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### Reproducibility of Maximum ATP Production Following Isotonic versus Isometric Exercise<sup>†</sup>

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**OBJECTIVES/GOALS:** This project aimed to investigate differences between isometric and isotonic systems for low and high frequency contractions. Intracellular changes in pH caused by the rate of exercise differ in their effect on PCr. The project assessed the reproducibility between these exercise methods. **METHODS/STUDY POPULATION:** Four subjects were studied (2F/2M, avg. age 27 years). 31P-MRS spectra were measured in the vastus lateralis (VL) using a 3T MRI scanner using a 31P/1H surface coil. In the isometric studies, the (supine) subjects legs were supported by a wedge pad and restrained by straps over the hips and knee with a resistance strap over one ankle. In the isometric studies, the (prone) subjects legs were fit into machine designed to induce isometric exercise. There were 4 exercise bouts that differed by exercise type and frequency and, consequently, duration. 31P-MR spectra were acquired from a 25mm slab of leg positioned parasagittal along the VL. Analyses were done using jMRUI and R. **RESULTS/ANTICIPATED RESULTS:** With an increase in sample size, we expect differences between recovery time constants, tau, of PCr between the different exercise frequency groups alluded to by other studies investigating recovery rates in bicep skeletal muscle. From the preliminary data, we obtained large limits of agreement of tau = 0.053 s<sup>-1</sup> & tau = -0.074 s<sup>-1</sup> from using Bland-Altman analysis. As we increase our sample size, we anticipate that we will see differences of PCr recovery rates between the exercise types as well. **DISCUSSION/SIGNIFICANCE:** Current studies that investigate the differences in PCr recovery rates between different metabolic states differ in the exercise methods employed on subjects. This study aims to standardize PCr recovery assessment in the VL for more interpretable and applicable assessments of metabolic function.

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### Parenting Stress and Drinking to Cope Association with Early Childhood Risk Behaviors<sup>\*,†</sup>

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**OBJECTIVES/GOALS:** Parent stress and coping impacts reward and motivation circuits during child development which influence self-regulation. One well known maladaptive coping response is alcohol or drinking-to-cope (DTC). This study assessed differences in stress and child behaviors among DTC parents as compared to non-DTC parents. **METHODS/STUDY POPULATION:** Baseline data was used from parents of a 2-5-year-old who were screened for a larger study assessing a mindfulness-based parent stress reduction

intervention to improve healthy choices for themselves and their families. The sample included 172 parent-child dyads, mean parent age was 34.4 (6.1) years old, 56.3% white, mean child age was 3.6 (1.2) years old, 52.3% male. Subjective stress was assessed using the Perceived Stress Scale (PSS), parent-specific stress was assessed using the Parenting Stress Index (PSI), DTC was assessed using the COPE inventory, and child behaviors were assessed using the Devereux Early Childhood Assessment. To investigate the differences in stress and child behaviors between DTC parents and non-DTC parents independent samples t-tests were conducted. **RESULTS/ANTICIPATED RESULTS:** DTC was significantly correlated with PSS (r= 0.23, p<.01), PSI (r= 0.26, p<.01), child self-control (r= -0.16, p=.03), child attention problems (r= 0.22, p<.01), and total behavioral concerns (r= 0.16, p=.04). After excluding those who do not drink alcohol at all, we found significantly higher perceived stress among DTC parents (M= 27.83, SD= 9.79) compared to non-DTC parents (M= 23.79, SD= 8.40), t(80)= 2.02, p= .02. For children, we found significantly higher aggression scores for children of DTC parents (M= 47.16, SD= 31.69) compared to children of non-DTC parents (M=35.83, SD=25.72), t(84)= 1.83, p= .04. And greater attention problems among children of DTC parents (M= 73.97, SD= 26.77) compared to children of non-DTC parents (M= 56.71, SD= 34.09), t(84)=2.63, p=.01. **DISCUSSION/SIGNIFICANCE:** Stress and DTC may contribute to negative behaviors in children. An intervention designed to decrease stress and increase adaptive coping mechanism in parents could benefit health child socioemotional and behavioral development. Future analyses will examine third variable effects in the relationship between stress, coping, and child behaviors.

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### Adaptive Capacity and Preparedness of CTSA: The Environmental Scan Approach and Findings

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**OBJECTIVES/GOALS:** Illuminate processes and findings of the Environmental Scan of Adaptive Capacity and Preparedness of CTSA done by the CTSA Working Group. Share challenges, strategies, and lessons learned for CTSA to build Capacity to address clinical and translational barriers while responding to emergencies. **METHODS/STUDY POPULATION:** An Environmental Scan approach for searching, collecting, analyzing and using information from diverse sources regarding CTSA hubs experiences during emergency as related to research implementation, translation, support, adaptation, and preparedness: - Triangulating multiple data sources and mixed methods (e.g., literature review, document/RPPR analysis, and expert review); - Secondary analysis of the JCTS COVID-19 Survey of the CTSA: challenges, lessons learned, and practices that work in various program components/areas; - Using feedback of CTSA professionals from multiple disciplines to enhance our knowledge of emergency preparedness