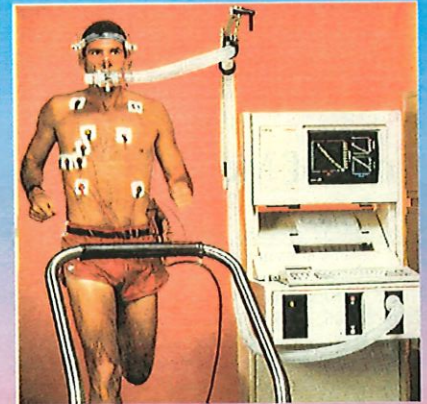
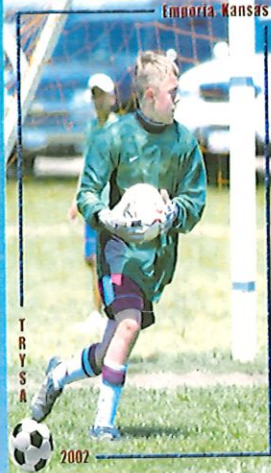




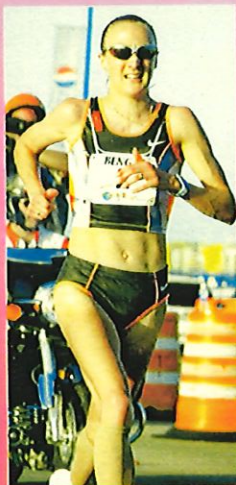
American College of Sports Medicine  
Central States Chapter  
Kansas City, October 10 & 11, 2003



Targeted theme  
youth and sports  
Mike Rogers, Ph.D.  
Ken Pitetti, Ph.D.

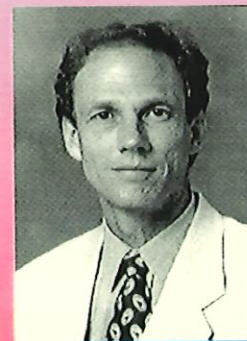


Whatever your exercise focus,  
the **Central States** meeting has  
something exciting for you!

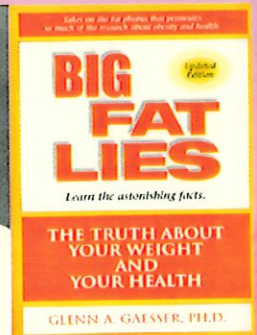


**Featured Speaker**  
Scientist and author:  
Dr. Glenn A. Gaesser,  
Univ. of Virginia  
**"Weight Loss for the  
Overweight and Obese:  
Panacea or Pound-Foolish"**  
**Symposium**

**"Exercise for Fitness, Health  
and Weight Management"**  
Chaired by: Dennis J.  
Jacobsen, Ph.D., FACSM  
**Student Awards, posters/  
free communications**



Glenn A. Gaesser, Ph.D., FACSM



**Gatorade Speaker**  
Dr. Edward F. Coyle  
*Endurance  
Physiology &  
Scientific Coaching*

New Event!  
**Musculoskeletal Workshop**  
*"The Shoulder; a link in the chain"*  
**George Sotiropoulos, M.D.**  
Assist. Prof. of Childrens Health and  
Head of Sports Med., Univ. of Missouri



**American College of Sports Medicine-  
Central States Chapter Annual Meeting**

Embassy Suites, Kansas City, Missouri

**Friday, October 10<sup>th</sup> through Saturday, October 11<sup>th</sup>, 2003**



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# American College of Sports Medicine- Central States Chapter Annual Meeting

Embassy Suites, Kansas City, Missouri

Friday, October 10<sup>th</sup> through Saturday, October 11<sup>th</sup>, 2003



## Friday, October 10<sup>th</sup>, 2003

7:30 – 8:30 a.m. Registration/Voting Begins

## Room

Lobby

### Morning Plenary Sessions

8:30 – 8:45	<b>David C. Poole, Ph.D., D.Sc., FACSM</b> Introductions and Announcements	Monterrey
8:45 – 9:15	<b>Mike Rogers, Ph.D.</b> <i>“A comparison of the Cardiovascular Fitness and BMI of Midwestern Youth to National and International Counterparts”</i>	Monterrey
9:15 – 9:20	<b>SYMPOSIUM (9:15-10:30): “Exercise for Fitness, Health, and Weight Management”</b> <b>Introduction: Dennis J. Jacobsen, Ph.D., FACSM</b>	Monterrey
9:20 – 9:40	<b>Speaker 1: Joseph E. Donnelly, Ed.D., FACSM</b> <i>“Is there a gender difference for how much exercise is required to lose weight?”</i>	Monterrey
9:40 – 10:00	<b>Speaker 2: Bryan K. Smith, Ph.D.</b> <i>“What do we know about resistance exercise for improving cardiovascular risk and assisting with weight management?”</i>	Monterrey
10:00 – 10:20	<b>Speaker 3: Dennis J. Jacobsen, Ph.D., FACSM</b> <i>“How much aerobic exercise is required for improving cardiovascular risk?”</i>	Monterrey
10:20-10:30	<b>Discussion: Dennis J. Jacobsen, Ph.D., Bryan K. Smith, Ph.D., Joseph E. Donnelly, Ed.D.</b>	Monterrey
10:30 – 10:45	Refreshment Break	La Paz

**Morning Divided Sessions**  
 Monterrey Room will be divided

**Exercise Physiology and Nutrition**

**Youth, Sports and Performance Enhancing Substances**

Room: Monterrey 1

Room: Monterrey 2 & 3

10:45 – 11:15	✓ <b>Debra Sullivan, Ph.D.</b> "Weighing in on weight loss diets: What works?"	10:45-11:35	<b>Lance Green, Ed.D.</b> "Youth Violence: Causes and Cures"
11:15 – 11:20	Discussion		
11:20 – 11:50	<b>Craig A. Harms, Ph.D.</b> "Exercise ventilation: can we improve it?"	11:35-12:25	<b>Christy Tharenos, M.D., MPH</b> "Performance Enhancing Substances and the Athlete"
11:50 – 11:55	Discussion	12:25 – 12:30	Discussion
11:55 – 12:25 p.m.	<b>Mark Langenfeld, Ph.D.</b> "Ultraendurance Exercise"		
12:25 – 12:30	Discussion		

**Lunch**

**Room**

12:30– 1:50 p.m.	Speaker: <b>Glenn A. Gaesser, Ph.D., FACSM</b> "Weight Loss for the Overweight and Obese: Panacea or Pound-Foolish"	Vera Cruz
1:50 – 1:55	<b>Honor Award Presentation-Drs. Michael G. Bemben and Debra A. Bemben</b>	Vera Cruz

**Student Research Sessions**

2:00 – 3:00	Speaker: <b>Edward F. Coyle, Ph.D., FACSM</b> "Endurance Exercise Physiology- Are School Children Receiving Scientific Coaching?"	Monterrey
3:00 – 3:15	Student Award Paper – Undergraduate/Masters <b>Vicki Bouckhout</b> "Does total body reciprocal training improve functional body symmetry in persons with hemiparesis?"	Monterrey
3:15 – 3:30	Student Award Paper – Doctoral <b>Michael Carper</b> "Effects of differing temperatures on muscle glycogen restoration in trained cyclists following moderate intensity exercise"	Monterrey
3:30 – 3:50	Refreshment Break	La Paz

3:50 – 4:00	<b>David C. Poole, Ph.D.,D.Sc., FACSM</b> Announcements, New Officers, Awards	Monterrey
4:00 – 4:45	<b>Robert Gregory, Ph.D.</b> <i>“Biomechanics of movement-related effort”</i>	Monterrey
4:45 – 6:30	Poster Session/ACSM Social	La Paz

**Saturday, October 11<sup>th</sup>, 2003**

8:00 – 8:45 a.m.	<b>Professional Business Meeting</b> <u>Monterey II</u>	8:00 – 8:45 a.m.	<b>Student Business Meeting</b> <u>Monterey III</u>
	<b><u>Musculoskeletal Workshop</u></b> <u>Monterey II</u>		<b><u>Work Site Planning/Health Promotion</u></b> <u>Monterey III</u>
9:00 – 10:00	<b>George Sotiropoulos, M.D.</b> <i>“The Shoulder; A Link in the Chain”</i>	9:00-10:00	<b>Jeremy Barnes, Ph.D</b> <i>“Current Trends in Health Promotion”</i>
10:00 - 10:15	Refreshment Break (outside Monterey rooms)	10:00 - 10:15	Refreshment Break (outside Monterey rooms)
Continued 10:15 – 12:15 p.m.	<b>George Sotiropoulos, M.D.</b> <i>“The Shoulder; A Link in the Chain”</i>	10:15-11:15	<b>Kristi Heesch, Dr. PH</b> <i>“Moving the Unmotivated: Getting the Couch Potato Physically Active”</i>
		11:15 – 12:15 p.m.	<b>Christine Moranetz, Ph.D.</b> <i>“Menopause and Health Risks Beyond the Media Hype”</i>

# NOTES

# NOTES

## 2003 CSCACSM Administrative Council Members

- President Rich Sabath, Childrens Mercy Hospital  
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- Missouri State Rep. Jeremy Barnes, Southeast Missouri State University  
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# **LEARNING OBJECTIVES**

## ***Intended Audience***

ACSM members, students and professionals interested in the field of sports medicine and exercise science.

## ***Learning Objectives***

At the conclusion of this activity, participants should be able to:

- Recognize contemporary controversial issues related to sports medicine, exercise science, and health promotion
- Identify new approaches to, and perspectives on, problems in exercise science and sports medicine through interaction among scientists and clinicians in related fields.
- Discuss the general anatomy, mechanisms of injury and rehabilitation of shoulder injuries.
- Identify current trends in obesity management.
- Recognize the importance of research in understanding problems related to physical inactivity.

## ***Statement of Need***

*A need for this annual program has been determined by CSC/ACSM Board Members as well as evaluations from previous annual meetings.*

## ***Joint Sponsorship***

*This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of the American College of Sports Medicine and the Central States Chapter. The American College of Sports Medicine is accredited by the ACCME to provide continuing medical education for physicians.*

*The American College of Sports Medicine designates this educational activity for a maximum of 2.0 category 1 credits toward the AMA Physician's Recognition Award. Each physician should claim only those credits that he/she actually spent in the activity.*

## ***CEC Credit***

*The American College of Sports Medicine's Professional Education Committee certifies that this Continuing Education offering meets the criteria for 8.0 credit hours of ACSM Continuing Education Credit. Individuals who wish to receive CEC's must complete an application form at the time of registration and pay a \$10.00 fee (\$15.00 for non-members).*

## ***Commercial Sponsors***

*The American College of Sports Medicine and the Central States Chapter gratefully acknowledge the educational grants provided by Gatorade Sports Science Institute, Hans Rudolph, Pharmacia/Pfizer*

# Doctoral Student Award Winner

Michael Carper  
University of Kansas  
Lawrence, Kansas

## **EFFECTS OF DIFFERING TEMPERATURES ON MUSCLE GLYCOGEN RESTORATION IN TRAINED CYCLISTS FOLLOWING MODERATE INTENSITY EXERCISE**

M.J. Carper, S.A. Whitman, S.R. Richmond, L.S. Acree, B.D. Olson, and M.P. Godard.

Applied Physiology Laboratory, University of Kansas, Lawrence, Kansas 66045

This is the first study, to our knowledge, to investigate the differences between males and females with regards to muscle glycogen (MG) utilization and restoration at differing temperatures. **PURPOSE:** The purpose of this investigation was to determine the effects of cycling exercise at differing ambient temperatures on MG restoration in trained female ( $n=4$ ) and male ( $n=4$ ) cyclists. **METHODS:** Female subjects were tested in the midfollicular phase of the menstrual cycle. They completed three testing sessions that were separated by at least 28 days, while the men completed three testing sessions that were separated by at least 7 days. Approximately 12 h prior to the depletion ride a resting muscle biopsy from the vastus lateralis was obtained followed by a 45 min ride at 70%  $VO_{2\text{ peak}}$ . Subjects reported to the laboratory the following morning in a 12 h fasted state and cycled for 90 min at 70%  $VO_{2\text{ peak}}$  at 21°, 35°, or 5°C. Immediately following the 90 min ride subjects performed 8 - 1-minute sprints at 125%  $VO_{2\text{ peak}}$ . Immediately- and 180 min post-exercise a second and third biopsy were obtained. Following the immediate post-ex muscle biopsy and at 60 min post-ex a carbohydrate drink (1.0 g/kg body mass) was consumed. Blood samples were drawn every 30 min during and following the depletion ride and analyzed for blood glucose (GLU). **RESULTS:** There was a significant difference in MG between groups at pre-depletion for the 21° trial (males vs. females:  $56.4 \pm 4.4$  vs.  $84.1 \pm 6.1$  mmol/kg wet wt). Within group differences were observed for MG from pre- to immediate post-ex (males and females, respectively); [(% decrease; 21°C: 65.8 and 62.4%; 35°C: 58.2 and 41.4%; 5°C: 77.2 and 62.8%)], from immediate post- to 180 min post-ex [(%increase; 21°C: 62.5 and 24.2%; 35°C: 54.9 and 9.8%; 5°C: 76.2 and 32.2%)] and, and from pre- to 180 min post-ex [(% decrease; 21°C: 8.8 and 50.4%; 35°C: 7.3 and 34.8%; 5°C: 4.1 and 45.2%)]. There were no between group differences for the depletion ride GLU concentrations, however there were within group differences observed during and for 180 min following the depletion ride. **CONCLUSION:** These results indicate that males and females utilize and restore comparable amounts of muscle glycogen during and following 90 min of exercise at 21°, 35°, and 5°C with no differences observed in exercising and recovery blood glucose concentrations.

Supported by: Gatorade Sports Science Institute

# Undergraduate/Master Student Award Winner

Vicki Bouckhout  
University of Kansas Medical Center  
Kansas City, Kansas

## **DOES TOTAL BODY RECIPROCAL TRAINING IMPROVE FUNCTIONAL BODY SYMMETRY IN PERSONS WITH HEMIPARESIS?**

V. Bouckhout, D.V. Gobert, S. Jernigan, I. Kapros, M. Santos, E. John, and A. Guillory.  
Balance & Mobility Research Laboratory, University of Kansas Medical Center, Kansas City, KS,  
66160; email: vbouckho@kumc.edu

**PURPOSE:** Persons who suffer from hemiparesis have impairments in both balance and gait due to difficulty in regaining symmetry of postural control and impeding reciprocal, coordinated movements of the limbs. Lesions in the CNS result in weakness on one side of the body with a bias towards the stronger side. There is decreased weight-bearing on the involved side and ultimately disruption of reciprocal movements necessary for balance and gait. This project was part of a larger study which correlated exercise involving the use of both lower and upper extremities in total body reciprocal training (TBRT) with changes in functional mobility, cardio-physiological adaptations, and changes in quality of life. The primary goal of this project was to investigate the effects of an 8-week program using TBRT on changes in body symmetry and reciprocal coordinated movements in persons with hemiparesis. **METHODS:** Twenty chronic stroke survivors 30 years old and older, who are at least six months post stroke, participated in an 8-week exercise program. The subjects were recruited from local stroke support groups, outpatient rehabilitation units and the surrounding Kansas City community. The exercise program consisted of 2-3x/ week, 30 - 45 minute sessions of aerobic exercise on a recumbent stepper. Variables of interests included. balance measurements of functional dynamic balance test protocols using the Smart EquiTest Balance Master: the Rhythmic Weight Shift (H & V), and the walk across. Clinical functional tests included the modified Timed Up & Go documenting both time and number of steps to complete twenty feet. A non-parametric Wilcoxon Signed Ranks Test analysis was used to compare pre- and post test results with an alpha level of 0.05. **RESULTS:** Computerized posturography tests such as the Walk Across demonstrated significant improved group mean values of 18.57 +/- 5.069 to 28.37 +/- 11.398 cm/sec (p=0.043) and a symmetry change from 15.00 % +/- 16.559 to 28.00 % +/- 19.419 (p= 0.043) indicating from a left bias to a more right bias during ambulation. The timed up and go test revealed significant improvements in velocity from 0.67 +/- 0.538 ft/sec to 0.81 +/- 0.681 ft/sec (p=0.015). **CONCLUSIONS:** The results from this project indicate that chronic stroke survivors can improve body symmetry for improved functional weight-bearing during activities such as ambulation in response to exercise incorporating total body reciprocal movements. This information will help improve current concepts for long term rehabilitation protocols for the stroke survivor.

Sponsored by: The American Stroke Foundation.

# POSTERS

## Poster 1

### **EFFECTS OF WARM-UP WITH BASEBALL BATS OF VARYING WEIGHT ON BAT VELOCITY AND SEGMENTAL MOVEMENT**

N.R. Harms and L. Noble, FACSM.

Department of Kinesiology, Kansas State University, Manhattan, KS, 66502;  
email: nolanh25@hotmail.com

Swinging warm-up bats of varying weights in the on-deck circle is common among baseball players. Achieving maximum bat velocity is the goal of many individual hitters. **PURPOSE:** The purpose of this investigation was to compare the effects of warming up with bats of varying weight on pre-impact bat linear velocity and on the timing and extent of segmental movement during the baseball swing. **METHODS:** Sixteen male varsity baseball players from the Manhattan (KS) High School baseball team volunteered as subjects for the study. The subjects were videotaped from overhead at 120 frames per second while hitting official baseball-sized wiffle balls off of a hitting tee following standardized warm-up routines using underweight, overweight, and standard weight bats. Each subject performed 6-10 swings following each warm-up condition with the three best swings per warm-up selected for analysis. Kinematic variables assessed in this investigation included: (1) pre-impact linear velocity of the center of percussion of the bat; and (2) angular displacement, peak angular velocity, and timing of peak angular velocity relative to ball contact of the hips, chest, shoulders, leading upper arm, leading forearm, and bat. **RESULTS:** A repeated measures ANOVA revealed no significant differences among the three warm-up conditions for neither pre-impact bat linear velocity nor the segmental kinematic variables. **CONCLUSION:** It was concluded that warming up with bats of varying weights does not affect the magnitude of pre-impact bat linear velocity nor the timing and extent of movement of the segments principally involved in the baseball swing.

## Poster 2

### **A MULTI-TEST ASSESSMENT OF ANAEROBIC POWER IN MALE ATHLETES. IMPLICATIONS FOR SPORT SPECIFIC TESTING.**

H.S.Lamont\*, G.White, and M.G.Bemben, FACSM\*.

Department of Health and Sport Sciences, University of Oklahoma, Norman, OK, British Olympic Committee Medical Research Center, Northwich Hospital, Harrow, England;  
email: hslamont@ou.edu

The assessment of sport specific anaerobic power using various field and laboratory tests is often used to chart training progress and talent identification. **PURPOSE.** This study was carried out to determine if an extensive battery of anaerobic tests could successfully identify differing components of athletic power, predict short sprint performance, and to distinguish between, worst, average and best performances. **METHODS.** 18 male college athletes ( $23 \pm 7$  yrs, Height  $179 \pm 5$  cm, Body mass  $85 \pm 12$  Kg) performed 8 subclasses of tests to assess specific components of anaerobic power (IRM tests; Smith machine back squat, supine bench press, Barbell power clean. Jump tests: CMVJ, CMVJ + 20KG, CMVJ + 40 KG, CONJ, 30cm Depth jump, plyometric push up, standing long jump, 10M sprint, 35M sprint, 10 second Quebec cycle test, 7.2kg overhead shot throw, 3.5kg seated shot throw). **RESULTS** T-tests were used to assess any statistical differences between jump variables (Height (cm), Ppower (W), Ppower/kg (W/KG)) for the different jump conditions (CMVJ, CMVJ + 20KG, CMVJ + 40KG, CONJ, 30cm depth jump). Correlation Coefficients (r) and Coefficients of determination (R squared) values were calculated between all test variables to assess commonality between tests. Correlations ranged from  $r = -0.85$  (CD 72.4%) to  $r = 0.91$  (CD 83%) Power produced during the depth jump condition was statistically greater ( $p \leq 0.05$ ) than that produced during all other jump conditions. All other jump conditions produced statistically similar ( $P \geq 0.05$ ) power outputs (W). Measure's corrected for body mass (Ppower/kg) produced stronger correlations when body mass was the primary resistance, and when maximal speed (10 m, 35 m sprints (s)), and height (CMVJ, CONJ) where the performance objectives. Regression analysis highlighted statistically significant groupings of variables, which could in part predict performance (10m sprint, 35m sprint (s), height CMVJ, CONJ (cm), Overhead shot distance (m), Plyopush up power (W)) outcomes. The best three groupings accounted for between 65% and 85% of the performance outcomes during the performance tests. **CONCLUSIONS** Different tests of anaerobic power are needed to assess varying force/velocity components of short sprint, jumping, and throwing performance. A combined multi-test approach is needed so that power, force, and velocity contribution can be monitored with a greater degree of specificity. Care needs to be taken so that tests do not measure the same components of anaerobic power.

## Poster 3

### COMPARISON OF OBJECTIVELY MEASURED MODERATE PHYSICAL ACTIVITY AMONG COLLEGE STUDENTS

T.K. Behrens, S.B. Hawkins, and M.K. Dinger, FACSM.

Department of Health & Sport Sciences, University of Oklahoma, Norman, OK;

email: tkbehrens@ou.edu (Sponsor: M.K. Dinger, FACSM)

The number of steps necessary to meet the current public health moderate physical activity (MPA) recommendation has not been determined in college students. **PURPOSE:** The primary purpose of this study was to determine the number of steps per day (steps·day<sup>-1</sup>) necessary to satisfy the current public health MPA recommendation in college students. A secondary aim of this study was to examine the relationship between steps·day<sup>-1</sup> and time spent in MPA in this population. **METHODS:** Thirty-six participants (age=23.3±3.1; BMI=25.4±4.07) simultaneously wore a uniaxial accelerometer (ACC) and an electric pedometer (PED) at their waist during all waking hours for seven consecutive days. PED steps·day<sup>-1</sup> were determined and divided into quartiles. ACC data were reduced into minutes spent in MPA. Descriptive statistics and a Pearson product moment correlation coefficient were calculated.

**RESULTS:** Participants averaged 9,940.4±2,867.1 PED-steps·day<sup>-1</sup> and 31.9±16.8 min·d<sup>-1</sup> in MPA. PED derived steps·day<sup>-1</sup> were divided into quartile 1 (≤7454 steps·d<sup>-1</sup>), quartile 2 (7455-9864 steps·d<sup>-1</sup>), quartile 3 (9865-11,131 steps·d<sup>-1</sup>), and quartile 4 (≥11,132 steps·d<sup>-1</sup>). The most applicable relationship between PED steps·day<sup>-1</sup> and the current public health MPA recommendation was found in quartile 3 with 10,420.7 ± 456.6 PED-steps·day<sup>-1</sup> and 37.8 ± 11.9 min·d<sup>-1</sup> in MPA. There was a strong positive relationship between PED steps·day<sup>-1</sup> and min·d<sup>-1</sup> in MPA ( $r = 0.69$ ,  $p < .0001$ ). **CONCLUSION:** These preliminary results indicate that in order to achieve the current MPA public health recommendation, college students should accumulate 10,420 steps·day<sup>-1</sup>. These results should be investigated with larger samples and in different populations to support their efficacy.

## Poster 4

### EVALUATION OF THE HORMONAL CONTROL MODEL OF RESISTANCE EXERCISE PROGRAMMING IN NATIONAL-LEVEL WEIGHTLIFTERS

M.J. Hartman, G.W. Pendlay, and J.L. Kilgore.

Department of Health and Sport Sciences, University of Oklahoma, Norman, OK;

email: michael.hartman@ou.edu (Sponsor: M.G. Bembien, FACSM)

Determining the necessary workload for high-level athletes is a problem that has been facing coaches for many years. A period of loading too low in intensity and duration would lead to no improvement in performance. Moreover, a period of intense loading too long in duration, coupled with a period of reduced loading too short in duration, could result in no improvement in performance and could potentially lead to overtraining. **PURPOSE:** The purpose of this study was to determine if the ratio of serum testosterone to cortisol ratio (T/C) could be monitored and adjusted to improve performance in national-caliber weightlifters. Previous research from this lab has indicated a 6-week program was not effective in producing optimal performance gains. The goal of this research was to manipulate the original program by including 2 additional weeks of reduced training load to achieve T/C recovery. **METHODS:** Seven male, competitive weightlifters (mean ± SD; age 19.75 ± 2.05 years; weight 94.88 ± 19 kilos), who have competed at a national-level contest, were recruited from the USA Weightlifting Regional Development Center to participate in this 8-week study. The training program consisted of 2-weeks of build up (weekly repetitions, mean training intensity; 92, 85%), 2-weeks of hard training (188, 95%), and 4-weeks of reduced volume training (75, 80%). T/C ratio was measured weekly by radioimmunoassay. **RESULTS:** Following the 2-weeks of hard training, mean T/C ratio dropped 16% from baseline levels (28 ± 15.9). Following the 4-weeks of reduced training load, mean T/C ratio increased to levels nearly 33% greater than baseline (41.8 ± 15.4). Weightlifting performance changes were determined by testing one-repetition maximum for the snatch and the clean and jerk. Weightlifting performance increased following the experimental training. Subjects succeeded with combined weights averaging 12.1 ± 2.78 kg above entry competition totals. 5 subjects reported an increase of at least 5-kg above previous competition 1RM snatch, and 4 subjects reported an increase of at least 5-kg above previous competition 1 RM clean and jerk. **CONCLUSIONS:** It appears that this 8-week program was successful in favorably controlling T/C ratio, improving weightlifting performance, and validates the concept that T/C ratio may be an effective indicator of loading and recovery for weightlifting performance. T/C ratio may potentially be used to plan training cycles, thus avoiding unplanned overreaching or overtraining by the athlete.

## Poster 5

### EFFECT OF ISOTONIC RESISTANCE TRAINING AND CREATINE AND/OR PROTEIN SUPPLEMENTATION ON ISOKINETIC MUSCLE FUNCTION IN OLDER MEN

J. Carter, M. Witten, D.A. Bemben, FACSM, A. Knehans, and M.G. Bemben, FACSM.

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Strength training with one mode of exercise (isotonic) usually results in neuromuscular improvements evidenced in other forms of muscle contraction (isokinetic or isometric), especially in young, healthy subjects. It is unclear if older muscle has the same adaptive ability between the different forms of contraction. If resistance training is performed by older individuals, it has been suggested that protein supplementation might be necessary to maximize potential improvements. Additionally, creatine supplementation is generally considered a positive ergogenic aid, however, its effectiveness has not been established in an older population. **PURPOSE:** Therefore, the purpose of this randomized, placebo-controlled study was to assess the effectiveness of protein and/or creatine supplementation in combination with an isotonic resistance training program on isokinetic muscle function in men aged 48 to 72 years. **METHODS:** Forty-two male subjects were randomly assigned to one of four training groups: 1) resistance training placebo (RTP, n = 10); 2) resistance trained creatine supplemented (RTCr, n = 10); 3) resistance trained protein supplemented (RTPr, n = 11); and 4) resistance trained creatine and protein supplemented (RTCrPr, n = 11). The intervention consisted of a 16-week progressive overload resistance training protocol (3 d/wk), designed to improve strength and muscle mass. The program consisted of bench press, leg press, lat pulls, military press, knee flexion and extensions, bicep curls and tricep extensions, and sit-ups. Subjects consumed their blinded drinks immediately following each training session. Isokinetic peak torque at 60, 180, and 240°-sec<sup>-1</sup> and isokinetic muscle endurance for both the knee flexors and extensors were measured pre, mid, and post training. **RESULTS:** Repeated measures ANOVA indicated a significant training effect ( $p < .05$ ) for both the knee extensor and flexor muscle groups' peak torque, average power, and acceleration at 60°-sec<sup>-1</sup>, 180°-sec<sup>-1</sup>, and 240°-sec<sup>-1</sup>, whereas only the knee flexor muscle group had significant improvements ( $p < .05$ ) in time to peak torque at 60°-sec<sup>-1</sup>, 180°-sec<sup>-1</sup>, and 240°-sec<sup>-1</sup>. The knee extensors had significant ( $p < .05$ ) improvements in total work and average power, as well as a significant reduction in force decline, during the isokinetic muscle endurance test. Interestingly, there were no differences between treatment groups or any trial by group interactions for any of the isokinetic parameters. **CONCLUSION:** In conclusion, older males improved isokinetic muscle function following isotonic strength training, however, there was no additional benefit from either the protein or creatine supplementation.

## Poster 6

### COMPARISON OF THE BOD POD AND DUAL ENERGY X-RAY ABSORPTIOMETRY IN MEN

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The majority of studies investigating the accuracy of the Bod Pod have compared it to hydrostatic weighing (HW), the long held, but outdated "gold standard" method of body composition analysis. Much less research has compared the Bod Pod to dual energy x-ray absorptiometry (DXA), the apparent heir to HW as the choice reference method of the future. **PURPOSE:** The purpose of this study was to help validate and establish the Bod Pod as a viable body composition tool by comparing it to DXA in a large number of men. **METHODS:** Participants were 160 men ( $32 \pm 11$  years). Percent body fat was determined on the same day to be  $19.4 \pm 6.8$  and  $21.6 \pm 8.4$  for DXA and the Bod Pod respectively. **RESULTS:** Although the two methods were highly correlated ( $r = 0.94$ ), the mean difference of 2.2 % was significant ( $p < 0.01$ ). Repeatability of measurements was good for both techniques but slightly better for DXA ( $R=0.99$ ;  $CV = 0.7 \pm 1.0$  %) compared to the Bod Pod ( $R=0.95$ ;  $CV = 2.6 \pm 2.0$  %). **CONCLUSION:** The results of this study indicate that a difference between methods existed for our sample of men. It is uncertain exactly where the difference lies. Practitioners should be aware that even with the use of technologically sophisticated methods (i.e., Bod Pod, DXA), the determination of body composition is at best, an estimation. Despite the statistically significant difference, the Bod Pod appears to be an excellent tool for measuring and tracking body fatness.

## Poster 7

### SHORT TERM INTERMITTENT AND CONTINUOUS EXERCISE TRAINING AND POSTPRANDIAL LIPEMIA.

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**Purpose:** The purpose was to compare the effect of four weeks of intermittent (INT-EX) and continuous (CON-EX) methods of cardiorespiratory exercise training on postprandial lipemia (PPL). **Methods:** Subjects were sedentary, normolipidemic males (n=7) and females (n=11), aged  $25 \pm 1.8$  y ( $M \pm SE$ ) with a pre-training  $VO_{2max}$  and BMI of  $38.4 \pm 1.5$  (ml/kg/min) and  $23.2 \pm 0.8$  (kg/m<sup>2</sup>), respectively. Subjects completed four weeks of exercise training that was either all CON-EX or all INT-EX. Exercise consisted of treadmill jogging that occurred 5 d per week for 30 min at 60%  $VO_{2max}$  (75% maximal heart rate). CON-EX was performed in continuous bouts. INT-EX was performed in three 10-min bouts that were separated by 20 min periods of seated rest. All training sessions were supervised by laboratory staff. At pre- and post-training, postprandial lipemia (PPL) was tested in two different conditions: 1) no exercise (NOEX), and 2) a training-specific exercise trial that was completed 12 h before the PPL trial. Trials at pre- and at post-training were separated by 7 to 10 days, and subjects followed activity and dietary guidelines before PPL trials. PPL was measured after subjects consumed a high fat meal (HFM) containing 1.5g fat (88% of calories), 0.05g pro, and 0.4g CHO per kg body weight. Blood samples were collected immediately prior to HFM (0-h) and at 2, 4, 6, and 8 h post-HFM during which subjects consumed only water. **Results:** Plasma analysis of triglyceride (TG) incremental area under the curve ( $AUC_1$ ) and TG incremental peak ( $Peak_1$ ) indicated no difference when comparing pre- and post-training values for either group, and the CON-EX and INT-EX groups were not different. At both pre- and post-training, the acute exercise sessions significantly attenuated  $AUC_1$  and  $Peak_1$  compared to NOEX, but CON-EX and INT-EX trials were not different. **Conclusions:** Although PPL is affected by the most recent exercise session, short term exercise training using 30 min INT-EX or CON-EX protocols does not attenuate fasting PPL in sedentary, normolipidemic individuals. These results suggest that four weeks of exercise training is not a sufficient quantity of exercise to cause a training effect that attenuates PPL.

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## Poster 8

### RELATIONSHIP BETWEEN IGF-1 AND BONE DENSITY RESPONSES TO RESISTANCE TRAINING IN OLDER ADULTS

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**PURPOSE:** This study investigated the association of IGF-1 and IGF-1 binding protein-3 (BP3) with changes in bone mineral density (BMD) in 57-70 year old men (n=47) and women (n=79) during 40 weeks of resistance training. **METHODS:** The resistance training consisted of 5 upper body and 7 lower body exercises (3 sets, 8-16 reps, 40-80% 1RM, 2-3 days/week) performed on Cybex isotonic equipment. BMD was measured at the lumbar spine (L2-L4), total hip and total body sites using DXA (Lunar DPX-IQ). Serum IGF-1 and BP3 levels (ng/ml) were measured by radioimmunoassay (Diagnostic Systems Laboratory). The intra-assay variation ranged from .05 to 12%, while the inter-assay variation ranged from .2 to 14% for both assays. IGF-1, BP3, and BMD were assessed at baseline, 20 weeks, and 40 weeks of training. **RESULTS:** Baseline total body BMD showed a low positive correlation with baseline IGF-1 levels ( $r=.198$ ,  $p<.05$ ) for all subjects. 20 week trochanter and total body BMD were positively related to 20 week IGF-1 ( $r=.185$  and  $r=.216$  respectively,  $p<.05$ ). 40 week trochanter BMD was positively related to 40 week IGF-1 ( $r=.203$ ,  $p<.05$ ). Regression analyses determined that gender was the only significant predictor for the absolute change in spine BMD ( $R^2=.039$ ,  $p<.05$ ). In further regression analyses split by gender, only women showed significant findings. The absolute change in IGF-1 from baseline to 40 weeks was a significant predictor of the absolute change in total hip BMD ( $R^2=.057$ ,  $p<.05$ ) and femoral neck BMD ( $R^2=.052$ ,  $p<.05$ ). Both baseline IGF-1 ( $R^2=.136$ ,  $p<.05$ ) and IGF-1 absolute change ( $R^2=.058$ ,  $p<.05$ ) were significant predictors of spine BMD absolute change. BP3 was not significantly ( $p>.05$ ) related to any of the BMD sites. **CONCLUSION:** In summary, serum IGF-1 levels were significantly related to BMD. Although IGF-1 variables were significant predictors of the total hip, femoral neck, and spine sites, they only accounted for 5% to 6% of the variance. Of the IGF-1 variables, baseline IGF-1 level was the strongest predictor of spine BMD, accounting for 14% of the variance of the absolute change in BMD.



## Poster 9

### BLOOD TREATMENT INFLUENCES MORPHOLOGY OF LYMPHOCYTE APOPTOSIS AFTER MAXIMAL EXERCISE.

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Cells are eliminated from the body through two mechanisms, necrosis or apoptosis. While necrosis occurs in response to cell injury, apoptosis, or programmed cell death, may be initiated through a number of other stimuli. Recent studies have found that maximal exercise is a physiological stimulus capable of inducing apoptosis in peripheral blood lymphocytes. To date, studies that have measured lymphocyte apoptosis after exercise have used only isolated cells during the assessment. **PURPOSE:** No systematic investigation has been reported that has assessed the effect of the isolation process on apoptosis. Therefore, the purpose of the present study was to evaluate the effect of lymphocyte isolation on morphological features of apoptosis in these cells. **METHODS:** Untrained healthy young men and women participated in the study ( $N=13$ , age= $26\pm 1$  yrs, wt= $77\pm 5$  kg, ht= $169\pm 3$  cm). Blood samples were obtained at rest and immediately following an incremental treadmill test to exhaustion. Samples were partitioned into three treatments: 1.) Whole blood smears made immediately after the sample was obtained (WB), 2.) Cells that were subjected to density-gradient isolation before smears were made (ISO), and 3.) Time-treated samples that were allowed to sit at room temperature before centrifugation and smearing (TT). Blood smears were stained using the Giemsa May-Grünwald procedure and evaluated under a light microscope for characteristic features of apoptosis including a decrease in cell volume, condensation of the nucleus, and the formation of apoptotic bodies. **RESULTS:** At rest, no differences were detected in the percent of lymphocyte apoptosis in WB ( $6.7\pm 0.5\%$ ), ISO ( $4.9\pm 0.4\%$ ), or TT blood samples ( $5.5\pm 0.4\%$ ). Following exhaustive exercise however, the percent of apoptotic lymphocytes was significantly greater in WB ( $19.1\pm 1.1\%$ ) compared to ISO ( $11.4\pm 0.7\%$ ) and TT samples ( $10.7\pm 0.7\%$ ,  $P<0.0001$ ). In all instances, post-exercise apoptosis was greater than resting values regardless of how the blood was treated ( $P<0.0001$ ). **CONCLUSION:** The results show that lymphocyte isolation following exhaustive exercise results in a significant decrease in the percent yield of apoptotic lymphocytes when compared to whole blood. This reduction is likely due to the amount of time needed to carry out the isolation process, rather than the density gradient used. Since apoptosis is a time-sensitive process that occurs within minutes rather than hours, the length of time from initial blood sampling to the preparation of cells for the assessment of apoptosis is critical and should be taken into account in future exercise studies.

## Poster 10

### COMPARISON OF PERCENT FAT MEASUREMENTS BY DUAL ENERGY X-RAY ABSORPTIOMETRY AND AIR DISPLACEMENT PLETHYSMOGRAPHY

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Air displacement plethysmography (ADP) is an innovative and exciting measurement tool for assessing body fat. Numerous studies have examined the validity of air displacement plethysmography, but to our knowledge none have specifically investigated the validity of ADP in females across a wide range of body fatness. **PURPOSE:** Therefore, the purpose of this study was to compare percent body fat measurements by ADP with dual energy X-ray absorptiometry (DXA) in three groups of females varying greatly in body mass index (BMI). **METHODS:** Thirty healthy adult females ( $27.9 \pm 9.7$  y;  $163.1 \pm 7.1$  cm;  $60.1 \pm 10.2$  kg) were divided into one of three BMI categories: 1) lean ( $BMI=18.5 \pm 1.3$ ) defined as a  $BMI < 21$  kg/m<sup>2</sup>, 2) normal weight ( $BMI=22.6 \pm 1.07$ ) defined as a BMI between 21-24.9 kg/m<sup>2</sup>, and 3) overweight ( $BMI=27.0 \pm 2.5$ ) was defined as a  $BMI > 25$  kg/m<sup>2</sup>. In random order, each of the subjects had their percent body fat measured by ADP and DXA (Lunar DPX-IQ V. 4.7b). For the ADP measurements, all thoracic gas volumes were measured and percent fat (%fat) was determined using the Siri equation. **RESULTS:** The results of regression equation estimates of %fat were: lean (intercept=.443%, slope=.993, SEE=1.39); normal (intercept=4.366%, slope=.854, SEE=1.59); overweight (intercept=4.489%, slope=.930, SEE=1.67). **CONCLUSION:** These results indicate that there is not a significant difference in estimations of %fat measured by DXA and ADP in each BMI classification. Therefore, it can be seen that ADP is a reliable tool for estimating %body fat in women in lean, normal, and overweight BMI classifications.

## Poster 11

### EFFECTS OF RESISTANCE TRAINING ON SERUM IGF-1 LEVELS IN OLDER ADULTS

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**PURPOSE:** This study investigated the effects of 40 weeks of resistance training on circulating levels of IGF-1 and IGF-1 binding protein-3 (BP3) in 57-70 year old men (n=47) and women (n=79). **METHODS:** The resistance training consisted of 5 upper body and 7 lower body exercises performed on Cybex isotonic equipment. The subjects were split into four training groups with varying levels of relative intensity (40% vs. 80% 1-RM) and different frequencies of training (2 vs. 3 days/week). Serum IGF-1 and IGF-1 BP3 were assessed at baseline, 20 weeks, and 40 weeks of training by commercial radioimmunoassay kits (Diagnostic Systems Laboratory). The intra-assay variation for both IGF-1 and BP3 assays ranged from .05 to 12%, while the inter-assay variation ranged from .2 to 14%. **RESULTS:** There were significant gender differences with women having lower serum IGF-1 levels than men at each time point. A repeated measures ANOVA (trial x training group) showed a significant trial effect (p=.032) for IGF-1. Post Hoc-tests revealed a significant decrease in IGF-1 from baseline to 20 weeks (154 ng/ml to 136 ng/ml, p=.025) followed by an increase at 40 weeks (136 ng/ml to 148 ng/ml, p=.038). There were trends for gender differences in the IGF-1 relative changes with men showing a 11.9 % increase and women showing an 8.1% decrease from baseline to 20 weeks (p=.053) and at 40 weeks with men showing an increase of 26.2% and women increasing by 1.6% (p=.059). There were no significant trial, gender or training group effects detected for BP3.

	Baseline IGF-1 (ng/ml)	20 weeks IGF-1 (ng/ml)	40 weeks IGF-1 (ng/ml)
Women (n=79)	128.7 ± 11.4	103.1 ± 9.7	113.1 ± 9.4
Men (n=47)	200.3 ± 16.2	196.9 ± 15.8	213.1 ± 17.3

Means ± S.E., (ng/ml) \* p<.05 gender differences

**CONCLUSIONS:** Women had significantly lower serum IGF-1 levels than men at each time point. Although there were no training group differences in IGF-1 responses, IGF-1 decreased at 20 weeks then returned to baseline levels at 40 weeks. Resistance training did not appear to affect BP3 levels.

## Poster 12

### IMPROVED PULMONARY FUNCTION FOLLOWING INCREASED FRUIT AND VEGETABLE CONSUMPTION IN HEALTHY SUBJECTS

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The pulmonary system limits exercise tolerance in many subjects in health and disease, yet is not believed to change through diet or exercise. Previous epidemiologic literature has shown that both fruit and vegetable (FV) consumption and serum antioxidant levels are related to pulmonary function in healthy individuals. **PURPOSE:** Determine if increased FV consumption will improve pulmonary function in healthy subjects. **METHODS:** Fifty-two non-smoking subjects (M=30; F=22) with no pulmonary disorders were recruited from an 8-wk fitness promotion program (Walk Kansas). Subjects were randomly divided into a control group (C; n=22; 35 ± 11yr) and an intervention group (FV, n=30; 45 ± 13yr). Both groups performed resting pulmonary function tests (PFT) and an NIH FV screener before and after the program while the FV group also received weekly newsletters to encourage FV consumption. **RESULTS:** There was no difference (p>0.05) in PFT or # of serving sizes/day of FV between groups pre-testing. However, FV sig improved FV consumption by 0.75±0.8 servings/day following the intervention whereas no difference (p>0.05) occurred in C. While no relation existed between PFT and FV consumption pre-testing among all subjects, a sig relationship was determined in FV group between the change in FV consumption and the change in forced expiratory volume in one second (FEV<sub>1</sub>)(r=0.44) and the change in forced expiratory flow from 25-75% of expiration (FEF<sub>25-75</sub>)(r=0.54). There was no relationship between FV consumption and any PFT measurement in C following testing. **CONCLUSIONS:** These results suggest that increasing FV consumption, presumably though increased antioxidants, leads to improved pulmonary function in healthy subjects which may improve exercise tolerance in health and in reduced pulmonary function associated with aging and disease.

*Support from American Lung Association*

## Poster 13

### IS GREATER THAN 10 PERCENT WEIGHT LOSS ASSOCIATED WITH FURTHER RISK REDUCTION IN OBESE WOMEN?

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**PURPOSE:** To determine if different percentages of weight loss were associated with differences in blood pressure, total cholesterol, LDL cholesterol, and HDL cholesterol in obese women. **METHODS:** 139 women (age  $50 \pm 10$  y, weight  $106.28 \pm 20.53$  kg, BMI  $37.01 \pm 5.77$  kg/m<sup>2</sup>, body fat  $48.36 \pm 6.94$  %) completed 6-months of a weight loss program that included nutritional, behavioral, and exercise instruction. For the first 12 weeks, participants consumed a very low-calorie diet (VLCD) in the form of liquid shakes. VLCD was followed by 4 weeks of gradual re-introduction to solid foods. At week 16 participants were given a weight maintenance diet which they followed for the duration of the study. All lab and blood assessments were performed at baseline and 6 months. To foster interpretation of the data, three groups were formed according to the proportion of weight loss. Group 1 had a weight loss of 10% or less, group 2 had a weight loss of 10-20%, and group 3 had a weight loss of >20%. One-way analysis of variance was utilized to determine differences between groups for each dependent variable. **RESULTS:** There was no difference between groups for systolic ( $P=0.16$ ) or diastolic blood pressure ( $P=0.22$ ). For total cholesterol, group 3 ( $188 \pm 37$  mg/dl) was significantly lower than group 1 ( $211 \pm 51$  mg/dl) ( $P=0.01$ ) but not group 2 ( $206 \pm 31$  mg/dl). For LDL, there was no difference between groups ( $P=0.11$ ). For HDL, group 3 ( $53 \pm 12$  mg/dl) was significantly lower than group 2 ( $59 \pm 14$  mg/dl) and group 3 ( $60 \pm 12$  mg/dl) ( $P=0.02$ ). **CONCLUSION:** These data suggest that a greater percentage of weight loss is associated with lower total cholesterol. Additionally, HDL decreased with a higher percentage of weight loss. The lack of statistically significant differences between groups for blood pressure and LDL may be due to the small sample size in group 1 ( $n=12$ ).

## Poster 14

### EFFECTS OF TOTAL BODY RECIPROCAL TRAINING ON AMBULATION SKILLS IN PERSONS WITH HEMIPARESIS

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**PURPOSE:** The main focus of this study was to correlate exercise involving the use of both lower and upper extremities in total body reciprocal training (TBRT) with changes in functional mobility in persons with hemiparesis. The project investigated the effects of an 8-week program using TBRT on changes in functional balance and gait as measured by both computerized posturography and standard clinical performance tests. It was hypothesized that each test method reveals specific but different information about functional gait. **METHODS:** Twenty moderately-impaired chronic stroke survivors (Mean age =  $61.72 \pm 11.75$  yrs), at least six months post stroke, participated in an 8-week exercise program. Exercise consisted of 2-3x/week, 30 minute sessions of aerobic exercise on a recumbent stepper. Variables of interests included balance measurements of functional dynamic balance using computerized posturography to measure Step Width (cm), Step Length (cm), Step Velocity (cm/sec) and Step Symmetry (% bias past midline). Clinical functional tests included the modified Timed Up & Go (TUG) documenting Time (sec) and number of Steps x 20feet for Velocity (feet/sec) and Cadence (steps/sec). A non-parametric Wilcoxon Signed Ranks Test analysis was used to compare pre- and post test results with an alpha level of 0.05. **RESULTS:** Gait demonstrated significant differences in velocity scores of  $18.57 \pm 5.069$  to  $28.37 \pm 11.398$  cm/sec ( $p=0.043$ ) and a symmetry change from  $15.00 \pm 16.559$  to  $28.00 \pm 19.419$  ( $p=0.043$ ) indicating a left bias to a more right bias during ambulation. Although both Step Width ( $24.51 \pm 1.203$  to  $26.25 \pm 1.164$  cm) and Step Length ( $21.48 \pm 4.539$  to  $25.63 \pm 4.961$  cm) both increased, changes did not reach significance with  $p=0.686$  and  $p=0.225$  respectively. The TUG revealed significant improvements in velocity from  $0.67 \pm 0.538$  ft/sec to  $0.81 \pm 0.681$  ft/sec ( $p=0.015$ ) while cadence increased from  $0.92 \pm 0.120$  steps/sec to  $1.03 \pm 0.134$  steps/sec ( $p=0.038$ ). **CONCLUSIONS:** Although gait velocity improved (both tests), improvements were seen more with increased frequency of steps (TUG) instead of increases in step width or length (posturography). Results indicate that improvements in functional gait are possible in persons with hemiparesis however; improvements maybe still be limited by functional range of motion. Therefore, clinicians should keep in mind the limitations of standard clinical tests in providing important specific information about exercise responses to rehabilitation protocols involving persons with hemiparesis.

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## Poster 15

### INFLUENCE OF COTTON AND SPANDEX SHORTS ON AIR DISPLACEMENT PLETHYSMOGRAPHY ESTIMATES OF PERCENT FAT

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Air displacement plethysmography (ADP) is gaining broad acceptance as an alternative to more traditional body composition methods (i.e. hydrostatic weighing and dual energy X-ray absorptiometry). Several studies have shown that certain types of clothing can affect ADP estimates of body fat. In spite of this evidence, it has become common practice to use clothing schemes that deviate from the manufacturer's recommendation of a tight fitting swimsuit. However, no study has specifically investigated the effect of regular cotton gym shorts and biking shorts on ADP estimates of body fat. **PURPOSE:** The purpose of this study was to investigate the effect of wearing cotton gym shorts and biking shorts on estimates of body fat. **METHODS:** Twenty-five healthy adult females, ( $24.8 \pm 5.6$  years;  $163.4 \pm 7.5$  cm;  $56.9 \pm 7.4$  kg) had their percent body fat measured by ADP. In random order each subject was tested in the following clothing schemes which were provided by the University of Oklahoma body composition laboratory: 1) a tight fitting swimsuit (the criterion clothing condition - CR); 2) normal cotton gym shorts (GS); and 3) bicycle shorts (BS). All thoracic gas volumes were measured and percent fat (%fat) was determined using the Siri equation. **RESULTS:** GS %fat ( $21.3 \pm 5.3\%$ ) and BS %fat ( $23.4 \pm 5.6\%$ ) were significantly lower ( $P \leq 0.01$ ) than the CR %fat ( $25.7 \pm 5.4\%$ ), with their regressions significantly deviating from the line of identity. GS had an  $R^2$  0.98 and an SEE of 1.2%fat, while BS had an  $R^2$  of 0.98 and an SEE 1.1%fat. Bland Altman analysis revealed no bias in estimates of percent body fat across the range of body fatness for either GS or BS. **CONCLUSION:** These results indicate testing in cotton gym shorts or bicycle shorts can result in 2% - 4% under-estimation in percent body fat. Therefore, it is recommended that only a tight fitting swimsuit be worn when using ADP in the assessment of body fat.

## Poster 16

### THE TEMPORAL RELATIONSHIP BETWEEN MUSCLE CONTRACTION AND OSCILLATIONS IN VENOUS BLOOD FLOW

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A primary focus of our lab is to understand the consequences of oscillations in muscle blood flow on the capillary bed and ultimately oxygen extraction. Previously we investigated this temporal relationship by assessing the impact of muscle contractions during rhythmic dynamic exercise on the oscillations in femoral venous blood temperature (by thermodilution). This initial analysis was done in the frequency domain with Fast Fourier Transforms. The phase shift in the oscillations in venous temperature (and flow) determined in this manner were not correlated with muscle contraction. Therefore we sought an alternative method with which to examine this temporal relationship. **PURPOSE:** To determine if the oscillations observed in femoral venous temperature during rhythmic dynamic exercise correspond (i.e. had a constant phase relationship) to muscle contractions. **METHODS:** Femoral venous blood flow was measured by thermodilution during dynamic knee extension exercise (40 contractions/min). Nine power outputs ranging up to 10 Watts, representing the range of aerobic work rates, were utilized. Femoral artery blood velocity was measured continuously using Doppler sonography. The phase relationship of the oscillations in venous temperature with muscle contraction was determined by cross correlation of the temperature signal with a measure of muscle contraction. **RESULTS:** Oscillations in femoral venous blood temperature were primarily caused by muscle contractions. However, there was not a predictable phase shift between the two variables. **CONCLUSION:** The primary cause of oscillations in femoral venous blood temperature during rhythmic dynamic exercise is muscle contraction. However, the temporal relationship is likely modulated by the periodic arterial blood flow, vascular conductance, the compliance of the venous blood vessels and/or other factors.

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## Poster 17

### REDUCTIONS IN ABDOMINAL ADIPOSITY AND ITS ASSOCIATION WITH LIPOPROTEIN SUBFRACTIONS: MIDWEST EXERCISE TRIAL (MET)

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**PURPOSE:** The purpose of this study was to determine the relationship between changes in abdominal adiposity (AA) with changes in lipid subfractions and particles sizes in overweight adults undergoing 16-months of supervised, verified exercise with an *ad libitum* diet. **METHODS:** Subjects (n=52, age 18-35, BMI  $\geq$  25) were randomly assigned to non-exercise control (women, n=12, men, n=12) or exercise (women, n=18, men, n=10) groups. Aerobic exercise progressed to 45 minutes $\cdot$ day<sup>-1</sup>, 5 days $\cdot$ week<sup>-1</sup> over 6 months and was maintained for an additional 10 months. Controls maintained their normal physical activity. AA was measured by computed topography at baseline and 16-months. Lipid subfractions and particles sizes were isolated from fasting blood samples by nuclear magnetic resonance at baseline and 16-months. **RESULTS:** For men in the control group there was a significant correlation between changes in visceral abdominal fat (VAF) (r=0.62), subcutaneous abdominal fat (r=0.80), and total abdominal fat (r=0.75) with changes in medium very low density lipoprotein with no other significant correlations. Changes in VAF with change in small high density lipoprotein (r=0.66) was significant for the control women, with no other significant correlations occurring. There were no significant correlations between changes in lipoprotein subfractions and particle sizes with any measure of AA in the exercising men or women. **CONCLUSION:** We conclude that reductions in AA may not correspond to improvements in lipid subfractions or particles sizes in young adults participating in long-term exercise. Therefore, additional factors other than a reduction in AA may contribute to reducing metabolic risk factors in young adults.

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## Poster 18

### THE EFFECTS OF EXERCISE ON BODY COMPOSITION AND BONE MINERAL DENSITY AMONG MIDDLE-AGED WOMEN

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Fifty percent of all women over 50 have low bone density, or osteoporosis. Studies have shown that changes in a woman's bone mineral density (BMD) and body composition (BC) may be subject to change as they experience menopause. Specific signs and symptoms, due to fluctuating hormone levels, occur as a woman goes through the various menopausal stages, thus contributing to the differences in BC and BMD. However, exercise has been shown to retard the loss of BMD following the onset of menopause. **PURPOSE:** The aim of this study was to examine the effects of self-reported physical activity on BC and BMD among perimenopausal and postmenopausal women. **METHODS:** Eighty-five women ages 40-60 years were recruited to participate in the study. Each subject completed a questionnaire to determine current menstrual status, medical, nutrition, and exercise history. Subjects then underwent a full body scan by dual energy x-ray absorptiometry (DEXA - Lunar Prodigy, version 2.5, Madison, WI) to determine BC and BMD. **RESULTS:** A significant difference was found in BMD between perimenopausal and postmenopausal women (P-value = .0017). Also, a significant interaction was detected between %BF and activity level for all subjects (P-value = .0002). However, there was no significant interaction observed between %BF, activity level, and menopausal state (P-value = .4160) or between BMD, activity level, and menopausal state (.2297). Also, no significant difference was detected between %BF and menopausal state (P-value = .4496). **CONCLUSION:** Regardless of activity levels, we found the overall mean BMD values higher for perimenopausal women compared to postmenopausal women. Therefore, this supports previous conclusions that BMD is relative to the hormonal fluctuations experienced as a women goes through the stages of menopause. Although previous research supports the notion that exercise retards the loss of BMD following menopause, our results oppose this concept. However, different perceptions of activity levels reported by the subjects may have had an impact our findings. As expected, those with less % BF exercised for greater periods of time. However, what is less understood is the type of exercise the women were performing. Despite reported levels of exercise, our group did not specifically note the type or intensity of exercise performed. Therefore, we recommend more research be executed examining BMD and BC relative to exercise in perimenopausal and postmenopausal women.

## Poster 19

### PREVALENCE OF ANEMIA AND IRON DEFICIENCY AMONG PHYSICALLY ACTIVE ADULTS

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In the United States the prevalence of iron deficiency anemia (IDA) among women is 3-5%, whereas the prevalence of iron deficiency without anemia (ID) is much higher, ranging from 11-13%. Although iron deficiency is much less common for males of the general population, estimated to be < 1%, a greater percentage of physically active males may be at risk. **PURPOSE:** To determine the prevalence of IDA and ID in a population of endurance-trained male and female adults. **METHODS:** Ninety subjects (51 female, 39 male) 18-41 years old, involved in aerobic training a minimum of three hours per week for at least six continuous months participated in an iron status screening. The concentrations of hemoglobin (Hb), serum ferritin (sFer), and serum transferrin receptor (sTfR), were analyzed to determine the prevalence of IDA and ID. **RESULTS:** Three individuals (2 female, 1 male) had IDA, classified by serum ferritin (sFer <16 ng/dl) and hemoglobin (Hb <12g/dl female, Hb <13g/dl male). ID classified by serum ferritin (sFer ≤16 ng/dl) and normal Hb, was found in 18% of study subjects (27% female and 5% male). An alternative determination of ID using the transferrin receptor-ferritin index (sTfR/log sFer ≥ 4.5) found 30% of the subjects to be ID. **CONCLUSION:** ID, assessed by sFer and sTfR, is common among endurance-trained adults and is more prevalent in females than males. The transferrin receptor-ferritin index may be a more sensitive indicator of ID in physically active individuals than ferritin, as it is not influenced by an acute exercise bout. Thus ferritin, serum transferrin receptor, and hemoglobin should all be measured in order to accurately determine iron status in individuals who are endurance trained.

Supported by MU Alumni Association and Department of Nutritional Sciences F21C.

## Poster 20

### A COMPARISON OF THE CHAMPS PHYSICAL ACTIVITY QUESTIONNAIRE AND THE AAHPERD TEST IN OLDER ADULTS

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Physical activity (PA) has been associated with functional fitness (FF). **PURPOSE:** The primary purpose of this study was to examine the relationship between the self-reported Community Healthy Activities Model Program for Seniors (CHAMPS) PA questionnaire and the performance-based American Alliance of Health, Physical Education, Recreation and Dance (AAHPERD) FF test. The secondary purpose of this study was to examine the sensitivity of the CHAMPS questionnaire to detect change in older adults participating in a structured eight week exercise regimen. **METHODS:** Two groups of subjects were recruited for the study: an active cohort ( $n=16$ ; age= $73.3 \pm 7.9$  yr) of older adults that exercise regularly and an experimental group ( $n=34$ ; age= $72.7 \pm 7.7$ ) of older adults participating in a community health program. The CHAMPS questionnaire and the AAHPERD test were given to both groups before and after the eight week long program. The CHAMPS questionnaire had four measurements: caloric expenditure of all intensity activities (CEALL), caloric expenditure of moderate and greater intensity activities (CEMOD), frequency of all intensity activities (FRALL), and frequency of moderate and greater intensity activities (FRMOD). The AAHPERD test measured body composition, flexibility, agility/dynamic balance (ADB), coordination (C), muscle fitness (MF), and aerobic endurance (AE). **RESULTS:** Pearson Correlation Coefficient revealed relationships between post-measurements of ADB and CEMOD ( $p=0.02$ ,  $r=-0.34$ ), C and CEMOD ( $p=0.05$ ,  $r=-0.30$ ), AE and CEMOD ( $p=0.03$ ,  $r=-0.33$ ), and MF and FRMOD ( $p=0.05$ ,  $r=0.30$ ). A paired-samples *t*-test did not show any significant change between pre- and post-measurements of the CHAMPS questionnaire in the experimental group. **DISCUSSION:** These results suggest that measures of higher intensity (CEMOD and FRMOD) from the CHAMPS questionnaire may be used to determine aspects of FF (ADB, C, AE, and MF) as measured by the AAHPERD test. The sensitivity of the CHAMPS questionnaire to detect PA changes from health interventions should be further examined because the questionnaire was unable to determine PA changes from this eight week program.

## Poster 21

### THE RELATIONSHIP BETWEEN FUNCTIONAL CAPACITY, CARDIAC FUNCTION, AND QUALITY OF LIFE IN HEART FAILURE PATIENTS

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Some consensus exists in that physiological domains, symptoms, functional status, and health perceptions contribute to quality of life in a wide range of populations. Specific to heart failure, Green et al. (*JACC* 35:1245-55, 2000.) determined a significant correlation ( $r^2 = 0.48$ ,  $p < 0.001$ ) between quality of life and a six-minute physical function walk test. **PURPOSE:** The intent of this investigation was to examine the relationship between functional capacity, cardiac function, and quality of life in male and female NYHA class II and III heart failure patients. **METHODS:** A total of 20 male ( $n=11$ ) and female ( $n=9$ ) subjects (age =  $57 \pm 2.5$  yrs; height =  $171.6 \pm 2.0$  cm; weight =  $84.3 \pm 3.0$  kg) underwent a peak oxygen consumption ( $VO_{2peak}$ ) test on a treadmill to assess functional capacity ( $VO_{2peak} = 16.6 \pm 1.2$  ml/kg/min; anaerobic threshold =  $913.6 \pm 51.9$  ml). In the same visit, each subject completed the Kansas City Cardiomyopathy Questionnaire to assess the individual's quality of life. A two-dimensional echocardiogram was performed on each subject to obtain an ejection fraction (EF) measurement ( $EF = 28.4 \pm 1.8\%$ ). **RESULTS:** A regression analysis revealed a non-significant correlation between  $VO_{2peak}$  and ejection fraction ( $r^2 = 0.07$ ,  $p = 0.14$ ). Additionally, there was a non-significant correlation between the quality of life and  $VO_{2peak}$  ( $r^2 = 0.11$ ,  $p = 0.08$ ), and between quality of life and ejection fraction ( $r^2 = 0.02$ ,  $p = 0.27$ ). Anaerobic threshold demonstrated a non-significant correlation with both the quality of life ( $r^2 = 0.16$ ,  $p = 0.10$ ) and the ejection fraction ( $r^2 = 0.05$ ,  $p = 0.39$ ). Furthermore, there were no significant correlations detected between gender and either the  $VO_{2peak}$ , ejection fraction, anaerobic threshold, or quality of life. **CONCLUSION:** This study exhibits that the  $VO_{2peak}$ , anaerobic threshold, and EF% are all unrelated to quality of life in NYHA class II and III heart failure subjects. Our findings are in disagreement with those of Green et al. who utilized a 6-minute walk test. Perhaps this difference is specific to the direct assessment that we obtained for physiological metabolic capacity ( $VO_{2peak}$  and anaerobic threshold) compared to the field testing that was performed by Green et al.

Supported by: University of Kansas Center for Research

## Poster 22

### THE EFFECTS OF MEAL REPLACEMENTS OR ORLISTAT ON FRUIT AND VEGETABLE INTAKE IN MEN AND WOMEN

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**PURPOSE:** The purpose of this study was to compare the consumption of fruit and vegetable intake, following substantial weight loss, in overweight men and women randomized to either a low fat diet using meal replacements (MR) or Orlistat (Orl). **METHODS:** Ninety-two overweight (BMI at or above 28) participants between the ages of 19 and 70 took part in this 52 week program. There were 64 women (age= $49.9 \pm 10.0$  yrs, wt= $101.6 \pm 17.1$ kg) and 28 men (age= $53.7 \pm 9.6$  yrs, wt= $121.8 \pm 16.0$ kg) who were randomized to one of two weight maintenance protocols. During the first 12 weeks of the study, all participants followed a liquid very low calorie diet (VLCD) of 520 kcal per day. From week 13-16 participants were gradually reintroduced to solid foods by replacing the liquid diet with grains, fruits, vegetables, and meal replacements. At week 16 participants were randomized to either Orlistat (Orl) or meal replacements (MR). Both groups were prescribed a meal plan designed to induce a weight loss of 0.5 to 1.0 pounds per week, and that encouraged participants in both groups to consume a minimum of 35 fruits and vegetables per week. Orl received Orlistat medication with their meal plan while MR received meal replacements with their meal plan. All participants attended weekly meetings for the first 6 months and biweekly meetings for the last 6 months, during which weight was measured and physical activity, fruit/vegetable, and Orlistat consumption were recorded. **RESULTS:** Fruit and vegetable intake in women was  $33.2 \pm 11.0$  and  $31.9 \pm 9.8$  at week 16 and  $36.0 \pm 8.4$  and  $37.0 \pm 8.1$  at week 52 for the MR and Orl groups respectively. Fruit and vegetable intake in men was  $29.1 \pm 5.7$  and  $32.3 \pm 18.6$  at week 16 and was  $37.8 \pm 8.0$  and  $54.4 \pm 26.2$  at week 52 in the MR and Orl groups. Fruit and vegetable intake increased a similar amount over time for women in the MR and Orl groups. However in men, fruit and vegetable intake increased significantly more in the Orl group compared to the MR group. **CONCLUSION:** All participants tended to increase fruit and vegetable consumption over the weight maintenance period. Overweight men randomized to Orlistat consumed significantly more fruits and vegetables compared to those randomized to meal replacements.

## Poster 23

### EFFECTS OF HYPOHYDRATION ON LACTATE AND RER IN HEALTHY SMOKERS AND NONSMOKERS DURING EXERCISE

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Research suggests that cigarette smokers display different fuel use patterns than nonsmokers during submaximal exercise. However, the effect of hypohydration on fuel use in cigarette smokers has not been studied. **PURPOSE:** This study examined and compared the effects of hypohydration on blood lactate and respiratory exchange ratio (RER) in healthy male cigarette smokers and male nonsmokers during long duration, submaximal exercise. **METHODS:** Eight untrained male smokers ( $M \pm SD$ : age  $25.8 \pm 5.3$ ;  $VO_{2PEAK}$   $34.9 \pm 7.6$ ) and eleven untrained male nonsmokers ( $M \pm SD$ : age  $25.6 \pm 3.4$ ;  $VO_{2PEAK}$   $31.8 \pm 5.4$ ) participated in the study. Subjects performed 60 minutes of cycle exercise at 50%  $VO_{2PEAK}$  under a euhydrated treatment and hypohydrated treatment. Hypohydration, induced by controlled sauna exposure the night prior to testing, yielded percent body weight reductions for smokers and nonsmokers of  $2.2 \pm 0.6$  and  $2.4 \pm 0.5$  respectively. Lactate and RER measurements were recorded at rest, 5, 15, 30, 45, and 60 minutes of exercise. Response variables " $\Delta$ " (hypohydrated minus euhydrated) were compared using repeated measures ANCOVA for group (smokers and nonsmokers) and time (rest, 5, 15, 30, 45, and 60 minutes). Additionally, steady state measurements for lactate and RER were determined by averaging values recorded at 30, 45, and 60 minutes of exercise. Steady state response variables " $\Delta$ " (hypohydrated minus euhydrated) were compared between groups using 2-sample t-tests. Paired t-tests were used to make within group comparisons. **RESULTS:** Repeated measures ANCOVA yielded no significant interactions or main effects. RER values for both groups during both treatments increased from rest to five minutes of exercise and remained steady after the five-minute measurement.  $\Delta RER$  for both groups was virtually unchanged during exercise. Lactate increased with the onset of exercise and showed very little change following the five-minute measurement. No significant differences were observed for  $\Delta$ lactate. Two-sample and paired t-tests comparing steady state measurements indicated no significant differences between and within the groups. Steady state RER remained constant between trials for both groups. Similar results were seen for steady state lactate, although the nonsmoking group did demonstrate slightly higher values for steady state lactate during the hypohydrated trial. **CONCLUSION:** The results of this study demonstrate that healthy male smokers and male nonsmokers have similar lactate and RER responses to submaximal exercise performed in a mild hypohydrated state, suggesting a similar use of fuel substrates.

## Poster 24

### C-REACTIVE PROTEIN IS UNAFFECTED BY EXERCISE OR N-3 FATTY ACID SUPPLEMENTATION IN RECREATIONALLY TRAINED MALES.

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Extended sessions of exercise produce a systemic inflammatory response which increases levels of the acute-phase reactant, C-reactive protein (CRP). Omega-3 fatty acids (n-3fa) possess anti-inflammatory properties. **PURPOSE:** The purpose of this study was to examine the effects of n-3fa supplementation and moderate exercise on plasma CRP levels. **METHODS:** Subjects were 10 recreationally active males, aged  $25 \pm 1.5$  y ( $M \pm SE$ ), who supplemented n-3fa (4 g/d: 60% EPA, 40% DHA) for 4 wk. Basal CRP levels were assessed pre and post n-3fa supplementation. Before and after supplementation, subjects completed a 60 min session of treadmill exercise at 60%  $VO_{2max}$ . Following a 24 h diet and 48 h activity control period, blood was collected immediately before and 20 h (expected peak for CRP) following the exercise session. CRP concentrations were measured by ELISA. **RESULTS:** Basal CRP concentrations were not influenced by 4 wk n-3fa supplementation (pre= $0.48 \pm 0.03$  vs. post= $0.58 \pm 0.07$  mg/L). In addition, CRP concentration was not elevated following exercise either prior to (pre EX= $0.47 \pm 0.03$  vs. post EX= $0.48 \pm 0.04$ ) or following n-3fa supplementation (pre EX= $0.59 \pm 0.09$  vs. post EX= $0.66 \pm 0.12$ ). **CONCLUSION:** Moderate-intensity exercise did not significantly elevate CRP concentrations, and n-3fa supplementation was not effective in reducing the already low CRP levels. These findings suggest that recreationally trained males may not experience a systemic low-grade inflammatory response to moderate aerobic exercise and may not receive anti-inflammatory benefits from n-3fa supplementation.

Supported by the American College of Sports Medicine and Food for the 21st Century.



## Poster 25

### PHYSICAL ACTIVITY IN WOMEN RANDOMIZED TO MEAL REPLACEMENTS OR ORLISTAT DURING WEIGHT MAINTAINANCE

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University of Kansas, Lawrence, KS

**PURPOSE:** To compare the level of physical activity (PA) during weight maintenance, following substantial weight loss, in obese women randomized to either a low fat diet using meal replacements (MR) or a low fat diet plus Orlistat (ORL). **METHODS:** 64 women (age  $50 \pm 10$  y, weight  $101.58 \pm 17.13$  kg, BMI  $36.72 \pm 5.42$  kg/m<sup>2</sup>, body fat  $52.03 \pm 4.62$  %) completed a 12-month weight loss program that included nutritional, behavioral, and exercise instruction. For the first 12 weeks, participants consumed a very low-calorie diet (VLCD) in the form of liquid shakes. VLCD was followed by 4 weeks of refeeding. At week 16 participants were randomized to receive a MR treatment or an ORL treatment. Participants were instructed to follow a PA progression that increased from 15 min, 3 times per week at baseline to 50-60 min, 5-6 times per week at 6-months. They were encouraged to maintain a minimum of 300 min of PA per week after 6-months. A change score was calculated by subtracting PA at week 16 from PA at week 52. To test the difference in PA change scores, an independent t-test was utilized. **RESULTS:** Subsequent to randomization, participants lost an average of 20.99 kg. The weight of the MR group increased from  $80.27 \pm 13.25$  kg at week 16 to  $82.60 \pm 14.94$  kg at week 52 ( $P < 0.05$ ). Similarly, the weight of the ORL group increased from  $81.05 \pm 17.09$  kg to  $82.43 \pm 18.23$  kg ( $P < 0.05$ ). PA for the MR group significantly decreased from  $269.5 \pm 96$  min at week 16, to  $228.1 \pm 152$  min at week 52 ( $P < 0.05$ ). PA for the ORL group was  $235.9 \pm 103$  min at week 16 and  $241.3 \pm 111$  min at week 52 ( $P > 0.05$ ). There was no statistical difference in change in PA between weeks 16 and 52 between the MR and ORL groups ( $P > 0.05$ ). **CONCLUSION:** There was no difference in change scores between the MR and ORL groups. The lack of significant difference in change scores between groups was likely due to the high level of variability within in each group. In addition, across time PA decreased in the MR group but not in the ORL group.

## Poster 26

### THE INDEPENDENT CONTRIBUTION OF PHYSICAL ACTIVITY ON WEIGHT LOSS AT THREE LEVELS OF ENERGY INTAKE

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University of Kansas, Lawrence KS

**PURPOSE:** To determine if the influence of physical activity on weight loss is altered with progressively lower levels of energy intake. **METHODS:** Data from 1696 participants who underwent weight loss between December 1994 and June 2002 in three weight loss clinics, were analyzed retrospectively. The patients were between the age of 18 and 70 and took part in 12 weeks of weight loss. Participants were assigned to one of three treatment protocols based on initial BMI and comorbidities. Energy intake was either 520kcal, 800kcal and 1200kcal. Patients attended weekly meetings throughout the 12 week period at which weight was measured and behavioral skills were taught. In addition to diet, a standard physical activity program was prescribed for all the participants in both groups. Subjects were instructed on how to calculate the energy cost of physical activity and weekly totals (kcal) were reported. **RESULTS:** Weight loss was  $19.6 \pm 3.9$ kg,  $14.9 \pm 2.6$ kg and  $14.1 \pm 5.5$ kg for the 520, 800 and 1200kcal groups respectively. The mean energy expended weekly in physical activity was  $2366 \pm 1128$ kcal for the 520kcal group ( $n=1036$ ),  $2315 \pm 1016$ kcal for the 800kcal group ( $n=520$ ) and  $2245 \pm 1061$  for the 1200kcal group ( $n=140$ ) and did not differ significantly. The energy expended weekly in physical activity was significantly related to weight loss ( $r=0.26$ ,  $p \leq 0.05$ ). After adjusting for baseline weight the impact of physical activity on weight loss did not differ between the 3 groups. **CONCLUSIONS:** The influence of physical activity on weight loss was independent of the level of energy intake but accounted for only 7% of the variance in weight loss. Thus, although the contribution of physical activity to weight loss was not large, it did not diminish with progressively lower levels of energy intake.

## Poster 27

### A HEALTH-RELATED FITNESS PROFILE OF SOCIOECONOMICALLY DISADVANTAGED AFRICAN AMERICAN YOUTH AGED 10-16 IN SOUTH MISSISSIPPI

L.D. Proctor and M. Maneval.

Department of Health, Human Performance and Recreation, Southeast Missouri State University, Cape Girardeau, MO.

**PURPOSE:** The purpose of this study was to measure and describe the health-related fitness profile of 244 socioeconomically disadvantaged African American Youth (AAY) ages 10 to 16 attending a National Youth Sport Program (NYSP). **METHOD:** approximately 244 male and female subjects were arranged into three groups: 10 - 11 (group 1), 12 - 13 (group 2), and 14 - 16 (group 3), and used for comparison to national norms. The modified FITNESSGRAM was administered using the following variables of interest which included resting heart rate (RHR), 2-minute exercise heart rate (2EHR), 3-minute exercise heart rate (3EHR), systolic blood pressure (SBP), diastolic blood pressure (DBP), pulmonary function (% FEV1), sit-ups (SU), modified pull ups (MPU), flexibility (FLX), percent body fat (%BF), body mass index (BMI), waist-to-hip ratio (WHR), total cholesterol (TC), high density lipoprotein (HDL), total cholesterol to high density lipoprotein ratio (TC/HDL), and blood glucose (BG). **RESULTS:** On the measure of EHR, 35% and 71% of the female population on 2-minute EHR (2EHR) and 3-minute EHR (3EHR) were not able to achieve the national standards. On the measure of waist-to-hip ratio 34% of the female population did not meet national standards with 33% of the same population having an elevated body mass index (BMI). On the measure of upper body muscular endurance (UBME) as measured by MPU, 30% of the female groups were deemed below-normal standards. Finally, on the measurement of blood glucose (BG), 25% of the female subjects in the present study displayed elevated values. When the male population was compared to the national norms, 30 % and 63 % of the male subjects failed to meet the normal standards of 2-minute and 3-minute EHR respectively. Mean resting heart rates (RHR) for male subjects indicated that 32% had above normal values. In addition, 38 % of the male population did not meet the normal standards when measured on BMI with 38 % of the group failing to achieve normal status regarding percent body fat (% BF). Of note, is the fact that 26 % of the male population fell below the normal status on the measure of modified pull-up test (MPU). **CONCLUSION:** The social class profiled in this study and defined by Low-SES appears to exhibit early warning signs on the health-related fitness variables described above. Based on these findings, it is recommended that intervention strategies for this population be designed to address the negative trends reported in this investigation.

Supported by Black Coaches Association.

# BIOGRAPHIES OF CANDIDATES

## President-elect Candidates

### **Joe Pujol, Ed.D., FACSM**

**Associate Professor, Southeast Missouri State University, Cape Girardeau, MO**

I have been instrumental in establishing the graduate program at Southeast Missouri State University. I developed the MS in Nutrition and Exercise Science with a colleague in dietetics. Research interests include the areas of exercise testing and effects of external stimuli. I have been active in the Central States Chapter since moving here in 1996 and have served as Missouri State Representative, as member on 3 of the 4 standing committees of the CSC, and as Newsletter Editor. I have been Workshop Director for our HFI Workshop/Certification since 1999. Certifications: HFI, ETT, and CSCS.

### **Kenneth R. Turley, Ph.D., FACSM**

**Associate Professor of Kinesiology/Director Human Performance Lab, Harding University, Searcy, AR**

I teach graduate and undergraduate Kinesiology/Exercise Science courses and developed the exercise science degree at Harding. I am a manuscript reviewer for several professional and scientific journals including, Acta Paediatrica, International Jo. Sports Med, JAP, MSSE, Pediatric Exercise Science, Sports Medicine. I have 13 peer reviewed publications in journals such as American J Clin Nutr, JAP, MSSE, and Ped Exer Sci. As a member of the Central States Chapter, I have served on three standing Committees including the Board, as well as the Arkansas Representative. I am a Certified ACSM Exercise Specialist.

## Kansas Representative Candidates

### **Michael Godard, PhD**

**Assistant Professor, University of Kansas, Lawrence, KS**

I am in my second year on faculty at KU. My previous position was as Assistant Professor at the University of Southern Maine. My major research emphasis is on the physiological processes that transpire with heart failure and aging in humans from the whole organism to genetic level. I teach both undergraduate and graduate courses in the area of Applied/ Exercise Physiology at KU. I previously served as the Maine Representative for the New England Chapter of ACSM. I have been presenting both regionally and nationally at ACSM meetings since 1995.

### **Denise V. Gobert, PT, PhD**

**Assistant Professor / Research Scientist, University of Kansas Medical Center (KUMC), Kansas City VA Medical Center (KCVAMC)**

I am an Assistant Professor of Physical Therapy & Rehabilitation Sciences at the University of Kansas Medical Center and a Research Scientist at the Kansas City VA Medical Center. I am Director of the Balance & Mobility Research Laboratory, which houses the Stroke Wellness and Fitness Program at KUMC. My research interests center on neurorehabilitation strategies to improve balance and mobility in disabled populations. I am an active participant in both national and international professional groups such as the Kansas Physical Therapy Association, American College of Sports Medicine, on the Editorial Board for the Journals of Cardiovascular Disorders and Physical Therapy Reviews, American Physical Therapy Association and the International Society for Posture & Gait Research.

## Missouri Representative Candidates

### **Jeremy Barnes, Ph.D.**

#### **Associate Professor, Southeast Missouri State University, Cape Girardeau, MO**

I am the coordinator of the BS in Health Management Program at Southeast. My research interests are in worksite health promotion and weight management. I have been a member of ACSM since 1990 and have presented abstracts at the National Meeting for the last five years and have spoken at the Central States Meeting twice. Since 1998, I have been active in the Central States Chapter. I have served as Missouri State Representative and on the Nominations and Conference Site standing committees. For the last five years I have served as an examiner and lecturer for the HFI Workshop/Certification at Southeast Missouri State University.

### **Thomas S. Altena, Ed.D.**

#### **Assistant Professor, Southwest Missouri State University, Dept. HPER**

My educational background is diverse, and ranges from Physical Education through a post-doctorate in Exercise Physiology. This diversity allows me greater understanding of the various facets that create our field of study that compliment the ACSM. I teach undergraduate students at SMS in Applied Human Physiology, Physiology Labs, and Fitness and Wellness. My research has been focused on the effects that exercise on lipid and lipoprotein metabolism. My hope is to continue this line of research through collaborative efforts both with students and faculty members. My past involvement in ACSM has been through research presentations, and also serving as an instructor and proctor for HFI certification testing at Oklahoma State University. I believe that academic and research boundaries are created only by the limitations of our minds, and I am honored to be nominated to serve CSC-ACSM as the Missouri Representative.