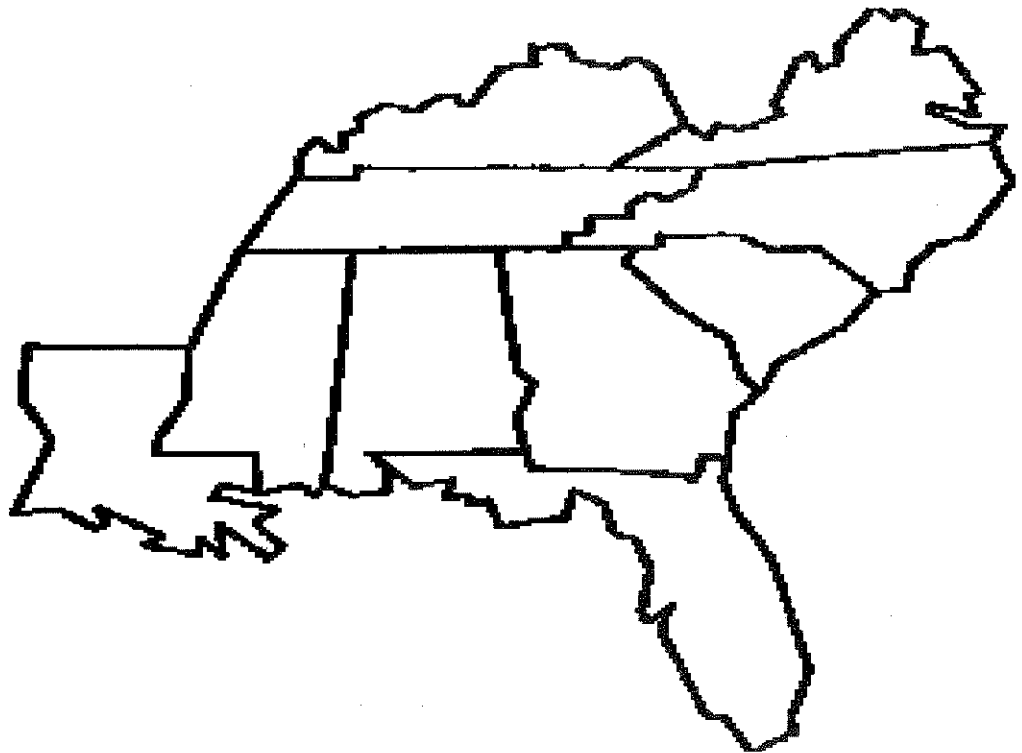


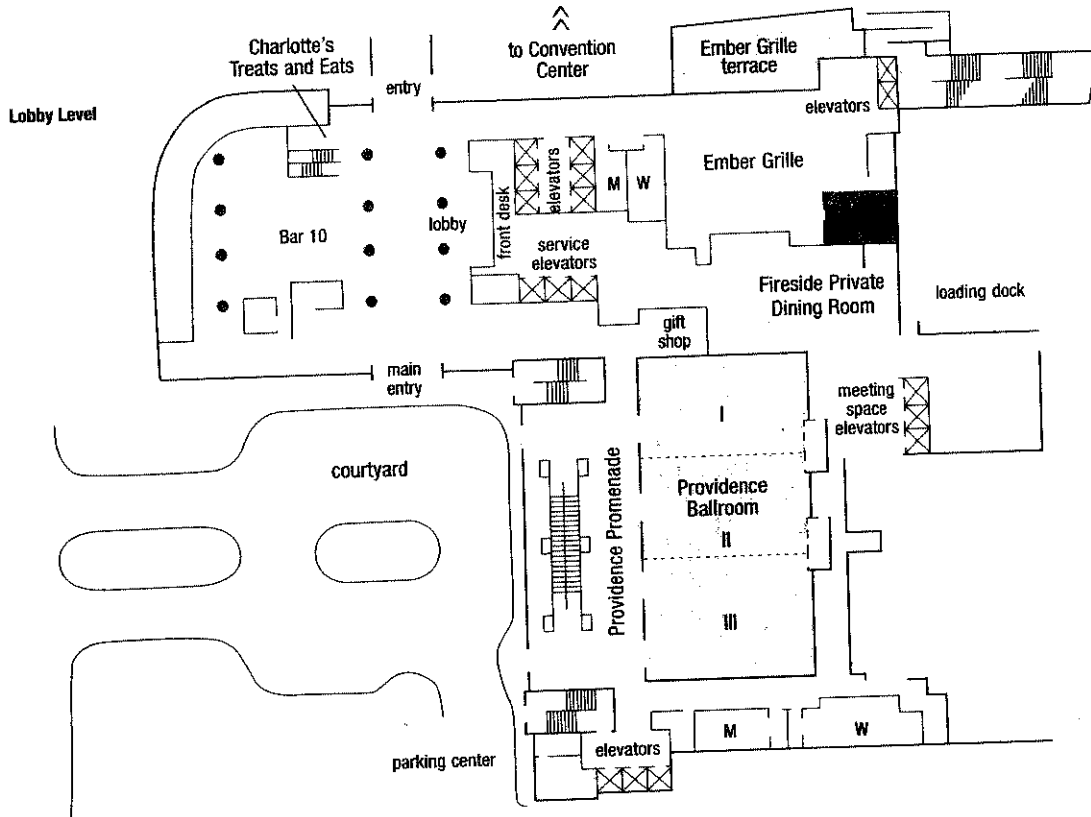
**AMERICAN COLLEGE
of SPORTS MEDICINE**
SOUTHEAST REGIONAL CHAPTER

**January 27-29, 2005
33rd Annual Meeting
The Westin Hotel
Charlotte, North Carolina**

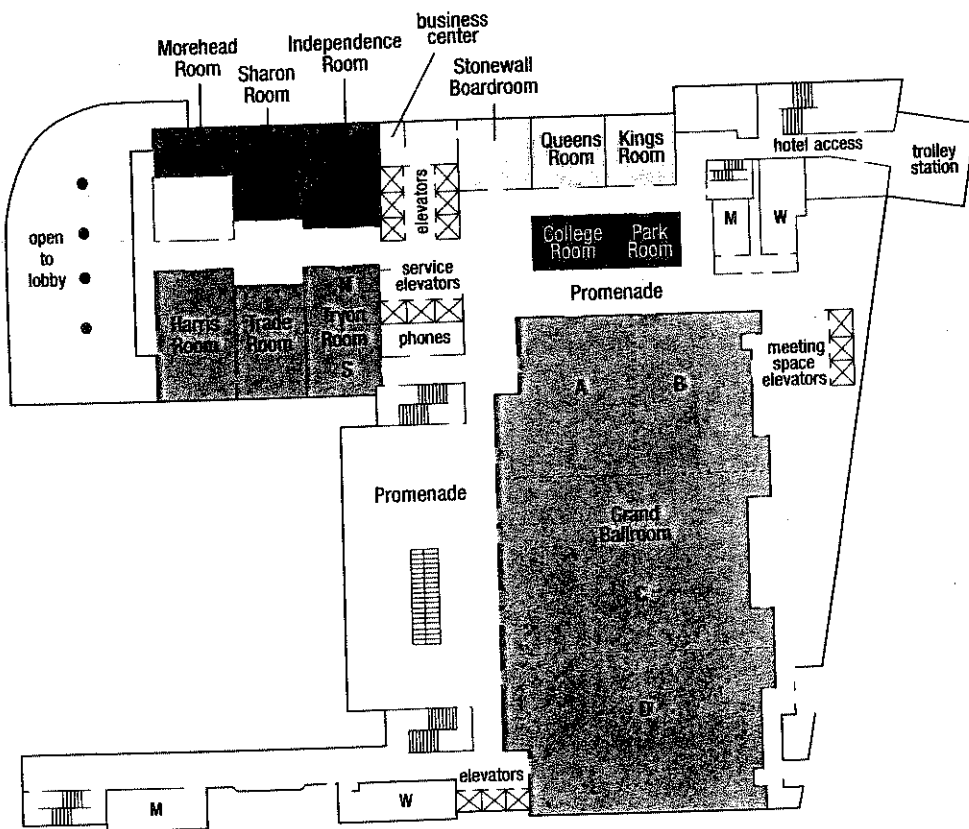
**A
B
S
T
R
A
C
T
S**



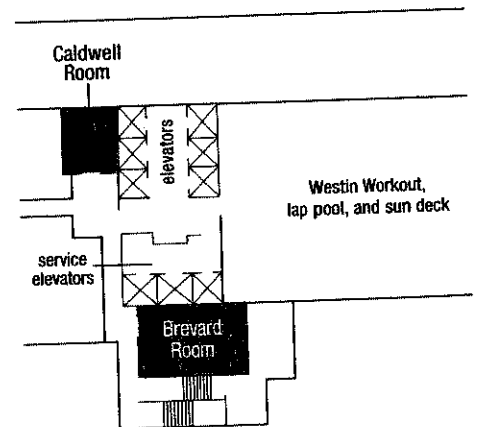
Jointly Sponsored by: The American College of Sports Medicine (ACSM)
and the Southeast Chapter of the American College of Sports Medicine (SEACSM)



Level Two



Level Three



Thirty-Third Annual Meeting

**SOUTHEAST REGIONAL CHAPTER
AMERICAN COLLEGE OF
SPORTS MEDICINE**

**The Westin Hotel
Charlotte, North Carolina
January 27-29, 2005**

Officers

President:

Allan Goldfarb, University of North Carolina@ Greensboro

Past President:

Beverly Warren, Virginia Commonwealth University

President-Elect:

Tim Lightfoot, University of North Carolina @ Charlotte

Executive Board:

Stephen Bailey, Elon University

B. Sue Graves, Florida Atlantic University

Judith Flohr, James Madison University

Andrew Gregory, (Clinical Rep.)

Janet Rankin, Virginia Tech, (National Rep)

Daniela Rubin, UNC at Chapel Hill (Student Rep.)

Debra M. Vinci, University of West Florida

Executive Director:

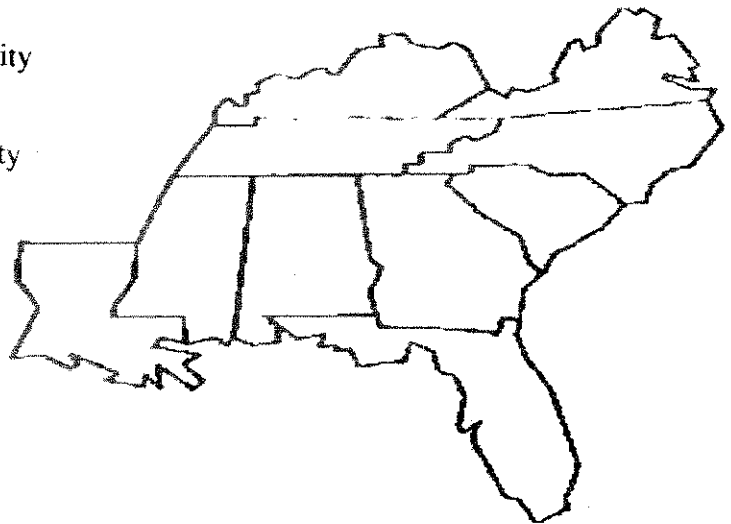
Carolynn Berry, Winston Salem University

Exhibits, Sponsorships & Fund Raising:

Liz Dowling, Old Dominion University

Publisher and Editor:

Don Torok, Florida Atlantic University



Meeting Objective

At the conclusion of the meeting, participants should be able to:

- Understand the biological, biomechanical, and psychological bases for the changes that occur during and following exercise in both normal and pathological states
- Identify new approaches to problems in exercise science and sports medicine through interaction among scientists and clinicians
- Recognize contemporary controversial issues related to sports medicine and exercise science
- Examine state-of-the-art and innovative basic science, applied science, and clinical information which will increase their knowledge of exercise, fitness, health, physical performance and sports medicine

Accreditation

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 Southeast Chapter of the American College of Sports Medicine. The American College of Sports Medicine is accredited by the ACCME to provide continuing medical education for physicians.

AMA/PRA

The American College of Sports Medicine designates this educational activity for a maximum of 15.5 hours in category I credit towards the AMA Physician's Recognition Award. Each physician should claim only those hours of credit that he/she actually spent in the educational activity.

Continuing Education Credits

SEACSM is an approved provider for ACSM and NATA (P788). Continuing education credits (CECs) have been applied for through NSCA, AFP and ACE. An attendee form will be available to sign to be eligible to receive CECs from the Commission of Dietetic Registration. Attendance verification forms will be available for these and other organizations upon request.

Faculty Disclosure

In accordance with ACCME requirements, faculty at all educational activities that receive CME credit must provide the audience with (1) disclosure of financial relationships they have with the supporters of this conference or with the manufacturers of products discussed in their presentations, and (2) disclosure of unlabeled or unapproved uses of drugs or devices that are discussed in their presentations. Therefore, the following information is provided:

Thomas Byrd has served as a consultant Pfizer Pharmaceuticals. Laurie Goodyear served on the Academic Advisory Board of Pfizer until March 2004. Larry Kenney has been a consultant for the Gatorade Sports Science Institute. Walter Taylor is a stockholder in Pfizer Pharmaceuticals. All other faculty returned disclosure forms indicate that they have no affiliation or financial interest in any organization(s) that may have a direct interest in the subject matter of their presentation(s).

Disclosure of Unlabeled/Unapproved Uses of Drugs or Devices

Notice: In accordance with the ACCME Standards for Commercial Support, the audience is advised that one or more presentations in this continuing medical education activity may contain reference(s) to unlabeled or unapproved uses of drugs or devices. Speakers will disclose this information at the time of their presentation.

Acknowledgement of Commercial Support

The Southeast Chapter of the American College of Sports Medicine gratefully acknowledges the unrestricted educational grants from: Pfizer, and Gatorade Sports Science Institute,

Planning Committee

Steve Bailey, Lynn Berry, Judith Flohr, Allan Goldfarb, Tim Lightfoot, Bev Warren

SEACSM List of Reviewers

Steve Bailey, Judith Flohr, Tim Lightfoot

SEACSM Meetings & Officers

	<u>Date/Place</u>	<u>Pres./PastPres./PresElect</u>	<u>Executive Board</u>
1st	Fall 1973 Gatlinburg, TN	Andrew Kozar	
2nd	Fall 1974 Atlanta, GA	Clyde Partin	
3rd	Fall 1975 Charlottesville, VA	Dan Copeland	
4th	Fall 1976 Murfreesboro, TN	Rankin Cooter	
5th	Fall 1977 Lexington, KY	Ed Howley	Steve Blair Ron Byrd Joe Smith
6th	Fall 1978 Columbia, SC	Russ Pate	
7th	Feb. 16-17, 1979 Atlanta, GA	Dennis Wilson Ed Howley Ron Byrd	Earl Allen Thad Crews Art Weltman
8th	Feb. 8-9, 1980 Charlotte, NC	Ron Byrd Dennis Wilson Paul Ribisl	Bruce Gladden Jay Kearney Russ Pate
9th	Feb. 6-7, 1981 Charleston, SC	Paul Ribisl Ron Byrd Bill Herbert	Joe Chandler Tom Cronan Kirk Cureton
10th	Feb. 5-6, 1982 Blacksburg, VA	Bill Herbert Paul Ribisl Russ Pate	Harvey Murphy (ES) Jon MacBeth (ES) Joe Chandler Tom Cronan Kirk Cureton Robert McMurray
11th	Feb. 4-5, 1983 Gainesville, FL	Russ Pate Bill Herbert Kirk Cureton	Jon MacBeth (ES) Earl Allen David Cundiff Scott Powers
12th	Feb. 3-4, 1984 Auburn, AL	Kirk Cureton Russ Pate Chris Zauner	Ron Bos (ES) Emily Haymes Phil Sparling Mike Stone

	<u>Date/Place</u>	<u>Pres./PastPres./PresElect</u>	<u>Executive Board</u>
13th	Jan. 31-Feb. 2, 1985 Boone, NC	Chris Zauner Kirk Cureton Robert McMurray	Ron Bos (ES) John Billings Harry DuVal Diane Spitler J. W. Yates
14th	Jan. 23-25, 1986 Athens, GA	Robert McMurray Chris Zauner Scott Powers	Ron Bos (ES) Terry Bazarre John Billings J. Larry Durstine Russ Pate (N) Diane Spitler
15th	Jan. 29-31, 1987 Charleston, SC	Scott Powers Robert McMurray Diane Spitler	Ron Bos (ES) Terry Bazarre J. Larry Durstine Steve Messier Allen Moore (S) Russ Pate (N) Janet Walberg
16th	Jan. 28-30, 1988 Winston-Salem, NC	Diane Spitler Scott Powers Phil Sparling	Ron Bos (ES) Dalynn Badenhop Gay Israel Steve Messier Russ Pate (N) Janet Waiberg Rankin Mark Senn (S)
17th	Jan. 19-20, 1989 Atlanta, GA	Phil Sparling Diane Spitler Emily Haymes	Ron Bos (ES) Dalynn Badenhop Kirk Cureton (N) Mark Davis Gay Israel Ben Kibler (MD) David Peltzer (S) Art Weltman
18th	Feb. 1-3, 1990 Columbia, SC	Emily Haymes Phil Sparling Harry DuVal	Ron Bos (ES) Jerry Brandon Maria Burgess (S) Kirk Cureton (N) Mark Davis Ben Kibler (MD) Dianne Ward Art Weltman
19th	Jan. 31-Feb. 2, 1991 Louisville, KY	Harry DuVal Emily Haymes Steve Messier	Ron Bos (ES) Jerry Brandon Maria Burgess (S) Kirk Cureton (N) Kevin Davy (S) Alan Rogol (MD) Jeff Rupp Amanda Timberlake Dianne Ward

	<u>Date/Place</u>	<u>Pres./PastPres./PresElect</u>	<u>Executive Board</u>
20th	Jan. 30-Feb. 1, 1992 Auburn, AL	Steve Messier Harry DuVal Gay Israel	Ron Bos (ES) Kevin Davy (S) Bill Duey (S) Ben Kibler (MD) Mindy Millard-Stafford Bob Moffatt Alan Rogol (MD) Jeff Rupp Phil Sparling (N) Amanda Timberlake
21st	Jan. 28-30, 1993 Norfolk, VA	Gay Israel Steve Messier J. Mark Davis	Vaughn Christian (ES) Barbara Ainsworth Michael Berry Jeff Chandler (CC) Shala Davis (S) Mindy Millard-Stafford Bob Moffatt Alan Rogol (MD) Phil Sparling (N) Kevin Tipton (S)
22nd	Jan. 20-22, 1994 Greensboro, NC	J. Mark Davis Gay Israel Janet Walberg Rankin	Vaughn Christian (ES) Barbara Ainsworth Michael Berry Jeff Chandler (CC) Shala Davis (S) Allan Goldfarb Victoria Schnyder (S) Phil Sparling (N) Beverly Warren
23rd	Feb. 2-4, 1995 Lexington, KY	Janet Walberg Rankin J. Mark Davis J. Larry Durstine	Vaughn Christian (ES) Carolyn Berry Jeff Chandler (CC) Allan Goldfarb Ed Howley (N) David Nieman Victoria Schnyder (S) Beverly Warren
24th	Feb. 1-3, 1996 Chattanooga, TN	J. Larry Durstine Janet Walberg Rankin Bruce Gladden	Vaughn Christian (ES) Carolyn Berry Ed Howley (N) Tim Lightfoot Patricia Mosher David Nieman Stewart Trost (S) George Wortley (MD)
25th	Jan. 23-25, 1997 Atlanta, GA	Bruce Gladden J. Larry Durstine Bob Moffatt	Vaughn Christian (ES) Dave Bassett Ed Howley (N) Tim Lightfoot Patricia Mosher Ann Swank Stewart Trost (S) George Wortley (MD)

	<u>Date/Place</u>	<u>Pres./PastPres./PresElect</u>	<u>Executive Board</u>
26th	Jan. 29-31, 1998 Destin, FL	Bob Moffatt Bruce Gladden Dianne Ward	Vaughn Christian (ES) Dave Bassett Mark Davis (N) Bonita Marks Mike Overton Ann Swank Melicia Whitt (S) George Wortley (MD)
27th	Feb. 4-6, 1999 Norfolk, VA	Dianne Ward Bob Moffatt Jeff Rupp	Vaughn Christian (ES) Mark Davis (N) Steve Dodd Bonita Marks Mike Overton Dixie Thompson Melicia Whitt (S) George Wortley (MD)
28th	Jan. 27-29, 2000 Charlotte, NC	Jeff Rupp Dianne Ward Mindy Millard-Stafford	Vaughn Christian (ES) Ted Angelopoulos Linda Chitwood Mark Davis (N) Keith DeRuisseau (S) Steve Dodd Dixie Thompson George Wortley (MD)
29th	Jan. 25-27, 2001 Charlotte, NC	Mindy Millard-Stafford Jeff Rupp David Nieman	Vaughn Christian (ES) Ted Angelopoulos Linda Chitwood Bruce Gladden (N) Keith DeRuisseau (S) Craig Broeder Liz Dowling George Wortley (MD)
30 th	Jan 31-Feb.2, 2002 Atlanta, GA	David Nieman Mindy Millard-Stafford Michael Berry	Vaughn Christian (ED) Anne Allen (MD) Craig Broeder Bruce Gladden (N) Greg Hand Pat Nixon Ray Thompson (S) Liz Dowling Don Torok
31 st	Jan 30-Feb 1, 2003	Michael Berry David Nieman Beverly Warren	Carolynn Berry (ED) Anne Allen (MD) Bruce Gladden (N) Greg Hand Pat Nixon David Pascoe Ray Thompson (S) Liz Dowling Don Torok Alan Utter

	Date/Place	Pres./PastPres./PresElect	Executive Board
32 nd	Jan.29-31, 2004	Beverly Warren Allan Goldfarb Michael Berry	Carolynn Berry (ED) Stephen Bailey B. Sue Graves Ron Lee (MD) David Pascoe Janet Rankin Daniela Rubin (S) Alan Utter Liz Dowling Don Torok
33 rd	Jan. 27-29, 2005	Allan Goldfarb Tim Lightfoot Beverly Warren Allan Goldfarb Michael Berry	Carolynn Berry (ED) Stephen Bailey B. Sue Graves Judith Flohr Andrew Gregory (MD) Janet Rankin Daniela Rubin (S) Debra M. Vinci Liz Dowling Don Torok

ES = Executive Secretary

S = Student Representative

CC = Clinical Consultant

N = National Representative

MD = Physician Representative

ED = Executive Director

SEACSM Award Winners

	<u>Scholar Award</u>	<u>Service Award</u>	<u>Student Award</u>
1989	Hugh Welch	Ron Bos	
1990	Russ Pate	Harvey Murphy	
1991	Wendell Stainsby	Paul Ribisl	Paul Davis
1992	Robert Armstrong	Phil Sparling	Brian Hinson
1993	Michael Pollock	Dennis Wilson	Steve Bailey
1994	Kirk Cureton	Ed Howley	David Criswell
1995	Scott Powers	Gay Israel	Marian Kohut
1996	Mel Williams	Russ Pate	Marvin Rainwater
1997	Henry Montoye	Emily Haymes	Kathryn Gracey
1998	Ed Howley	Kent Johnson	Heather Vincent
1999	Steve Messier	Vaughn Christian	Christopher Hewitt
2000	Bruce Gladden	J. Larry Durstine	Katherine Brittingham
2001	Barbara Ainsworth	Janet Walberg Rankin	Jamie Golden
2002	J.Mark Davis	Jeff Rupp	Joseph M. McClung
2003	Robert McMurray	Don Torok	Mahmoud Alomari
2004	Rod Dishman	Mindy Millard-Stafford	Kristen Mehl
2005	Emily Haymes		Martin Carmichael

Time/Day	Tryon	Ballroom C	Ballroom D	Trade	Harris	Independence	Sharon	Ballroom A	Ballroom B	Promenade	Stonewall
Thursday										Exhibitor set-up	Boardroom
4-4:30	S1			S2	S3	O1-05	O6-010	T1		P1-11	Exec Bd meeting
4:30-5:15	S1			S2	S3	O1-05	O6-010	T1		P1-11	
5:15-6	S1			S2	S3	O1-05	O6-010			P1-11	
7:30-9		Keynote									
9-11 PM			Social								
Friday											
7-8:30											
8-8:30		Presidential								P12-22	
8:30-9		Address								P12-22	
9:15-9:30	S4			T2	O16-020	O11-015	S5	S6		P12-22	
9:30-10	S4			T2	O16-020	O11-015	S5	S6		P12-22	
10-10:45	S4			T2 (10:15)	O16-020	O11-015	S5	S6		P12-22	
11-12:00		Invited Lecture									
12:30-1:30											
1:30-2:30		Basic Science								P23-P34	
2:45-4:15	S7			T4 (3:45)	O26-030	O21-025	S8	T3 (3:45)		P23-P34	
4:15-5:15		Student Symp									
5:15-5:30		Student Symp									
5:30-6:30			Grad Fair								
Saturday											
8-9 AM		Montoyo Lecture									
9-10 AM	S9			T5 (9:15)	T6 (9:15)						
10:15-10:30	S9			T5 (10:15)	T6 (10:15)						
10:30-11	S10			T7 10:45	T8 10:45	O31-35	O36-040			P35-P45	
11-11:30	S10			T7	T8	O31-35	O36-040			P35-P45	
11:30-12:00	S10					O31-35	O36-040				
12-2 PM		Luncheon Speaker									Exec Bd meeting
2-4 PM											

- 8:00-10:30
Promenade
- POSTER PRESENTATIONS II (P11-P21)** Authors present from 9:30-10:30
 Athletic Care/Trauma/Rehabilitation Biomechanics/Gait/Balance
 Connective Tissue/Bone/Skeletal Muscle Competitive Athletes
 Fitness/Testing/Assessment Respiratory Physiology
- 8:00-9:00
(CME1*)
Ballroom C
- ACSM PRESIDENTIAL ADDRESS**
“Are Ya Ready for Some Football?: Heat Stress and Heat Deaths in America's Game”
 W. Larry Kenney, PhD, FACSM, ACSM Past-President, Noll Physiological Research Center, Pennsylvania State University, University Park, PA
- 9:00-9:15
BREAK
- 9:15-10:45
**Tryon
Sharon
Ballroom A**
- SYMPOSIA (S4-S6)**
 Physical (IN)Activity and Central Adipose Tissue: The Gland in the Gut
 Calcium Scoring, Coronary Artery Disease, and Physical Activity
 Exercise-Induced Cardioprotection: A History, Recent Advances, and Future Directions
- 9:30-10:30
Trade
- TUTORIAL (T2)**
 Cardiorespiratory Fitness Assessment: Considerations for Accurate Prediction of Maximal Oxygen Consumption
- 9:15-10:45
**Independence
Harris**
- ORAL FREE COMMUNICATIONS**
 Epidemiology & Preventive Med - Psychology/Psychiatry/Behavior – Growth, Development & Aging (O11-O16)
 Exercise Evaluation - Growth, Development & Aging – Nutrition and Exercise/Sports - Body Composition (O16-O20, O26)
- 10:45-11:00
BREAK
- 11:00-12:00
(CME1*)
Ballroom C
- SPECIAL INVITED LECTURE – Exercise Psychology**
“Physical Activity and Aging: Psychological Outcomes and Underlying Processes”
 Edward McAuley PhD – Professor, Depts of Kinesiology, Psychology, Beckman Institute for Advanced Science and Technology, University of Illinois
- 12:00-1:15
PAST PRESIDENT’S LUNCH
- 1:00-1:30
Ballroom B
- CLINICAL TRACK – Snapping Hip, Hip Bursitis**
- 1:30-3:30
Promenade
- POSTER PRESENTATIONS III (P22-P33)** Authors present 2:30-3:30
 Metabolism/Carbohydrate, Lipid, Protein Nutrition and Exercise/Sports
 Cardiovascular Physiology Cellular Regulatory Mechanisms
 Psychology/Psychiatry/Behavior Growth, Development & Aging
- 1:30-2:30
(CME1*)
Ballroom C
- BASIC SCIENCE LECTURE**
“Gene-environment interaction and disease pathogenesis: what have we learned so far?”
 Steven Kleeberger, PhD. Lab Chief, Respiratory Biology Lab, National Institutes of Environmental Health Sciences, Durham, NC.

- 1:30-2:00
Ballroom B **CLINICAL TRACK – Hamstring, Quadricep, & Adductor Injuries in Athletes**
- 2:00 -2:30
Ballroom B **CLINICAL TRACK – Stress Fractures of the Hip/Pelvis**
- 2:30 – 3:00
Ballroom B **CLINICAL TRACK – Piriformis Syndrome**
- 2:45-4:15
Tryon
Sharon **SYMPOSIA (S7-S8)**
Relationship of Obesity and Fitness in Multicultural Children
An Emerging Model to Study Skeletal Muscle Disuse Atrophy
- 2:45-3:45
Trade
Ballroom A **TUTORIALS (T3-T4)**
Is Cardiovascular Drift Related to Reduced Maximal Oxygen Uptake?
The Effects of Exercise on Cancer Treatment-Related Symptoms
- 2:45-4:15
Independence
Harris **ORAL FREE COMMUNICATIONS**
Biomechanics/Gait/Balance (O21-O25)
Body Composition/Energy Balance/Weight Control (O27-O30)
- 3:00 – 3:30
Ballroom B **CLINICAL TRACK – Hip Injuries in Children**
- 4:00 – 5:00
Ballroom B **CLINICAL TRACK KEYNOTE – Evaluation and Treatment of Abdominal and Inguinal Pain in Athletes**
- 4:15-5:30
Ballroom C **STUDENT SYMPOSIUM**
“You Have Your Degree: Now What Do You Do?”
Mr. Breon Klopp, Pit Crew Training, Inc.
Mr. Michael DeVaul, YMCA of Greater Charlotte
Dr. Walt Thompson, Georgia State University
Dr. Janet Wahlberg-Rankin, Virginia Tech
Dr. Melinda Campbell, Meredith College
- 5:30 – 6:30
Ballroom D **SEACSM GRADUATE STUDENT FAIR**
- 6:00 – 7:00
Ballroom B **CLINICAL TRACK KEYNOTE – Evaluation and Management of Hip Joint Injuries in Athletes**

SATURDAY, JANUARY 29, 2005

- 7:30-9:00 **REGISTRATION (Promenade)**
- 7:00-12:00 **SPEAKER READY ROOM**
- 8:00-9:00
(CME1*)
Ballroom C **HENRY J. MONTOYE SCHOLAR LECTURE**
“Nutrition, Exercise and Sport Performance”
Emily Haymes, PhD, FACSM, Florida State University.

**SOUTHEAST AMERICAN COLLEGE OF SPORTS MEDICINE
2005 ANNUAL MEETING SCHEDULE**

THURSDAY, JANUARY 27, 2005

12:00 – 2:00 BOARD MEETING (Stonewall Boardroom)

12:00 – 6:00 REGISTRATION (Promenade)

2:00 – 7:00 SPEAKER READY ROOM (Morehead)

4:00 – 9:00 EXHIBITS (Promenade)

4:00 – 6:00 **POSTER PRESENTATIONS I. (P1-P10)** Authors present from 5:00-6:00
Promenade

Body Composition

P1 EXCESS POSTEXERCISE OXYGEN CONSUMPTION IN UNTRAINED MALES: EFFECTS OF EQUATING EXERCISE CALORIC EXPENDITURE BETWEEN A COMBINED BOUT OF ARM AND LEG EXERCISE AND A CONTINUOUS BOUT OF ARM EXERCISE, Authors: Lyons, S., Richardson, M., Bishop, P., Smith, J., Heath, H., & Giesen, J. Western Kentucky University; University of Alabama.

P2 SKINFOLD AND DEXA ASSESSMENT OF BODY COMPOSITION IN BLACK POSTMENOPAUSAL WOMEN, R. S. Farley, J. L. Caputo, A. B. Collins, B. M. Eveland, & S. M. Otto Middle Tennessee State University, Murfreesboro, TN.

P3 THE EFFECTS OF A HIGH FAT OR LOW FAT WEIGHT LOSS DIET ON MARKERS OF INFLAMMATION AND OXIDATIVE STRESS IN OVERWEIGHT WOMEN, Abigail Turpyn, Janet Walberg Rankin, FACSM. Virginia Tech, Blacksburg, VA.

Environmental Physiology

P4 EXERCISE INDUCED HYPONATREMIA DURING INTENSIVE LONG FIELD MARCHES @C MECHANISM AND PREVENTION, M. Magal^{1,2}, D. Dinour³, D. Moran^{2,5}, N. Pelled^{4,5} and Y. Epstein^{2,4}. North Carolina Wesleyan College¹, Rocky Mount, NC; Heller institute of Medical Research², Israel; the Department of Nephrology and Hypertension, Sheba Medical Center, Tel Hashomer³, Israel; Sackler Faculty of Medicine, Tel Aviv University⁴, Israel.

P5 METABOLIC AND THERMOREGULATORY RESPONSES TO A SIMULATED FOOTBALL PRACTICE IN THE HEAT, Hitchcock, K., Millard-Stafford, M., Phillips, J., and Gibbs, K. Exercise Physiology Laboratory, Georgia Institute of Technology, Atlanta, GA.

Endocrinology

P6 DAY TO DAY VARIABILITY OF SELECT HORMONES IN ACTIVE MEN, E. Zack and A.C. Hackney, FACSM. Endocrine Section -Applied Physiology Laboratory, UNC-CH, Chapel Hill, NC.

- Epidemiology**
- P7 FREQUENCY AND CHARACTERIZATION OF INJURY IN ROCK CLIMBING,
 Marcus K. Taylor¹, Rick LaCaille¹, J.K. Taylor², Ricardo Pietrobon¹
 (1) Duke University Medical Center, Durham, NC (2) International Sports Sciences
 Association, Santa Barbara, CA.
- P8 DIRECT OBSERVATION OF A COMMUNITY RECREATIONAL TRAIL, J.A. Reed, S.
 Hagen, H. Haring. Department of Health and Exercise Science, Furman University,
 Greenville, SC.
- P9 CORRELATES OF ACHIEVING PHYSICAL ACTIVITY RECOMMENDATIONS IN
 AFRICAN-AMERICAN CHURCH MEMBERS, K. Butler, M. Bopp, S. Wilcox, M. Laken,
 J. Charton, L. McClorin, R. Swinton, O. Gethers, D. Bryant, J. Jordan, T. Anderson, R.
 Carter. University of South Carolina, Columbia, SC and Medical University of South
 Carolina, Charleston, SC.

Research Design and Statistics

- P10 OSTEOPOROSIS AND MALES: ARE THEY AT THE SAME RISK AS FEMALES,
 William Linville and Tim Clouch. Live Well Program, Tennessee Valley Authority,
 Chattanooga, Tenn.

4:00-5:30

SYMPOSIA (S1 – S3)

Tryon

S1

EXERCISE, PHYSICAL FUNCTION, AND HIV DISEASE.
 Gregory A. Hand, Kenneth D. Phillips, and James A. Carson. University of South
 Carolina, Columbia.
 Chair: Dixie Thompson, PhD, University of Tennessee – Knoxville.

Harris

S2

PREVENTION AND REHABILITATION OF ANKLE SPRAINS.
 Brent L. Arnold, Scott E. Ross. Virginia Commonwealth University, Richmond, VA.
 Chair: Tibor Hortobagyi, PhD, East Carolina University.

Trade

S3

ACCREDITATION OF EDUCATIONAL PROGRAMS IN EXERCISE SCIENCE AND
 EXERCISE PHYSIOLOGY AND THE COMMISSION ON ACCREDITATION OF
 ALLIED HEALTH EDUCATION PROGRAMS (CAAHEP) COMMITTEE ON
 ACCREDITATION FOR THE EXERCISE SCIENCES (COAES): WHAT IS
 ACCREDITATION?
 Thompson, WR and Colvin, L. Georgia State Univ., University of Louisiana-Monroe.
 Chair: Linda Chitwood, PhD, University of Mississippi.

4:00 – 5:00

Ballroom A

T1

TUTORIAL (T1)

EFFICACY OF CARBOHYDRATE/PROTEIN BEVERAGES FOR ENDURANCE
 PERFORMANCE AND RECOVERY.
 Michael J. Saunders, Ph.D., FACSM., Department of Kinesiology, James Madison
 University, Harrisonburg, VA.
 Chair: J. Andrew Doyle, PhD, Georgia State University.

4:00 – 5:15

Independence**ORAL FREE COMMUNICATIONS****Cellular Regulatory Mechanisms**

Chair: John Quindry, PhD, University of Florida.

- O1 EFFECTS OF INCREASED OR DECREASED ACTIVITY ON THE NEUROMUSCULAR JUNCTION, Kelly A. Tenny, Meredith H. Wilson, and Michael R. Deschenes. The College of William & Mary.
- O2 EVALUATION OF PHYSICAL ACTIVITY PHENOTYPES IN SECOND GENERATION CROSSBRED MICE, David G. Weih, Sean M. Courtney, Melissa A. Graf, Lauren E. Stone, J. Timothy Lightfoot, Michael J. Turner. Dept. of Kinesiology, University of North Carolina, Charlotte, NC.
- O3 RESPONSES OF YOUNG AND AGED MUSCLE FIBERS TO CHRONIC OVERLOAD, Brian R. Suyes, Scott E. Gordon, Jennifer L. Duffy, Kelly A. Tenny, and Michael R. Deschenes. College of William & Mary, and East Carolina University.
- O4 EFFECTS OF AGE ON DAILY ACTIVITY OF YOUNG MICE, A.H Vordermark, S.E. Carter, M.J. Turner, S.R. Kleeberger, J.T. Lightfoot. Dept. of Kinesiology, University of North Carolina at Charlotte, Charlotte, NC; Pulmonary Pathobiology Lab, NIEHS, Durham, NC.
- O5 CARDIAC ENLARGMENT IN A MOUSE MODEL OF CACHEXIA, Raymond W. Thompson, Kristen A. Mehl, J. Mark Davis (FACSM), J. Larry Durstine (FACSM), James A. Carson. Exercise Science Dept. Arnold School of Public Health, University of South Carolina, Columbia, SC.

Sharon**Endocrinology - Hematology / Immunology**

Chair: Paul G. Davis, PhD, University North Carolina Greensboro.

- O6 PSYCHOLOGICAL STRESS DURING EXERCISE: STRESS HORMONE AND LYMPHOCYTIC RESPONSES AND RELATIONSHIPS, H.E. Webb¹, M.L. Weldy¹, E.C. Fabianke¹, G.R. Orndorff¹, G.H. Kamimori², FACSM, J.M. Cruse³, R.E. Lewis³, & E.O. Acevedo¹, FACSM. University of Mississippi¹, University, MS; Walter Reed Army Institute of Research ², Silver Springs, MD; University of Mississippi Medical Center³, Jackson, MS.
- O7 EXERCISE AND A MOUSE MODEL OF INFECTIOUS MONONUCLEOSIS, Nancy Gasper-Smith, J. Timothy Lightfoot, Kenneth L. Bost, University of North Carolina at Charlotte, Dept. of Biology, Dept. of Kinesiology. **(STUDENT AWARD WINNER)**
- O8 ROLE OF BRAIN IL-1B ON FATIGUE FOLLOWING DOWNHILL RUNNING, M. D. Carmichael, J. M. Davis FACSM, E. A. Murphy, A. Ghaffar, and E. P. Mayer. University of South Carolina, Columbia, SC. **(STUDENT AWARD WINNER)**
- O9 ROLE OF LUNG MACROPHAGES ON THE BENEFITS OF OAT β -1,3-D-GLUCAN ON SUSCEPTIBILITY TO RESPIRATORY INFECTION FOLLOWING EXERCISE STRESS, E. Angela Murphy, J. Mark Davis, Adrienne S. Brown, Martin D. Carmichael, Jennifer L. Lake, Nico van Rooijen, Abdul Ghaffar and Eugene P. Mayer. University of South Carolina, Columbia, SC.

- O10 **SKELETAL MUSCLE CYTOKINE MRNA AND PLASMA CYTOKINE CHANGES AFTER 2.5-H CYCLING:INFLUENCE OF CARBOHYDRATE**, D.C. Nieman, J.M. Davis, D.A. Henson, S. Gross, C.L. Dumke, A.C. Utter, D.M. Vinci, J.A. Carson, A. Brown, S.R. McAnulty, L.S. McAnulty. Appalachian State University, Boone, NC; University of South Carolina, Columbia, SC.
- 7:30-9:00 **BUSINESS MEETING AND KEYNOTE ADDRESS**
(CME1*) **“The 0.1% Solution: Genetics and Exercise Training Adaptations”**
Ballroom C James Hagberg, PhD, FACSM, Dept. of Kinesiology, University of Maryland, College Park, MD.
Presiding: SEACSM President, Allan Goldfarb, PhD, University of North Carolina Greensboro
- 9:00-11:00 **SEACSM SOCIAL (Ballroom D)**

FRIDAY, JANUARY 28, 2005

- 6:30-7:45 **WOMEN’S BREAKFAST (Ballroom B)**
- 7:00-6:00 **SPEAKER READY ROOM (Morehead)**
- 8:00-6:00 **REGISTRATION (Promenade)**
- 8:00-6:00 **EXHIBITS (Promenade)**
- 8:00-10:30 **POSTER PRESENTATIONS II (P11-P21) Authors present from 9:30-10:30**
Promenade **Athletic Care/Trauma/Rehabilitation**
- P11 **COMFORT PROFILE AND ITS FACILITATION OF INDUSTRIAL SAFETY AND EXERCISE**, Robert W. Boyce, University of North Carolina at Wilmington
- Biomechanics/Gait/Balance**
- P12 **A BIOMECHANICAL ANALYSIS OF FOOT MOTION DURING GAIT BETWEEN BAREFOOT AND FLIP FLOP CONDITIONS**, Authors: Miletello, W., Kuminka, B., Turner, C., Lockshin, D., Neale, R., Whidden, N., Valdes, A., Boger, C., Prose, G., McElhinny, C., Fitzgerald, M., Gordon, K., Hildebrand, L., Lowndes, J. Louisiana Tech University and The National Training Center Sports Medicine Institute.
- Connective Tissue/Bone/Skeletal Muscle**
- P13 **SKELETAL MUSCLE VEGF MRNA IS LOWER IN AGED MEN**, T.P. Gavin, N.A. Ryan, K.A. Zwetsloot, L. M. Westerkamp, W.E. Pofahl, and R.C. Hickner. Departments of Exercise and Sport Science, Physiology, Surgery, and Human Performance Laboratory East Carolina University, Greenville, NC.
- P14 **PHYSICAL ACTIVITY AND BONE MINERAL DENSITY AMONG WOMEN TAKING DEPO-PROVERA**, S.M. Otto, J.L. Caputo, R.S. Farley Middle Tennessee State University, Murfreesboro, Tennessee.

- P15 SKELETAL MUSCLE REGENERATION IN CASTRATED MICE, A. Wilson, K.A. Mehl, J.M. McClung, T.A. Washington, and J.A. Carson Integrative Muscle Biology Laboratory, Department of Exercise Science, University of South Carolina, Columbia, South Carolina.
- Competitive Athletes**
- P16 AN INVESTIGATION INTO THE EFFECTS OF A BOUT OF PNF STRETCHING ON AN ANTAGONIST MUSCLE GROUP AND ITS RELATIVE EFFECTS ON THE ISOKINETIC PERFORMANCE OF THE AGONIST MUSCLE GROUP, Andrew G Jameson, PhD. University of Mississippi.
- Fitness/Testing/Assessment**
- P17 CONTRIBUTION OF 220-AGE MAXIMAL HR ESTIMATION ON YMCA PREDICTION OF VO₂PEAK, Parson, L., J.R. McLester, J.M.Green, and D. Falls. Western Kentucky University, Bowling Green, KY and The University of Alabama, Tuscaloosa, AL.
- P18 COMPARISON OF FOUR BIOELECTRICAL IMPEDANCE ANALYZERS IN COLLEGE STUDENTS, Robinson, T.S., Collins, G., Aull, J.L., and Mahar, M.T. Department of Exercise and Sport Science, East Carolina University, Greenville, NC.
- P19 THE T.E.E.N.S. PROGRAM: EVALUATION OF BASELINE SEVEN-DAY PHYSICAL ACTIVITY RECALL AND PHYSICAL FITNESS MEASURES IN OBESE ADOLESCENTS, R.L. Franco, R.K. Evans, P.A. Gibbs, and B.J. Warren. Department of Exercise Science, Virginia Commonwealth University, Richmond, VA.
- P20 EVIDENCE OF A PRACTICE EFFECT IN ADMINISTRATION OF THE SENIOR FITNESS TEST, P.B. Schuler, T.S. Marzilli, J.M. Kozusko D. Robinson, & R. Issosari, HLES, University of West Florida, Pensacola, FL.
- Respiratory Physiology**
- P21 RELATIONSHIP BETWEEN SMOKING HISTORY AND FEV₁ IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE, KJ Hanson, JM Sheely, KM Webb, JA Shilt, CM Woodard, MJ Berry Wake Forest University, Department of Health and Exercise Science.
- 8:00-9:00
(CME1*)
Ballroom C **ACSM PRESIDENTIAL ADDRESS**
“Are Ya Ready for Some Football?: Heat Stress and Heat Deaths in America's Game”
W. Larry Kenney, PhD, FACSM, ACSM Past-President, Noll Physiological Research Center, Pennsylvania State University, University Park, PA
Chair: Michael Berry, PhD, Wake Forest University
- 9:00-9:15 **BREAK**

9:15-10:45

SYMPOSIA (S4-S6)**Tryon**

S4

PHYSICAL (IN)ACTIVITY AND CENTRAL ADIPOSE TISSUE: THE GLAND IN THE GUT, C.A. Slentz, Division of Cardiology, Department of Medicine, Duke University, Durham, NC; P.G. Davis, Department of Exercise and Sport Science, University of North Carolina at Greensboro, Greensboro, NC.
Chair: Mike Saunders, PhD James Madison University.

Sharon

S5

CALCIUM SCORING, CORONARY ARTERY DISEASE, AND PHYSICAL ACTIVITY, J. Larry Durstine, Ph.D. University of South Carolina, SC Michael J. LaMonte, Ph.D., The Cooper Institute, TX, John B. McDaniels, Ph.D., Institute for Wellness and Sports Medicine Hattiesburg, MS.
Chair: Walter Thompson, PhD, Georgia State University.

Ballroom A

S6

EXERCISE-INDUCED CARDIOPROTECTION: A HISTORY, RECENT ADVANCES, AND FUTURE DIRECTIONS, John C. Quindry, Joel P. French, and Scott K. Powers University of Florida, Dept of Applied Physiology & Kinesiology, Gainesville, FL.
Chair: Alan Utter, PhD, Appalachian State University.

9:30-10:30

TUTORIAL (T2)**Trade**

T2

CARDIORESPIRATORY FITNESS ASSESSMENT: CONSIDERATIONS FOR ACCURATE PREDICTION OF MAXIMAL OXYGEN CONSUMPTION, J. Andrew Doyle, PhD and Jeffrey C. Rupp, PhD. Department of Kinesiology and Health, Georgia State University, Atlanta, Georgia.
Chair: Lisa Colvin, PhD, University of Louisiana at Monroe.

9:15-10:45

ORAL FREE COMMUNICATIONS**Independence****Epidemiology & Preventive Med - Psychology/Psychiatry/Behavior - Growth, Development & Aging (O11-O16)**

Chair: Michael J. Turner, PhD, University of North Carolina Charlotte.

O11

AGE-RELATED DECLINES IN FLEXIBILITY AND HEALTH-RELATED QUALITY OF LIFE IN NONAGENARIANS: GENDER DIFFERENCES, Jennifer M Fabre, CM King, MJ Nelson, RE Gardner, KE Cherry, RH Wood, & SM Jazwinski, Louisiana Healthy Aging Study; Louisiana State University (Baton Rouge); Louisiana State University Health Sciences Center (New Orleans).

O12

DIFFERENCES IN THE UNITS USED TO EXPRESS LEVELS OF AEROBIC POWER AND HOMA-IR IN ADOLESCENTS, Daniela A. Rubin, Robert G. McMurray and Joanne S. Harrell. University of North Carolina at Chapel Hill.

- O13 PHYSICAL FUNCTION AND HEALTH-RELATED QUALITY OF LIFE IN CULTURALLY DIVERSE ELDERLY: EVIDENCE OF ENVIRONMENTAL PRESSURE, Rebecca Ellis Gardner, Robyn Bossier, Artie Brown, Melissa N. deVeer, Jennifer Fabre, Kellye Ferachi, Ryan Russell, Tierney Toussaint, Alissa Villarubia, and Robert H. Wood. Louisiana State University, Department of Kinesiology, Baton Rouge, LA.
- O14 EXAMINATION OF THE PSYCHOMETRIC PROPERTIES OF THE THOUGHTS DURING RUNNING SCALE (TDRS) ACROSS EXERCISE SETTINGS, Rick A. LaCaille, Marcus K. Taylor, Lara J. LaCaille, & Kevin S. Masters. Duke University Medical Center; Syracuse University.
- O15 COMPARISON OF TREADMILL AND OVERGROUND WALKING TRAINING ON THE ATTITUDES OF OLDER ADULTS, L.C. Johnson, W.J. Rejeski, J.A. Katula, C.F. Pacchia, A.P. Marsh, K.L. Koury. Wake Forest University, Winston-Salem, NC.

Harris

Exercise Evaluation - Growth, Development & Aging – Nutrition and Exercise/Sports – Body Composition (O16-O20, O26)

Chair: Mindy Millard-Stafford, PhD, Georgia Institute of Technology.

- O16 COMPARISON OF 5K RACING PERFORMANCE AFTER 72 HOURS ACTIVE AND PASSIVE RECOVERY, A Bosak, P Bishop, J Smith, M Green, M Richardson. Georgia Southwestern State University, Americus, GA and The University of Alabama, Tuscaloosa, AL.
- O17 COMPARISON OF WALKING RECOMMENDATIONS IN PREVIOUSLY INACTIVE WOMEN, C. N. Hultquist, C. Albright, and D. L. Thompson. Center for Physical Activity & Health, University of Tennessee, Knoxville, TN.
- O18 SPORTS PARTICIPATION AND VIGOROUS PHYSICAL ACTIVITY IN ADOLESCENT FEMALES OVER A FOUR-YEAR PERIOD, K.A. Pfeiffer, J.R. Sirard, M. Dowda, K.L. McIver, D.S. Ward, FACSM, R.K. Dishman, FACSM, and R.R. Pate, FACSM. University of South Carolina, Columbia, SC.
- O19 ANTIOXIDANT TREATMENT EFFECTS ON PLASMA PROTEIN CARBONYLS AFTER 30 MINUTES OF AEROBIC EXERCISE, MJ McKenzie, AH Goldfarb, FACSM, RJ Bloomer Exercise and Sport Science Dept., University of North Carolina at Greensboro, Greensboro, NC.
- O20 EFFECT OF BLUEBERRY POLYPHENOLS ON ACE ACTIVITY, BLOOD PRESSURE, AND OXIDATIVE STRESS IN CHRONIC SMOKERS, Steven R. McAnulty, Lisa S. McAnulty, Daniel Khardouni, Lesli Shooter, James Monk, Sarah Gross, Erin Murphy, Victor Brown, and Jason D. Morrow Dept. of Health, Leisure, and Exercise Science, Appalachian State University, Boone, NC; Dept. of Medicine and Pharmacology, Vanderbilt University School of Medicine, Nashville, TN.
- O26 RELATIONSHIP BETWEEN BODY COMPOSITION AND BLOOD PRESSURE IN AFRICAN AMERICAN CHILDREN 10 TO 12 YEARS OF AGE, L. Jerome Brandon, FACSM, Larry Proctor, Dept. Kinesiology & Health, Georgia State Univ., Atlanta, GA and Department of Kinesiology, Louisiana Tech Univ. Ruston, LA.

- 10:45-11:00 **BREAK**
- 11:00-12:00 **SPECIAL INVITED LECTURE – Exercise Psychology**
(CME1*) **“Physical Activity and Aging: Psychological Outcomes and Underlying Processes”**
Ballroom C Edward McAuley PhD – Professor, Depts of Kinesiology, Psychology, Beckman
 Institute for Advanced Science and Technology, University of Illinois
- 12:00-1:15 **PAST PRESIDENT’S LUNCH (Brevard)**
- 1:00-1:30 **CLINICAL TRACK – Ray Cody, MD - Snapping Hip, Hip Bursitis**
Ballroom B
- 1:30-3:30 **POSTER PRESENTATIONS III (P22-P33) Authors present 2:30-3:30**
Promenade
- Metabolism/Carbohydrate, Lipid, Protein**
- P22 **THE INFLUENCE OF DIFFERENT INTENSITIES OF EQUAL WORKLOAD OF
 RESISTANCE TRAINING ON GLUCOSE UPTAKE, P.E. Luebbers, J.A. Potteiger,
 B.J. Warren, J.N. Clore. Department of Exercise Science, Virginia Commonwealth
 University, Richmond, Virginia.**
- Nutrition and Exercise/Sports**
- P23 **VOLITIONAL HYDRATION IN CHILDREN: IMPACT OF TASTE AND CHRONIC
 DEHYDRATION, Millard-Stafford, M., K. Hitchcock, and T. Snow Exercise
 Physiology Laboratory, Georgia Institute of Technology, Atlanta, GA.**
- P24 **THE EFFECT OF DURATION AND EXOGENOUS CARBOHYDRATE ON
 CYCLING EFFICIENCY, W. Gowin, C.L. Dumke, D.C. Nieman, A. Utter, S.
 McAnulty, and J.M. McBride; Appalachian State University, Boone, N.C.**
- Cardiovascular Physiology**
- P25 **PREVALENCE OF QT INTERVAL PROLONGATION IN COLLEGE STUDENTS,
 C.M. DeWitt. M.F. Hume, S.L. Burkhart, H.N. Huff, L.S. Smith, B.B. Parr, and D.K.
 Strom. Exercise and Sports Science. University of South Carolina Aiken, Aiken, SC.**
- P26 **THE VESTIBULOSYMPATHETIC REFLEX: HEMODYNAMIC RESPONSES TO
 HORIZONTAL SEMI-CIRCULAR CANAL ACTIVATION, M Klumpp, M deVeer, J
 Hondzinski, and R Wood, Louisiana State University.**
- Cellular Regulatory Mechanisms**
- P27 **AGE-RELATED RUNNING WHEEL ACTIVITY IN FIRST GENERATION MICE
 FROM HIGH AND LOW ACTIVITY PARENTS, Sean Courtney, Melissa Graf,
 Lauren Stone, David Weih, J. Timothy Lightfoot, and Michael Turner. Dept. of
 Kinesiology, University of North Carolina at Charlotte, Charlotte, NC.**
- P28 **DAILY ACTIVITY OF F1 MICE FROM STRAINS OF HIGH ACTIVITY C57L/J
 AND LOW ACTIVITY C3H/HEJ MOUSE STRAINS, S.E. Carter, A.H Vordermark,
 M.J. Turner, S.R. Kleeberger, J.T. Lightfoot. Dept. of Kinesiology, University of North
 Carolina at Charlotte, Charlotte, NC; Pulmonary Pathobiology Lab, NIEHS, Durham,
 NC.**

- P29 SYSTEMIC AND INTESTINAL INFLAMMATION CHANGES WITH PHYSICAL ACTIVITY IN THE APCMIN+/- MOUSE, J.A. Carson, K.A. Mehl, T.A. Washington, J.M. McClung, J.M. Davis, and F.G. Berger. Integrative Muscle Biology Laboratory, Department of Exercise Science, University of South Carolina, Columbia, South Carolina.
- Psychology/Psychiatry/Behavior**
- P30 HEALTH RELATED QUALITY OF LIFE IN COLLEGE-AGED STUDENTS: WHAT FACTORS INFLUENCE? T. Nevin, E. Hall, J. Schuldt, & P. Miller Elon University, Elon, NC.
- P31 STATE ANXIETY RESPONSES IN COLLEGE-AGED FEMALES TO DIFFERENT RESISTANCE TRAINING MODES, E. Chmelo, E. Hall, R. DeWitt, J. Morrison, C.Kostura, & P. Miller Elon University, Elon, NC.
- Growth, Development & Aging**
- P32 PHYSICAL ACTIVITY AND HEALTH- RELATED QUALITY OF LIFE: A STUDY OF OLDER ADULTS RESIDING IN ASSISTED LIVING, Andrea N. Miller, Shannon L. Mihalko, Ph.D., Katie L. Wickley, M.S., Anthony P. Marsh, Ph.D., Wake Forest University, Winston-Salem, NC.
- P33 THE IMPORTANCE OF OLDER ADULT ASSESSMENT IN PUBLIC HOUSING, Dawn M. Hayes, PT, Geraldine Clarke, M.Ed., Dr. M. Elaine Cress, Ph.D. Exercise Science, University of Georgia, Athens, Georgia.
- 1:30-2:30
(CME1*)
Ballroom C
- BASIC SCIENCE LECTURE**
“Gene-environment interaction and disease pathogenesis: what have we learned so far?”
Steven Kleeberger, PhD. Lab Chief, Respiratory Biology Lab, National Institutes of Environmental Health Sciences, Durham, NC.
Chair: J. Timothy Lightfoot, PhD, University of North Carolina Charlotte.
- 1:30-2:00
Ballroom B
- CLINICAL TRACK – Walter Taylor, MD - Hamstring, Quadricep, & Adductor Injuries in Athletes**
- 2:00 -2:30
Ballroom B
- CLINICAL TRACK – Tracy Ray, MD - Stress Fractures of the Hip/Pelvis**
- 2:30 – 3:00
Ballroom B
- CLINICAL TRACK – Kim Fagan, MD - Piriformis Syndrome**
- 2:45-4:15
Tryon
S7
- SYMPOSIA (S7-S8)**
RELATIONSHIP OF OBESITY AND FITNESS IN MULTICULTURAL CHILDREN, Mark Loftin, University of New Orleans, New Orleans, LA, Larry Proctor, Louisiana Tech University, Ruston, LA and L. Jerome Brandon, Georgia State Univesity, Atlanta, GA
Chair: J. Larry Durstine, PhD, University of South Carolina.

Sharon

S8

AN EMERGING MODEL TO STUDY SKELETAL MUSCLE DISUSE ATROPHY, Keith C. DeRuisseau, Scott K. Powers, Darin Van Gammeren, and Darin J. Falk University of Florida, Dept of Applied Physiology and Kinesiology, Gainesville, FL. Chair: Gregory A. Hand, PhD MPH, University of South Carolina

2:45-3:45

Trade

T3

TUTORIALS (T3-T4)

IS CARDIOVASCULAR DRIFT RELATED TO REDUCED MAXIMAL OXYGEN UPTAKE? J.E. Wingo, Department of Exercise Science, University of Georgia, Athens, GA.

Chair: David R. Bassett, Jr., PhD, The University of Tennessee.

Ballroom A

T4

THE EFFECTS OF EXERCISE ON CANCER TREATMENT-RELATED SYMPTOMS, C. L. Battaglini, Ph.D. The University of North Carolina at Chapel Hill. Chair: Eric Plaisance, PhD, Auburn University.

2:45-4:15

Independence**ORAL FREE COMMUNICATIONS****Biomechanics/Gait/Balance**

Chair: Peter W. Grandjean, PhD, Auburn University.

O21

MUSCLE WORK IS LARGER WHILE WALKING UP VS. DOWN INCLINED SURFACES, B.R. Noyes, J. Helseth, T. Hortobagyi, FACSM, P. DeVita, FACSM Biomechanics Laboratory, East Carolina University, Greenville, NC.

O22

OLD AND YOUNG ADULTS USE DIFFERENT STRATEGIES TO MODULATE STEP LENGTH DURING GAIT, J. Helseth, B. Noyes, T. Hortobagyi FACSM, P. DeVita FACSM Biomechanics Laboratory, Department of Exercise and Sport Science, East Carolina University, Greenville, NC.

O23

THE EFFECTS OF AGE ON FORCE CONTROL WITH AND WITHOUT VISUAL FEEDBACK, M. Pullen, P. DeVita, FACSM, O. Tikkanen, K. Giggey, K. Steinweg, and T. Hortobagyi, FACSM Department of Exercise and Sport Science and Brody School of Medicine, East Carolina University, Greenville, NC.

O24

AUGMENTING SPATIAL AND TEMPORAL FEATURES OF GAIT CONTROL IN PARKINSONS DISEASE, R. McCoy(1), R. Kohl(1), R. Seel(2), D. Cifu(3), E. Cooper(1), and A. Lotts(1), (1) Dept. of Kinesiology, College of William and Mary, Williamsburg, VA; (2) Crawford Research Institute, Atlanta, GA; (3) Dept. of Phys.Med.&Rehab., Virginia Commonwealth University, Richmond, VA.

O25

SPATIOTEMPORAL CHARACTERISTICS OF TREADMILL AND OVERGROUND WALKING IN OLDER ADULTS, C.F. Pacchia, K.L. Koury, A.P. Marsh, L.C. Johnson, J.W. Rejeski, J.A. Katula Wake Forest University, Department of Health and Exercise Science.

Harris**Body Composition/Energy Balance/Weight Control (O27-O30)**

Chair: Timothy P Gavin, PhD, East Carolina University.

- O27 THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY AND FOOD CONSUMPTION IN INBRED MOUSE STRAINS, T.S. Curtis, A.P. Jung, J. Henning, University of North Carolina at Charlotte.
- O28 PEDOMETER-DETERMINED WALKING AND BODY COMPOSITION VARIABLES IN AFRICAN-AMERICAN WOMEN, Lyndsey Hornbuckle, M.S., R.D.; David R. Bassett, Jr., Ph.D.; Dixie Thompson, Ph.D University of Tennessee, Knoxville.
- O29 WALKING AND BODY COMPOSITION IN OLDER WOMEN, DL Thompson, EM Krumm, O Lukajic, P Andrews, University of Tennessee, Knoxville, TN.
- O30 EFFECTS OF MODERATE INTENSITY EXERCISE ON THE BODY COMPOSITION OF HIV-INFECTED PERSONS, Wesley D. Dudgeon, Kenneth D. Phillips, Stephanie E. Burgess, J. Larry Durstine, and Gregory A. Hand. Arnold School of Public Health and College of Nursing, University of South Carolina, Columbia, SC. (STUDENT AWARD WINNER)

3:00 – 3:30 **CLINICAL TRACK – Andrew Gregory, MD - Hip Injuries in Children**

Ballroom B

4:00 – 5:00 **CLINICAL TRACK KEYNOTE – Bill Myers, MD - Evaluation and Treatment of Abdominal and Inguinal Pain in Athletes**

Ballroom B

4:15-5:30 **STUDENT SYMPOSIUM**

Ballroom C

“You Have Your Degree: Now What Do You Do?”

Mr. Breon Klopp, Pit Crew Training, Inc.

Mr. Michael DeVaul, YMCA of Greater Charlotte

Dr. Walt Thompson, Georgia State University

Dr. Janet Wahlberg-Rankin, Virginia Tech

Dr. Melinda Campbell, Meredith College

Chair: Daniella Rubin, MS, University of North Carolina Charlotte

5:30—6:30 **SEACSM GRADUATE STUDENT FAIR**

Ballroom D

6:00 – 7:00 **CLINICAL TRACK KEYNOTE – Tom Byrd, MD - Evaluation and Management of Hip Joint Injuries in Athletes.**

Ballroom D

SATURDAY, JANUARY 29, 2005

7:30-9:00 **REGISTRATION (Promenade)**

7:00-12:00 **SPEAKER READY ROOM (Morehead)**

8:00-9:00
(CME1*)
Ballroom C

HENRY J. MONTOYE SCHOLAR LECTURE
“Nutrition, Exercise and Sport Performance”
Emily Haymes, PhD FACSM, Florida State University.
 Chair: Beverly J. Warren, EdD, PhD, Virginia Commonwealth University.

8:00 –12:00
Ballroom B

CLINICAL TRACK – “Hip/Pelvis” Clinical Case Presentations
 8:00 – Marc DeJong, MD - Marfan Syndrome
 8:15 – Shane Shapiro, MD – Fibrous Dysplasia with Hip Pain
 8:30 – David Drake, MD – Freiberg’s Infarction
 8:45 – Discussion
 9:00 – Jon Woo, MD – Vertebral Fracture
 9:15 – Nicholas Kilmer, MD - Anemia
 9:30 – Greg Tardie, MD – Pectus Excavatum
 9:45 – Discussion
 10:00 – 10:15 Break
 10:15 – Mia Griggs, MD – Spear Tackler’s Spine
 10:30 – Andrew Gregory, MD – Transverse Myelitis
 10:45 – Case 9
 11:00 Discussion
 11:15 – Case 10
 11:30 – Case 11

9:30-12:00
Promenade

POSTER PRESENTATIONS IV (P34-P45) Authors present 11:00-12:00

Chronic Disease and Disability

P34

THE COMPARISON OF FUNCTIONALITY AMONG OLDER WOMEN, WOMEN DIAGNOSED WITH FIBROMYALGIA, AND HEALTHY CONTROL WOMEN, D. Kingsley, L. Panton, FACSM, T. Toole, G. Abboud, P. Sirithienthad, R Mathis, & V. McMillan. Florida State University, Tallahassee, FL.

P35

LEVEL OF AGREEMENT BETWEEN TWO COMMERCIALY AVAILABLE PULSE OXIMETERS DURING GRADED EXERCISE TESTING, K.M. Webb, K.J. Hanson, J.M. Sheely, and M.J. Berry, Department of Health and Exercise Science, Wake Forest University, Winston-Salem, NC.

P36

EFFECTS OF LIFESTYLE ACTIVITY ON GLYCOSYLATED HEMOGLOBIN IN MIDDLE-AGED LOWER SOCIOECONOMIC OVERWEIGHT AND OBESE WOMEN, J. Hart, L. Panton, FACSM, D. Kingsley, T. Toole, R. Moffatt, M. Kushnick, E. Haymes, FACSM. Florida State Univ. Tallahassee, FL.

P37

PREDICTORS OF 6-MINUTE WALK DISTANCE IN OLDER ADULTS WITH COPD: IMPLICATIONS FOR INTERVENTION, Katie L. Wickley, M.S., Jeffrey A. Katula, Ph.D, W. Jack Rejeski, Ph.D and Michael J. Berry, Ph.D, Wake Forest University, Winston-Salem, NC.

P38

Exercise Evaluation/Clinical

WALKING ADHERENCE IN WOMEN: WHAT IS THE BEST PRESCRIPTION? C. Albright, C. Hultquist, D. Thompson, FACSM University of Tennessee, Knoxville, TN.

- P39 ACUTE HEART RATE, BLOOD PRESSURE, AND RPE RESPONSES BETWEEN SUPER SLOW AND GOLD STANDARD RESISTANCE TRAINING PROTOCOLS, PJ Wickwire, JR McLester, JM Green, and TR Crews. The University of Alabama, Tuscaloosa, AL and Western Kentucky University, Bowling Green, KY.
- P40 THE EFFECTS OF EXERCISE DURATION ON DEPRESSION OF AT-RISK ADOLESCENTS, Tania Lovell, John O'Connor, Frank Wyatt, & James Heimdal Louisiana Tech University, Ruston, LA.
- P41 PHYSICAL INACTIVITY: THE IMPACT OF THE BREAST CANCER EXPERIENCE, S.D. Rogers, S.L. Mihalko, E.L. Wenzel, L.A. Kreshel, E. Levine, P.M. Ribisl, Wake Forest University.
- P42 EXERCISE AND OLDER WOMEN WITH BREAST CANCER: INFLUENCES ON SELF ESTEEM, S.L. Strayer, S.L. Mihalko, E.L. Wenzel, G.D. Miller, R.T. Anderson; Wake Forest University.
- P43 ASSESSMENT OF RESISTANCE TRAINING USING HR AND RPE: A PRELIMINARY EVALUATION, C.M. Kostura, P.C. Miller, J. Morrison, R. Dewitt, E. Chmelo and E.E. Hall, Department of Health and Human Performance, Elon University, Elon, NC.
- Hematology/Immunology**
- P44 RELATIONSHIP BETWEEN SALIVARY IGA SECRETION AND UPPER RESPIRATORY TRACT INFECTION FOLLOWING A 160-KM RACE, S.J. Gross, D.C. Nieman, D.A. Henson, C.L. Dumke, R.H. Lind, L.R. Shooter. Departments of Health, Leisure, and Exercise Science; Biology; Family and Consumer Sciences; Appalachian State University, Boone, NC.
- Body Composition/Energy Balance/Weight Control**
- P45 TOTAL AND SUBCUTANEOUS ADIPOSE TISSUE IN CHILDREN: A LONGITUDINAL INVESTIGATION OF BODY COMPOSITION AND PHYSICAL ACTIVITY, Lisa C. Colvin, Emily Morris and Lindsay Benjamin, Department of Kinesiology, College of Education and Human Development, University of Louisiana at Monroe, Monroe, LA.
- 9:00-10:30
Tryon
S9 **SYMPOSIUM (S9)**
EXERCISE INTERVENTION FOR PERIPHERAL NEUROPATHY PATIENTS: USING AN INTEGRATED APPROACH TO EXAMINE IMPROVEMENTS, L. Li, PhD, FACSM, R. Ellis Gardner, PhD. J. Hondzinski, PhD, R. Wood, PhD, M. Welsch, PhD, Louisiana State University
Chair: Judith A. Flohr, PhD, James Madison University, Harrisonburg, VA.
- 9:45-10:45
Trade
T5 **TUTORIALS (T5-T6)**
RECENT ADVANCES IN PEDOMETER RESEARCH, David R. Bassett, Jr., Ph.D., FACSM; Dixie L. Thompson, Ph.D., FACSM. University of Tennessee, Knoxville, TN
Chair: Alan Utter, PhD, Appalachian State University.

Harris
T6

PEDIATRIC EXERCISE PHYSIOLOGY: RESPONSES TO ACUTE AND CHRONIC ENDURANCE EXERCISE, Don W. Morgan. Middle Tennessee State University, Murfreesboro, TN.
Chair: L. Jerome Brandon, PhD, Georgia State University

10:30-12:00

Tryon
S10

SYMPOSIUM (S10)

REGULATION OF MUSCLE FIBER SIZE BY NON-MUSCLE CELL SYSTEMS, Timothy P. Gavin 1, Scott E. Gordon 1, and Michael R. Deschenes 2. 1-East Carolina University, Greenville, NC and 2-The College of William and Mary, Williamsburg, VA.
Chair: L. Bruce Gladden, PhD, Auburn University.

10:45-12:00

Independence

ORAL FREE COMMUNICATIONS

Competitive Athletes - Fitness/Testing/Assessment (O31-O35)

Chair: Don Morgan, PhD, Middle Tennessee State University.

O31

PRINCIPAL COMPONENT ANALYSIS ON THE KINEMATIC PARAMETERS OF ELITE WOMEN SHOT PUTTERS, Michael A. Young, MS, Li Li, PhD, FACSM, Louisiana State University.

O32

PERFORMANCE VARIABLE DIFFERENCES BETWEEN DIVISION THREE VARSITY AND INTRAMURAL SOCCER ATHLETES, PEYTON BURCHELL (Faculty Mentor: PETER MAGYARI) School of Health Sciences and Human Performance Lynchburg College, Lynchburg Virginia.

O33

CROSS-SECTIONAL COMPARISON OF FITNESS IN AFRICAN AMERICAN CHILDREN 10 TO 12 YEARS OF AGE, Larry Proctor, and L. Jerome Brandon, FACSM, Department of Kinesiology, Louisiana Tech Ruston, LA, Univ., Dept. Kines. & Health, Georgia State Univ., Atlanta, GA.

O34

VALIDITY OF THE BODYMEDIA SENSEWARE ARMBAND, Danielle Wadsworth University of Mississippi.

O35

VALIDITY AND INTER-INSTRUMENT RELIABILITY OF THE ACTIGRAPH ACCELEROMETER IN 3-5 YEAR OLD CHILDREN, K.L. McIver, K.A. Pfeiffer, M.J.C.A. Almeida, M. Dowda, and R.R. Pate, FACSM. University of South Carolina, Columbia, South Carolina.

Sharon

Connective Tissue/Bone/Skeletal Muscle (O36-O40)

Chair: Keith De Ruisseau, PhD, University of Florida.

O36

FACTORS INFLUENCING BONE MINERAL DENSITY IN YOUNG GIRLS, Kristin Sutika and Don Morgan, Arizona State University, University of North Carolina-Chapel Hill and Middle Tennessee State University.

- O37 THE EFFECT OF FEMORAL NECK NORMALIZATION IN FEMALES ON POTENTIAL FRACTURE RISK, EA Darr, MS2*, WR Barfield, PhD,FACSM***, JA Leupold, MD,* LA Hartsock,MD* *Department of Orthopaedic Surgery and **College of Charleston.
- O38 THE OVARIAN HORMONE ESTROGEN CONTRIBUTES TO THE RECOVERY OF SKELETAL MUSCLE FROM DISUSE ATROPHY, J.M. McClung 1,2, J.M. Davis 1, and J.A. Carson 1,2. Integrative Muscle Biology Laboratory1, Department of Exercise Science2, University of South Carolina, Columbia, SC.
- O39 SKELETAL MUSCLE ATROPHY IS ASSOCIATED WITH CHRONIC INFLAMMATION IN THE APCMIN+/- MOUSE. K.A. Mehl, J.M. McClung, F.G. Berger, and J.A. Carson. Integrative Muscle Biology Laboratory, Department of Exercise Science, University of South Carolina, Columbia, South Carolina.
- O40 IL-6 DEFICIENCY EFFECTS SKELETAL MUSCLE AT THE ONSET OF FUNCTIONAL OVERLOAD Tyrone A. Washington, Joseph M. McClung, and James A. Carson Integrative Muscle Biology Laboratory, Exercise Science Department, University of South Carolina, Columbia SC.
- 11:00-12:00 **TUTORIALS (T7-T8)**
- Trade**
- T7 **CORTICAL AND SPINAL CONTROL OF MUSCLE COACTIVITY IN HUMAN MOVEMENTS.** T. Hortobgyi. Biomechanics Laboratory, Department of Exercise and Sport Science, East Carolina University, Greenville, NC.
Chair: Jeff Rupp, PhD, Georgia State University.
- Harris**
- T8 **SCREENING, MONITORING, AND PRECAUTIONARY MEASURES FOR VERY ACTIVE INDIVIDUALS AND COMPETITIVE ATHLETES WITH DIABETES,** Eric P. Plaisance, M.S.S., Auburn University, A. Jack Mahurin, D.O., Auburn University, and Peter W. Grandjean, Ph.D., FACSM, Auburn University.
Chair: Alan P. Jung, PhD, University of North Carolina Charlotte.
- Noon-2:00 **SEACSM LUNCHEON AND LECTURE**
- Ballroom C** **"Signaling in Skeletal Muscle: Can You Hear Me Now?"**
Laurie J. Goodyear, PhD, FACSM, Joslin Lab/Metabolic Section, Harvard Medical School, Harvard University, Boston, MA.
Chair: Ed Howley, PhD, The University of Tennessee.
- 2:00-4:00 **SEACSM EXECUTIVE BOARD MEETING – Stonewall Boardroom**

CORTICAL AND SPINAL CONTROL OF MUSCLE COACTIVITY IN HUMAN MOVEMENTS

T. Hortobágyi, Biomechanics Laboratory, Department of Exercise and Sport Science, East Carolina University, Greenville, NC 27858

The central nervous system (CNS) produces voluntary movement by coordinating the contractions of muscles surrounding our joints. Muscles located on one side of a joint act as prime mover agonists and generate or absorb mechanical power. Muscles on the opposite side of the joint are concurrently also activated and provide joint stability. The CNS regulates this simultaneous activity of the antagonist muscles with the agonists, called antagonist muscle coactivity, through descending paths from the brain to interneurons. Another path of regulation occurs at the spinal level through reciprocal inhibition. The purpose of this tutorial is to provide a systematic illustration of these neural mechanisms controlling human movement. An understanding of how CNS controls movement through the agonist-antagonist muscle interaction is important because exercise training, age, clinical conditions, such as knee osteoarthritis and knee ligament injuries are associated with an altered muscle balance. However, the contribution from brain and spinal circuits to generate coordinated movements vary between these conditions. The presentation will be instructional for all audiences representing the applied, basic, and clinical exercise sciences including students and professionals from exercise physiology, neuroscience, and biomechanics.

T3

EFFICACY OF CARBOHYDRATE/PROTEIN BEVERAGES FOR ENDURANCE PERFORMANCE AND RECOVERY

Michael J. Saunders, Ph.D., FACSM, Department of Kinesiology, James Madison University, Harrisonburg, VA

Since the 1980s, carbohydrate sports beverages have been utilized extensively by endurance athletes. Numerous studies demonstrate that carbohydrate beverage consumption during exercise prolongs time to exhaustion or increases work performed in the later stages of endurance activities. In addition, the administration of carbohydrate beverages immediately following exercise improves glycogen replenishment, muscle recovery and subsequent athletic performance. A growing body of literature suggests that the addition of protein to carbohydrate beverages augments muscle recovery and glycogen replenishment following prolonged exercise. Recent studies also indicate that beverages containing both carbohydrate and protein may improve endurance performance compared to carbohydrate-only beverages. However, there is controversy regarding the conditions under which these benefits are present, and potential mechanisms for performance enhancement remain to be elucidated. The purpose of this tutorial is to discuss existing literature regarding the efficacy of carbohydrate/protein beverages that are intended to improve endurance performance and muscle recovery. Potential mechanisms for the putative benefits of these beverages will also be discussed. The target audience for this tutorial includes students and professionals with an interest in ergogenic aids and exercise metabolism during endurance-based activities.

T1

CARDIORESPIRATORY FITNESS ASSESSMENT: CONSIDERATIONS FOR ACCURATE PREDICTION OF MAXIMAL OXYGEN CONSUMPTION

J. Andrew Doyle, PhD and Jeffrey C. Rupp, PhD Department of Kinesiology and Health, Georgia State University, Atlanta, Georgia

For many years, maximal oxygen consumption (VO₂max) has been recognized and used widely as the criterion measure of cardiorespiratory fitness. Direct measurement of VO₂max requires expensive equipment and a maximal physical effort by the subject. Metabolic measurement equipment requires regular maintenance, specially-trained personnel, and can be time-consuming to use. Maximal effort exercise testing may not always be desired or appropriate, particularly considering the medical supervision recommendations for testing moderate or high-risk individuals. The purpose of this tutorial is to review the various strategies for estimating VO₂max, and to discuss the factors that must be considered by the fitness professional in the selection and implementation of an assessment test for accurately predicting VO₂max. Factors that determine VO₂max (cardiac output and arterial-venous oxygen difference) and the measurement of VO₂max by indirect calorimetry (gas exchange) will be briefly reviewed. However, the primary focus of this tutorial will be a review of the rationale of various prediction strategies of VO₂max, the scientific validity of these methods, and practical considerations for the practicing fitness professional. Maximal oxygen consumption prediction models reviewed will include performance tests based upon regression equations (e.g. 12-minute walk/run, 1.5 mile run, Rockport 1 mile walk), single stage, submaximal assessments (e.g. step tests, Astrand-Rhyming cycle ergometer test), and multi-stage, submaximal tests using the extrapolation method (e.g. YMCA cycle ergometer test, treadmill extrapolations tests).

T2

THE EFFECTS OF EXERCISE ON CANCER TREATMENT-RELATED SYMPTOMS

C. L. Battaglini, Ph.D. The University of North Carolina at Chapel Hill

One of the hardest concepts to convince a cancer patient of is that exercise may help them overcome the feeling of fatigue. Most patients would quickly disagree with this idea because they are too tired to do even normal daily activities. Fatigue is one of the most prevalent side effects that affect 78%-96% of the cancer population. Fatigue is characterized by the inability to perform physical tasks at one's usual pace or strength. The exact mechanism that causes fatigue in patients with cancer is not known. It is likely that many different mechanisms play a role. Exercise has been shown in many previous studies to play a more preventative role in the development of certain types of cancer. This concept is already known, but what about the benefits of exercise for a current cancer patient? Numerous studies have suggested that exercise, including light to moderate intensities, has many benefits for people with cancer. Some of the benefits of exercise include: increases in cardiovascular, pulmonary, and muscular functioning (produced by regular exercise resulting in improved oxygen consumption, stroke volume, cardiac output, vascularization of muscles, lymphatic circulations, metabolic rate, muscle tone, strength, coordination, and balance). During cancer treatment, chemotherapy, radiation and surgery can cause lasting effects to various biological systems. This tutorial will briefly explore some of the side-effects produced by the most common treatments available for cancer patients, and the possible benefits of exercise on the management of the symptoms produced by cancer treatments.

RECENT ADVANCES IN PEDOMETER RESEARCH

David R. Bassett, Jr., Ph.D., FACSM; Dixie L. Thompson, Ph.D., FACSM
University of Tennessee, Knoxville, TN

This tutorial will summarize new research conducted with electronic pedometers, with a primary focus on the relationship between accumulated ambulatory activity and health. We will start by providing an overview of several measurement and evaluation issues related to the use of pedometers in research and health promotion settings. Dr. Bassett will discuss the accuracy and reliability of various pedometer mechanisms, along with issues of day-to-day variability, seasonal variability, and optimal sampling strategies needed to obtain reliable results. Next, he will summarize pedometer studies conducted around the world, in various age groups. Dr. Thompson will review the results of cross-sectional studies examining pedometer-determined walking and health variables (BMI, body fat, bone density, blood pressure). She will then review a number of longitudinal studies that examined the effects of pedometer-based physical activity interventions on health outcomes. Finally, we will describe how pedometers are being used in health promotion settings, and discuss issues of concordance between various daily step goals (e.g. 10,000 steps per day or 2,000 steps per day increase above baseline) and the national physical activity recommendation.

T5

IS CARDIOVASCULAR DRIFT RELATED TO REDUCED MAXIMAL OXYGEN UPTAKE?

J.E. Wingo, Department of Exercise Science, University of Georgia, Athens, GA.

Cardiovascular drift (CVdrift) is a well-known phenomenon that occurs during prolonged exercise, with or without heat stress. Despite the heavy attention that hypotheses regarding the causes of CVdrift have received, its consequences for exercise performance and work capacity are less studied. Some research has investigated the effects of CVdrift on maximal oxygen uptake (VO₂max). However, investigators in most of these studies have measured VO₂max during periods other than when CVdrift occurred. In this tutorial, empirical evidence will be presented from four investigations in which VO₂max was measured immediately after a period of submaximal exercise in which CVdrift occurred. The purpose of this tutorial will be to discuss the hypothesis that maximal oxygen uptake is reduced when measured in situations in which there is also CVdrift. The potential mechanisms that cause CVdrift, potential mechanisms explaining how it may detrimentally affect VO₂max, and conditions under which CVdrift is likely to have the greatest effect on VO₂max will be presented. The target audience for this tutorial includes students and professionals who have an interest in cardiovascular physiology during exercise-heat stress as well as those who are interested in limitations to exercise performance and physical work capacity.

T7

PEDIATRIC EXERCISE PHYSIOLOGY: RESPONSES TO ACUTE AND CHRONIC ENDURANCE EXERCISE.

Don W. Morgan Middle Tennessee State University, Murfreesboro, TN

The primary aim of this tutorial is to provide a comprehensive overview of current knowledge regarding physiological responses to short- and long-term endurance exercise in children and adolescents. Emphasis will be placed on understanding how physical growth and maturation influence the developing functional capacities of the exercising child. Topics which will be covered include growth and maturation, maturation and plasticity of aerobic fitness, and cardiovascular, respiratory, and peripheral responses to endurance exercise and training. Where appropriate, unresolved questions and future research directions will be noted. It is hoped that this symposium will provide attendees with a basic understanding of exercise responses in children and stimulate interest in conducting research in the area of pediatric exercise physiology.

T6

SCREENING, MONITORING, AND PRECAUTIONARY MEASURES FOR VERY ACTIVE INDIVIDUALS AND COMPETITIVE ATHLETES WITH DIABETES

Eric P. Plaisance, M.S.S., Auburn University, A. Jack Mahurin, D.O., Auburn University, and Peter W. Grandjean, Ph.D., FACSM, Auburn University.

Exercise considerations for individuals with diabetes are primarily focused on those who are sedentary. This tutorial will address a population that is less often recognized - physically active diabetics who are competitive athletes or those who wish to begin athletic competition. It will further address exercise program considerations, hypoglycemic therapies and delivery systems, timing of meals, and physiological monitoring for the diabetic athlete. The information covered in this tutorial should be of interest to exercise scientists, exercise science graduate students, nutritionists and other sports medicine professionals.

T8

EXERCISE, PHYSICAL FUNCTION, AND HIV DISEASE.

Gregory A. Hand, Kenneth D. Phillips, and James A. Carson.
University of South Carolina, Columbia, 29208.

Reduced functioning associated with HIV disease is illustrated by significant reductions in physical work capacity, anthropomorphic changes including lean tissue wasting and fat redistribution, and exacerbated emotional stress levels and increased anxiety and depression. Physical exercise has been shown to be beneficial for each of these conditions in other disease populations. However, research on the effect of exercise in HIV disease is sparse. This lack of research is more disturbing as current drug therapies can exacerbate many of these conditions. The purpose of this symposium is to present an integrated view of current knowledge related to exercise and its effects on the physical symptomatology of HIV infection. Dr. Phillips will present an overview of the physical, psychological, and environmental problems associated with HIV disease and the side effects of current highly active anti-retroviral therapy (HAART). Dr. Hand will present a brief historical perspective on research on exercise in HIV-infected individuals. He will then present the current understanding of mechanisms for physiological benefits of large muscle rhythmic exercise in this population, and present recent data on exercise training's effect on aerobic capacity. Dr. Carson will present a perspective on genetic and environmental mechanisms related to muscle wasting syndromes. He will discuss exercise as an intervention for muscle wasting and possible mechanisms of exercise effects in individuals with HIV disease. Recent data will be presented concerning exercise training and HIV-related anthropomorphic changes. A question period will follow the presentations.

S1

ACCREDITATION OF EDUCATIONAL PROGRAMS IN EXERCISE SCIENCE AND EXERCISE PHYSIOLOGY AND THE COMMISSION ON ACCREDITATION OF ALLIED HEALTH EDUCATION PROGRAMS(CAAHEP)COMMITTEE ON ACCREDITATION FOR THE EXERCISE SCIENCES(COAES): WHAT IS ACCREDITATION AND WHY IS IT IMPORTANT?

Thompson, WR and Colvin, L. Georgia State Univ., University of Louisiana-Monroe

Accreditation is an effort to assess the quality of institutions, programs and services, measuring them against agreed-upon standards and thereby assuring that they meet those standards. Institutional accreditation helps to assure potential students that a school is a sound institution and has met certain minimum standards in terms of administration, resources, faculty and facilities. Programmatic (or specialized) accreditation examines specific schools or programs within an educational institution (e.g., the law school, the medical school, the nursing program). The standards by which these programs are measured have generally been developed by the professionals involved in each discipline and are intended to reflect what a person needs to know and be able to do to function successfully within that profession. Accreditation in the health-related disciplines also serves a very important public interest. Along with certification and licensure, accreditation is a tool intended to help assure a well-prepared and qualified workforce providing health care services. The Commission on Accreditation of Allied Health Education Programs (CAAHEP) is the largest programmatic/specialized accreditor in the health sciences field. In collaboration with its Committees on Accreditation, CAAHEP reviews and accredits more than 2,000 educational programs in twenty-one (21) health science occupations across the United States and Canada. Prior to 1994, accreditation in most of these disciplines was a function of a Committee within the American Medical Association (AMA). When the AMA decided to turn over accreditation of these programs to another entity, CAAHEP was born. The Committee on Accreditation for the Exercise Sciences (CoAES) represents the profession. CAAHEP is the largest specialized accreditor of allied health education programs in

S3

PREVENTION AND REHABILITATION OF ANKLE SPRAINS.

Brent L. Arnold, Scott E. Ross. Virginia Commonwealth University,
Richmond, VA.

Ankle bracing, taping, and coordination training appear to have positive effects on ankle support. Both bracing and taping restrict inversion range of motion, with tape and stirrup style braces providing the best support. Ankle supports also appear to improve the strength of the muscular response to perturbation, potentially providing a stronger muscular contraction. However, they fail to improve the neuromuscular response time to unexpected perturbations. Thus, this stronger response may occur too slowly to protect the joint. Slowness of the neuromuscular response may be offset by the support's ability to slow the inversion motion, allowing the neuromuscular system to respond before the point of ligament damage. Ankle supports also improve balance in individuals with previously injured ankles. As an alternative to ankle supports, coordination training also appears to improve balance. Single leg center of pressure sway measures improve after a coordination training program that are performed at least 3 times/week for approximately 8 weeks. Balance improvements from training are likely the result of enhancing neuromuscular control and muscular strength. Improving ankle stability and balance through bracing, taping, and coordination training may have implications for decreasing recurrent ankle sprain injuries.

S2

PHYSICAL (IN)ACTIVITY AND CENTRAL ADIPOSE TISSUE: THE GLAND IN THE GUT

C.A. Slentz, Division of Cardiology, Department of Medicine, Duke University, Durham, NC; P.G. Davis, Department of Exercise and Sport Science, University of North Carolina at Greensboro, Greensboro, NC

Obesity-related co-morbidities are particularly prevalent in persons with a large amount of central (mostly visceral) adipose tissue. In addition to making fatty acid available to visceral organs, this tissue is very active metabolically, releasing substances (adipocytokines) that alter one's susceptibility to several diseases, mainly cardiovascular disease and diabetes. The purpose of this symposium is to outline the health concerns associated with central adiposity and to discuss the potential of both physical activity and inactivity to alter this fat depot. Specifically, the effects of physical activity and inactivity on regional fat distribution will be covered, with special attention being given to exercise dose. The physiological interplay among various adipocytokines and their potential or known responses to exercise will also be discussed. This symposium is targeted both toward 1) researchers interested in investigating the effects of physical activity and inactivity on adipose tissue and its products and 2) exercise professionals working in preventive and rehabilitative settings, especially as discussion of more nontraditional cardiovascular disease risk factors continues to increase in the mainstream literature.

S4

CALCIUM SCORING, CORONARY ARTERY DISEASE, AND PHYSICAL ACTIVITY

J. Larry Durstine, Ph.D., University of South Carolina, SC Michael J. LaMonte, Ph.D., The Cooper Institute, TX, John B. McDaniels, Ph.D., Institute for Wellness and Sports Medicine Hattisburg, MS.

Coronary artery disease (CAD) remains the principal cause of death and disability among U.S. adults, despite intensive basic science and clinical research. For many persons, the first sign of CAD is a myocardial infarction or sudden death. As a result, a high priority for primary prevention is to identify asymptomatic patients who appear clinically free of CAD, but at sufficiently high risk for a coronary event. Nontraditional noninvasive technology is becoming available and is being used to determine CAD risk. Coronary artery calcium (CAC) measured by electron-beam tomography is directly associated with the number and severity of diseased vessels and is recognized as a noninvasive measure of subclinical coronary atherosclerosis. CAC scores predict CAD events in asymptomatic individuals, although consensus of clinically relevant CAC scores is lacking. Existing data suggest that CAD event rates occur at a CAC score of ~100. These data and other published observations suggest that a CAC score of 100 may define clinically relevant subclinical disease and identify individuals who should receive intensive primary prevention therapy. Therapeutic options for elevated CAC are not well defined and few studies have examined the effects of conventional intervention on CAC levels and associated coronary events. The purpose of this symposium is to discuss the role of calcium in CAD development, review current assessment methods for determining CAD, explain calcium scoring as an inexpensive clinical screening tool that can enhance early detection of CAD, and discuss the potential use of CAC scoring in physical activity and exercise interventions.

S5

RELATIONSHIP OF OBESITY AND FITNESS IN MULTICULTURAL CHILDREN

Mark Loftin, University of New Orleans, New Orleans, LA, Larry Proctor, Louisiana Tech University, Ruston, LA and L. Jerome Brandon, Georgia State University, Atlanta, GA

Childhood obesity is at epidemic proportions and is resulting in health complications not previously observed in western society. A major reason for the rise in obesity is believed to be the increased prevalence of sedentary lifestyles. Sedentary lifestyles results in decreased fitness, which includes altered cardiovascular capacity, muscle strength and endurance and decreased flexibility in these obese children. Therefore, the focus of this presentation is the relationship between physical fitness and obesity in multicultural urban and rural children. The first presentation will focus on cardiovascular functions in obese children. Precisely, the focus will be on measuring cardiovascular capacity in this population and comparing the results with non-obese children. Further, there will be discussions of the relationship of sedentary lifestyles and cardiovascular complications in obese children. The second presentation will focus on the relationship between obesity and overall fitness in children between 13 and 16 years of age. The specific focus will be on how fitness profiles differ between children with a BMI greater than the 85th % and those below the 85th % and those %, 95th % with below the 95th %. The third presentation will also focus on the relationship between obesity and overall fitness in preteen children 10 to 12 years of age. The fitness analyses will consider the differences between obese and non-obese girls and boys in this age group. These fitness comparisons will include whether or not different fitness components are different based on gender and obesity for these youngsters.

EXERCISE-INDUCED CARDIOPROTECTION: A HISTORY, RECENT ADVANCES, AND FUTURE DIRECTIONS

John C. Quimby, Joel P. French, and Scott K. Powers, University of Florida, Dept of Applied Physiology & Kinesiology, Gainesville, FL

Regular endurance exercise is a well-described intervention for the prevention of cardiovascular disease. One aspect of exercise-induced disease prevention is termed cardioprotection, whereby the myocardium of exercise trained individuals is resistant to ischemia-reperfusion (I-R) injury. The exact mechanisms of exercise-induced cardioprotection, while not fully understood, are polygenic and include, but are not limited to improved, collateral circulation and up-regulation of cytoprotective mediators. The primary purpose of this symposium is to provide an overview of exercise-induced cardioprotection and discuss recent scientific advances toward understanding the mechanism(s) responsible for exercise-induced cardioprotection. A major focus of this presentation will be to discuss the important role that exercise-induced increases in myocardial antioxidants and heat shock proteins play in providing myocardial protection against I-R injury. The symposia will conclude with a dialog about important unanswered questions in the area of exercise-induced cardioprotection and a discussion of promising avenues for future research.

S6

AN EMERGING MODEL TO STUDY SKELETAL MUSCLE DISUSE ATROPHY

Keith C. DeRuisseau, Scott K. Powers, Darin Van Gammeren, and Darin J. Falk, University of Florida, Dept of Applied Physiology and Kinesiology, Gainesville, FL

Prolonged periods of skeletal muscle inactivity lead to a loss of muscle protein and strength. Well-recognized models used to investigate the effects of disuse atrophy include immobilization, chronic bed rest, hindlimb suspension, and space flight. More recently, another animal model used to investigate disuse muscle atrophy is the effect of controlled mechanical ventilation (MV) on the diaphragm. MV represents a unique model of muscle disuse that results in the rapid development of diaphragm atrophy and contractile dysfunction. This symposium will aim to provide an overview of this newly emerging field of disuse atrophy and how it relates to other established models. Additionally, the role of oxidative stress as a contributor to disuse-mediated skeletal muscle dysfunction will be emphasized. The symposium targets all individuals with an interest in skeletal muscle atrophy.

S8

EXERCISE INTERVENTION FOR PERIPHERAL NEUROPATHY PATIENTS: USING AN INTEGRATED APPROACH TO EXAMINE IMPROVEMENTS

L. Li, PhD, FACSM, R. Ellis Gardner, PhD, J. Hondzinski, PhD, R. Wood, PhD, M. Welsch, PhD, Louisiana State University

Peripheral neuropathy is a neurological disorder that causes pain and numbness in the extremities among approximately 20 million Americans. The symptoms usually become debilitating when they lead to inactivity and reduced mobility. Currently, there is no medical modality that directly treats the disease. Patients rely on pain medication, assistive devices in an effort to cope with their symptoms, and to maintain their quality of life. The purpose of the symposium is to review the literature and the latest research development in regarding the effects of exercise intervention on peripheral neuropathy patients. Biomechanics of gait and balance; motor control of the coordination amongst hands, eyes, and lower extremity; physiology of cardiovascular function; and the interaction between autonomic and physical functions from the literature will be discussed. In addition, the results of a 6-week exercise intervention pilot-project will be presented. Our observations are consistent with evidence in the literature that suggests that patients with peripheral neuropathy can benefit physically and psychologically from a carefully designed exercise program, which over time may allow these patients to optimize quality of life throughout the life span.

S9

EXCESS POSTEXERCISE OXYGEN CONSUMPTION IN UNTRAINED MALES: EFFECTS OF EQUATING EXERCISE CALORIC EXPENDITURE BETWEEN A COMBINED BOUT OF ARM AND LEG EXERCISE AND A CONTINUOUS BOUT OF ARM EXERCISE

Lyons, S., Richardson, M., Bishop, P., Smith, J., Heath, H., & Giesen, J. Western Kentucky University; University of Alabama

The purpose of this study was to investigate excess postexercise oxygen consumption (EPOC) following a continuous 200 kcal bout of upper-body exercise (UBE) compared to a continuous bout of combined lower-body and upper-body exercise (COMBO) of equal caloric expenditure. Ten male subjects (age: 25.7 ± 5.83 years; arm VO₂ peak: 2.2 ± 0.25 L/min; 21.5 ± 4.35 ml/kg/min; leg VO₂ peak: 3.1 L/min ± 0.38; 30.7 ml/kg/min ± 7.79), on separate days (48 hrs between) and in counterbalanced order, performed a continuous 200 kcal bout of exercise at 60% of mode-specific VO₂ peak utilizing arm-crank ergometry on one day and on another day performed a 100 kcal bout at 60% of mode-specific VO₂ peak utilizing both arm and leg ergometry (total of 200 kcal). These two 100 kcal bouts were consecutive with no rest. Subjects reported to the laboratory rested and following a 12-hour fast. Each test was preceded by a 30-min baseline test to determine resting metabolic rate. Postexercise VO₂ was continuously monitored until baseline was re-established. Results showed that EPOC magnitude and duration were both significantly greater ($p=0.05$) following COMBO (2.77 L ± 1.2; 13.3 min ± 5.2) compared to UBE (1.89 L ± 0.7; 11.5 min ± 6.1). These data indicate that a combination of arm and leg exercise at moderate intensity elicited both a significantly greater magnitude and duration of EPOC when compared to arm exercise of the same relative intensity and energy expenditure.

P1

REGULATION OF MUSCLE FIBER SIZE BY NON-MUSCLE CELL SYSTEMS

Timothy P. Gavin I, Scott E. Gordon I, and Michael R. Deschenes 2. 1-East Carolina University, Greenville, NC and 2-The College of William and Mary, Williamsburg, VA.

The regulation of muscle fiber size and thus muscle mass requires the coordinated action of several cell signaling systems internal to the muscle fiber and several support cell systems external to the muscle fiber. Among the external cell support systems that appear to facilitate the regulation of muscle fiber size are the capillary network, satellite cells, and the neuromuscular system. The size of muscle fibers, and accordingly muscle mass, correlates strongly with the size of the capillary network, the recruitment of satellite cells, and the motor neurons that innervate them. For example, with senescence, there is a decrease in the number of capillaries surrounding the muscle fibers; lower activation and incorporation of satellite cells into hypertrophying muscle fibers; and lower recruitment of large motor neurons within the spinal cord resulting in the denervation/re-innervation of muscle fibers. Thus, adaptations in each of these support systems are likely necessary to enable muscle remodeling. Moreover, these support systems may become limiting factors when compromised, and could underlie conditions such as atrophy and the diminished capacity for overload-induced hypertrophy in aged skeletal muscle.

S10

SKINFOLD AND DEXA ASSESSMENT OF BODY COMPOSITION IN BLACK POSTMENOPAUSAL WOMEN

R. S. Farley, J. L. Caputo, A. B. Collins, B. M. Eveland, & S. M. Otto Middle Tennessee State University, Murfreesboro, TN

Skinfolds and DEXA are two of the many available techniques for measuring human body composition. Skinfold measures can be invasive and may be associated with higher inter-tester variability, but are cost effective and require minimal training. Whereas the DEXA is more expensive and requires operator licensure, it utilizes advanced technology and is non-invasive. Research on how these measures of body composition compare within specific populations is warranted. The aim of this investigation was to determine the relationship between DEXA and skinfold measurements of percent body fat in Black postmenopausal women. Data were collected on 19 women who had not experienced a menstrual cycle within the past 12 months and who were not using hormone replacement therapy. Skinfolds were obtained at seven sites using a Harpenden caliper and body density was used to calculate percent body fat (mean = 40.6%) using a population specific equation. A Hologic QDR 4500W DEXA was used to take whole body scans and percent body fat (mean = 40.2%) was determined using manufacturer supplied software (Version 11.2). There was no statistically significant difference between the two techniques ($t = .269, p > .05$) and values were moderately correlated ($r = .47, p < .05$). These cost-extreme techniques produced similar results with this population. This information allows researchers the flexibility of working within their available resources when selecting a body composition measurement technique with this specific population.

METABOLIC AND THERMOREGULATORY RESPONSES TO A SIMULATED FOOTBALL PRACTICE IN THE HEAT

Hitchcock, K., Millard-Stafford, M., Phillips, J., and Gibbs, K. Exercise Physiology Laboratory, Georgia Institute of Technology, Atlanta, GA.

Energy cost is an important factor when determining tolerable thermal limits during exercise in the heat. No data exist on the metabolic cost of football during a practice or game, although assumed to be ~35% $\dot{V}O_{2max}$. The purpose of this study was to assess core temperature (T_{GI}) and metabolic responses with different football ensembles during a simulated practice. Five collegiate offensive linemen ($n = 120$ kg, 17% body fat) volunteered to complete four 60-minute simulated football practices in an environmental chamber (82°F, 55% RH). In counterbalanced, randomized order, subjects wore: 1) shorts only; 2) helmet; 3) helmet and shoulder pads; and, 4) full gear. T_{GI} was obtained using a CorTemp ingestible sensor. During active drills, exercise intensity ranged from 30% $\dot{V}O_{2max}$ (isometric squats) to 81% $\dot{V}O_{2max}$ (6-8 reps of sled blocking). Equipment had a significant effect on % $\dot{V}O_{2max}$ with helmet and shoulder pads (61.4% \pm 3.7) compared to helmet (53.3% \pm 6.9) and shorts only (40.1% \pm 8.5) during the recovery from blocking drills, although not different during exercise. At 26 minutes, T_{GI} was higher ($p < 0.05$) with shoulder pads compared to helmet only. These results indicate a significantly higher overall metabolic cost (5-6 METS) than predicted for football linemen during practice. The addition of shoulder pads elicits higher energy cost during the recovery between exercise bouts and increases core temperature in unacclimatized, offensive linemen. Supported by a grant from the National Collegiate Athletic Association.

P5

Chronic inflammation is associated with elevated risk of heart disease. Weight loss may reduce elevated markers of inflammation and oxidative stress observed in obese individuals. **PURPOSE:** Our objective was to evaluate the effect of weight loss diet composition (Atkins high fat, HF, vs. low fat, LF) on inflammation and oxidative stress. **METHODS:** Twenty nine overweight women, BMI 32.1 \pm 5.4 kg/m², were randomly assigned to a self-selected HF or LF diet for 4 wks. Weekly sessions and diet record collections helped enhance compliance. Body weight, markers of inflammation (serum interleukin-6, IL-6; C-reactive protein, CRP) oxidative stress (urinary 8-epi-prostaglandin F₂, 8-epi) and fasting blood glucose were measured weekly. **RESULTS:** The diets were similar in caloric intake (1357 kcal/d HF vs. 1361 LF, $p = 0.94$), but differed in vitamin C (84mg/d HF vs. 178 LF, $p < 0.05$) and macronutrients (58, 12, 30 and 24, 59, 18 for % fat, % CHO, and % PRO for HF and LF, respectively). Although HF lost more weight (5.8 \pm 1.2kg HF vs. 2.6 \pm 1.7 LF, $p = 0.04$), they experienced an increase in the cardiovascular disease risk factor, CRP, while CRP was reduced by the LF diet (+25% vs. -43% respectively, $p = 0.02$). For both groups, glucose decreased with weight loss (85.42mg/dl baseline vs. 82.05 week 4, $p < 0.01$), while IL-6 tended to increase (1.39pg/mL to 1.62, $p = 0.07$). 8-epi varied differently over time ($p < 0.05$), but with no consistent pattern. **CONCLUSION:** The LF diet was superior to the HF in reducing a key marker of inflammation, while there was no consistent effect on a measure of oxidative stress.

P3

THE EFFECTS OF A HIGH FAT OR LOW FAT WEIGHT LOSS DIET ON MARKERS OF INFLAMMATION AND OXIDATIVE STRESS IN OVERWEIGHT WOMEN.

Abigail Turpyn, Janet Walberg Rankin, FACSM, Virginia Tech, Blacksburg, VA

EXERCISE INDUCED HYPONATREMIA DURING INTENSIVE LONG FIELD MARCHES & MECHANISM AND PREVENTION

M. Magall 2, D. Dinour 3, D. Moran 2, S. N. Pelled 4, S. and Y. Epstein 2, 4. North Carolina Wesleyan College 1, Rocky Mount, NC; Heiler Institute of Medical Research 2, Israel; the Department of Nephrology and Hypertension, Sheba Medical Center, Tel Hashomer 3, Israel; Sackler Faculty of Medicine, Tel Aviv University 4, Israel; IDF Medical Corps 5, Israel.

The purpose of the study was to investigate water and sodium balance during prolonged exercise in order to elucidate a possible mechanism leading to hyponatremia. Twenty-seven (19 \pm 1 yrs) highly trained soldiers (47.8 \pm 1.6 ml/kg/min) participated in the study. Exercise consisted of two field marches of 50 km (march A) and 80 km (march B) at estimated intensity of 50-60% $\dot{V}O_{2max}$. During the two exercises, fluid consumption and food intake were recorded and the amount of sodium intake was calculated. Pre and post exercise blood samples were collected. During march A, fluid intake was 9890 \pm 460 ml and during march B it was 19800 \pm 900 ml ($n = 900$ -1080 ml/h in both marches). Sodium intake during march A was 222 \pm 84 mEq. Accordingly, sodium intake throughout march B was estimated to be circa 490 mEq. Following the two marches, [Na⁺] decreased by about five mEq/L but did not reach hyponatremic levels (march A: 142 \pm 1 vs. 137 \pm 1 and march B: 140 \pm 1 vs. 135 \pm 1 mEq/L) and subjects were asymptomatic. Hemoglobin and hematocrit remained stable during march A and decreased significantly during march B, reflecting an elevation of plasma volume. The results of this study suggest that although plasma volume was expanded during the two exercises, the consumption of Na⁺ has attenuated the drop in plasma [Na⁺] and held it above hyponatremic levels.

P4

DAY TO DAY VARIABILITY OF SELECT HORMONES IN ACTIVE MEN

E. Zack and A.C. Hackney, FACSM, Endocrine Section - Applied Physiology Laboratory, UNC-CH, Chapel Hill, NC

PURPOSE: To determine the day to day variability of total testosterone (TT), total thyroxine (TT4), total 3,5,3,5-tetraiodothyronine (TT3), and cortisol (C) in physically active men ($n = 63$, 24-41 yr [X \pm SE]). **METHODS:** Resting venous blood samples were collected at the same time of day (morning) over 3 consecutive days, 24 hr apart. Subjects were instructed to minimize stress and physical activity and to maintain a consistent diet for the 24 hr prior to each blood collection. RIA procedures were used to measure hormones. Repeated measures ANOVAs were used to test for differences within each hormone across days and intra-class correlations (ICC) were used to assess reliability of hormone concentrations across days (SPSSw ver. 11.5). **RESULTS** (hormone, day 1, 2, 3 [X \pm SE]): TT (ng/ml) = 4.94 \pm 0.34, 4.58 \pm 0.30, 4.08 \pm 0.27; TT4 (ug/dl) = 10.5 \pm 0.2, 10.7 \pm 0.2, 10.4 \pm 0.2; TT3 (ng/dl) = 137.2 \pm 5.8, 131.6 \pm 5.5, 127.3 \pm 5.0; C (ug/dl) = 14.5 \pm 0.7, 14.0 \pm 0.7, 13.5 \pm 0.6. Hormonal values were within accepted clinical ranges for physically active men. No significant mean differences ($p > 0.05$) from day to day were found. Each hormone displayed significant ($p < 0.05$) ICC values: TT = 0.891, TT4 = 0.861, TT3 = 0.700, C = 0.886. **CONCLUSIONS:** Resting TT, TT4, TT3, and C concentrations are not highly variable and appear reliable from day to day in physically active men. If researchers measure these hormones at rest before and after (i.e., 24-48 hr later) an experimental treatment, they can presume that any significant hormonal changes seen at the 24-48 hr point are due to their treatment and not an artifact of day to day variability.

FREQUENCY AND CHARACTERIZATION OF INJURY IN ROCK CLIMBING

Marcus K. Taylor*, Rick LaCaille*, J.K. Taylor†, Ricardo Pietrobom* * Duke University Medical Center, Durham, NC † International Sports Sciences Association, Santa Barbara, CA

Few empirical studies have systematically documented the frequency and characteristics of injury in rock climbing. **PURPOSE:** To examine the frequency and characteristics of injuries sustained as a direct result of involvement in the sport of rock climbing. **METHODS:** Seventy-two rock climbers were asked to describe all significant injuries sustained throughout their climbing careers. Injury frequencies were tallied and expressed per climber-year. A panel of medical experts subjectively classified each injury by level of severity (low, moderate, high), and injuries were also categorized by source (e.g., fall, climbing maneuver). **RESULTS:** A total of 73 injuries were reported in association with 575.5 total years of climbing experience, resulting in .13 injury sustained per climber-year. Low severity injuries comprised 57.5% of all reported injuries, whereas 8.2% and 17.8% were considered to be of moderate and high severity, respectively. Additionally, 54.9% of accidents were sustained as a result of falls while climbing, 29.5% were incurred during an attempted climbing maneuver, and 11.3% were due to overtraining. Thirty-one types of injuries were identified, thus characterizing the diverse etiology of injury in rock climbing. **CONCLUSION:** Our data suggest that rock climbing may be no more risky than most conventional sporting activities. Additionally, we have characterized the types, sources and severity of rock-climbing injuries with an unprecedented level of detail.

P7

CORRELATES OF ACHIEVING PHYSICAL ACTIVITY RECOMMENDATIONS IN AFRICAN-AMERICAN CHURCH MEMBERS

K. Butler, M. Bopp, S. Wilcox, M. Laken, J. Charton, L. McClorin, R. Swinton, O. Gethers, D. Bryant, J. Jordan, T. Anderson, R. Carter. University of South Carolina, Columbia, SC and Medical University of South Carolina, Charleston, SC

Many African-Americans in the United States do not acquire enough physical activity (PA) for health benefits, contributing to many preventable illnesses. Churches are common and vital institutions within the African-American community and many have begun to focus on decreasing health disparities. For that reason, churches offer a viable outlet for health promotion programs. **PURPOSE:** To examine correlates of meeting PA recommendations in African-American church members. **METHODS:** The Health-e-AME PA initiative is investigating the effects of a faith-based PA program in AME churches in SC. Participants were randomly selected from a sample of AME churches statewide to participate in a telephone assessment of the program (N=571). The CDC BRFS PA module was used to assess PA. Psychosocial, demographic, and environmental variables were also examined. Baseline results are reported. **RESULTS:** Attaining PA recommendations was positively associated with income ($p=0.05$), employment status ($p=0.008$), PA enjoyment ($p=0.003$), PA self-efficacy ($p<0.004$), exercise programs available in the church ($p=0.043$), and interpersonal support in the church ($p=0.006$). Age ($p=0.011$) was a negative correlate of achieving physical activity recommendations. **CONCLUSION:** These findings will assist the Health-e-AME program, and other faith-based interventions to targeting changeable correlates in an effort to increase the amount of church members attaining and maintaining PA recommendations.

P9

DIRECT OBSERVATION OF A COMMUNITY RECREATIONAL TRAIL

J.A. Reed, S. Hagen, H. Harring Department of Health and Exercise Science, Furman University, Greenville, SC

Introduction: Recreational trails are environmental supports identified in the literature associated with physical activity (PA). Most PA data examining trail-use behavior is collected with survey methodology or sophisticated counters that lack objectivity and the ability to record contextual elements of the environmental setting. The purpose of this study was to record PA behavior on a recreational trail via direct observation. **Methodology:** The System for Observing Play and Recreation in Communities (SOPARC) was used to collect all PA data. Scans were conducted at (1st) 7:30 am, (2nd) 12:00pm, (3rd) 3:30 pm and (4th) 6:00 pm for seven consecutive days on the trail. Separate scans were made for females and males, and for age and ethnic estimations. Validity of the activity codes has been established. **Results:** Trail users tended to be Caucasian, male, adult walkers. A total of (n = 840) individuals were observed using the trail. The majority of the trail-users (n = 251; n = 306) were Caucasian females and males respectively. Fewer female and male (n = 106; n = 177) minorities respectively used the trail. An average of (n = 89) females used the trail at each of the four observation periods (Caucasian = 62.7; other = 26.5; children = 9.25; teens = 1.5; adults = 73; elders = 4.75). An average of (n = 72) females walked on the trail in comparison to an average of (n = 18) females who engaged in vigorous PA. Males averaged (n = 121) trail-users at each of the four observation periods (Caucasian = 77; other = 44; children = 18; teens = 8; adults = 86; elders = 10). Males averaged (n = 77) walkers during each of the four observation periods compared to an average of (n = 44) individuals who engaged in vigorous PA. **Conclusion:** Direct observation of recreational trails provides precise and accurate PA data that can be used to develop interventions to promote PA.

P8

OSTEOPOROSIS AND MALES: ARE THEY AT THE SAME RISK AS FEMALES

William Linville and Tim Clouch Live Well Program, Tennessee Valley Authority, Chattanooga, Tenn

Purpose: The purpose of the free Osteo Screenings for employees at a large public power utility was to: 1) determine a baseline percentage of our workers who had scores indicative of Osteopenia or Osteoporosis, 2) compare the percentage of males with Osteopenia or Osteoporosis to our females. **Methods:** The screenings were performed by taking an ultrasound of the participant's right or left heel using a GE Lunar ACE 32015 model. **Results:** The assessments were performed by Live Well Project Managers between January 1, 2002 through September 30, 2003. Those screened came from a cross section of the power utility workforce. In FY - 02 (January 1 to September 30), 865 males were screened and 212 (24.5%) were at risk for Osteopenia or Osteoporosis. In FY - 03 (October 1 to September 30), 569 males were screened and 154 (27.1) were at risk for Osteopenia or osteoporosis. **Conclusions:** Males at the power utility tended to be at the same or higher risk as females for Osteopenia or Osteoporosis. The females in FY -02 scored 23.6%. The females in FY -03 scored 27.1%.

P10

COMFORT PROFILE AND ITS FACILITATION OF INDUSTRIAL SAFETY AND EXERCISE

Robert W. Boyce, University of North Carolina at Wilmington

The purpose of this study is to report the repetitive stress profile of workers in an industrial plant and to report how a comfort profile facilitated the production, safety and exercise recommendations for that plant. There was an increase in employee discomfort complaints associated with repetitive motion tasks in the production area of a pigment mixing plant in the southeastern United States. To assess the extent of the discomfort forty-six employees who performed physical labor participated in an interactive ergonomic evaluation of the facility. The employees filled out a comfort survey that identified the body parts that were in discomfort and the level of discomfort. A five point rating scale was ranked the level of discomfort (1 = some discomfort to 5 = very uncomfortable). The overall results of the comfort survey are as follows. The employees are aging with an average age of 39.6 with 45% being over age 40. The average length of service is 10 years. The comfort profile shows a repetitive syndrome pattern. The body parts that stand out in order of most discomfort on a scale of 1 to 5 are listed. The percentage with a comfort rating of at least 1 and 3-5 respectively are left foot 60.9%, 43.5%, right foot 58.7%, 43.5%; low back 60.9%, 37.0%; hand/wrist left 52.2%, 28.3%; right knee 50.0%, 28.3%; left knee 52.2%, 26.1%; and upper back 43.5%, 26.1%. The comfort survey identified the stressed body areas and set the stage for an interactive problem solving session with the employees, a "walk-through," evaluation for the plant to address the specific concerns to improve the comfort, productivity and safety of the employees. The survey result stimulated the proposal for a back exercise program.

P11

SKELETAL MUSCLE VEGF MRNA IS LOWER IN AGED MEN.

T.P. Gavin, N.A. Ryan, K.A. Zwetsloot, L. M. Westerkamp, W.E. Pofahl, and R.C. Hickner. Departments of Exercise and Sport Science, Physiology, Surgery, and Human Performance Laboratory East Carolina University, Greenville, NC

The capillary supply is lower in aged skeletal muscle. Vascular endothelial growth factor (VEGF) is an important angiogenic growth factor for the maintenance and expansion of the skeletal muscle capillary supply. Previously, we observed that exercise-induced VEGF mRNA was lower in aged women. **PURPOSE:** To determine if resting and exercise-induced skeletal muscle VEGF mRNA is lower in aged compared to young men. **METHODS:** Eight young (YM)(21+1 yrs) and seven aged (AM)(65+ 2 yrs) men had a resting and a 4 hr post-exercise muscle biopsy obtained from the vastus lateralis. VEGF mRNA was analyzed by real time PCR. **RESULTS:** Exercise increased VEGF mRNA independent of group ($p = 0.0002$), while VEGF mRNA was lower in aged men independent of condition ($p = 0.0229$)(YM rest: 1.00 ± 0.13 ; YM post-exercise: 3.45 ± 0.77 ; AM rest: 0.44 ± 0.05 ; AM post-exercise: 1.85 ± 0.34). **CONCLUSIONS:** These results provide evidence in men that aging lowers resting VEGF mRNA and exercise-induced VEGF mRNA.

Supported by NIA AG-21891 and AG-19209.

P13

A BIOMECHANICAL ANALYSIS OF FOOT MOTION DURING GAIT BETWEEN BAREFOOT AND FLIP FLOP CONDITIONS

Miletello, W., Kuminka, B., Turner, C., Lockshin, D., Neale, R., Whidden, N., Valdes, A., Boger, C., Prose, G., McElhinny, C., Fitzgerald, M., Gordon, K., Hildebrand, L., Lowndes, J. Louisiana Tech University and The National Training Center Sports Medicine Institute.

The flip flop industry is a 1.8 billion dollar per year industry, showing a 22% increase from 2002. However, their popularity among teens and young adults is responsible for a growing epidemic of heel and foot pain in this population, according to the American College of Foot and Ankle Surgeons. The purpose of this study is to analyze the effect of barefoot (BF) and flip flop (FF) conditions on biomechanical characteristics of foot motion during gait. **Methods:** Twelve graduate students volunteered for the study. Participants of the study were recorded with six optical capture cameras, which also digitize the reflective markers. ANOVA was used to determine the factor effect among conditions tested with an alpha level of 0.05. **Results:** BF and FF conditions were similar when gait velocity, stride width, stride length, step length, stance period, swing period, and the timing and magnitude of vertical ground reaction forces were compared among the conditions. For FF conditions, a decrease in ankle dorsiflexion, supination, and pronation angles, a decrease in ankle dorsiflexor, supinator, and pronator moments, and an increase in plantar flexor moments occurred when compared to BF ($p < 0.05$). **Discussion:** Compensatory foot motion was found to occur during gait using FF when compared to BF. Considerable variability among participants was found for variables analyzed, which could be contributed to the variability in foot structure, an uncontrolled factor in the study. Overall, footwear had less influence on the factors analyzed than the participants, which could be contributed to the height of the flip flop. Perhaps a flip flop with a higher sole would influence foot motion to a greater extent and should be considered in subsequent research.

P12

PHYSICAL ACTIVITY AND BONE MINERAL DENSITY AMONG WOMEN TAKING DEPO-PROVERA

S.M. Otto, J.L. Caputo, R.S. Farley Middle Tennessee State University, Murfreesboro, Tennessee

Over 68 million women currently use an injectable form of birth control called Depo-Provera (DEPO). While effective in preventing unwanted pregnancy, DEPO inhibits and even reverses bone development. Many women begin using DEPO at an age when bone development is critical to future bone health. In contrast, weight-bearing activity has been shown to significantly increase bone mineral density among females in their twenties. It is unknown if a relationship exists between physical activity and bone density in the presence of hormones that may inhibit bone development. As such, the purpose of this investigation was to determine if a relationship existed between weight bearing physical activity and bone mineral density in women taking DEPO. Data were collected on a limited sample of 10 females (ages 19-37) who had been using DEPO for no less than one year. Bone mineral density at both the hip and the lumbar spine were measured using a Hologic DEXA. Activity monitor data were collected for a one week period and participants were asked to complete a three-day diet record to determine calcium intake. There was no significant correlation between average step count and bone mineral density at any site when controlling for calcium intake. Bone density Z-scores were as low as -2.0 at the lumbar site, -2.3 at the right hip, and -1.8 at the left hip, each categorized as osteopenic. Activity step counts were below the recommended amount for all participants and only one of the participants consumed the U.S. RDA for calcium. Calcium was the only factor that was significantly correlated with bone mineral density at the right hip ($R = .73$) and left hip ($R = .79$). These data encourage women taking DEPO to engage in activities to promote bone health to combat the negative consequences of this contraceptive.

P14

CONTRIBUTION OF 220-AGE MAXIMAL HR ESTIMATION ON YMCA PREDICTION OF VO2PEAK

Parson, L., J.R. McLester, J.M.Green, and D.Falls. Western Kentucky University, Bowling Green, KY and The University of Alabama, Tuscaloosa, AL

The YMCA bike test is dependent upon an extrapolation to estimated maximal HR(MHR). This study investigated the contribution of the widely used 220-Age equation to the YMCA protocol. Thirty females (20.8±1.4 years, 63.3±8.5kg, 23.9±4.1% fat) participated in the study. The YMCA protocol was used to estimate VO2peak (YVO2) with metabolic data simultaneously measured using a Vacumed system. Upon completion of the YMCA protocol, actual VO2peak (MVO2) was measured by having subjects continue to cycle with increases of 0.5kcp (30Watts) per minute until volitional exhaustion. In addition to 220-Age (MHR220), actual maximum heart rates (AMHR) were entered into the YMCA equation to investigate differences in VO2peak prediction. ANOVA with repeated measures was used to compare estimated and actual MHR and estimated and actual VO2peak. Results were considered significant at $p < 0.05$. A significant difference was found between the MVO2 (36.98 ml/kg/min+5.1) and YVO2 (34.8 ml/kg/min+6.3). A significant difference was also found between AMHR (184.3±8.4bpm) and MHR220 (199.2±1.4bpm). YVO2 (34.8 ml/kg/min+6.3) and VO2 estimated from entering AMHR into the YMCA extrapolation (31.1 ml/kg/min+5.6) were also significantly different. In conclusion, the YMCA protocol tends to underestimate VO2peak while the 220-Age equation overestimates MHR in college-aged females. However, using them together for VO2peak prediction is more accurate than if AMHR is entered into the YMCA equation.

P17

SKELETAL MUSCLE REGENERATION IN CASTRATED MICE
A. Wilson, K.A. Mehl, J.M. McClung, T.A. Washington, and J.A. Carson Integrative Muscle Biology Laboratory, Department of Exercise Science, University of South Carolina, Columbia, South Carolina

Androgens have potent stimulatory effects on skeletal muscle growth. Androgens may also be important for skeletal muscle regeneration following damage. The purpose of this study was to determine if androgen loss would be detrimental to skeletal muscle regeneration following skeletal muscle injury. Male C57BL/6 were randomly assigned to Sham+PBS (n=5), Sham+Marcarine (n=3), Castration+PBS (n=4), or Castration+Marcarine (n=3). Castrated or sham-operated mice received a bilateral injection of 0.75% Marcarine HCl or PBS in the tibialis anterior (TA) to induce muscle damage. Mice were sacrificed 14 days after the injections and the TA was sectioned and stained with H&E to determine centralized nuclei. Castrations were confirmed by a reduction in seminal vesicle weight in the castrated mice (34 ± 23 mg) compared to sham-operated animals (301 ± 22 mg). There were no differences in initial body weight, but castrated mice (26.1 g ± 0.6 g) weighed less than sham-operated mice (27.8 ± 0.5 g; $p = 0.045$) after the injections. There were no differences in TA wet weight, TA:tibia length, or TA:body weight ratios between groups. The number of centralized nuclei increased 13-fold with Marcarine (555 ± 75 nuclei/mm²) compared to PBS (40 ± 61 nuclei/mm²; < 0.001), but was not different between Sham+Marcarine (489 ± 106 nuclei/mm²) and Castration+Marcarine (621 ± 106 nuclei/mm²). Further work is required to examine if the time course of muscle recovery is altered by androgen status.

P15

AN INVESTIGATION INTO THE EFFECTS OF A BOUT OF PNF STRETCHING ON AN ANTAGONIST MUSCLE GROUP AND ITS RELATIVE EFFECTS ON THE ISOKINETIC PERFORMANCE OF THE AGONIST MUSCLE GROUP
Andrew G Jameson, PhD. University of Mississippi.

Antagonist muscle activation during ballistic movements has been cited as a protective and controlling mechanism. Rapid lengthening of an antagonist muscle extrafusal and intrafusal fibers results in a stretch reflex. Although protective to the tissue, it may inhibit the agonist generated limb velocity and net force production. **PURPOSE:** Determine if a facilitated stretching technique, previously cited as a technique that "changes muscle sensitivity to a stretch", when applied to the antagonist muscle group suppresses the stretch reflex and therefore not inhibit intended agonist driven movement. **METHODS:** Fifteen (15) Division One varsity women soccer players performed a pre-test of five (5) isokinetic knee extensions at 180 degrees/sec. Subjects were then randomly exposed to a five (5) minute treatment of isometric condition. Subjects performed both experimental conditions within 48 hours. **Treatment:** PNF technique (stretch/hold/contract). **Control:** rest. On completion of the treatment or control phase a post test of five (5) isokinetic extensions at 180 degrees/sec were performed. A Repeated Measures MANOVA was used to quantify statistical differences. **RESULTS:** Maximum Rep Total Work (MRTW), Average Power (AP) and Maximum Average Peak Torque (MAPT) significantly increased ($p < 0.05$). Acceleration Time (AT) significantly reduced ($p < 0.05$). **CONCLUSION:** Facilitated stretching of antagonist muscle contributes to a reduction in the braking effect during the performance of an agonist generated ballistic movement. Further investigation needs to be performed to identify if this can contribute to enhancing

P16

COMPARISON OF FOUR BIOELECTRICAL IMPEDANCE ANALYZERS IN COLLEGE STUDENTS

Robinson, T.S., Collins, G., Aull, J.L., and Mahar, M.T. Department of Exercise and Sport Science, East Carolina University, Greenville, NC 27858.

Bioelectrical impedance analysis (BIA) estimates body composition from the resistance to flow of a low level electrical current. The first analyzers were expensive (e.g., RJL Systems and Valhalla fitness analyzer) and used electrodes placed on the wrist and ankles. Newer analyzers are inexpensive and send the current from hand-to-hand (Omron body fat analyzer) or foot-to-foot (Tanita body fat monitor). **PURPOSE:** The purpose of this study was to compare four bioelectrical impedance analyzers to determine whether they could be used interchangeably. **METHODS:** Participants were 60 university students (age = 21.4 ± 2.5 yr, height = 66.4 ± 3.8 in., weight = 155.8 ± 34.9 lb, percent fat from skinfolds = 19.1 ± 9.8%). BIA was assessed on each participant by all four analyzers. The presence of proportional or fixed bias was determined using the Bland-Altman technique. **RESULTS:** Proportional bias was present for comparisons between Tanita and all other analyzers, indicating poor method agreement. For the RJL and Valhalla analyzers, no proportional bias was found and the 95% limits of agreement were small, indicating good agreement. No proportional bias was found for the comparisons between the Omron and RJL or Omron and Valhalla analyzers; however, 95% limits of agreement were moderately high (both ± 4.0) and a fixed bias was present, demonstrating Omron estimates of percent fat were significantly lower than estimates by both the RJL and Valhalla analyzers. **CONCLUSIONS:** RJL and Valhalla BIA analyzers produce similar estimates of percent fat. The less expensive models, Omron and Tanita, produce estimates of percent fat that are not interchangeable with the RJL and Valhalla models.

THE T.E.N.S. PROGRAM: EVALUATION OF BASELINE SEVEN-DAY PHYSICAL ACTIVITY RECALL AND PHYSICAL FITNESS MEASURES IN OBESE ADOLESCENTS
R.L. Franco, R.K. Evans, P.A. Gibbs, and B.J. Warren. Department of Exercise Science, Virginia Commonwealth University, Richmond, VA

The purpose of this study was to determine baseline relationships between self-reported physical activity (PA) and measures of physical fitness (PF) in urban, obese adolescents enrolled in a comprehensive weight management program (T.E.N.S. Program). Eighty-four males and females (14.1 +/- 1.9 yrs, 39.6 +/- 9.7 kg/m²) completed a seven-day physical activity recall (7-day PAR) administered by a trained interviewer prior to beginning the program. The subjects reported amount of time spent in moderate, hard, and very hard activity during the previous seven days. Prior to analysis, hard and very hard activities were combined and reported as vigorous activity (VA). Within three weeks of completing the 7-day PAR, subjects completed a graded exercise test (VO₂-170), a 1-mile distance for time, a hand-grip strength (HG) test, and body fat assessment (%FAT). VA was significantly correlated with VO₂-170 ($r = .659$, $p = .001$) and HG ($r = .436$, $p = .006$). Additionally, there was an inverse relationship between VA and 1-mile time ($r = -.439$, $p = .009$) and VA and %FAT ($r = -.361$, $p = .003$). Participation in moderate PA was not significantly correlated to any PF variable. This data demonstrates that increased time reportedly spent in VA is associated with higher levels of PF in urban, obese adolescents. This result is in agreement with previous studies that have evaluated relationships between PA recall and PF parameters in adolescents.

P19

RELATIONSHIP BETWEEN SMOKING HISTORY AND FEV1 IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE

KJ Hanson, JM Sheely, KM Webb, JA Shilt, CM Woodard, MJ Berry Wake Forest University, Department of Health and Exercise Science

Chronic obstructive pulmonary disease (COPD) is a debilitating disease caused in large part by smoking. This obstruction is typically measured using spirometry, and the primary value that is used to evaluate the disease is forced expiratory volume in the first second (FEV1). The goal of this investigation was to examine the relationship between the smoking history (pack years) and the FEV1. Methods: 512 current and former smokers (mean age 63.1 ± 10.9 yrs, 49.1% men) served as subjects. All subjects underwent spirometry testing according to ATS criteria. Pearson correlation was used to assess the relationship between FEV1 and pack years. Results: The correlation between FEV1 and pack years was small but statistically significant (-.097, $p < .028$). Further analyses were performed on men ($n=255$) and women ($n=257$) separately. No correlation was found in men (-.031, $p < .617$), but interestingly the correlation increased in women (-.162, $p < .009$). Since FEV1 naturally declines with age, partial correlations were used to control for age. No significance was found in the group as a whole (-.0491, $p < .268$) or in men (-.0113, $p < .858$). The correlation was reduced in women. However, the slight correlation did approach significance (-.1190, $p < .057$). Conclusions: It is known that chronic smoking has a detrimental effect on lung function. However, reasons for lack of correlation between FEV1 and pack years may be due in large part to other factors, e.g. environmental or genetic. In addition, these findings further support the known gender differences in response to smoking (i.e. women have a greater degree of lung function impairment at a given amount of tobacco exposure).

P21

EVIDENCE OF A PRACTICE EFFECT IN ADMINISTRATION OF THE SENIOR FITNESS TEST

P.B. Schuler, T.S. Marzilli, J.M. Kozusko D. Robinson, & R. Issosari, HLES, University of West Florida, Pensacola, FL

The Rikli-Jones Senior Fitness Test (SFT) has been established as a valid assessment tool to determine the functional independence of older adults. The SFT protocol calls for two separate testing sessions due to observed significant increases in mean scores across trials. Increases in the scores from one day to the next have large effects on the absolute scoring consistency and the stability of the test. Many sites are unable to perform multiple session assessments due to limitations in trained personnel, adequate funding, and time constraints. PURPOSE: To determine the need for two separate testing sessions when administering the SFT to obtain valid measures of functional fitness status. METHODS: 29 independent-living older adults (ages 60-91) with varying functional abilities were tested on two occasions separated by 3 days. The six item battery of SFT measures included: 30 second chair stand, arm curl, chair sit-and-reach, back scratch, 8 foot up-and-go, and the 6 minute walk. RESULTS: The analysis revealed that three test items: arm curl, chair sit-and-reach, and 8 foot up-and-go improved significantly ($p < 0.05$) in the second administration of the SFT. In addition, there was also an observed trend towards improvements in the 6 minute walk. CONCLUSION: It is strongly suggested that the SFT be administered on two separate testing sessions to ensure stability of measurements. This is particularly important when utilizing the SFT to determine baseline fitness measures and to accurately assess any training effects that may be seen over time.

P20

THE INFLUENCE OF DIFFERENT INTENSITIES OF EQUAL WORKLOAD OF RESISTANCE TRAINING ON GLUCOSE UPTAKE.

P.E. Laebbers, J.A. Pottenger, B.J. Warren, J.N. Clore. Department of Exercise Science, Virginia Commonwealth University, Richmond, Virginia.

PURPOSE: To compare the effect of acute low- and high-intensity resistance exercise of equal work output on glucose uptake in resistant-trained males. **METHODS:** Ten healthy male (22.03±2.34yrs), resistance-trained (6.02±2.34yrs) subjects completed three treatment sessions: CON (no-exercise control), HI (3 x 8, 85% 10-RM), and LO (3 x 15, 45% 10-RM). Exercise sessions consisted of eight resistance exercises. Glucose uptake was measured the following morning by hyperinsulinemic euglycemic clamp technique. Glucose disposal was measured by analyzing the glucose infusion rate during the final 30 minutes of steady-state blood glucose concentrations. Insulin sensitivity was calculated by dividing the glucose infusion rate by the average insulin infusion. **RESULTS:** Fasting blood glucose levels did not change among treatment sessions (CON=81.44±5.48 vs. HI=76.57±4.35 vs. LO=77.70±5.69 mg/Dl). Glucose uptake was not significantly different among treatment sessions (CON=11.06±3.21 vs. HI=10.94±2.40 vs. LO=11.80±2.96 mg/kgFFM/min). Insulin sensitivity did not change among treatment sessions (CON=0.25±0.07 vs. HI=0.26±0.06 vs. LO=0.27±0.07 mg/kgFFM/min / uU/ml). **CONCLUSION:** These data indicate that for acute resistance exercise bouts with an equated work volume, low- and high-intensity sessions have similar effects on glucose uptake, but are no different than a no-exercise control session in resistance-trained males. The trained status may have allowed for maximum exercise-induced cellular adaptations for enhanced insulin sensitivity and glucose uptake.

P22

VOLITIONAL HYDRATION IN CHILDREN: IMPACT OF TASTE AND CHRONIC DEHYDRATION

Millard-Stafford, M., K. Hitchcock, and T. Snow Exercise Physiology Laboratory, Georgia Institute of Technology, Atlanta, GA.

Our purpose was to examine the hydration status of children and if thirst, taste preference, and gastrointestinal tolerance of sports drinks containing 6, 8, and 9% carbohydrate (CHO) are altered with vigorous exercise. Thirty-three soccer athletes (17 girls, 16 boys), aged 9-12 y, participated in a double-blind, cross-over study. Using a 10 cm VAS, subjects rated thirst, taste, and stomach upset before and after a 90 min practice during which one of the CHO beverages was ingested ad libitum. A urine specimen was obtained prior to exercise. Mean (\pm SD) urine specific gravity (usg) was not different for girls and boys (1.0218 \pm 0.007 and 1.0252 \pm 0.005, respectively). However, 70% of children initiated practice moderately dehydrated (usg > 1.020). Drink volume during 90 min was 724 \pm 285 and 692 \pm 198 ml for girls and boys, respectively, and not related to pre-exercise perception of thirst ($r = 0.03$). However, boys drank significantly more ($p < 0.01$) fluid per water break (543 \pm 251 ml) than girls (361 \pm 210). Boys rated thirst significantly higher prior to exercise (4.5 \pm 2.3) compared to girls (2.6 \pm 1.8), but no difference in thirst after exercise (1.8 \pm 1.3 and 2.1 \pm 1.8). There were no differences in volume ingested, drink palatability, stomach upset, or taste preferences for 6, 8, or 9%CHO. These data suggest that active children may be chronically dehydrated and drinking patterns during exercise differ between pre-pubescent boys and girls. Moreover, increased CHO content does not influence drinking patterns during exercise.

Supported by a grant from Kraft Foods, Inc.

THE EFFECT OF DURATION AND EXOGENOUS CARBOHYDRATE ON CYCLING EFFICIENCY

W. Gowin, C.L. Dumke, D.C. Nieman, A. Utter, S. McAnulty, and J.M. McBride; Appalachian State University, Boone, N.C.

Purpose: The purpose of this investigation was to determine the effects of 2.5 hours of cycling with and without carbohydrate supplementation on gross efficiency. Methods: Trained cyclists (N=15) were tested for VO₂ max (53.6 \pm 2.2 ml/kg-min-1) and lactate threshold during an incremental test to exhaustion. On two separate subsequent visits cyclists performed 2.5 hours of cycling on an indoor trainer. A carbohydrate (C) or placebo (P) beverage was randomly provided during the two trials. Gross efficiency, cycling economy, power output, VO₂, lactate, and blood glucose were measured at seven time points (T1-T7) during the 2.5 hour ride. Muscle glycogen levels were measured immediately before and after the ride from muscle biopsies obtained from the vastus lateralis. Results: Gross efficiency and cycling economy during P significantly decreased and was significantly lower than C at T7. Power output significantly decreased in P and was significantly lower than C at T7. Blood glucose significantly decreased in P and was significantly lower than C at T7. VO₂ and lactate changes were not significantly different between P and C. Muscle glycogen levels decreased by over 60% during both conditions but demonstrated no effect of C treatment. Conclusion: It appears that 2.5 hours of cycling results in a significant decrease in gross efficiency accompanied by a significant decrease in power output and blood glucose levels.

Supported by the Gatorade Sports Science Institute.

PREVALENCE OF QT INTERVAL PROLONGATION IN COLLEGE STUDENTS

C.M. DeWitt, M.F. Hume, S.L. Burkhardt, H.N. Huff, L.S. Smith, B.B. Parr, and D.K. Strom. Exercise and Sports Science, University of South Carolina Aiken, Aiken, SC

Prolonged QT interval syndrome is potentially dangerous, sometimes predisposing ventricular dysrhythmias and sudden death. Since there is a paucity of research documenting the prevalence of this syndrome in college students, the objective of this investigation was to measure the QT interval in college students and determine the frequency of prolongation. One hundred sixty two (87 males and 75 females) students, age 18-29, served as subjects for the study. Following consent, a single-lead resting electrocardiogram was recorded on each subject. The heart rate (beats/minute) and QT interval (seconds) were measured. A heart rate-corrected QT interval (QTc) was used to establish prevalence of QT interval prolongation. For males (mean age 23), the average heart rate was 69 and the average QT interval was 0.37 seconds. Eight male subjects had a QTc at the upper limit of normal and two male subjects had a prolonged QTc interval. For females (mean age 22), the average heart rate was 73 and the average QT interval was 0.38 seconds. Two female subjects had a QTc at the upper limit of normal and no female subject had a prolonged QTc interval. Conclusion: The results indicate that QTc interval prolongation is rare in college students. This study showed a prevalence of 1.2% (two male subjects). No female subjects had this abnormality.

THE VESTIBULOSYMPATHETIC REFLEX: HEMODYNAMIC RESPONSES TO HORIZONTAL SEMI-CIRCULAR CANAL ACTIVATION

M Klumpp, M deVeer, J Hondzinski, and R Wood Louisiana State University

Age-related deterioration in vestibular function that is known to negatively affect balance coordination and normal physical function may contribute to increased incidence of falling. While the semi-circular canals are known to be instrumental in balance coordination, there are no data to substantiate their role in autonomic cardiovascular reflexes, which are believed to help combat orthostatic hypotension. Therefore, the purpose of this study was to observe reflexive changes in cardiovascular function during activation of the horizontal semicircular canals using bithermal binocular caloric irrigation in young adult participants. Repeated-measures ANOVAs revealed RR intervals tended to shorten under most caloric conditions but failed to achieve to statistical significance. MAP increased or tended to increase under all caloric conditions ($p < 0.10$), and sympathovagal balance increased under some ($p < 0.10$), but not all conditions. These data suggest that vestibular activation results in a reduction in vagal withdrawal, sympathetic activation, or both. Future studies should examine the implications of primary aging and vestibular disease for potential problems with cardiovascular control.

P25

P26

P24

P23

AGE-RELATED RUNNING WHEEL ACTIVITY IN FIRST GENERATION MICE FROM HIGH AND LOW ACTIVITY PARENTS

Sean Courtney, Melissa Graf, Lauren Stone, David Weh, J. Timothy Lightfoot, and Michael Turner. Dept. of Kinesiology, University of North Carolina at Charlotte, Charlotte, NC 28223

Physical activity (PA) levels commonly decrease with aging. Research from our laboratory suggests a genetic influence on PA and aging in mice. To further investigate this influence, highly active SWR/J mice and less active DBA/2J mice were crossbred, resulting in the production of nine D2SW F1 and seven SWD2 F1 mice. Daily running wheel patterns were compared to parental strain activity patterns (5 SWR/J and 5 DBA/2J) from age seven to 14 weeks. Each mouse was placed in a separate cage and provided with a running wheel, sensor, and clock. Daily readings of duration, distance, and average velocity and weekly body weights were analyzed by ANOVA with repeated measures. Age-related running wheel performance with distance, duration, and velocity ($p < 0.001$) were different when compared between the groups. The SWR/J mice displayed high PA levels while D2SW F1 mice exhibited low running wheel activity levels. There were no difference in running wheel patterns across the 8 week study period. All mice increased body weight across the 2 month study period ($p < 0.05$). Therefore, assessment of PA phenotypes across the two month time period in crossbred mice suggest low PA level may be the dominant running wheel activity trait with these strains of mice. Supported by an NIH AG022417 (Turner, Graf, Courtney, and Brown) and NIH DK61635 (Lightfoot).

P27

SYSTEMIC AND INTESTINAL INFLAMMATION CHANGES WITH PHYSICAL ACTIVITY IN THE APCMIN⁺ MOUSE

J.A. Carson, K.A. Mehl, T.A. Washington, J.M. McClung, J.M. Davis, and F.G. Berger. Integrative Muscle Biology Laboratory, Department of Exercise Science, University of South Carolina, Columbia, South Carolina.

Colon cancer is the second leading cause of all cancer deaths in the US. Behavioral modifications, such as physical activity (PA) and diet, can effect its prevention and progression. The adenomalous polyposis coli (APC) gene is one heritable genetic mutation that can trigger tumor development. Male and female APCMin⁺ mice were randomly assigned to Control, Treadmill, and Activity Wheel groups. Treadmill runners ran on a treadmill at 18 m/min for 60 min, 6 d/week. Activity wheel runners were housed with 24-h access to voluntary activity wheels. Splenic inflammatory cytokine mRNA levels were analyzed via RT-PCR. We have previously demonstrated that treadmill running can decrease intestinal polyp number and size in male APCMin⁺ mice. Splenic IL-6 mRNA concentration decreased 29% in male treadmill runners compared to controls ($p=0.036$), but not in wheel runners. There was no effect of exercise on female spleen weight or splenic IL-6 mRNA abundance. The crypt depth: villus height ratio in the intestine (CVR), an indirect marker of intestinal inflammation, decreased 21% ($p=0.024$) and 24% ($p=0.029$), respectively, in male and female treadmill runners, but not wheel runners. Physical activity-induced attenuation of intestinal polyp number may be related to the systemic and intestinal inflammatory state. Further studies need to examine the interaction between nutraceutical treatments and physical activity on intestinal polyp development.

This study was funded by the Colorectal Cancer COBRE Program from the National Institute of Health/USC.

P29

DAILY ACTIVITY OF F1 MICE FROM STRAINS OF HIGH ACTIVITY C57L/J AND LOW ACTIVITY C3H/HEJ MOUSE STRAINS

S.E. Carter, A.H. Vordermark, M.J. Turner, S.R. Kleeberger, J.T. Lightfoot. Dept. of Kinesiology, University of North Carolina at Charlotte, Charlotte, NC; Pulmonary Pathobiology Lab, NIEHS, Durham, NC

Recent studies suggest that genetics exert a significant control on daily activity. The purpose of this project was to conduct reciprocal breeding of high activity C57L/J and low activity C3H/HeJ mice to gain insight into possible inheritance patterns of daily physical activity. C57L/J and C3H/HeJ inbred mice were chosen to cross breed based on their previous physical activity results of duration, distance and velocity. The F1 offspring of these two strains were housed separately and given access to exercise wheels from 6-13 weeks of age. Exercise duration (minutes) and distance (km) were recorded daily with exercise velocity (m/min) subsequently calculated, and body weight (g) was measured once per week. The F1s showed no significant difference in running velocity ($p= .38$, $R=0.4$) regardless of their parentage. However, the F1s with the C57L/J mothers ran significantly farther ($p=0.0006$) and for a longer time ($p<0.0001$) than the offspring with C3H/HeJ mothers. Our early data suggests that daily activity patterns may be influenced maternally. Future F2 data will be used to further test this suggestion.

P28

HEALTH RELATED QUALITY OF LIFE IN COLLEGE-AGED STUDENTS: WHAT FACTORS INFLUENCE?

T. Nevitt, E. Hall, J. Schuldt, & P. Miller. Elon University, Elon, NC 27244

Health Related Quality of Life (HRQL) depicts aspects of life that can be altered by health modifications such as exercise and other forms of physical activity. Previous research has attempted to determine factors that have an influence over HRQL because it may be important in designing health interventions. PURPOSE: The current study examined the relationship between physical fitness, self-reported physical activity, physical self-efficacy and HRQL. METHODS: Data was collected from 155 participants (106 females, 49 males) who underwent physical fitness assessments. The participants also completed surveys concerning HRQL (SF-36; Ware et al., 2000), self-reported physical activity levels (The Aerobics Center Longitudinal Study Physical Activity Questionnaire; Kohn et al., 1988) and physical self-efficacy (Physical Self-Efficacy Scale; Ryckman et al., 1982). Participants fitness levels included information from muscular strength (grip strength), muscular endurance (sit-ups and curl-ups), cardiovascular endurance (estimated VO2max from 5-min step test), body composition (% body fat from skin calipers), and flexibility (sit-and-reach) assessments. RESULTS: Preliminary correlational analyses revealed that percent body fat ($r = -0.15$), estimated VO2max ($r = 0.19$), and perceived physical ability ($r = 0.19$) were significantly correlated with physical component summary of SF-36. Perceived physical ability ($r = 0.19$) and physical self-presentation confidence ($r = 0.41$) were significantly correlated with mental component summary of the SF-36. Self-reported physical activity was not correlated with HRQL. CONCLUSION: This data suggests that objective measures (e.g., physical fitness) and subjective measures (e.g., self-efficacy) can both be related to HRQL in college-aged students.

(Support: Carter, Vordermark, Lightfoot - NIH DK61635; Turner - NIH AG022417; Kleeberger - NIH NIEHS)

STATE ANXIETY RESPONSES IN COLLEGE-AGED FEMALES TO DIFFERENT RESISTANCE TRAINING MODES

E. Chmelo, E. Hall, R. DeWitt, J. Morrison, C. Kostura, & P. Miller
Elon University, Elon, NC 27244

Single bouts of exercise have been associated with significant decreases in state anxiety; however, most studies examine only aerobic exercise and not anaerobic exercise. **PURPOSE:** The purpose of this study is to examine the state anxiety responses in female exercisers following acute bouts of resistance training. **METHODS:** 31 college-aged females (mean age = 20.3 ± 1.3) completed 4 sessions with at least 48 hours between sessions. Session 1 was used to determine the 10 repetition max (RM) load for 4 different resistance exercises (chest press, overhead press, seated row, and bicep curl). The next 3 sessions had the participants perform 1 of 3 different modes of resistance training (concentric only, eccentric only or traditional concentric/eccentric). For the acute bouts of resistance training, the participants performed 3 sets for each exercise at varying intensities (80%, 100%, and 120% 10 nRM) at one of the different modes. The 10-item short version of the State Anxiety Inventory (SAI; Spielberger, 1979) was given to the participant prior to, immediately following and 60 minutes after the acute bout of resistance training. **RESULTS:** A repeated measures MANOVA failed to show either a time ($p = 0.65$) or condition ($p = 0.28$) effect for state anxiety responses following resistance exercise. **CONCLUSION:** The SAI may not be the most appropriate instrument to see changes in state anxiety following resistance training. Future studies may want to examine changes in affect that occur with resistance training.

P31

THE IMPORTANCE OF OLDER ADULT ASSESSMENT IN PUBLIC HOUSING

Dawn M. Hayes, PT, Geraldine Clarke, M.Ed., Dr. M. Elaine Cress, Ph.D.
University of Georgia, Athens, Georgia, Exercise Science

Older adults residing in public housing are at a higher risk for nursing home placement (Black et al., 1999) and physical function is an integral component in maintaining independence (Pennix et al., 1998). Purpose: To gain an insight of self perceived and performance-based function of an older adult population in public housing. Design: Retrospective and cross-sectional study of older adults mean age 76.5 (9.56), 56.6% female, 23.33% black, 60% < high school education, 80% <\$10,000 annual income. Methods: Dependent variables included Short Physical Performance Battery (SPPB) and support services use. Independent variables included SF36 (self reported health), CES-D (depression), IADL (self reported daily function), OARS (social support resources), and medical history. ANOVA used to examine SPPB group differences (high 10-12 compared to mod 7-9, low 4-6, and very low <4). Correlation/regression analysis used to account for variance in service utilization. Results: Cross-sectional findings showed that age and gait speed accounted for 54% of service use variation. One SPPB group (7-9) was identified as a good target for education and physical activity intervention. Implications: Education targeted at housing authority managers and residents on the need for assessment is justified to develop new solutions for independence maintenance in public housing.

P33

PHYSICAL ACTIVITY AND HEALTH-RELATED QUALITY OF LIFE: A STUDY OF OLDER ADULTS RESIDING IN ASSISTED LIVING

Andrea N. Miller, Shannon L. Mihaliko, Ph.D., Katie L. Wickley, M.S.,
Anthony P. Marsh, Ph.D., Wake Forest University, Winston-Salem, NC

Regular physical activity has been associated with improved physical function and Health Related Quality of Life (HRQL) among community-dwelling older adults. However, few studies have included older adults residing in assisted living. Therefore, the purpose of this cross-sectional study was to examine the relationship between physical activity and HRQL in older adults (N=130, M age= 81.6 +/- 5.3 years) residing in these communities. Specifically, we measured resident physical activity levels using the Physical Activity Scale for the Elderly (PASE) and HRQL using the SF-36. Residents who were more physically active reported significantly higher levels of HRQL (physical component; $r = .204, p < .05$) than those who were less active. Indices of physical function were also significantly correlated ($p < .01$) with HRQL, such that those participants who reported higher levels of HRQL demonstrated better balance ($r = .400$) and had faster chair rise ($r = -.285$), timed up and go ($r = -.376$), and four meter walk ($r = -.364$) times. Additionally, residents who reported a higher number of comorbidities had significantly ($p < .05$) lower levels of physical activity ($r = -.288$) and HRQL ($r = -.244$). These data emphasize the need to incorporate physical activity into the daily lives of older adults residing in assisted living. Future studies should evaluate changes in psychological and physical function as related to residents' participation in physical activity over time.

P32

THE COMPARISON OF FUNCTIONALITY AMONG OLDER WOMEN, WOMEN DIAGNOSED WITH FIBROMYALGIA, AND HEALTHY CONTROL WOMEN

D. Kingsley, L. Pantoni, FACSM, T. Toole, G. Abboud, P. Sirithienthad, R. Mathis, & V. McMillan, Florida State University, Tallahassee, FL.

The ability to perform activities of daily living (ADL) may be compromised in older women (OW) and in women diagnosed with fibromyalgia (FW) compared to healthy age and weight-matched control women (CW). The purpose of this study is to compare the functionality among OW, FW, and CW by utilizing the Continuous Scale-Physical Functional Performance Test (Cs-PFF) that consists of 5 domains: upper body strength (UBS), upper body flexibility (UBF), lower body strength (LBS), balance and coordination (BALC), and endurance (END), and an overall score of functionality (Cs-PFF). Thirty-eight OW (71±8 yrs), 29 FW (46±7 yrs), and 12 CW (44±8 yrs) participated in the study. One-way ANOVA was used to assess significance ($p < .05$). The height, weight, and body mass index (BMI) for the OW (159.9±6.4cm, 66.2±14.4kg, 25.9±5.4) were different from the FW (164.5±5.5cm, 84.2±21.6kg, 31.1±7.0) and for the CW (162.9±5.3cm, 81.5±18.6kg, 30.6±6.3). The CW had significantly higher functionality measures of UBS (CW:68±9 units; OW:50±14 units; FW:47±12 units), LBS (CW:63±7 units; OW:42±16 units; FW:41±16 units), BALC (CW:62±9 units; OW:46±12 units; FW:48±17 units), END (CW:67±8 units; OW:50±13 units; FW:49±17 units), and Cs-PFF (CW:64±6 units; OW:49±13 units; FW:49±15 units) compared to OW and FW. The FW had significantly lower functionality scores than the CW, but were not different from OW. These findings suggest that the inability of FW to perform ADL may prematurely lower their quality of life.

P34

LEVEL OF AGREEMENT BETWEEN TWO COMMERCIAALLY AVAILABLE PULSE OXIMETERS DURING GRADED EXERCISE TESTING

K.M. Webb, K.J. Hanson, J.M. Sheely, and M.J. Berry, Department of Health and Exercise Science, Wake Forest University, Winston-Salem, NC.

Due to the difficulty of directly measuring oxygen saturation, pulse oximetry is used clinically to monitor oxygen saturation (SpO₂) non-invasively in those with chronic obstructive pulmonary disease (COPD). The purpose of this study was to measure the level of agreement between two commercially available pulse oximetry during rest and exercise. SpO₂ was measured in 33 COPD patients (age=68.7 ± 10.7 yrs) at rest, during a graded exercise test and during recovery. The Ohmeda pulse oximeter (Biox 3740; Louisville, CO) was placed on the right hand throughout the test, and the Respironics pulse oximeter (Model 950; Kennesaw, GA) was placed on the left hand. SpO₂ values from Ohmeda and Respironics were significantly correlated ($r=0.812$, $p<0.001$). Statistical analysis included Pearson correlations, paired-sample t-tests, and Bland-Altman plots. The mean SpO₂ of the Ohmeda (94.5 ± 3.12) was not significantly different from that of the Respironics (94.02 ± 3.2). The Bland-Altman plot showed a mean difference between the oximeters of 0.4%; however, the 95% confidence intervals ranged from 4.5% to -3.7%. The variance in the level of agreement between the Ohmeda and the Respironics pulse-oximeters is clinically significant and suggests potential error and a large level of disagreement between the two pulse oximeters. Given the importance of monitoring SpO₂ in COPD patients, specifically those who are prescribed supplemental oxygen, more research is needed on the reliability of commercially available pulse-oximeters.

P35

PREDICTORS OF 6-MINUTE WALK DISTANCE IN OLDER ADULTS WITH COPD: IMPLICATIONS FOR INTERVENTION

Katie L. Wickett, M.S., Jeffrey A. Katula, Ph.D., W. Jack Rejeski, Ph.D. and Michael J. Berry, Ph.D., Wake Forest University, Winston-Salem, NC

Older adults with Chronic Obstructive Pulmonary Disease (COPD) often experience significant declines in functional health. The 6-minute walk test, a significant predictor of mortality, is widely used to assess the impact of COPD on functional status. Although studies provide support for the positive effects physical activity has on 6-minute walk distance, little is known regarding correlates of this outcome. Therefore, the purpose of this study was to examine predictors of 6-minute walk distance in older adults (N=142, M age = 67.6 ± 6.02 years) with COPD. Predictors included, age, gender, FEV1 (% predicted), and self-efficacy (SE) for walking and illness management. A linear regression analysis revealed that the following variables explained 42% of the variance in 6-minute walk distance $F(1,132) = 19.08$ ($p < .01$); age ($p < .01$), gender ($p < .01$), and both SE for walking ($p < .01$), and disease management ($p < .01$). These data suggest that interventions should be designed to increase self-efficacy for walking and disease management among older adults with COPD. Such interventions may add to the effects that traditional forms of exercise therapy have on functional health outcomes such as the 6-min walk. Supported by NIH grants HL53755 AG10484.

P37

WALKING ADHERENCE IN WOMEN: WHAT IS THE BEST PRESCRIPTION?

C. Albright, C. Hultquist, D. Thompson, FACSM University of Tennessee, Knoxville, TN

The optimal intervention for getting sedentary individuals to adhere to increasing daily physical activity is still unknown. Purpose: To compare exercise adherence and changes in health over an unsupervised 6-month follow-up in women instructed to walk 10,000 steps per day (10K) with those told to take a brisk 30-min walk on most, preferably all, days of the week (30min) following an intensive 4-week monitoring period. Methods: Fifty-eight sedentary (baseline steps < 7000 per day) women, ages 45 + 6.0 y, were randomly assigned to either a 10K or 30min group. Both groups underwent a 4-wk implementation phase in which a sealed pedometer was worn and subjects returned for weekly meetings to have their step count recorded. The 10K group was given a second pedometer to track daily steps. Subjects then returned for a 3 and 6- mo follow-up, and daily step accumulation was monitored for 1 wk. Blood pressure and anthropometric measurements were taken at baseline, 4 wks, 3 mo, and 6 mo. Results: There were no differences in daily steps or health variables between the groups at baseline. There was a significant difference ($P<0.05$) in step accumulation between groups during the intensive 4-wk period (10K:10159±292,30min:8270±354). There were no significant differences in step accumulation between groups at 3 and 6 months. Both groups were walking significantly more steps at 3-mo (10K: 8510±490,30min: 8621±636) and 6-mo (10K: 8231±499,30min: 8842±624) compared to baseline. There was a significant decrease in blood pressure, waist and hip circumferences, body weight, and body fat percentage over time but not between groups. Conclusion: A step count goal may initially result in greater physical activity accumulation, but long-term adherence seems to be similar for both intervention strategies. Both physical activity goals are also capable of increasing activity above sedentary levels over a 6-month time period and improving health variables.

P38

EFFECTS OF LIFESTYLE ACTIVITY ON GLYCOSYLATED HEMOGLOBIN IN MIDDLE-AGED LOWER SOCIOECONOMIC OVERWEIGHT AND OBESE WOMEN

J. Hart, L. Pantou, FACSM, D. Kingsley, T. Toole, R. Moffatt, M. Kushnick, E. Haymes, FACSM, Florida State Univ. Tallahassee, FL.

Seventy percent of diabetes can be attributed to excess weight, which is a major public health concern in lower socioeconomic groups that are typically prone to being overweight. The purpose of this study is to determine if glycosylated hemoglobin (A1c) can be lowered during a 12-month lifestyle modification program using pedometers in overweight and obese, women (40 to 65 yrs) on Medicaid. Forty-six women agreed to participate in the study and to wear pedometers (Digitwalker SW-701). Telephone calls were made weekly to record daily steps and to encourage subjects to increase steps with a goal of 10,000 steps/day. Baseline and 12-month measurements included weight, height, circumferences, and fasting blood samples that were analyzed for A1c. Twenty-nine women completed the study. Of these women, nineteen did not increase their steps (noncompliers; 4480±2782 to 4597±2674 steps/day) while ten increased their steps (compliers) by more than 2,000 (7023±3879 to 11102±5336 steps/day). A two-way repeated measures (group x time) ANOVA was used to compare compliers to noncompliers. The compliers had significant decreases in body weight (107.1±19.4 to 102.5±20.0 kg), body mass index (40.8±7.8 to 39.1±8.0 kg/m²), and waist circumference (113.2±16.0 to 111.9±17.2 cm), compared to the noncompliers. There were no significant differences between the compliers (6.0±1.4 to 6.3±1.5%) and noncompliers (6.2±1.1 to 6.8±1.8%) in A1c after the 12 months. For this population an increase of more than 2,000 steps/day did change some anthropometric measures but had no effect on A1c.

P36

ACUTE HEART RATE, BLOOD PRESSURE, AND RPE RESPONSES BETWEEN SUPER SLOW AND GOLD STANDARD RESISTANCE TRAINING PROTOCOLS

FJ Wickwire, JR, McLester, JM Green, and TR Crews. The University of Alabama, Tuscaloosa, AL and Western Kentucky University, Bowling Green, KY

Acute cardiovascular and perceptual responses to Super Slow resistance training (SS) are not well understood. This study compared blood pressure (BP), heart rate (HR) and RPE between SS and "Gold-Standard" (GS) protocols. Participants (n=20) completed 3 sessions of elbow flexion (EF) and knee extension (KE). Session-1 consisted of a 1-repetition maximum (1RM) test for EF and KE and a familiarization trial for SS. Sessions 2 and 3 were counterbalanced (different days) with subjects completing 3 sets of SS (10s concentric, 5s eccentric per rep, 40% 1RM) and GS (2s concentric, 4s eccentric per rep, 65% 1RM). Peak HR was recorded for each set with minimum HR taken between sets after 3 min recovery. BP was taken following 5 min seated rest, after each set, before sets 2 and 3, and 2 min post set 3. RPE for active musculature were obtained 3 times per set. Repeated measures ANOVA was used for between and within group comparisons ($\alpha = 0.05$). Although systolic BP (SBP) and diastolic BP (DBP) responses were not significantly different between SS and GS for EF or KE, SBP (SS and GS combined) was significantly lower during EF and significantly higher during KE than resting BP. DBP (SS and GS combined) was not significantly different from resting BP for EF or KE. No significant differences were observed for minimum HR (GS vs. SS). However, peak HR was significantly greater during GS (vs. SS) for EF and KE. RPE was also significantly greater during GS for EF and KE. Even though SBP was greater for SS and GS combined during KE, comparing SS and GS revealed minimal differences in BP, suggesting either would be appropriate for individuals to whom strength training is not contraindicated.

P39

THE EFFECTS OF EXERCISE DURATION ON DEPRESSION OF AT-RISK ADOLESCENTS

Tania Lovell, John O'Connor, Frank Wyatt, & James Heimdal Louisiana Tech University, Ruston, LA

Research indicates an association between chronic exercise and physiological health. Very few investigations have studied the effect of an acute bout of exercise of different durations on adolescent self reported depression levels. **PURPOSE:** The purpose of this investigation was to determine the effect of exercise duration on the self reported depression levels of at risk adolescents. **METHODS:** Subjects consisted of 21 inactive adolescents (11 females, 9 males) with a mean age of 14yrs. All subjects are residents in a long term care facility. The two acute aerobic exercise treatments were randomized. The exercise intensities were identical between treatments and the two exercise durations included a 20 min and 45 min bout respectively. Subjects followed a video recorded aerobic dance routine and an exercise leader. Depression levels were determined using the Reynolds Adolescence Depression Scale (RADS). Between treatment variances (mean + SD), data were analyzed by the independent samples t-Test. Statistical significant was set at the $p < 0.05$ level. **RESULTS:** No significant difference was determined for heart rate, b/min (146 ± 13 vs. 150 ± 10) for the two exercise treatments. A significant decrease in depression was reported for the short duration exercise (71.7 ± 15.4 vs. 65.0 ± 16.7) but no significant difference was reported for the long exercise duration (71.7 ± 15.4 vs. 67.6 ± 21.3). **CONCLUSION:** These data suggest that an acute aerobic exercise bout at two durations lowered RADS scores of inactive at risk adolescents. The non-significant decrease in depression reported following the 45 min exercise treatment may be due to the participants inactive lifestyle. These results contribute to the data reported on the effect of exercise duration on at risk adolescent depression levels.

P40

PHYSICAL INACTIVITY: THE IMPACT OF THE BREAST CANCER EXPERIENCE

S.D. Rogers, S.L. Mihalko, E.L. Wenzel, L.A. Kreshel, E. Levine, P.M. Ribish; Wake Forest University

It is estimated that this year 182,800 women will join the 2 million women currently living with breast cancer (Harvard Cancer Prevention, 2004). Retrospective studies have evaluated activity levels in women following surgery, but less is published on pre-surgery activity. The purpose of this prospective study was to determine pre-surgery activity in women with breast cancer and change in activity over time, at 6- and 12- months post-surgery. Pre-surgery data were collected on 250 women (M age = 56 years +/- 13-08) diagnosed with breast cancer. Prior to surgery, the sample reported low levels of mild ($M = 1.7$ days/wk), moderate ($M = 1.2$ days/wk), and strenuous activity ($M = 0.44$ days/wk). These women were also overweight pre-surgery (M BMI = 28.7). To date, 51 women from this sample have returned for testing at 6-months post-surgery. In this sub-sample, mild activity levels declined substantially ($p < .01$) from pre- ($M = 2.5$ days/wk) to 6 months post-surgery ($M = .26$ days/wk). Reported moderate activity was unchanged. Strenuous activity ($p = .053$) declined from an average 0.4 days/wk to 0.09 days/wk. Activity levels remain dampened in those who returned for 12-month post-surgery follow-up ($n = 23$). These data indicate that women with breast cancer do not participate in recommended levels of activity prior to surgery and are even less active at 6 and 12 months post-surgery. Our results make a convincing case for early exercise intervention programs to prevent declines in physical activity and function in women with breast cancer.

P41

EXERCISE AND OLDER WOMEN WITH BREAST CANCER: INFLUENCES ON SELF ESTEEM

S.L. Strayer, S.L. Mihalko, E.L. Wenzel, G.D. Miller, R.T. Anderson; Wake Forest University

Breast cancer is a powerful stressor that can adversely affect self-esteem (Baldwin & Courneya, 1997). Since exercise improves self-esteem in others, the present study employed the Exercise and Self-Esteem Model (EXSEM, 1989) to examine the effects of an eight-week exercise intervention on self-esteem in breast cancer survivors ($N = 18$; M age = 65.4 +/- 7.8 years). The relationship between exercise and self-esteem is based on a hierarchical model; therefore, the sub-domain levels of body (BODY), strength (STR), and condition esteem (COND) and physical self-worth (PSW) were examined as mediators in the exercise and self-esteem relationship. Correlational analysis of baseline data revealed relationships ($p < 0.05$) between physical activity (EX) and walking self-efficacy (SE), COND, and BODY. SE was also related ($p < 0.05$) to BODY, COND, and PSW. In turn, PSW was related ($p < 0.05$) to COND, BODY, and STR as well as global esteem (EST). Paired samples t-tests showed changes ($p < 0.05$) in COND, PSW, EX, and SE from pre- to post-intervention. Residualized change scores were calculated to examine EXSEM over time and correlational analysis of these scores revealed relationships ($p < 0.05$) between EX and BODY as well as between STR and BODY and PSW. Borderline significance ($p < 0.10$) was indicated between EX and SE, COND, and STR as well as between PSW and EST. These data indicate that relationships exist to support EXSEM at baseline, and an 8-week exercise intervention can positively impact these relationships among women with breast cancer.

P42

ASSESSMENT OF RESISTANCE TRAINING USING HR AND RPE: A PRELIMINARY EVALUATION

C.M. Kostura, P.C. Miller, J. Morrison, R. Dewitt, E. Chmelo and E.E. Hall,
Department of Health and Human Performance, Elon University, Elon, NC 27244

Ratings of perceived exertion (RPE) are routinely used to monitor, assess, and prescribe aerobic exercise. Heart rate (HR) is another measure used to evaluate exercise intensity. The application of RPE and HR to resistance training programs has not been yet effectively established. **PURPOSE:** The purpose of this study was to examine the differences in RPE and HR among college-aged females performing 3 different modes of resistance training: concentric (CE), eccentric (EE) and traditional concentric/eccentric (TE) utilizing varying resistances. **METHODS:** 15 females (mean age = 20.6 ± 1.3) were asked to complete four sessions of resistance training on accommodating resistance machines; chest press, seated row, overhead press and biceps curl. The first session was used to establish the 10-RM load for each station. Subsequent sessions involved the execution of training in one of the 3 test conditions CE, EE, or TE. The participants performed 3 sets of each lift at 80% 10-RM, 100% 10-RM and 120% 10-RM. **RESULTS:** The data revealed lower RPE and HR response during EE than either CE or TE conditions. **CONCLUSION:** These results may be partially due to differing fiber recruitment patterns, movement mechanics, or energy requirements of the test conditions. These findings are potentially important for the establishment of training programs especially for those individuals recovering from an illness, who had been previously sedentary, and who are involved in rehabilitation of an injury.

P43

TOTAL AND SUBCUTANEOUS ADIPOSE TISSUE IN CHILDREN: A LONGITUDINAL INVESTIGATION OF BODY COMPOSITION AND PHYSICAL ACTIVITY

Lisa C. Colvin, Emily Morris and Lindsay Benjamin, Department of Kinesiology,
College of Education and Human Development, University of Louisiana at Monroe,
Monroe, LA 71209

According to a Center for Disease Control report, approximately 30.3 percent of children (ages 6 to 11) are overweight and 15.3 percent are obese. With the rise in childhood overweightness and obesity, there has been an increase in the incidence and prevalence of medical conditions in these age groups that had been rare in the past. The purpose of this study was to examine longitudinal effects of physical activity on fat distribution patterns and percent body fat in children from 1993 to 2003. Twenty Caucasian male and female subjects between the ages of 8 and 13 were randomly selected from a pool of highly competitive age group swimmers in Northeast Louisiana in 1993. After a ten year period, subjects were reassessed. Subcutaneous fat tissue volume, thickness and percentage were collected using MRI. Physical activity data was collected using a modified Behavioral Risk Factor Surveillance System (BRFSS) form. Statistical comparison between 1993 and 2003 was performed by paired t-test ($p < .05$). Significant differences were found in the thickness of the lateral thigh, abdomen, chest and anterior thigh sites from 1993 and 2003. Percent body fat showed a significant increase from 1993 to 2003 (1993 = $24.77\% \pm 8.79\%$; 2003 = $31.47\% \pm 6.12\%$). BRFSS physical activity survey showed a significant decrease in hours of moderate to high physical activity per week from 1993 (14.5 hours/week) to 2003 (2.5 hours per week). Additional investigations regarding this type of child exerciser should be conducted.

P45

EFFECTS OF INCREASED OR DECREASED ACTIVITY ON THE NEUROMUSCULAR JUNCTION

Kelly A. Tenny, Meredith H. Wilson, and Michael R. Deschenes. The College of
William & Mary.

The objective of this study was to directly compare the effects of increased, or decrease activity on neuromuscular junction (NMJ) morphology. Twenty-four young (7 wks old male Sprague-Dawley rats were randomly assigned to one of three treatment group (N=8/group). Rats assigned to the increased activity group performed treadmill running (5d/wk for 10 wks. Animals assigned to the decreased activity group were subjected to muscle unloading for 10 wks. Control rats lived freely in their cages for the same 10 w period. At the end of the 10 wk intervention, all animals were euthanized before soleu muscles were dissected out, and quickly frozen at resting length. To visualize NMJs, 5 um thick longitudinal muscle sections were stained with rhodamine conjugate bungarotoxin, and fluorescein labeled RT97 antibody. Bungarotoxin binds specifically to post-synaptic acetylcholine receptors, and RT97 recognizes pre-synaptic nerve terminal. Images of NMJs were collected and analyzed with a confocal microscope. One wa ANOVA was used to compare data from the three groups. Results indicate that in bot fast- and slow-twitch myofibers, exercise training significantly ($P < 0.05$) amplified pre synaptic nerve terminal branching without altering post-synaptic structure of the NMJ. I contrast, muscle unloading resulted in diminished ($P < 0.05$) post-synaptic endplat dimensions without affecting nerve terminal characteristics. These data suggest th although both increased, and decreased activity elicit significant synaptic remodeling, th mechanisms involved appear to be activity specific.

RELATIONSHIP BETWEEN SALIVARY IGA SECRETION AND UPPER RESPIRATORY TRACT INFECTION FOLLOWING A 160-KM RACE

S.J. Gross, D.C. Nieman, D.A. Henson, C.L. Dumake, R.H. Lind, L.R. Shooter. Departments
of Health, Leisure, and Exercise Science; Biology; Family and Consumer Sciences;
Appalachian State University, Boone, NC

The relationship between salivary IgA secretion rate and upper respiratory tract infection (URTI) was studied in 155 ultramarathoners (126 males, 29 females, mean age 46.5 ± 0.7) who had qualified to run the 160-km 2003 Western States Endurance Run. Subjects provided saliva samples during registration, held the morning before the race, and within 5-10 minutes post-race (mean race time, 26.2 ± 0.3 h). Unstimulated saliva was collected by expectoration for four minutes into 15-ml plastic, sterilized vials. Runners finishing the race and providing pre- and post-race saliva samples ($n=106$) turned in a health log specifying URTI episodes and severity of symptoms for the two-week period following the race. The total volume of saliva that the runners was able to expectorate during sample collection decreased 51% post-race compared to pre-race values ($P < 0.001$). Saliva protein concentration increased 20% ($P < 0.001$) while the saliva protein IgA concentration decreased 10% ($P < 0.05$). Salivary IgA secretion rate decreased 40% when comparing pre- to post-race values ($P < 0.001$). Twenty-four percent of the runners finishing the race and providing salivary samples reported an URTI episode lasting two days or longer during the two-week period following the race (mean number of days with symptoms was 5.4 ± 0.6 days). The decrease in salivary IgA secretion rate (pre- to post-race) was 53% greater in the 25 runners reporting URTI (-355 ± 45 $\mu\text{g}/\text{min}$) compared to the 81 runners not reporting URTI (-232 ± 37 $\mu\text{g}/\text{min}$) ($P = 0.04$). In summary, nearly one in four runners reported an URTI episode during the two week period following a 160-km race, and the decrease in salivary IgA secretion rate was significantly greater in these runners compared to those not reporting URTI. Supported by the Western United States Endurance Run Medical Committee.

P44

01

EVALUATION OF PHYSICAL ACTIVITY PHENOTYPES IN SECOND GENERATION CROSSBRED MICE.

David G. Weih, Sean M. Courtney, Melissa A. Graf, Lauren E. Stone, J. Timothy Lightfoot, Michael J. Turner. Dept. of Kinesiology, University of North Carolina, Charlotte, NC.

Previously, our laboratory identified a strong genetic contribution to the age-related decline in daily PA with mice. To further investigate this genetic influence, we performed reciprocal crossbreeding with our high (SWR/J, n=5) and low active (DBA/2J, n=5) mice to generate second generation progeny (F2). The daily PA patterns of the second generation progeny (D2SW F2, n=21 and SWD2 F2, n=81) were compared to the parental strains from 7 to 14 weeks of age. All mice were housed in separate cages, each with a running wheel and magnetic sensor, and were monitored daily. Daily duration, distance, velocity, and weekly body weights were analyzed by ANOVA with repeated measures (p<0.05). The age-related changes in daily duration (p<0.002), distance (p<0.0001), and velocity (p<0.0001) were different between the four groups of mice. The SWR/J inbred mice exhibited the highest daily PA level over this time period and the D2SW F2 mice performed the lowest PA levels. Additionally, the SWD2 F2 mice exhibited a greater PA level than D2SW F2 mice, which was similar to the difference between the progenitor strains (SWR/J and DBA/2J). Also there was a significant decrease (p<0.02) in daily distance run across the 14 weeks in all inbred strains of mice. Body weight increased throughout the study period (p<0.05). Therefore, evaluation of PA phenotypes throughout weeks 7-14 of life in second generation crossbred mice suggests a decreased activity level in the second generation progeny which is indicative of low activity level as the dominant trait for these PA phenotypes.

Supported by an NIH AG022417 (Turner, Graf, Courtney, and Brown).

RESPONSES OF YOUNG AND AGED MUSCLE FIBERS TO CHRONIC OVERLOAD

Brian R. Suyes, Scott E. Gordon, Jennifer L. Duffy, Kelly A. Tenny, and Michael R. Deschenes. College of William & Mary, and East Carolina University.

The aim of this investigation was to determine myofiber adaptations to a chronic overload stimulus in young adult and aged skeletal muscle. Nine young adult (8 mo old) and nine aged (22 mo old) male Fischer 344 rats underwent a unilateral ablation procedure to place the plantaris and soleus muscles in a state of constant overload. After a 4 wk intervention period, all animals were euthanized and muscles of interest were removed, then frozen at resting length. 10 um thick cross-sections from the midbelly of overloaded and control soleus and plantaris muscles were obtained at -20 degrees Celsius and stained with standard histochemical procedures. In the typically non-postural plantaris, results showed that with fiber types pooled together, chronic overload elicited significant (P<0.05) hypertrophy of aged (19%), but not young (7%) myofibers. This was mainly attributed to age related differences in the type II fibers that predominate the plantaris. In those fibers, overload resulted in significant hypertrophy in aged (18%), but not young (6%) muscle. In the normally postural soleus, chronic overload failed to promote significant myofiber hypertrophy among either young or aged animals. This was true when data from fibers were pooled together, or analyzed separately according to fiber type. And while a trend (P=0.10) for aging related atrophy was evident among type II fibers of control plantaris muscles, a significant aging effect (aged < young) was detected among those fibers in the soleus. The data presented here suggest that relative to young muscle, the fibers of aged muscle possess a robust capacity for hypertrophy when presented with the same overload stimulus.

EFFECTS OF AGE ON DAILY ACTIVITY OF YOUNG MICE

A.H Vordermark, S.E. Carter, M.J. Turner, S.R. Kleeberger, J.T. Lightfoot. Dept. of Kinesiology, University of North Carolina at Charlotte, Charlotte, NC; Pulmonary Pathobiology Lab, NIEHS, Durham, NC

There is no literature examining whether there is any change in daily activity during the early stages of maturity in inbred mice. The purpose of this study was to determine if daily activity differed in mice as they aged from 6 to 13 weeks of age. Five male mice in 13 inbred strains (A/J, AKR/J, Balb/cJ, C3H/HeJ, C57BL/6J, C57L/J, C3Heb/FeJ, CBA/J, DBA/2J, SWR/J, MRL/MpJ, SPRET/Ei, CAST/Ei) were singly housed and given access to a running wheel at 6 weeks of age. Every 24 hours, exercise distance (km) and duration (mins) were noted and exercise velocity (m/min) subsequently calculated. Sixty-one mice completed the six weeks. There were significant (p<0.0001) strain by time interactions for all three activity indices all with power >0.99. There was an average increase of 11.7% in daily distance, a 67% increase in exercise duration, and a 10% increase in exercise velocity across all strains. Ten of the strains showed an increase in exercise distance with the CBA/J mice exhibiting the highest increase (684%) while the C57BL/6J mice exhibited the largest decrease (78%). Similarly, 11 strains showed an increase in daily duration with the CBA/J mice having the largest increase (238%) with the SPRET/Ei mice showing the largest decrease (34%). Only 8 strains increased exercise velocity with the CBA/J mice showing the highest increase (74%) with the C57BL/6J mice showing a 41% decrease. We conclude that daily activity of young mice is altered by age with activity generally increasing as the mouse ages from 6 to 13 weeks (Support: Carter, Vordermark, Lightfoot - NIH DK61635; Turner - NIH AG022417; Kleeberger - NIH NIEHS)

CARDIAC ENLARGMENT IN A MOUSE MODEL OF CACHEXIA.

Raymond W. Thompson, Kristen A. Mehl, J. Mark Davis (FACSM), J. Larry Durstine (FACSM), James A. Carson. Exercise Science Dept. Arnold School of Public Health, University of South Carolina, Columbia, SC.

Cancer cachexia induces unexplained weight loss thought to be mediated by chronic inflammation and increases the risk of mortality. However, less is known about the effect of chronic inflammation on the heart. The purpose of this study was to determine cardiac remodeling and inflammation in the hearts of APCmin^{+/+} mice, a model of colorectal cancer that experiences chronic low levels of inflammation and cachexia. Seven female APCmin^{+/+} (6mo) and seven female C57BL/6 (wt) mice were used in this study. Body and heart mass and tibia length were determined. RT-PCR was used to determine gene expression related to cardiac remodeling and cardiac inflammation. Body mass was 20% lower in APCmin^{+/+} than wt (22.1 ± 1.1 vs 27.8 ± 0.6g, p<0.05) though body size (tibia length) was not different (16.7 ± 0.1 vs 16.7 ± 0.1mm). APCmin^{+/+} hearts were 25% heavier than wt hearts (160.9 ± 6.5 vs 128.4 ± 4.4mg, p<0.05). aMHC mRNA expression was 25% lower in APCmin^{+/+} hearts compared to wt (0.74 ± 0.03 vs 1.0 ± 0.06 IOD, p<0.05) and skeletal-a-actin mRNA expression was 50% lower in APCmin^{+/+} compared to wt hearts (.49 ± 0.05 vs 1.0 ± 0.05 IOD, p<0.05). Cardiac IL-6 mRNA expression was 50% greater in APCmin^{+/+} than wt hearts (1.5 ± 0.2 vs 1.0 ± 0.2 IOD, p<0.05). In conclusion, the cachectic mice have enlarged hearts that show significant cardiac remodeling and enhanced local inflammation. Further work is needed to determine if chronic inflammation is inducing the cardiac enlargement and remodeling processes.

This study was funded by NIH grant P20 RR-017698

PSYCHOLOGICAL STRESS DURING EXERCISE: STRESS HORMONE AND LYMPHOCYTIC RESPONSES AND RELATIONSHIPS

H.E. Webb I, M.L. Weldy I, E.C. Fabianke I, G.R. Orndorff I, G.H. Kamimori2, FACSM, J.M. Cruse3, R.E. Lewis3, & E.O. Acevedo1, FACSM. University of Mississippi, University, MS; Walter Reed Army Institute of Research 2, Silver Springs, MD; University of Mississippi Medical Center3, Jackson, MS.

The effects of physical and psychological stress, independently, have demonstrated relationships between cortisol elevations and reductions in helper-T (HT) cells, the HT to cytotoxic-T cell (HT/CT) ratio, and natural killer (NK) cells. However, the potential additive effects of a psychological stressor to physical stress have not been investigated. **PURPOSE:** To investigate the effect of psychological stress during moderate exercise on catecholamine and cortisol responses and relationships to HT cells, HT/CT ratio, and NK cells. **METHODS:** Eight apparently healthy subjects participated in this study. The treatment condition was a ride at 60% of VO2max while participating in a computerized psychological stressor (stress exercise condition; SEC), whereas the control condition subjects exercised at the same intensity without the psychological stressor (exercise alone condition; EAC). The NASA Task Load Index (NTLX) was used to assess perceived physical and psychological load during each condition. These sessions were counter-balanced between subjects. **RESULTS:** NTLX scores demonstrated that subjects perceived overall workload to be greater in the SEC. In addition, the SEC elicited greater elevations in heart rate, respiratory rate, ventilation, norepinephrine, and cortisol. Total cortisol elevation was related to decreases in NK cells at 60 minutes post exercise in the SEC. **CONCLUSION:** Professionals involved in physical and psychological stress may have a suppression of immune function which can increase susceptibility to infection and illness.

06

Role of Brain IL-1b on Fatigue Following Downhill Running.

M. D. Carmichael, J. M. Davis FACSM, E. A. Murphy, A. Ghaffar and E. P. Mayer. University of South Carolina, Columbia, SC

Cytokines in the brain, induced by various inflammatory challenges have been linked to sickness behaviors, including fatigue. However, the brain cytokine response to exercise is not well understood. Preliminary data show that exaggerated fatigue following downhill vs uphill running is associated with increased brain IL-1b concentration. This study more specifically determined the role of brain IL-1b in this model using intracerebroventricular (ICV) injections of IL-1b or IL-1b receptor antagonist (IL-1bra) in uphill and downhill runners, respectively. 64 male C57BL/6 mice were assigned to 1 of 4 groups (UP-SAL, UP-IL-1b, DWN-SAL & DWN-IL-1ra). Mice were initially run at 22 m/min and -14% or +14% grade, for 150-min. Fatigue was assessed 12-24hr later via voluntary wheel running (Exp. 1) or treadmill running to fatigue (Exp. 2). In Exp 1, 8-hr after the initial run, UP runners received ICV injections of IL-1b (900pg/mouse in 2IL saline) or saline (2IL), whereas DWN runners received IL-1ra (1.8lg/mouse in 2IL saline) or saline (2IL). Then, 2-hr later, all 4 groups were monitored for 24-hr voluntary wheel running patterns. In Exp. 2, the protocol was identical except that injections were given 22-hr after the initial run and fatigue was assessed 2-hr later using a treadmill run time to fatigue test. In Exp. 1, injection of IL-1b in uphill runners decreased wheel running (distance, time and peak speed) during the subsequent two 12-hr active cycles (lights out) vs. saline injected mice, and IL-1ra improved wheel running in downhill runners vs. saline mice. In Exp. 2, IL-1b injection decreased run-times to fatigue in the uphill group, and IL-1ra increased run time to fatigue in the downhill group. These results support the hypothesis that increased brain IL-1B plays an important role in fatigue following muscle-damaging exercise and pretraps other inflammatory challenges.

08

EXERCISE AND A MOUSE MODEL OF INFECTIOUS MONONUCLEOSIS

Nancy Gasper-Smith, J. Timothy Lightfoot, Kenneth L. Bost University of North Carolina at Charlotte, Dept. of Biology, Dept. of Kinesiology

The aim of this study was to investigate the effect of viral infection on activity level and the effects of exercise on symptom severity. Groups of 9 week old C57BL/6 mice were housed with or without running wheels and allowed to acclimate for one week. Mice in the first group were intranasally infected with 6000 plaque forming units of HV-68, the mouse model for Epstein-Barr Virus, and housed in cages with access to a running wheel, (n=4). Mice in the second group were similarly infected and housed without a running wheel, (n=4). A third group of mice remained uninfected and housed with a running wheel, (n=3). Daily distances and durations of exercise were recorded for the entire 3-week period, followed by sacrifice and assessment of symptom severity. Virally-infected mice allowed access to the running wheel demonstrated significant decreases in duration (p<0.01) and distance (p<0.05) as compared to pre-infected levels. Surprisingly, infected animals allowed to exercise were observed to have a significantly greater degree of splenomegaly and leukocytosis than non-exercising infected mice (p<0.05 and p<0.01). Results of this preliminary study suggest that voluntary daily activity may serve to exacerbate symptoms of infectious mononucleosis, and that infection with the virus can affect physical activity levels. These results may have important implications in the treatment of young athletes presenting with symptoms associated with EBV infection.

Support: Gasper-Smith, Bost: NIAH130407; Lightfoot: NIHDK61635

07

ROLE OF LUNG MACROPHAGES ON THE BENEFITS OF OAT α -GLUCAN ON SUSCEPTIBILITY TO RESPIRATORY INFECTION FOLLOWING EXERCISE STRESS

E. Angela Murphy, J. Mark Davis, Adrienne S. Brown, Martin D. Carmichael, Jennifer L. Lake, Nico van Rooijen, Abdul Ghaffar and Eugene P. Mayer. University of South Carolina, Columbia, SC

Exhaustive exercise has been associated with increased risk for respiratory infection. Oat α -glucan (O α -G), a soluble fiber with mild immunostimulant activity, can offset the decrease in macrophage (M ϕ) antiviral resistance and increased risk of infection associated with exercise stress (Davis et al., Med Sci Sports Exerc 36(8):1321-7, 2004). This study examined the role of lung M ϕ 's on the benefits of O α -G on susceptibility to infection following exercise stress. Exercise mice were run on a treadmill for 3 consecutive days. O α -G was fed to the mice in their drinking water for 10 consecutive days prior to infection. Mice were administered 100ml of clodronate (Ex-H2O-CL2MDP, Ex-O α -G-CL2MDP, Con-H2O-CL2MDP and Con-O α -G-CL2MDP) or phosphate buffered saline (Ex-H2O-PBS, Ex-O α -G-PBS, Con-H2O-PBS and Con-O α -G-PBS) encapsulated in liposomes, via an intra-nasal route on the 1st day of exercise and the 4th day following infection. M ϕ 's ingest the liposomes and are killed by the clodronate through apoptosis. Following rest or exercise on the last day of training, mice were intra-nasally inoculated with HSV-1 (1.28 X 10⁵ PFUs). They were monitored twice daily for morbidity, mortality and symptom severity for 21 days. Exercise increased morbidity, mortality and symptom severity, however O α -G consumption significantly reduced this increase in morbidity, mortality and symptom severity following Ex. M ϕ depletion negated the beneficial effects of O α -G. These data suggest that lung M ϕ 's play an important role in the mechanism whereby O α -G exerts its beneficial effects on reducing susceptibility to infection following exhaustive exercise.

09

SKELETAL MUSCLE CYTOKINE mRNA AND PLASMA CYTOKINE CHANGES AFTER 2.5-H CYCLING-INFLUENCE OF CARBOHYDRATE

D.C. Nieman, J.M. Davis, D.A. Henson, S. Gross, C.L. Dumke, A.C. Utter, D.M. Vinci, J.A. Carson, A. Brown, S.R. McAnulty, L.S. McAnulty, Appalachian State University, Boone, NC; University of South Carolina, Columbia, SC.

Fifteen trained cyclists cycled for 2.5 h at 60% maximal Watts on two occasions while receiving 4 ml/kg/min carbohydrate (6%)(CHO) or placebo (PLA) beverages in a randomized, counterbalanced design. Diurnal variation was determined in 5 cyclists who rested in the lab during the exercise sessions. Blood and vastus lateralis muscle biopsy samples were collected before and after exercise, and 12-h post-exercise. Blood cell counts were determined, and plasma was analyzed for IL-6, IL-10, IL-1ra, IL-8, cortisol, epinephrine, glucose, and insulin. Muscle was analyzed for glycogen content and relative gene expression of 4 cytokines, IL-6, IL-8, TNF- α and IL-1 β , using real-time quantitative RT-PCR. Plasma glucose and insulin were higher, and epinephrine, cortisol, IL-6, IL-10, and IL-1ra, but not IL-8, were significantly lower post-exercise in CHO vs PLA. Muscle glycogen content decreased 68% immediately post-exercise and the pattern of change did not differ between CHO and PLA. Muscle IL-6, IL-8, TNF- α and IL-1 β mRNA increased modestly immediately post-exercise compared to controls, with no differences between CHO and PLA. In summary, CHO compared to PLA beverage ingestion attenuated the increase in plasma cortisol, epinephrine, IL-6, IL-10, and IL-1ra, but not muscle IL-6, IL-8, and TNF- α mRNA in athletes cycling 2.5 h at 60% maximal Watts.

Supported by the Gatorade Sports Science Institute.

AGE-RELATED DECLINES IN FLEXIBILITY AND HEALTH-RELATED QUALITY OF LIFE IN NONAGENARIANS: GENDER DIFFERENCES

Jennifer M Fabre, CM King, MJ Nelson, RE Gardner, KE Cherry, RH Wood, & SM Jazwinski, Louisiana Healthy Aging Study; Louisiana State University (Baton Rouge); Louisiana State University Health Sciences Center (New Orleans)

Age is associated with deterioration in physical function and decrease in health-related quality of life (HRQL). Decline in physical function appears to plateau around age 90 and the role of physical function to HRQL in nonagenarians is unknown. The purpose was to examine age-related changes in physical function and HRQL in a random sample of 59 community-dwelling nonagenarians. Participants were evaluated for physical function with the continuous scale physical function performance test (CS-PPP), and for HRQL using the SF-36 version 2.0. CS-PPP requires execution of activities of daily living and provides scores in upper body strength, upper body flexibility (UBF), lower body strength, balance/coordination, endurance, and total function. SF-36 provides scores for physical function (PF), role physical, bodily pain, general health, vitality, social function, role emotional, mental health, and overall physical (PCS) and mental health scores. Pearson correlation was used to compare age, physical function, and HRQL scores. For the entire sample, age was inversely associated with UBF ($r = -.44, p < .001$), but not with any other physical function or HRQL score. There were also associations between physical function and HRQL, UBF and PF ($r = .49, p < .001$) and PCS ($r = .49, p < .001$). In males, there was a significant inverse association between age and UBF ($r = -.52, p < .01$). Significant associations between UBF and PF ($r = .69, p < .001$) and PCS ($r = .61, p < .001$) were observed in female nonagenarians only. Data suggest that UBF declines during the 10th decade of life. Decrease in UBF has implications for decreased HRQL in female nonagenarians. Findings have relevance in exercise programs for 90+ year-old individuals. Funded by the Louisiana Board of Regents Millennium Trust Health Education Fund [HEF(2001-06)-02].

DIFFERENCES IN THE UNITS USED TO EXPRESS LEVELS OF AEROBIC POWER AND HOMA-1R IN ADOLESCENTS.

Daniela A. Rubin, Robert G. McMurray and Joanne S. Harrell. University of North Carolina at Chapel Hill.

Higher levels of aerobic power (VO_{2max}) are associated with lower insulin resistance; however, this association may differ according to the units used to express VO_{2max} . PURPOSE: To determine the effect of using different units to express VO_{2max} on insulin resistance in adolescents. METHODS: Subjects were 299 girls and 288 boys, ages 10-15 participating in the CHIC study. Body mass, stature, sum of triceps and subscapular skinfolds, predicted maximal aerobic power (pVO_{2max} from cycle ergometry), and fasting blood samples were obtained in the schools. Fasting insulin (RIA) and glucose (colorimetric) were used to compute the Homeostatic Model of Assessment for Insulin Resistance (HOMA). Adolescents were divided in sex-specific tertiles (1 = high to 3 = low) for: relative pVO_{2max} (REL: ml/kg/min), absolute pVO_{2max} (ABS: L/min), relative to fat free mass VO_{2max} (FEM: ml/kgffm/min), and allometrically scaled pVO_{2max} (ALOM: ml/kg 0.7/min). RESULTS: When VO_{2max} is expressed REL the HOMA for all tertiles were different for both boys and girls ($p < 0.01$). When expressed in FEM the girls in tertiles 1 & 2 and the boys in tertile 1 had lower HOMA than in lowest tertile. In ALOM terms, only boys in tertile 1 had lower HOMA than in tertile 3 ($p < 0.01$). CONCLUSION: In adolescents the units chosen to express VO_{2max} influence the relationship between VO_{2max} and HOMA. Expressing aerobic power relative to body mass or fat free mass seem to be more sensitive in determining the influence of aerobic power on HOMA.

Supported by NIH-NINR grant RO1-1837.

PHYSICAL FUNCTION AND HEALTH-RELATED QUALITY OF LIFE IN CULTURALLY DIVERSE ELDERLY: EVIDENCE OF ENVIRONMENTAL PRESS

Rebecca Ellis Gardner, Robyn Bossier, Artie Brown, Melissa N. deVeer, Jennifer Fabre, Kellye Petachi, Ryan Russell, Tierney Toussaint, Alisha Villarubia, and Robert H. Wood. Louisiana State University, Department of Kinesiology, Baton Rouge, LA 70803.

The theory of environmental press suggests that health-related quality of life (HRQL) may be compromised when environmental demands are not matched with functional ability. The purpose of this investigation was to examine physical function and HRQL in culturally diverse elders. Fifty-two older adults were evaluated for physical function using the continuous-scale physical function performance test (CS-PPP) and HRQL using the SF-36 v.2. Twenty-six predominantly African American community dwelling participants were from a lower socio-economic class (SES) and 26 were Caucasian adults from a high SES class residing in a continuing care retirement community. T-tests revealed group differences in age (low SES = 72.15; high SES = 77.62; $p < .05$). MANCOVA (age as a covariate) revealed that low SES participants had higher physical function as a result of greater upper body strength ($p = .011$). The low SES participants reported lower HRQL on General Health ($p = .001$), Vitality ($p = .007$), Mental Health ($p < .001$), and Mental Component Subscale ($p = .001$) scores. Pearson correlation revealed several significant relationships between physical function and HRQL indices in both groups. These data indicate that despite higher physical functional ability, low SES older adults report poorer HRQL. This finding is consistent with the notion that environmental press may interact with functional ability to impact HRQL. Future studies should identify the environmental conditions that are most likely to interact with functional ability in older adults.

O10

O12

O11

O13

EXAMINATION OF THE PSYCHOMETRIC PROPERTIES OF THE THOUGHTS DURING RUNNING SCALE (TDRS) ACROSS EXERCISE SETTINGS.

Rick A. LaCaille (1), Marcus K. Taylor (1), Lara J. LaCaille (1), & Kevin S. Masters (2)
(1) Duke University Medical Center; (2) Syracuse University

There has been considerable interest in the "mind of the runner" and the cognitive foci and strategies used while running. However, the literature has been hindered by a lack of agreement of terminology and measurement of cognitive foci. There has also been little consideration of the potential influence of different settings on these cognitive processes. **PURPOSE:** To evaluate the reliability, validity, and responsiveness of the Thoughts During Running Scale (TDRS; Goode & Roth, 1993) in recreational runners across different exercise settings. Sixty runners, half of whom listened to music (dissociative task) while the other half monitored their heart rates (associative task), completed 5km runs on a treadmill, indoor track, and outdoor route. The TDRS and Exercise-induced Feeling Inventory (EFI; Gauvin & Rejeski, 1993) were completed following each run. **RESULTS:** The TDRS subscales demonstrated internal consistency reliability, with Cronbach alpha exceeding 0.70 for all of the scales across the settings. Examination of the within-individual differences of each item revealed that the Association subscale items demonstrated the greatest agreement across each of the settings, whereas the items composing the External Surroundings subscale were most responsive to change of the setting. Correlations between the TDRS and EFI revealed that the former performed as expected; the non-associative subscales were positively related to Tranquility, Revitalization, and Positive Engagement, whereas the Association subscale was positively related to Physical Exertion in only the outdoor setting. Multivariate regression analysis with the TDRS discriminated runners' use of either an associative or dissociative task while running. The TDRS demonstrated good internal consistency, construct validity, and responsiveness to different settings and cognitive strategies.

O14

COMPARISON OF TREADMILL AND OVERGROUND WALKING TRAINING ON THE ATTITUDES OF OLDER ADULTS

L.C. Johnson, W.J. Rejeski, J.A. Katula, C.F. Pacchia, A.P. Marsh, K.L. Koury, Wake Forest University, Winston-Salem, NC.

Although walking programs have been effective in enhancing a number of health outcomes in older adults, questions have been raised as to the differential effects of treadmill training as compared to overground walking programs. Therefore, the goal of this study was to examine the attitudes of older adults walking either overground (OG) or on a treadmill (TM) after 1, 3, and 5 weeks of training. Twenty participants (74.3 ± 4.1 yrs) completed 6 weeks (18 sessions) of walking training, either on a treadmill (n = 9) or a flat track (n = 11), both groups exercising at the same facility at different times. Blood pressure, heart rate and rating of perceived exertion (RPE) were monitored during each session, and participants were encouraged to walk at an RPE of 12-13. A number of bipolar adjectives (eg. pleasant/unpleasant) used in previous research were employed to measure participants' attitudes (i.e. incentive value) toward walking training. Mean summary scores calculated for each group across 3 time points (M(OG) = 89.8±8.1; M(TM) = 75.3±13.6) indicated that OG participants placed a higher incentive value on training compared to TM participants (t(14.7) = 2.74; p = .015). When analyzed as a single item, enjoyment levels were higher for OG (M(OG) = 86.0±13.1) than for TM (M(TM) = 70.0±12.3) across 3 time points (t(14.6) = 2.64; p = .019). These results suggest that older adults have more positive attitudes towards OG walking training than TM walking. Future research is needed to determine whether these findings translate to differences in adherence and, ultimately, training effects and health outcomes (e.g., functional improvements).

O15

COMPARISON OF 5K RACING PERFORMANCE AFTER 72 HOURS ACTIVE AND PASSIVE RECOVERY

A. Bosak, P. Bishop, J. Smith, M. Green, M. Richardson, Georgia Southwestern State University, Americus, GA and The University of Alabama, Tuscaloosa, AL

The type of recovery needed after a hard run to restore the body back to peak racing condition is unknown. This study compared 5k run time between 72hrs active recovery and passive recovery. Twelve trained (VO2max = 62.1 ml/kg/min) recreational runners (9 males, 3 females) completed three 5k performance trials within six days. Using a within subjects counter-balanced design, each 5k trial was separated by 72hrs passive recovery (PAS) or 72hrs active recovery (ACT). The first and second 5k trials served as separate baseline measures allowing comparison of PAS and ACT recovery modes. Mean 5k times were not significantly different (p = 0.17) between ACT (19:35 ± 1.5min) and baseline (19:41 ± 1.7min) or PAS (19:30 ± 1.5min) and baseline (19:34 ± 1.6min) (p = 0.21). PAS HRave (177.9 ± 6.3 b/min) was significantly (p = 0.04) higher than baseline (175.4 ± 6.5 b/min), but ACT HRave (175.9 ± 6.6 b/min) was significantly (p = 0.01) lower than baseline (178.9 ± 6.4 b/min). PAS RPEend (19.6 ± 0.8) was not significantly different (p = 0.17) than baseline (19.7 ± 0.7). During PAS trials, two individuals ran a mean 12.0 + 2.8secs slower, two individuals ran a mean 33.0 ± 21.0secs faster, and eight individuals ran within 5.1 ± 2.5secs of baseline. During the ACT trials, one participant ran 13.0secs slower, three participants ran a mean 34.7 ± 13.5secs faster, and "eight non-responders" ran within 5.5 ± 2.7secs of baseline. Results indicate 72hrs of passive or active recovery permits similar recovery based on mean 5k performance. Ideal recovery duration may need to be explored.

O16

COMPARISON OF WALKING RECOMMENDATIONS IN PREVIOUSLY INACTIVE WOMEN.

C. N. Hultquist, C. Albright, and D. L. Thompson. Center for Physical Activity & Health, University of Tennessee, Knoxville, TN.

The purpose of this study was to compare the number of steps accumulated by women instructed to walk 10,000 steps per day (10K group) with those told to take a brisk 30-minute walk on most, preferably all, days of the week (30-min group). Daily steps were compared for 58 sedentary women (45.0 ± 6.0 y) randomly assigned to either the 10K or the 30-min group. Subjects wore a sealed pedometer for two weeks for baseline physical activity assessment. Those averaging < 7000 steps per day were randomly assigned to a group for the 4-week intervention. All subjects wore a sealed pedometer capable of storing 7 days of data and reported to the laboratory each week so that investigators could gather step counts. The 10K group wore a second pedometer for viewing their daily steps. There were no differences between the groups for baseline steps. During the intervention, there was a significant difference (p < 0.05) between groups in daily steps. The 30-min group walked 8270 ± 354 steps per day and the 10K group walked 10,159 ± 292 steps per day. The 30-min group averaged 9505 ± 326 steps per day on the days that a 30-minute walk occurred and 5597 ± 363 steps per day when no walk occurred. The 10K group averaged 11,775 ± 207 steps on days when they walked at least 10,000 steps and 7780 ± 231 steps on days that their target was not achieved. It was concluded that previously inactive women walk more everyday when told to take 10,000 steps per day compared to those instructed to take a brisk 30-minute walk.

O17

SPORTS PARTICIPATION AND VIGOROUS PHYSICAL ACTIVITY IN ADOLESCENT FEMALES OVER A FOUR-YEAR PERIOD

K.A. Pfeiffer, J.R. Sirard, M. Dowda, K.L. McIver, D.S. Ward, FACSM, R.K. Dishman, FACSM, and R.R. Pate, FACSM. University of South Carolina, Columbia, SC

PURPOSE: To determine whether adolescent girls who play sports engage in more vigorous physical activity (VPA) and remain more active than those who drop out or do not participate in sports over a four-year time period. **METHODS:** Adolescent girls (N=429, 56% African American, age=13.6±0.6 years at baseline) were evaluated in 8th, 9th, and 12th grades. Demographic variables, height, weight, sports participation, and VPA were measured. Crude and adjusted odds ratios (OR) were calculated to determine the association between sports participation and physical activity. All data are reported as adjusted OR with non-sport participants as the referent group for each grade. **RESULTS:** Eighth grade sport participants were more likely to engage in VPA in 9th [OR=1.80 (1.19,2.71)] and 12th grade [OR=1.88, (1.21, 2.93)]. Ninth grade sport participants were more likely to engage in VPA in 9th [OR=2.62 (1.71,4.01)] and 12th grades [OR=1.89 (1.21,2.94)]. Girls who played sports in both 8th and 9th grade were more likely to engage in VPA in 9th [OR=2.06 (1.39,3.06)] and 12th grade [OR=2.03 (1.34,3.08)], and girls who played sports in all three years were over two times as likely to participate in VPA in 12th grade [OR=2.23 (1.47,3.41)]. **CONCLUSION:** Results of this study suggest that adolescent girls who do not participate in sports in 8th, 9th, and 12th grades are less likely to be vigorously active in 12th grade. More research regarding the cumulative effects of sport participation on physical activity behavior is necessary.

Supported by NHLBI 1RO1 HL57775.

ANTIOXIDANT TREATMENT EFFECTS ON PLASMA PROTEIN CARBONYLS AFTER 30 MINUTES OF AEROBIC EXERCISE

MJ McKenzie, AH Goldfarb, FACSM, RJ Bloomer Exercise and Sport Science Dept., University of North Carolina at Greensboro, Greensboro, NC 27402

PURPOSE: To determine the effect of two antioxidant treatments on plasma protein carbonyls (PC) after aerobic exercise. **METHODS:** 25 men and 23 women (23±1 yrs) were randomly assigned in double blind manner to one of three treatments: Juice Plus (JP), a food based supplement (N=16), 400 IU vitamin E + 1000 mg vitamin C (V, N=15), or a placebo (P, N=17). Subjects ran for 30 minutes at 80% VO₂max on 3 occasions: pre-supplementation, after 2 weeks of supplementation, and after a one week wash out. Blood samples were taken before and immediately post exercise and analyzed for PC and vitamin C (VC). Data were analyzed using a 3 (treatment) x 3 (exercise session) x 2 (time) repeated measures ANOVA. **RESULTS:** PC were elevated post exercise for all treatments at all times (P< 0.001). The JP and V significantly (P<0.05) attenuated the increase in PC after 2 weeks of supplementation (JP-18%, V-18%), and after the one week wash out (JP-8%, V-17%) compared to P. Plasma VC was similar pretreatment in all groups and exercise had no effect. Plasma VC was significantly elevated in the V group after 2 weeks of treatment (from 32 to 51.5 uM) and returned to baseline after a one week washout (37 uM). JP had no significant effect on VC after supplementation and 1 week wash out. **CONCLUSION:** These data suggest that JP and V supplementation may attenuate the rise in PC after 30 minutes of aerobic exercise, and after a one week wash-out the effectiveness of these treatments was maintained.

EFFECT OF BLUEBERRY POLYPHENOLS ON ACE ACTIVITY, BLOOD PRESSURE, AND OXIDATIVE STRESS IN CHRONIC SMOKERS

Steven R. McAnulty, Lisa S. McAnulty, Daniel Khardouni, Lesli Shooter, James Monk, Sarah Gross, Erin Murphy, Victor Brown, and Jason D. Morrow Dept. of Health, Leisure, and Exercise Science, Appalachian State University, Boone, NC; Dept. of Medicine and Pharmacology, Vanderbilt University School of Medicine, Nashville, TN

Polyphenols from pomegranate juice have been found to lower blood pressure (BP) and reduce ACE activity in hypertensive individuals. Blueberries contain similar polyphenolic compounds. This study examined whether chronic daily blueberry consumption (250 g) for three weeks and acute ingestion of blueberries would attenuate angiotensin converting enzyme (ACE) activity and reduce oxidative stress in chronic cigarette smokers. Twenty subjects were recruited and randomized into blueberry (BB) or control (CON) groups. Blood samples and blood pressure (BP) were obtained at baseline and then pre and one hour post when subjects returned to the lab three weeks later. To examine acute effects, BB immediately ingested 250 g of blueberries after arriving and at least one hour prior to the last blood draw. Plasma samples were analyzed for ACE activity, F2-isoprostanes as a measure of oxidative stress, and ferric reducing ability of plasma (FRAP) as a measure of antioxidant potential. A 2x3 repeated measures ANOVA design was used for statistical analyses. The pattern of change between treatments was significant for systolic and diastolic BP or ACE activity, F2-isoprostanes and FRAP. This study indicates that neither chronic or acute blueberry consumption affects BP, ACE activity, oxidative stress, or plasma antioxidant potential in heavy smokers.

MUSCLE WORK IS LARGER WHILE WALKING UP VS. DOWN INCLINED SURFACES

B.R. Noyes, J. Helseth, T. Hortobagyi, FACSM, P. DeVita, FACSM Biomechanics Laboratory, East Carolina University, Greenville, NC 27858

We reported that work calculated from joint powers during stair descent was lower than during stair ascent, despite equivalent changes in potential energy (1). This result led us to hypothesize that lower extremity muscles absorb less mechanical energy during gait tasks in which humans lower their center of mass compared to the energy they produce in gait tasks in which humans raise their center of mass. **Purpose:** The purpose of this study was to compare work produced by lower extremity muscle groups while walking up and down a surface inclined 10°. Our secondary purpose was to test the hypothesis in both young and old adults. **Methods:** 20 young and 10 old adults (mean ages 76 & 22 yr) were videotaped walking up and down a ramp with a force platform. Step lengths of young adults were matched to that of old adults (mean ascent: 0.63 m, descent: 0.60 m). Lower extremity joint powers and work were calculated through inverse dynamics. This work quantified muscle contributions to energy changes. **Total work per step** was calculated from the change in potential energy in ramp ascent and descent. **Results:** Joint work was 31% higher in ascent vs descent (68 vs 51 J/step, t-test p<.001). Ascent joint work was statistically identical to the total work done to raise the subjects' mass through the observed vertical displacement (68 vs 70 J/step, p>.05) while descent joint work was 24% lower than the total work done to lower the subjects' mass (51 vs 67 J/step, p<.001). Young and old subjects were statistically identical. **Conclusions:** Lower extremity muscles perform more work in ascending vs descending inclined surfaces. This result was observed in two populations with different gait mechanics. Work from other tissues within the lower extremity or other body segments most likely accounts for this discrepancy.

O20

O21

O18

O19

OLD AND YOUNG ADULTS USE DIFFERENT STRATEGIES TO MODULATE STEP LENGTH DURING GAIT

J. Helseth, B. Noyes, T. Hortobagyi, FACSM, P. DeVita, FACSM Biomechanics Laboratory, Department of Exercise and Sport Science, East Carolina University, Greenville, NC 27858

Old compared with young adults walk with 4% ($p < 0.05$) shorter steps by reducing torque and power at the ankle and knee but not at the hip (1). Recent pilot data also show step length reductions with age are larger while walking up an inclined surface. This lead us to ask, is the mechanism of decreased step length with age identical in level and inclined walking and do young adults decrease their step length using the same mechanism? The purposes of this study were to 1) compare joint torques and powers between young and old adults while walking at an inclined surface and 2) compare joint torques and powers of young adults while walking at self selected and old adults' average step lengths. Ten old and 20 young subjects walked up a surface inclined 10 degrees at 1.5 m/s. Subjects were tested using their preferred step length, and young subjects were also tested using a step length matched with old adults' average step length. Old adults walked up the incline with an 18% shorter preferred step length than young (0.64 vs. 0.74 m), 13% lower peak ankle torque and performed 25% less work at the ankle (t-test, all $p < 0.05$). Young subjects decreased step length to match that of old adults by decreasing their hip torque and work 21% and 16%, and ankle torque and work 7% and 13% (all $p < 0.05$). These data suggest the mechanisms of decreased step length with age are different in level and inclined gait with only decreased ankle torque and work sufficient to reduce step length on the sloped surface. Young vs. old adults used different mechanisms to reduce step length in that they reduced torque and work at both the ankle and hip. These results provide further support for the concept that old adults maintain hip joint function during locomotion. (1) DeVita et al. J. Appl Physiol. 88, 1804-1811, 2000.

O22

AUGMENTING SPATIAL AND TEMPORAL FEATURES OF GAIT CONTROL IN PARKINSONS DISEASE

R. McCoy(1), R. Kohli(1), R. Seel(2), D. Cifu(3), E. Cooper(1), and A. Lotts(1), (1) Dept. of Kinesiology, College of William and Mary, Williamsburg, VA; (2) Crawford Research Institute, Atlanta, GA; (3) Dept. of Phys. Med. & Rehab., Virginia Commonwealth University, Richmond, VA

Earlier we proposed that attending to auditory cues assisted participants with Parkinson's Disease (PD) in determining when to select their responses. Whereas, attention to spatial cues will largely assist PD participants in determining how to execute their responses. A test of this hypothesis was constructed by comparing the walking mechanics of 7 male participants (Age 71 ± 9.3 yrs) over four conditions (self-selected (SS), auditory cueing of step rate at 115% of SS, visual cueing of step length at 115% of SS, and both auditory and visual cueing, while on medication and off medication. Analyses revealed that while the speed of walking did not vary significantly ($p < 0.05$) across conditions, stride rate was greater during the off medication condition indicating the importance of both auditory and visual cueing on step rate. Also, the accuracy in stepping to the auditory cues was significantly greater for the auditory only condition compared to the auditory and visual condition. In comparison, there was no difference in the accuracy in stepping to the visual only condition compared to the auditory and visual condition. These findings indicate that participants relied more on the visual cues when presented with both auditory and visual cues. As an indicator of safe walking, the minimum toe height during the swing phase was observed to be significantly greater for only the auditory and visual cueing condition as compared to the other conditions.

O24

THE EFFECTS OF AGE ON FORCE CONTROL WITH AND WITHOUT VISUAL FEEDBACK

M. Pullen, P. DeVita, FACSM, O. Tikkanen, K. Giggey, K. Steinweg, and T. Hortobagyi, FACSM Department of Exercise and Sport Science and Brody School of Medicine, East Carolina University, Greenville, NC 27858

Age affects motor output not only by reducing muscle mass and muscle strength, but also by modifying the sensitivity and threshold of the sensory receptors. Elements of the sensorimotor system become impaired to a different extent with advancing age and it is unclear if one component can compensate for reduced function in another component. The purpose of this study was to determine the effects of age on proprioception, measured as force steadiness and accuracy, with and without visual feedback. Healthy young (age 21 ± 1, n = 5) and old adults (age 82 ± 10, n = 7) performed 5 s-long, 20% of maximum eccentric (15 deg/s) quadriceps contractions on a dynamometer. Subjects were instructed to produce force as smoothly and as accurately as possible. After practice with eyes open, 2 trials were recorded with eyes open while subjects watched the force traces on the monitor and 2 trials blindfolded. Force steadiness was expressed as the coefficient of variation (%) of force. Force accuracy was expressed as the mean absolute error relative to target force. Force steadiness was similar with (18% ± 8) and without visual feedback (20% ± 9). Young produced force more steadily than old subjects with (13% ± 6 vs 24% ± 13) and without visual feedback (17% ± 10 vs 23% ± 9). Subjects performed force with less error eyes open (22 N ± 8) than blindfolded (29 N ± 15). Young performed 20% more accurately than old subjects with eyes open (20 N ± 7 vs 24 N ± 8) but 29% less accurately blindfolded (34 N ± 20 vs 24 N ± 10). Under these experimental conditions old adults performed the steadiness and accuracy tasks surprisingly well, suggesting that old adults may be able to compensate for reduced visual input by heightening proprioception to avoid reductions in motor output.

O23

SPATIOTEMPORAL CHARACTERISTICS OF TREADMILL AND OVERGROUND WALKING IN OLDER ADULTS

C.F. Paccchia, K.L. Koury, A.P. Marsh, L.C. Johnson, J.W. Rejeski, J.A. Katula Wake Forest University, Department of Health and Exercise Science

The purpose of this study was to assess the spatiotemporal characteristics of treadmill walking and overground walking at a preferred pace and an RPE of 13 in older adults. We examined walking velocity, stride rate, and stride length using a Gaitrite instrumented carpet for overground trials and calculated stride length using the relationship, treadmill velocity = stride length * stride rate. Male (n = 9) and female (n = 14) volunteers with an average age of 74 ± 4 yrs served as subjects. The Short Physical Performance Battery (SPPB) was administered and used as an indicator of physical function. SPPB scores for the sample ranged from 4 to 12 with a mean score of 9 ± 2. The preferred or self-selected comfortable walking velocity of the participants was slower on the treadmill (63 ± 26 cm/s) compared to overground (102 ± 18 cm/s). Similarly, the walking velocity was slower on the treadmill (90 ± 34 cm/s) than overground (121 ± 25 cm/s) when participants walked at an RPE of 13. Within each mode of walking the walking velocity was greater at an RPE of 13 than at the preferred velocity. However, the preferred velocity overground was greater than the velocity on the treadmill at an RPE of 13. The magnitude of the difference between treadmill and overground walking was greater at the preferred velocity (-41 ± 23 cm/s) than at an intensity equivalent to an RPE of 13 (-30 ± 17 cm/s). The lower velocities were a result of both shorter stride length and slower stride rate on the treadmill than overground at both intensities. These data have relevance when prescribing modes of activity for older adults when the intensity is based on perceived effort.

O25

RELATIONSHIP BETWEEN BODY COMPOSITION AND BLOOD PRESSURE IN AFRICAN AMERICAN CHILDREN 10 TO 12 YEARS OF AGE

L. Jerome Brandon, FACSM, Larry Proctor, Dept. Kinesiology & Health, Georgia State Univ., Atlanta, GA and Department of Kinesiology, Louisiana Tech, Univ., Ruston, LA

The objective of this study was to determine if different procedures for assessing overweight and obesity in pre-teenage boys and girls provide essentially the same information. The specific purpose was to determine if body mass index (BMI) and percent body fat (%fat) would share similar relationships with blood pressure (BP) for both boys and girls. Participants were 134 pre-teen age boys (65) and girls (69) 10 to 12 years of age from a rural town in Louisiana. BMI was calculated from height and weight (wt-kg/ht-m²), percent body fat was calculated from triceps and calf skinfolds using the equations Slaughter et al. (1988) for African American children. Blood pressure was measured employing standard procedures on the right arm after the child has sat quietly for 10 minutes. The data were evaluated using descriptive statistics, oneway ANOVA and Scheffe' post hoc test. The %fat was optimal for the 10 and 12 year olds, but moderately high for the 11-year-old girls. The BMI were > the 85th percentile for the 11 and 12 year old girls, but < 85th percentile for the 10 year old girls. The %fat of the boys was classified as high for the 10 and 11 year old and moderately high for the 12 year old. The BMI of the boys was > 85th percentile for the 10 and 11 year old and < 85th for the 12 year old. Only the 11-year-old girls were hypertensive based on age and height. Significant (p<0.05) relationships were observed for % fat and all blood pressure variables for the 10 and 11 year old girls, but only systolic blood pressure (SBP) and mean arterial blood pressure (MAP) was significantly related to BMI for the 11-year-old-girls. Only the relationship between SBP and %fat, and BMI and DBP were significant (p<0.05) for the 11-year- old boys. These results indicate that information provided by body fat and BMI about BP is different from each other and information the procedures provide for boys is different than that provided for girls.

026

THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY AND FOOD CONSUMPTION IN INBRED MOUSE STRAINS

T.S. Curtis, A.P. Jung, J. Henning, University of North Carolina at Charlotte

The purpose of this study was to determine the relationship between physical activity (PA) and food consumption in two inbred mouse strains (DBA2/J and SWR/J). Eight female mice from each strain were monitored for 12 weeks. Half of each strain was provided running wheels (RUNNERS), while the other half received no running wheel (NON-RUNNERS). Voluntary PA was monitored daily by recording distance and duration run on the wheel. All groups consumed food ad libitum. Food was measured and recorded twice a week in order to determine volume of consumption. Body weight was recorded weekly. The results showed daily distance (p<0.001) and duration (p<0.001) were significantly greater for the SWR/J RUNNERS (6.5±0.45 km/day and 337.4±23.7 min/day, respectively) compared to the DBA2/J RUNNERS (1.5±0.7 km/day and 89.3±36.8 min/day, respectively). SWR/J RUNNERS consumed a significantly higher volume of food compared to SWR/J NON-RUNNERS (42.1±1.0 vs 33.5±1.1 g/wk, p=0.02) and DBA2/J RUNNERS (32.2±1.1 g/wk, p<0.01). Additionally, the difference in food consumption between the DBA2/J RUNNERS and the DBA2/J NON-RUNNERS approached significance (p=0.09). Finally, there were significant correlations between distance run and food consumption (r=0.77, p<0.001) and between duration run and food consumption (r=0.74, p<0.001). There was no difference in body weight between groups (p>0.05). Based on our results, it appears increased physical activity is related to increased food consumption in inbred mouse strains. This research was supported by the Office of Research at UNC-Charlotte.

027

PEDOMETER-DETERMINED WALKING AND BODY COMPOSITION VARIABLES IN AFRICAN-AMERICAN WOMEN

Lyndsey Hombuckle, M.S. R.D.; David R. Bassett, Jr., Ph.D.; Dixie Thompson, Ph.D. University of Tennessee, Knoxville

Purpose: This study evaluated the relationship between pedometer-determined physical activity and body composition variables in middle-aged, African-American women. Methods: Height, weight, waist and hip circumferences, and %body fat were measured in 69 African-American females (mean age 51.4 +/- 5.4 years). Subjects wore a pedometer for seven consecutive days and average steps per day were compared to each anthropometric variable. The subjects were categorized into 3 different groups based on their physical activity level: <5,000 steps per day, 5,000-7,499 steps per day, and 7,500 or more steps per day. A one-way analysis of variance (ANOVA) was performed to examine the health variables among the three groups. Partial correlation coefficients controlling for age and kilocalories were calculated for walking volume and body composition variables. Results: There were significant differences between the least active and most active groups for age (P=0.013), BMI (P=0.005), % body fat (P<0.001), waist circumference (P=0.004), and hip circumference (P=0.043). When a partial correlation controlling for age and energy intake was used to compare steps per day to body composition variables, significant negative correlations still existed for each variable except WHR. These correlations were significant for BMI (P<0.001), % body fat (P<0.001), waist circumference (P=0.002), and hip circumference (P=0.017). Conclusions: Middle-aged, African-American women who accumulated more ambulatory activity had significantly lower body fat percentages, BMI values, waist circumferences, and hip circumferences.

028

WALKING AND BODY COMPOSITION IN OLDER WOMEN

DL Thompson, EM Krumm, O Lukajic, P Andrews University of Tennessee, Knoxville, TN

Physical activity (PA) plays an important role in the maintenance of a healthy weight and body composition (BC). We examined the relationship between pedometer-determined PA measured in steps/day and BC variables in postmenopausal women. Height, weight, percent body fat (%BF), trunk fat, and waist (WC) and hip (HC) circumference were measured on 93 women (60.9 ± 5.76 y). Each wore a pedometer for 14 days following testing to assess walking volume. Correlation analyses were used to examine the relationship between walking volume and BC variables. Subjects were placed in groups to reflect different levels of PA: sedentary (< 5,500 steps/d), low active (5,500-7,500 steps/d), and active (> 7,500 steps/d). ANOVA was used to determine whether BC variables varied across groups. P < 0.05 was considered significant for all tests. A significant correlation was found between walking volume and %BF (r = -0.368, P < 0.0001); body mass index (BMI) (r = -0.422, P < 0.0001); trunk fat (r = -0.393, P < 0.0001); WC (r = -0.487, P < 0.0001); HC (r = -0.435, P < 0.0001); and waist-to-hip ratio (r = -0.487, P = 0.004). Relationships remained significant after controlling for the influence of age and caloric intake. Also, there was a significant difference in BC variables among activity groups, with higher values found in the less active groups. We demonstrated that postmenopausal women who take more daily steps have more favorable BC profiles. Additionally, the average BMI of the women in the active category (99.61 ± 309 steps per day) was in the recommended range (24.6 ± 0.6 kg/m²).

029

EFFECTS OF MODERATE INTENSITY EXERCISE ON THE BODY COMPOSITION OF HIV-INFECTED PERSONS.

Wesley D. Dudgeon, Kenneth D. Phillips, Stephanie E. Burgess, J. Larry Durstine, and Gregory A. Hand. Arnold School of Public Health and College of Nursing, University of South Carolina, Columbia, SC.

Background: Those infected with HIV commonly experience a redistribution of body fat stores and a loss of lean tissue mass. A method of treating these body composition issues is with exercise training, which has proven beneficial in this capacity in apparently healthy persons. **Methods:** Thirty-nine HIV-infected individuals, who were medically cleared for study participation, were randomized to an exercise group (EX) who completed 6 weeks (twice per week) of moderate intensity exercise training, or to a control group (CON) that did not receive the exercise intervention. Each subject prior to and following the 6-week training period received a DEXA scan for body composition determination. **Results:** The EX (N=21) had a significant increase in lean tissue mass (LTM) ($P=0.006$) following the intervention, while the CON (N=18) had no significant changes in body composition. Both groups were then divided into those above 20% body fat (BF) and those below 20% BF prior to the intervention. The EX below 20% BF group had significantly more LTM than the EX above 20% BF group. Analysis of the EX then revealed that those below 20% increased lean tissue mass ($P=0.03$) only, while those above 20% decreased weight ($P=0.03$), fat mass ($P=0.03$) and total fat % ($P=0.05$) while showing a trend for decreased trunk fat % ($P=0.09$). There were no changes in the CON and no changes were observed in nutritional status following the intervention. **Conclusion:** These data suggest that 6 weeks of combined moderate intensity aerobic and resistance training can differentially benefit HIV-infected individuals depending on their body composition status. This work supported by NINR/NIH and the Arnold School of Public Health.

O30

PERFORMANCE VARIABLE DIFFERENCES BETWEEN DIVISION THREE VARSITY AND INTRAMURAL SOCCER ATHLETES

Peyton Burchell (faculty mentor: Peter Magyari) School of Health Sciences and Human Performance Lynchburg College, Lynchburg Virginia

Introduction: The disparity in performance level between Division I Varsity athletes and Intramural athletes is rarely debated. A reduced disparity in performance level is hypothesized when it comes to Division III athletes versus Intramural athletes. This study examines performance variable differences between Division III men's Varsity soccer players ($n=24$) and Intramural men's soccer players ($n=20$) at Lynchburg College. **Methods:** Anthropometric (height, weight, and body composition) and performance (VO₂max, muscular strength, and muscular endurance) variables were assessed in both groups to determine if there were significant differences. **Results:** The varsity soccer players had significantly greater VO₂max (55.35 to 48.45 mlO₂/kg/min), and muscular endurance (28.5 reps to 22.1 reps @ 60% bodyweight). The intramural athletes had significantly greater total body weight (80.3 kg to 72.05kg), %body fat (16.37% to 10.9%), and absolute upper body muscular strength (189 lbs. to 164.8 lbs on a 1 RM bench press test). There were no significant differences in height, lean mass, or relative upper body muscular strength. **Conclusions:** This study supported previous investigations indicating a positive relationship between high cardio-respiratory endurance, high muscle endurance, low body fat, and competitive status, indicating that the disparity in performance variables between Varsity and Intramural athletes persist at the Division III level.

O32

CROSS-SECTIONAL COMPARISON OF FITNESS IN AFRICAN AMERICAN CHILDREN 10 TO 12 YEARS OF AGE.

Larry Proctor, and L. Jerome Brandon, FACSM, Department of Kinesiology, Louisiana Tech Ruston, LA, Univ., Dept. Kines. & Health, Georgia State Univ., Atlanta, GA

This study was designed to investigate the differences in fitness of boys and girls between the ages of 10 and 12 years of age. Since girls mature faster than boys, the hypothesis was that the girls would have better fitness values at these ages than boys. Participants were 134 pre-teen age boys (65) and girls (69), who were selected through their participation in a Summer National Youth Sports Program (NYSP). All subjects were classified as low socio-economic status according to Federal guidelines for free and reduced breakfast and lunch. Measures include cardiovascular fitness via a 30-centimeter bench step test (two and three min. heart rates); flexibility \bar{x} sit and reach box (inches); muscular strength \bar{x} modified pull-up (# of successful attempts) and body composition was measured by triceps and calf skinfolds and converted to percent fat using the procedures of Slaughter et al. (1988) for African American children. Data was analyzed with descriptive statistics, oneway ANOVA and Scheffe's post hoc test ($p < 0.05$). When cross-sectional comparisons were made the participants did not differ based on gender for height or weight, however, the 10 year old boys and 11 year old girls were fatter ($p < 0.05$) than their age matched counterparts. Results from cardiovascular fitness within years based on gender indicated that there was an 8.9%, 15.7%, 6.4% and 5.9% difference for the 10, 11, 12 and total group, respectively. For Strength, only small differences were observed between the 10 year old boys and girls, but the 11 and 12-year-old boys had higher (28.6% - 47.7%) strength values than the 11 and 12-year-old girls, respectively. The 12-year-old girls had 20.8% better flexibility values than the 12-year-old boys. In summary, only small differences in fitness were observed between genders for the 10 year-old children. Larger differences in fitness were observed between genders for the 11 and 12 year old children. However, the fitness levels of the children across the age groups, based on the variables in this study, were not ($p > 0.05$) different. The fitness of pre-teen African American children appears to be similar between 10 and 12 years of age. However, boys tend to have greater strength. The hypothesis that the girls would have better fitness values than the boys is not supported.

O33

PRINCIPAL COMPONENT ANALYSIS ON THE KINEMATIC PARAMETERS OF ELITE WOMEN SHOT PUTTERS

Michael A. Young, MS, Li Li, PhD, FACSM, Louisiana State University

Previous research has indicated many potentially important parameters for successful shot putting however the observations are inconclusive. **PURPOSE:** To examine the kinematic parameters of elite level performance among women shot putters using principal component analysis (PCA). **METHODS:** Seven elite women shot putters competing in the 2003 USA TF National Championships served as participants in this study. Video data were collected at 60 Hz for the two best trials of each participant. Direct linear transformation was used to reconstruct 3D coordinates. PCA was used to identify important features of data variation. Twenty-four previously cited parameters were included in the initial analysis. The correlation matrix of the original parameters was created and principal components (PCs) with eigenvalues greater than 1 were retained for further analysis. These PCs were given identities based on their correlations with the original parameters. Linear regression was performed using the case-wise PCs as independent variables and the corresponding measured distance of the throw as the dependent variable. **RESULTS:** The first six PCs accounted for approximately 90% of the data set variance. Linear regression analysis ($R^2 = 0.88$, $p < 0.005$) indicated that three of the six PCs were significant contributors to the outcome of the throw. PCs representing shoulder-hip orientation ($p = 0.002$), release angle ($p = 0.026$), and vertical center of mass (COM) displacement during flight ($p = 0.006$) were found to be significant contributors to the measured distance. **CONCLUSION:** The results of this study indicate that release angle, shoulder-hip orientation and vertical COM displacement during flight contributed significantly to elite level success among women shot putters. These observations should assist in new training and coaching developments.

O31

VALIDITY OF THE BODYMEDIA SENSEWARE ARMBAND

Danielle Wadsworth University of Mississippi

The purpose of this study was to determine the validity of the Bodymedia Senseware Armband (BSA) to measure energy expenditure during walking and resting conditions. The Armband utilizes a 2-axis accelerometer, heat flux sensor, galvanic skin response sensor, skin temperature sensor and a near-body ambient temperature sensor to capture data leading to the calculation of energy expenditure. Methods: Seventeen subjects, who were devoid of health complications, were recruited for the study. Indirect calorimetry was used to validate energy expenditure. Each participant completed an exercise protocol while wearing the armband on the right triceps. The 45-minute protocol was divided into three 15 minute conditions: 15 minutes of supine rest, 15 minutes of treadmill walking at 3.5 mph and 15 minutes of supine rest. Energy expenditure was measured for each 15-minute increment and total energy expenditure from indirect calorimetry and the armband. Pearson Product Moment Correlations were used to determine criterion validity for the three conditions and total energy expenditure. Alpha level was set .05 a priori. Results: The results show significant correlations for the first rest condition ($r = .81$, $p = .000$), walking condition ($r = .95$, $p = .000$), and the second rest condition ($r = .82$, $p = .000$). BSA total energy expenditure was also significantly correlated with indirect calorimetry ($r = .95$, $p = .000$). Conclusion: The armband is a valid method to measure energy expenditure and will allow researchers to validly measure energy expenditure in a free-living environment.

034

FACTORS INFLUENCING BONE MINERAL DENSITY IN YOUNG GIRLS.

Kristin Sutika and Don Morgan, Arizona State University, University of North Carolina-Chapel Hill and Middle Tennessee State University

While factors influencing bone mineral density (BMD) have been studied extensively in adults, research identifying variables that affect BMD in very young children is lacking. Thus, the purpose of this study was to quantify interrelationships among height, body mass, daily physical activity (DPA), dietary calcium intake (DCI) and BMD in 33 four-year-old girls. Using a Lunar DEXA, BMD was measured at the femoral neck, lumbar spine, and total body. DPA was assessed using four days of pedometer data and DCI was measured using a food questionnaire completed by parents. Results demonstrated that the average number of steps taken per day was 10,446 \pm 3,497 and the average reported dietary calcium intake was 1,816 \pm 903 mg/d. Stepwise regression analyses revealed that body mass was the only significant predictor ($p \leq 0.05$) of lumbar spine BMD, explaining 25% of the variance. Step count and height accounted for 35% of the variance in femoral neck BMD, whereas body mass was the only significant predictor of total body BMD, accounting for 10% of the variance. Interestingly, DCI was not an important contributor to BMD. Viewed collectively, these findings indicate that in four-year-old girls, body mass is the strongest predictor of BMD, with DPA and height also being important. From a programmatic perspective, these data also suggest that daily weight-bearing physical activity should be emphasized as a means of positively impacting bone health in very young girls.

036

This study was supported by funding from the Douglas Conley Memorial Scholarship, the Associated Students of ASU Grant, and the North American Society for Pediatric Exercise Medicine Research Grant.

VALIDITY AND INTER-INSTRUMENT RELIABILITY OF THE ACTIGRAPH ACCELEROMETER IN 3-5 YEAR OLD CHILDREN.

K.L. McIver, K.A. Pfeiffer, M.J.C.A. Almeida, M. Dowda, and R.R. Pate, FACSM. University of South Carolina, Columbia, South Carolina

PURPOSE: To examine the correlation between VO2 and Actigraph accelerometer counts for two different placements and to examine the reliability between two monitors during structured and unstructured activities. **METHODS:** Thirty children (age = 4.4 \pm 0.75, 53% female, 57% African American, BMI = 16.5 \pm 2.1) wore a portable metabolic analyzer (Cosmed K4b2; Rome, Italy) and two Actigraph accelerometers (MTI; Fort Walton Beach, FL); one placed at the hip and one placed on the back. The children wore the equipment during rest, three structured activities, and during inside and outside freeplay times. Pearson correlations were used to determine the relationship between VO2 and accelerometer counts, and to determine the inter-instrument reliability. **RESULTS:** The correlation coefficient for the Actigraph at the hip placement was significantly higher ($r=0.78$; $p=0.018$) than the back placement ($r=0.68$) during the rest and structured activities. During freeplay, the correlation between VO2 and counts was $r=0.35$ for the hip and $r=0.45$ for the back. During both structured and unstructured activities, the monitors correlated with each other ($r=0.73$ and 0.78 , respectively). **DISCUSSION:** Structured and unstructured activities yielded different correlations between VO2 and counts. Most research in this area has been conducted in laboratory settings (structured). It is therefore necessary to further investigate instrument reliability in field settings (unstructured) in this population and others.

035

Supported by an ILSI Research Foundation grant and NIH grant 5R01HD043125.

THE EFFECT OF FEMORAL NECK NORMALIZATION IN FEMALES ON POTENTIAL FRACTURE RISK

EA Darr, MS2*, WR Barfield, PhD, FACSM***, JA Leupold, MD, * LA Hartsoc, MD** Department of Orthopaedic Surgery and **College of Charleston

In recent years there has been a dramatic rise in the number of hip fractures in females over the age of 65 due to osteoporosis (OP). Femoral neck length (FNL) has been implicated as a risk factor. The goals of our study were to normalize FNL and to make comparisons based on race in females. Subjects were retrospectively assessed through the GCRC DEXA scan database following IRB approval. Our hypotheses were that statistically significant differences would exist across five methods of normalization of FNL based on race in females. Statistical comparisons were made with a two sample t-test. 151 females were included in the study; 50 African American (AA) and 101 Caucasian (C). Statistically significant differences existed for: age ($p<0.003$) [AA-40.6; C-49.0 years of age], body mass ($p<0.001$) [AA-81.1 kg; C 65.6 kg], FNL/body mass ($p<0.001$) [AA-0.81; C-0.99], FNL/total BMD ($p<0.001$) [AA-64.8; C-73.8], FNL/neck BMD ($p<0.001$) [AA-72.1; C-87.3], BMD total ($p<0.001$) [AA-0.97 gm/cm2; C-0.86 gm/cm2], neck BMD ($p<0.001$) [AA-0.88 gm/cm2; C-0.74 gm/cm2]. No statistical differences existed for: FNL ($p=0.11$) [AA-61.28 mm; C-62.44mm], height ($p=0.40$) [AA-163.6 cm; C-162.6 cm], femoral neck width ($p=0.76$) or FNL/femoral neck width ($p=0.41$) [AA-0.37; C-0.38]. The goals of this study were to assess whether race had an effect on proximal femur normalization. AA and C FNL did not differ statistically ($p>0.05$), yet when normalized demonstrated statistical differences. Based on this sample, normalization of the FNL contributes to the body of knowledge related to fracture risk.

037

THE OVARIAN HORMONE ESTROGEN CONTRIBUTES TO THE RECOVERY OF SKELETAL MUSCLE FROM DISUSE ATROPHY

J.M. McClung 1,2, J.M. Davis 1, and J.A. Carson 1,2. Integrative Muscle Biology Laboratory 1, Department of Exercise Science 2, University of South Carolina, Columbia, SC.

The purpose of this study was to determine whether skeletal muscle mass recovery is sensitive to ovarian hormone loss. Additionally, the study delineated estrogen sensitive components of muscle mass recovery. Intact, ovariectomized (OVX), and ovariectomized with 17 β -estradiol replacement (OVX+E2) female rats were subjected to hindlimb suspension atrophy for 10-days and then allowed 14- or 28-days of reloading recovery. Soleus muscle wet mass (mg) recovered by the 14th day of reloading in intact, but remained depressed in OVX females. 14-days of reloading also restored mean CSA in intact soleus muscle. There was a 42% deficit in mean CSA, characterized by a sustained lack of large (>4000 μ m²) myofibers, in OVX female soleus muscle at day 14 of reloading which returned to control levels by the 28th day of reloading. Estrogen administration restored mean CSA and large myofiber occurrence in OVX animals at day 14 of reloading. Embryonic myosin heavy chain (eMHC) expression was induced similarly in intact, OVX, and OVX+E2 soleus muscle at day 14 of reloading. However, a sustained occurrence of centralized myofiber nuclei was present at day 14 of reloading with OVX that was absent in intact females and attenuated by estrogen administration. These results suggest that OVX induced estrogen loss is sufficient to delay the ability of skeletal muscle to recover muscle fiber area after disuse atrophy. These changes may be related to estrogen effects on myofiber growth and regeneration components of mass recovery. This work was funded by National Science Foundation/EPSCoR grant # EPS-0132573 and NIH/BRIN grant # 8-PORR13461A, as well as American College of Sports Medicine/NASA Student grants.

O38

IL-6 DEFICIENCY EFFECTS SKELETAL MUSCLE AT THE ONSET OF FUNCTIONAL OVERLOAD

Tyrone A. Washington, Joseph M. McClung, and James A. Carson Integrative Muscle Biology Laboratory, Exercise Science Department, University of South Carolina, Columbia SC, 29208

Functional overload is a hypertrophic stimulus for skeletal muscle. Muscle inflammation accompanies the initial response to this stimulus. IL-6 is an inflammatory cytokine that is induced in skeletal muscle at the onset of hypertrophy. However, the function of increased IL-6 expression in response to functional overload has not been determined. The purpose of this study was to determine the effect IL-6 deficiency has on initial gene expression related to muscle growth. Male C57/BL6 (WT, n=10) and IL-6 knockout (IL-6KO, n=10) mice were assigned to either a control or a functional overload group. The plantaris muscles were functionally overloaded for 3 days by synergist ablation and the control group received a sham surgery. MyoD, Myogenin, and p21 gene expression were determined by RT-PCR. Functional overload induced a 31% (p=0.004) and a 21% (p=0.007) increase in plantaris muscle mass to body mass ratio in WT and IL-6KO mice, respectively. MyoD overload induction was approximately 2 fold greater in WT mice than in IL-6KO mice. Functional overload induced a 278% (p=0.02) and a 235% (p=0.01) increase in myogenin mRNA expression in WT and IL-6KO mice, respectively. There was a 46% (p=0.008) reduction in p21 mRNA expression in control IL-6KO mice compared to control WT mice. Functional overload induced a 142% (p=0.003) and a 326% (p=0.003) increase in p21 mRNA expression in WT and IL-6KO mice, respectively. In summary, IL-6 loss induced differential gene expression related to skeletal muscle growth in response to functional overload.

O40

SKELETAL MUSCLE ATROPHY IS ASSOCIATED WITH CHRONIC INFLAMMATION IN THE APCMIN^{+/+} MOUSE.

K.A. Mehl, J.M. McClung, F.G. Berger, and J.A. Carson. Integrative Muscle Biology Laboratory, Department of Exercise Science, University of South Carolina, Columbia, South Carolina.

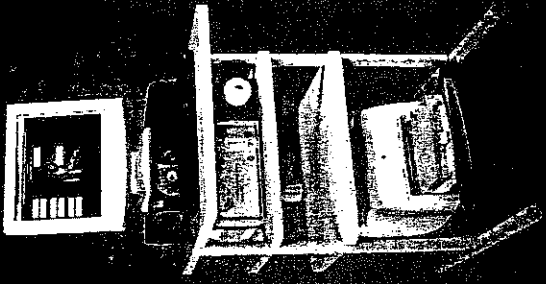
Cachexia is a state of whole-body disorder and ill-health, accompanied by increased caloric expenditure and decreased caloric intake or utilization. This condition is associated with other diseases, like cancer or chronic heart failure. The APCMin^{+/+} mouse develops a heavy intestinal tumor burden, creating a systemic inflammatory state. Female C57BL/6 (n=7) and APCMin^{+/+} (n=7) mice were sacrificed at 6-8 months of age. We have already demonstrated that the APCMin^{+/+} mouse loses muscle mass after the initial intestinal tumor burden plateaus. This muscle loss was associated with an increase in plasma IL-6 (12.2 \pm 5.7 pg/ml), which was not detected in C57BL/6 mice. Soleus mean fiber cross-sectional area decreased 24% (1153 \pm 75 μ m²) compared to C57BL/6 (1509 \pm 75 μ m²). This was also associated with a heightened regenerative response with an increase in APCMin^{+/+} mouse centralized nuclei (20 \pm 6 nuclei/mm² vs. 5 \pm 2 nuclei/mm²) and embryonic myosin heavy chain positive fibers (39 \pm 12 fibers/mm² vs. 3 \pm 3 fibers/mm²). Therefore, it appears that the APCMin^{+/+} mouse may be a useful model to examine exercise and nutritional paradigms to prevent skeletal muscle loss, ultimately delaying the progression of cancer.

O39

AIRCAST[®]

INCORPORATED

20 Years Expertise in Metabolic Measurement



Accurate, Reliable, and Easy to Use **ParvoMedics TrueMax 2400** Metabolic Measurement System

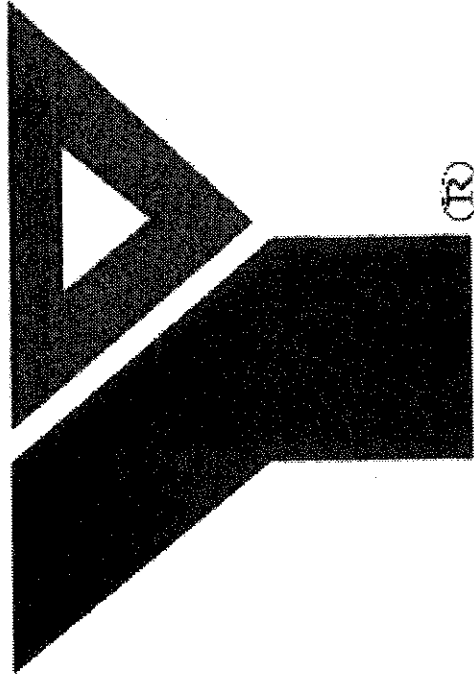
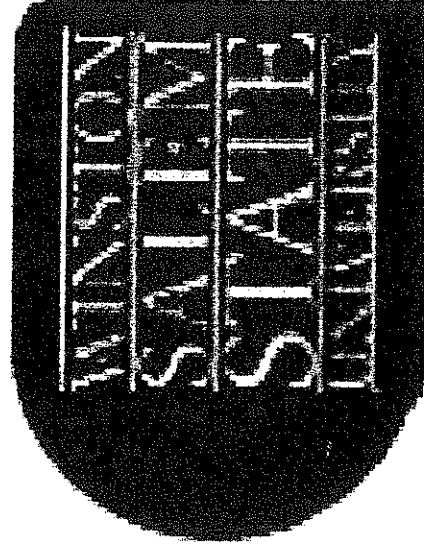
- **Accurate**
Precision "Yeh" algorithm for flow calibration. Validated by prestigious lab and published in J.A.P. ("Validity of inspiratory and expiratory methods of measuring gas exchange with a computerized system" JAP 91:218-224, 2001).
- **Reliable**
3 years standard warranty.
- **Easy to Use**
Windows XP program. Gas auto-cal takes 30 seconds.
- **Comprehensive Interfaces**
Automated controls for treadmills and bikes. Interfaces to ECG.
- **Preferred by Exercise Physiologists**
U.S. Winter Olympic Testing Center (USHS), Canada Olympic Training Center (U. of Calgary), Harvard, Stanford, Dulce, Washington, Cooper Institute, University of Florida (8 systems) and 11 California State Universities.

PARVO MEDICS

Call for FREE Demo Diskette
ParvoMedics Inc.

8652 South 1715 East, Sandy UT 84093
Toll Free 1-800-912-7255 • Telex/Fax (801) 942-1796
e-Mail: info@parvomeds.com • Web: www.parvomeds.com

Making Metabolic Measurement Easy



YMCA of Greater Charlotte





Exhibitors:**Accusport :**

**Sports Resources Group
Jerry Cosgrove
210 Belmont Road
Hawthorne, NY 10532
1-914-747-8572
fax: 1-914-741-5623**

**COSMED USA
Dan Shelby
2758 N. Paulina
Chicago, IL 60614
773-528-8113
Fax:773-528-8116**

**Human Kinetics
Hope Ingle
Academic Exhibits Manager
1607 N. Market Street
Champaign, IL 61820
1-217-351-5076 ext 2335
Fax 1-217-351-2674
hopei@hkusa.com**

**Lippincott, Williams & Wilkins
Christine Kushner
351 W. Camden St
Baltimore, MD 21201
Ckushner@www.com
1-410-528-8518
Fax: 410-528-4305**

ParvoMedics/Consentius Technologies

**Pat Yeh/ Susan Hsu
8152 South 1715 East
Sandy, UT 84093
1-800-942-7255
Fax: 1-800-942-7796**

Sensor Medics

**Tony Minter
1024 Parkview Way
Milburn, CA 30047
Tonyminter34@yahoo.com
1-800-231-2466
fax: 1-770-931-7459**

VacuMed

**John Hoppe
4483 McGrath Street #102
Ventura, CA 93003
1-800-235-3333**

**THANKS TO
SUPPORTERS & EXHIBITORS**

... from the Southeast Chapter of the American College of Sports Medicine

2005 Supporters:

Pfizer

New York, NY 10017

Gatorade Sports Science Institute

Barrington, IL 60010

ParvoMedics/Consentius Technologies

Sandy, UT 84093

YMCA of Greater Charlotte

Charlotte, NC

Aircast

Summit, NJ 07901

Florida Atlantic University

Davie, FL 33314

Winston-Salem State University

Winston-Salem, NC 27110

Charlotte, NC



PFIZER

IS PROUD

TO BE A CONTINUING SUPPORTER OF
THE CLINICAL TRACK
AND A PLATINUM SUPPORTER
OF THE 33rd ANNUAL MEETING
OF THE
SOUTHEAST REGIONAL CHAPTER
OF THE
AMERICAN COLLEGE OF SPORTS MEDICINE