*Palm Cooling’s Impact on Blood Lactate Responses Incurred Through Resistive Exercise Workouts.

Rachel Perry¹, Lacey Erickson¹, Roman Edwards¹, Amanda Barbosa¹, Rachel Giebel¹, Lexis Learmonth¹, William Potter², John Caruso¹

¹: Exercise & Sports Science Program, The University of Tulsa. ²: Department of Chemistry & Biochemistry, The University of Tulsa.

Pyruvate kinase, a glycolytic enzyme, may be inhibited at higher internal body temperatures such as those achieved with exercise, to elicit lower blood lactate concentrations ([BLₐ⁻]). To test this hypothesis subjects (n = 33) performed three four-set leg press workouts while one of three treatments was administered: no palm cooling (NO PC), palm cooling between sets (PC BTN), or palm cooling between sets and for 20 minutes post-exercise (PC BTN & POST). Workouts with the PC BTN or PC BTN & POST treatment saw subjects submerge their left hand in a 15°C water bath for 100 seconds between sets. [BLₐ⁻] were measured before each workout, and at 0-, 5-, 10-, 15-, and 20-minutes post-exercise. Under aseptic conditions, each measurement entailed collection of a fingertip blood drop that was immediately placed in a calibrated analyzer (Accutrend; Hawthorne, NY). [BLₐ⁻] were compared with a 3 (treatment) x 6 (time) ANOVAs, with repeated measures for treatment and time. A simple effects analysis was our post-hoc and α = 0.05 denoted significance. The result of our [BLₐ⁻] data analysis was a treatment x time interaction. Our post hoc revealed NO PC produced a significantly higher [BLₐ⁻] than the PC BTN or PC BTN & POST treatment at 0-POST, contrary to our proposed hypothesis. It was concluded palm cooling hastens the removal of lactate from the bloodstream, resulting in significantly lower [BLₐ⁻] at 0-minutes post-exercise, versus workouts that did not involve a palm cooling treatment.
*Palm Cooling’s Impact On Skin Temperature Values Incurred From Resistive Exercise Workouts.

Lacey Erickson¹, Rachel Perry¹, Roman Edwards¹, Amanda Barbosa¹, Rachel Giebel¹, Lexis Learmonth¹, William Potter², John Caruso¹

¹: Exercise & Sports Science Program, The University of Tulsa. ²: Department of Chemistry & Biochemistry, The University of Tulsa.

We assessed palm cooling’s impact on skin temperature values incurred through resistive exercise. Subjects (n = 35) performed three four-set leg press workouts while one of three treatments was administered: no palm cooling (NO PC), palm cooling between sets (PC BTN), or palm cooling between sets and for 20 minutes post-exercise (PC BTN & POST). Thermomistors (Bio-Medical Instruments, Warren, MI) were applied to their right forearm, right thigh and the left hand’s palmar surface. Temperatures were recorded before workouts, after a warm-up, following the first three leg press sets, and every fifth minute post-exercise. Workouts with the PC BTN or PC BTN & POST treatment saw subjects submerge their left hand in a 15°C water bath for 100 seconds between sets. Temperatures were compared with a 3 (treatment) x 10 (time) ANOVAs, with repeated measures for treatment and time. A simple effects analysis was our post-hoc and α = 0.05 denoted significance. Right thigh and right forearm results each included a time main effect. In contrast left hand skin temperature results included a treatment x time interaction. Post-hoc results showed NO PC, PC BTN > PC BTN & POST at 5-, 10-, 15- and 20-minutes post-exercise. A “high responder” subset that produced warmer (≥ 40°C) hand temperatures had their data scrutinized with an additional ANOVA that again produced a two-way interaction with PC BTN > NO PC > PC BTN & POST at 5-, 10-, 15- and 20-minutes post-exercise. It was concluded hand blood flow was improved by the intermittent nature of cold application seen with the PC BTN treatment, and counteracted the vasoconstriction from palm cooling to elicit cold-induced vasodilation. This appears to be particularly true of our high responders, as they may possess more anastomoses, which are blood vessels believed to expedite body heat transfer.

*Do Active People Have Different Perceived Stress Than Inactive People

Tori Mandrell, Kayla Smith, and Alvin Aldaz

University of Central Oklahoma

Among college students, perceived stress levels are high and physical activity rates continue to decline. The purpose of the study is to determine whether active college students have different perceived stress levels than inactive college students. The subjects were a convenience sample of college students, 18 years and older. Participants were asked if they met American College of Sports Medicine (ACSM) guidelines and divided into active and inactive groups based on their response. The Perceived Stress Scale (PSS) was used to assess perceptions of stress. The Perceived Stress Scale. An independent t test was used to examine differences between the groups. The results indicated that the inactive group had a mean PSS of 19.14 (SD4.06)where as active group had a mean PSS of 13.38 (SD 4.73). This difference is significant (t = 2.92, p = .007). We concluded that inactive college students have significantly higher levels of perceived stress than active college students. These results can be used by college health professionals to target inactive students for both stress reduction and physical activity promotion programs.
The Quality of School Wellness Policies, Sociodemographic Variables, and School-based Physical Activity

Jessica Berg; Kristin Zwerneman; Kevin Fink, PhD; Deana Hildebrand, PhD, SNS, LD; Nancy Betts, PhD, RD; Christi Erwin, MS

Oklahoma State University

Federal laws requiring schools to develop local wellness policies have the potential to prevent childhood obesity by improving school nutrition and physical activity (PA) environments. School environments are of great importance because of the significant amount of time children spend at these institutions (Story, Nanney, & Schwartz, 2009). This study reviewed wellness policy language for 176 school districts in Oklahoma using the Wellness School Assessment Tool (WellSAT) and examined various district sociodemographic characteristics (Yale Rudd Center, 2013). Comparisons were examined between (1) policy compliance in conjunction with these mandated acts; and (2) the strength of the policy’s wording related to physical education and activity. Independent-samples t-tests, ANOVA, and Mann-Whitney U tests were run to compare physical education and activity wellness policy scores with academic status, free and reduced price meal eligibility, and geographic location. Most school districts (77.3%) addressed an advisory committee and most districts (69.3%) met or went above time per week spent in school-based PA for elementary school students, as required by Oklahoma legislation. Many of the seventeen physical activity policy elements on the WellSAT were not mentioned; as suggested by low overall mean physical education and activity comprehensiveness and strength scores of 24.47% and 12.29%, respectively. Contrasting previous wellness policy research, there were no statistically significant differences in policy scores and free and reduced price meal eligibility, or geographic location. Marginal significance was found among academic status and mean physical education and activity comprehensiveness and strength scores ($p = 0.066$). Although PA is of utmost importance in decreasing childhood obesity, lack of strong wording and policy comprehensiveness suggest that this area is often overlooked in school wellness policy development. Local and state policy makers may have an opportunity to improve school environments by developing stricter minimum physical activity and physical education statements and using stronger language for policy goals.

The Effects of a Competitive Season on Aerobic Fitness in Male Intercollegiate Soccer Player

Nathan Billings, Ahmet Ozturk, Mark Giese

Northeastern State University

The purpose of this study was to determine to what extent a competitive college level soccer season affects the aerobic fitness levels in intercollegiate soccer players. Previous studies indicate that a competitive soccer season has positive effects on the personal fitness levels of players. The objective of this research is to define the effect a college soccer season has on players by determining if their aerobic fitness levels improved, worsened, or stayed the same from the beginning of the season to the end of the season. To accomplish this, a widely used fitness test was conducted in which 16 players were instructed to run two miles as quickly as possible. The players were tested first at the end of pre-season and again at the end of the season. The results were compared in order to determine what effect (if any) the season had on the players’ fitness levels. In this study, the overall average time actually increased from a test one average of 12.2519 minutes to a test two average of 12.8038 minutes with a t score of -2.336 where $p<0.05$. This illustrated a decrease in aerobic fitness.
Body Mass Index (BMI) and Waist Circumference

Olivia Curtis, Brett Dickson, & Mark Darter

University of Central Oklahoma

BMI is traditionally used to determine the health of an individual. It is possible that individuals may be misclassified based on BMI, but there may be a lower chance of classification error with waist circumference. The purpose of this study is to determine if there is a positive correlation between measured BMI and waist circumference in college students. Participants in this study are University of Central Oklahoma students ages 18 and older. Height and weight were measured to the nearest half pound. BMI was recorded using a Bioelectrical Impedance Analyzer and waist circumference was measured at the umbilicus using a standard flexible tape with a tensometer to the nearest half inch. We expect our results to have no correlation between measured waist circumference and BMI.

Are you Mannequin Material?

Cynthia Fierro, B.S., Vanessa Fiaud, Ph.D

West Texas A&M University

The aims of this study were to investigate and compare the anthropometric measurements and the body types of mannequins to actual males and females in the literature found. A total of 4 male and 4 female mannequins were selected from a city in the southern United States; based on complete body figure. The subject underwent measurements of shoulder diameter, height, bust, waist, hip, biceps, thigh, and calf girths. Additionally, waist to hip ratio and bust to hip ratios were also calculated to look at the characteristics of body type. In conclusion, it was observed that there were differences between male and female mannequins, minimal differences between female mannequins, and slightly more variation between male mannequins than female. Results between female mannequins and actual females were substantially different with mannequins being unrealistically smaller. Differences in male mannequins and actual males were less and more realistic than female. Furthermore, there has been little research on this particular association, but these findings serve as a basis for future investigation along with more in depth topic and related topics of this nature.
Foot Strike Patterns and Injuries Among Distance Cross-Country Runners

Evan Fike
University of Central Oklahoma

Foot strike patterns are highly associated with injury rates in the lower body among runners (Daoud, et al. 2012). Running with a forefoot strike reduces the load on one’s legs when compared to heel striking (Shih, et al. 2012). The purpose of this study is to examine injury rates and injury type based on foot strike patterns of cross-country runners. Based on literature, the researcher hypothesizes that runners with heel strike patterns will have a greater likelihood of stress fracture, while runners with fore foot strike patterns will be more likely to experience Achilles tendonitis. There is a lack of literature when researching tibia stress fracture and its relation to heel strike. There is research concerning rates of injury for different foot strikes; however, there is no research thus far for specific injuries to foot strikes. Research in this area could help provide clues for lowering the high persistent of running injuries. Distance running causes higher rates of running related injuries, estimated to be about 30% to 75% per year although there are several different methods to study injuries in the realms of frequency and intensity of workouts and running (Daoud, et al. 2012). Hip pain, knee pain, tibial stress injuries and plantar fasciitis have all been attributed to heel strike running patterns. Injuries related to fore foot strike are Achilles tendon injury, foot pain, and stress fracture of the metatarsals (Daoud, et al 2012). Tibial stress fracture is one of the most common stress fractures of runners. Tibial stress fractures account for 35% to 49% of the injuries in runners (Clansey, et al 2012). Foot strike has also been shown to be an important factor when considering running in shoes or barefoot. Running with a forefoot strike reduces the load on one’s legs when compared to heel striking (Shih, et al. 2012). Fatigue has also been looked at regarding foot strike. In a marathon, rear foot striking was more common at the 32km point than 10 km point during a marathon. This might be due to load and pressure on the ankles and lower leg muscles are fatigued quicker using fore foot strike pattern (Larson, et al 2011). Participants will consist of 20 collegiate male and female cross-country athletes between the ages of 18 and 22 years old. Participants will log daily miles over the 15-week season. On their logs, participants will report any injuries that are diagnosed by an athletic trainer or physical therapist. Foot strikes data will be collected using the Tekscan F-scan sensors while running a lap on a track. The F-scan sensors can be placed in the runner’s shoes and records pressure during activities. For this test, the participant’s foot pressure will be recorded during running at the athlete’s preferred speed. Pressure data will be analyzed and used to group participants into two groups based on foot strike pattern (heel or fore). Foot strike pattern will be assessed at the beginning of the study prior to logging daily miles and injuries. The independent variable is foot strike group (heel or fore), while the dependent variable is injury. Injury will be grouped by type (stress fracture, Achilles tendonitis, other, and no injury). Descriptive statistics will be used to determine the frequency of injuries by type within each foot strike group. Because variables are categorical (foot strike pattern and injury), the Chi- squared test will be used to analyze differences between foot strike groups. Secondary analysis of logged miles by foot strike group and diagnosed injury will be conducted using descriptive statistics.
Lessons Learned: PhotoVoice as a Vehicle to Better Understanding the Inequity of Homelessness

Haleigh M. Larkin
University of Central Oklahoma

This poster will highlight lessons learned from PhotoVoice research with Oklahoma City metro participants who are homeless. PhotoVoice projects provide community members with cameras, enabling them to capture images pertaining to the social and built environment. Participants for this research were selected with assistance through a contact who is homeless as well as through partnership with the Curbside Chronicle, a non-profit organization devoted to working with people who are homeless. Purposive sampling was used, allowing researchers to gather names and contact information of participants from those in the community. After taking photographs, participants met with researchers to share their work and discuss the impacts of the environment on members of the metropolitan homeless population. This poster will share lessons learned from working with people who are homeless as well as preliminary research findings from this study. The poster will provide recommendations to better address health equity among people who are intermittently and chronically homeless in the metro.

Effect of Nintendo® Wii Fit™ Balance Games on Postural Control and Balance Among Adults with Down Syndrome

Michelle Miller
University of Central Oklahoma

Adults with Down syndrome may benefit from a balance training regimen; however, there are many barriers to exercise that inhibit participation in balance training. Utilizing a Nintendo Wii Fit gaming device may eliminate several barriers to exercise and promote participation in balance training. This study seeks to determine if implementing a Nintendo Wii balance exercise regimen will improve postural control and balance among adults with Down syndrome 18-30 years of age. Twenty adults with Down syndrome between the ages of 18 and 30 years old will be randomly split into an experimental and comparison group. The experimental group will participate in specific exercises utilizing the Nintendo Wii balance games and the comparison group will only use one of the non-balance games on the Nintendo Wii Fit. A Tekscan HR mat will be utilized to measure center of pressure medio/lateral and anterior/posterior measurements pre and post intervention. Balance will be measured by time (in seconds) the participant can stand on both legs, left leg only, and right leg only with and without eyes closed. Results will be analyzed using a 2 X 2 ANOVA for each dependent variable.
Physical Activity Guidelines and Overwhelming Anxiety of College Students
Shea N. Ware
University of Central Oklahoma

Physical activity is known to improve overall health as well as decrease stress and anxiety levels. The American College Health Association’s (ACHA) National College Health Assessment (NCHA) data were utilized to review a variety of physical and health patterns of college students. This project sought to examine patterns of physical activity and overwhelming anxiety among college students. In spring 2012, data from the ACHA-NCHA survey were collected from college students in Healthy Life Skills class at the University of Central Oklahoma. 722 participants were surveyed over various topics such physical activity and ever felt overwhelming anxiety. The data were analyzed by descriptive statistics, also using crosstabulation. Categories of felt overwhelming anxiety are: never, not in the last 12 months, in the last 2 weeks, in the last 30 days, in the last 12 months. The results showed that 52.5% of male and female college students do not meet physical activity guidelines. Thirty-six percent of males and females met the guidelines and have never felt overwhelming anxiety, whereas 32.6% did not meet the guidelines and have never felt overwhelming anxiety. Fifty-six percent of participants reported not met physical activity guidelines and have felt overwhelming anxiety in the last 2 weeks, in the last 30 days, or in the last 12 months, whereas 46.2% reported met the guidelines and have felt overwhelming anxiety in the last 2 weeks, in the last 30 days, or in the last 12 months. The findings of this research study showed students that met the physical activity guidelines were slightly less likely to have felt overwhelming anxiety. Recommendations for health educators might include educating students on the importance of physical activity as well as how to handle mental health such as, overwhelming anxiety, in a healthy and positive way; implementing mental health training for faculty and staff; starting a peer run mental health organization; or planning fun physical activity activities for students during midterm and final’s week. Future studies should look at college students as a whole, the triggers of overwhelming anxiety, and controlled studies.