statistical difference between fallers and non-fallers in either total step count or the percentage of time spent in sedentary or light PA. While previous reports suggest that many falls occur during light PA, our results do not suggest that greater volumes of low intensity activities alone results in greater fall incidence. However, we suggest this result may be influenced by physical stimuli participants received within the larger overall study design including a session of repeated exposure to forward loss of balance.

**TOTAL TRANSCRIPTOME RESPONSES TO LOW AND HIGHER INTENSITY AEROBIC EXERCISE INTERVENTIONS IN OLDER ADULTS**

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Aerobic exercise is a universally recommended strategy for increasing healthspan, and recent advances in next-generation sequencing and bioinformatics (e.g., RNA-seq/transcriptomics) have made it possible to broadly profile the molecular transducers of exercise. However, most transcriptome studies of exercise have focused on coding genes only, and the transcriptomic response to different exercise interventions has not been characterized by RNA-seq in older adults. Therefore, we performed total RNA-seq (to capture both coding and non-coding gene expression) on peripheral blood mononuclear cells collected from healthy, previously sedentary older adults (males and females, aged 70 ± 1 years). Samples were collected before and after 16 weeks of either low-intensity continuous training (LICT, 50% maximum heart rate, 3 x 30 min/week) or moderate-intensity continuous training plus interval training (MICT+IT, 60-80% maximum heart rate, progressively increased to include IT, 3 x 30 min/week). We found that both interventions modified biological processes (transcriptome modules) related to oxygen transport and reduced inflammatory signaling/immune activation processes (more pronounced with LICT). Interestingly, transcriptome changes unique to LICT subjects included increased expression of genes linked to vascularization and endothelial cell migration, whereas MICT+IT was uniquely associated with a robust increase in antioxidant response gene expression. We also observed numerous changes in long non-coding RNAs and microRNAs that could be linked with these exercise-associated gene expression changes with both interventions. These data provide a first comprehensive look into transcriptomic changes associated with moderate vs. low intensity aerobic exercise in older adults, and they suggest distinct benefits of each exercise strategy.

**TREADMILL TRAINING IMPROVES AEROBIC CAPACITY IN AGED MALE MICE COMPARED TO VOLUNTARY WHEEL RUNNING**

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Preclinical exercise studies typically use two forms of exercise training protocols: 1) voluntary wheel running and 2) forced treadmill running. Previous work from our group clearly demonstrates that older (18-month-old) male mice do not voluntarily engage in wheel running, especially compared to younger males or female mice. Therefore, we implemented a forced exercise treadmill training protocol to determine if treadmill training was superior to wheel running in improving aerobic capacity in older male mice.

**Purpose:** To determine if a 3-week treadmill training protocol improved time to exhaustion (TTE) in older male mice.

**Methods:** 18-month-old male mice (n=5) were provided a running wheel in their individual cage for 2 weeks or underwent daily treadmill training (n=6) for 3 weeks with increasing speed/incline. At the end of the training period we assessed TTE.

**Results:** Older male mice that trained on the treadmill demonstrated higher TTE compared to wheel (1382 ± 32 seconds versus 500 ± 99 seconds, respectively). In addition, older male mice that trained on the treadmill improved on average ~8% in their TTE test.

**Conclusion:** A 3-week treadmill training protocol improves aerobic capacity in older male mice to a greater extent than voluntary wheel running. Ongoing experiments will utilize this training protocol to understand age-related declines in cardiorespiratory fitness, circadian rhythm, and to test exercise as an intervention in the aging population.

**VALSARTAN AND SACUBITRIL COMBINATION TREATMENT ENHANCES COLLAGEN PRODUCTION IN OLDER ADULT HUMAN SKIN CELLS**

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Collagen is a major component of the skin’s support system, allowing for firmness, elasticity, and mechanical strength. In older adults, skin collagen production decreases significantly, and is associated with increased sagging, wrinkling, and thinning. The Renin Angiotensin System (RAS) is a key hormonal system that changes with age and affects multiple organ systems. While primary health benefits of Angiotensin (Ang) receptor type1 (AT1 R) blockers (ARBs) are believed to arise from systemic effects on blood pressure. There exists a skin-specific Renin Angiotensin System (RAS), but the impact of ARBs on older skin is unknown. Human skin fibroblasts from individuals aged 2 (young individual) and 57 (older individual) were treated with drugs that alter RAS: Valsartan (an ARB) and neprilysin inhibitor Sacubitril. Fibroblast proliferation and collagen production was quantified in response to the drug treatment using fluorescence microscopy. Fibroblasts from 57-year-old individuals were slower to proliferate and had less collagen content as compared to fibroblasts from young individual. Valsartan alone treatment had no effect on collagen production from young or old fibroblasts. In contrast, Sacubitril treatment increased collagen production by approximately three-fold in young (2.87 ± 0.27 RFU, P<.0001), and older (2.93 ± 0.53 RFU, P<.0001) fibroblasts. Concomitant treatment with Valsartan and Sacubitril increased collagen production by five-fold increase (5.36 ± 1.08 RFU, P<.0001) in young...