METHODS: In a counter-balanced, cross-over design, six older adults (4M, 2F; 67±2yr; BMI: 26.6±2.0 $kg \cdot m^{-2}$) completed an acute bout of high-intensity interval (HIIE; ten, 1-min intervals, 85-95% heart rate max, 1-min rest between intervals) and moderate intensity continuous cycling (MOD; 30-min, 60-65% VO_{2peak}), separated by ~1 week. Muscle biopsies (*vastus lateralis*) were obtained before exercise and 24h after each exercise bout. Immunofluorescence was used to identify myosin heavy chain (MHC), satellite cells, and capillaries.
RESULTS: A significant relationship between capillary density and satellite cell density (P=0.018; R2=0.789) was observed. Significant correlations were also found between satellite cell density and VO2peak (P<0.001; R2=0.99), capillary density and VO2peak (P=0.019; R^2=0.785), satellite cells/MHC I fiber and VO2peak (P=0.026; R2=0.750), and satellite cells/MHC II fiber and VO2peak (P=0.002; R2=0.93) at baseline. Total satellite cells/fiber and fiber type-specific satellite cells/fiber were unchanged in response to acute MOD or HIIE (P>0.05) and no differences were observed between exercise trials (P>0.05).
CONCLUSIONS: These data reveal positive relationships between capillaries and satellite cell density in skeletal muscle of older adults. Further, while no changes in satellite cell density were observed 24h following acute MOD or HIIE, our preliminary findings suggest an association between satellite cell density and VO2peak in older adults. Thus, future research is needed to examine whether these exercise strategies differentially impact changes in proliferation or differentiation of satellite cells in older adults, and to what extent capillary density may be related to chronic adaptations in satellite cell density and VO2peak.

---

308 Board #146 May 29 11:00 AM - 12:30 PM

Predicting Prevalence and Mortality in Female Mice Using The Mouse Frailty Phenotype

Dongmin Kwak[1], Cory W. Baumann[2], LaDora V. Thompson[1]. *[1]Boston University, Boston, MA. [2]University of Minnesota, Minneapolis, MN.*
Email: skk0831@gmail.com

(No relationships reported)

Frailty is a clinical syndrome associated with adverse health outcomes. Preclinical studies are important in the identification of the underlying mechanisms contributing to frailty. Interestingly, previous preclinical studies focused on male rodents with minimal attention to female rodents.
PURPOSE: The two purposes of this study were to identify the prevalence of frailty across the lifespan in female mice, and to determine if frailty status at a younger age predicts mortality.
METHODS: Female C57BL/6J (n=29) were used. Starting at 17 months of age, mice were assessed using a frailty phenotype that consisted of 5 criteria, including body weight, walking speed (Rotarod), strength (grip strength), endurance (treadmill) and physical activity (voluntary wheel running). Mice were tested every three months across their lifespan using the frailty phenotype. The designated cut-off points for each frailty criterion, using 20 months of age characteristics, were set using the top 20% for body weight and bottom 20% for the other 4 criteria. Mice with 3 or more positive frailty markers were identified as frail, mice with 2 markers were identified as pre-frail and mice with 1 or no positive marker were identified as non-frail.
RESULTS: The mean survival age was 28.1 months, with the first and last mouse dying at 21.1 and 34.3 months, respectively. Prevalence of frailty increased across the lifespan. At 17 months of age, there is evidence of pre-frail and frail mice. Frail mice steadily increased up to 66.7% at 32 months. Non-frail mice steadily decreased to 18.2% at 29 months. Beyond 29 months, no mouse was identified as non-frail. The percentage of pre-frail mice increased and peaked at 26 months (36.8%.) Following 29 months this percentage declined, with 18.2 and 33.3% of mice being identified as pre-frail at 29 and 32 months. Frail/pre-frail and non-frail mice had mean survival ages of 26.9 months and 29.0 months, respectively. Frailty status predicted mortality with the non-frail mice living longer than the frail/pre-frail mice (P=0.037).
CONCLUSIONS: Using a mouse frailty phenotype, we are able to identify that the prevalence of frailty in female mice increases across the lifespan. In addition to predicting mortality, this frailty phenotype has potential to yield information about underlying mechanisms contributing to frailty.

A-48 Free Communication/Poster - **Joint Health and Arthritis**

Wednesday, May 29, 2019, 7:30 AM - 12:30 PM
Room: CC-Hall WA2

---

309 Board #147 May 29 11:00 AM - 12:30 PM

Bone Health of Patients Diagnosed With Rheumatoid Arthritis

Sebastien Beauregard, Adriana De la Parra-Sólomon, Nathan Chiarlitti, Alexe Sirois, Susan Bartlett, Ross Andersen, FACSM. *Mcgill University, montreal, QC, Canada.*

(No relationships reported)

Rheumatoid arthritis (RA) is the most common type of chronic inflammatory disease in adults and often is associated with bone health problems. It is estimated that poor bone health may occur in in 50% of patients.
PURPOSE: First, to explore bone health among sedentary patients diagnosed with RA. Secondly, to explore the relationship among regional bone mineral density (BMD) with age, weight, and height.
METHOD: Twenty-one sedentary participants with diagnosed RA whose mean age was 39.43± 18.3yrs, height was 162.56± 7.452 cm, and weight averaged 66.67± 9.07 kg. Dual energy x-ray absorptiometry (DXA) was used to measure bone health. Linear regression was used to explore relationships among age, height, weight, and BMD in RA patients.
RESULTS: BMD of the FN and L1-L4 averaged 0,12± 1.29 SD and 0,38±1,57 SD, respectively. Mean Z-scores were 0,72± 1,43 for TB, 0.38± 1,57 for LV, and 0,12± 1,29 for the FN . In the FN region 25% of patients had Z-scores below -1 SD and 5% were below -2 SD. In the LS 20% has Z-scores below -1 SD and 45% were below 0 SD. Additionally, no significant relationships were observed among BMD, age, weight, and height.
CONCLUSION: These findings suggest that a great range of variability in bone health exists in RA patients. Furthermore, healthcare professionals should monitor bone health in the RA population and future interventions should explore the effects of tailored exercise programming to simulataneously improve bone health and well-being.

---

310 Board #148 May 29 11:00 AM - 12:30 PM

Cells Progenitors Potential In Cartilage: Changes From Moderate To Severe Oa

Marija Mazor[1], Annabelle Cesaro[1], Thomas M. Best, FACSM[2], Mazen Ali[1], Eric Lespessailles[3], Hechmi Toumi[3]. *[1]Orleans University, I3MTO, Orleans, France. [2]UHealth Sports Medicine Institute U of Miami, Coral Gables, FL 33146, USA., Miami, FL. [3]Orleans University, I3MTO, Service de Rhumatologie, Centre Hospitalier Régional d'Orléans, Orleans, France.* (Sponsor: Thomas Best, FACSM)
Email: mazor.marija@gmail.com

(No relationships reported)

Cells progenitors potential in Cartilage: Changes from moderate to severe OA
PURPOSE: Recent data suggests that osteoarthritic (OA) cartilage contains mesenchymal progenitor cells (MPC) with multi – differentiation potential. Yet, there is limited information concerning how their prevalence changes with disease stages. Herein, we explore presence, prevalence and differentiation potential of MPC cells isolated from different OA grades.
METHODS: Human osteoarthritic tibial plateaus were obtained from 25 patients undergoing total knee replacement. Each sample was classified as mild, moderate or severe OA according to OARSI scoring. The mRNA expression levels of CD105, CD166, Notch 1, Sox9, Acan, Col II A1 and Col I A1 were measured at day 0, day 14 (2 weeks in vitro) and day 35 (after chondrogenesis). At D35, the pellets matrix composition was tested on formation of proteoglycan, collagen II and I by HES and Immunofluorescence.