

**RESULTS:** After the hypoxia period, cell viability rate was  $98\pm 9\%$ , without differing from the normoxia group ( $p>0.05$ ). However, after 8 or 4 h of reoxygenation, the viability rate was reduced to  $51\pm 10\%$  ( $p<0.01$ ) and  $74\pm 10\%$  ( $p<0.001$ ), respectively. In addition, the percentage of early apoptotic cells was 36% ( $p<0.001$ ) after 6 h of hypoxia/4 h of reoxygenation (H/R) as assessed by MTT assay. The viability rates in the same H/R protocol increased from  $74\pm 10\%$  to  $92\pm 10\%$  and  $80\pm 2\%$  in SM- and NSM-treated cells, respectively, without exhibiting differences with the normoxia group ( $p>0.05$ ). Interestingly, a significantly higher viability was observed only in the cells treated with the SM compared to the non-treated cells after H/R injury ( $p<0.05$ ). **CONCLUSIONS:** Our findings suggest that cardiomyocytes are susceptible to H/R-induced injury, while the cell death rate depends on the duration of reoxygenation. Moreover, cardiomyoblasts' secretome inhibits their apoptosis after H/R injury while their mechanical load "preconditioning" appears to boost the anti-apoptotic effects of their secretome, implying the beneficial paracrine action of cardiac muscle cells due to mechanical loading.

---

**2143** Board #62 May 28 3:00 PM - 4:30 PM

**EFFECT OF REGULAR EXERCISE ON EXPRESSION OF  $K_{ATP}$  CHANNELS IN HEART OF DIABETIC RATS**

Silvestre Cardiel-Gutiérrez, Sergio Márquez-Gamiño, Karla S. Vera-Delgado, Víctor H. Cordova-de los Santos, Fernando Sotelo-Barroso, Cipriana Caudillo-Cisneros, Elizabeth Sánchez-Duarte. *Universidad de Guanajuato, León, Mexico.*

(No relationships reported)

There is abundant evidence that ATP sensitive potassium ( $K_{ATP}$ ) channels play cytoprotective role in cardiac myocytes, allowing the cell to couple metabolic state to electrical activity of the cell membrane. In cardiac myocytes Kir6.2/SUR2A are the major subunits expressed. However, expression or function of  $K_{ATP}$  channels has been found to be impaired in the presence of persistent hyperglycemia in diabetes mellitus (DM). While regular exercise can improve hyperglycemic status in DM, its impact on the expression of  $K_{ATP}$  channels subunits in heart is unknown.

**PURPOSE:** To assess the effect of regular exercise on expression of  $K_{ATP}$  channel subunits in heart of streptozotocin-induced diabetic rats.

**METHODS:** Male Wistar rats (25 days old) were randomly divided into four groups, among them: sedentary control, trained control, sedentary diabetic, trained diabetic. Diabetes was induced by a single streptozotocin injection (100 mg/kg body weight), animals with fasting blood glucose levels  $\geq 300$  mg/dL were considered as diabetic. Groups with training program performed exercise on a treadmill (30 minutes daily, 5 days/week) for 8 weeks. At the end of the intervention, two subunits of cardiac  $K_{ATP}$  channel (SUR2A and Kir 6.2) were analyzed as indicators and quantitative analysis of these subunits was achieved with real-time RT-PCR.

**RESULTS:** In control conditions, the regular exercise reduced Kir6.2 subunit mRNA levels significantly (76%;  $p=0.045$ ) in heart. In diabetes, reduced Kir6.2 expression was also observed, and there was no difference in expression levels between sedentary diabetic and trained diabetic groups ( $P > 0.05$ ). Otherwise, relative mRNA expression of the subunit SUR2A was increased in both sedentary diabetic and trained diabetic groups (80.33% and 86.08%, respectively).

**CONCLUSION:** Collectively, our data demonstrate that the regular exercise modifies expression of  $K_{ATP}$  channel subunits of heart only in control conditions. However, the gene expression patterns of  $K_{ATP}$  channel subunits are different during diabetes, by increased SUR2A and decreased Kir6.2, which was not modified by exercise. These results may provide an opportunity to understand mechanisms leading to diabetic cardiomyopathy during stress and exercise in DM.

---

**D-62 Free Communication/Poster - Health Interventions in Youth**

Thursday, May 28, 2020, 2:00 PM - 4:30 PM

Room: CC-Exhibit Hall

---

**2144** Board #63 May 28 2:00 PM - 3:30 PM

**Parent-Child Obesity Program Causes Delayed But Significant Improvement In Body Composition Among At-Risk Youth**

Stephanie Ta, Cynthia Villalobos, Courtney D. Jensen, Gigi Lee, Tristan J. Kittinger, J. Mark VanNess. *University of the Pacific, Stockton, CA.*

Email: s\_ta2@u.pacific.edu

(No relationships reported)

More than 13 million U.S. children are obese; complications are expected to progress throughout adulthood, increasing the risk of premature mortality. Although proper nutrition and exercise provide short and long-term health benefits, translating this information to a community-setting has been largely ineffective. It is important to identify programmatic variables that demonstrate success in weight management.

**PURPOSE:** To observe the effect of a family-oriented exercise and nutritional intervention on body composition in overweight and obese children and adolescents.

**METHODS:** Twelve subjects (ages 7-16) were enrolled in a childhood obesity program upon referral by their primary care physician. Subjects engaged in 45 min of aerobic and flexibility training twice weekly for 18 weeks. Each exercise session was followed by 30 min of nutritional counseling. Body mass index (BMI), waist circumference (WC), hip circumference (HC), and body fat percent (BF%) were measured throughout the intervention. One-way repeated measures ANOVA determined anthropometric differences at baseline, midpoint, and at the end of the intervention.

**RESULTS:** Subjects were  $12.3\pm 2.4$  years old and 44.4% were obese, having a mean BMI of  $29.8\pm 4.5$  kg/m<sup>2</sup>, BF% of  $38.6\pm 6.8\%$ , HC of 99.85 cm, WC of 96.10 cm, and hip-to-waist ratio of 0.96. From baseline to follow-up, subjects decreased BMI by  $1.0$  kg/m<sup>2</sup> ( $p=0.011$ ), WC by 4.69 cm ( $p=0.031$ ), and hip-to-waist ratio by 0.05 ( $p=0.043$ ); the reduction in BF% failed to reach significance ( $p=0.060$ ). Repeated measures ANOVA identified reductions in bodyweight (1.09 kg;  $p<0.001$ ), WC (3.44 cm;  $p=0.049$ ), and hip-to-waist ratio (.05;  $p=0.037$ ) between weeks 9 and 18. Differences for the same measurements between weeks 1 and 9 were insignificant ( $p>0.05$ ).

**CONCLUSION:** Despite our small sample, a combined exercise and nutritional counseling intervention improved anthropometric profiles of obese and overweight children and adolescents over the course of 18 weeks. The greatest improvements took place after 9 weeks, indicating the importance of perseverance when seeking body composition improvement in this demographic.

---

**2145** Board #64 May 28 2:00 PM - 3:30 PM

**Influence Of Sports Games On Children'S Coordination Ability And Lower Limb Muscle Strength**

Ye Zhang, Boqian Sun. *Qijing Normal University, Qijing, China.*

Email: zhangye5337@126.com

(No relationships reported)

**PURPOSE:** to explore the influence of the developed sports game intervention programs on children's physical coordination and lower limb strength, and to compare the effects of routine gymnastics and sports game intervention, so as to better develop children's physical coordination and lower limb strength, and provide effective intervention programs in line with the characteristics of children's physical and mental development.

**METHODS:** 48 children aged 4-5 were selected and randomly divided into two groups based on teaching classes - sports game group and gymnastics group - each with 24 children. The developed sports game programs were adopted to intervene children of the sports game group. The intervention period was 4 weeks, 3 times a week, 30 minutes each time. In the same intervention cycle and intervention time, children in the gymnastics group did basic gymnastics.

**RESULTS:** repeated measures of variance were analysed to compare the changes of children's physical coordination and lower limb strength in different groups before and after the intervention. The results showed that both the children in the sports game group and the gymnastics group took less time in the continuous jumping test after the intervention than before the