to End Domestic Violence regions (45%, n=25/56) and survey responses from 180 DV organizations highlighted three key challenges during COVID-19: 1) public health measures contributed to increased victim isolation; 2) shelter capacity changes required strategies; and 3) workforce shortages arose from remote service shifts, stress, and mental health challenges. Several lessons were learned from the interviews, such as the need for virtual services and addressing disparities to strengthen DV systems for future crises and ensure sustainable service delivery. Discussion: The "twin pandemics" of COVID-19 and DV highlighted vulnerabilities in DV systems. Findings emphasize the need for preparedness as climate change escalates disaster risks, increasing exposure to DV. Addressing equity and justice issues within DV systems is crucial, alongside sustained adaptation and support, to mitigate future disruptions and ensure sustainable crisis response capabilities in the DV sector.

117A*

Disaster Preparedness for Delawareans with Diabetes

Palma Bauman, Jennifer Horney, Lilly Moreau

Abstract: The State of Delaware is highly susceptible to flooding and is facing increasing storm surge risks as climate change will bring larger and wetter storms, such as hurricanes and nor’easters. Beyond the direct impacts of flooding, floods can also propagate along roads and road networks, creating far-reaching impacts on communities such as hindering or prolonging the time needed for emergency services or restricting the movement of people and goods. According to the Division of Public Health, 24.6% of Delaware adults have either diabetes or prediabetes. Research shows that people receiving dialysis for their diabetes are nearly four times as likely to visit the emergency room following a large disaster event; they are also more likely to be admitted to the hospital or die within 30 days of a major disaster. Therefore, pre-disaster preparedness among this population subgroup is critical to avoid medical complications in a disaster. The purpose of this study was to assess the disaster preparedness of Delawareans with diabetes and their caregivers through a nine-question survey. Surveys were conducted both on paper and electronically via a Qualtrics QR code from a convenience sample of attendees of the 22nd Annual Diabetes Wellness Expo in Dover, Delaware in November 2024. Data were analyzed using SAS Software. A total of 28 respondents completed the survey, including diabetic and pre-diabetic patients, healthcare providers, caregivers, and others. The majority of respondents (22, 78.4%) have a person who would be able to assist them or their family during a disaster or emergency. Most respondents were also confident in their household’s ability to respond to a disaster (21, 75%). However, about half of all respondents either agreed or strongly agreed they wanted additional training or resources to prepare for a disaster or emergency. Since this group is at very high risk of health complications and negative sequalae in a disaster, these findings should inform preparedness planning for Delawareans with diabetes and prediabetes for flood events, which could limit their access to essential medical care such as dialysis.

119A

The Rise of AI-Facilitated Sexual Violence: Public Awareness, Legal Responses, and the Role of Deepfake Technology

Taylor Burton

Abstract: INTRODUCTION: The rise of generative artificial intelligence (AI) and deepfake technology has introduced new dimensions to sexual violence, raising concerns about consent, identity, and legal protections. This study examines public perceptions of AI-facilitated sexual abuse, assessing awareness, personal experiences, and confidence in legal responses. METHODS: A voluntary homogenous sample of 100 participants completed a screening survey measuring their ability to distinguish between real and AI-generated content, their exposure to AI-facilitated abuse, and perspectives on legal protections. The survey included questions on personal experiences with non-consensual deepfake content and confidence in existing policies. RESULTS: Preliminary findings indicate significant gaps in public awareness and legal protections. Among participants, 8% reported being superimposed into explicit images or videos without consent, and 3% experienced threats or sales of non-consensual deepfake content. Despite these experiences, only 1% believed current laws sufficiently address the issue. Additionally, participants' ability to distinguish AI-generated images from real ones averaged 2.93 on a 5-point scale, highlighting vulnerabilities to misinformation and exploitation. CONCLUSION: These findings highlight the urgent need for stronger legal frameworks and public education to mitigate harm. As AI technology continues to evolve, understanding public perception and legal shortcomings is crucial in addressing digital sexual violence. This study contributes to the growing discourse on digital safety, AI ethics, and the evolving nature of sexual violence in the digital age.

121A

Method Development for the Characterization of Microplastics in Drinking Water from Across Delaware

Mary D. Webb, Sanaz Pourreza, Melissa M. Melough

Abstract: INTRODUCTION: Microplastics, particles measuring less than 5 millimeters, have become pervasive in the environment due to the breakdown of larger plastic items and there is increasing concern about their possible health impacts. Understanding their health risks depends on our ability to accurately detect and characterize them, which requires standardized sampling, extraction, and analysis protocols. Therefore, we aimed to establish and implement methods to test drinking water for microplastics. METHODS: Water samples were collected in glass containers from public libraries across the state of Delaware. Prior to sample collection, taps were flushed for at least 30 seconds to avoid potential accumulation of contaminants. Approximately two liters of water from each sampling location was filtered over a cellulose filter (13 mm diameter, 20-25 µm pore size) through a stainless steel filtration system. All materials used for sampling and extraction were cleaned thoroughly and rinsed with microplastics-analysis-grade water prior to use. We utilized a high efficiency particulate air filter and a hooded workspace to limit airborne particulate contamination. Following extraction, filtered samples were visually inspected with scanning electron microscopy. RESULTS: Implementation of standardized protocols helped reduce external contamination during sampling and extraction. Among the samples of drinking water from across Delaware, a limited number of microplastics were detected. The particles identified were ~50 µm and most appeared fragmented in shape. CONCLUSION: Methods for microplastic sampling, extraction, and visual analysis were established and implemented to test for microplastics in drinking water. Next, we will use optical photothermal infrared spectroscopy for chemical identification of particles.

123A

The impact of phytochemical supplementation on depression and anxiety in women: A systematic review

Anita Dini, Carly Pacanowski, PhD RD, Sheau Ching Chai, PhD RD

Abstract: Depression is a mental health disorder characterized by persistent sadness, hopelessness, and loss of interest in previously enjoyed activities, impairing personal, social, and occupational functioning. In the US, depression and anxiety are 36% and 44% more prevalent in women than in men, respectively, influenced by socioeconomic, personality, biological, and hormonal factors. Pharmaceutical treatments are often associated with adverse effects, such as nausea, vomiting, insomnia, and decreased sex drive, highlighting the need for alternative therapies. Phytochemicals have emerged as promising candidates for alleviating depressive symptoms through neurotransmitter modulation, monoamine oxidase inhibition, brain-derived neurotrophic factor upregulation, anti-inflammatory activity, and oxidative stress reduction. This systematic review evaluates the effects of phytochemical supplementation on depression and anxiety in adult women. PsycINFO, Web of Science, and PubMed were searched through February 15, 2025. Randomized controlled trials published in English within the past 10 years that assessed depression and/or anxiety in women aged 18 and older using validated tools or relevant biomarkers were included. Out of 315 records, 34 studies met the inclusion criteria. Among them, 15 studies focused solely on depression, 4 on anxiety, and 15 examined both. Furthermore, 19 (76%) studies reported significant reductions in depression and 11 (73%) in anxiety, while 6 (24%) and 4 (27%) found no significant effects, respectively. Trial quality was assessed using the Jadad scale, with 27 studies (79%) scoring above 3, indicating high methodological quality. These findings suggest that phytochemical supplementation may effectively reduce depressive and anxiety symptoms in women. Further research is needed to establish clinical recommendations.

125A

Probiotic and synbiotic interventions and women's mental health: A systematic review

Cash, H., Katz, S., Pacanowski, C.

Abstract: Background: Mental illnesses are a global public health problem. Due to differences in both biology and gendered life experiences, women have higher rates of depression and anxiety than men. Dysbiosis of gut bacteria is linked to the expression of mental illness. Probiotic and synbiotic interventions are promising alternative therapies as they may modulate microbiome, resulting in improved mental health. This review aims to assess the effect of probiotics and synbiotics on women's mental health. Methods: A preliminary search was conducted on PubMed and PsycINFO using keywords related to probiotics, synbiotics, mental health, and women. Peer-reviewed, primary research articles available in English that included a probiotic or synbiotic intervention and measured mental health in women were included. After registration with PROSPERO, PubMed, PsycINFO, CINAHL and Web of Science will be searched from inception through Feb 2025. Two independent reviewers will screen titles and abstracts based on established inclusion criteria. The preliminary search will direct development of a data extraction template. Joanna Briggs Institute critical appraisal tools will assess study quality. Results: The preliminary search returned 551 records, of which 53 full texts were retrieved, with 20 studies eligible for inclusion. 16/20 studies were RCTs and 19/20 used probiotic interventions. Mental health was most commonly measured with the Edinburgh Postnatal Depression Scale (n=6 studies), the Beck Depression Inventory (n=5), and the State Trait Anxiety Inventory (n=5). 10 studies (50%) reported significant improvement in at least one mental health outcome following a probiotic or symbiotic intervention. Results of the final search are forthcoming.

127A

When Pain Isn't Gain: Relationship Between Low Back Pain Chronicity and Psychosocial Health Outcomes Among Adults with Lower-Limb Loss

Roseberry, RL; Stauffer, SJ; Horne, JH; Sions JM

Abstract: INTRODUCTION: Individuals with lower-limb loss (LLL) experience low back pain (LBP) at rates up to four times higher than that of the general population. Adults with LLL and comorbid LBP report more severe physical disability and limitations in performing daily activities when compared to the general population. This analysis sought to identify how LBP chronicity relates to health profiles among adults with LLL. METHODS: From 2019-2021, n=172 adults (56.3±12.7 years, 58.1% male) with unilateral LLL (66.9% below-knee) completed questionnaires including the Patient-Reported Outcome Measure Information System, 29-item (PROMIS-29). Participants were classified by chronicity of LBP, i.e., no LBP (n=37), non-chronic LBP (n=41), and chronic LBP (n=94). Between group differences were evaluated ($p<0.05$) RESULTS Compared to participants with no LBP, participants with chronic LBP reported worse physical function ($p<0.001$), anxiety ($p=0.050$), depression ($p=0.002$), fatigue ($p<0.001$), sleep disturbance ($p=0.002$), ability to participate ($p<0.001$), pain interference ($p<0.001$), and pain intensity ($p<0.001$). Compared to participants with no LBP, participants with non-chronic LBP reported worse physical function ($p=0.026$), fatigue ($p=0.049$), pain interference ($p<0.001$), and pain intensity ($p=0.019$) Compared to participants with non-chronic LBP, the chronic LBP group reported worse fatigue ($p=0.29$), ability to participate ($p<0.001$), pain interference ($p<0.001$), and pain intensity ($p<0.001$). CONCLUSIONS Individuals with LLL and chronic LBP report worse health profiles than their peers with LLL and no LBP across all domains, while non-chronic LBP has a lesser impact on psychosocial functioning. Further research is needed to identify if interventions to address chronic LBP lead to improvements in health profiles after LLL.

129A*

Achilles Tendon Cross-Sectional Geometry and Pain in Patients with Achilles Tendinopathy

Nate Mange, Morgan N Potter, Andy K Smith, Stephanie G Cone, Karin Grävare Silbernagel

Abstract: Background: Achilles tendinopathy is an overuse injury defined by Achilles tendon pain and stiffness. Achilles tendon structural changes, such as fusiform thickening and increased cross-sectional area (CSA), are commonly present and related to pain and symptoms in those with Achilles tendinopathy. This study investigated associations between a novel measure of tendon cross-sectional geometry and tendon pain in patients with Achilles tendinopathy. Methods: 88 individuals (45F) with unilateral Achilles tendinopathy (age: (mean±SD) 48±13 years; BMI: 29.6±6.0) were included. Tendon CSA, degree of thickening, and a novel measure of tendon circularity (ratio of axial width versus height) were assessed from ultrasound images. Analysis used the average of three measurements. Circular tendons have lower circularity values, with a perfect circle having a value of '1'. Single leg hopping and palpation pain were assessed with the Numeric Pain Rating Scale. Spearman's rank correlation coefficient ($\alpha=0.05$) evaluated correlations. Results: Tendon circularity had a strong negative correlation to tendon CSA ($r=-0.798$, $p<0.001$) and tendon thickening ($r=-0.806$, $p<0.001$). Tendon circularity was not significantly correlated with the studied pain measures. Discussion: Previous studies have found correlations of CSA and tendon thickening with measures of pain. Although tendon circularity has strong correlations with both tendon CSA and tendon thickening, it was not correlated with the studied pain measures. These findings suggest tendon circularity alone does not explain pain in this population. Future research should expand upon the geometric properties of tendon shape by evaluating Achilles tendon volume.

131A

Lower Self-Efficacy Is Associated With Higher Movement-Evoked Pain Among Adults With Low Back Pain

Isabelle Botto, Steven George, Emily Fox, and Katie Butera

Abstract: Low back pain (LBP), a multifaceted experience, affects over 577 million people worldwide. Variability in psychological factors across patients can lead to LBP-related treatment challenges. Better understanding of how positive coping interacts with the movement system may improve LBP outcomes. This cross-sectional, secondary analysis of seventy-two adults with LBP (mean age=45 years; 38 females, 34 males) evaluates the novel relationship between movement-evoked pain (MEP) and positive psychological coping factors, including pain self-efficacy (PSEQ) and self-efficacy for rehabilitation (SER). Participants completed the Optimal Screening for Prediction of Referral and Outcome-Yellow Flag questionnaire to determine PSEQ and SER scores. Participants' average MEP was measured during walking tasks (e.g., fast-walking, Timed-Up-and-Go) and Back Performance Scale (BPS) tasks (e.g., box lift, supine to sit). MEP was recorded during each task using a Numeric Pain Rating Scale. Separate hierarchical regression models were generated with age and sex added as predictors in step 1 and positive coping added in step 2 (either PSEQ or SER scores); MEP measures served as dependent variables. Across all models, sex and age were not significant predictors ($p>0.05$). For PSEQmodels, PSEQ predicted MEP during walking (beta= -0.42, $p<0.001$) and MEP during BPS tasks (beta= -0.39, $p=0.001$). For SER models, SER predicted MEP during walking (beta= -0.46, $p<0.001$) and MEP during BPS tasks (beta= -0.43, $p<0.001$). Our findings indicate that among individuals LBP, those with lower self-efficacy experience greater MEP. Future work is needed to test whether treatments focused on increasing self-efficacy improve pain and functional outcomes for individuals with LBP.

133A

Motor learning strategies during walking, are diversly affected by receiving error and reinforcement feedback in healthy older adults.

Sara Penuela, John J Jeka

Abstract: Research has shown that motor learning can be influenced by processes such as reinforcement and error-based learning. These processes can increase motor strategies such as exploration and corrective behaviors. As we age, brain regions important for mediating these motor learning strategies, such as the basal ganglia, the cerebellum, and the frontal cortex, experience functional decline, impacting our ability to retain and learn new motor actions. Here, we investigate whether motor learning can be affected with age during walking, through reinforcement and error-based learning. In a previous study, we tested the effects of these same processes during locomotion in young adults, thus here we look to replicate those methods and investigate the effects in an older population. Using a self-paced treadmill and a virtual environment, participants adjusted both their step lengths and widths, over a set of walking trials while receiving reinforcement or error feedback. Results suggest error feedback leads to high corrective behavior when adjusting both step length and width, and to higher chances of hitting a target. Reinforcement feedback during the step length conditions led to similar exploratory behaviors than at baseline, suggesting step length adjustments may not be influenced by reinforcement feedback. Reinforcement feedback also led to slightly lower success rates than error, suggesting brain processes active during reinforcement learning may be impacted with age. These findings provide insight into how different types of feedback mechanisms can be influenced by aging, allowing for the development of new and more focused rehabilitation practices for older populations.

135A

The Platform to Recognize and Evaluate Children for Age-appropriate Response and Early detection of Delays (PRECARE)

Bashayer M. Alharbi, Waad A. Al Mutlaqah, Eman K. Alhindi, Sydney Wissman, Alondra Alverio, Michele A. Lobo and the PRECARE Consortium

Abstract: Introduction: PRECARE is a pioneering initiative aimed at enhancing early detection of developmental delays (DDs) in infants through innovative mobile health technology. Addressing a critical gap in developmental surveillance, where the majority of US infants do not receive adequate monitoring, PRECARE utilizes a combination of smart monitoring technologies (i.e., computer vision) and an application (app) to support parents and pediatricians. Methods: The initial stage involved formative research with focus groups (FGs) of parents and in-depth interviews (IDIs) with pediatricians to develop the prototype of the PRECARE platform. This phase was instrumental in identifying barriers to effective surveillance, such as limited parental knowledge and constraints in clinical practice. The users expressed their preferences for educational content, app functionalities, and communication methods with healthcare providers. Currently, the project has progressed into the second stage, where further FGs and IDIs are being conducted to evaluate the platform's initial design. Ongoing analysis is refining the machine learning algorithms. Results: Insights from FGs and IDIs pinpointed preferences and needs for the variables to be analyzed using computer vision and machine learning. Reaching, rolling, and head lifting in prone positions were identified as key early motor indicators to detect DDs. Initial feedback has shown strong engagement and guiding enhancements to the platform's functionality. Future Directions: Validation testing to assess the machine learning algorithms' feasibility in flagging potential DDs and pilot testing to evaluate the system's usability for parents and pediatricians. Conclusion: This abstract highlight the innovative use of technology to improve early developmental surveillance in healthcare.

137A

The Effect of Neovascularization on Achilles Tendon Circularity and Stiffness Sensation

Jess Orzelowski1, Andy K. Smith1,2, Stephanie G Cone2,3, Karin Grävare Silbernagel1,2

Abstract: Introduction: Achilles tendinopathy (AT) is a prevalent condition characterized by pain and dysfunction of the Achilles tendon. Neovascularization is associated with AT and may relate to worse symptoms. However, its influence on tendon morphology and sensation of stiffness is not well understood. This study aims to examine the influence of neovascularization on tendon morphology and self-reported stiffness duration. Methods: Data from 182 participants with AT were included in this study. Participants were grouped by presence (Y, n=113, 52±11y, 31± 7kg/m2) or absence (N, n=69, 44±13y, 27±6kg/m2) of neovascularization. Ultrasound imaging was performed to measure tendon morphology and presence of neovascularization. From these images, we measured circularity (tendon width/tendon height) and cross-sectional area (CSA). VISA-A questionnaire Q1 was collected, assessing the duration of perceived Achilles tendon morning stiffness. One-way ANOVAs were run to examine group differences. Results: The group with neovascularization was more circular (Y, 2.00±0.53; N, 2.70±0.67; p<.001) and had larger CSA (Y, 1.20±0.44 cm2 ; N, 0.71±0.26 cm2 ; p<.001). No significant difference were found between groups for VISA-A Q1 (Y, 6.8±3.1; N, 7.1± 2.6; p=0.383). Discussion: Presence of neovascularization influences tendon morphology, resulting in larger and more circular tendons. Neovascularization could disrupt tendon collagen orientation and increase fluid accumulation in the tissue, potentially altering the mechanical properties. Despite no difference in duration of stiffness, neovascularization may still influence tendon mechanical properties as sensation may differ from mechanical properties.

139A

The Role of Visuospatial Working Memory in Visual Feedback-Based Motor Corrections During Walking After Stroke

Manzoor S, Thompson ED, Wright H, Wright TR, Barela AM, Cohen ML, Reisman DS

Abstract: Background & Objectives: Motor learning is fundamental for post-stroke walking rehabilitation, spanning a continuum from implicit (sensorimotor adaptation) to explicit (strategic learning) processes1 . Explicit learning has been studied through voluntary locomotor corrections using external cues such as visual feedback (VFB)2 . Studies in upper extremity tasks show that visuospatial working memory (VSWM) is linked to effective use of VFB 3,4 , However, VSWM is often impaired post-stroke5 . This study aimed to examine the relationship between VSWM and VFB-based locomotor corrections post-stroke. We hypothesized that better VSWM would be related to better voluntary correction in locomotor behavior.
Methods: Seventy-three individuals (>6 months post-stroke, 37 males, 36 females; mean age=65.86±10.95 years) walked on a split-belt treadmill (2:1 speed ratio) with real-time VFB of step length. The leg with the longer baseline step length was placed on the faster belt regardless of the hemiparetic side. The voluntary correction was defined as hitting the visual target, calculated as average success = (total correct hits with VFB)/(total attempts with VFB) ×100. VSWM was assessed using the Spatial Addition subtest of the Weschler Memory Scale-IV6. Results: To assess VSWM's contribution to voluntary correction, hierarchical regression was conducted with average success as the dependent variable. Model 1 (age, time since stroke, Fugl-Meyer score, sex) explained 2.2% of variance (R2=.022, p=.823). Adding VSWM improved variance explained by 11% (ΔR2=.112, p=.004), with poor VSWM significantly associated with reduced voluntary correction (β=2.023, p=.004). Conclusion: VSWM significantly influences voluntary gait corrections, aligning with upper extremity findings7,4 , and highlights its relevance as a key consideration in designing walking rehabilitation strategies for people with stroke. Physical therapists should consider VSWM deficits when using VFB to optimize post-stroke gait training strategies.

141A*

Factors Impacting the Use of Wearables and Logs by Adults with Intellectual Disability: A Randomized Crossover Study

Cora J. Firkin, Iva Obrusnikova, and Albert R. Cavalier

Abstract: The objective was to examine the factors that impact independent and sufficient use of wearables and adapted activity logs by adults with intellectual disability (ID) during physical activity (PA) and sedentary behavior (SB) assessments. A purposive sample of 12 adults with ID was randomized into using the ActiGraph GT9X-Link (AG) or Apple Watch Series 4 (AW) with the log for one week before switching wearables. Independent use was assessed via caregiver-reported daily evaluations. Sufficient use was determined by recording ≥10 hours of wearable data/day for ≥4 days and completing ≥90% of log entries during wake hours/day for ≥4 days. After each week, individual semi-structured interviews, guided by the Social Cognitive Theory, were conducted. Demographic, physical, and functional characteristics and self-efficacy with wearable and log tasks were assessed. Seven participants independently used the AW, while four independently used the AG. No one independently used the log in Week 1, but two participants did in Week 2. Sufficient use criteria were met by eleven for the AW, eight for the AG, and six then ten for the log in Weeks 1 and 2. Common facilitators included routine establishment, external guidance, and knowledge and skill proficiencies. Fewer barriers were mentioned for the AW. AG barriers were predominantly related to its aesthetics, physical features, and interface. Leveraging facilitators and mitigating barriers to independent and sufficient assessment tool use may improve data quality and usability for adults with ID. Future research

should explore personalized approaches and accessible design refinements to optimize PA and SB assessments.

143A

Title: Impaired proprioception after stroke affects the ability to perform sensory action sequences

Amelia Decarie and Jennifer A. Semrau

Abstract: After stroke, ~50% of individuals have impaired proprioception, our sense of body position and movement. Proprioceptive impairments may result in a reduced ability to perform sensory action sequences (SAS), which we use to guide, plan, and execute sequential movements for functional tasks, such as making a sandwich. Our goal was to assess how impaired proprioception impacts performance of SAS after stroke. Individuals with chronic stroke (N=3 with impaired proprioception, N=8 without proprioceptive impairment), and age-matched controls (N=8), were tested using a KINARM Robotic Exoskeleton. In our task, the more-affected upper limb (stroke) or randomized limb (controls), was passively moved through a sequence of targets in the absence of visual feedback. At the end of the passive movement, participants had to actively reproduce the movement sequence. The length of movement sequences ranged from 1-5 targets and were presented in pseudorandomized order (40 trials total). Procrustes Distances (PD) were computed to quantify quality of sequence matching. Computed PD values range between 0 and 1, with higher values indicating worse performance. Preliminary results found that PD values were significantly different between groups (Control: 0.14 [0.11 0.20], Stroke (without proprioceptive impairment): 0.13 [0.10 0.20], Stroke (with proprioceptive impairment): 0.45 [0.43 0.51], p=0.03). Post-hoc tests found similar PD values between controls and stroke participants without proprioceptive impairments. Stroke participants with proprioceptive impairments had significantly higher PD values than both controls and stroke participants without proprioceptive impairments (p=0.01). These results suggest that impaired proprioception after stroke may significantly impact sensory planning which is critical for the execution of sequence-based tasks used in everyday function.

Second Poster Session: 1:30 – 2:45 pm

2B

Event apprehension and argument roles during sentence production: An individual differences approach to the role of linguistic knowledge.

Mackensie Blair, Kathleen Oppenheimer, Roshean Ashmah, Yi Ting Huang, Amanda Owen Van Horne

Abstract: Purpose: This study examined the extent to which school-aged children draw on animacy cues to facilitate production of passive sentences. To evaluate whether linguistic knowledge (i.e.,comprehension) related to sentence production, we assessed performance on a picture-description production task, relating it to performance on a comprehension task. Methods: 143 4-9-year-old monolingual English-speaking children (DLD N = 109, Age M = 5.97, SD = 1.44; TD N = 34, Age M = 6.51, SD = 1.65) participated. DLD diagnosis aligned with Bishop et al., (2016); TD children did not have functional concerns and standardized test scores were in the typical range. To assess comprehension, children saw 2 animate-animate pictures and they heard an active or passive sentence and matched it to the correct scene. Responses were coded as correct (1) or incorrect (0). For production children heard a passive model for one picture and then described the second, patients were animate or inanimate, agents were animate. Responses were coded as fully (1), partially (.5) or not (0) correct. Linear mixed effects models were run to analyze the data. Results: Children who were highly accurate at comprehending both structures had the greatest benefit from inanimate patients ($\beta = 1.31$, $p = .003$). In contrast, children with poor sentence comprehension were largely insensitive to ($\beta = 0.23$, $p > .05$), and benefitted less from ($\beta = -1.05$, $p < .0002$) animacy cues. Implications: This suggests that children's ability to leverage salient animacy cues in events for sentence production improves with linguistic knowledge.

4B

Does Sex Influence Achilles Tendinopathy Recovery?

Morgan N. Potter, PT, DPT, Ryan Pohlig, PhD, Karin Grävare Silbernagel, PhD, PT, ATC,FAPTA

Abstract: Introduction: Achilles tendinopathy (AT) is an overuse injury resulting in pain with movement and lower extremity (LE) functional deficits. This injury has similar incidence rates in males and females,1 yet it is unknown if sex influences recovery with rehabilitation. We investigated if recovery in symptoms and LE function differed between males and females with AT undergoing rehabilitation. Methods: 182 individuals (79M) with AT were enrolled and received physical therapy (Silbernagel protocol) during the study. Variables of interest were evaluated once every 8 weeks for 1 year. Symptoms were evaluated through the VISA-A questionnaire, and function was evaluated by heel rise work (joules) of the involved limb during the single leg heel rise endurance test. Generalized linear mixed models were used to evaluate sex differences over time. Results: Males and females were similar in age (mean±SD M:48±12.8yrs;F:47±12.6yrs) Females had lower VISA-A scores (mean±SEM:57±1.8;F:44±1.7,p<.001) and heel rise work (M:1848±99;F:1256±65,p<.001) at baseline, but were similar to males in tendon thickness (M:7.4±.3;F:7.4±.2). Males and females differed in VISA-a scores over time (p=0.009), with females having lower scores until 32wks. Heel rise work differed throughout the study, with females having lower heel rise work (mean difference: 657±107,p<.001). However, both improved in heel rise work (mean change: M:285±78;F:253±74,p<.001) throughout the study. Conclusion: Males and females experience similar recovery in LE function. While females present with worse symptom severity at baseline, they reach similar scores as males by 6 months. Funding Acknowledgements:

Research reported in this abstract was supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development and the National Institute of Arthritis and Musculoskeletal and Skin Diseases of the National Institute of Health under award numbers: T32HD007490 and R01-AR072034. This work was supported in part by a Promotion of Doctoral Studies (PODS) – Level I Scholarship from the Foundation for Physical Therapy Research.

6B

Parent Reported Container Use Relates to Infants' Fine Motor Development

Joseph Corrado, Zainab Alghamdi, and Michele A. Lobo

Abstract: Introduction: Infant containers, such as car seats, strollers, swings, and bouncers, are commonly used for transportation, safety, and entertainment. However, little research has examined their impact on infant development. This study aimed to assess total daily container use, bout duration, and their relationship to developmental outcomes. Methods: A cross-sectional survey of 250 parents of infants (30 days to 19 months) recorded the duration and frequency of use for ten container types. Infant development was assessed using the Ages and Stages Questionnaire (ASQ-3), which evaluates problem-solving, communication, motor skills, and personal-social development. Correlation analyses examined relationships between container use and ASQ-3 scores. Results: Infants spent an average of 5.15 hours per day in containers, with 3.0 hours in restrictive containers (e.g., strollers, car seats). Playpens and carriers had the longest total use, while exersaucers and floor seats had the shortest. Higher container use was significantly correlated with poorer fine motor development ($r = -.137$, $p = 0.035$). Longer bout durations in positional pillows were associated with lower gross and fine motor scores ($r = -2.08$, $p = .001$; $r= -.181$, $p = 0.005$), while bouncer use correlated with lower personal-social scores ($r = -.157$, $p = 0.016$). Conclusion: Infants may spend nearly half of their awake time in containers, underscoring the need for balance with floor play and movement. These findings can inform parent education on optimizing container use for developmental benefits. Future research should explore parental beliefs to enhance practical guidance.

8B

The Scholar Model: Enhancing Clinical Proficiency, Knowledge Retention, and Resilience in Nursing Students

Isabella Leonardo, Jennifer Saylor, Jennifer Graber, Rosemary Wurster, Michelle Thompson, Elizabeth Speakman

Abstract: Background/Purpose: There is a nationwide nursing shortage, with hospital shortages projected to reach 20%. In response, UDSON and a BayHealth hospital developed the Scholar Model that emphasizes mentorship and clinical immersion to enhance retention and confidence in nursing graduates. This pilot study examines clinical skills proficiency, knowledge retention, and resilience among senior nursing students completing immersive, single-site clinical experiences. Methods: This descriptive, pilot study involves 4 senior nursing students (n=4). Data collection is ongoing with participants completing 5 surveys pre- and post-each 7-week clinical rotations during their last 2 semesters, followed by quarterly surveys post-employment as registered nurses. The surveys assess confidence (Healthstream Nurse Confidence Survey), clinical judgment (Healthstream jane® AI Clinical Judgment Assessment), general knowledge (quizzes), clinical skill proficiency (Creighton Competency Evaluation Instrument), and resilience (Connor-Davidson Resilience Scale). Due to the small sample size, data will be analyzed using descriptive statistics. Additional data includes open-ended survey responses, focus groups, stakeholder feedback, and preceptor evaluations. Results: Expected outcomes at the end of their senior year include higher perceived confidence, clinical judgment, and resilience among

participants in the Scholar's Program. Conclusions & Implications: The Scholar Model presents an innovative solution to addressing the critical nursing shortage by leveraging immersive, single-site clinical experiences to enhance skill proficiency, knowledge retention, confidence, and resilience in senior nursing students. This model could be expanded to other clinical partners, creating a broader network of immersive training sites that strengthen graduate readiness and provide a smooth transition into professional practice.

10B

Enhancing Suicide Prevention: Evaluating the Impact of Universal Suicidal Ideation Screening in Primary Care

Alyssa Selimov, BSN, RN 1 ; Jennifer Graber, EdD, APRN, PMHCNS-BC 1 ; Sharon Dudley-Brown, PhD, FNP-BC 1

Abstract: Background: Universal suicidal ideation (SI) screenings serve as a method to mitigate suicide risk through identification, early intervention, and monitoring. Despite the literature supporting the efficacy of universal SI screenings in primary care, many clinics opt for depression screenings to indirectly assess suicide risk, without supportive evidence. Purpose: This project explores whether direct screening for SI in primary care yields an accurate identification of SI, with secondary aims of increasing suicide risk mitigation interventions and evaluating the involved primary care providers' (PCPs) perceptions of universal SI screening. Methods: A prospective quantitative analysis of universal SI screening was completed over eight weeks in a single primary care clinic. Four weeks of baseline suicide risk data using the Patient Health Questionnaire-2 (PHQ-2) preceded four weeks of universal SI screening with the Colombia Suicide Severity Rating Scale (C-SSRS). Descriptive statistics, chi-square tests, and Fisher's exact tests were used to evaluate SI identification, risk mitigation intervention use, and PCPs' perceptions of project feasibility and utility. Results: There was a significant decrease in identification of SI with the C-SSRS compared to suicide risk identified with the PHQ-2 (□ 2 =7.11, p=0.008, □= 0.114), highlighting the precision of the C-SSRS. Additionally, suicide risk mitigation interventions increased by 26% from baseline to intervention phase. All the involved PCPs believed the screenings to be moderately beneficial or very beneficial. Conclusions & Implications: This study supports the evidence of the applicability of universal SI screenings in primary care settings, and highlights the nuances present in SI screening.

12B

Association between Time-of-Day for Eating, Exercise, and Sleep with Blood Pressure in Adults with Elevated Blood Pressure or Hypertension: A Systematic Review

Thomas Keiser, Sarah Katz, Shannon M. Robson, Jody L. Greaney, Sean Healy, Susan K. Malone, Vahid Farrahi, and * Freda Patterson

Abstract: INTRODUCTION: The science of aligning therapeutic treatments with endogenous biological rhythms ('chronomedicine') presents an opportunity to consider that there may be an optimal time-of-day to engage in the behaviors of eating, exercise, and sleep for cardiovascular health. The purpose of this review was to synthesize results from studies that examined the association between estimated time-of-day for eating, exercise, and sleep with blood pressure (BP) in adults with elevated BP or hypertension (BP□120/80). METHODS: PubMed, CINAHL Plus, Scopus, SPORTDiscus, and Web of Science databases were searched for relevant publications from January 2013 to July 2023. Two researchers independently screened abstracts and full-text articles, performed data extraction, and assessed study quality using the NHLBI Study Quality Assessment Tools. RESULTS: The search identified 789 studies. Ten studies met inclusion criteria. Four studies examined the association between time-of-day for eating and BP. Eating later in the day was linked to higher

BP in three of four studies. Five studies examined the association between time-of-day for exercise and BP. Morning and evening exercise were linked with significantly lower BP in three and four of five studies, respectively. The one study testing the association between time-of-day for sleep and BP found that later sleep midpoint was significantly related to higher BP. CONCLUSION: The results of these studies provide preliminary evidence to support research to examine the independent role of time-of-day for eating, exercise, and sleep with BP. Included studies were limited by a lack of prospective, randomized-controlled study designs and use of 24-hour ambulatory BP assessment.

14B*

Examining State-level Program Goals in the Supplemental Nutrition Assistance Program Education (SNAP-Ed) System: Preliminary Insights from State Plans

Kristin Kelly, MA

Abstract: Over $500 million in federal spending supports the Supplemental Nutrition Assistance Program Education (SNAP-Ed), addressing national health priorities through health education programs in all U.S. states and territories. Initially focused on nutrition education, SNAP-Ed expanded with the Healthy, Hunger-Free Kids Act to include physical activity (PA) strategies, making PA integration a requirement for SNAP-Ed projects starting in Fiscal Year 2024 (FY24). However, it remains unclear how PA has been incorporated into the SNAP-Ed system or what guidance SNAP- Ed State Implementing Agencies (SIAs) have received. Stakeholder responses to these policy changes vary based on a range of factors, such as geography, budget, experience, and agency history with PA integration. This abstract presents findings from one component of a larger study examining stakeholder perspectives and the impact of federal policy changes on the SNAP-Ed system. Initial quantitative data collection (Aim 1) is complete, with analysis underway. Preliminary findings, drawn from publicly available data from state SNAP-Ed Annual Plans, describe the intended goals and strategies of SIAs during FY24. This includes a review of the frequencies and characteristics of SIAs that planned to integrate PA. These results establish a baseline of how and where PA has been integrated into the SNAP-Ed system. Qualitative data collection (Aim 2; in progress) will build on these findings, providing deeper insight into how SNAP-Ed agencies respond to federal policy changes, incorporate them into organizational decision-making, and adjust existing practices to align with evolving SNAP-Ed guidance.

18B*

Addressing LGBTQIA+ Biases in Healthcare Professionals: Impact on Care and Health Outcomes

Siddhi Sanjay Ghadi, Yendelela Cuffee.

Abstract: Introduction: Healthcare professionals are responsible for providing treatment, healing, and supporting patient's health and well-being. Implicit and explicit biases can lead to delayed care and poorer health outcomes. The objective of this review is to explore how bias held by healthcare professionals may serve as a barrier to care and meeting the needs of members of the LGBTQIA+ community. Hypothesis: We hypothesize that implicit and explicit biases among healthcare professionals negatively influence the quality of care and health outcomes for LGBTQIA+ patients. Methods: A scoping review was conducted by searching PubMed and Google Scholar for peer-reviewed articles published between 2014 & 2024. Studies focused on implicit and explicit biases among healthcare providers toward LGBTQIA+ individuals. Inclusion criteria required studies to specifically address LGBTQIA+ healthcare disparities and interactions with healthcare professionals. Five studies were reviewed and selected for inclusion in this review. Results: The findings indicated pervasive implicit biases indicating a preference towards heterosexual individuals among healthcare providers, with nurses and male physicians displaying the strongest preferences toward

heterosexuals. The study findings highlighted that even in settings with LGBTQIA+-inclusive policies, biases persisted and negatively affected patient care. Medical students also reported gaps in formal education regarding LGBTQIA+ health issues, indicating a need for enhanced training Conclusion: This scoping review highlights the pervasive impact of implicit and explicit biases among healthcare professionals on the care and health outcomes of LGBTQIA+ patients. The findings underscore an urgent need for comprehensive interventions, including bias training, and the enforcement of inclusive healthcare policies.

20B

Sleep Health in Children and Adolescents with Sickle Cell Disease

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Abstract: Introduction: Youth with sickle cell disease (SCD) are at increased risk for sleep disordered breathing (SDB), poor sleep health, like reduced sleep duration, increased nocturnal awakenings, and daytime sleepiness. Poor sleep is associated with increased risk for Vaso-occlusive crisis (VOC) and poor quality of life. Methods: 2-year cross-sectional study with youth ages of 8-17 years with a diagnosis of SCD in baseline state of health and age, race, and sex-matched controls without chronic illness were recruited. Validated questionnaires evaluating sleep health and Pediatric Quality of Life Inventory (PedsQL) were obtained. Data was collected on health care utilization (HCU) for VOC. Results: 50 youth with SCD and 37 controls. Groups did not differ in age, race, sex, height, weight, or BMI. There were no differences between groups in daytime sleepiness, however 38% of SCD youth had scores indicating increased daytime sleepiness (i.e., >10). SCD youth screened higher risk for SDB on PSQ (p= 0.029). 32% of the youth with SCD had positive PSQ. Worse HRQL reported in SCD(p=.003). 51% of youth with SCD had HCU for VOC in the preceding year. No significant association identified between HCU for VOC and sleep health indices. Conclusion: Youth with SCD in their baseline state of health reported comparable sleep health to youth without chronic illness but had worse HRQL than their healthy peers. 32% of youth with SCD screened positive for high risk for SDB and had significantly increased risk compared to controls. Indices of sleep health were not associated with HCU for VOC among youth with SCD.

24B

Variability between stress management and sleep health in socioeconomically disadvantaged families

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Abstract: INTRODUCTION: Cross-sectional examinations suggest that stressful life events and ineffective stress management relate to poor sleep. Not known is the day-to-day experience of stress among toddler caregivers, and how daily stress management relates to caregiver sleep in low-socioeconomic status (SES) family contexts. This study aims to characterize the day-to-day experience and response to stressors in association with caregiver sleep health. METHODS: We enrolled 60 caregiver-toddler dyads who were eligible for federally funded programs (e.g., WIC, Medicaid). Using a micro-longitudinal design, we used 24/7 actigraphy to measure caregiver sleep health over two-weeks. Concurrently, caregivers completed daily electronic diaries reporting experienced stressors, their severity, stress management strategies and their effectiveness. Generalized Linear Models quantified the associations between caregiver stress and sleep health. RESULTS: One-quarter of caregivers (90% mothers, 48% Black) reported family/parenting issues as their primary stressor, with up to 90% taking a healthy action against stress (e.g., mindfulness-based techniques), yet 44% reported healthy strategies as ineffective. Mixed model results showed that caregiver sleep efficiency varied

by stress management effectiveness (p=0.009), ranging from a low of -0.4% decreased sleep efficiency (ineffective strategies) up to a high of 1.5% increased efficiency (very effective strategies). Similarly, on days when caregivers reported high strategy effectiveness, their sleep duration increased by 48-minutes (p=0.034). CONCLUSION: Our findings underscore the importance of perceived stress management effectiveness on sleep quality and quantity in low-SES contexts. Future work is needed to better understand how caregivers are employing stress management strategies, and if targeting such strategies may positively affect caregiver sleep. SUPPORT: Rockefeller University Heilbrunn Family Center for Research Nursing (#UL1TR001866); Institutional Development Award (IDeA) from NIH NIGMS (#U54-GM104941;PI: Hicks)

26B

How Delaware's SHIP Coalition Improves the Health of Delaware

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Abstract: Introduction: The Delaware State Health Improvement Plan (SHIP) is led by the Delaware Division of Public Health (DPH) in partnership with the University of Delaware's Partnership for Healthy Communities and Epidemiology Program. The Delaware SHIP engages stakeholders across the state who form a Coalition to address the health needs of Delawareans. A SHIP is a strategic framework that identifies a state's health priorities and outlines the actions needed to address them. Methods: The Coalition was formed to address five prioritized health outcomes using the Vital Conditions of Health and Well-Being framework. The SHIP team developed goals, objectives, and strategies for each outcome, achievable by 2028, selected based on challenges identified in the State Health Assessment (SHA). Evidence-based strategies were refined through Coalition meetings and literature reviews. Measurable targets for the objectives were set using the National Center for Health Statistics' Percent Improvement Tool (Hubbard et al., 2020), validated by recent trends, and reviewed for feasibility by DPH. Results: The five priority health outcomes identified through the SHIP Coalition are mental health, chronic disease, maternal and infant health, avoidable injury, and premature death. One goal of mental health is to improve mental health outcomes, with its measurable objective being the reduction of suicide and depression rates. One strategy to achieve this is by increasing access to mental health services through transportation and telehealth. Conclusion: The SHIP team will continue to work with the Coalition to implement the strategies that move Delaware towards the goal of alleviating disparities in priority health outcomes.

28B

Prevalence of Insomnia and Its Associations with Gaming Behavior and Perceived Health in Autistic Adults

Sydney Bouder, Lia McNulty, Daehyoung Lee

Abstract: Background: Insomnia is a prevalent and growing health concern among autistic adults, profoundly impacting their well-being. Empirical studies support that autistic adults tend to spend extensive time playing video or online games, which may contribute to sleep disturbances and low health perceptions in this population. Purpose: 1) to explore the prevalence of insomnia and 2) examine its associations with gaming behavior and perceived physical and mental health among autistic adults. Methods: Seventy autistic adults (M age 33.3±9.7; 80% females) participated in this cross-sectional survey. Standardized self-report instruments were utilized to assess demographics, insomnia severity, gaming behavior, and perceived physical and mental health. Descriptive statistics, independent t-tests, Spearman's rank correlations, and Stepwise multiple regression analyses were performed to answer the research questions. Results: Over one-quarter (25.3%) of study participants reported clinical insomnia, and 14.3% of participants were identified as potentially meeting the criteria for gaming disorder. Additionally, significant negative correlations were observed between

perceived physical health and gaming time (ρ = -0.239, p<.05) and between perceived mental health and insomnia (ρ = -0.319, p<.01). Both perceived mental health and the presence of mild intellectual disability were significant predictors of insomnia; however, the regression models explained less than 16% of the variability in insomnia severity. Conclusions: An increasing number of autistic adults may be prone to problematic gaming behaviors, which in turn can contribute to poor sleep habits in this population. Future studies may consider leveraging technology as a tool to develop strength-based interventions that promote sleep quality and overall health in autistic adults.

30B

iManage-SCI Sexual Wellness: A Symptom-Monitoring/Self-Management Program to Improve Sexual Wellness after SCI

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Abstract: INTRODUCTION: Spinal cord injury (SCI) is a life-altering injury that can impact sexual wellness (SW). Individuals with SCI may notice changes in sensation, performance, and the functional ability to engage in sex. We are creating a module for our symptom-monitoring/self-management system, iManage-SCI, that targets SW. Development of this module includes creation of new SW measures and self-management videos designed to improve SW in individuals with SCI.METHODS: The new SCI-QOL SW item pools were administered to 521 people with traumatic SCI and calibrated using graded response model item response theory analysis. The final bank has 27 items which could be administered as a short form or computer adaptive test. Additionally, items related to autonomic dysreflexia (k = 3), bowel and bladder (k = 4), and needing assistance during sex (k = 2) were retained for their clinical meaning and can be administered as a short form. Scripts for the self-management videos were developed based on the results of a literature review on SW symptoms and treatments in individuals with SCI. Scripts were transformed into storyboards by an animator. Storyboards were iteratively reviewed by project investigators and expert consultants before video animation. Feedback was gathered from expert advisory panels at national conferences before finalizing videos. CURRENT RESULTS & NEXT STEPS: The banks are being programmed into the PROMIS Assessment Center TM Application Programming Interface and public REDCap library. We are also working to finalize the animation of the self-management videos. The final iManage-SCI program is being reprogrammed by a new software vendor.

36B

Effect of Tart Cherry Juice Consumption on Emotional and Menopausal Symptoms in Postmenopausal Women: An Ongoing Study

Oyefemiwa Fadaini, Bingqing Luo, Ayham Ghith, Alexa Harrison, Anita Dini, Freda Patterson, Zugui Zhang, David Edwards, Sheau Ching Chai

Abstract: Postmenopausal women are at increased risk for emotional health challenges, including anxiety and depression, largely due to hormonal fluctuations and physiological changes. While pharmacological treatments exist, concerns over side effects and long-term health implications highlight the need for natural, dietary interventions. Tart cherries (Prunus cerasus L.) contain bioactive compounds such as anthocyanins, polyphenols, and melatonin, which have been associated with cognitive and mood benefits. However, limited research has examined their effects on emotional health in postmenopausal women. This study investigates the extent to which daily consumption of tart cherry juice improves emotional status in postmenopausal women. This 12-week, parallel, randomized controlled trial recruited postmenopausal women aged 45-60 years, not on hormone therapy. Participants were randomly assigned to consume either tart cherry juice

(n=13) or control drink (n=10) for 12 weeks. Emotional status and menopausal symptoms were assessed using the Hospital Anxiety and Depression Scale and the Women's Health Questionnaire at baseline and post-intervention. Results showed a significant time effect for vasomotor symptoms (p=0.05) and a borderline time effect for anxiety (p=0.09). After 12 weeks, anxiety scores decreased by 19% and 20% in the tart cherry and control groups, respectively. Women in the tart cherry group experienced a greater reduction in vasomotor symptoms (-65%) compared to those in the control group (-43%). These findings suggest a potential beneficial effect of tart cherry juice on emotional well-being and vasomotor regulation in postmenopausal women.

38B

Gaming Behavior as a Predictor of 24-Hour Movement Behaviors in Autistic Adults with and without Mild Intellectual Disabilities

Kathiravan S, McNulty LK, and Lee D

Abstract: Introduction: Emerging evidence suggests that autistic adults are prone to excessive gaming behaviors, which may negatively impact 24-hour movement behaviors, including physical activity (PA), sedentary behavior (SB), and sleep. This study aimed to (1) identify the characteristics of gaming and 24-hour movement behaviors and (2) assess their relationship in autistic adults, including those with mild intellectual disabilities (ID). Methods: An online survey was developed to assess gaming behavior, PA, SB, and sleep in autistic adults. The survey included visual aids and comprehensive definitions for PA- and SB-related questions to ensure clarity. Participants were recruited through the Simons Foundation Powering Autism Research for Knowledge Research Match services. Pearson correlation and stepwise multiple regression analyses were performed to examine the relationship between gaming behavior, PA, sedentary time, and sleep quality. Results: Forty-six autistic adults (M_{age} 33.3±10.3**;** 80% females; 43.5% with mild ID) completed the survey. Participants spent 625.8±910.3 min/week gaming, 86.9±102.0 min/week in moderate PA and 39.8±73.4 min/week in vigorous PA engagement. 15.2% of participants were identified as potentially having a gaming disorder while 39.1% had poor sleep quality. The gaming disorder score was significantly associated with gaming time (r =.43, p =.003), vigorous PA (r =−.30, p =.042), and weekday (r =.59, p <.001) and weekend sedentary time (r =.37, p =.011). **Conclusions**: Autistic adults may be susceptible to excessive gaming behaviors, increased sedentary time, and reduced engagement in vigorous PA. These results underscore the need for multifaceted interventions that promote healthy 24-hour movement behaviors in this population.

40B

Contrasting Associations of Fat and Lean Mass with Bone Mineral Density Among Postmenopausal Women

Bingqing Luo, Adam Davey, Sheau Ching Chai

Abstract: Objectives: Women face increased risk of osteoporosis following menopause due to hormonal changes. Higher BMI has been considered protective against osteoporosis, but more recent studies challenge this notion. This study examines the relationship between body composition and bone mineral density (BMD) in postmenopausal women. Methods: Pooled data from NHANES 2011-2018 were used to identify 548 postmenopausal women with complete BMD and body composition measurements. Covariates were screened using stepwise elimination regression was used to identify significant confounders, and univariable regression analyses examined the associations between body composition parameters and total and lumbar spine BMD. Results: Findings demonstrated that total fat mass was positively associated with total and lumbar spine BMD. However, after adjusting for confounders, this association reversed, with total fat mass showing a negative relationship with total BMD (β = -0.0069, p-value = 0.003) and lumbar spine BMD (β = -0.0091, p-

value = 0.007). Subcutaneous fat mass was also negative association with lumbar spine BMD (β = -0.0676, p-value = 0.038). Conversely, lean mass parameters, particularly total lean mass, consistently showed a positive association with total BMD (β = 0.0051, p-value = 0.02) and lumbar spine BMD (β = 0.0066, p-value = 0.041) regardless of adjustments for covariates. Conclusion: Findings highlight the opposing roles of fat and lean mass in bone health, with lean mass as a stronger predictor of higher BMD. This challenges the notion that fat mass is protective against osteoporosis and highlights the importance of considering body composition in assessing osteoporosis risk.

42B*

The effect of apiaceous vegetable extract on endothelial dysfunction in acrolein-exposed human aortic endothelial cells

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Abstract: Atherosclerosis is a chronic inflammatory disease that can lead to heart attack, stroke, and death. Endothelial dysfunction is an early event in its pathogenesis, characterized by the recruitment of pro-inflammatory immune cells to a weakened endothelial barrier, leading to the accumulation of lipid-laden macrophages and atherosclerotic plaque formation. Key risk factors for atherosclerosis include an unhealthy diet, smoking, and exposure to air pollution. Acrolein (ACR), a reactive aldehyde found in cigarette smoke and air pollution, induces DNA and protein damage, triggering inflammatory responses that exacerbate vascular injury. Diet is a modifiable factor and nutrient-rich foods with antioxidant properties [e.g., apiaceous vegetables (celery family)] potentially protect against environmental toxins and oxidants such as ACR. We tested the hypothesis that apiaceous vegetables (celery, parsnip) reduce ACR-induced endothelial dysfunction in human aortic endothelial cells (HAECs). HAECs were exposed to 200 µg/mL apiaceous vegetable extract (80% methanolic extract of fresh celery and parsnip) for 24 hours before exposure to 30 µM ACR for 2 hours. Endothelial dysfunction-related protein markers (E-selectin, vascular cell adhesion molecule 1, monocyte chemoattractant protein 1, phosphorylated endothelial nitric oxide synthase) were measured via western blot. No signal was detected for monocyte chemoattractant protein 1, and there were no significant differences among groups for the remaining endothelial dysfunction markers. Future steps include optimizing ACR exposure time and concentration to confirm the induction of endothelial dysfunction at both the protein and mRNA levels.

44B

Training Speed, not Training Heart Rate, Predicts Changes in Walking Capacity in People with Chronic Stroke

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Abstract: INTRODUCTION: More than 80% of people with chronic stroke (PwS) experience a reduction in their ability to walk. 1-4 The aggregation of walking studies suggests higher levels of intensity may facilitate greater changes in walking capacity, yet studies have lacked the power for robust statistical methods and account for important covariates. 5-11 Exercise intensity is frequently quantified as heart rate (HR). While HR is a valid measure of cardiovascular intensity, it is influenced by other factors, agnostic to exercise.12,13 It has been suggested that walking speed may provide a more specific measure of exercise intensity in this population. 14 Understanding the strength of each exercise intensity metric to predict outcome is imperative to provide optimal training parameters for clinicians to implement walking exercise interventions in PwS. METHODS: This is a secondary analysis from a larger clinical trial (“PROWALKS”; NIH1R01HD086362) and included participants

(n = 169; age: 63.1 ± 12.5, 46% female) with complete pre- and post-intervention data. Four multiple linear regressions with robust errors analyzed the relationship of exercise intensity (predictor; % HR or training speed) on pre-to-post intervention changes in walking capacity (outcome; Six-Minute Walk Test (6MWT), Fastest Walking Speed (FWS)) after accounting for covariates. Covariates included age, sex, stroke chronicity, comorbidity index, balance self-efficacy, baseline 6MWT, and total exercise minutes. RESULTS: Training speed was a significant predictor of both a change in 6MWT distance (b = .364 (95% CI[.108 - .621]), p = .006) and FWS (b = .001 (95% CI [.001-.002]), p = .003). HR was not a significant predictor of either outcome (both p > .096). CONCLUSION: If participants trained at their self-selected speed, there was a 41.3m increase in 6MWT and .157m/s increase in FWS. If participants trained at their FWS, there was a 58.0m increase in 6MWT and a .203m/s increase in FWS. On average, training at FWS led to greater changes in 6MWT (+16.7m) and FWS (+.046m/s) compared to training at self-selected speeds. This suggests clinicians should prioritize challenging PwS to walk at the upper-limit of their walking speed during training to optimize outcomes.

46B

Comparing Physiological Approaches to Assess Cutaneous Nitric Oxide-Dependent Vasodilation in Young Men and Women

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Abstract: Local heating (LH) of the skin, typically to either 39°C or 42°C, is widely used to assess nitric oxide (NO)-mediated endothelium-dependent dilation (EDD), including the recent use of LH to examine sex differences in the regulation of microvascular function. However, no study has investigated whether these responses are correlated within an individual or whether this relation is different between sexes. We hypothesized that NO-mediated EDD to these LH stimuli would be positively correlated in both men and women, despite an overall reduction in responsiveness in young men. In 14 men (22±4 yrs) and 22 women (22±3 yrs), red cell flux (laser Doppler flowmetry) was measured in response to a standard LH protocol to either 39°C or 42°C followed by intradermal microdialysis perfusion of N(G)-nitro-l-arginine methyl ester (L-NAME; 15mM) to quantify the relative contribution of NO. Cutaneous vascular conductance was calculated (CVC=flux/mean arterial pressure) and normalized to maximum (28mM sodium nitroprusside + 43°C). Although LH-induced NO-mediated EDD depends on sex (interaction, p=0.026), there were no differences between sexes for either 39°C (76±10% men vs 69±11% women; post hoc p=0.14) or 42°C (78±10% men vs 81±13%CVCmax women; post hoc p=0.10). NO-mediated EDD at 39°C was not related to that at 42°C in the full sample (r=0.01, p=0.94) or when considered separately in men (r=0.09, p=0.75) and women (r=0.05, p=0.83). These preliminary data suggest that cutaneous microvascular NO-mediated EDD in response to LH to 39°C and 42°C may not be comparable within either men or women, limiting comparisons between studies using different stimuli.

48B

Examining the Association Between Diet Quality, Physical Activity, and Vascular Function in Children

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Abstract: Background: According to the Bogalusa Heart Study, the manifestation of cardiovascular disease begins in childhood. Physical activity (PA) and diet, are two modifiable behaviors shown to have cardioprotective effects on vascular function in adults. The study aimed to examine the association between diet quality, PA, and vascular function in children. Methods: Baseline data from 38 children (9.3 ± 1.8 years) enrolled in a randomized controlled trial with 3-day dietary records, at least four days of ActiGraph wear time,

and at least one measure of vascular function (pulse wave velocity [PWV] or flow-mediated dilation [FMD]) were included. Healthy Eating Index (HEI-2010), a measure of diet quality, was calculated and FMD was corrected using allometric scaling. Linear regression models were used to analyze the association between diet quality and vascular function and PA and vascular function. Results: Children had a mean HEI-2010 total score of 49.9±10.8 and consumed 0.8±0.6 cup-equivalents of fruits per day and 0.6±0.5 cup-equivalents of vegetables per day. Children engaged in a mean of 129.3±81.7 minutes of moderate-to-vigorous PA per day. Mean values for vascular function were %change FMD: 7.2±3.5%, corrected FMD: 2.8±1.4%, and PWV: 3.7m±0.6m s-1. Diet quality was not associated with vascular function. MVPA was significantly associated with PWV (b = -0.002 (0.001), p = 0.033), but not FMD. Conclusion: Limited associations between dietary quality, physical activity, and vascular function may be apparent due to optimal cardiovascular health in children.

50B*

Effects of vasomotor symptoms on endothelial function in midlife women

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Abstract: BACKGROUND: Nearly 75% of women experience vasomotor symptoms (VMS) during menopause. VMS have been reported to be associated with reduced endothelial function, a non-traditional risk factor for cardiovascular disease, in late perimenopausal and postmenopausal women. However, this remains unexplored in late premenopausal (PRE) and early perimenopausal women (PERI). The purpose of this study was to test if greater frequency and severity of VMS leads to lower endothelial function in PRE and PERI . METHODS: Thirty-one PRE and PERI (age 25-55) completed this study. Severity and frequency of hot and cold flashes and night sweats were assessed with a Likert questionnaire (0 being the best and 10 the worst), creating a maximum total score of 30. Total scores were median-split, creating a “Low Symptoms” (LS) group and “High Symptoms” (HS) group. Endothelial function was assessed using brachial artery flow mediated dilation (FMD). Statistics were analyzed with an unpaired-samples t-test. RESULTS: Fifteen women comprised the LS group (<7), and sixteen the HS group (≥7). There were no significant differences in age (LS: 45.3±6.5 yrs; HS: 47.9±3.1 yrs; p=.16) or BMI (LS: 25.2±3.0 kg/m 2 ; HS: 25.8±3.8 kg/m 2 ; p=.66). FMD trended lower in the HS group (LS: 6.57%±1.90; HS: 5.23%±2.20; p=.088). CONCLUSION: These preliminary findings suggest a possible correlation between high VMS prevalence and reduced endothelial function in PRE and PERI. Additional research is needed to assess this relationship and the underlying mechanisms of vasomotor symptoms.

52B

ASCVD: Screening in New Castle County, Delaware

Juneessa Pressley, Christine Sowinski, Heather Milea, Jennifer Horney

Abstract: Background: HEALTH for All (H4A) is an innovative equity-based model for collaborative campus-community partnerships. H4A provided Point of Care testing, education, counseling, care coordination, and referrals to clients at risk for atherosclerotic cardiovascular disease (ASCVD) with the aim of improving outcomes in communities experiencing health inequities. Methods: Clients who accessed H4A for an ASCVD screening received a biometric screening that included lipid panel, health inventory, BMI, and blood pressure. A ASCVD risk calculator was used to identify 10-year and lifetime risk. Results: 41 participants completed both initial and 3-month follow-up ASCVD screening as well as a post-visit survey. 56.10% of participants (23/41) indicated actively reducing consumption of trans fats, 53.66% of participants (21/41). Physical assessments during the 3 month followup found that 15 participants lost weight (Mean 4.68 lbs), 28 gained weight, and others maintained their weight. Systolic blood pressure (SBP) decreased in 18 participants (Mean decrease

9.36) and diastolic blood pressure (DBP) decreased in 19 participants (Mean decrease 8.05). Discussion: This study assessed ASCVD risk and health outcomes of Delaware's communities via a small longitudinal study. Although somewhat mixed, these findings underscore the need for targeted health interventions and demonstrate the importance of addressing both clinical and social factors to reduce health disparities.

54B

Effects of chronic kidney disease and exercise training on the blood pressure response to exercise

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Abstract: Individuals with chronic kidney disease (CKD) are at high cardiovascular risk and experience elevated blood pressure (BP) and lower exercise capacity. While the systolic BP (SBP)-workload slope during exercise predicts cardiovascular events, its response to exercise training remains unclear. We investigated the effect of 12 weeks of exercise training on the SBP-workload slope in patients with CKD and compared slopes to a healthy control (HC) group. Seventeen patients with CKD (age=61±11 years, eGFR=46±13 ml/min/1.73m 2) and 19 HC (age=57±5 years, eGFR>60 ml/min/1.73m 2) completed graded exercise testing (GXT). Participants with CKD were randomized to 12 weeks of exercise training (EX; n=9) or control (CON; n=8), and GXT was repeated. The EX group performed 3 × 45-minute sessions of exercise per week at 60-85% heart rate reserve, whereas the CON group received routine care. BP recorded at rest, two submaximal workloads, and peak workload were utilized to calculate slopes. Nonlinear SBP responses were excluded from slope analyses. HC achieved higher workloads (167±43 W) than CKD (135±49 W, p=.043). Patients with CKD had higher resting (138±22 mmHg vs. 123±14 mmHg, p=.018) and maximal SBP (210±29 mmHg vs. 192±22 mmHg, p=.032) and a steeper SBP-workload slope (0.63±0.15 vs. 0.45±0.13, p=.031). Exercise training did not alter resting and peak SBP or the SBP-workload slope. These data suggest that patients with CKD experience elevated peak exercise SBP and a steeper SBP increase during exercise. Exercise training did not alter SBP responses. Further investigation is needed to determine if other exercise modalities or longer durations may be effective.

56B

Assistive device and orthosis use impact on daily step activity improvements in individuals with chronic stroke

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Abstract: PURPOSE/HYPOTHESIS: Chronic stroke often leads to long-term mobility impairments, impacting quality of life and decreasing daily activity. 1,2 Many individuals with these impairments often receive an assistive device (AD) such as a cane or walker to aid gait stability and overall safe mobility. 3 While ADs aim to enhance an individual's safety and improve mobility, research suggests that these devices may be associated with increased non-stepping time, compared to those who do not use an AD after stroke. 3–5 Recent studies have aimed to explore the efficacy of a step activity behavioral intervention for increasing daily walking activity in individuals with chronic stroke. 2 Results from the PROWALKS trial showed that a behavioral intervention or combined behavioral and high-intensity walking intervention were effective at improving daily step activity in people with chronic stroke. 2 It is unclear if AD use predicts a change in daily step activity following an intervention. The purpose of this study was to determine how AD and orthosis use impacts changes in daily step activity following an intervention aimed at increasing steps/day in individuals with chronic stroke. We hypothesized that AD and orthosis use would be a significant predictor of change in daily

step activity in response to the PROWALKS intervention, with AD or orthosis use associated with lower increases in steps/day.

58B

Guardian-Reported and Self-Reported Quality of Life in High School Students with Congenital Heart Defects

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Abstract: INTRODUCTION: High school is a critical period of development for adolescents with congenital heart defects (CHD), this condition may impact various aspects of their quality of life. However, limited research compares guardian-reported and student-reported perspectives on the quality of life.
METHODS: This cross-sectional, descriptive study included high school students (n=60) aged 14-17 with CHD and guardians of high school students (n=60). Unmatched participants completed the Pediatric Cardiac Quality of Life Inventory (PCQLI) on adolescent ability to engage in physical and psychosocial experiences. Data were collected through Qualtrics.
RESULTS: The mean total score on the PCQLI was similar for the student and guardian groups (X=63.77, SD=17.70; X=61.65, SD=18.13, respectively). The student group's mean age was 15.73 (SD=1.26) compared to the guardian group's self-report of their student's mean age of 15.52 (SD=1.13). Almost half of the participants in the student and guardian groups were White/Caucasian (n=49, 81.7%). While the guardian group reported the majority among 9th-10th graders (n=38, 63%), the student group was equal across all high school years. Among all the participants (n=120), a variety of CHD were reported with Hypoplastic Left Heart Syndrome and Tetralogy of Fallot accounting for 37.5% (n=45). Inferential statistics are ongoing.
CONCLUSION: Understanding self-reported and guardian-reported PCQLI in adolescents with CHD can help healthcare providers develop targeted interventions. Discrepancies highlight the importance of incorporating both perspectives in clinical assessments and care planning.

60B

The Effect of Repetitive Head Impact Exposure on Resting Blood Pressure in Former Amateur Athletes

Lauren J. Cardone, Caitlin A. Gallo, Scott W. Passalugo, Thomas A. Buckley

Abstract: Repetitive head impacts (RHI) from contact and collision sports have been linked to later-life neurological health decline. Existing evidence suggests that former professional RHI sports athletes have elevated blood pressure, especially before the age of 40; however, the effect on young former amateur athletes is unknown. PURPOSE: To examine how a history of RHI exposure impacts resting blood pressure. Methods: Ten participants (age: 29.9 ± 3.9 years, height:165.0 ± 5.7 cm, mass: 74.8 ± 18.2 kg) were divided into two groups: 1) former contact and collision sport athletes (RHI; N=5) and 2) former non-contact sport athletes (NCA; N=5). Blood pressure measurements were taken to assess the impact of RHI exposure history on resting systolic (SBP) and diastolic blood pressure (DBP). Group means for SBP and DBP were compared using an independent t-test assuming unequal variances with significance set at $p < 0.05$. Results: There was no significant group difference for both SBP (RHI: 121.4 ± 12.0 mmHg, NCA: 111.8 ± 8.79 mmHg, $p = 0.19$, Cohen's $d = 0.91$) and DBP (RHI: 63.8 ± 6.30 mmHg, and NCA: 62.8 ± 5.63 mmHg, $p = 0.7981$, Cohen's $d = 0.17$). Conclusion: While no significant differences were observed, there was a large effect size suggesting RHI participants have a higher SBP than NCA participants. These findings suggest that RHI exposure history may influence resting blood pressure.

62B

Pain and Function Differences for Adults with Rheumatic Conditions: Preliminary Findings from an Online Cohort

Sydney, Jennifer, Tom, Jason, Evie, Julie, Julio, Dan

Abstract: Purpose: Rheumatic conditions, such as osteoarthritis (OA), fibromyalgia, and lupus, result in chronic pain and functional limitations, and physical therapy (PT) is well-suited to address these outcomes. Adults often have multiple rheumatic diagnoses, but little is known about how pain and function differ based on the number of diagnoses, which could influence PT plans. This study explored the relationship between the number of rheumatic diagnoses and patient-reported pain and physical function in a nationwide online cohort. Methods: We conducted a preliminary analysis of the Delaware OASIS study. Participants were recruited via Meta ads and included if they were ≥18 years old, lived in the US, and had a self-reported rheumatic diagnosis (e.g., OA, fibromyalgia, RA, lupus). Participants were classified as having 1, 2, or 3+ diagnoses. Pain and function were measured using PROMIS Pain Interference and PROMIS Physical Function questionnaires. T-scores were analyzed via generalized linear regression adjusted for age, sex, and BMI. Results: Among 162 participants (age 57.5 ± 12.3 years, 85.8% women, BMI 31.6 ± 8.1 kg/m^2), 82 reported 1 diagnosis, 52 reported 2, and 28 reported 3+. OA was the most common diagnosis across groups. Pain interference scores increased with more diagnoses (e.g., 62.6 for 1 diagnosis, +4.9 for 3+). Physical function scores decreased with more diagnoses (e.g., 46.0 for 1 diagnosis, −6.1 for 3+). Conclusion: Participants with multiple diagnoses had more pain interference and worse function, though differences were small.

64B

The Effect of Stochastic Resonance Stimulation in Neural Control of Balance During Walking in Parkinson Disease

Eman Alsaqabi, Stephen DiBianca, Ashwini Sansare, Khushboo Verma, Hendrik Reimann, John Jeka

Abstract: Background: People with Parkinson disease (PwPD) often face challenges with maintaining balance while walking, which can stem from sensory dysfunction. Studies have identified different strategies that aid in preserving upright balance control, revealing a preference among PwPD for utilizing proximal joint strategies over distal ones. Stochastic resonance (SR) stimulation delivers sub-threshold electrical noise to enhance the detection capabilities of dysfunctional sensory systems. Yet, the effectiveness of SR in enhancing gait stability in PwPD is undetermined. Objective: The purpose of this study was to investigate the effects of SR on balance control during visually perturbed walking in PwPD. Methods: Fourteen individuals with Parkinson disease completed the study. We established individualized sensory thresholds for SR stimulation and identified the optimal SR intensity. Following this, the participants walked on a self-paced treadmill within a virtually perturbed environment. Center of mass (CoM) excursion, foot placement, and ankle roll responses were assessed bilaterally. Results: Peak CoM excursion showed a significant increase with the SR condition compared to no-SR at the more affected side. Outcome measures related to underlying mechanisms of balance control were insignificant. Conclusions: In the current study, SR led to an insignificant finding regarding underlying balance mechanisms and larger CoM excursion, which might be due to adding more noise to sensory processing in our sample population and misidentifying their affected side. With SR, PwPD were driven by the induced fall with more sway and without significant alterations in balance strategies. Further investigation is needed to establish SR efficacy.

65B

Prescription and non-prescription medication use before and after a herpes zoster diagnosis among nursing home residents in the United States

Peyton Free, Preeti Chachlani, Kaleen N. Hayes, Kevin W. McConeghy, H. Edward Davidson, Lisa Han, Stefan Gravenstein, Daniel A. Harris

Abstract: Conflicts of interest and acknowledgments: This study was funded by GSK through an investigator-initiated study mechanism. DAH reports consulting fees from Sanofi for non-research-related activities related to influenza. SG reports grant support from Genentech, GSK, Moderna, Pfizer, Sanofi, and Seqirus, and consulting fees or honoraria from the same and AstraZeneca, Icosavax, Janssen/J&J, and Novavax, KH reports investigator-initiated grant support from Genentech and Sanofi for influenza vaccine and outbreak research. The content and views expressed in this article are those of the authors and do not necessarily reflect the position or official policies of the United States Government or the US Department of Veterans Affairs. Background: Herpes zoster (HZ) is a common and potentially debilitating condition in older and immunocompromised adults that is commonly managed with a combination of antivirals, steroids, and pain medications. Few studies have investigated the nature and extent of prescription and non-prescription medications among nursing home residents with HZ – a population at high risk of medication-associated adverse events and drug interactions. Objective: To characterize prescription and non-prescription medication administrations prior to and following an HZ diagnosis in nursing home residents. Methods: We conducted a retrospective cohort study using community nursing home electronic health record data between 2017 and 2022. Diagnoses for HZ were identified using ICD-10 codes in the active diagnosis file. We identified all administrations of antivirals, steroids, pain medications (opioid and non-opioid), antibiotics, and gabapentinoids within 30 days of the HZ diagnosis date in periods of time (i.e., 1-7, 8-14, 15-30 days prior to diagnosis, and 1-7, 8-14, 15-30 days after diagnosis). To assess medication changes over time, each period was compared to 15-30 days prior to diagnosis ("baseline period"). Prevalence ratios (PRs) with the baseline period as a reference were used to summarize relative changes over time. Results: We identified 4,697 residents with an HZ diagnosis (mean age=77 years; 69.5% female). Acetaminophen (20.9%), acetylsalicylic acid (13.9%), and gabapentin (13.4%) were the most prevalent medications administered during the baseline period. Antivirals showed the largest relative and absolute increases in administrations up to and following the HZ diagnosis date, peaking at 0-7 days after diagnosis (acyclovir: baseline=0.7%, 0-7 days after=28.1%, PR=40.1; valacyclovir: baseline=0.5%, 0-7 days after=23.7%, PR=44.7). Hydrocortisone (baseline=1.5%, 0-7 days after=4.8%, PR=3.2), gabapentin (baseline=13.4%, 0-7 days after=31.3%, PR=2.3), and oxycodone (baseline=1.2%, 0-7 days after=2.6%, PR=2.2) also showed larger relative changes over time. Antivirals, gabapentinoids, and hydromorphone remained elevated compared to the baseline period in the 15-30 days following diagnosis (PR >1.5). Conclusions: We documented increases in antivirals, steroids, gabapentinoids, and opioid pain medication use before and several weeks following HZ diagnoses among nursing home residents. Evidence supporting the use of gabapentinoids and opioids for prolonged periods following diagnosis requires future study and risk-benefit evaluation.

68B*

fNIRS-based markers of cognitive improvements following a Nintendo Exergaming Intervention in Autistic Children – a Pilot Randomized Control Trial

J.-M. Tsai, J. Corey, S. Kathiravan, L. Alexander, A. Bhat

Abstract: Children with Autism Spectrum Disorder (ASD) often display co-occurring challenges with executive functioning (EF) and motor skill performance, which can influence their overall functioning. Movement

interventions such as exercise and play are known to improve EF in autistic children. Exergaming is an innovative method of promoting physical activity and multisystem development in children with developmental disabilities. However, we do not know the effects of novel exergaming tools such as Nintendo switch to promote EF skills in autistic children. In this RCT, we compared EF performance using a Flanker task and standard questionnaires between the Nintendo exergaming group (NE, n=15) and control group (CO, n=15, Mean age 12.6 ± 3.5y) using pre- and post- behavioral and fNIRS cortical activation patterns. During the Flanker task, compared to the pretest, the NE group showed improved reaction times post-intervention. Compared to the pretest, the NE group reduced cortical activation post-intervention in both hemispheres. Compared to the pretest, older NE participants showed training-related reduction in cortical activation in right and left MFG, IFG, STS, and IPL post intervention, whereas younger participants reduced activation in right and left PCG and IPL only. Default mode network brain regions seem to capture changes in activation that are associated with improved Flanker task performance. We recommend Nintendo exergaming as a home/community-based intervention to facilitate enjoyable physical activity that has added benefits of improved EF.

70B

Title: From Muscle Mass to Movement: Exploring the Connection Between Appendicular Lean Soft Tissue Index and Walking Stability Control

Ahmed Alkaye, Nancy Nguyen, Carrie Earthman, and Jeremy Crenshaw

Abstract: Introduction: Older adults are at an increased risk of falls, and this risk is exacerbated by sarcopenia. Sarcopenia, a condition commonly seen in older adults, is the gradual deterioration of muscle mass and strength. Appendicular lean soft tissue index (ALSTI) is a measurement that quantifies lean muscle mass in the extremities and is used to detect sarcopenia. ALSTI is linked to decreased mobility and may influence how individuals maintain frontal plane stability while walking. In this study, we focused on two key walking stability mechanisms that may be influenced by ALSTI: foot placement and push-off. The purpose of this study is to determine the relationship between ALSTI and walking stability mechanisms. We anticipate that smaller ALSTI will be associated with decreased push-off mechanisms and increased foot placement mechanisms. Methods: Whole-body dual-energy X-ray absorptiometry scans were completed to determine ALSTI. Participants walked on a dual-belt, instrumented treadmill as force-plate data were recorded. Foot placement and push-off mechanisms were calculated using a novel force-plate only approach. Results: To date, three older adults (Age = 56-69 years, BMI = 23.8-33.3 kg/m 2)) without neuromuscular impairments participated in the study. ALSTI ranged from (6.35-8.43 kg/m 2), foot placement ranged from (0.09-0.12 m/s 2 2), and push-off ranged from (0.06-0.09 m/s 2).0.09). Conclusion: Data generated from this ongoing study will provide an understanding of how sarcopenia is linked to walking stability control in older adults. This understanding can guide hypotheses on how interventions that target improvements in ALSTI may also benefit walking stability control, further enhancing care in this population.

72B*

A Domain-Specific Approach to Characterizing Falls Efficacy Post-Stroke

Grace K. Kellaher, Ryan T. Pohlig, Darcy S. Reisman, and Jeremy R. Crenshaw

Abstract: Background: Post-stroke individuals have low falls efficacy. Addressing falls efficacy after a stroke is challenging because it's likely comprised of distinct balance domains. We sought to demonstrate that the construct of falls efficacy, as measured by the Activities-Specific Balance Confidence (ABC) scale, is comprised of distinct factors in individuals post-stroke. Methods: This study analyzed ABC scale data from 248 adults

enrolled in the UD Stroke Research Registry. We proposed that the ABC scale items can be categorized as anticipatory control, walking, or reactive balance. We assigned ABC Q1,2,8,10-12 to walking, Q3-7,9 to anticipatory control, and Q13-16 to reactive balance. A confirmatory factor analysis was conducted to define the three latent constructs of anticipatory control, walking, and reactive balance. Results: All indicators significantly loaded as hypothesized; Q1,2,8,10-12 on walking, Q3-7,9 on anticipatory control, and Q13-16 on reactive balance (p<0.05). The model showed adequate fit (RMSEA=0.118, CFI=0.846, TLI=0.818, SRMR=0.070). Modification indices suggested Q6 must be multidimensional and load onto both the anticipatory control and reactive balance latent constructs. This resulted in an improved model CFA (RMSEA=0.109, CFI=0.869, TLI=0.843, SRMR=0.064), suggesting Q6 scores on the ABC scale contain both constructs of anticipatory control and reactive balance. Conclusions: We confirmed the ABC scale consists of three latent factors that align with the balance domains. Since falls efficacy can be improved through skill mastery, the three domains identified within the ABC scale may be distinct targets of balance interventions. A domain-specific approach to measuring falls efficacy may be better at detecting the benefits of such interventions.

74B

Assessing Balance Control in Early-Stage Parkinson's Disease with Wearable IMU Technology

Taylor Boileau, Jae Woo Chung, PhD, Abigail E. Bower, MA; Roxana G. Burciu, PhD

Abstract: Balance deficits are common in Parkinson's disease (PD) and worsen with disease progression. Early detection of subtle impairments is essential, as traditional clinical assessments fail to capture early-stage balance dysfunction. The Modified Clinical Test of Sensory Interaction in Balance (mCTSIB) assesses balance control under various sensory conditions, offering a more sensitive measure. In this study, we used an instrumented version of the mCTSIB to objectively measure sway area in 37 individuals with PD and 36 older adults (OA). Balance was measured using a wearable IMU placed at the lumbar region. The groups did not differ significantly in age, sex distribution, cognitive status, or BMI. PD participants were tested after overnight withdrawal from anti-parkinsonian medication. Balance was assessed under four conditions manipulating eyes open versus closed and firm versus soft surface. Both groups demonstrated greater sway in the eyes closed - soft surface (ECSS) condition compared to the other three conditions, which showed comparable sway areas. While no significant group differences were observed, the PD group showed a trend toward greater sway in ECSS. Secondary analysis revealed that this trend was driven by the Postural Instability Gait Difficulty (PIGD) subtype, with the Tremor-Dominant (TD) subtype exhibiting sway similar to OA. Importantly, no significant differences in disease duration or severity between subtypes were found. The increased sway area in PIGD may reflect difficulties in sensory integration. Future studies should explore the underlying mechanisms driving the increased sway area in PIGD subtype, particularly examining the contributions of axial rigidity and potential cerebellar dysfunction.

76B

Diuretic Use is Associated with Fall Risk after Lower-Limb Loss: A Retrospective Analysis of Data from an Interdisciplinary Outpatient Clinic

Shahi AK; Stauffer SJ; Sarlo, FB; Horne JR; Sions JM

Abstract: Background More than 50% of adults with lower-limb loss (LLL) fall each year, with many falls resulting in injury. Among the general population, cardiovascular medications (e.g., beta blockers, calcium channel blockers [CCBs], diuretics, angiotensin-converting enzyme inhibitors [ACEi]) may increase fall risk due to adverse effects on blood pressure. Yet, medication use as a risk factor for falls after LLL has not been

investigated. Thus, this study examines relationships between cardiovascular medication use and recurrent fall risk in adults with LLL. Methods From 2013-2022, 108 adults with LLL and no history of heart attack or stroke (54.7 ± 13.0 years, 75% male) completed surveys, including medication use and one-year fall history. Between-group differences (i.e., recurrent falls defined as ≥2 falls versus ≤1 fall) were assessed. Associations between medications and recurrent falls were evaluated using logistic regression, after considering age, sex, amputation level, and time since amputation as covariates. Results Recurrent falls were reported by 31.5% of the LLL sample. Participants reporting recurrent falls more frequently reported diuretic use (p=0.015). Diuretic use was associated with 4.9x odds of reporting recurrent falls (95% Confidence Interval: 1.2, 19.8; p=0.024). There were no associations between use of beta blockers, CCBs, or ACEis and recurrent fall risk. Conclusion Recurrent falls are common with LLL. Diuretic use is associated with increased risk of recurrent falls after LLL, which is consistent with findings among older adults without LLL. Further research is warranted to elucidate the underlying mechanism(s) for the relationship between diuretic medication use and elevated fall risk after LLL.

78B

Examining the Relationship Between Specific Strength and Fatigability in Older Adults

Kathleen Downs, Millissa A. Murro, Jocelyn F. Hafer

Abstract: As we age, muscle quality decreases and we become more fatigable. However, whether muscle quality affects one's risk for fatigue is unknown. Preventative measures could be implemented if fatigability is dependent on muscle quality. The purpose of this study was to examine the relationship between muscle quality and fatigability in older adults. We hypothesized that those with greater muscle quality would have a smaller decrease in muscle power in response to activity and, therefore, be less fatigable. We recruited 16 older adults (61.75 ± 4.16 years, BMI 23.27 ± 2.12, 8 female) to complete muscle strength testing and muscle imaging via MRI. The largest cross-sectional areas (CSA) of the quadriceps and hamstrings were measured from transverse MRI scans in each participant, and maximal voluntary contractions (MVC) of each muscle group were collected to calculate specific strength (Specific strength= MVC/CSA). Muscle power was measured during 270°/second concentric knee extensor contractions before and after a 30-minute walking protocol and change in power was calculated (Δ=post-pre). There was no significant relationship found between specific strength and fatigability for the quadriceps (p=0.08, r=-0.45) or the hamstrings (p=0.89, r=-0.04), although the quadriceps result suggests that greater muscle quality may be related to greater fatigability. Muscle quality may not be the primary factor explaining fatigability in older adults. Other factors, such as muscle fiber type or physical activity level, may make a stronger contribution to fatigability than muscle quality. Future work should explore the influence of additional factors on fatigability in older adults.

80B

Nursing Students' Perceptions in Caring for Older Adults: A Literature Review

Sophia Theodoridis, Paige Beam, Pia Inguito, Ju Young Shin

Abstract: Introduction - The Future of Nursing 2020-2030 report emphasized the importance of equipping registered nurses with the knowledge and skills to care for the growing older adult population. However, little is known about nursing students' perceptions of caring for older adults. This study aimed to assess the nursing students' perceptions of caring for older adults, and how to improve the caring relationship between future nurses and the older adult population. Methods The search was conducted in PubMed and CINAHL using the phrase "nursing students' perception of caring for older adults." Inclusion criteria were a) peer-reviewed studies published between 2000 and January 2025, and b) the article was written in English.

Exclusion criteria were articles that did not discuss gerontology or nursing students' perceptions, and review articles. Results The initial search yielded 173 peer-reviewed articles and 13 studies were included in this review. Six studies were conducted in the U.S. Most studies utilized qualitative (n = 6) or mixed methods (n = 3). The key findings of these studies included a) nursing students' negative perception and feelings of unpreparedness for caring for older adults before clinical rotations, b) positive impacts of educational training on students' knowledge and perception of caring for older adults, and c) the lasting effect of the clinical environment and advisor in shaping the nursing students' perception of caring for older adults. Implications The findings of this review highlight the importance of educating nursing students about caring for older adults to prepare competent gerontological nurses.

84B

The Effects of Repetitive Head Impact and Physical Activity on Dual-Task Cognitive Performance

Isabella M. Rothwell, Abigail M. Fisher, Caitlin A. Gallo, Thomas A. Buckley

Abstract: Repetitive head impact (RHI) exposure has been linked to cognitive decline, but its impact on dynamic functional tasks, such as dual task (DT) remains unknown. PURPOSE: Examine cognitive performance differences between those with and without a history of RHI exposure. METHODS: 18 adults (age: 56.8±6.89 yrs, height: 171.4±9.2 cm, mass: 79.4±15.0 kg) were categorized into three groups: former contact sport athletes who participated in RHI sports (HRS, n=5), physically active former non-contact sport athletes (NCA, n=10), and non-physically active former non-contact or non-athletes (NON, n=3). Participants completed 5 walking trials under single-task (ST) and DT (motor and cognitive) conditions. The cognitive task was working memory (WM) (i.e., spelling 5-letter words backward, serial 7's, months in reverse). The dependent variables were cognitive accuracy (i.e., total attempted answers/total correct answers) and the number of total correct answers. DT cost (DTC) was calculated as ((DT-ST)/ST) x 100 for both cognitive dependent variables, with negative values indicating performance decline. Group differences were analyzed using one-way ANOVAs. RESULTS: No significant differences were observed between groups for both WM DTC outcomes ($p>0.05$). However, the NON (-0.28±8.8 %) group demonstrated the greatest (worst) DTC cognitive accuracy compared to HRS (4.1±12.9 %) and NCA (5.9±17.1 %) groups ($F =0.195$ $p = 0.825$). CONCLUSION: These preliminary findings suggest that a history of RHI exposure does not affect DTC cognitive performance. However, physical activity may mitigate age-related declines in cognitive function.

86B

Diuretic Use is Associated with Fall Risk after Lower-Limb Loss: A Retrospective Analysis of Data from an Interdisciplinary Outpatient Clinic

Shahi AK; Stauffer SJ; Sarlo, FB; Horne JR; Sions JM

Abstract: Background More than 50% of adults with lower-limb loss (LLL) fall each year, with many falls resulting in injury. Among the general population, cardiovascular medications (e.g., beta blockers, calcium channel blockers [CCBs], diuretics, angiotensin-converting enzyme inhibitors [ACEi]) may increase fall risk due to adverse effects on blood pressure. Yet, medication use as a risk factor for falls after LLL has not been investigated. Thus, this study examines relationships between cardiovascular medication use and recurrent fall risk in adults with LLL. Methods From 2013-2022, 108 adults with LLL and no history of heart attack or stroke (54.7 ± 13.0 years, 75% male) completed surveys, including medication use and one-year fall history. Between-group differences (i.e., recurrent falls defined as ≥2 falls versus ≤1 fall) were assessed. Associations between medications and recurrent falls were evaluated using logistic regression, after considering age, sex, amputation level, and time since amputation as covariates. Results Recurrent falls were reported by 31.5% of

the LLL sample. Participants reporting recurrent falls more frequently reported diuretic use (p=0.015). Diuretic use was associated with 4.9x odds of reporting recurrent falls (95% Confidence Interval: 1.2, 19.8; p=0.024). There were no associations between use of beta blockers, CCBs, or ACEis and recurrent fall risk. Conclusion Recurrent falls are common with LLL. Diuretic use is associated with increased risk of recurrent falls after LLL, which is consistent with findings among older adults without LLL. Further research is warranted to elucidate the underlying mechanism(s) for the relationship between diuretic medication use and elevated fall risk after LLL.

88B

Physical Activity Characteristics and Pain Severity in Older Adults with Arthritis: Examining Sleep Disturbances as a Moderator

Sanaz Taherzadeh, MS, RN . Ju Young Shin, PhD, APRN, ANP-C . Regina Wright, PhD . Shanshan Ding, PhD . Li-Qun Zhang, PhD . Xiaopeng Ji, PhD, RN

Abstract: Introduction: Arthritis affects 50% of older adults, causing chronic pain and functional limitations. While insufficient physical activity and sleep disturbances are linked to severe pain, the impact of their interaction on pain severity is unclear. This study examined the moderating effect of sleep disturbances on the relationship between physical activity characteristics and pain severity. Methods: This study utilized the 2016, 2018, and 2020 waves of the Health and Retirement Study dataset, including 5,304 older adults with arthritis (73.75±7.92 y. o.) who had complete data on self-reported physical activity, sleep disturbances, and pain severity. Mixed-effect ordered logistic models estimated the interactions, adjusting for age, gender, pain medication, perceived health status, neighborhood safety, poverty, and depression. Results: Among them, 5,210 older adults reported at least one sleep disturbance. Engaging in mild (OR = 0.67- 0.75, p's < 0.05), moderate (OR=0.61-0.68, p's <0.001), and vigorous (OR=0.58-0.68, p's <0.05) physical activity at any frequency (vs. none) was associated with lower odds of greater pain, while greater sleep disturbances were associated with increased pain severity (OR=1.13, p<0.001). Sleep disturbances significantly moderated the association between moderate-level physical activity and pain, with increasing sleep disturbances amplifying the negative association between reduced frequency in moderate physical activity (vs. daily) and odds of more severe pain (OR= 1.50-2.14, p's < 0.05). However, there was no interaction between mild/vigorous physical activity and sleep. Implications: The findings of this study may highlight the importance of addressing sleep disturbances and insufficient physical activity in arthritis pain management among older adults.

90B

Healthcare Providers' Roles in Preventing A Trajectory of Violence

Andrea Araya, Alexa Brown & Kathleen Brewer-Smyth, PhD, RN, MSN, CRRN, FAAN

Abstract: INTRODUCTION: Females represent 18-21% of violent crime arrests in the U.S., but little is known about female violence, particularly in relation to suicide and homicide risks. This secondary analysis examines risk factors for violent and suicidal behavior among female prison inmates in order to inform evidence-based prevention interventions. METHODS: The study analyzes data from private interviews and examinations with randomly selected female inmates, comparing those who have (n = 41) and have not (n = 92) attempted suicide; and those who committed a violent crime and/or attempted suicide (n = 84) to those who did not attempt suicide or commit a violent crime (n = 71). RESULTS: Bivariate logistic regression revealed that individuals who committed violent crimes or attempted suicide had higher frequencies of childhood physical and sexual abuse and greater healthcare access for abuse-related injuries. The number of abuse-related injuries leading to healthcare visits was the only significant variable when adjusted for other factors. Females

convicted of violent crimes had nearly three times as many suicide attempts. Childhood sexual abuse (CSA) was a key predictor of increased suicide attempts. Traumatic brain injuries (TBI) were also identified as a risk factor for both violent and suicidal behaviors. CONCLUSIONS: This study concludes that childhood abuse, particularly CSA and abuse-related injuries requiring healthcare, are significant risk factors for future violent crimes and suicide attempts. Identifying and addressing these issues in healthcare settings may present opportunities for violence prevention interventions targeting female survivors.

92B*

Mitochondrial CD36 Regulates Lipid Metabolism and Superoxide Production in Endothelial Cells Under Hyperglycemic and obesogenic Conditions

Bhaswati Kashyap, Thanh Nguyen, Emma Hudgins, Erica J Johnson, Ibra S Fancher*

Abstract: Diabetes is a chronic condition with high blood sugar, increasing the risk of cardiovascular events by 2 to 4 times. The vascular endothelium plays a crucial role in regulating vascular tone and maintaining vascular homeostasis. In diabetes, endothelial damage can occur through insulin resistance, hyperglycemia, and low-grade systemic inflammation, independent of other cardiovascular risk factors. The cluster of differentiation 36 (CD36), a fatty acid translocase, scavenger receptor, and glycoprotein, has been shown to be upregulated in obesity and in response to elevated glucose levels. Notably, CD36 has also been identified in mitochondria, suggesting a potential role in cellular respiration. However, the role of mitochondrial CD36 (mitoCD36) in endothelial cells' lipid metabolism has not yet been studied. To address this knowledge gap, we exposed human adipose microvascular endothelial cells (HAMECs) to elevated glucose (200mg/dl), fatty acids (FAs), or both simultaneously for 72 hours to mimic the conditions of obesity and hyperglycemia. Our data revealed that cells treated with glucose and FAs together exhibited significantly increased mitochondrial superoxide production compared to cells treated with glucose or FAs alone. Superoxide production was significantly reduced in glucose and FA-treated cells when CD36 was downregulated using siRNA. Furthermore, glucose significantly upregulated total-CD36 protein expression after 72 hours of treatment, however, this increase was not observed in membrane-localized CD36. Since membrane CD36 expression was not upregulated by glucose treatment, we next quantified CD36 expression in the pure mitochondria fraction isolated from HAMECs using TOM40-based magnetic cell sorting. CD36 expression was increased in the mitochondrial fraction of glucose-treated cells, which may result in alterations in mitochondrial respiration following sustained high glucose levels. These findings were further confirmed by colocalization of MitoTtracker and CD36. Our study suggests that mitochondrial CD36 plays a pivotal role in oxidative stress in endothelial cells exposed to sustained glucose levels in vitro. Future studies will explore the molecular mechanisms underlying the increase in mitochondrial CD36 expression in response to glucose and its effects on endothelial cell respiration during fatty acid exposure.

94B

Quantifying the Uptake of RNA Cargo from Nanocage-based RNA Exporters

P. Turner, A. Koppula, M. Batish, G. Davis

Abstract: RNA is the most dynamic molecule to maintain the intricate balance of gene expression regulation in the cells. Recent years have identified another critical role of RNA in intercellular communication. Several RNA species are identified to be selectively packaged into extracellular vesicles and released into the recipient cell to alter its gene expression. These findings have opened new avenues to engineer vesicles to selectively package RNA cargo, allowing us to achieve delivery from donor cells to recipient cells, providing many implications in therapeutic delivery of RNA as well as cell monitoring. Batish lab has been working in

developing engineered artificial vesicles called COURIER (Controlled Output and Uptake of RNA for Interrogation, Expression, and Regulation) system. COURIER is based on the cell-to-cell transportation of RNA, establishing a foundation for hybrid cell and gene therapies. This system delivers engineered exporter RNA cargo enclosed into extracellular vesicles known as nanocages that can be used to export the RNA, monitor its delivery, expression, and functional activity in recipient cells.

96B

Regulation of transcription factor MEF2C expression by circNFIX in spastic cerebral palsy

Brigette Romero, Parsa Hoque, Karyn G Robinson, Stephanie K Lee, Tanvi Sinha, Amaresh Panda, Vijay Parashar, Robert E Akins, M. Wade Shrader, and Mona Batish

Abstract: Spastic cerebral palsy (CP) accounts for more than 80% of CP cases and involves conditions such as muscle hypertonia, contracture, and musculoskeletal deformities that often worsen over time. CircRNAs are regulatory RNAs that play crucial roles in modulating gene expression through their ability to “sponge” regulatory microRNAs (miRNAs). Here, we used primary myoblasts (MBs), and myotubes (MTs) to explore the role of circNFIX in regulating the expression of MEF2C, a transcription factor that plays a critical role in muscle development and sarcomere formation. Under an IRB-approved protocol, MBs were obtained from surgical samples of skeletal muscle and subsequently differentiated into MTs. Isolated cells from study participants with CP (n=9) and non-CP controls (CN) (n=9). qRT-PCR analysis was performed to estimate the level of circNFIX, MEF2C, and MEF2C targets in MBs, MTs, and skeletal muscle tissue. Additionally, MEF2C protein expression was assessed in MBs and MTs by immunofluorescence. Bioinformatic analyses and luciferase assays were performed to identify miRNAs targeting MEF2C and regulated by circNFIX. We observed reduced circNFIX and MEF2C levels in CP MBs, MTs, skeletal muscle tissue compared to controls. The protein level of MEF2C was significantly decreased in both CP and KD MB cells, leading to a reduction in the level of downstream MEF2C targets. Bioinformatic analysis identified miR373-3p as a potential target of circNFIX. These findings support our hypothesis that circNFIX downregulates the translation of MEF2C protein by sponging of miR-373-3p. The regulatory circNFIX/MEF2C/miRNA373-3p axis could help explain the development of shortened and overstretched sarcomeres in CP.

98B

Effects of Circulating Endothelial Microvesicles on Cerebrovascular Inflammation in Chronic Kidney Disease

Vinicius P. Garcia, Danielle L. Kirkman, Auburn R. Berry, Samuel D. Ruzzene, Jared J Greiner, Christopher A. DeSouza, David G. Edwards

Abstract: INTRODUCTION: Chronic low-grade inflammation in chronic kidney disease (CKD) increases cardiovascular risk, including stroke. Circulating endothelial microvesicle (EMVs) represent a mechanistic factor to the increased risk of ischemic stroke by crossing the blood-brain-barrier and disrupting vascular function through inflammation and oxidative stress. AIMS: We determine whether circulating EMVs are elevated in adults with CKD and their effects on brain endothelial cell inflammation in vitro. METHODS: Ten adults were studied: five healthy adults (62±2 years; 4M/1F; eGFR: >60 ml·min−1·1.73m−2) and five adults with non-dialysis CKD (stage 3-4; 64±4 years; 4M/1F; eGFR:46 ± 5 ml·min−1·1.73m−2). Circulating EMVs (CD144+) were quantified and isolated from plasma by flow cytometry. Human cerebral microvascular endothelial cells (HCMECs) were cultured and treated with EMVs isolated from healthy or CKD adults. RESULTS: Circulating EMVs were ~30% higher in CKD (883±79 EMV/µL) compared with healthy (698±39 EMV/µL) adults. EMVs from adults with CKD induced significantly greater proinflammatory cytokine release from HCMECs. Interleukin (IL)-6 (276.1±5.8 vs.115.8±7.1 pg/mL) and IL-8 (2635.5±146.7 vs.

1351.9±44.7 pg/mL) release was ~150% higher in cells treated with EMVs from adults with CKD. Although total NF-κB p65 expression was not significantly different between groups (healthy: 220.9±10.8 AU vs CKD: 231.4±9.8 AU), CKD-related EMVs induced markedly higher (~95%) phosphorylated NF-κB p65 expression (88.6±8.3vs. 45.5±3.2 AU), indicating heightened NF-κB activity consistent with increased IL-6 and IL-8 production. CONCLUSION: Data indicate that circulating EMVs are elevated with CKD and induce a proinflammatory response in brain endothelial cells. EMVs may contribute to cerebrovascular inflammation and stroke risk in CKD.

100B

Atypical transcriptional regulation by a histidine kinase in S. aureus

Theresa Edery, Ahmed Abdelgawad, Sadik Shataer, Mona Batish, Vijay Parashar

Abstract: Introduction: Canonical two-component systems (TCSs) respond to environmental changes by regulating the transcriptional efficacy of target genes in bacteria. The KdpDE TCS senses salt stress and regulates potassium homeostasis and virulence in multiple bacteria. The histidine kinase, KdpD, of this TCS senses extracellular potassium levels and regulates the expression of the potassium ion-channel KdpFABC and virulence factors that aid in host invasion and antibiotic resistance in Staphylococcus aureus. In addition to canonical histidine kinase domains, KdpD harbors an atypical N-terminal region (NTR) whose function has not been well characterized. We hypothesize that KdpD-NTR interacts with RNA, and we analyzed whether it functions at the transcriptional or post-transcriptional levels. Methods: Utilizing the rifampicin assay, which uses an antibiotic to inhibit transcription by targeting DNA-dependent RNA polymerase, we analyzed changes in the levels of RNAs involved in the kdpFABC operon and virulence factors Aug, Spa, and HlgB in various strains of S. aureus deleted in the kdpDE operon and complemented with the kdpDE operon on a plasmid. Results: Our results show that upon salt stress, the KdpDE system increases the levels of the target RNAs largely independent of the canonical transcriptional regulation by TCSs. Using a KdpD mutant deficient in RNA binding, we demonstrated that RNA binding by KdpD significantly contributes to increased target RNA levels upon salt stress. Post-transcriptional RNA binding by KdpD may protect the RNAs from degradation by RNases. Conclusion: This newly identified post-transcriptional regulation by KdpD histidine kinases imparts stability to target RNAs, further enhancing the salt stress response in the cells.

104B

Necrotizing Fasciitis in Diabetic Patients: Current Global Status and Challenges in Diagnosis and Treatments

Anna Hernandez and Mona Batish

Abstract: Necrotizing fasciitis (NF) is a rare but devastating soft tissue infection characterized by rapid and progressive necrosis of the fascia and surrounding tissues. NF is associated with high morbidity and mortality rates, especially in diabetic patients, who face an increased risk due to immune dysfunction, poor circulation, and delayed wound healing. Given its rapid progression, early diagnosis is crucial yet challenging, as initial symptoms are often nonspecific, and standard diagnostic tools, such as the Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC) score, have limitations in diabetic populations. Despite advancements in diagnostic criteria, the reliability of tools like the LRINEC score in diabetic populations remains debated, emphasizing the need for a comprehensive evaluation of NF in this high-risk group. This study aims to systematically evaluate the epidemiology, clinical presentation, risk factors, diagnostic challenges, and treatment outcomes of NF in diabetic patients through a comprehensive systematic review and meta-analysis. A systematic literature review will be conducted following PRISMA guidelines, with a two-stage screening process and clearly defined inclusion and exclusion criteria. Relevant clinical data will be extracted, and

statistical analyses, including random-effects meta-analysis and subgroup analyses, will be performed to compare the presentation, diagnosis, and treatment outcomes of NF in diabetic versus non-diabetic patients. Findings will provide evidence-based recommendations to enhance diagnostic accuracy, refine treatment protocols, and ultimately improve survival and outcomes in the susceptible diabetic NF

106B

Swarming Motility is Controlled by DegU Oligomerization and DNA Bending

Richard Knappenberger, Vijay Parashar, Mona Batish

Abstract: Antimicrobial resistance is an escalating war playing out in hospitals worldwide that, without innovation, will result in countless lives lost. Our research engages in this battle by taking the unconventional angle of targeting bacterial behaviors that, while harmful, are not vital for survival. Specifically, we investigate swarming motility, a coordinated movement that allows bacteria to spread rapidly across surfaces using flagella. By untangling the complex regulatory web controlling flagellar expression, we seek to disrupt this advantage, weakening bacterial defenses and expanding our arsenal against antimicrobial resistance.
Our research focuses on Bacillus subtilis, where swarming motility is coordinated by the DNA-binding protein DegU and its activator SwrA. While these proteins are known to influence flagellar gene expression, the precise coordination in the protein-DNA complex remains unclear. We hypothesize that DegU and SwrA facilitate this gene regulation through oligomerization and DNA bending. To test this hypothesis, we employ a comprehensive array of techniques, including EMSAs, analytical ultracentrifugation, and in-vivo assays. Our findings suggest a molecular model in which DegU forms a hetero-hexamer with SwrA on DNA--the importance of which has been validated by mutations that disrupt DegU's oligomerization and the SwrA-DegU interface. From this groundwork, future investigations will delve deeper into SwrA's role in DegU oligomerization and how this complex interacts with RNA polymerase. Ultimately, this work seeks to understand the role of transcriptional activators on bacterial behaviors, but it also leaves a path for therapies that can redefine our fight against antimicrobial resistance before it spirals out of control.

108B

Exploring Retinoid Interactions with ABCA4's Extracytoplasmic Domain ECD2: A Computational Perspective

Jazzlyn S. Jones, Subhasis B. Biswas, and Esther E. Biswas-Fiss

Abstract: Purpose: ABCA4 is a retinal protein linked to inherited blinding disorders, including Stargardt disease. With over 4,000 identified variants, clinicians face challenges in assessing pathogenicity. ABCA4 facilitates retinoid clearance, a process involving its extracytoplasmic domains (ECDs), particularly ECD2—a 290-amino-acid loop structure. Prior studies revealed high-specificity interactions between ECD2 and all-trans-retinal (ATR), alongside conformational changes in the 1391–1400 subregion upon retinoid binding. This study investigates how variants within this subregion impact ABCA4 function using computational methods. Methods: Clinical variants in the ECD2 subregion were sourced from ClinVar. Pathogenicity predictions were generated using PolyPhen2, SIFT, and MutationTaster. Structural assessments, including steric clashes, surface alterations, and protein stability, were analyzed and visualized using PyMOL. Results: In silico analyses identified V1393I as the least detrimental variant, while P1395 variants were most damaging. G1398S and P1395L exhibited the highest steric clashes, with P1395L clashes appearing near the retinoid ligand site. E1399K showed significant surface alterations. Conclusions: This study highlights the utility of computational approaches in variant classification and provides mechanistic insights on the ECD2 domain. Identifying critical ECD2 motifs enhances understanding of ABCA4 function and informs clinical assessments of disease severity in ABCA4-related retinal dystrophies.

110B

Exploring ABCA4 Genetic Variants: Present Insights and Emerging Opportunities

Nadee N. J. Matarage Don, Subhasis B. Biswas and Esther E. Biswas

Abstract: The ABCA4 protein in photoreceptor cells plays a crucial role in exporting toxic retinoid byproducts and their recycling through the visual cycle. Structural and functional impairments of ABCA4, arising from genetic mutations in the ABCA4 gene, are associated with inherited blinding disorders, including Stargardt disease. The pathogenicity of 47% of missense variants in ABCA4 remains uncertain, classifying them as variants of uncertain significance (VUS). This uncertainty poses challenges for variant-specific therapeutic development and accurate disease risk prediction in affected individuals and their relatives. These missense variants are distributed across all domains of ABCA4, with some localized to uncharacterized regions of the extracellular domains (ECDs). This study aims to investigate the pathogenicity of ABCA4 variants located in uncharacterized regions of the extracellular domains (ECDs) through in silico and in vitro functional assessments. Initially, the VUS within unresolved regions with significant pathological tendency were identified using the ClinVar database. The pathogenic potential of these VUS was further evaluated using predictive software including PolyPhen-2, SIFT, and REVEL to select the best candidates for in vitro analysis. Subsequently, in vitro analyses was conducted to assess the enzymatic activity of selected variants, providing insights into their functional impact in a biological context. The identified VUS were expressed and purified in virus-like particles (VLPs) from insect cells employing baculovirus expression system. The retinal stimulated ATPase activity of the ABCA4-VUS was evaluated and compared to that of wild-type ABCA4. This study aims to unravel the pathophysiological significance of the VUS in the unresolved realms of ABCA4. K

112B*

Epidemiological Analysis Of High Risk And Low Risk Human Papilloma Viruses (Hpvs) In Africa, Asia And Other Parts Of The World.

Yaw Kobia Dwomor

Abstract: HPV related diseases cut across globally, with distinct variations across different regions, generally influenced by risk factors like access to quality healthcare, vaccines, and cultural practices. The study focused on assessing the distribution of HPV genotypes in women globally, and to make recommendations for public health measures and vaccines to target genotypes that are not covered by the existing vaccines for human papilloma virus prevention. METHODS AND RESULTS: Primary sources of literature, published from 2000 – 2024 and covering genotypes distribution in the selected countries, were taken from PubMed and Google scholar databases. Literature with distribution of genotypes 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, and 59, and low risk genotypes 6 and 11 were included in the study. Literature without distribution data on the mentioned high and low risk genotypes were excluded from the study. Descriptive analysis on the pooled prevalence was carried out. Overall, the topmost prevalent genotypes, in descending order, were 52 (17.03%), 16 (16.13%), 58, 51, 53, 18, 39, 56, 33, 31, with 52 being the most prevalent in the study. CONCLUSION: Current data on genotype prevalence exists, however, there still remains gaps on prevalent genotypes in some regions which do not have extensive vaccine coverage and has higher numbers of infections and cervical cancer burden, and such data can guide public health policies that can reduce the incidence of HPV infections.

114B

DNA Polymerase Family B Reveals Novel Viral Diversity and Reflects Infection Strategy

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Abstract: Introduction There are 10 30 bacteriophages (phages)—viruses that infect bacteria— in the world's oceans making them the most abundant biological entity on Earth. Phage maintain a singular central function of genome replication through lytic or temperate infection of their bacterial host, and the outcomes of phage infection significantly impact bacterial communities and nutrient cycling. The Viral Ecology and Informatics Laboratory uses phage replication proteins, such as DNA polymerases, as markers of bacteriophage lifestyle. DNA Polymerase B (PolB) exhibits potential as a viral marker gene given that it is evolutionarily ancient; important to viral biology; and is well represented in publicly available databases, diverse phage lineages, and across ecologically important groups such as cyanophage, which infect photosynthetic cyanobacteria. Methods This research project characterizes conserved domains and active sites in PolB and uses this knowledge to validate PolB in environmental samples. Putative PolB are retrieved from a collection of environmental viral genomes based on similarity to reference sequences and annotated domains relating to PolB. Conserved domains and motifs are identified based on literature review and multi-sequence alignments. Results Phylogenetic analysis reveals sequence motifs that may be predictive of particular protein subclasses and clades and uncovers viral diversity not observed in PolB-carrying bacterial hosts. Conclusion This data highlights the potential of DNA Polymerase B as a viral marker for bacteriophage lifestyle. Future research will explore the diversity and abundance of PolB-carrying viral populations and their impacts on host communities and ecosystems.

116B*

Characterizing Perceptions of Opioid Treatment Program Access Barriers During Disasters

Lilly Moreau, Palma Bauman, Joshua Hall, Shangjia Dong, Jennifer Horney,

Abstract: The U.S. declared the opioid crisis a public health emergency in 2017. That same year, the U.S. experienced a “historic year for climate and weather disasters” with a total of 16 billion-dollar disasters. In 2024, there were 27 billion-dollar weather and climate disasters. The concurrent emergencies of the opioid crisis and disasters highlight the barriers faced by people who use drugs (PWUD). Individuals with substance use disorders are considered more susceptible to effects of disasters, considering drug use and other health factors, housing, and socioeconomic status. To better understand disaster-associated barriers for PWUD, we conducted key informant interviews with advocates working with PWUDs, state government officials, community health workers, and opioid treatment program (OTP) leaders in Delaware. An interview guide was developed to assess the impact of disasters and emergencies on OTPs. Eleven interviews were completed using Zoom. Interview transcripts were hand coded to inductively identify themes relating to barriers in receiving opioid treatment during disasters. The four themes that were identified included stigma, communication barriers, challenges to secure housing and transportation, and issues regarding policies and practices of OTPs, for instance, insurance coverage. Each theme can inform the development of policies and practices to address gaps around disaster preparedness and response. Disasters disrupt OTPs, which operate in a highly regulated environment that prevent adaptive capacity. It is critical to include OTPs in program and policy adaptations in pre-disaster and preparedness planning.

118B

Nursing Climate Resources for Health Education (N-CRHE): Bridging the Gap Between Assessment and Action

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Abstract: Climate change is the greatest threat to health in the 21st century. Rapid environmental change is

further undermining health equity, social determinants of health, and environmental justice while compounding preexisting ill health, especially in pediatric populations. An agile nursing workforce is vital to protect patients from these climate-related health threats. At present, there is no easily accessible, standardized resource bank to accelerate the inclusion of climate change and health into nursing curricula. The Nursing-Climate Resources for Health Education (N-CRHE) was developed to tackle this challenge by: (1) creating evidence-based, peer-reviewed, and health-equity specific educational climate resources for nursing educators and learners which align with current planetary health frameworks, competencies and best-practices, (2) create evidence-based, continuing education opportunities specific to the field of nursing, (3) develop a repository of evidence-based, peer-reviewed Quality Improvement (QI) templates. Global teams of nurses created population-focused Learning Objectives (LO's) which were subsequently peer and expert reviewed. The Strategic Actions team created an N-CRHE template for case studies and slide decks. An initial case study, Pediatric Heat-Related Illness, was developed linking to the Nurses Planetary Health Report Card and GCCHE Competencies. The next phase of the project will focus on continued development of resources by global teams of nurses, students, and faculty. N-CRHE aims to be a hub of climate and planetary health-related resources designed to support and amplify work at all levels of nursing education and practice. Nurses can lead and be a driving force of sustainable change.

120B

Long working hours and cardiovascular health using Life's Essential 8 Metrics: Findings from the 2011-2018 National Health and Nutrition Examination Survey (NHANES)

Annaliese Peña, Fadzai Nicola Dube, James Wallace, Kareem Khairy, Jee Won Park

Abstract: Long working hours (≥55 hours/week) are increasingly common and represent a modifiable risk for cardiovascular health (CVH). This study explored the impact of long working hours on overall CVH, and assessing differences by sex and race/ethnicity, to provide insights into workplace-related CVH outcomes. We utilized data from National Health and Nutrition Examination Survey (NHANES) 2011-2018 with 6,580 participants (age ≥18 years). CVH was evaluated using the American Heart Association's Life's Essential 8. Adjusted multinomial logistic regression analyses for CVH (high/moderate/low) were performed as a function of working hours (35-40/41-48/49-54/55+ hours per week). We assessed for effect measure modification (EMM) by sex and race/ethnicity by including relevant product terms in the model. The adjusted ORs (95% CIs) for high and moderate versus poor CVH among participants with long working hours (55+ hours) compared to standard working hours (35-40 hours) were 0.82 (0.56-1.19) and 0.86 (0.63-1.17), respectively. The adjusted OR (95% CIs) for high versus poor CVH among males was 0.67 (0.40-1.12) and among females was 1.33(0.76-2.31). The corresponding estimates for non-Hispanic White, non-Hispanic Black/African-American, Hispanic/Latino, and Asian/Other participants were 1.06 (0.65-1.75), 0.63 (0.25-1.59), 0.41 (0.19-0.88), and 0.42 (0.16-1.09) respectively. Our findings indicated that long working hours were associated with poorer CVH, particularly among male and non-White participants. These results emphasize the need for targeted interventions to mitigate workplace-related risks to CVH. However, additional prospective studies are needed to establish the temporality of these associations and to capture the long-term effects of long working hours on CVH.

122B

Development of a Protocol for Extracting and Characterizing Microplastics in Infant Formula

Sanaz Pourreza, Mary Webb, Melissa M. Melough

Abstract: Microplastics, defined as plastic particles smaller than 5 mm, are ubiquitous in the environment,

leading to widespread human exposure. Concerns about health impacts of microplastics are growing, particularly during sensitive developmental stages such as infancy. However, research on dietary sources of microplastics, especially those relevant to infants, is lacking. This study aimed to develop a method for extracting and characterizing microplastics in commercially available infant formulas in the US. Powdered infant formula was mixed with 60˚C HPLC-grade water. Samples were digested using either 70 mL of 30% hydrogen peroxide (H_2O_2) or 10 mL of 70% nitric acid. After digesting in a 60°C water bath for at least 8 hours, samples were successively sieved through 200 µm and 125 µm stainless steel sieves to remove residue, then filtered using vacuum filtration through either cellulose ester or polycarbonate filter membranes. Recovered microplastics were analyzed using optical microscopy, scanning electron microscopy (SEM), and optical photothermal infrared spectroscopy (O-PTIR). Results from method blank samples, prepared as described above but without formula, confirmed adequate controls against contamination. Preliminary findings suggest that H_2O_2 yielded thorough digestion, while nitric acid left visible yellow residue, possibly indicating partially oxidized and undigested material. Polycarbonate filters provided a more uniform surface for imaging than cellulose filters. Optical microscopy facilitated the mapping of suspected particles, while SEM and O-PTIR enabled further characterization of microplastic size, morphology, and chemical structure. These preliminary findings contribute to improving a protocol for microplastic identification in infant formulas, with potential applications for other food items.

124B

Sociodemographic and Health Vulnerabilities Associated with Disaster Exposure: Insights from ECHO Cohort

Shazia Shaukat, Tarang Parekh, Jee Won Park, Melissa Melough, Jennifer Horney.

Abstract: Disasters disproportionately impact women, particularly those of childbearing age, by exacerbating existing health disparities and disrupting access to essential healthcare services. This cross-sectional study examines the sociodemographic and health vulnerabilities associated with disaster exposure among women using data from the Environmental influences on Child Health Outcomes (ECHO) Cohort. A total of 3,142 women were included, with 17.6% reporting lifetime disaster exposure. Sociodemographic differences were observed, with disaster-exposed women being older, more likely to be married or cohabiting, and having higher educational attainment compared to non-exposed women. Health disparities were evident, with disaster exposure associated with higher rates of diabetes, hypertension, and depression. The frequency of disaster exposure further exacerbated these vulnerabilities, with women exposed to multiple disasters exhibiting the highest prevalence of chronic conditions and mental health challenges. Notably, disparities in disaster exposure were observed across racial and ethnic groups, with White women being overrepresented among disaster-exposed individuals, while Hispanic women were underrepresented. These findings highlight the need for targeted disaster preparedness and response efforts that address the cumulative health burden of repeated disaster exposure. The study underscores the importance of integrating disaster exposure into maternal health policies and interventions to mitigate long-term health consequences for vulnerable populations. Future research should incorporate longitudinal designs to assess causal pathways and develop resilience-building strategies for at-risk groups.

126B

Evaluating Accessibility, Safety, and Usability of Delaware's Parks and Playgrounds for Individuals with Disabilities

Riley Pennington; Cole Bilbrough; India Dixon; Cora J. Firkin, BS; Iva Obrusnikova, PhD

Abstract: INTRODUCTION: This study assesses the accessibility, usability, and safety of parks and playgrounds in Delaware's three counties, identifying barriers that hinder physical activity (PA) among individuals with disabilities. Despite representing about 25% of the US population, these individuals are often underrepresented in research, policy, and infrastructure development. This lack of representation leads to significant health disparities and restricted participation in PA. By assessing public spaces critical for active living, this research aims to address these gaps and contribute to preventing chronic diseases. METHODS: Conducted from June to July 2024, this cross-sectional study assessed 50 parks using the Community Health Inclusion Index and the Playground Safety Report Card. Data collection was carried out by trained personnel, with inter-rater reliability and statistical validation ensuring the accuracy of the findings. RESULTS: Our findings highlight considerable accessibility deficits across Delaware parks. Major issues include a lack of accessible parking in 62% of parks and non-ADA compliant restrooms in 68%. Additionally, 38% of playgrounds lacked inclusive play equipment, and 64% of sites failed to provide ADA-compliant pathways. Only 22% of parks featured accessible fitness stations, underscoring significant infrastructural shortcomings that hinder accessibility and usability for individuals with disabilities. CONCLUSION: Significant improvements are required in the design and maintenance of Delaware's parks to better support individuals with disabilities. Enhanced park accessibility and usability are crucial for promoting inclusive PA and ensuring equitable recreation opportunities. This study advocates for urgent policy reforms and infrastructure development to meet ADA standards and foster a more inclusive society.

128B

Investigating how proprioceptive deficits affect bilateral arm capacity after stroke

Joanna E. Hoh, Darcy S. Reisman, Jennifer A. Semrau

Abstract: Hemiparesis, a common consequence of stroke, is known to significantly impact bilateral function, which is required for most daily activities. Proprioceptive deficits are also a common consequence, but the relationship between proprioception and bilateral arm function has not been explored. The purpose of this study was to investigate how proprioceptive deficits affect the relationship between clinical and robotic measures of bilateral arm capacity after stroke. We hypothesized 1) a positive relationship between clinical and robotic measures of bilateral arm capacity and 2) individuals with proprioceptive deficits will have reduced bilateral arm capacity. Participants with chronic, unilateral stroke were recruited cross-sectionally. Bilateral capacity was measured clinically using the Chedoke Arm and Hand Activity Inventory (CAHAI) and robotically using the Kinarm exoskeleton, where participants used both hands to hit falling objects away from the body in a virtual environment. In our current sample (N=33), 14 individuals had proprioceptive deficits. Preliminary results indicated a significant, positive relationship between clinical and robotic measures of bilateral arm capacity (=0.71, p<0.001). Additionally, individuals with proprioceptive deficits scored significantly lower than individuals without proprioceptive deficits on the CAHAI using a Mann-Whitney U test (p=0.02). However, there was no significant difference between groups on our robotic bilateral capacity measure. Overall, it is critical to assess bilateral function after stroke, as it closely relates to functional independence. Proprioceptive deficits may impact clinical bilateral arm capacity after stroke, and capturing upper limb proprioceptive deficits is an important aspect of clinical care as a contributor of overall arm function after stroke.

130B

Patellar Tendon Graft-Site Healing after ACLR using BPTB Autograft

Claudia Kacmarcik, PT, DPT , Karin Gravare Silbernagel, PT, ATC, PhD, FAPTA

Abstract: INTRODUCTION: Bone-patellar tendon-bone (BPTB) autograft is harvested from the central third of the patellar tendon. In current practice, return to activity milestones are determined based on performance metrics such as quadriceps strength, with less consideration for graft-site tendon recovery. PURPOSE: The purpose of this investigation was to assess changes in the central gap size and the proportion of healthy tissue within the surgical patellar tendon in 20 athletes (10F:10M, 24±7 y/o) at 1, 3-4, and 6-9 months after (ACLR) using BPTB autograft. METHODS: Patellar tendon cross-sectional area (CSA) was measured using ultrasound. CSAs of the overall tendon and the remaining medial and lateral portions were segmented using a MATLAB script, and residual gap-width was calculated at 25, 50, and 75% of tendon depth and reported as an average. Gap-width and proportion of "healthy" tissue, (%, [(medial+lateral)/ overallCSA]×100) were compared at the three timepoints using linear mixed models accounting for sex. RESULTS: There was a significant main effect of time for average gap-width (p<0.01), but not proportion of healthy tendon (p=0.11). There was no main effect of sex (p>0.30). Average gap-width increased from 1 (emmean[95% CI]: 3.37[3.00-3.74]mm) to 3 months (4.22[3.84-4.59]mm, p<0.01) and decreased from 3 to 6 months (2.94[2.56-3.31]mm, p<0.01). There was no difference between 1 and 6 months (p=0.24). Proportion of healthy tendon didn't differ significantly between any timepoints. CONCLUSIONS: Patellar tendon gap-width after BPTB autograft initially increases before decreasing by 6 months. As tendon structure relates to knee function, these changes should not be ignored.

132B

Sex-Specific Differences in Recurrent Fall Risk among Adults with Lower-Limb Amputation

Claire E. Vallery, CPO, MPO; Samantha J. Stauffer, CPO, MSPO; Frank B. Sarlo, MD; John R. Horne, CPO; J. Megan Sions, PT, DPT, PhD

Abstract: Introduction Females have reduced mobility following lower-limb amputation (LLA) and are 3 times more likely to experience fall-related injury than males. While sex has been studied as a potential risk factor for falls after LLA, sex-specific risk factors have not been identified. This study evaluated sex-specific factors associated with recurrent fall risk after LLA. Methods: Adults with unilateral LLA (n=158, 59.6±11.6 years, 69.6% male, 75.3% transtibial) completed surveys obtaining falls history, pain-locations, and balance-confidence per the Activities-Specific Balance Confidence Scale (ABC). Participants performed the 10-Meter Walk Test. Sex-specific differences were evaluated using independent sample t-tests and Mann-Whitney U tests, as appropriate. Forward stepwise logistic regressions were performed to identify factors associated with recurrent falls for each sex (p≤.05). Results Approximately 1/3 of males and 1/3 of females reported recurrent falls in the past year. After controlling for age, time since amputation, and amputation level, a 1% decrease in ABC score was associated with a 1.04x [95% Confidence Interval (CI): 1.01-1.08] greater odds of recurrent falls for females (p=0.14). For males, multisite pain presence was associated with a 4.51x (95% CI: 1.35-15.12) greater odds of recurrent falls (p=0.14). No other factors were associated with recurrent falls in either sex-specific model. Conclusion Factors associated with risk of recurrent falls after LLA are sex-specific, revealing novel treatment targets, i.e., multisite pain among males and balance-confidence among females, which may be addressed to reduce fall risk. Findings support consideration of sex when tailoring LLA prosthetic rehabilitation programs.

134B

Motion Capture And Shear Wave Tensiometry Assessments Of Achilles Tendon Loading Are Significantly Correlated

*Zahra McKee, Stephanie G. Cone, Karin Grävere Silbernagel, Elisa S. Arch

Abstract: Introduction: The Achilles tendon is prone to injuries like tendinopathy and tendon ruptures. For these injuries, managing the load experienced by the tendon is important for optimal recovery. Currently, estimates of tendon loading have primarily used motion capture (MC) but this method has some limitations. Shear wave tensiometry (SWT), an emerging technique, allows for direct measurement of the Achilles tendon. SWT centers around the idea that tendon shear wave speed (SWS) varies in proportion to the square root of tendon axial stress and therefore SWS can be used as a proxy for tendon load. This study aimed to compare Achilles tendon loading assessed with MC and SWT during a variety of relevant dynamic exercises. Methods: 5 healthy adults (2 M/3 F; 28.0± 2.92 yr; body mass index = 26.4 ± 4.80 kg·m−2) visited the lab so far. MC, force plate and SWT data were collected while participants performed several iterations each of nine activities: single/double leg standing heel raises, squats, trailing/leading evaluation leg lunges, single leg countermovement and forward jumps, and running and walking at their self-selected speed on a treadmill. Results: MC load estimate and SWS peaks ($p<0.001$, $\rho=0.55$), impulses ($p<0.001$, $\rho=0.62$), and peak rates of change ($p<0.001$, $\rho=0.83$) were significantly correlated (Figure 1), indicating these methods similarly represent tendon loading. Conclusion: Trends in peaks, impulses, and peak rates of change can be compared between these two measurement methods.

136B

Does Walking Efficiency Increase After Self-Exploration Of Walking With A Passive Dynamic Ankle-Foot Orthosis For Individuals Post-Stroke? A Pilot Study

Shay R. Pinhey, Darcy S. Reisman, Elisa S. Arch

Abstract: Passive-dynamic ankle-foot orthoses (PD-AFOs) have been shown to improve walking energetics for only some individuals post-stroke. To increase the likelihood that an individual's walking energetics improve with a PD-AFO, we need to better understand how individuals acclimate to a PD-AFO. Self-exploration protocols, which consist of guided walking alterations, have successfully helped healthy individuals converge on their most energetically efficient walking strategy. However, self-exploration with a PD-AFO has never been studied. This study, therefore, explored the effect of self-exploration on walking energetics in individuals post-stroke. Three participants with chronic stroke came in for a single visit. Participants were first fit to the PD-AFO then walked on an instrumented treadmill at their pre-exploration self-selected walking speed while motion capture data was recorded. Participants were then guided through three repetitions of a 5-minute self-exploration protocol over ground. Finally, they walked again on the treadmill for one minute at their post-exploration self-selected walking speed. The primary outcome variable, walking efficiency, was calculated as the ratio of walking speed to mechanical cost of walking. Two of the three participants improved walking efficiency after exploration. For those two participants, speed did not change after exploration, therefore their increased walking efficiency was the result of reduced cost of walking. These results demonstrate that self-exploration with a PD-AFO can be done successfully and may affect walking efficiency. Additional participants will provide insight into the efficacy of self-exploration as a PD-AFO acclimation strategy. Ultimately, better acclimation can increase the likelihood of individuals improving walking energetics with a PD-AFO.

138B*

Title: Body size parameters in allometric normalization of handgrip strength in adults with Parkinson's disease: Which parameter is the most appropriate?

Isabella P. Marques, Rebecca J. Daniels and Christopher A. Knight

Abstract: Introduction: Handgrip strength is a simple, informative proxy for overall strength, reflecting neuromuscular function that is affected by age and disease. One recent study explored the most appropriate

body size parameter for allometric normalization of handgrip strength in 643 community-dwelling adults aged 60 or older (Kasovic, 2023). Height, body mass, and fat-free mass were effective normalization parameters, with height being optimal (allometric exponent = 0.85). To appropriately scale grip strength in people with Parkinson's disease, and to reduce testing time in ongoing protocols, we sought to determine the best scaling parameter among multiple measures that we collect. Methods: Subjects included 53 PwPD (41 males, aged 68.6 ± 8.0 years, 5.0 ± 4.0 years since diagnosis, 1.74 ± 0.10 m tall, mass: 80.2 ± 14.3 kg, Hoehn and Yahr stage: 2.0 ± 0.5, levodopa equivalent daily dose: 535.9 ± 346.8 mg, and Movement Disorders Society-UPDRS Score: 34.5 ± 13.4). Grip strength (Jamar Plus+ Digital Hand Dynamometer) and body size (mass, height, forearm girth and length) were measured. Pearson's correlations assessed grip strength's association with these variables, including height^0.85. Results: Correlations with grip strength ranged from r=.325 (forearm length) to r=.660 (height^.85). Height (r=.659) and forearm girth (r=.637) were similarly strong predictors of grip strength. Discussion: Our results determined that height^.85 is a sufficient parameter for scaling. While exponential scaling of strength measures has not been universally adopted in health care or health sciences research, it is the mathematically correct way to account for the nonlinear relationship between body dimensions and strength.

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Relationships between the rate of torque development and tendon-aponeurosis complex stiffness in plantar flexors and knee extensors

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Abstract: Purpose: This study aimed to investigate the relationship between the rate of torque development (RTD) in the neural (early) and muscular (late) dependent time phases and tendon-aponeurosis mechanical properties at higher and lower exerted force intervals. Methods: Fourteen healthy men (age: 20.7 ± 2.0 years) participated in this study. RTD was measured during isometric explosive maximum voluntary contraction (MVC) of the plantar flexor and knee extensor muscles and was calculated as the slope of the time–torque curve at early (0–50 and 50–100 ms) and late (100–200 ms) time phases. Medial gastrocnemius and vastus lateralis tendon-aponeurosis mechanical properties were measured during isometric ramp contractions. Tendon-aponeurosis stiffness was calculated as the slope of the force-elongation curves at lower (25–45 and 30–70 %MVC) and higher (50–100 %MVC) exerted force intervals. Results: Early RTD was associated with tendon-aponeurosis stiffness at 25–45% and 30–70% MVC in plantar flexor and knee extensor ($r = 0.543–0.565$ and $r = 0.560–0.569$, respectively, $P < 0.05$). The late RTD displayed a significant relationship with tendon-aponeurosis stiffness at every force interval in the plantar flexor and knee extensor ($r = 0.549–0.581$ and $r = 0.626–0.642$, respectively, $P<0.05$) tendons. Conclusion: Greater tendon-aponeurosis stiffness at lower and higher force intervals was associated with a greater RTD in the early and late phases. This study suggests that training programs that enhance tendon-aponeurosis stiffness at lower and higher exerted force intervals may be effective in developing a rapid force production capacity.

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The Influence of Metabolic Risk Factors on Physical Activity during Midportion Achilles Tendinopathy Recovery

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Abstract: Introduction: Achilles tendinopathy (AT) affects individuals across the lifespan and across activity levels, with metabolic syndrome increasing the risk of AT. While physical activity is recommended to address modifiable metabolic risk factors (MRF), tendon load management is crucial in AT treatment. The purpose of this study was to assess the effect of MRFs on physical activity during recovery from AT. Methods: 149 participants were grouped based on MRFs present at baseline: no factors (Met0), one factor (Met1), two or more factors (Met2). MRFs included obesity, hypertension, self-reported diabetes, thyroid and rheumatologic comorbidity, and moderate/high cardiovascular disease risk. Physical Activity Scale (PAS) assessed self-reported physical activity. One-way ANOVA was used to compare prior PAS between groups, and generalized linear mixed models compared groups over time. Results: Prior to symptom onset, the Met2 group (n=47, 29F, 50±11yrs) had significantly lower PAS (3.9±1.4) than Met1 (n=47, 25F, 48±13yrs; PAS 5.0±1.2) and the Met0 group (n=59, 34F, 44±13yrs; PAS (5.3±1.0) (p's<0.001). There was no interaction effect of MRF group and time or main effect of time for PAS. There was a significant effect of group for PAS in which the Met2 group had significantly lower PAS than the Met1 and Met0 groups (p's<0.002) throughout treatment. Discussion: Individuals with AT and multiple MRF presented with less physical activity prior to and during treatment. However, the presence of multiple MRF did not affect physical activity recovery trajectory. There was no change in physical activity over the year and no group returned to pre-symptomatic levels.