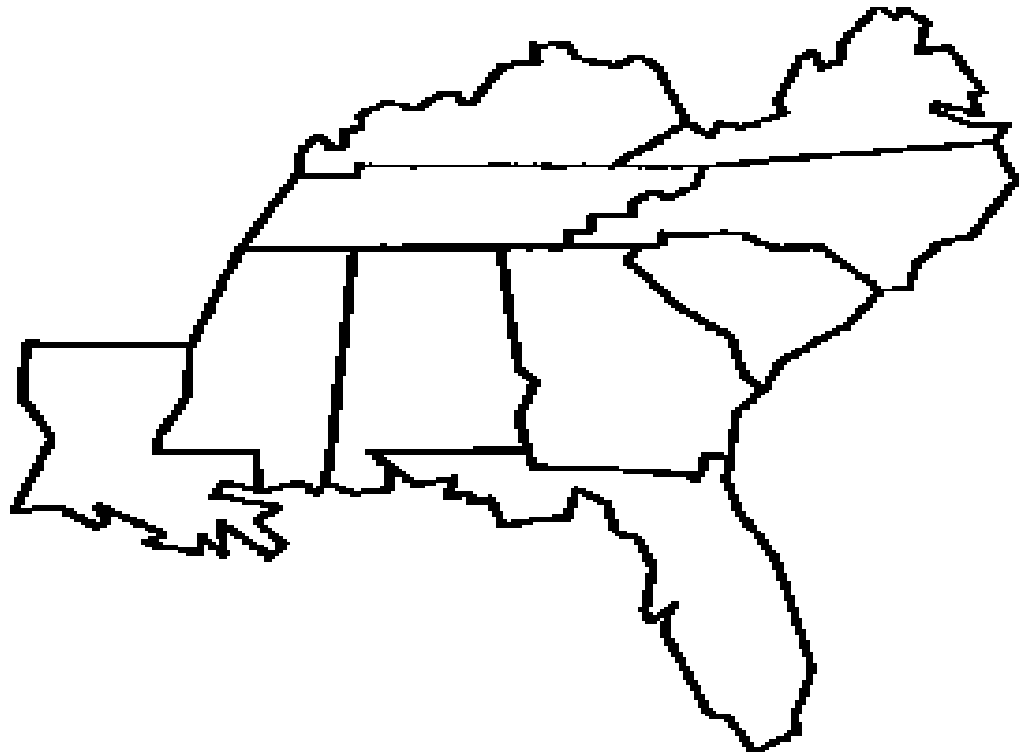


**AMERICAN COLLEGE
of SPORTS MEDICINE**
SOUTHEAST REGIONAL CHAPTER

**February 12-14, 2009
37th Annual Meeting
Wynfrey Hotel
Birmingham, Alabama**

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

Thirty-Seventh Annual Meeting

SOUTHEAST REGIONAL CHAPTER
AMERICAN COLLEGE OF
SPORTS MEDICINE

Wynfrey Hotel Birmingham
Birmingham, Alabama
February 12-14, 2009

Officers

President:

Judith Flohr, President, James Madison University

Past President:

Jerry Brandon, Past-President, Georgia State University

President-Elect:

President-Elect, Alan Utter, Appalachian State University

Executive Board:

Edmund O. Acevedo, At-Large Member, Virginia Commonwealth University

Michael Berry, Representative to ACSM, Wake Forest University

Chuck Dumke, At-Large Member, Appalachian State University

Erica Jackson, At-large Member, The College of William and Mary

Amy Knab, Student Representative, University of North Carolina at Charlotte

Lynn Panton, At-large Member, Florida State University

Tracy Ray, Physician's Representative, American Sports Medicine Institute

Executive Director:

Carolynn Berry, Winston Salem University

Exhibits, Sponsorships & Fund Raising:

Michael Berry, Wake Forest University

Publisher and Editor:

Don Torok, Florida Atlantic University



SEACSM 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

CME Meeting Objectives

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

- Describe appropriate preventive measures, training and performance techniques for athletes to help them avoid upper extremity injuries and discuss the scientific evidence behind these recommendations.
- Describe the relevant upper extremity anatomy and pathophysiology and discuss diagnostic and treatment recommendations for common upper extremity injuries occurring in various athletic populations, as well as discuss the scientific evidence behind these recommendation.
- Understand the appropriate format for scientific case presentations, be able to prepare and present scientific case reports involving sports medicine topics and discuss their clinical relevance

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 6.0 AMA PRA Category I Credit(s)™. Physicians should only claim credit commensurate with the extent of their participation in the 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 up to 16 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: Tom Byrd, MD – reported Grant/Research Support: Smith & Nephew Endoscopy and Consultant: Smith & Nephew Endoscopy. Brent Anderson disclosure as being

the President/CEO of Polestar Pilates, which is an educational company that provides education on pilates training. No other speaker had any disclosure associations.

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 program support from: Life Measurements, Inc., Gatorade Sports Science Institute, and Myotest.



L I F E M E A S U R E M E N T , I N C





Acknowledgement of Other Support

The Southeast Chapter of the American College of Sports Medicine gratefully acknowledges program support from the American College of Sports Medicine.



Planning Committee

Edmund O. Acevedo, Jerry Brandon, Michael Berry, Judith Flohr, Tracy Ray, Erica Jackson, Lynn Panton,
Abigail Turpyn-Peairs,Carolynn Berry, Don Torok, Alan Utter

SEACSM List of Reviewers

Steven R. McAnulty, Jeff McBride, David Morris, David C. Nieman, John Quindry,
Andrew Shanely, Travis Triplett, Alan C. Utter

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 Walberg 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 Atlanta, GA	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

	<u>Date/Place</u>	<u>Pres./PastPres./PresElect</u>	<u>Executive Board</u>
32 nd	Jan.29-31, 2004 Atlanta, GA	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 Charlotte, NC	Allan Goldfarb Beverly Warren Tim Lightfoot	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
34 th	Feb. 9-11, 2006 Charlotte, NC	Tim Lightfoot Allan Goldfarb Dixie Thompson	Carolynn Berry (ED) Paul Davis Judith Flohr Peter Grandjean Andrew Gregory (MD) Janet Rankin Abigail Turpyn (S) Debra M. Vinci Liz Dowling Don Torok
35 th	Feb. 8-10, 2007 Charlotte, NC	Dixie Thompson Tim Lightfoot Jerry Brandon	Carolynn Berry (ED) Michael Berry Paul Davis Peter Grandjean Tracy Ray (MD) Kevin McCully Michael Turner Abigail Turpyn (S) Liz Dowling Don Torok
36 th	Feb. 14-16, 2008 Birmingham,AL	Jerry Brandon Dixie Thompson Judith Flohr	Carolynn Berry (ED) Michael Berry Chuck Dumke Erica Jackson Tracy Ray (MD) Kevin McCully Michael Turner Amy Knab (S) Liz Dowling Don Torok

	<u>Date/Place</u>	<u>Pres./PastPres./PresElect</u>	<u>Executive Board</u>
37 th	Feb. 12-14, 2009 Birmingham,AL	Judith Flohr Jerry Brandon Alan Utter	Carolynn Berry (ED) Michael Berry Chuck Dumke Erica Jackson Tracy Ray (MD) Edmund Acevedo Lynn Panton Amy Knab (S) Don Torok

ES = Executive Secretary
N = National Representative

S = Student Representative
MD = Physician Representative
CC = Clinical Consultant
ED = Executive Director

SEACSM Award Winners

	<u>Scholar Award</u>	<u>Service Award</u>	<u>Student Award</u>	<u>Clinical 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	Elizabeth Murphy	
2005	Emily Haymes	George Wortley	Martin Carmichael	
2006	David Nieman	Carolynn Berry	Heather Webb	Stefanie Shaver
2007	David Bassett, Jr.	Liz Dowling	Dawn Hayes-Doc Seam Courtney-MS/UG	Jason Blackham
2008	J. Larry Durstine	Anne Allen	Mary Beth Brown-Doc Jacqueline Del Giorno- MS/UG	Jeffrey B. Roberts

SOUTHEAST AMERICAN COLLEGE OF SPORTS MEDICINE 2009 ANNUAL MEETING SCHEDULE

THURSDAY, February 12, 2009

- 12:00-2:00 **BOARD MEETING (Dorset)**
- 1:00-6:00 **REGISTRATION (Second Floor Convention Registration)**
- 4:00-9:00 **EXHIBITS (Prefunction Area)**
- 4:00-5:00 **TUTORIAL (T1-T2)**
 T-1 ACSM Certification; Leading the Way in Making Exercise Good Medicine
 (WyndSOR II)
 T-2 The Safety and Efficacy of Resistance Exercise Training in Heart Failure Patients
 (Wynfrey E)
- 4:00-5:30 **ORAL FREE COMMUNICATIONS (O1-O6) (Avon)**
 Psychology/Psychiatry/Behavior
- 4:00-5:00 **ORAL FREE COMMUNICATIONS (O7-O10) (Yorkshire)**
 Chronic Disease and Disability
- 4:00-6:00 **STUDENT AWARD POSTER PRESENTATIONS
(DP1-9, MUP 1-9) (Second Floor Foyer)**
 Authors Present 4:30-6:00
- 5:15-6:15 **TUTORIALS (T3-T4)**
 T-3 Advances in Cardiac Impedance Technology for Use in Clinical or Sport
 Performance Settings **(Wynfrey E)**
 T-4 Ergogenic Potential & Mechanisms of Action During Anaerobic Exercise
 (WyndSOR II)
- 7:30-9:00 **BUSINESS MEETING AND KEYNOTE ADDRESS (Wynfrey ABC)**
 Presiding Judith A. Flohr
 **"The Worldwide Epidemic of Physical Inactivity -Epidemiology, Evolution
and Economics"**
 Reed Humphrey, PT, PhD
 Professor and Chair, School of Physical Therapy and Rehabilitation, University of
 Montana
 Past President: American Association Cardiovascular and Pulmonary Rehabilitation
 Head of the World Council for Cardiovascular and Pulmonary Rehabilitation from
 2000-2004
- 9:00-11:00 **SEACSM SOCIAL-Supported by Life Measurement, Inc. (Riverchase AB)**

FRIDAY, February 13, 2009

- 6:45-7:45 **WOMEN'S BREAKFAST -Supported by Myotest (Riverchase A)
(Registration Required)**
 "Ten Commandments for Women in Sports Science."
 Dr. Tori Murden McClure
 Vice President for External Relations, Enrollment
 Management and Student Affairs, Spalding University
 Moderator: Dr. Jody Casey, University of Kentucky
- 8:00-5:00 **REGISTRATION (Second Floor Convention Registration)**
- 8:00-6:00 **EXHIBITS (Prefunction Area)**

- 8:00-9:30 **SYMPOSIUM (S-1) (Wynfrey D)**
If Exercise is Medicine, How Do We Get People to Do It? A Look at
Community-Based Programs
Elizabeth Bailey, Stephen Bailey, PhD, Robert McMurray, PhD, Erin Banks
- 8:00-9:00 **TUTORIALS (T5-T6)**
T-5 Making the Most of Your Graduate Exercise Science Experience
(WyndSOR II)
T-6 Cardiac Rehabilitation: Emergence, Neglect, and Resurgence **(Avon)**
- 8:00-9:00 **ORAL FREE COMMUNICATIONS- (O11-O14) (Wynfrey E)**
Nutrition/Metabolism
- 8:00-9:30 **POSTER PRESENTATION I (P1-P17) (Second Floor Foyer)**
Authors Present 8:00-9:00 AM
Fitness Testing/Assessment
- 8:30-9:30 **SYMPOSIUM (S-2) (Riverchase B)**
Advancing the Clinical Exercise Physiologist
Brian Coyne, M Ed., RCEP
- 9:45-10:45 **ACSM PRESIDENTIAL ADDRESS (Wynfrey ABC)**
"The Physiology of Endurance Performance: What Do We Really Know?"
Mindy Millard-Stafford, PhD, ACSM President
- 9:45-12:00 **POSTER PRESENTATION II (P18-P33) (Second Floor Foyer)**
Authors Present 11:00-12:00
Psychology/Behavior Exercise Evaluation/Clinical
- 10:45-11:00 **BREAK**
- 11:00-12:00 **CLINICAL EXCHANGE PANEL (Riverchase A)**
Lessons Learned from the Beijing 2008 Paralympic Games
Walter R. Thompson, Ph.D., Joanne B. "Anne" Allen M.D., Laurie A. Malone, Ph.D.,
Jeff Underwood, and Jen Armbruster.
- 11:00-12:00 **TUTORIALS (T7-T8)**
T-7 Influence of Quercetin as a Mitochondrial Biogenesis Energy Restriction Mimetic
(Wynfrey E)
T-8 Using Sport Science to Improve Team Sport Performance **(WyndSOR II)**
- 11:15-12:15 **ORAL FREE COMMUNICATIONS –Supported by ParvoMedics**
(O15- O18) (Avon)
Fitness Testing/Assessment
- 12:00-1:15 **PAST PRESIDENT'S LUNCH (Riverchase B)**
- 1:00-5:45 **CLINICAL TRACK (Wynfrey D)**
1:00-1:25 Clinical Entities and Pathophysiology of Low Back Pain in Athletes by Rayden C.
Cody, M.D.
1:25-1:50 Diagnosis and Management of Spondylolysis and Spondylolisthesis in Athletes by
Ken Mautner, MD
1:50-2:15 Disorders of the Sacrum by Anne Allen, MD
2:15-2:30 Discussion
2:30-2:44 Brea
2:45-3:00 Fellow Case 1
3:00-3:15 Fellow Case 2
3:15-3:30 Fellow Case 3
3:30-4:30 Treatment of Low Back Pain with Rehabilitative Pilates by Brent Anderson, PT,
PhD, OCS

- 4:30-4:45 Break
- 4:45-5:15 Rehabilitative Ultrasound Imaging for Recurrent Lumbo-Pelvic Pain in Athletes by Brian Yee PT, MPhty, OCS
- 5:15-5:45 Incontinence in Female Runners by Blair H. Green MPT, OCS, CSCS
- 1:30-2:30 **BASIC SCIENCE LECTURE (Wynfrey ABC)**
"Understanding Physical Activity and Metabolic Balance from the Cell's Point of View"
 Darrell Neuffer, PhD
 Department of Exercise and Sports Sciences
 Department of Physiology
 East Carolina University
- 2:30-2:45 **BREAK**
- 2:45-4:15 **SYMPOSIUM (S-3) (Wynfrey E)**
An Overview of the Nutritional Challenges of Maintaining Muscle Mass In Older Adults
 Jacob M. Wilson, Craig Broeder, PhD
- 2:45-4:15 **POSTER PRESENTATIONS III (P34-P44) (Second Floor Foyer)**
 Authors Present 2:45-3:45
 Nutrition and Exercise
- 3:00-4:00 **TUTORIAL (T9-T10)**
 T-9 Metabolic Syndrome: Prevalence, Risk, and the Effects of Physical Activity in Adults (**WyndSOR I**)
 T-10 Sweat Gland Physiology and the Puzzling 'Salty Sweater' (**WyndSOR II**)
- 3:00-4:00 **ORAL FREE COMMUNICATIONS (O19- O22) (Avon)**
 Endocrinology/Immunology/Cardiovascular Physiology
- 4:30-5:30 **STUDENT BOWL-Prized provided by ACSM & Lippincott, Williams, and Wilkins (Riverchase AB)**
 Moderator: Dr. Michael Turner, UNC Charlotte
- 5:45-7:00 **SEACSM GRADUATE STUDENT FAIR-Prizes provided by Human Kinetics (Wynfrey ABC)**

SATURDAY February 14, 2009

- 8:00-9:00 **REGISTRATION (Second Floor Convention Registration)**
- 7:30-12:00 **CLINICAL TRACK PROGRAM (Wynfrey D)**
- 7:30-8:30 Pilates Mat Class for Low Back Care (lab session-appropriate dress required)
- 8:30-8:45 Fellow Case 4
- 8:45-9:00 Fellow Case 5
- 9:00-9:15 Fellow Case 6
- 9:15-10:00 Hip Pathology in the Athlete by Thomas Byrd, M.D.
- 10:00-10:15 Break
- 10:15-10:30 Fellow Case 7
- 10:30-10:45 Fellow Case 8
- 10:45-11:00 Fellow Case 9
- 11:00-11:45 Pain Management in the Athlete with Low Back Pain by Sophia Lal, DO
- 11:45-12:00 Award Best Fellow Case/Presentation

- 8:00-12:00 **EXHIBITS (Prefunction Area)**
- 8:00-9:00 **ORAL FREE COMMUNICATIONS (O23-O26) (WyndSOR II)**
Epidemiology/Body Composition
- 8:00-9:00 **ORAL FREE COMMUNICATIONS (O27- O30) (Yorkshire)**
Biomechanics/Athletic Care/Competitive Athletes
- 8:00-9:00 **TUTORIAL (T11)**
T-11 Review of Protein/Amino Acid Supplement Research Design in Exercise
(Wynfrey E)
- 8:00-9:45 **POSTER PRESENTATION IV (P45-P59) (Second Floor Foyer)**
Authors present 8:00-9:00
Body Composition/Energy Balance
Competitive Athletes
- 9:00-10:00 **HENRY J. MONTOYE SCHOLAR LECTURE (Wynfrey ABC)**
The Role of Muscle Activity in Health Maintenance after Spinal Cord Injury.
Kevin McCully, PhD
Department of Kinesiology, University of Georgia
- 10:00-10:15 **BREAK**
- 10:15-11:45 **SYMPOSIUM (S-4) (Wynfrey E)**
Strength Capacity and Functional Performance in Older Adults
M. Elaine Cress, PhD, Scott Arnett, PhD, John McCarthy, PhD,
Judy Kruger, PhD
- 10:15-11:15 **TUTORIALS (T12-T13)**
T-12 Preparing Exercise Program Professionals: Current Issues for Students,
Professors, Internship Coordinators, and Program Directors **(Yorkshire)**
T-13 Evaluation and Treatment of Exertional Leg Pain: Evidence Based Practice
(WyndSOR II)
- 10:15-12:00 **POSTER PRESENTATION V (P60-P75) (Second Floor Foyer)**
Authors Present 10:15-11:15
Cardiovascular/Respiratory Physiology Epidemiology
Chronic Disease Endocrinology/Immunology
- 12:00-2:00 **SEACSM LUNCHEON AND LECTURE (Wynfrey ABC)**
Prevention of Obesity and Diabetes through Minerals, Interventions and the
Environment?
Stella L. Volpe, PhD, RD, FACSM
University of Pennsylvania, School of Nursing
- 2:00-4:00 **SEACSM EXECUTIVE BOARD MEETING (Dorset)**

SOUTHEAST AMERICAN COLLEGE OF SPORTS MEDICINE 2009 ANNUAL MEETING SCHEDULE

THURSDAY, February 12, 2009

- 12:00-2:00 **BOARD MEETING (Dorset)**
- 1:00-6:00 **REGISTRATION (Second Floor Convention Registration)**
- 4:00-9:00 **EXHIBITS (Prefunction Area)**
- 4:00-5:00 **TUTORIAL (T1-T2)**
- T-1 ACSM CERIFICATION; LEADING THE WAY IN MAKING EXERCISE GOOD MEDICINE
Hope Wood, M.A., American College of Sports Medicine, Indianapolis, IN
Chair: Dr. James R. Churilla (**Wyndson II**)
- T-2 THE SAFETY AND EFFICACY OF RESISTANCE EXERCISE TRAINING IN HEART
FAILURE PATIENTS
Peter Magyari, PhD. University of North Florida, Jacksonville FL
Chair: Dr. Sheila A. Ward (**Wynfrey E**)
- 4:00-5:30 **ORAL FREE COMMUNICATIONS (O1-O6) (Avon)**
Psychology/Psychiatry/Behavior
Chair: Dr. Eric Hall
- O1 4:00 EFFECTS OF DECEPTION ON RPE DURING MODERATE INTENSITY CYCLING.
C. M. Laurent, J.M. Green, J.K. Davis, and K.R. Shaw, Department of Kinesiology,
University of Alabama, Tusacaloosa, AL and Department of Health, Physical
Education, and Recreation, University of North Alabama, Florence, AL
- O2 4:15 PHYSICAL ACTIVITY IN RURAL AND URBAN MIDDLE SCHOOL YOUTH: PERCEPTIONS OF
OPPORTUNITIES, ENVIRONMENTAL SUPPORTS AND BARRIERS FOR PARTICIPATION.
J.B. Moore, K.A. Shores, R. Brownson, L.F. Novick, and D. Rodriguez. Dept. of
Public Health, East Carolina University.
- O3 4:30 TRAINING MOTIVATIONS FOR COLLEGIATE FEMALE STUDENT-ATHLETES.
Robin Hardin, Ph.D., Amber McMillin, M.S., Gi-Yong Koo, Ph.D., Exercise, Sport,
and Leisure Studies, University of Tennessee, Knoxville, TN , Cherilyn Hultquist,
Ph.D., Health, Exercise, and Sport Science, Kennesaw State University,
Kennesaw, GA
- O4 4:45 INCREASED PERCEIVED QUALITY OF LIFE BURDEN WITH AGE-ASSOCIATED
DECLINE IN VASCULAR AND PHYSICAL FUNCTION.
TR Parish, DP Credeur, K Cherry, E Ravussin, D Johansson, MA Welsch, SM
Jazwinski. Depts. of Kinesiology, SELU and LSU, Pennington Biomedical Research
Center, and Tulane Univ., LA
- O5 5:00 POSSIBLE MECHANISMS INFLUENCING POSITIVE CHANGES IN BODY IMAGE
AFTER PARTICIPATION IN ALAMANCE-GIRLS IN MOTION.
D.L. Wolff, E.K. Bailey, Dept of Health and Human Performance, S.P. Bailey, Dept
of Physical Therapy Education, Elon University, Elon, NC
- O6 5:15 PSYCHOSOCIAL CORRELATES OF PHYSICAL ACTIVITY IN APPARENTLY HEALTHY ADOLESCENTS.
D.C. Andrews, Chih-Hsien Hsu. Sport Science, Jackson State University,
Jackson, MS
- 4:00-5:00 **ORAL FREE COMMUNICATIONS (O7-O10) (Yorkshire)**
Chronic Disease and Disability
Chair: Dr. Erica Jackson

- 07 4:00 THE RELATIONSHIP BETWEEN LUNG FUNCTION AND PEAK POWER OUTPUT AMONG INDIVIDUALS WITH PHYSICAL DISABILITIES WHO ENGAGE IN RECREATIONAL SPORT.
J.P. Barfield, Tennessee Tech University, Cookeville, TN
- 08 4:15 IMPROVED LIPID PROFILE IN HIV POSITIVE MEN AFTER 6 WEEKS OF COMBINED RESISTANCE AND AEROBIC TRAINING.
Jason Jagers¹, Kenneth Phillips², Wesley Dudgeon³, G.W. Lyerly¹, Stephanie Burgess¹, Larry Durstine, FACSM¹, Gregory A. Hand, FACSM¹. ¹ University of South Carolina, Columbia, SC. ² University of Tennessee, Knoxville, TN. ³ The Citadel, Charleston, SC
- 09 4:30 12-WEEK EXERCISE PROGRAM AND QUALITY OF LIFE IN ADULTS WITH CEREBRAL PALSY.
Laurie A. Malone & Laura K. Vogtle, Dept of Research and Education, Lakeshore Foundation, Birmingham, AL Dept of Occupational Therapy, Univ of Alabama at Birmingham, Birmingham, AL
- O10 4:45 AEROBIC FITNESS AS A MODIFIER OF AMBULATORY BLOOD PRESSURE IN ADOLESCENTS BORN PREMATURELY WITH VERY LOW BIRTH WEIGHT.
E.C. Sasser, P.A. Nixon, L.K. Washburn, T.M. O'Shea. Depts. Of Health & Exercise Science and Pediatrics, Wake Forest University, Winston-Salem, NC
- 4:00-6:00 **STUDENT AWARD POSTER PRESENTATIONS
(DP1-9, MUP 1-9) (Second Floor Foyer)**
Authors Present 4:30-6:00; Chair: Dr. Jerry Brandon
Doctoral Student Posters DP1-DP9
- DP1 RELATIONSHIP BETWEEN VO₂ AT LACTATE THRESHOLD (LT) AND VO₂ AT MAXIMAL RATE OF FAT OXIDATION (FATMAX) ACROSS AGE, FITNESS STATUS, AND SEX.
S.S. Angadi, C.A. Rynders, N.Y. Weltman, G.A. Gaesser (FASCM), A. Weltman (FACSM). Dept. of Human Services, University of Virginia, Charlottesville, VA
- DP2 CAFFEINE CO-INGESTED WITH CARBOHYDRATE: ADDITIONAL ERGOGENIC EFFECT FOR ENDURANCE EXERCISE?
Scott A. Conger, Gordon L. Warren, FACSM, Melinda L. Millard-Stafford, FACSM, School of Applied Physiology, Georgia Institute of Technology, Atlanta, GA; Division of Physical Therapy, Georgia State University, Atlanta, GA
- DP3 ASSOCIATION BETWEEN DAILY ACTIVITY, VASCULAR AND PHYSICAL FUNCTION: ROLE OF HOMOCYSTEINE.
DP Credeur, D Johansson, DA Dobrosielski, A Arce-Esquivel, E Ravussin, MA Welsch, SM Jazwinski. Dept. of Kinesiology, LSU, Pennington Biomedical Research Center, and Tulane Univ., LA
- DP4 COMPARISON OF BODY COMPOSITION DISTRIBUTION IN AFRICAN-AMERICAN WOMEN WITH AND WITHOUT METABOLIC SYNDROME.
L.M. Hornbuckle, P-Y. Liu, J.Z. Ilich, E. Simonavice, J-S. Kim, L. Panton. Dept. of Nutrition, Food, & Exercise Sciences. Florida State University, Tallahassee, FL,
- DP5 FOREARM BLOOD FLOW AND REACTIVE HYPEREMIA IN WOMEN WITH FIBROMYALGIA.
J. Derek Kingsley, Lynn B. Panton FACSM, Victor McMillan, Arturo Figueroa Dept. of Nutrition, Food and Exercise Sciences, Florida State University, Tallahassee, FL and McIntosh Clinic, Thomasville, GA
- DP6 THE RELATIONSHIP BETWEEN CARDIORESPIRATORY FITNESS AND ALL-CAUSE MORTALITY IN WOMEN WITH IMPAIRED FASTING GLUCOSE AND NON-DIAGNOSED DIABETES.
G. William Lyerly¹, Xuemei Sui¹, Carl J. Lavie², Timothy S. Church³, Gregory A. Hand, FACSM¹, Steven N. Blair, FACSM¹. Arnold School of Public Health¹, University of South Carolina, Columbia, SC, Department of Cardiovascular Diseases, Ochsner Medical Center, New Orleans, LA², Pennington Biomedical Research Center, Baton Rouge, LA³.

- DP7 ASSOCIATIONS BETWEEN PAIN, FATIGUE, AND INJURY IN COLLEGIATE BASEBALL PITCHERS.
Johna K. Register-Mihalik, Stephen W. Marshall, Frederick O. Mueller, FACSM; The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina
- DP8 VO2 AT MAXIMAL RATE OF FAT OXIDATION IS NOT RELATED TO THE LACTATE THRESHOLD IN ABDOMINALLY OBESE WOMEN WITH THE METABOLIC SYNDROME (MS).
C.A. Rynders, S.S. Angadi, N.Y. Weltman, G.A. Gaesser (FACSM), A. Weltman (FACSM). Dept. of Human Services, University of Virginia, Charlottesville, VA
- DP9 EFFECTS OF CARDIORESPIRATORY FITNESS (CRF) ON ENDOTHELIAL FUNCTION FOLLOWING A HIGH-FAT MEAL IN POSTMENOPAUSAL WOMEN.
D.L. Swift, S.S. Angadi, J.Y. Weltman, E.J. Barrett, J.T. Patrie, G.A. Gaesser (FACSM), A. Weltman (FACSM). University of Virginia, Charlottesville, VA

Masters/Undergraduate Posters MUP1-MUP9

- MUP1 SATELLITE CELL ACTIVATION IN THE DIAPHRAGM FOLLOWING TRACHEAL OCCLUSION IN RATS.
S.M. Attia, B.K. Smith, S. Mathur, F. Ye, M.T. Hotchkiss, B.D. Darragh, A.D. Martin, P.W. Davenport, and K. Vandenborne. Dept. of Physical Therapy, University of Florida, Gainesville, FL
- MUP2 INTERVAL SPECIFIC HAPLOTYPE ANALYSIS BETWEEN HIGH ACTIVE AND LOW ACTIVE MICE WITHIN CHROMOSOMES 9 AND 13.
Tyrone Ceaser, University of North Carolina at Charlotte, Charlotte, NC
- MUP3 EFFECT OF BODY MASS INDEX ON PHYSICAL FUNCTION IN PULMONARY DISEASE PATIENTS.
Amanda L. Correll, W. Jack Rejeski, Michael J. Berry. Health and Exercise Science Department, Wake Forest University, Winston-Salem, NC
- MUP4 COMPARISON OF CALORIC EXPENDITURE CALCULATED BY A TREADMILL CALORIMETER AND INDIRECT CALORIMETRY DURING SUB-MAXIMAL EXERCISE.
Zach Halewood, Kim Bevillard, Grace Lewis, Macie Lewis, Tom Carroll and Timothy P. Scheett. Human Performance Laboratory, College of Charleston, Charleston, SC.
- MUP5 ANTIOXIDANT ENZYME FUNCTION IN ISCHEMIC AND PERFUSED CARDIAC TISSUE OF EXERCISED RATS.
Megan Irwin, John Quindry, Lindsey Schrieber, Peter Hosick, Jenna Wrieden, & Rebecca Kappus, Department of Health and Exercise Science, Appalachian State University, Boone, NC
- MUP6 QUERCETIN AS AN ANTIOXIDANT: A COMMUNITY TRIAL.
M.J. Landram, D.C. Nieman, and S.R. McAnulty. Dept. HLES, Appalachian State University, Boone, NC
- MUP7 INFLUENCE OF SUPPLEMENTAL QUERCETIN AND EPIGALLOCATECHIN 3-GALLATE ON IMMUNITY AND INFLAMMATION.
Kendra R. Maxwell, David C. Nieman, Dru A. Henson, Ashley S. Williams, Steven R. McAnulty, Fuxia Jin, Andrew Shanely, Thomas Lines. Depts. Health, Leisure, and Exercise Science, Family and Consumer Sciences, and Biology, Appalachian State University, Boone, NC
- MUP8 MITOCHONDRIAL KATP CHANNEL INHIBITION BLUNTS ARRHYTHMIA PROTECTION IN ISCHEMIC EXERCISED HEARTS.
Lindsey E. Schreiber, John Quindry, Lindsey Schreiber, Peter Hosick, J. Megan Irwin, Jenna Wrieden, Emily Hoyt, Rebecca Kappus. Dept of Health, Leisure, & Exercise Science; Appalachian State University, Boone, NC

- MUP9 QUERCETIN'S INFLUENCE ON EXERCISE PERFORMANCE AND MUSCLE MITOCHONDRIAL BIOGENESIS IN UNTRAINED MALES. A. Williams, D.C. Nieman, F. Jin, J. Sobierj, A. Shanely, S.R. McAnulty, N. T. Triplett, and M. Austin. Depts. Biology, Health, Leisure, and Exercise Science, and Family and Consumer Sciences, Appalachian State University, Boone, NC
- 5:15-6:15 **TUTORIALS (T3-T4)**
T-3 ADVANCES IN CARDIAC IMPEDANCE TECHNOLOGY FOR USE IN CLINICAL OR SPORT PERFORMANCE SETTINGS
Craig Broeder, Ph.D. FACSM, Benedictine University, Lisle, IL
Chair: Dr. John Quindry (**Wynfrey E**)
- T-4 CAFFEINE: ERGOGENIC POTENTIAL & MECHANISMS OF ACTION DURING ANAEROBIC EXERCISE
JM Green¹, Davis JK², Laurent CM², 1: The University of North Alabama, Florence, AL 2: The University of Alabama, Tuscaloosa, AL
Chair: Dr. Beverly Warren (**Wyndson II**)
- 7:30-9:00 **BUSINESS MEETING AND KEYNOTE ADDRESS (Wynfrey ABC)**
Presiding Judith A. Flohr
"The Worldwide Epidemic of Physical Inactivity - Epidemiology, Evolution and Economics"
Reed Humphrey, PT, PhD
Professor & Chair, School of Physical Therapy & Rehabilitation, University of Montana
Past President: American Association Cardiovascular and Pulmonary Rehabilitation
Head of the World Council for Cardiovascular and Pulmonary Rehabilitation from 2000-2004
Speaker Introduction: Paul M. Ribisl, PhD, Wake Forest University
- 9:00-11:00 **SEACSM SOCIAL –Supported by Life Measurement, Inc. (Riverchase AB)**
- FRIDAY, February 13, 2009**
- 6:45-7:45 **WOMEN'S BREAKFAST–Supported by Myotest (Riverchase A)**
(Registration Required)
"Ten Commandments for Women in Sports Science."
Dr. Tori Murden McClure
Vice President for External Relations, Enrollment Management and Student Affairs, Spalding University
Moderator: Dr. Jody Casey, University of Kentucky
- 8:00-5:00 **REGISTRATION (Second Floor Convention Registration)**
8:00-6:00 **EXHIBITS (Prefunction Area)**
- 8:00-9:30 **SYMPOSIUM (S-1) (Wynfrey D)**
IF EXERCISE IS MEDICINE, HOW DO WE GET PEOPLE TO DO IT? A LOOK AT COMMUNITY-BASED PROGRAMS.
EK Bailey, Dept. of Health and Human Performance, Elon University, Elon, NC; SP Bailey Dept. of Physical Therapy Education, Elon University, Elon, NC; RG McMurray, Dept. of Exercise and Sports Science, University of North Carolina, Chapel Hill, NC; ER Banks, Psychology of the Public Interest, North Carolina State University, Raleigh, NC
Chair: Dr. David C. Nieman
- 8:00-9:00 **TUTORIALS (T5-T6)**
T-5 MAKING THE MOST OF YOUR GRADUATE EXERCISE SCIENCE EXPERIENCE.
PA Bishop¹, JM Green², ¹Kinesiology Dept. The University of Alabama, Tuscaloosa, AL ²HPER Dept. The University of North Alabama, Florence, AL
Chair: Dr. Sue Graves (**Wyndson II**)

- T-6 CARDIAC REHABILITATION: EMERGENCE, NEGLECT, AND RESURGENCE
MA Welsch, PhD, Department of Kinesiology, Louisiana State University, Baton Rouge, LA
Chair: Dr. Susan Tsivitse **(Avon)**
- 8:00-9:00 **ORAL FREE COMMUNICATIONS- (O11-O14) (Wynfrey E)**
Nutrition/Metabolism
Chair: Dr. Timothy P. Scheett
- O11 8:00 NEUROPEPTIDE Y1 RECEPTOR: OBESITY AND SKELETAL MUSCLE FATTY ACID OXIDATION.
Brett Hutcherson, Madyln Frisard, Ryan McMillan, Kim Haynie, Kristin Wahlberg, Matthew Hulver. Dept of Human Nutrition, Foods, and Exercise, Virginia Polytechnic Institute and State University, Blacksburg, VA
- O12 8:15 EFFECT OF EXTREME ENDURANCE SUPPLEMENTATION ON MAXIMAL AEROBIC PERFORMANCE IN ENDURANCE ATHLETES.
Jürgen Seßner, Volker Tzscheetzsch and Mike Iosia. Corpus Diagnostik, Hilpoltstein, GER and Lee University, Cleveland, TN
- O13 8:30 EFFECT OF MIXED FLAVONOIDS, ANTIOXIDANTS, AND OMEGA-3 FATTY ACIDS ON PLASMA OXIDATIVE DAMAGE.
W.S. Lynch, S.R. McAnulty, L.S. McAnulty, J.C. Quindry, D.C. Nieman, T. Triplett, and D.A. Henson. Depts. Health, Leisure, and Exercise Science, Family and Consumer Sciences, and Biology, Appalachian State University, Boone, NC
- O14 8:45 ACUTE TIMING EFFECTS OF β -HYDROXY β -METHYLBUTYRATE (HMB) SUPPLEMENTATION ON SERUM INDICES OF MUSCLE DAMAGE.
J.M. Wilson, J-S. Kim, S-R. Lee, J. Rathmacher, B. Sommer, J. Colon, H. Koch, T., Diah, J.D. Kingsley, L.B. Panton. FACSM Florida State Univ, Tallahassee, FL
- 8:00-9:30 **POSTER PRESENTATION I (P1-P17) (Second Floor Foyer)**
Authors Present 8:00-9:00 AM
- Fitness Testing/Assessment**
- P1 VALIDITY AND RELIABILITY EVIDENCE OF OMRON PEDOMETERS
T.V. Barreira, E.A. Holbrook, and M. Kang. Dept. of Health and Human Performance, Middle Tennessee State University, Murfreesboro, TN
- P2 COMPARING PHYSICAL ACTIVITY LEVELS TO CARDIORESPIRATORY FITNESS AND BODY COMPOSITION IN FIREFIGHTERS OF WEST MONROE DURING THE 2007 AND 2008 YEARS.
C. Beraud, L. Thomas, L. Colvin, and B. Coyne Department of Kinesiology, University of Louisiana Monroe. Monroe, LA
- P3 VALIDATION OF A NEW UPPER BODY MUSCULAR POWER TEST.
Kristi Brinkley, Sarah Gossett, Kelley Ingram, Griffen B. Greene, Dena Garner and Timothy P. Scheett, Human Performance Laboratory, College of Charleston, Charleston, SC and Human Performance Laboratory, The Citadel, Charleston, SC
- P4 CORRELATIONS BETWEEN VARIABLES THAT AFFECT RIGHT & LEFT BALL VELOCITY AMONG UNDER-12 FEMALE SOCCER PLAYERS.
Melissa R. Bunke, Piper J. McCord, Anna E. Gray, Tom Carroll, and William R. Barfield, FACSM

- P5 MUSCULAR STRENGTH, MUSCULAR ENDURANCE, AND FLEXIBILITY RESPONSES TO THE POLICE CORPS LAW ENFORCEMENT TRAINING PROGRAM.
Heather Driggers, R. Lee Franco, Malcolm T. Whitehead, Ronald E. Evans, Jeffrey Soukup, Michael J. Webster and Timothy P. Scheett, Human Performance Laboratory, College of Charleston, Charleston, SC and Laboratory for Applied Physiology, University of Southern Mississippi, Hattiesburg, MS
- P6 NATURAL HISTORY OF MUSCULAR STRENGTH FOLLOWING SHORT-DURATION MUSCLE STRETCHING.
Whitney M. Frail and Noah Wasielewski, Human Performance Laboratory, College of Charleston, Charleston, SC
- P7 THE EFFECT OF MOUTHPIECE USE ON MUSCULAR ENDURANCE.
A. Bowen, S. Caffey, C. Garnett, G. Greene, C. McRae, T. Morin, B. Nolan, T. Shealy, and D.P. Garner. Dept of Health, Exercise and Sport Science, The Citadel, Charleston, SC
- P8 EFFECT OF THE POLICE CORPS LAW ENFORCEMENT TRAINING PROGRAM ON BLOOD LIPIDS AND BODY COMPOSITION.
Kali Oberholtzer, R. Lee Franco, Malcomb T. Whitehead, Ronald E. Evans, Jeffrey Soukup, Michael J. Webster and Timothy P. Scheett, Human Performance Laboratory, College of Charleston, Charleston, SC and Laboratory for Applied Physiology, University of Southern Mississippi, Hattiesburg, MS
- P9 ASSESSING MARKERS OF OVERTRAINING THROUGHOUT THE COMPETITIVE VOLLEYBALL SEASON.
S.E. Pallardy, J.M. Davis, FACSM, S. Chen, J. McClellan. Dept. of Exercise Science, The University of South Carolina, Columbia, SC
- P10 PRESCHOOL-AGE CHILDREN'S PEDOMETER STEP COUNT ACROSS THE SCHOOL DAY.
C. Peoples, D.D. Wadsworth, L.E. Robinson, Dept. of Kinesiology, Auburn University, Auburn, AL
- P11 EFFECT OF THE POLICE CORPS LAW ENFORCEMENT TRAINING PROGRAM ON AEROBIC AND ANAEROBIC POWER.
Maegan Rogers, R. Lee Franco, Malcomb T. Whitehead, Ronald E. Evans, Jeffrey Soukup, Michael J. Webster and Timothy P. Scheett, Human Performance Laboratory, College of Charleston, Charleston, SC and Laboratory for Applied Physiology, University of Southern Mississippi, Hattiesburg, MS
- P12 STABILITY RELIABILITY OF CARDIOPULMONARY MEASURES ON THE DIGIJUMP.
J.C. Sivley, J.W. Navalta, T.S. Lyons, and L.K. Marable, Department of Physical Education and Recreation, Western Kentucky University, Bowling Green, KY
- P13 PHYSIOLOGICAL PREDICTORS OF BAT SWING AND BATTED-BALL VELOCITIES OF NOVICE COLLEGE STUDENTS.
D. J. Szymanski, J. R. Beam, J. G. Reed, H. S. Hsu, and S. P. McHenry. Department of Kinesiology, Louisiana Tech University, Ruston, LA
- P14 PHYSIOLOGICAL PREDICTORS OF SPORT-SPECIFIC SKILLS OF BASEBALL PLAYERS.
J. M. Szymanski, D. J. Szymanski, J. M. Albert, J. G. Reed, H. S. Hsu, S. T. Gilliam, E. G. Taylor, and K. L. Weil. Department of Kinesiology, Louisiana Tech University, Ruston, LA
- P15 ASSESSMENT OF CHANGES IN CARDIORESPIRATORY FITNESS PARAMETERS OF MORBIDLY OBESE FEMALES FOLLOWING GASTRIC BYPASS SURGERY.
S.D. Vesely, Franco RL, Fallow BA, Herrick JE, Larson NY, Arrowood J, Evans RK. Departments of Health and Human Performance and Internal Medicine, Virginia Commonwealth University, Richmond, VA

- P16 THE EFFECTS OF INDEPENDENT PLYOMETRIC AND STRENGTH TRAINING ON HIGH AND LOW SPEED MUSCULAR STRENGTH.
M. T. Whitehead, A. C. Villa, T. P. Scheett, and M. R. McGuigan, Northwestern State University, Natchitoches, LA
- P17 ENERGY EXPENDITURE DURING INTERACTIVE VIDEO GAME PLAY.
B.E. Yates and R.G. McMurray. Exercise and Sport Science Department, The University of North Carolina at Chapel Hill, Chapel Hill, NC
- 8:30-9:30 **SYMPOSIUM (S-2) (Riverchase B)**
ADVANCING THE CLINICAL EXERCISE PHYSIOLOGIST
Brian J. Coyne. University of Louisiana Monroe, Monroe, LA
Chair: Dr. Walter Thompson
- 9:45-10:45 **ACSM PRESIDENTIAL ADDRESS (Wynfrey ABC)**
"The Physiology of Endurance Performance: What Do We Really Know?"
Mindy Millard-Stafford, PhD, ACSM President
Chair: Dr. Kirk Cureton
- 9:45-12:00 **POSTER PRESENTATION II (P18-P33) (Second Floor Foyer)**
Authors Present 11:00-12:00
- Psychology/Behavior** **Exercise Evaluation/Clinical**
- P18 IMPACT OF PROTEASE SUPPLEMENTATION ON PERCEIVED PAIN AND EXERCISE AFFECT FOLLOWING THE ONSET OF DOMS.
M.S. Scoggin, P.C. Miller, S.P. Bailey, T.K. Mulcahy, W.R. Bixby, & E.E. Hall. Department of Exercise Science, Elon University, Elon, NC
- P19 BELIEFS AND INTENTIONS OF REGISTERED DIETITIANS TOWARD EVALUATING PSYCHOLOGICAL FACTORS IN OVERWEIGHT CLIENTS.
J.L.P. Roy, D.O. Burnett, R.R. Evans, O.W. Kendrick, D.M. Macrina, S.W. Snyder, B.C. Stephens, T.E. Blaudeau and G.R. Hunter (FACSM). Dept. Human Studies, University of Alabama at Birmingham, Birmingham, AL
- P20 TIME REQUIRED FOR INCIDENTAL PHYSICAL ACTIVITY: AN ANALYSIS OF PARKING LOT BEHAVIOR.
K.W. Lokey, B.B. Parr, and C.M. DeWitt. Department of Exercise and Sports Science, University of South Carolina Aiken, Aiken, SC
- P21 SOCIAL-COGNITIVE INFLUENCES ON STUDENTS' MAINTENANCE OF PHYSICAL ACTIVITY ACROSS THE FIRST YEAR OF COLLEGE.
J.C. Hutchinson, Oxford College of Emory University, & J.P. Barfield, Department of Exercise Science, Physical Education and Wellness, Tennessee Tech University, Cookeville, TN
- P22 IMPACT OF GREENWAY CONSTRUCTION ON PEDESTRIAN AND CYCLING PHYSICAL ACTIVITY: A NATURAL EXPERIMENT.
Eugene C. Fitzhugh, David Bassett, Mary F. Evans University of Tennessee; Knoxville, TN,
- P23 BODY IMAGE IN BREAST CANCER SURVIVORS: PHYSICAL FITNESS MAKES A DIFFERENCE.
Lauren N. Cook, B.S., ¹ Shannon L. Mihalko, Ph.D., ¹ Thomas McCoy, M.S., ¹ Erica Rosenberger, M.S., ¹ Edward Levine, M.D., ¹ Paul Ribisl, Ph.D., ¹ & Roger Anderson, Ph.D.² ¹Wake Forest University and ²Pennsylvania State University, Hershey, PA

- P24 PREDICTING CORTISOL ACTIVITY FROM SELF-REPORTED MEASURES OF POSITIVE AND NEGATIVE AFFECT IN FIREFIGHTERS PERFORMING DUAL-STRESS ACTIVITY.
D.S. Campbell ¹, C.J. Jackson ¹, R.S. Garten ², D.R. McMinn ³, J.L. Beckman ³, E.O. Acevedo ⁴, & H.E. Webb ⁵. ¹ The University of New South Wales; ² UNC-Greensboro, ³ University of Mississippi; ⁴ Virginia Commonwealth University, ⁵ Mississippi State University
- P25 EFFECTS OF 7-WEEK EXERCISE INTERVENTION ON DIMENSIONS OF SELF-CONCEPT AND BODY IMAGE.
J.D. Burns, E Science, Elon University, Elon, NC. E Hall, G.K. Chao, W.R. Bixby, and P.C. Miller, Department of Exercise, Elon, NC
- P26 INFLUENCE OF BODY CONSCIOUSNESS ON AFFECTIVE AND EMOTIONAL RESPONSES TO EXERCISE WHILE VIEWING TELEVISION PROGRAMS.
S.A. Baird, D.N. Gilbert, E.E Hall, W.R. Bixby, and P.C. Miller, Department of Exercise Science, Elon University, Elon, NC
- P27 MEDIA REPRESENTATIONS OF IDEAL BODY IMAGE AND THEIR INFLUENCE ON ACUTE EXERCISE BEHAVIOR AND AFFECTIVE RESPONSES .
K.M. Arfman, E.E. Hall, E.E. Lewandowski, W.R. Bixby, P.C. Miller, Department of Exercise Science, Elon University, Elon, NC
- P28 DETERMINANTS OF PHYSICAL ACTIVITY MOTIVATION IN CULTURALLY DIVERSE OLDER ADULTS.
I. Antikainen and R. Ellis, Department of Kinesiology & Health, Georgia State University, Atlanta, GA
- P29 EXTERNAL AND INTERNAL ATTENTIONAL FOCUS IN SOCCER SKILL PERFORMANCE.
B.M. Williams, B. Sirikul, D.B. Hollander, E.H. Hebert. Dept. of Kinesiology & Health Studies, Southeastern Louisiana University, Hammond, LA
- P30 QUADRICEPS TORQUE GENERATION AND DECAY IN LUNG TRANSPLANT RECIPIENTS.
B. K. Smith, S.M. Attia, B.D. Darragh, A.D. Martin. Department of Physical Therapy, University of Florida, Gainesville, FL
- P31 THE EFFECTS OF PRIOR EXERCISE ON INTRAMUSCULAR MAGNESIUM CONCENTRATIONS AND MUSCLE METABOLISM
T.N. Turner, Q. Zhao, and K.K. McCully. Kinesiology Department, Physics Department, University of Georgia, Athens, GA
- P32 RATIO OF HAMSTRINGS TO QUADRICEPS TORQUE VALUES IN LUNG TRANSPLANT PATIENTS.
B.D. Darragh, B.K. Smith, S. Attia, A.D. Martin. Dept. of Physical Therapy, The University of Florida, Gainesville, FL
- P33 SEX DIFFERENCES OF METABOLIC RESPONSE TO GXT'S PERFORMED ON A "TREADWALL", TREADMILL, AND CYCLE ERGOMETER.
J. McLester, FACSM, J. Wickwire, and B. Harrison. Department of Health, Physical Education, and Sport Science, Kennesaw State University, Kennesaw, GA. Southern Connecticut State University, New Haven, CT
- 10:45-11:00 **BREAK**
- 11:00-12:00 **CLINICAL EXCHANGE PANEL (Riverchase A)**
Lessons Learned from the Beijing 2008 Paralympic Games
Chair: Dr. Kevin McCully
- "International Paralympic Committee's Sports Science Committee – Beijing Experience"
Walter R. Thompson, Ph.D., FACSM
Member and Coordinator of Research, International Paralympic Committee
Regents Professor, Department of Kinesiology and Health
Georgia State University, Atlanta, Georgia

"Beijing Perspective from Team USA Medical Staff"
Joanne B. "Anne" Allen M.D., FACSM, FAAPMR
Physical Medicine and Rehabilitation Specialist, Team Physician, 2008 USA
Paralympic Team,
Wrightsville Beach, North Carolina

"Support Services for the Paralympic Athlete"
Laurie A. Malone, Ph.D.
Director of Research & Education, Lakeshore Foundation, Birmingham, Alabama

"The Chef de Mission Experience"
Jeff Underwood
Chef de Mission, 2008 USA Paralympic Team, President, Lakeshore Foundation,
Birmingham, Alabama

"The Perspective of a Gold Medal Athlete"
Jen Armbruster
5 time Paralympian, Team Captain, 2008 USA Goalball, Gold Medalist, 2008 USA
Goalball, Flag Bearer, 2008 USA Paralympic Team Recreation Specialist,
Lakeshore Foundation, Birmingham, Alabama

11:00-12:00 **TUTORIALS (T7-T8)**

T-7 INFLUENCE OF QUERCETIN AS A MITOCHONDRIAL BIOGENESIS ENERGY
RESTRICTION MIMETIC.

David C. Nieman, Department of Health, Leisure and Exercise Studies,
Appalachian State University, Boone, NC

Chair: Dr. Chuck Dumke **(Wynfrey E)**

T-8 USING SPORT SCIENCE TO IMPROVE TEAM SPORT PERFORMANCE.

A. Bosak¹ and P. Bishop². ¹ Brock University, Baton Rouge, LA and ² The
University of Alabama, Tuscaloosa, AL

Chair: Dr. Peter Grandjean **(Wyndsor II)**

11:15-12:15 **ORAL FREE COMMUNICATIONS –Supported by ParvoMedics
(O15- O18) (Avon)**

Fitness Testing/Assessment

Chair: Dr. Paul G. Davis

O15 11:15 HEART RATE, RPE, AND BLOOD LACTATE RESPONSES TO AEROBIC EXERCISE IN
BREAST CANCER PATIENTS.

Elizabeth S. Evans, Claudio L. Battaglini, Diane G. Groff, and A.C. Hackney,
FACSM Department of Exercise and Sport Science, University of North Carolina at
Chapel Hill, Chapel Hill, NC

O16 11:30 CORRELATION OF VO2MAX, VO2MAX RELATIVE TO LEAN MASS, AND THE
MODIFIED HOFF TEST IN FEMALE COLLEGIATE SOCCER PLAYERS.

Kelly Gayman, Tom Carroll, William Barfield, FACSM; Human Performance
Laboratory, College of Charleston, Charleston SC

O17 11:45 EFFECT OF BLOOD DONATION ON MAXIMAL OXYGEN CONSUMPTION.

C.M. DeWitt, D.A. Gregory, S. Vaid, W. J. Bowman, and B.B. Parr. Department of
Exercise and Sports Science, University of South Carolina Aiken, Aiken, SC

O18 12:00 GEOCACHING: UTILIZING TECHNOLOGY TO INCREASE PHYSICAL ACTIVITY ON
CAMPUS.

P. Magyari and R. Meyer University of North Florida, Jacksonville, FL

12:00-1:15 **PAST PRESIDENT'S LUNCH (Riverchase B)**

- 1:00-5:45 **CLINICAL TRACK (Wynfrey D)**
 1:00-1:25 Clinical Entities and Pathophysiology of Low Back Pain in Athletes by Rayden C. Cody, M.D.
- 1:25-1:50 Diagnosis and Management of Spondylolysis and Spondylolisthesis in Athletes by Ken Mautner, MD
- 1:50-2:15 Disorders of the Sacrum by Anne Allen, MD
- 2:15-2:30 Discussion
- 2:30-2:44 Break
- 2:45-3:00 Fellow Case 1
 3:00-3:15 Fellow Case 2
 3:15-3:30 Fellow Case 3
- 3:30-4:30 Treatment of Low Back Pain with Rehabilitative Pilates by Brent Anderson, PT, PhD, OCS
- 4:30-4:45 Break
- 4:45-5:15 Rehabilitative Ultrasound Imaging for Recurrent Lumbo-Pelvic Pain in Athletes by Brian Yee PT, MPhty, OCS
- 5:15-5:45 Incontinence in Female Runners by Blair H. Green MPT, OCS, CSCS
- 1:30-2:30 **BASIC SCIENCE LECTURE (Wynfrey ABC)**
“Understanding Physical Activity and Metabolic Balance from the Cell’s Point of View”
 Darrell Neuffer, PhD
 Department of Exercise and Sports Sciences, Department of Physiology
 East Carolina University
 Chair: Dr. Marcas Bamman
- 2:30-2:45 **BREAK**
- 2:45-4:15 **SYMPOSIUM (S-3) (Wynfrey E)**
 AN OVERVIEW OF THE NUTRITIONAL CHALLENGES OF MAINTAINING MUSCLE MASS IN OLDER ADULTS.
 Jacob M. Wilson, Florida State University, Tallahassee, FL
 Craig Broeder, Benedictine University, Lisle, IL
 Chair: Dr. Mark Loftin
- 2:45-4:15 **POSTER PRESENTATIONS III (P34-P44) (Second Floor Foyer)**
 Authors Present 2:45-3:45
- Nutrition and Exercise**
- P34 EFFECTS OF CARBOHYDRATE SUPPLEMENTATION ON THE RPE-BLOOD LACTATE RELATIONSHIP.
 Jennifer L. Steiner, A. Curmaci, J. Patrie, G. A. Gaesser (FACSM), and A. Weltman (FACSM). Dept. of Human Services, University of Virginia, Charlottesville, VA
- P35 EFFECT OF HYPERIMMUNE EGG SUPPLEMENT ON MOOD STATE AND QUALITY OF LIFE.
 Johannes D. Aartun and Timothy P. Scheett. Human Performance Laboratory, College of Charleston, Charleston, SC

- P36 EFFECTS OF PENTA® WATER, BOTTLED WATER, AND A CARBOHYDRATE BEVERAGE ON MARKERS OF HYDRATION STATUS AFTER ACUTE DEHYDRATION IN COLLEGIATE WRESTLERS. J.S. Valiente, A.C. Utter, J.C. Quindry, and D.C. Nieman. Dept. of Health, Leisure, and Exercise Science, Appalachian State University, Boone, NC
- P37 CARBOHYDRATE-ELECTROLYTE SUPPLEMENTATION DOES NOT ENHANCE COGNITIVE FUNCTION OR SKILL PERFORMANCE IN MALE HIGH SCHOOL BASKETBALL PLAYERS. Debra J. Morrell, Gregory S. Wimer, Bryan L. Riemann, and Vann B. Scott, Jr. Sports Medicine Program, Armstrong Atlantic State University, Savannah, GA
- P38 EFFECTS OF A CAFFEINATED ENERGY DRINK ON MUSCULAR STRENGTH AND ENDURANCE. N.B. Burton, R.H. Glaser, M.A. Hardy, A.H. Honeycutt, M.B. Hubier, C.M. Ready, & G.L. Warren. Division of Physical Therapy, Georgia State University, Atlanta, GA
- P39 CREATINE KINASE AND MUSCLE SORENESS RESPONSES TO ECCENTRIC EXERCISE: EFFECT OF FRUIT/VEGETABLE CONCENTRATE SUPPLEMENTATION. R.S. Garten, A.H. Goldfarb, C. Cho, and P.D.M. Chee. Dept. of Exercise and Sport Science, University of North Carolina Greensboro, Greensboro, NC
- P40 THE EFFECTS OF CONJUGATED LINOLEIC ACID SUPPLEMENTATION AND EXERCISE ON CONTRACTILE PERFORMANCE AND LEAN MASS. G.K. Chao, P.C. Miller, J.D. Burns, W.R. Bixby, & E.E. Hall. Department of Exercise Science, Elon University, Elon, NC
- P41 LIPID HYDROPEROXIDES AND RANGE OF MOTION RESPONSES TO ECCENTRIC EXERCISE: EFFECT OF FRUIT/VEGETABLE CONCENTRATE SUPPLEMENTATION. C. Cho, A.H. Goldfarb, R.S. Garten, and P.D.M. Chee. Dept. of Exercise and Sport Science, University of North Carolina Greensboro, Greensboro, NC
- P42 CARBOHYDRATE-PROTEIN SUPPLEMENTATION ATTENUATES EXERCISE-INDUCED MUSCLE DAMAGE. S. Chen, J.M. Davis (FACSM), S. Mahoney, T. Barrilleaux, K. Hubbles, C. Kline, M. Carmichael, and E.A. Murphy. Department of Exercise Science, The University of South Carolina, Columbia, SC.
- P43 LACTATE AND MUSCLE FORCE AND WORK RESPONSES TO ECCENTRIC EXERCISE: EFFECT OF FRUIT/VEGETABLE CONCENTRATE SUPPLEMENTATION. P.D.M. Chee, A.H. Goldfarb, C. Cho, and R.S. Garten. Dept. of Exercise and Sport Science, University of North Carolina Greensboro, Greensboro, NC
- P44 INFLUENCE OF EQUAL CARBOHYDRATE DELIVERY PROVIDED THRU VARYING CARBOHYDRATE DRINK CONCENTRATIONS ON RUNNING PERFORMANCE. M. Barberio¹, P. Reneau², B.Larouere². ¹Dept. of Kinesiology, Auburn University, Auburn, AL ²Dept. of Health and Human Performance, Fairmont State University, Fairmont, WV
- 3:00-4:00 **TUTORIAL (T9-T10)**
T-9 METABOLIC SYNDROME: PREVALENCE, RISK, AND THE EFFECTS OF PHYSICAL ACTIVITY IN ADULTS. James R. Churilla, PhD, MPH, University of North Florida, Jacksonville, FL
Chair: Dr. J. Larry Durstine (**WyndSOR I**)
- T-10 SWEAT GLAND PHYSIOLOGY AND THE PUZZLING 'SALTY SWEATER' Mary Beth Brown, Georgia Institute of Technology, Atlanta, GA
Chair: Dr. Andrew Shanely (**WyndSOR II**)

- 3:00-4:00 **ORAL FREE COMMUNICATIONS (O19- O22) (Avon)**
Endocrinology/Immunology/Cardiovascular Physiology
Chair: Dr. Allan H. Goldfarb
- O19 3:00 AGE-ASSOCIATED DECLINE IN DHEAS, LEAN BODY MASS, VASCULAR AND PHYSICAL FUNCTION: ROLE OF PHYSICAL ACTIVITY. B Hollis, DP Credeur, D Johansson, E Ravussin, MA Welsch, SM Jazwinski. Dept. of Kinesiology, LSU, Pennington Biomedical Research Center, and Tulane University, LA
- O20 3:15 RESISTANCE TRAINING EFFECTS ON BRACHIAL ARTERY FLOW MEDIATED DILATION: A META-ANALYSIS.
Grayson.F.Lipford, Brent L. Arnold, Ronald K. Evans. Dept. of Health and Human Performance, Virginia Commonwealth University, Richmond, VA
- O21 3:30 CHANGES IN VASCULAR & PHYSICAL FUNCTION WITH EXERCISE TRAINING IN THE OLDEST OLD.
RD Russell, DP Credeur, DA Dobrosielski, TR Parish, MA Welsch and SM Jazwinski. Depts. of Kinesiology, SELU and LSU, Pennington Biomedical Research Center, and Tulane Univ., LA
- O22 3:45 EFFECT OF AEROBIC FITNESS ON CARDIORESPIRATORY AND STRESS HORMONE RESPONSES TO CONCURRENT MENTAL AND PHYSICAL STRESS.
Webb HE¹, Tangsilsat SE², McLeod KA², Acevedo EO³, & Kamimori GH⁴ ¹Mississippi State University, ²University of New South Wales, ³Virginia Commonwealth University, ⁴Walter Reed Army Institute of Research
- 4:30-5:30 **STUDENT BOWL (Riverchase AB)-Prizes provided by the American College of Sports Medicine & Lippincott, Williams and Wilkins**
Moderator: Dr. Michael Turner, UNC Charlotte
- 5:45-7:00 **SEACSM GRADUATE STUDENT FAIR –Prizes provided by Human Kinetics (Wynfrey ABC)**

SATURDAY February 14, 2009

- 8:00-9:00 **REGISTRATION (Second Floor Convention Registration)**
- 7:30-12:00 **CLINICAL TRACK PROGRAM (Wynfrey D)**
- 7:30-8:30 Pilates Mat Class for Low Back Care (lab session-appropriate dress required)
- 8:30-8:45 Fellow Case 4
8:45-9:00 Fellow Case 5
9:00-9:15 Fellow Case 6
- 9:15-10:00 Hip Pathology in the Athlete by Thomas Byrd, M.D.
- 10:00-10:15 Break
- 10:15-10:30 Fellow Case 7
10:30-10:45 Fellow Case 8
10:45-11:00 Fellow Case 9
- 11:00-11:45 Pain Management in the Athlete with Low Back Pain by Sophia Lal, DO
- 11:45-12:00 Award Best Fellow Case/Presentation
- 8:00-12:00 **EXHIBITS (Prefunction Area)**

- 8:00-9:00 **ORAL FREE COMMUNICATIONS (O23-O26) (WyndSOR II)**
Epidemiology/Body Composition
Chair: Dr. Steven Rossi
- O23 8:00 PROFILES OF SEDENTARY BEHAVIOR IN CHILDREN AND ADOLESCENTS:
NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY 2001-2006.
S.B. Sisson, T.S. Church, C.P. Earnest, C.K. Martin, C. Tudor-Locke, S.R. Smith,
C. Bouchard, T. Rankinen, R. Newton, P.T. Katzmarzyk, Pennington Biomedical
Research Center, Baton Rouge, LA
- O24 8:15 WEIGHT MANAGEMENT AND HYPERTENSION SERVICES IN A RURAL PUBLIC HEALTH CLINIC.
C.D. Sands IV¹, A.M. Best², C.D. Sands III², F. Ford³, R.W. Hensarling⁴, C.F. Steil²
¹Beeson School of Education and Professional Studies, Samford University,
Birmingham, AL ²McWhorter School of Pharmacy, Samford University,
Birmingham, AL ³Sowing Seeds of Hope, Marion, AL ⁴Department of Exercise
Science and Sports Medicine, Samford University, Birmingham, AL
- O25 8:30 PARITY, WEIGHT LOSS, AND BODY COMPOSITION.
T.E. Blaudeau, G.R. Hunter, and J.P. Roy. Dept. of Human Studies, The University
of Alabama at Birmingham, Birmingham, AL
- O26 8:45 RURAL APPALACHIA MIDDLE SCHOOL GIRLS SELF EFFICIACY AND PHYSICAL
ACTIVITY BEHAVIOR IN RELATIONSHIP TO OBESITY.
Lauren E. LaBounty & Karen E. Schetzina, M.D., MPH; Department of Pediatrics,
Quillen College of Medicine, Johnson City, TN
- 8:00-9:00 **ORAL FREE COMMUNICATIONS (O27- O30) (Yorkshire)**
Biomechanics/Athletic Care/Competitive Athletes
Chair: Dr. Ann L. Gibson
- O27 8:00 BIOMECHANICAL AND PROPRIOCEPTIVE DIFFERENCES BETWEEN DANCERS AND
NON-DANCERS DURING DROP LANDINGS.
K.E. Volkerding, C.J. Ketcham, J.A. Davis Department of Exercise Science,
Elon University, Elon, NC
- O28 8:15 VARIABILITY IN 1-RM STRENGTH AMONGST PARKINSON DISEASE PATIENTS.
Thomas A. Buckley, Chris J. Hass. Georgia Southern University, Statesboro, GA
and University of Florida, Gainesville, FL.
- O29 8:30 THE POSTEXERCISE EFFECT OF EVAPORATIVE CRYOTHERAPY AND ICE PACKS IN
REDUCING SKIN TEMPERATURE IN HYPERTHERMIC MALES.
R.B. Dale*, D. Greer, J.E. Kovaleski, D.W. Fell, L. Gurchiek, and R. Coleman.
*Dept. of Physical Therapy, University of Tennessee at Chattanooga,
Chattanooga, TN; University of South Alabama, Mobile, AL
- O30 8:45 EFFECT OF THREE DAYS OF INTENSE EXERCISE TRAINING ON THE FREE
TESTOSTERONE TO CORTISOL RATIO.
J.W. Duke, M.B. Behr, C. Battaglini, K.S. Ondrak, C.J. Hirth, & A.C. Hackney,
FACSM, Department of Exercise & Sport Science, University of North Carolina,
Chapel Hill, NC
- 8:00-9:00 **TUTORIAL (T11)**
T-11 REVIEW OF PROTEIN/AMINO ACID SUPPLEMENT RESEARCH DESIGN IN EXERCISE
M. Iosia, M. Spano, M. Cooke, and C. Kerksick .
Lee University, Cleveland, TN Spano Sports Nutrition Consulting, Atlanta, GA,
Baylor University, Waco, TX and The University of Oklahoma, Norman, OK
Chair: Dr. Sara Chelland Campbell **(Wynfrey E)**

8:00-9:45 **POSTER PRESENTATION IV (P45-P59) (Second Floor Foyer)**

Authors present 8:00-9:00

Body Composition/Energy Balance Competitive Athletes

- P45 EFFECTS OF A LOW GLYCEMIC DIET VERSUS A LOW CALORIE DIET ON WOMEN IN NORTH LOUISIANA.
S. Roark¹, K. Brooks². Department of Kinesiology, University of Louisiana at Monroe¹; Louisiana Tech University²
- P46 EFFECTS OF PHYSICAL ACTIVITY (PA) COMPLIANCE ON BODY WEIGHT STATUS AND PHYSICAL FITNESS OF OBESE ADOLESCENTS PARTICIPATING IN A WEIGHT MANAGEMENT PROGRAM.
Z.V. Williams, A.M. Abell, R.L. Franco, N.Y. Larson, R.K. Evans. Dept. of Health and Human Performance, Virginia Commonwealth University, Richmond, VA
- P47 CHANGES IN ENERGY EXPENDITURE, BODY COMPOSITION, AND BLOOD LIPID PROFILE WITH INGESTION OF HIGH PROTEIN, LOW FAT DIET VERSUS HIGH PROTEIN, HIGH FAT DIET AMONG OVERWEIGHT/OBESE FEMALES.
A.J. Riggs, S.J. Rossi, J.L. McMillan, K. Thornton, & L. Frost. Health and Human Performance Laboratory, Georgia Southern University, Statesboro, GA
- P48 ASSOCIATION OF BLOOD LEPTIN CONCENTRATION WITH PERCENT BODY FAT, ANTHROPOMETRIC PARAMETERS, AND HEALTH-RELATED PHYSICAL FITNESS IN FEMALE COLLEGE STUDENTS .
H. G. Choi¹, J. H. Cho¹, M. J. Lee², M. R. Shin¹, J. H. Lee¹, B. I. Choi¹, H. J. Kim¹, S. M. Kim¹, J. H. Jung¹, S. S. Jung¹, M. J. Yang¹, Department of Physical Education, Sookmyung Women's University¹, Department of Physical Education, University of Alabama, Tuscaloosa, AL
- P49 EFFECTS OF CARNITINE SUPPLEMENTATION WITH EXERCISE ON LIPIDLIPROTEIN AND METABOLIC INDICES
J. H. Lee¹, J. H. Cho¹, M. J. Lee², M. R. Shin¹, H. G. Choi¹, B. I. Choi¹, H. J. Kim¹, S. M. Kim¹, J. H. Jung¹, S. S. Jung¹, M. J. Yang¹ Department of Physical Education, Sookmyung Women's University, Seoul, Korea¹, Department of Physical Education, University of Alabama, Tuscaloosa, AL
- P50 THE RELATIONS BETWEEN REGIONAL BONE MINERAL DENSITY AND BODY COMPOSITION IN ELITE COMPETITIVE OLDER ATHLETES AND HEALTHY CONTROLS.
S.E. Hunt^{1, 2}, F. Goss, FACSM², R. Robertson, FACSM², S.L. Greenspan, MD², and J.L. McCrory, FACSM^{2, 3}. ¹University of South Carolina Lancaster, Lancaster, SC; ²University of Pittsburgh, Pittsburgh, PA, ³West Virginia Univ., Morgantown, WV
- P51 MODERATE-INTENSITY EXERCISE TRAINING REDUCES BODY FAT IN HIV-INFECTED MEN.
Wesley D. Dudgeon, The Citadel, Kenneth D. Phillips, University of Tennessee, J. Larry Durstine, G. William Lyerly, Stephanie E. Burgess, J. Mark Davis, Gregory A. Hand, University of South Carolina
- P52 RELATIVE BODY COMPOSITION AND ACTIVITY LEVELS OF FEMALE UNIVERISTY STUDENTS COMMUTING TO- AND LIVING ON CAMPUS.
M.A. Coleman, B. Sirikul, Dept of Kinesiology & Health Studies, Southeastern Louisiana University, Hammond, LA
- P53 EVALUATION OF AGREEMENT BETWEEN BIOELECTRICAL IMPEDANCE (BIA) AND DUAL ENERGY X-RAY ABSORPTIOMETRY (DXA) IN ESTIMATING BODY COMPOSITION CHANGES FOLLOWING GASTRIC BYPASS SURGERY.
MK Bowen, Franco RL, Maher JW, Kellum JM, Evans RK. Departments of Health & Human Performance & Surgery, Virginia Commonwealth University, Richmond, VA

- P54 RESISTANCE TRAINING TO MAINTAIN BODY COMPOSITION DURING PREGNANCY: A CASE STUDY.
M.J. Benton, PhD, RN, CNS;¹ P.D. Swan, PhD, FACSM;² M. Whyte, DHSc, ARNP-C1, ¹Valdosta State University, Valdosta, GA; ²Arizona State University
- P55 CORRELATIONS BETWEEN BODY FAT, LOWER EXTREMITY ABSOLUTE PEAK POWER AND SPEED IN COLLEGE FEMALE SOFTBALL PLAYERS.
Ben Hepner, Tom Carroll, Timothy P. Scheett, William Barfield, FACSM Human Performance Laboratory, College of Charleston, Charleston SC.
- P56 EVALUATION OF FITNESS DATA TO PREDICT THE SUCCESS OF NASCAR PIT CREWS.
D.P. Ferguson, R.S. Bowen, B.M. Klopp*, and J.T. Lightfoot Department of Kinesiology, University of North Carolina Charlotte, Charlotte, NC *Pit Instruction and Training, LLC, Mooresville, NC
- P57 DIFFERENCE IN WINGATE POWER OUTPUT IN RESPONSE TO MUSIC AS MOTIVATION.
K.S. Brooks¹, K.A. Brooks². Dept. of Physical Education and Recreation, University of West Georgia¹; Dept. of Kinesiology, Louisiana Tech University²
- P58 GENDER DIFFERENCES IN RUNNING ECONOMY OF DIVISION I COLLEGIATE DISTANCE RUNNERS.
B.E. Brawner, A.P. Jung, J.K. Petrella, Department of Exercise Science and Sports Medicine, Samford University, Birmingham, AL
- P59 THE ACCURACY OF A NON-EXERCISE MAXIMAL OXYGEN UPTAKE PREDICTION EQUATION FOR CROSS COUNTRY ATHLETES.
Babin, B. and Thomas, L. Department of Kinesiology, The University of Louisiana at Monroe, Monroe, LA
- 9:00-10:00 **HENRY J. MONTOYE SCHOLAR LECTURE (Wynfrey ABC)**
The Role of Muscle Activity in Health Maintenance after Spinal Cord Injury.
Kevin McCully, PhD
Department of Kinesiology, University of Georgia
Chair: Dr. Kirk Cureton
- 10:00-10:15 **BREAK**
- 10:15-11:45 **SYMPOSIUM (S-4) (Wynfrey E)**
STRENGTH CAPACITY AND FUNCTIONAL PERFORMANCE IN OLDER ADULTS.
M. Elaine Cress, PhD, Department of Kinesiology, University of Georgia, Athens, GA, S.Arnett Physical Education & Recreation, Western Kentucky University; J.P. McCarthy, Dept Physical Therapy, University of Alabama at Birmingham, Birmingham, AL; J.Kruger Division of Nutrition, Physical Activity & Obesity National Center for Chronic Disease Prevention & Health Promotion
Chair: Dr. Peter M. Magyari
- 10:15-11:15 **TUTORIALS (T12-T13)**
T-12 PREPARING EXERCISE PROGRAM PROFESSIONALS: CURRENT ISSUES FOR STUDENTS, PROFESSORS, INTERNSHIP COORDINATORS, AND PROGRAM DIRECTORS.
Bonnie K. Sanderson ¹, PhD, RN, FAACVPR, Christopher Schumann ², MS, RCEP, Peter W. Grandjean ³, PhD, FACSM ¹ Manager of Cardiopulmonary Rehabilitation, University of Alabama-Birmingham, ² Registered Clinical Exercise Physiologist, Cardiopulmonary Rehabilitation, University of Alabama-Birmingham, ³ Department of Kinesiology, Auburn University, AL
Chair: Dr. Judith Flohr **(Yorkshire)**
- T-13 EVALUATION AND TREATMENT OF EXERTIONAL LEG PAIN: EVIDENCE BASED PRACTICE.
Kevin R. Vincent, MD, PhD, Department of Orthopaedics and Rehabilitation, University of Florida, Gainesville, FL
Chair: Dr. Kimberly Reich **(Wyndson II)**

10:15-12:00 **POSTER PRESENTATION V (P60-P75) (Second Floor Foyer)**

Authors Present 10:15-11:15

Cardiovascular/Respiratory Physiology Epidemiology
Chronic Disease Endocrinology/Immunology

- P60 THE EFFECT OF A HIGH PROTEIN HIGH FAT OR HIGH PROTEIN LOW FAT DIET ON INFLAMMATORY MARKERS IN OVERWEIGHT/OBESE WOMEN.
S.J. Rossi, A.J. Riggs, J.L. McMillan, K. Thornton, L. Frost, & J.N. Metzler. Health and Human Performance Laboratory, Georgia Southern University, Statesboro, GA
- P61 EFFECTS OF EXERCISE INTENSITY ON POST-PRANDIAL GLUCOSE DISPOSAL IN ABDOMINALLY OBESE ADULTS
N.Y. Weltman C.A. Rynders, G.A. Gaesser (FACSM), E.J. Barrett, and A. Weltman (FACSM). Depts. of Human Services and Medicine, University of Virginia, Charlottesville, VA
- P62 AN EXAMINATION OF CATECHOLAMINE AND INTERLEUKIN-2 RESPONSES ON OXIDATIVE STRESS UTILIZING A DUAL STRESS MODEL.
C.J. Huang, H.E. Webb, R.K. Evans, G.H. Kamimori, and E.O. Acevedo, Virginia Commonwealth University, Richmond, VA
- P63 RELATIONSHIPS AMONG SERUM LEPTIN, BODY WEIGHT STATUS, AND CARDIORESPIRATORY FITNESS IN OBESE AFRICAN AMERICAN FEMALE ADOLESCENTS ENROLLED IN A WEIGHT MANAGEMENT PROGRAM.
W.M. Blackwell, J.E. Herrick, R.L. Franco, G.F. Lipford, E.P. Wickham, R.K. Evans. Depts. of Health & Human Performance, Internal Medicine, and Pediatrics, Virginia Commonwealth University, Richmond, VA
- P64 RESPONSE OF PERCEIVED AND PERFORMANCE BASED FUNCTION IN OLDER ADULTS WITH EXERCISE INTERVENTION.
AE O'Brien, ME Cress, TL Moore-Harrison. Dept. of Kinesiology, The University of Georgia, Athens, GA
- P65 THE EFFECT OF AN AUDITORY RHYTHM-BASED WALKING PROGRAM ON FITNESS IN PERSONS WITH PARKINSON'S DISEASE.
Ildiko Nyikos, Laurie A. Malone, Crystal M. Russell, C. Scott Bickel, & Matthew P. Ford, Dept. of Research & Education, Lakeshore Foundation, Birmingham, AL; Dept. of Physical Therapy, Univ. of Alabama at Birmingham, Birmingham, AL
- P66 CAROTID ARTERIAL STIFFNESS AND INFLAMMATION IN SPINAL CORD INJURED SUBJECTS.
J.D. La Favor, B.C. Hollis, S.L. Mokshagundam, and J.L. Olive. Dept. of Health and Sport Sciences, University of Louisville, Louisville, KY
- P67 THE ACUTE EFFECTS OF EXERCISE INTENSITY ON ENDOTHELIAL FUNCTION IN LEAN & OBESE YOUNG ADULTS.
R. Hallmark, Z. Liu, G. A. Gaesser (FACSM), E.J. Barrett, A. Weltman (FACSM) General Clinical Research Center, University of Virginia, Charlottesville, VA
- P68 GENDER DIFFERENCES IN PLASMA VOLUME SHIFT IN RESPONSE TO ERGOMETER EXERCISE
KB Sehgal, MR Francois, M Fleming, L Shehane, A Bhayana, A Prasad, E Sissodiya, and RR Kraemer. Dept. of Kinesiology and Health Studies, Southeastern Louisiana University, Hammond, LA
- P69 AVERAGE NIGHTTIME BLOOD PRESSURE WAS NOT LOWER AFTER ACUTE EXERCISE IN PREHYPERTENSIVE WOMEN, BUT FEWER WOMEN WERE NON-DIPPERS.
D.G. Wilson, E.M. Jackson, Dept. of Kinesiology, College of William & Mary, Williamsburg, VA

- P70 NO DIFFERENCE IN SLEEP APNEA INDEX BETWEEN COLLEGE FOOTBALL LINEMEN AND ADULTS.
B. Beedle and B. Vanzanten. Dept. of Exercise Science, Elon University, Elon University, NC
- P71 DEVELOPMENT OF A PHYSICAL ACTIVITY STATUS SCALE FOR WHEELCHAIR USERS AND ITS COMPARISON TO COMPONENTS OF THE METABOLIC SYNDROME: A PILOT STUDY.
E.K. O'Neal, J.M. Green*, and M.T. Richardson. Dept. Of Kinesiology, The University of Alabama, Tuscaloosa, AL, HPER Dept., The University of North Alabama, Florence, AL*
- P72 EFFECTS OF A MODERATE-VOLUME OF MODERATE-INTENSITY AEROBIC EXERCISE ON INSULIN SENSITIVITY IN SEDENTARY ADULTS WITH IMPAIRED FASTING GLUCOSE.
Robert Buresh, Ph.D., Kennesaw State University, Kennesaw, GA; Laura Bilek, Ph.D., P.T., University of Nebraska Medical Center, Omaha, NE; Kris Berg, Ed.D., University of Nebraska at Omaha,; Fred Hamel, Ph.D., University of Nebraska Medical Center, Omaha, NE
- P73 BREATHE RIGHT® EXTERNAL NASAL DILATOR STRIPS AS AN ERGOGENIC AID TO EXERCISE.
C. Allen¹, K.A. Brooks². Department of Kinesiology, University of Louisiana at Monroe; Louisiana Tech University²
- P74 INFLUENCE OF BODY POSITION ON FORCED VITAL CAPACITY MEASURES TAKEN IN AIR AND WATER IN COMPETITIVE SWIMMERS.
M.J. Sandage, M. Barbario, and D.D. Pascoe, Department of Kinesiology, Auburn University, Auburn, Alabama
- P75 EXERCISE CHANGES IN TNF-alpha AND CORTISOL, DOES A CHANGE IN CORE TEMPERATURE MATTER? AN EXPLORATORY INVESTIGATION.
P.A. Hosick, M.P. Berry, E.S. Cooper, and R.G. McMurray. Depart. of Exercise and Sport Science, University of North Carolina, Chapel Hill, NC
- 12:00-2:00 **SEACSM LUNCHEON AND LECTURE (Wynfrey ABC)**
Prevention of Obesity and Diabetes through Minerals, Interventions and the Environment?
Stella L. Volpe, PhD, RD, FACSM
University of Pennsylvania, School of Nursing
Chair: Dr. Mindy Millard-Stafford
- 2:00-4:00 **SEACSM EXECUTIVE BOARD MEETING (Dorset)**

ACSM CERIFICATION; LEADING THE WAY IN MAKING EXERCISE GOOD MEDICINE

Hope Wood, M.A., American College of Sports Medicine, Indianapolis, IN

T1

Learn how ACSM Certification is leading the way in making exercise good medicine. Initiatives for new specialty certifications, international outreach and enhancing our current certifications will be discussed. As well as key ongoing initiatives for the organization which include facility accreditation for health clubs, Exercise is Medicine, and the new American Fitness Index. Learn how you can join the movement by getting certified or joining the national ACSM membership. Those currently members and/or certified will also benefit by learning about the new and exciting initiatives happening with ACSM.

THE SAFETY AND EFFICACY OF RESISTANCE EXERCISE TRAINING IN HEART FAILURE PATIENTS.

Peter Magyari, PhD. University of North Florida, Jacksonville FL

T2

The purpose of this tutorial is to provide the audience with an understanding of how the application of resistance exercise training (RT) in the treatment heart failure (HF) patients is evolving. Issues of safety, efficacy, and guidelines for exercise prescription will be addressed. The session will begin with a literature review on how and why attitudes on RT in the treatment of HF have progressed from fear of further left ventricular impairment and adverse left ventricular remodeling to an appreciation of how RT may positively impact muscular strength, muscular endurance, VO₂, skeletal muscle morphology, left ventricular function, and quality of life in HF patients (15 minutes). The session will then shift to a discussion on current guidelines for RT exercise prescription in HF patients (based on the 2007 AHA Scientific Statement and recent published reviews) including frequency, intensity, duration, volume, and progression. Criteria for inclusion and exclusion as well as contraindications to implementing RT in this patient population will be addressed. It will be stressed that while attitudes on the application of RT in HF within the medical community are improving, this issue remains controversial and published guidelines have been extremely cautious (15 minutes). This tutorial will conclude with a question and answer session (5-10 minutes).

ADVANCES IN CARDIAC IMPEDANCE TECHNOLOGY FOR USE IN CLINICAL OR SPORT PERFORMANCE SETTINGS.

Craig Broeder, Ph.D. FACSM, Benedictine University, Lisle, IL

T3

Cardiac impedance technology (CIT) was first introduced in 1940 by Nyboer. Kubicek et al. were commissioned by the National Aeronautics and Space Administration to develop this technology as a non-invasive means of determining cardiac output. Sramek et al. and Berstein refined the technology in 1980 that is now the core basis of CIT today. Currently, advances in digital signal processing have lead to many validated studies in assessing both human performance and clinical cardiology uses. This tutorial's purpose will be to discuss new advances in cardiac impedance technology for the measurement of cardiac function as it applies to sport performance and various clinical conditions. This symposium will include four sections: how CIT works; key aspects of collecting high quality data, CIT interpretation examples; sample research in a variety of human performance and clinical settings; and several case-study examples. In addition, high definition video and actual data simulation data collection demonstrations will also be included to provide the attendees with real-time in lab learning experience. (Presentation time: 75-90 minutes)
Research Supported by A Grant from PhysioFlow Corporation.

CAFFEINE: ERGOGENIC POTENTIAL & MECHANISMS OF ACTION DURING ANAEROBIC EXERCISE

JM Green¹, Davis JK², Laurent CM²; ¹The University of North Alabama, Florence, AL, ²The University of Alabama, Tuscaloosa, AL

T4

Caffeine has consistently shown to enhance performance during aerobic/endurance-based activity. However, the potential ergogenic value during high intensity sprint-type performance is not well-understood. Caffeine-induced magnification of free fatty acid (FFA) mobilization has been challenged as the primary mechanism to improved endurance capacity and would seem unlikely to impact anaerobic performance because alternate ATP substrates (PCr, Glycogen) are dominant. However, caffeine also increases mental alertness and concentration, decreases reaction time, and magnifies catecholamine responses. Caffeine is also proposed to act antagonistically on adenosine receptors, thereby inhibiting the negative effects adenosine induces on neurotransmission, arousal, and pain perception (leading to decreased pain perception). These mechanisms provide a theoretical basis for enhanced anaerobic performance although little research exists. Preliminary studies have provided support for the ergogenic properties of caffeine during exercise dominated by oxygen-independent metabolic pathways, including enhanced repeated sprint performance and improved resistance training capacity. Further, attenuated Ratings of Perceived Exertion (RPE) support the notion that altered pain response may play a role. This tutorial will review the potential ergogenic action of caffeine with a focus on its efficacy during short duration, high intensity anaerobically-based exercise. Current research including multiple studies from our lab will be reviewed. The tutorial will close with recommendations for future research.

MAKING THE MOST OF YOUR GRADUATE EXERCISE SCIENCE EXPERIENCE

PA Bishop¹, JM Green²; ¹Kinesiology Dept. The University of Alabama, Tuscaloosa, AL.,
²HPER Dept. The University of North Alabama, Florence, AL.

T5

Selecting a graduate program suiting a student's needs is a key step in a positive graduate school experience. Current and prospective graduate students often make a crucial and often uninformed decision when selecting a graduate program. This tutorial is intended for undergraduates aspiring to attend graduate school and current Masters/Doctoral Students, and is aimed at providing balanced information on key factors in selecting a graduate program and tactics helping the student optimize their educational experience. This tutorial will not be biased towards a particular type of graduate program, but will be based on career objectives. Three primary, yet general career paths will be targeted: Fitness/wellness, rehabilitation/clinical and academics. Topics covered will be the pragmatic issues of: admissions, financial support, costs, curriculum, opportunities for practical/applied experiences, laboratory skills/research interests and opportunities for involvement in teaching and research. Also covered will be general information on what to expect, how to approach the graduate degree, optimizing opportunity and potential outcomes. A primary objective will be disseminating information to: a) help the students, decision-making regarding graduate school selection and b) allow the student to have a positive and productive graduate school experience. The great temptation is to promote one's own program and approach; instead we will endeavor to give a general, broadly applicable perspective which will be useful to students interested in different disciplines with varying professional career goals.

CARDIAC REHABILITATION: EMERGENCE, NEGLECT, AND RESURGENCE

M.A. Welsch. Dept. of Kinesiology, Louisiana State University, Baton Rouge, LA

T6

The untiring efforts of the cardiac rehabilitation pioneers, Drs. Herman Hellerstein and Michael Pollock contributed significantly to the development of the core components of cardiac rehabilitation, recognition for the need for a multidisciplinary team approach, and the establishment of safe and effective treatment strategies. Based on early outcomes indicating clinical, economical, and survival benefits, the stage seemed set for firm inclusion of cardiac rehabilitation, as part of the overall cardiology product line. Unfortunately, cardiac rehabilitation services remained vastly underutilized, for years, in part, because of external (i.e. Rates of referral, Lack of clinical recognition, Reimbursement issues) and internal (i.e. Ineffective preparation and product delivery) barriers. As a result of this neglect only 10 to 20% of eligible patients participate in cardiac rehabilitation programs. However, the unwavering burden of cardiovascular disease and exciting work by prominent researchers such as Rainer Hambrecht are reinvigorating research efforts and clinical focus in cardiac rehabilitation. The objectives of this tutorial are to provide the audience with an historical perspective; emerging challenges; and exciting new research findings, relating to cardiac rehabilitation. The information presented aims to provide the clinicians with a brief overview of; emerging challenges in; and novel practical information about, cardiac rehabilitation services. Basic scientists will gain further insight into the postulated mechanisms for improvements in patients participating in cardiac rehabilitation programs.

INFLUENCE OF QUERCETIN AS A MITOCHONDRIAL BIOGENESIS ENERGY RESTRICTION MIMETIC

D.C. Nieman. Dept HLES, Appalachian State University, Boone, NC

T7

Flavonoids are a large family of secondary plant phenolics of low molecular weight that are present in most edible fruits and vegetables. Recent evidence indicates that soy isoflavone derivatives, resveratrol, and tea catechins are associated with induction of genes for mitochondrial biogenesis and oxidative phosphorylation in animal models, and function as energy restriction (ER) mimetics. Quercetin is a flavonol that constitutes the aglycone of the plant glycosides rutin and quercitrin. Of all flavonoids, quercetin is among the most widespread, with broad spectrum bioactive effects. A study using sedentary mice showed that 7-d quercetin feeding increased cytochrome C concentration and citrate synthase activity in soleus muscle by 20-30%, with a 30% improvement in treadmill run time to fatigue. Studies with trained human cyclists, however, have failed to show any influence of quercetin supplementation at 1,000 mg/day on endurance performance or skeletal muscle mRNA expression for mitochondrial biogenesis. In contrast, a randomized, crossover study with 26 untrained males showed a small but significant performance effect with two weeks quercetin (2.9%) compared to placebo (-1.2%) supplementation, and strong trends for augmented mRNA expression of four genes related to skeletal muscle mitochondrial biogenesis. These data indicate that quercetin may operate as an ER mimetic for mitochondrial biogenesis in untrained but not trained subjects, perhaps due to differences in pre-supplementation muscle mitochondrial density

USING SPORT SCIENCE TO IMPROVE TEAM SPORT PERFORMANCE

A. Bosak¹ and P. Bishop²; ¹Brock University and ²The University of Alabama.

T8

It is often difficult to determine how scientific knowledge can be effectively applied in aiding coaches in developing athletes, training programs. Also, the understanding of sports science application to field performance, with direct focus on which athlete parameters need to be improved, is often „lost in translation“ between scientists and coaches. Yet, when coaches and sport scientists agree on which laboratory tests are most efficient in acquiring the most appropriate data, then data can be utilized to determine the most effective training techniques. This presentation will evaluate the variables that contribute to athletes' physiological changes during team sport seasons, examine specific team sport training concepts as well as overtraining and detraining aspects, review data collection barriers and how lab results relate to field application, analyze particular team sport seasons, and discuss more accurate training prescriptions. Unlike, individual sports, where data are often easy to collect from athletes with relative ease of interpretation, teams sports often provide more data collection barriers and difficulties in determining how best to use science to improve sport performance. Also, high variability exists among athletes on the same team, which often makes it difficult for athletes to train together when the physiological demands of their playing position may differ. Several studies exist which examine the physiological changes of athletes during team sport seasons as well as the individuality of positional play, but more research is needed with an emphasis on the importance of training individuals in a team context, but with differing position demands, so that overall team sport performance can improve.

METABOLIC SYNDROME: PREVALENCE, RISK, AND THE EFFECTS OF PHYSICAL ACTIVITY IN ADULTS

James R. Churilla, Ph.D., MPH, University of North Florida, Jacksonville, FL

The purpose of this tutorial is to provide the audience with a global understanding of the metabolic syndrome and how physical activity may impact this clustering of diabetes and cardiovascular disease risk factors in adults. The session will begin by reviewing the five medical society definitions of the metabolic syndrome, and then examine the association these various definitions have on prevalence and risk estimates in a representative sample of the U.S. adult population utilizing 1999-2004 National Health and Nutrition Examination Survey (NHANES) data. Understanding that more than one definition exists, and knowing which one to use in your research is an important area for discussion (15 minutes). The session will then shift to discussing the relationship regular exercise and physical activity, or physical inactivity (sedentary time) has been shown to have on metabolic syndrome prevalence and risk. Results will be presented from varying studies that will include Diabetes Prevention Program (DPP), Aerobic Center Longitudinal Study (ACLS), and the Framingham Heart Study (15 minutes). In addition, results from several cross-sectional studies utilizing previous and the most recent NHANES data and emphasizing the current American College of Sport Medicine and American Heart Association public health physical activity recommendation will be presented to examine prevalence and risk estimates. These studies have examined the relationship between sedentary time, isolated leisure-time physical activity, and physical activity reported from multiple domains and the metabolic syndrome (15-20 minutes). This tutorial will conclude with a question and answer session (5-10 minutes).

T9

SWEAT GLAND PHYSIOLOGY AND THE PUZZLING 'SALTY SWEATER'

MB Brown, School of Applied Physiology, Georgia Institute of Technology, Atlanta, GA

Humans are known to exhibit large variability in sweat electrolyte composition. Sweat sodium concentration typically ranges from ~ 10 to 70 mmol/L. Individuals with sweat sodium concentration in the upper normal range and beyond may be more prone to exercise-associated hyponatremia during prolonged physical activity in the heat. A genetic predisposition related to the disease cystic fibrosis (CF) has been suggested as one possible cause of high sweat sodium. Patients with CF excrete sweat with three to five fold greater NaCl concentrations as a result of well-studied chloride channel dysfunction in the CF sweat gland. However, there are some individuals without disease that excrete sweat with sodium levels approaching that of CF, regardless of heat acclimation status. Glandular mechanisms underlying the excretion of excessively salty sweat in these apparently healthy individuals have not been identified. Eccrine sweat gland physiology will be the focus of this tutorial, particularly as it relates to sweat electrolyte composition. We will discuss the gland in its two functional compartments: the secretory coil, responsible for producing an isotonic primary sweat, and the reabsorptive duct, responsible for partially reabsorbing NaCl so that the final sweat excretion is hypotonic. Since primary sweat is always isotonic, final sweat electrolyte composition is chiefly dictated by the Na⁺ and Cl⁻ conductance of the reabsorptive duct. This tutorial will explore some of the specific ion channels lining the lumen of the duct that underlie Na⁺ and Cl⁻ conductance for reabsorption. Recent work in our lab with human skin biopsies and microdissected sweat glands will be presented.

T10

EFFECT OF EXTREME ENDURANCE® SUPPLEMENTATION ON MAXIMAL AEROBIC PERFORMANCE IN ENDURANCE ATHLETES.

Jürgen SeBner, Volker Tzscheetzsch and Mike Iosia. Corpus Diagnostik, Hilpoltstein, GER and Lee University, Cleveland, TN, USA

This study examined the ability of Extreme Endurance® to improve maximal exercise performance and influence on lactate concentration. In a double-blind randomized and crossover design, 22 aerobic athletes (19 M, 3 F) were assigned to ingest either a supplement (S) or placebo (P) for ten days. Three identical testing sessions consisting of an incremental maximal exercise tests on a cycle ergometer were completed before and after supplementation. A 10 day wash-out period was observed. Repeated measures ANOVA was used to identify significant differences between testing sessions and pairwise t-tests were utilized post hoc for the following variables: VO₂peak, power at aerobic threshold (PAT), power at anaerobic threshold (PANT), power at RQ of 1.00 (RQ1), peak power (PP), HR at aerobic threshold (HRAT), HR at anaerobic threshold (HRANT), HR at RQ of 1.00 (HRRQ1), HR at peak power (HRPP), peak lactate achieved (PLT) and a 5 min recovery lactate (5RL). Significant differences for PLT S (8.70 ± 2.4) vs. pre-test (9.9 ± 2.7, p < .05) and P (9.7 ± 2.7, p < .05), HRPP pre-test (185 ± 12) vs. S (179.9 ± 12, p < .05) and P (181 ± 12, p < .05) and HRANT pre-test (169 ± 12) vs. S (164 ± 11, p < .05) and P (166 ± 12, p < .05). Although the supplement decreased PLT, no maximal performance changes were noted. Further study is warranted, possibly in a field test such as 40 km time trial to investigate if supplementation would translate into improved performance in an alternate paradigm.

T11

This study was funded by a grant from Euronutrition BV.

PREPARING EXERCISE PROGRAM PROFESSIONALS: CURRENT ISSUES FOR STUDENTS, PROFESSORS, INTERNSHIP COORDINATORS, AND PROGRAM DIRECTORS

Bonnie K. Sanderson¹, Ph.D., RN, FAACVPR, Christopher Schumann², M.S., RCEP, Peter W. Grandjean³, Ph.D., FACSM, ¹ Manager of CardioPulmonary Rehabilitation, University of Alabama-Birmingham, ² Registered Clinical Exercise Physiologist, CardioPulmonary Rehabilitation, University of Alabama-Birmingham, ³ Department of Kinesiology, Auburn University, AL

The competencies required of health care professionals are constantly being updated and revised. The objectives of the tutorial will be to: 1) provide an overview of the opportunities for exercise professionals in the current and future environment; 2) describe the classifications, roles, and scope of practice of health and exercise program professionals relative to ACSM certification categories; 3) discuss the types of learning strategies for knowledge, skills, and abilities (KSAs) used to prepare competent exercise professionals; 4) describe academic preparation, learning activities, and desired attributes recommended for exercise professionals, and 5) discuss potential career paths for ACSM Certified Health Fitness Specialist ® and ACSM Certified Clinical Exercise Specialists ®. The information covered in this tutorial should be of interest to students, educators, exercise specialists, clinicians, and other health care professionals.

T12

EVALUATION AND TREATMENT OF EXERTIONAL LEG PAIN: EVIDENCE BASED PRACTICE

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T13

Exertional leg pain is a common complaint for sports medicine and musculoskeletal clinicians. Approximately 18% of overuse injuries that present to a clinician are in the area of the shin. Common etiologies for exertional leg pain are stress fractures, chronic exertional compartment syndrome and medial tibial stress syndrome with other possible causes being tendonopathy, radiculopathy and arterial entrapment/fibrosis. Given the prevalence of overuse injuries in the leg, it is important for clinicians to recognize the clinical characteristics that delineate each of the etiologies for exertional leg pain. The proposed lecture will describe the characteristics that define and contrast each of the etiologies for exertional leg pain. Appropriate history, physical examination, and ancillary testing will be discussed. Finally, treatment guidelines and relative activity modification recommendations will be presented. Through participation in this lecture, participants should be able to appropriately identify the clinical characteristics for each etiology of exertional leg pain. Participants will also learn the appropriate ancillary tests to order to properly evaluate and discern between the various etiologies. Three months after the session, participants should be able to describe the onset of pain characteristics that define the three main causes of exertional leg pain.



IF EXERCISE IS MEDICINE, HOW DO WE GET PEOPLE TO DO IT? A LOOK AT COMMUNITY-BASED PROGRAMS

EK Bailey, Dept. of Health and Human Performance, Elon University, Elon, NC; SP Bailey Dept. of Physical Therapy Education, Elon University, Elon, NC; RG McMurray, Dept. of Exercise and Sports Science, University of North Carolina, Chapel Hill, NC; ER Banks, Psychology of the Public Interest, North Carolina State University, Raleigh, NC

S1

Strong evidence supports the health benefits of regular exercise, yet almost 60% of adults get less than what is recommended and 25% get none at all. In addition, evidence suggests that as children age, they participate in less and less physical activity. Furthermore, rates of obesity continue to rise in pediatric and adult populations. To be effective in promoting the message (Exercise is Medicine, we must be able to engage a variety of demographic groups in effective exercise programs. The purpose of this symposium is to examine the successes, failures and limitations of several exercise programs found within communities. The specific interventions to be presented include: Alamance-Girls in Motion, Salud Latina Salud de Alamance (SALSA), Being Healthy Counts to H.I.M., and three school-based programs (CHIC, TAAG, and STOPP-T2D). Objective and subjective outcomes of these programs will be presented and discussed. The generic attributes of a successful community-based physical activity program will be examined.

ADVANCING THE CLINICAL EXERCISE PHYSIOLOGIST PROFESSION

B.J. Coyne. University of Louisiana Monroe, Monroe, LA

S2

The Clinical Exercise Physiologist (CEP) profession is a rather young one compared to many other professions and one that is advancing rapidly in the recent years. CEPs are tasked with advancing the scientific and practical application of clinical exercise physiology for the betterment of their clients who are usually at high risk for or are living with a chronic disease. CEPs are also tasked with advancing their profession. Two states in the Southeast are currently active in advocating for clinical exercise physiologists and either have CEP licensure or are pursuing CEP licensure at the state level. To update attendees, the essential components of a profession will be identified, the recent history and evolving trends of the clinical exercise physiology profession will be discussed, and opportunities to advance the profession of the clinical exercise physiologist will be discussed. The state, regional, and national advocacy efforts and opportunities available to all attendees will be described. Discussion will also include scope of practice, advocacy, and continuing education of CEPs.

AN OVERVIEW OF THE NUTRITIONAL CHALLENGES OF MAINTAINING MUSCLE MASS IN OLDER ADULTS

Jacob M. Wilson, Florida State University, Tallahassee, FL and Craig, Broeder, Benedictine University, Lisle, IL

S3

Sarcopenia is defined as the progressive loss of muscle tissue that occurs after the age of 50. There are a conglomeration of attributable causes including a loss of muscle fibers, inactivity, a decline in endocrine function, nutritional deficiencies, pharmaceutical interactions impairing proper physiological function, and a general insensitivity to anabolic stimuli. Research indicates resistance training increases muscle mass in the elderly with a range of 2-20 %, 6-46 %, and 13-58 % in CSA of whole muscle, type I and type II fibers, respectively. However, these responses are generally blunted in the elderly relative to young individuals. It is thought that with aging, impaired muscle adaptation responses may be related to the fact that aged skeletal muscle tissue may have a delayed or blunted signaling response to anabolic stimuli (i.e., nutritional or hormonal influences). Consequently, attenuating the anabolic repair processes and limiting aged muscle's ability to fully recover after brief or extended periods of negative energy balance or muscle injury (i.e., eccentric muscle tears) following physical activity. Interestingly, elderly appear to require higher nitrogen intake per day, and per meal relative to young individuals. Other studies have shown that creatine supplementation may enhance protein synthesis in aging adults beyond normal training adaptations. Therefore the purpose of this presentation will be to analyze the effectiveness of nutritional interventions, in combination with or without exercise to prevent or treat premature skeletal muscle losses in elderly individuals. Nutritional interventions include optimizing whole protein and amino acid feedings, as well as, the supplementation of the amino acid metabolites HMB, and creatine.

STRENGTH CAPACITY AND FUNCTIONAL PERFORMANCE IN OLDER ADULTS

M. E. Cress University of Georgia, Dept. Kinesiology, Institute of Gerontology; S.Arnett Physical Education & Recreation, Western Kentucky University; J.P. McCarthy, Dept Physical Therapy, University of Alabama at Birmingham, Birmingham, AL; J.Kruger Division of Nutrition, Physical Activity & Obesity National Center for Chronic Disease Prevention & Health Promotion

S4

The ACSM/AHA recommends (Nelson et al., 2007) muscle-strengthening activities are needed to promote and maintain health, to reduce risk of falling among the elderly, to increase muscle strength, and to improve functional capacity. A healthy musculoskeletal system is essential to overall health and quality of life and can prevent sarcopenia (i.e., age-related reduction of muscle mass and strength). Sarcopenia threatens independence and has been prevalent in roughly 30% of adults >60 years of age. Because inactivity and aging cause muscles to atrophy, encouraging adults to engage in regular activity to maintain muscle strength becomes essential. Functional tasks such as carrying groceries or climbing stairs require strength to perform, however, little is known about how much strength can be gained from functional activities. Resistance training and functional training are also commonly integrated in clinical interventions, yet little evidence is available on how to optimally integrate these two types of training. This symposium examines the elements of functional tasks in terms of load on the muscle and peak torque and summarizes the literature on interventions using functional tasks to improve strength.

VALIDITY AND RELIABILITY EVIDENCE OF OMRON PEDOMETERS

T.V. Barreira, E.A. Holbrook, and M. Kang. Dept. of Health and Human Performance, Middle Tennessee State University, Murfreesboro, TN

P1

The purpose of this study was to establish validity and reliability evidence for the Omron HJ-151 and HJ-720ITC pedometers under controlled and free-living conditions. A total of 47 adults (23 females; age = 24 ± 4.4 yrs; BMI = 25.7 ± 4.2 kg/m²) participated in this study. In the controlled setting, 34 participants completed three randomized 100-m walking trials through a range of scripted walking speeds (slow, moderate, very brisk) for each pedometer model. In the free-living setting, 31 participants completed one 1-mile walk on a standardized course for each model. HJ-151 pedometers were worn around the waist at the right hip, left hip and mid-back; whereas HJ-720ITC pedometers incorporated right pocket, left pocket, and backpack positions in addition to the three waist-mounted sites. Absolute percent error (APE) scores were calculated to examine pedometer accuracy between actual steps (a criterion measure) and pedometer determined steps for each mounting position during the different settings. Coefficient of variation (CoV) was computed to describe inter-device reliability during the different settings. With the exception of the HJ-720ITC at the backpack position in the control setting (mean APE = 3.4%), the HJ-151 and HJ-720ITC accurately reported step counts under controlled and free-living conditions (all APE values < 3.0%). Moreover, inter-device reliability evidence was established for the HJ-151 and HJ-720ITC under controlled and free-living conditions (all CoV values < 2.1%). The Omron HJ-151 and HJ-720ITC pedometers demonstrated validity and reliability at various mounting positions under controlled and free-living conditions with both healthy and overweight adults.

COMPARING PHYSICAL ACTIVITY LEVELS TO CARDIORESPIRATORY FITNESS AND BODY COMPOSITION IN FIREFIGHTERS OF WEST MONROE DURING THE 2007 AND 2008 YEARS.

C. Beraud, L. Thomas, L. Colvin, and B. Coyne Department of Kinesiology, University of Louisiana Monroe. Monroe, LA

P2

One specific occupation of people who are susceptible to obesity due to lots of idle time in their profession, but interspersed with various intensity activities when on duty is firefighters. Firefighters estimated VO₂max level for suppression duties is between 40 to 43 ml.kg⁻¹.min⁻¹. The heavy demands of fire suppression duty, 24 hour shifts, an increased in ghrelin and reduced leptin, help to explain the increase of body mass index. Training studies have shown an increase of VO₂max, flexibility, muscular strength and endurance, and a decrease in body fat. Previous research indicates fire fighter,s self perception of physical activity isn,t correlated to their VO₂max. 29 West Monroe Firefighters were tested for their body fat percentage and estimated VO₂max for the 2007 and 2008 years. Nonparametric correlations were used to examine the relationships. Results indicate a positive correlation between self report physical activity level and estimated VO₂max for both years, and a negative correlation for body fat percentage and self report physical activity levels. More research is needed in order to identify a clear link between physical activity levels, body fat percentage, and VO₂max.

VALIDATION OF A NEW UPPER BODY MUSCULAR POWER TEST

Kristi Brinkley, Sarah Gossett, Kelley Ingram, Griffen B. Greene, Dena Garner and Timothy P. Scheett. Human Performance Laboratory, College of Charleston, Charleston, SC and Human Performance Laboratory, The Citadel, Charleston, SC.

P3

Currently, tests for upper body power require expensive equipment and special training. The development of an appropriate field test requiring minimal equipment and experience would allow coaches/trainers at all levels the ability to easily assess upper body muscular power. The purpose of this study was to validate the clapping push-up power (CPUP) test. Sixty-six males volunteered to perform a 15 second upper body Wingate test and as many clapping push-ups as possible in 15 seconds, in random order. The Wingate test was performed using 5% of each subject,s mass. Peak and mean power were measured using an Opto Sensor and SMI Power Pack from Linear System Design. Vertical displacement during the clapping push-ups was measured by a Just Jump System. Pearson correlations and dependent t-tests were performed using STATISTICA with an alpha level of 0.05. Calculated ($r=0.499$, $p<0.05$) and measured ($r=0.282$, $p<0.05$) power from the upper body power test were significantly correlated to absolute mean power from the Wingate test. The calculated and measured power outputs from the CPUP test were significantly correlated ($r=0.774$, $p<0.05$) but were not significantly different ($p>0.05$). Therefore, the data suggest that the CPUP test represents a practical, easy to perform field test to measure upper body muscular power. However, further validation using a force plate is necessary to confirm these results.

Support provided by the College of Charleston's School of Education, Health, and Human Performance's Teacher-Scholar Committee.

CORRELATIONS BETWEEN VARIABLES THAT AFFECT RIGHT & LEFT BALL VELOCITY AMONG UNDER-12 FEMALE SOCCER PLAYERS

Melissa R. Bunke, Piper J. McCord, Anna E. Gray, Tom Carroll, and William R. Barfield, FACSM. Human Performance Laboratory, College of Charleston, Charleston, SC.

P4

Instep kicking (IK) is a fundamental skill in soccer, however, little research has been conducted on IK in preadolescent children. The purpose of the present study was to determine if segmental leg lengths, isokinetic torque and height correlated with dominant (D) and nondominant (ND) instep ball velocity (BV) among preadolescent soccer players. Fifteen preadolescent (9-11 yrs) female soccer players were recruited from the Charleston United Soccer Club. The best BV among five trials on D and ND sides was selected for each player using KickSpeed radar target. Peak extensor torque of both knees were measured at 60 and 180 deg/s with a Biodex System 3 Isokinetic Dynamometer. Anthropometric measurements included height, body mass, and segmental leg lengths (thigh (TL): anterior superior iliac spine to the lateral epicondyle; leg (LL): lateral femoral epicondyle to the lateral malleolus). Following determination of data normality with Shapiro-Wilk, bivariate Pearson correlation was used to assess the relationship between variables using SSPS v14. Variables that correlated significantly with D BV included height ($r=0.66$; $p<0.01$), TL ($r=0.69$; $p<0.01$), knee torque at 60 deg/s ($r=0.67$; $p<0.01$) and knee torque at 180 deg/s ($r=0.63$; $p<0.01$). ND BV correlated significantly with height ($r=0.60$; $p<0.01$), right LL ($r=0.74$; $p<0.01$), knee torque at 60 deg/s ($r=0.52$; $p<0.05$) and knee torque at 180 deg/s ($r=0.61$; $p<0.02$). These findings suggest that coaches of preadolescent soccer players should include exercises during training sessions that increase muscular torque in right and left kicking limbs.

MUSCULAR STRENGTH, MUSCULAR ENDURANCE, AND FLEXIBILITY RESPONSES TO THE POLICE CORPS LAW ENFORCEMENT TRAINING PROGRAM

Heather Driggers, R. Lee Franco, Malcolm T. Whitehead, Ronald E. Evans, Jeffrey Soukup, Michael J. Webster and Timothy P. Scheett. Human Performance Laboratory, College of Charleston, Charleston, SC and Laboratory for Applied Physiology, University of Southern Mississippi, Hattiesburg, MS.

P5

Police Corps (PC) was a Department of Justice funded program designed to revolutionize the training of law enforcement cadets. Implementing regular physical fitness practices provide the foundation for optimal job performance. The purpose of the study was to assess the effectiveness of a six month training program on muscular strength (MS), muscular endurance (ME) and flexibility. Fourteen male cadets aged 23.8 ± 0.6 yrs, height 180.4 ± 1.6 cm, mass 86.9 ± 3.5 kg and 14.9 ± 1.8 % body fat participated in the program. The training program was designed and led by PC instructors to maximize cardiorespiratory fitness which consisted of militaristic-style calisthenics, stretching, 2-3 mile run (8-9 min mile pace), and cool down. Resistance training was left to the individual cadets to perform on their own. MS and ME were assessed by a 1RM and max reps at 70% of the 1RM in the squat and bench press, respectively. Flexibility was assessed using the Sit and Reach Test (SRT) and a Trunk Specific Test (TST). The data illustrated significant ($P < 0.05$) increases in squat MS (8.9%), bench MS (10.6%), squat ME (31.7%), and bench ME (37.3%). Flexibility significantly increased in SRT (18.8%) and TST (4.9%). The results demonstrate the training program produced impressive improvements in upper and lower body ME and SRT. Although significant improvements were measured in MS and TST more emphasis should be placed given the job specific requirements of law enforcement officers.

NATURAL HISTORY OF MUSCULAR STRENGTH FOLLOWING SHORT-DURATION MUSCLE STRETCHING

Whitney M. Frail and Noah Wasielewski Human Performance Laboratory, College of Charleston, Charleston, SC.

P6

Muscle stretching is frequently recommended for the purposes of preventing injury, reducing muscle soreness, and enhancing performance in physically active people. Recently, research has questioned the beneficial effects of muscle stretching. The purposes of our research were: 1) To observe the effect of a standard quadriceps and hamstring muscle stretching protocol on the magnitude of subsequent peak knee joint torque and 2) to observe the effect of the same muscle stretching protocol on the duration of a possible muscle force deficit, up to three hours in length. Fifteen healthy, physically active male participants between the ages of 18 and 44 volunteered for participation. A single group, repeated measures design was used with two conditions (stretch or no stretch). The stretching procedure alternated standardized hamstrings and quadriceps stretches for 30 seconds over the course of four stretches. The stretch intensity was held at the point of discomfort, but short of pain. Flexor and extensor peak torques of both knees were measured at 60 and 180 deg/sec at baseline, 30, 60, 90, 120, 150, and 180 minutes with a Biodex System 3 isokinetic dynamometer. Testing occurred on three separate occasions over the course of 10 days. Four three-way repeated measure ANOVAs (side x stretch condition x time) yielded no significant main effects nor stretch condition x trial interaction effects ($p > 0.05$). Data from this study indicates that short duration muscle stretching does not appear to influence subsequent low or moderate velocity muscle force production.

THE EFFECT OF MOUTHPIECE USE ON MUSCULAR ENDURANCE

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P7

Several studies have cited the importance of mouthpiece use as a protective device during sports. However, the use of a mouthpiece as an ergogenic device has been rarely substantiated in research articles. Thus the purpose of this study was to analyze the effects of wearing and not wearing a mouthpiece while subjects performed 2 resistance training exercises, specifically to determine if wearing a mouthpiece can improve muscular endurance as indicated by the number of repetitions. Participants took part in a 2-day experiment. Subjects were randomly assigned the use of a bite and boil mouthpiece (The Edge, Bite Tech Corp.) either on day 1 or day 2 of the experiment. On the first day, participants performed their maximum number of repetitions at 75% of their 1 repetition maximum on the bench press and on the preacher curl exercises, either with or without the mouthpiece. On day 2, participants performed the same exercises, either with or without the mouthpiece. SPSS was used to run a dependent t-test. Results indicated that use of a mouthpiece significantly increased the number of repetitions for both the bench press and the preacher curl ($p = 0.03$ and 0.004 , respectively). The mean number of repetitions for the bench press was 15.8 with mouthpiece versus 14.3 without mouthpiece, while the mean number of repetitions for the preacher curl was 13.7 with mouthpiece versus 11.7 without the mouthpiece. This study suggests that the use of a mouthpiece can improve muscular endurance during the bench press and preacher curl exercises.

EFFECT OF THE POLICE CORPS LAW ENFORCEMENT TRAINING PROGRAM ON BLOOD LIPIDS AND BODY COMPOSITION

Kali Oberholtzer, R. Lee Franco, Malcomb T. Whitehead, Ronald E. Evans, Jeffrey Soukup, Michael J. Webster and Timothy P. Scheett. Human Performance Laboratory, College of Charleston, Charleston, SC and Laboratory for Applied Physiology, University of Southern Mississippi, Hattiesburg, MS.

P8

Police Corps was a Department of Justice funded program to transform the training and education of officers about the importance of health and physical activity. Establishing healthy fitness and dietary practices are important for maintaining optimal job performance while enhancing career longevity. The purpose of this study was to assess the effects of a six month training program on fasting blood lipids and body composition. Fourteen male cadets aged 23.8 ± 0.6 yrs, height 180.4 ± 1.6 cm, mass 86.9 ± 3.5 kg and 14.9 ± 1.8 % body fat participated in the program. The training program was primarily focused to increase cardiorespiratory fitness and consisted of traditional militaristic-style calisthenics, stretching, 2-3 mile run (8-9 min mile pace), cool down and stretching. The cadets were provided time to engage in resistance training on their own. The cadets were provided mountain bikes and were required to ride to and from their barracks, classroom, mess hall, and all areas on the training base which provided 3-4 miles of cycling per day with sporadic additional rides ranging from 15-50 miles. Meals were consumed at the base mess hall. Post testing revealed significant ($P < 0.05$) changes in fasted total cholesterol (+15.4%), HDL cholesterol (+10.9%), LDL cholesterol (+60.7%), body fat (-10.3%), lean body mass (+2.3%), and fat mass (-9.9%). The results indicated the training program produced positive body composition changes despite the unhealthy dietary choices provided on base.

ASSESSING MARKERS OF OVERTRAINING THROUGHOUT THE COMPETITIVE VOLLEYBALL SEASON

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P9

Overtraining has shown to negatively affect sleep, mood, physiological function, stress response and immune status in athletes. Decreased performance, however, is most commonly associated with overtraining. The purpose of this study was to assess markers of overtraining in female college athletes throughout the competitive volleyball season. Volleyball athletes (n=15) were tested on five occasions (Baseline, August, September, October, November). Markers to measure behavioral, psychological, physiological, and biochemical changes included: Sleep quality and pattern, mood, heart rate, percent body fat, body weight, salivary cortisol and immunoglobulin A. Vertical jump height and Margaria power test were used to measure anaerobic power. Volleyball skills of passing and hitting were recorded to evaluate game performance. Sleep quality and pattern worsened and mood deteriorated throughout the season ($p < 0.05$). No differences were found in percent body fat and body weight and heart rate was higher in August compared to baseline and November. Cortisol levels were elevated at all time points compared to baseline and IgA values did not significantly change. Measures of anaerobic power improved in the middle of the season. Passing performance was greater in November compared to baseline and no significant changes were observed in hitting performance. Decrease in performance variables was not associated with behavioral, psychological, physiological, or biochemical measures; therefore, no clear depiction of overtraining was shown in this study. Performance variables may have been greater; however, if there were no problems with sleep, mood, and stress.

PRESCHOOL-AGE CHILDREN,S Pedometer STEP COUNT ACROSS THE SCHOOL DAY

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P10

Understanding physical activity participation in preschoolers is essential to provide a basis for examining health benefits of physical activity and setting physical activity recommendations. Therefore, the purpose of this study was to determine daily step counts of preschoolers who attended a child-care center. Preschoolers were recruited from a rural, subsidized child care facility in the southeastern United States (N=27). Preschoolers (58.08 mo + 7.01) participated in a typical early learning curriculum that consisted of indoor learning centers and two outdoor free-play sessions. New Lifestyles SW-200 Digi-Walker pedometers were attached to the waist of each child by a secured strap upon arrival to the child-care facility (8:00 AM) and removed prior to departure (5:00 PM) by a trained research technician for three consecutive days. The preschoolers averaged a total of 2526.55 steps, 2949.25 steps, and 3242.29 steps, respectfully on Day 1, 2, and 3. During the first outdoor free-play session children accumulated 769.6 steps, 871.3 steps and 631.85 steps; and 658.3 steps, 981 steps and 975.6 steps during the second outdoor free-play session on Days 1, 2, and 3. The outdoor play sessions accounted for 50%-63% of accumulated daily step count. Although there are no specific guidelines for step counts for preschoolers, a step count of greater than 13,000 has been associated with 60 minutes of moderate-to-vigorous physical activity accumulated throughout the day for this age group. The results for this study are clearly below this criterion and support the need for programs that promote physical activity for preschool-age children. Supported by Auburn University Undergraduate Research Fellowship

EFFECT OF THE POLICE CORPS LAW ENFORCEMENT TRAINING PROGRAM ON AEROBIC AND ANAEROBIC POWER

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P11

Research has shown that law enforcement officers who maintain physical fitness are better prepared to handle critical incidents and prove more readily able to cope with the day to day stressors of the job. Police Corps, a Department of Justice funded program, redesigned law enforcement training to enable the officers to better endure stressful, dangerous and often high intensity conditions. The purpose of this study was to measure the effectiveness of a six month training program on anaerobic (AnP) and aerobic power (AP). Fourteen male cadets aged 23.8 ± 0.6 yrs, height 180.4 ± 1.6 cm, mass 86.9 ± 3.5 kg and 14.9 ± 1.8 % body fat participated in the program. Improvement in cardiorespiratory fitness was the primary goal of the PC instructor designed and led training program which included daily militaristic-style calisthenics, stretching, 2-3 mile run (8-9 min mile pace) and cool down. The cadets cycled 3-4 miles per day in-between training locations with sporadic additional rides ranging from 15-50 miles. Participation in resistance training was optional. AnP was assessed by a 30-s Wingate test and a vertical jump (VJ) test. AP was determined using an incremental treadmill test and indirect calorimetry (ParvoMedics MaxOne). The data indicated that training decreased ($P < 0.05$) Wingate Peak AnP (-5.6%) and VJ (-6.1%) and increased ($P > 0.05$) AP by 5.9%. The results of this study indicate that the training program was not of sufficient intensity to significantly increase AnP and AP.

STABILITY RELIABILITY OF CARDIOPULMONARY MEASURES ON THE DIGIJUMP

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P12

Weight-bearing exercise has been shown to increase bone mineral density. One exercise modality that may provide sufficient stimulus to improve bone health is repetitive jumping. The Digijump ergometer is a device that allows for repetitive jumping while monitoring work rate. It is necessary to establish whether the Digijump provides reliable, physiological results from test to test. We recently established that the Digijump is reliable for the commonly used laboratory measures of oxygen uptake, heart rate, and rate of perceived exertion. The purpose of this investigation was to determine the stability reliability of other cardiopulmonary measures: systolic and diastolic blood pressure (SBP, DBP), ventilation (VE), respiratory exchange ratio (RER), and respiratory rate (RR). College-aged individuals (N = 17) completed two 3-min repetitive jumping bouts on the Digijump ergometer (120 jumps per minute, jump height = 0.5 in) at least seven days apart. Stability reliability was calculated using the intraclass correlation coefficient derived from 1-way ANOVA. Test-retest reliability was considered acceptable for cardiovascular measures (SBP R = 0.757, DBP R = 0.740) and high for pulmonary measures (VE R = 0.899, RRR = 0.916, RER R = 0.914). This data extends our findings on the ability of the Digijump to produce consistent physiological data from one session to the next. Importantly, it establishes a framework for future investigation into the validity of the device compared to established ergometers.

PHYSIOLOGICAL PREDICTORS OF BAT SWING AND BATTED-BALL VELOCITIES OF NOVICE COLLEGE STUDENTS

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P13

The relationship of various physiological characteristics to bat swing (BV) and batted-ball velocities (BBV) of 60 novice college students was investigated. Tests included lean body mass (LBM), dominant and non-dominant grip strength, rotational power (0.9 kg medicine ball hitter,s throw and 2.7 kg medicine ball side toss), and leg power (vertical jump). Significantly high positive relationships ($p < 0.05$) existed between dominant grip strength and BBV ($r = 0.84$) and BV ($r = 0.80$); non-dominant grip strength and BBV ($r = 0.85$) and BV ($r = 0.82$); medicine ball side toss (MBST) and BBV ($r = 0.84$). Significant and moderately high positive relationships existed between MBST and BV ($r = 0.79$); medicine ball hitter,s throw (MBHT) and BBV ($r = 0.78$) and BV ($r = 0.72$); vertical jump and BBV ($r = 0.78$) and BV ($r = 0.73$); LBM and BBV ($r = 0.79$) and BV ($r = 0.73$). When data were separated by gender, there was a significantly moderate relationship between MBHT and BBV ($r = 0.46$) and BV ($r = 0.45$); non-dominant grip strength and BV ($r = 0.46$) and BBV ($r = 0.46$) for men. For women, there was a significantly moderate relationship between MBHT and BBV ($r = 0.49$); MBST and BV ($r = 0.46$). Results suggest that when attempting to increase BV and BBV for novice college students, resistance training should emphasize development of rotational power. Data from previous college baseball and softball research reveals significant relationships of rotational power to BV and BBV too. Future research should examine the effects of improving rotational power on BV and BBV. Supported by Power Systems, Knoxville, TN

PHYSIOLOGICAL PREDICTORS OF SPORT-SPECIFIC SKILLS OF BASEBALL PLAYERS

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P14

The relationship of various physiological characteristics to sports-specific variables in 38 college baseball players was investigated. Tests included lean body mass, dominant (D) and non-dominant (ND) grip strength, 1 repetition maximum upper (bench press and dumbbell row) and lower body (squat) strength, leg power (standing long jump and vertical jump), running speed (10, 30, 60 yd sprint), throwing velocity (TV), bat velocity (BV), and batted-ball velocity (BBV). A significantly high positive relationship ($p < 0.05$) existed between 30 yd and 60 yd sprint ($r = 0.92$); vertical jump (VJ) and standing long jump (SLJ) ($r = 0.81$). A significant and moderately high positive relationship was indicated between BV and BBV ($r = 0.74$). Significant and moderately high negative relationships were indicated between 30 yd sprint and SLJ ($r = -0.79$) and VJ ($r = -0.69$); 60 yd sprint and SLJ ($r = -0.76$) and VJ ($r = -0.68$). Significant and moderately positive relationships existed between D grip strength and TV ($r = 0.49$), squat ($r = 0.45$), and dumbbell (DB) row ($r = 0.42$); ND grip strength and TV ($r = 0.43$); VJ and BV ($r = 0.50$), BBV ($r = 0.41$), squat ($r = 0.41$), DB row ($r = 0.42$), and bench press ($r = 0.43$); BBV and bench press ($r = 0.46$); DB row and squat ($r = 0.59$) and bench press ($r = 0.47$). Results suggest that strength training programs designed to improve college baseball player,s performance should emphasize increasing leg power, speed, upper body strength, lower body strength, and grip strength

ASSESSMENT OF CHANGES IN CARDIORESPIRATORY FITNESS PARAMETERS OF MORBIDLY OBESE FEMALES FOLLOWING GASTRIC BYPASS SURGERY

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P15

The purpose of this study was to evaluate cardiorespiratory fitness (CRF) parameters of morbidly obese females before and after gastric bypass surgery (GBS). Nine morbidly obese females (37.4 ± 9.7 yrs; 42.9 ± 4.1 kg/m²) voluntarily participated in the study and performed graded exercise tests prior to and 3 months after GBS. Pre and Post-GBS measures included absolute (L/min) and relative (ml/kg/min) maximal oxygen consumption (VO₂max), percentage of age-predicted maximal heart rate attained (%MHR), maximal oxygen pulse (O₂pulse), maximal respiratory exchange ratio (RER) and treadmill time to fatigue (TT). Data were analyzed using paired samples t-tests. While absolute VO₂max was not significantly different ($p = 0.288$) between the two time points, a 20% weight reduction following GBS led to a significant increase in relative VO₂max (21.6 ± 4.8 mL/kg/min vs. 26.2 ± 5.4 mL/kg/min, $p < 0.05$). Additionally, TT was significantly increased (825.6 ± 176.6 sec. vs. 965.5 ± 183.3 sec, $p = 0.018$) without a concomitant improvement in O₂pulse ($p = 0.635$), %MHR ($p = 0.17$), or RER ($p = 0.617$), suggesting that the increased exercise capacity was not the result of improved cardiovascular function.

THE EFFECTS OF INDEPENDENT PLYOMETRIC AND STRENGTH TRAINING ON HIGH AND LOW SPEED MUSCULAR STRENGTH

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P16

The purpose of this study was to compare the effects of separate plyometric and strength training programs on high and low speed muscular strength. Thirty active, apparently healthy, low-risk college students aged 21.3 ± 1.9 years, height 177.3 ± 10.6 cm, weight 79.9 ± 14.6 kg, body fat 15.9 ± 6.4 participated in this investigation. Participants were recruited and participated in plyometric ($n = 10$), strength training ($n = 10$), or a control group ($n = 10$) twice per week for eight consecutive weeks. Performance tests were administered prior to and following training and included the vertical jump as the criterion test of high speed muscular strength as well as a one-repetition maximal squat as the criterion test of low speed muscular strength. Significant between subject effects were indicated for difference scores for body fat percentage ($p < 0.000$), standing broad jump percent change ($p = 0.021$), percent change in vertical jump ($p < 0.000$), and one repetition maximal squat percent change ($p = 0.001$). Post Hoc analysis indicated that the plyometric group exhibited a greater loss in body fat as compared to both the strength and control groups (-9.64 ± 3.38 , -0.70 ± 0.87 , and -0.35 ± 0.96 %; $p < 0.000$). The plyometric group demonstrated a greater percent change than the control in standing broad jump (0.24 ± 0.24 , -0.05 ± 0.29 %; $p = 0.028$). The plyometric group showed the greatest improvement in vertical jump as compared to the strength and control groups (6.66 ± 4.16 , 3.30 ± 2.75 ; $p = 0.048$, 0.27 ± 0.89 %; $p < 0.000$). Both the strength group and plyometric groups showed greater improvement in one repetition maximal squat compared to the control group (20.25 ± 12.27 ; $p < 0.000$ and 12.02 ± 11.57 ; $p = 0.046$, vs. 0.51 ± 2.62 %). CONCLUSIONS: These data indicate eight weeks of plyometric training resulted in significant improvement in body fat percentage, standing broad jump, and high speed muscular strength

ENERGY EXPENDITURE DURING INTERACTIVE VIDEO GAME PLAY

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P17

Recently, there has been a surge in the number of interactive video games that purport to increase physical activity and promote weight loss. This study investigated the physiological responses to participation in the interactive video game, "Yourself!Fitness®," focusing on the Cardio (CV) and Weight Loss (WL) modules. Comparisons were made for the amount of time spent at or above the ACSM recommended minimal guidelines for VO₂max and HRmax, as well as the game-predicted and measured caloric expenditures. Fifteen healthy volunteers (7M/8F) aged 18-24, participated in two 30-minute interactive video game exercise sessions, CV and WL. There was a trend towards significantly higher HR measures during the WL exercise session when compared to the CV exercise session (CV: 141±27 bpm, WL: 147±22 bpm; p=0.051), but the mean percentages of VO₂peak were similar; ~43% (CV: 26.6±4.8 mL/kg/min, WL: 23.4±4.8 mL/kg/min; p>0.05). There were no differences in measured energy expenditure between the CV or WL trials (CV: 265±61 kJ, WL: 268±60 kJ; p=0.743); nor in minutes spent above the ACSM threshold (~14-16 min/30 min session; p>0.169). Energy expenditure (EE) during the 30 min was measured at 266±60 kcal, while the game-predicted EE was greater by 88-97 kJ. The results suggest that although the mean HR appears to meet guidelines, the metabolic responses are minimal. Therefore, Yourself!Fitness® has the potential for cardiorespiratory benefit if the exercise session is extended

IMPACT OF PROTEASE SUPPLEMENTATION ON PERCEIVED PAIN AND EXERCISE AFFECT FOLLOWING THE ONSET OF DOMS

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P18

Feelings of soreness are regarded as having an adverse impact on exercise behavior. Delayed onset muscle soreness (DOMS), which is commonly seen following intense exercise, may be diminished by protease supplementation. This study examined the effects of protease supplementation on the perception of pain (PP) and exercise affect following the onset of DOMS. 23 individuals participated in this investigation. DOMS was induced by performing 6 sets of 10 reps of eccentric isokinetic exercise (EE) at -1.05 rad/sec. Each participant took either 2 protease tablets (PRO) or a placebo (PLAC) 4 times a day for 4 days. Supplementation was blinded and randomized. Each participant performed 2 identical, moderate-intensity sessions of cycle ergometry for 35 minutes, one before the EE and one 2 days post-EE. Every 5 minutes during the exercise session, PP was measured using Borg's CR-10 scale and affect was measured using the feeling scale (FS) and the felt-arousal scale (FAS). Differences were seen for PP at the 5, 25, 30, and 35 minute mark of the post-EE exercise session with the PRO reporting less discomfort than the PLAC (p<0.05). A significant difference was seen for FS with the PRO reporting greater feelings of pleasantness than the PLAC at the 20, 25, 30 and 35 minute mark of the post-EE exercise session (p<0.05). Protease supplementation may positively influence an individual's responses to exercise following DOMS. This finding may be important when considering a return to activity following an intense exercise session. This work was supported through funding by Enzymatic Therapy Inc., Green Bay, WI.

BELIEFS AND INTENTIONS OF REGISTERED DIETITIANS TOWARD EVALUATING PSYCHOLOGICAL FACTORS IN OVERWEIGHT CLIENTS

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P19

Psychological factors influence eating behaviors and/or contribute to increased body weight and obesity. American Dietetic Association (ADA) practice standards state that registered dietitians (RDs) are responsible for evaluating psychological factors related to client food and weight concerns. The purpose of the study was to examine RDs, beliefs and intention toward evaluating psychological factors related to client food and weight concerns. The Dietitian Belief and Intentions Questionnaire (DBIQ) was developed based on the Theory of Planned Behavior (TpB; Ajzen, 1988) and completed online by 484 RDs. The DBIQ is comprised of demographics items, e.g. „I have a major, minor or graduate certificate in psychology (PSYCH)%, and items related to attitude toward behavior (ATTB), subjective norm (SN), perceived behavioral control (PBC), and intention to evaluate. Multiple linear regression analysis was conducted; all TpB predictors (ATTB, SN, PBC) and PSYCH were significant predictors (p < 0.05) of intention to evaluate. In conclusion, by influencing the TpB factors of ATTB, SN and PBC, it is anticipated that a corresponding improvement would be seen in RDs intention to evaluate psychological factors. These results provide useful information for creating interventions designed to increase the number of dietitians who evaluate psychological factors related to clients, weight and food intake and take appropriate actions - including referrals to other professionals.

TIME REQUIRED FOR INCIDENTAL PHYSICAL ACTIVITY: AN ANALYSIS OF PARKING LOT BEHAVIOR

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P20

Parking farther away and walking to a destination is one of many recommendations for increasing physical activity. However, the perception that this takes longer serves as a disincentive for some individuals. The purpose of this study was to compare the time required to park in the first convenient parking space as opposed to driving around searching for a space closer to the destination. Subjects recorded the time required for both parking in the first convenient parking space and for searching for a parking space closer to the destination on a college campus and at businesses in the community. The time required to search for a parking space closer to the destination was significantly greater than the time required to park in the first convenient parking space on campus (211.68±97.91 s vs. 126.08±24.47 s, p<0.001) and in the community (162.78±70.09 s vs. 84.77±30.26 s, p<0.001). Overall, the time required for driving around searching for a parking space closest to the destination is significantly greater than parking in the first convenient parking space and walking whether the parking lot is on campus or in the community (180.79±83.61 s vs. 99.41±34.41 s, p<0.05). These findings indicate that it takes approximately twice as much time to look for the closest parking space as opposed to parking in the first convenient parking space and walking to the destination. This information could be used as part of an intervention to increase participation in incidental physical activity on campus and in the community.

SOCIAL-COGNITIVE INFLUENCES ON STUDENTS, MAINTENANCE OF PHYSICAL ACTIVITY ACROSS THE FIRST YEAR OF COLLEGE

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P21

This study examined the role of exercise identity (EI) in predicting freshmen students, physical activity habits, and the ability of theory of planned behavior (TPB) to predict changes in physical activity behavior across the first college year. Participant recruitment occurred during the first two-weeks of a fall academic semester (T1). Email solicitation was sent to students enrolled in first-year courses (166 men and 234 women returned surveys) with a link to an online survey consisting of the EI inventory (Anderson & Cychosz, 1994), TPB instrument (Ajzen, 2006), informed consent, 7-day physical activity recall instrument (Godin & Shephard, 1985) and demographic questions. The sample was again solicited at the end of the first college semester (T2) and the end of the first academic year (T3). To examine the influence of EI on students, physical activity habits during the first college year, r and r^2 were determined for EI and MET-HR (activity score) at T1, T2, and T3. To examine the ability of TPB to predict activity change, r^2 was determined between TRB predictor variables and activity change across the first semester and academic year. EI predicted 13 and 25% of the variability in activity scores among men and 41 to 44% among women at T1 and T2 respectively with minimal predictive ability at T3. These findings point to the importance of EI to activity among first-semester college students, but its effectiveness may dissipate over the course of longer time periods. TPB variables did not predict students, behavior change across either a semester or academic year.

IMPACT OF GREENWAY CONSTRUCTION ON PEDESTRIAN AND CYCLING PHYSICAL ACTIVITY: A NATURAL EXPERIMENT

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P22

This study uses the planned retrofitting of an established neighborhood with an urban greenway as a natural experiment to examine associated changes in directly observed pedestrian and cycling physical activity (PA). **METHODS:** The research utilized a 3-year (2005-2007) prospective cohort study design, with two control neighborhoods. Direct observation (DO) of PA, both community- and school-level, was conducted over two days in 2005 (pre-greenway) and two days in 2007 (post-greenway). Neighborhood DO was conducted for separate 2 hours periods in the morning, mid-day, and evening, while school DO measured active commuting prior to and after school. Significance was determined by non-parametric multiple-comparison tests. **RESULTS:** For community DO, mean PA across all 2-hr observation periods significantly increased between 2005 and 2007 in the intervention neighborhood, by 10.0 users/2 hr ($p < 0.05$), with no increase found in the control neighborhoods. In 2007, mean PA across all 2-hour observation periods in the intervention neighborhood exceeded mean PA in the control areas by 11.0 users/2 hr ($p < 0.01$), with no comparable difference found pre-intervention. School DO found no significant increases in active commuting of students. **CONCLUSION:** Construction of an urban greenway was associated with increased pedestrian/cycling PA, but not with School active commuting.

BODY IMAGE IN BREAST CANCER SURVIVORS: PHYSICAL FITNESS MAKES A DIFFERENCE

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P23

With improving breast cancer survival rates, more women are dealing with the consequences of diagnosis and treatment. One challenge breast cancer survivors face is a decreased body image. Despite growing literature to suggest that physical activity positively influences self-perceptions of body image, breast cancer survivors may be relatively inactive (Irwin, 2003). The present study examined the correlations between physical fitness, body image, and health-related quality of life (HRQL) in women treated for breast cancer. Women with stage I-III breast cancer (N=104) were recruited within 6-12 weeks of surgery and randomized. Intervention participants began a center-based exercise program gradually shifting to the home at 6 months. Controls received patient education. Participants were 53.7 years of age and 43%/28% overweight/obese. Pearson correlations were estimated for assessing association of body image measures with physical fitness and HRQL. Total meters walked was significantly correlated with Appearance Self Efficacy (AE) and Body Area Satisfaction (BASS), while AE and BASS were also significantly correlated with HRQL (FACT-B and Physical Component Scale of SF-12). Repeated measures ANOVA showed that intervention participants had significantly increased total meters walked, and improved AE and BASS compared to controls ($p < 0.05$). These data have meaningful implications for the integration of physical activity into treatment regimens and suggest that physical function makes a difference in perceptions of body image among breast cancer survivors

PREDICTING CORTISOL ACTIVITY FROM SELF-REPORTED MEASURES OF POSITIVE AND NEGATIVE AFFECT IN FIREFIGHTERS PERFORMING DUAL-STRESS ACTIVITY

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P24

Firefighters have an elevated risk of on-duty death from cardiovascular related events. Mechanisms have been suggested to explain this increased risk, involving a greater cortisol response to the combined physiological and psychological stressors of firefighting. The purpose of this study was to investigate whether cortisol activity could be predicted from self-reported measures of positive affect (PA) and negative affect (NA). Twelve professional firefighters ($VO_{2max} = 35.74 \pm 5.35$ ml·kg⁻¹·min⁻¹) participated in a set of computerized tasks designed to simulate a fire scene whilst exercising at 60% of VO_{2max} for a duration of 37 minutes on a cycle ergometer. The fire scene simulation began 10 minutes after the commencement of exercise, and lasted 20 minutes. Using multilevel modeling, results suggested that cortisol activity was significantly predicted by age and by an interaction between PA and NA. Results suggest the well established link between cortisol activity and NA is moderated by PA. These results imply that the positive emotional state of the firefighter affects the relationship between the negative emotional state and cortisol activity.

EFFECTS OF 7-WEEK EXERCISE INTERVENTION ON DIMENSIONS OF SELF-CONCEPT AND BODY IMAGE

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P25

Previous research has shown that it may be possible to positively augment one's self-esteem and body image with exercise participation. This study was conducted to examine effects of a 7-week exercise intervention on self-esteem and body image. 48 participants were recruited (44 participants completed study) to participate in a 7-week exercise intervention, consisting of 40-60 total minutes of combined cardiovascular and resistance training three times a week. Participants in this study were also participating in a concurrent study that involved the use of a nutritional supplement (conjugated linoleic acid) compared to placebo during the 7-week period. At both the beginning and the end of exercise intervention, participants completed the Rosenberg Self-Esteem Scale (Rosenberg, 1965) to measure global self-esteem and the Physical Self-Perception Profile (Fox & Corbin, 1989) for physical self-concept. Body image was assessed using the Multidimensional Body-Self Relations Questionnaire (Cash & Pruzinsky, 1990). Preliminary findings show that participants in both groups experienced significant increases in physical self-concept, body area satisfaction and appearance evaluation. However, global self-esteem did not show any changes as a result of the exercise intervention. These data show that exercise interventions might influence more specific measures of self-concept instead of global self-esteem.

INFLUENCE OF BODY CONSCIOUSNESS ON AFFECTIVE AND EMOTIONAL RESPONSES TO EXERCISE WHILE VIEWING TELEVISION PROGRAMS

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P26

Previous research has hypothesized that people with issues related to body image and self-presentation may respond to exercise differently. The purpose of the present study was to examine the influence of body consciousness on affective and emotional responses to acute bouts of exercise, while watching television programs with different body image content. Forty-one college females were tested over 3 sessions of recumbent cycle ergometry. Each session lasted 30 min: 5 min warm-up, 22 min self-regulated intensity and 3 min cool-down. Sessions were differentiated between 2 days of television viewing and 1 day with no visual stimulation. Of the television shows, one contained media-portrayed ideal female body images, while the other portrayed neutral images of the female body. Activation Deactivation Adjective Checklist (AD ACL; Thayer, 1989) and Physical Appearance State Anxiety Scale (PASA; Reed et al., 1991) were administered prior to, immediately following and 10 min following exercise. Body consciousness was determined using the Social Physique Anxiety Scale (Hart et al.1989) and Sociocultural Attitudes Towards Appearance Scale-3 (SATAQ-3; Thompson et al., 2004). Those high in body consciousness (top third) scored higher on PASA following exercise, additionally, responded with an increase in PASA after watching the television program with ideal body image content. Regarding exercise affect, similar responses were seen in both body consciousness groups, resulting in a more pleasant activated state following exercise. These results suggest body consciousness influences emotional but not affective responses

MEDIA REPRESENTATIONS OF IDEAL BODY IMAGE AND THEIR INFLUENCE ON ACUTE EXERCISE BEHAVIOR AND AFFECTIVE RESPONSES

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P27

Previous research has shown that negative body image is not just a problem experienced by females. Males are increasingly dissatisfied with their bodies and desire a leaner, more muscular frame. These images as represented by the media may influence exercise behavior and affect if exposed to them while exercising. The purpose of this study was to investigate the influence of viewing different television shows and the effect it has on exercise behavior and affect in college males. 16 males were tested over 3 separate sessions of recumbent bike exercise. Each 30 min session included a 5 min warm-up, 22 min of self-regulated intensity and a 3 min cool-down. Of the 3 shows, one portrayed neutral images of the male body, one showed idealized hypermuscular male images and the third portrayed attractive females. During the exercise session, participants completed the Ratings of Perceived Exertion (RPE; Borg, 1998) and Feeling Scale (FS; Hardy & Rejeski, 1989) every 5 minutes during exercise. Subjects compared themselves to the people in the show and thought about their appearance significantly more while watching the hypermuscular males. Participants biked farther when watching shows with ideal compared to neutral body images. There were no differences in FS or RPE between conditions. However, RPE increased throughout the exercise session and FS increased following compared to during exercise. It appears that the television shows had the intended effect related to influencing thoughts related to body image, but had little influence on exercise behavior and affect.

DETERMINANTS OF PHYSICAL ACTIVITY MOTIVATION IN CULTURALLY DIVERSE OLDER ADULTS

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P28

Physical activity (PA) facilitates independent functioning and is associated with longer life expectancy and years of healthy life. About 15% of adults achieve the recommended amount of PA with minorities, older adults, and people with low income levels being least active (USDHHS, 1996, 2000). The purpose of this study was to examine PA motivation in culturally diverse (68.6% African American, 64.7% < \$20,000 annual income, 56.9% < high school education) older adults using the theory of planned behavior (TPB; Ajzen, 1985). Participants were 51 culturally diverse older adults who completed a TPB questionnaire before a 16-week PA intervention. The questionnaire had 24 items that assessed behavioral, control, and normative PA beliefs and intention. Hierarchical regression analyses with forced entry within each block were performed to determine the predictors of PA intention. Behavioral and normative beliefs (Block 1) did not explain a significant amount of variance ($R^2 = .01$) in intention, $F(2, 45) = .26, p = .77$; however, the addition of control beliefs (Block 2) was significant. Control beliefs accounted for an additional 17.5% of the variance in intention, $F(3, 45) = 3.22, p < .01$, being the only significant determinant ($\hat{\alpha} = .42, p < .01$). The results provide evidence of the predictive utility of belief-based measures for understanding PA motivation and they provide a rationale for designing intervention studies that evaluate the effectiveness of strategies to enhance PA motivation in culturally diverse older adults.

EXTERNAL AND INTERNAL ATTENTIONAL FOCUS IN SOCCER SKILL PERFORMANCE

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P29

Current research supports that motor task performance utilizing an external attentional focus (EAF) is more effective than an internal attentional focus (IAF) or no instruction (NI). The purpose of this study was to determine if an EAF was more effective on soccer skill performance than an IAF or NI. It was expected that experienced performers (E) would benefit more when using external cues that were further away from skill execution, and novices (N) would improve more with an EAF related to the movement effects of the skill execution. Participants were classified as E (>6 yrs) or N (<2 yrs). Participants performed under EAF, IAF, and NI conditions. In condition 1 (E=6, N=6) participants dribbled a ball through a timed course. In condition 2 (E=5, N=5) participants performed a shooting task in which they had to hit one of three zones in a target. Data were analyzed using repeated measures ANOVA. In condition 1, E moved faster with NI (5.22±0.5 s) than utilizing either attentional focus. E moved faster when exploiting EAF (5.25±0.54 s) than IAF (5.3±0.57 s). N achieved faster times with EAF than the other conditions. In condition 2, no benefit was observed from E using EAF or IAF. E scored better with NI (1.56±0.21) than with an EF (1.28±0.1) and IF (1.28±0.27). N shot better under an EAF (1±0.11) compared to NI (0.76±0.22) and an IAF (0.72±0.16). There was no difference between the conditions with E or N. Attentional focus may be specific to the motor task and experience. This study observed a trend that E may benefit with an EAF that are further away from skill execution, and N with an EAF related to the movement effects of the skill execution.

QUADRICEPS TORQUE GENERATION AND DECAY IN LUNG TRANSPLANT RECIPIENTS.

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P30

This pilot study assessed training adaptations in peak isometric knee extension torque, in 4 male lung transplant recipients, before and after an acute rehabilitation program. Rehabilitation consisted of quadriceps resistance training and aerobic exercise, 5 times weekly for 4 weeks. Torque was measured in 90 degrees flexion using a computerized dynamometer. Subjects sustained maximal, 5-second contractions for 5 repetitions, with a 60-second rest between each effort. Prior to rehabilitation, the average normalized isometric torque was considerably lower than age-predicted values (1.29 ±.11 N-m/kg, 38-58% predicted). Maximal torque tended to improve following 4 weeks of training (1.52 ±.37 N-m/kg, p>.05). Rate of torque development significantly increased, from .95 (±.09) N-m/kg/sec, to 1.34 (±.33) N-m/kg/sec (p<0.05). The rate of force decay during maximal isometric efforts did not vary between the pre- (.04 ±.02 N-m/kg/sec) and post- (.05 ±.02 N-m/kg/sec) training conditions. The results suggest that neurally-mediated training adaptations improved the rate of quadriceps torque generation in recipients without significantly altering muscular endurance properties.

Supported by NIH, and by HHMI and Foundation for PT scholarships

THE EFFECTS OF PRIOR EXERCISE ON INTRAMUSCULAR MAGNESIUM CONCENTRATIONS AND MUSCLE METABOLISM

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P31

³¹P magnetic resonance spectroscopy has been used to measure muscle oxidative metabolism using the rate of recovery of phosphocreatine after exercise, and intramuscular magnesium concentrations using the frequency shift of the beta-ATP peak. The purpose of this study was to evaluate our ability to measure muscle metabolism and intramuscular magnesium in the quadriceps muscles twice before and twice after two hours of moderate intensity walking. Twelve normal, healthy male volunteers were tested in a 3 Tesla magnet. In vivo phosphocreatine (PCr) recovery kinetics was measured after 30-39 s bouts of isometric exercise. Out of 12 subjects, the data from one subject was not used. The mean end exercise PCr was 47.6% and the mean end exercise pH was 6.97. PCr recovery averaged 39 s (p = 0.892) and had an interclass correlation coefficient between days (ICC) of 0.819. Intramuscular magnesium concentrations averaged 0.388 mM and had a COV% between days of 7.91%. Walking for 2 hours did not produce significant alterations in either PCr recovery kinetics or intracellular magnesium levels (p = 0.440). In conclusion, PCr recovery after exercise had modest reproducibility. In addition, prior exercise is unlikely to alter measurements of resting metabolites or muscle metabolism.

RATIO OF HAMSTRINGS TO QUADRICEPS TORQUE VALUES IN LUNG TRANSPLANT PATIENTS

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P32

A pre test-post test design was used to evaluate the effectiveness of an exercise program on the strength of lower limb muscles, specifically hamstrings and quadriceps, in recent recipients of lung transplant (Ltx). Four male Ltx patients, aged 57-65, underwent an exercise program 5 times a week for 4 weeks, beginning 18 (±7) days after transplantation. Exercise included lower-extremity resistance training and progressive treadmill walking. After familiarization with the equipment and procedure, the isokinetic torque (60 degrees per second) of hamstrings and quadriceps was measured before and after training, using a Biodex dynamometer. Torque was normalized for body weight and contrasted according to muscle group and training status, using a 2-way repeated measures ANOVA. Quadriceps torque (pre: 1.3 ± .41 N-m/kg, post: 1.8 ± .34 N-m/kg) was significantly greater than hamstrings torque (pre: .52 ± .17 N-m/kg, post: .89 ± .32 N-m/kg) at both time points (p<0.005). In addition, training resulted in significant strength gains of both muscle groups (p<0.05). The ratio of hamstrings to quadriceps torque increased from .39 ± .07 to .49 ± .08 (p<0.05). These results indicate that the exercise program induced an increase in lower-extremity strength and an improvement in the torque ratio between the hamstrings and quadriceps.

SEX DIFFERENCES OF METABOLIC RESPONSE TO GXT'S PERFORMED ON A "TREADWAL" TREADMILL, AND CYCLE ERGOMETER

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P33

Evidence has been provided that ventilatory threshold (VT) on different modalities is sex dependent. However, there appears to be no similar comparisons regarding a vertical treadmill/treadwall (TW)}. Therefore, the purpose was to compare metabolic data between male and female subjects that performed GXT,s on a treadmill (TM), cycle ergometer (CE), and a TW. Male(n=11; 24.0±4.3yrs; 179.4±6.7cm; 81.2±7.8kg; 14.3±7.7%bf) and female(n=11; 22.1±1.3yrs; 162.1±10.6cm; 58.2±7.8kg; 22.1±1.3%bf) subjects were tested on the different devices on three separate occasions to determine their highest achievable VO2(order counterbalanced). VO2, VT, respiratory exchange ratio(RER), and HR were measured, along with several metabolic parameters. A significant effect(p<0.05) was found between groups for VO2, VT, RER, and HR. For VT, there was a significant difference between males(56.56±7.17) and females(66.33±5.17) on CE, but not on TM(64.33±6.08 vs 65.7±8.35) and TW(72.36±8.39 vs 75.5±2.32). For RER, there was a significant difference between males(1.08±0.06) and females (1.02±0.04) on the TW, but not on the TM(1.11±0.05 vs 1.09±0.04) and CE (1.19±0.06 vs 1.17±0.06). A significant difference between sexes was found for HR on the TM(191.55±7.03 vs 198.3±6.03) and TW(178.22±10.15 vs 185.00±2.86), but not on the CE(181.33±11.68 vs 185.22±8.37). Compared to TM, subjects in this study consistently achieved a 15.47% lower VO2 on a CE and 16.16% lower VO2 on TW. However, it appears that VT and other responses to different modalities is sex dependent.

EFFECTS OF CARBOHYDRATE SUPPLEMENTATION ON THE RPE-BLOOD LACTATE RELATIONSHIP

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P34

Purpose: To examine the effects of carbohydrate (CHO) ingestion on the RPE-blood lactate relationship during incremental and constant effort exercise. Methods: Six male and three female subjects (mean age=27.2±8.2yrs; ht=174.5±13.5cm; wt=68.9±12.5kg; body fat=18.5±8.3%), completed two incremental cycling LT/VO2peak tests followed by two 45-minute production trials. Either ~240 ml of a carbohydrate or placebo (PL) was ingested before and every 15 min during exercise. Results: No differences were observed between conditions at LT, 2.5 and 4.0 mM and peak. Within the CHO condition: VO2= 25.0, 32.6, 37.5, 47.2 ml/kg*min-1; power output=123.3, 170.7, 200.1, 241.7 watts; RPE= 12.8, 15.4, 17.2, 19.3; and HR= 137.4, 156.8, 168.7, 187.7 bpm at LT, 2.5mM, 4.0mM and peak, respectively. Within PL VO2= 24.7, 32.5, 36.8,45.7 ml/kg*min-1; power output= 130.0, 175.4, 201.9, 240.0 watts; RPE= 12.1, 15.0, 17.0, 19.3;and HR= 134.9, 157.9, 169.6, 187.2 bpm, respectively. In the CHO condition blood glucose was higher (P < 0.001) and a trend was observed for lower RPE over time (P = 0.07). During the production trials (RPE of 16) in the CHO condition higher blood glucose area under the curve (AUC) (PL: 204.1±79.3; CHO: 220.6±18.5 mM, P=0.039) and a trend for greater total work (PL: 448.5±73.8; CHO 470.5±65.6 kJ, P=0.089) were observed. Conclusion: We conclude that: 1) CHO ingestion does not alter the blood lactate-RPE relationship during incremental LT/VO2peak cycling; and 2) carbohydrate supplementation during exercise eliciting high RPE may increase work output during training sessions.

Supported in part by NIH Grant RR00847 to the General

EFFECT OF HYPERIMMUNE EGG SUPPLEMENT ON MOOD STATE AND QUALITY OF LIFE

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P35

Hyperimmune egg (HIE) protein is a powdered, pure egg product derived from chicken hens immunized with more than 26 killed pathogens of human origin. Anecdotal evidence suggests HIE supplementation enhances mood and overall quality of life. The purpose of this project was to determine if supplementation with HIE for 10 days resulted in any alteration in the subscales from the POMS and HRQL. Recreationally active males (n=24) aged 23.6±0.8yrs, height 176±2cm, mass 69.2±0.6kg and 17.1±1.5% body fat were randomly assigned to either HIE (n=12) or an egg protein placebo (PLA) group. Participants abstained from their regular exercise routine for the duration of the study and were supplemented with 4.5 g/d for 2 d, 9 g/d for 2 d and 13.5 g/d for 6 d. POMS and HRQL questionnaires were administered on Days 1, 8, 10 and 12. On days 1, 8 and 10, participants performed an exercise performance test battery. ANCOVA was used to determine significant differences between or within the groups during the 10 d of supplementation with initial differences between groups serving as a covariate. Significance was set at a = 0.05. Anger/Hostility subscale significantly decreased in HIE from Day 1 to Day 10 (- 28%; p<0.05). Pain subscale significantly decreased in HIE from Day 1 to Day 12 (-83%; P<0.05) and was also significantly lower than PLA on Day 12 (-84%). The data suggest that oral supplementation of hyperimmune egg for 10 d resulted in positive alterations in the subscales of Pain, Positive Effect, Depression, and Anger/Hostility. These alterations are likely a result of HIE,s ability to enhance muscle repair and recovery time from prior exercise.

EFFECTS OF PENTA® WATER, BOTTLED WATER, AND A CARBOHYDRATE BEVERAGE ON MARKERS OF HYDRATION STATUS AFTER ACUTE DEHYDRATION IN COLLEGIATE WRESTLERS.

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P36

Penta® water is produced through a purported purifying process, to yield a new commercially formulated beverage with various claims of health and performance benefits made by the manufacturer. The objective was to evaluate the effects of three different drinks (Penta® water, bottled water, and a carbohydrate beverage) on blood and urinary markers of hydration after acute dehydration in collegiate wrestlers. Twenty-three athletes were recruited and followed a randomized, cross-over design with 3 different study arms comparing the effectiveness of Penta® water, carbohydrate (6% or 60 gram□l-1), or regular bottled water (placebo) in promoting rehydration after a 3% reduction in body mass. Urine specific gravity (Usg), urine osmolality (Uosm), plasma osmolality (Posm), and plasma volume were measured pre- and post- dehydration and at 1-h after rehydration. Statistical analyses utilized a 3 (conditions) x 3 (times) repeated measures analysis of variance. Significant (P<0.01) interaction effects were found for Posm and Uosm. Posm returned to baseline levels and Uosm remained in negative balance after 1-h rehydration in the trials of Penta® water and regular bottled water. No significant interaction effects were found for either Usg or plasma volume shift. The findings of this study demonstrate that a carbohydrate/electrolyte solution was more effective in promoting rehydration than either Penta® water or plain water in collegiate wrestlers after a 3% reduction in body mass and a rehydration period of 1-h when consuming 100% of their body weight loss.

CARBOHYDRATE-ELECTROLYTE SUPPLEMENTATION DOES NOT ENHANCE COGNITIVE FUNCTION OR SKILL PERFORMANCE IN MALE HIGH SCHOOL BASKETBALL PLAYERS

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P37

PURPOSE: To determine the effects of carbohydrate-electrolyte (CE) beverage supplementation on cognitive function and skill performance in male high school basketball players. **METHODS:** Ten male high school varsity basketball players completed two experimental sessions consisting of four 15 min periods of high-intensity basketball skill drills. During the experimental sessions, subjects consumed either 5 mL.kg⁻¹ of a CE beverage or a similarly flavored and colored placebo (PLO) before period one and at the beginning of halftime and consumed 3 mL.kg⁻¹ at the end of period one, halftime and periods three and four. Cognitive function was assessed using The Clerical Speed and Accuracy Test (CSAT) and The Trail Making Test (TM). Basketball skill performance was measured using the AAHPERD speed spot shooting and passing tests. **RESULTS:** There were no significant differences between the beverage conditions for either the total number of shots made (P=.812) or passes completed (P=.239). When compared to before period one and halftime, CSAT time was significantly greater after period four (P=.006) during both PLO and CE with no significant differences between beverage treatments across time (P=.583). Overall, the time to complete the TM was significantly longer at halftime compared to after period four (P=.002), with no significant differences between the beverage treatments across time (P=.697). **CONCLUSION:** These results suggest that CE beverages do not enhance skill performance or cognitive function in male high school basketball players.

EFFECTS OF A CAFFEINATED ENERGY DRINK ON MUSCULAR STRENGTH AND ENDURANCE

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P38

Because research has found caffeine ingestion to increase muscle strength and activation, our aim was to determine if caffeine when combined with carbohydrate, such as that in a commercial energy drink, would have similar effects. A convenience sample of 15 college students was used in a double-blind, repeated measures experimental design. Each subject performed 3 trials, ingesting either a caffeinated energy drink (Full Throttle, The Coca-Cola Company), an uncaffeinated version of the energy drink, or a placebo drink. The interpolated twitch procedure was used to assess maximum voluntary isometric contraction (MVIC) strength, electrically-evoked strength, and muscle activation during MVIC of the knee extensors both before and after drink ingestion, and after a fatiguing bout of 50 concentric contractions. The change in MVIC strength from before to after drink ingestion was greater for the caffeinated energy drink compared to the placebo (+5.2% (SE=1.7%) vs. -0.5% (SE=1.5 %); p=0.01); there were no significant differences between the uncaffeinated energy drink and the other drinks. There was no effect of drink type on the changes in electrically-evoked strength or muscle activation from before to after drink ingestion. Additionally, there was no effect of drink type on the changes in any variable from before to after the fatiguing bout of contractions. In summary, a caffeinated energy drink can increase MVIC strength in the unfatigued state similar to that of caffeine alone. Supported by a grant from The Coca-Cola Corporation

CREATINE KINASE AND MUSCLE SORENESS RESPONSES TO ECCENTRIC EXERCISE: EFFECT OF FRUIT/VEGETABLE CONCENTRATE SUPPLEMENTATION.

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P39

The purpose of this study was to test the effectiveness of a fruit/vegetable concentrate supplement on plasma creatine kinase (CK) response and perceived muscle soreness (MS) to an acute bout of eccentric exercise (EE). Forty (18-35 yrs) healthy volunteers were randomly assigned to either a treatment (FVC) or placebo (P). All volunteers were prescreened prior to being accepted as a subject. The subjects were instructed to ingest the pills for 28 days (6 day-1) prior to the EE and for the next four days (compliance = 97.5% FVC; 98.5% P). All subjects arrived in the morning, a resting blood sample was obtained, MS assessed and then the EE (4 sets of 12 repetitions of elbow flexion with their non-dominant arm). Blood and MS were also obtained immediately after exercise, and 2, 6, 24, 48, 72 hrs post-exercise. CK at rest was 48.01 IU and significantly increased at 48hr {150.51±37.40 IU (P); 154.86±58.6 IU (FVC)} and continued to increase at 72hrs {291.98±64.62IU (P); 240.78±66.86 IU (FVC)} independent of treatment (p< .0001). MS levels in the dominant arm were unaffected over time and were similar for the P and the FVC based on a Likert 10 cm scale. MS increased in a bimodal response independent of treatment over time in the non-dominant arm. MS increased over time independent of assessment method (palpation, flexion, stationary) and treatment. MS peaked at 48 hrs post exercise independent of treatment (3.19±.67 (P); 3.01±.40 (FVC) compared to 0.06±0.02 prior to EE. MS was 2.27±.58 (P) and 1.76 ±.34 (FVC) at 72 hrs. The data indicates that four weeks of pre-supplementation and continued treatment after EE with a fruit and vegetable concentrate had no significant effect on the blood CK response or perceived muscle

THE EFFECTS OF CONJUGATED LINOLEIC ACID SUPPLEMENTATION AND EXERCISE ON CONTRACTILE PERFORMANCE AND LEAN MASS

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P40

The use of nutritional supplements today is on the rise. Often, unsubstantiated fitness claims are associated with these supplements. While conjugated linoleic acid (CLA) has been associated with favorable changes in body composition, corresponding fitness gains have not been well described. The purpose of this study was to describe the effects of CLA supplementation on contractile function and lean mass when used with regular exercise. Forty-four participants took either 1 g of CLA or 650 mg of 10-grain gelatin 3 times daily for 7 weeks. They also participated in a training program 3 days per week over this time. The training program included both resistance and aerobic exercise. Contractile function was assessed isokinetically by performing 5 reps of knee extension (KE)/flexion (KF) at 1.05, 3.14, and 5.24 rad/s. Body comp was assessed using bioelectrical impedance. Lean mass was then calculated. These measures were taken both prior to and following the training program. Significant group*time interactions were seen for KE peak torque (PT) at 3.14 rad/s (p=.02); KE average power (AP) at 5.24 rad/s (p=.03); KE total work (TW) at 3.14 rad/s (p=.01); KF PT at 3.14 rad/s (p=.04); KF AP at 3.14 rad/s (p=.01) & 5.24 rad/s (p=.05); and KF TW at 3.14 rad/s (p=.02). A significant group*time interaction was seen for lean mass (p=0.05). In all analyses the CLA group demonstrated superior gains to those seen in the placebo group. The use of CLA with regular exercise appears to be effective in improving contractile performance and lean mass. The changes in lean mass may underlie the gains in contractile performance seen in the CLA group.

LIPID HYDROPEROXIDES AND RANGE OF MOTION RESPONSES TO ECCENTRIC EXERCISE: EFFECT OF FRUIT/VEGETABLE CONCENTRATE SUPPLEMENTATION

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P41

The purpose of this study was to test the effectiveness of a fruit/vegetable concentrate supplement on the plasma lipid hydroperoxides (LOOH) and range of motion (ROM) responses to an acute bout of eccentric exercise (EE). Forty (18-35 yrs) healthy volunteers were randomly assigned to either a fruit/vegetable concentrate treatment (FVC) or placebo (P). All volunteers were prescreened prior to being accepted as a subject. The subjects were instructed to ingest the pills (double blind) for 28 days (6 day-1) prior to the EE and for the next four days (compliance = 97.5% FVC; 98.5% P). All subjects arrived in the morning, a resting blood sample was obtained, ROM assessed and then the EE (4 sets of 12 repetitions of elbow flexion with their non-dominant arm). Blood and ROM were also obtained immediately after exercise, and 2, 6, 24, 48, 72 hrs post-exercise. The data were analyzed by SPSS using repeated measure ANOVA (208). There were no significant changes in time, treatment, and time \times treatment interaction in LOOH and ROM in the dominant arm. In contrast, non-dominant arm ROM demonstrated significant time ($p=0.000$) effect with no treatment effect and time \times treatment interaction. The ROM of the non-dominant arm decreased significantly over time [post (9.5%), 2 (9.8%), 6 (9.3%), 24 (13.7%), 48 (11.6%), and 72 (9.2%) hrs] after the EE compared to pre-exercise levels. In conclusion, these data suggest that oxidative stress as indicated by plasma LOOH was unaffected by this EE and that the change in ROM decreased similarly with the FVC compared to the P treatment.

Supported by a Grant from NSA

CARBOHYDRATE-PROTEIN SUPPLEMENTATION ATTENUATES EXERCISE-INDUCED MUSCLE DAMAGE

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P42

This study examined the effects of CHO+PRO supplementation on muscle soreness and muscle function following one bout of unaccustomed eccentrically-biased exercise (downhill running). 20 recreationally active participants were randomly assigned to CHO+PRO or CHO group. Supplementation was administered in a randomized, double-blind fashion. Following preliminary testing and familiarization sessions, subject consumed either 1.2 g·kg⁻¹ CHO or additional 0.3 g·kg⁻¹ of protein for CHO+PRO group daily for 7 days prior to 30-minute downhill running (-18% and 5.1 mph) and for 2 days post-downhill running. Plasma creatine kinase (CK) level, ratings of delayed onset muscle soreness (DOMS), isokinetic muscle function were measured prior to exercise, 24 and 48 hour postexercise. Athletic performance was assessed using a test battery that simulate team sports activities including 20-m sprint, gross motor skills, and vertical jump prior to downhill running and 48 hours post-downhill running. CK activities was not different between the two groups, but perceived DOMS was significantly lower in CHO+PRO group compared to CHO at 24 and 48 hour post-exercise ($p<0.01$). The impairment of isokinetic muscle function was attenuated in CHO+PRO vs. CHO group at 24 and 48 hour postexercise ($p<0.05$). The CHO+PRO group also maintained better 20-m sprint performance postexercise. The results of this study reveal that 9-day consumption of CHO+PRO beverages can enhance multiple aspects of muscle recovery following exercise-induced muscle damage.

Supported by a Grant from Gatorade Sports Science Institute.

LACTATE AND MUSCLE FORCE AND WORK RESPONSES TO ECCENTRIC EXERCISE: EFFECT OF FRUIT/VEGETABLE CONCENTRATE SUPPLEMENTATION.

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P43

The purpose of this study was to test the effectiveness of a fruit/vegetable concentrate (FVC) supplement on plasma lactate (La) response, muscle forces and work to an acute bout of eccentric exercise (EE). Forty (18-35 yrs) healthy volunteers were randomly assigned to either a (FVC) or placebo (P) treatment. All volunteers were prescreened prior to being accepted as a subject. The subjects were instructed to ingest the pills for 28 days (6 day-1) prior to the EE and for the next four days (compliance = 97.5% FVC; 98.5% P). All subjects arrived in the morning, a resting blood sample obtained, maximal isometric forces (MIF) on both arms determined prior to the EE (4 sets of 12 repetitions of elbow flexion with their non-dominant arm {ND}). Blood and MIF were also obtained immediately after exercise, 2, 6, 24, 48, and 72 hrs post-exercise. La at rest was no different across treatments {0.44 mM \pm .06 (P) vs. 0.46 mM \pm .07 (FVC)} and increased significantly immediately post exercise {2.13 \pm .19 mM (P); 2.28 \pm .19 mM (FVC)}. La returned to normal levels thereafter independent of treatment. MIF for the dominant arm was unaffected over time and was similar for the P and the FVC. MIF for the ND decreased immediately after the EE independent of treatment {35.9% \pm 4.01 (P) vs. 31.08% \pm 3.19 (FVC)} The MIF was depressed throughout the 72 hrs post EE with the nadir at 24hrs with no differences by treatment. Total work for the EE was 1636.2 \pm 172.9 J (P) and 1784.4 \pm 174.4 J (FVC) and was not different. The % decline in work from the 1st set to the 4th set for the EE was 35.32 \pm 4.24 % (P) and 31.66 \pm 3.68 % (FVC) and did not differ across treatments. The data indicates that four weeks of pre-supplementation and continued treatment after EE with a fruit and vegetable concentrate had no apparent effect on the blood lactate or muscle force responses compared to placebo treatment. Supported by a Grant from NSA.

INFLUENCE OF EQUAL CARBOHYDRATE DELIVERY PROVIDED THRU VARYING CARBOHYDRATE DRINK CONCENTRATIONS ON RUNNING PERFORMANCE

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P44

The purpose of this study was to investigate differing concentrations of carbohydrates when delivering an equal amount of carbohydrate content on running. Eight Division II collegiate athletes ran for one hour at a pace equal to 75% of VO₂max. Physiological responses consisted of heart rate (HR), blood glucose (BG), and perceptual measures of Rating of Perceived Exertion (RPE), and stomach discomfort (SD) were recorded. Drink concentrations were delivered at 6%, 8%, or 10% CHO and matched for carbohydrate delivery (60g/hr -ACSM maximum CHO delivery recommendation) by varying the volume ingested. HR, RPE, and SD were recorded before exercise and at 5 minute intervals during the trials while BG was sampled pre-exercise and every 15 minutes. Statistical analysis showed no significant differences ($p > 0.05$) between the 3 carbohydrate concentration treatments for any of the physiological and perceptual measured variables at any time during the exercise.

EFFECTS OF A LOW GLYCEMIC DIET VERSUS A LOW CALORIE DIET ON WOMEN IN NORTH LOUISIANA

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A low Glycemic Index (GI) diet promotes consuming lower end carbohydrates to promote satiety, and minimize postprandial insulin secretion to maintain insulin sensitivity. This study compared a diet based on using the GI to a diet based on calorie restriction. Twenty-two women from the North Louisiana completed the program. The subjects were randomly placed into one of the two diets. The subjects were evaluated twice, once for initial baseline information and then after eight weeks to evaluate changes. The subjects were given a general exercise prescription based on ACSM guidelines. The exercise intensity for each person was based on her own heart rate reserve range. It was found that the final mean body weight, in kilograms, was significantly different from the initial mean weight in both groups. The low calorie group had a mean weight of 68.81 kg initially and a mean weight of 65.69 kg in the final evaluation ($p < 0.001$). The mean initial weight for the low Glycemic Index (GI) diet had an initial mean weight of 85.19 kg. The final mean weight was 80.74 kg ($p < 0.016$). Between the two groups, the GI group's decrease was significantly greater than that of the low calorie group ($p < 0.016$). We can assume that the low GI diet is better for weight loss. The percentage of subjects who completed the study in the low GI group was significantly lower than that of the low calorie group. From this information it may be deduced that the GI diet was effective, however, difficult to follow. Future studies should focus on how exercise adherence may be affected by each diet.

EFFECTS OF PHYSICAL ACTIVITY (PA) COMPLIANCE ON BODY WEIGHT STATUS AND PHYSICAL FITNESS OF OBESE ADOLESCENTS PARTICIPATING IN A WEIGHT MANAGEMENT PROGRAM

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The purpose of this study was to evaluate the effect of PA compliance on changes in body weight status and physical fitness during a 6-month weight management program. Twenty-five participants ($13.3 \geq 1.8$ years, $36.2 \geq 5.4$ kg/m²) voluntarily participated in the program. Body mass (BM), body mass index (BMI), body fat percentage (%FAT), muscular strength (MS), muscular endurance (ME), and maximal oxygen consumption (VO₂max) were assessed upon enrollment (PRE) and after 6-months of participation (POST). Program components included PA, nutrition education, and behavioral support. Participants were instructed to participate in PA 3 d/wk. Subjects were retrospectively grouped as either compliant (COM; N=12) or non-compliant (NonCOM; N=13) based on a documented PA compliance rate of 70%. PRE measures were not significantly different between the groups. Data were analyzed utilizing a 2 group (COM vs. NonCOM) by 2 time point (PRE vs. POST) repeated measures ANOVA. Significant group by time interactions were observed in BM ($p=0.009$), BMI ($p=0.025$), ME ($p=0.017$), and VO₂max ($p=0.02$) with the COM group demonstrating greater reductions in BM and BMI and greater increases in ME and VO₂max compared to the nonCOM group. The results of this study demonstrate that a 70% PA compliance rate significantly improved body weight status and physical fitness of obese adolescents following 6-months of program participation. Implementation of strategies designed to maximize program compliance are crucial for successful adolescent weight management programs.

FAT DIET VERSUS HIGH PROTEIN, HIGH FAT DIET AMONG OVERWEIGHT/OBESE FEMALES.

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Obesity is a growing epidemic that is linked to chronic diseases. The purpose of this study was to investigate differences between a high protein, low fat (HPLF) versus a high protein, high fat (HPHF) diet on energy expenditure (EE), body weight (BW), body composition (BC), and blood lipid profile among overweight/obese females. Twenty-two participants completed baseline measurements. Height and BW were measured to calculate Body Mass Index. A metabolic cart and DEXA were used to measure EE and BC, respectively. Blood samples were analyzed for total cholesterol (TC), LDL, HDL, blood glucose, and triglycerides (TG). Following baseline measurements, participants were randomly assigned to HPLF diet (28% protein, 24% fat, 52% carbs) or HPHF diet (34% protein, 43% fat, 23% carbs). Measurements were repeated at the end of the six weeks. Ten participants (45%) completed the study. The HPLF group significantly ($P < .05$) lost more BW ($93 \text{ kg} \pm 88.9$ to $89 \text{ kg} \pm 92.4$) than the HPHF group ($91 \text{ kg} \pm 53.4$ to $90 \text{ kg} \pm 53.7$). HPLF group demonstrated a trend toward lower TG values, but this trend was not significantly different from HPHF group. No significant differences found in REE, BC, HDL, LDL, or BMD between the two groups. Preliminary findings indicated that HPLF diet produced more weight loss than HPHF diet, but no significant differences found between the two diets in EE, BC, or blood lipids. Supported by a grant from Georgia Southern University

ASSOCIATION OF BLOOD LEPTIN CONCENTRATION WITH PERCENT BODY FAT, ANTHROPOMETRIC PARAMETERS, AND HEALTH-RELATED PHYSICAL FITNESS IN FEMALE COLLEGE STUDENTS

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Background: Whether blood leptin concentration is associated with percent body fat, anthropometric parameters and health-related physical fitness across gender and ethnic groups remain less clear. This study was investigated to the relations of blood leptin concentration with percent body fat, anthropometric parameters (weight, fat mass, waist-hip ratio, WHR, waist circumference, WC, hip circumference, HC, body mass index, BMI, triceps thickness, supraileum thickness, thigh thickness) and health-related physical fitness (back muscle strength, sit-up, trunk forward bending, Harvard step test) in 31 Korean female college students. Methods: We measured blood leptin concentration, percent body fat, weight, fat mass, triceps thickness, supraileum thickness, thigh thickness, WHR, WC, HC, BMI, back muscle strength, sit-up, trunk forward bending, Harvard step-test. Pearson product-moment correlation, multiple linear regression, and Dubin Watson test were used to investigate the association of blood leptin concentration with anthropometric parameters, and health-related physical fitness to examine the statistical significance using SPSS 12.0 windows. Results: Blood leptin concentration was significantly associated with weight, percent body fat, fat mass, BMI, WHR, WC, HC, triceps thickness, supraileum thickness, thigh thickness, back muscle strength, sit-up, flexibility, and PEI respectively. Percent body fat, thigh thickness and trunk forward bending were independent variables which influence blood leptin concentration in multiple linear regression analysis. Conclusions: In conclusion, improvements in health-related physical fitness may reduce blood leptin concentration, while being obese may increase blood leptin concentration in Korean female college students.

EFFECTS OF CARNITINE SUPPLEMENTATION WITH EXERCISE ON LIPIDLIPROTEIN AND METABOLIC INDICES

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The purpose of this study was to offer experimental data about the effects of 4 weeks of carnitine supplementation and aerobic exercise on lipidlipoprotein and metabolic indices. Eleven college females participated in this study for 4 weeks. They were assigned into two groups. 20 minutes before exercising, they took the following medicine: Group I exercise and placebo (180\$/dosage); Group II exercise and carnitine (1800\$/dosage). For aerobic exercise, quick steps was used 30 times per week and duration was 20-32 minutes (increased by 4 minutes every week for 4 weeks). The SPSS was used to analyze the results of the experiment, and Analysis of Covariance (ANCOVA) was used. There were no group differences in TC, HDL-C, LDL-C, TG, lertin, FFA, and glucose. In conclusion, carnitine supplementation and performing exercise were not significantly correlated with changes of lipidlipoprotein and metabolic indices. For precise experiment of carnitine effects on college females, the previous individual activity, life style, and other factors should be considered in setting up the intensity and duration of exercise.

THE RELATIONS BETWEEN REGIONAL BONE MINERAL DENSITY AND BODY COMPOSITION IN ELITE COMPETITIVE OLDER ATHLETES AND HEALTHY CONTROLS

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PURPOSE: Previous studies report that bone mass is closely related to other body composition variables. However, results are not in agreement on whether fat tissue mass or lean tissue mass is the important correlate of bone mass. The purpose of this study was to examine the relations of regional mineral free lean tissue (RMFL) and regional body fat (RBF) with regional bone mineral density (RBMD). **METHODS:** One-hundred senior athletes from the 2005 National Senior Games and 86 healthy controls participated. RBMD, RMFL (%) and RBF (%) were measured by DXA. Correlational analyses were performed between RBF mass and RBMD, as well as between RMFL mass and RBMD. **RESULTS:** The results are as follows

	RMFL% L am	RMFL% L leg	RBF% L am	RBF% trunk	RBF% L leg
Controls	r=.745*	r=.375*	r= .615*	r=.164	r=-.466*
Athletes	r=.548*	r=.196*	r=-.407*	r=.028	r=-.338*
Both	r=.640*	r=.248*	r=-.508*	r=.000	r=-.386*

*significant at p<.05

DISCUSSION: The negative relations found between RBF and RBMD are interesting because previous studies suggest that weight and BMI are strong positive correlates of bone mineral density. Further research is required to examine the relationship between regional body composition and RBMD.

MODERATE-INTENSITY EXERCISE TRAINING REDUCES BODY FAT IN HIV-INFECTED MEN.

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Background: Those living with HIV have many endocrine and immune changes that result in altered physiological states. These physiological changes often result in an increased incidence of chronic diseases, such as cardiovascular disease (CVD). Just as in the case with uninfected persons, excess body fat, especially in the trunk, increases the risk for CVD. **Methods:** Thirty-nine HIV-infected individuals were randomized to an exercise group (EX) who completed 6 weeks (twice per week) of moderate-intensity resistance and aerobic exercise, or to a control group (CON) that did not receive the intervention. Each subject prior to and following the 6-week training period received a DXA scan for body composition determination. **Results:** The EX (N=31) was divided at the median body fat (BF) %, which resulted in a group above 20% and a group below 20% BF prior to the intervention. The below 20% BF (N=17) group had no significant changes in BF following the intervention. Those above 20% BF (N=14) decreased fat mass (P=.02), BF % (P=.009), and trunk fat % (P=.001), while not losing lean tissue mass (LTM). There were no changes in the CON (N=27) and no changes were observed in nutritional status following the intervention. **Conclusions:** These data indicate that 6 weeks of moderate-intensity exercise training can decrease fat mass, including the trunk, in those above 20% BF while retaining LTM, thereby improving a major risk factor for CVD. Results suggest that combined aerobic and resistance exercise may have differential effects on BF in HIV-infected persons based on pre intervention body composition

UNIVERISTY STUDENTS COMMUTING TO- AND LIVING ON CAMPUS

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It was hypothesized that students who reside in on-campus housing would have better physical fitness profiles than students living off-campus due to the proximity and availability of a campus recreation center as well as having to walk greater distances to travel between housing and classes. This study was conducted to compare the fitness levels of female university students who resided on-campus (ON) vs. female students who commuted to school (COM). 10 ON and 12 COM were recruited for this study. Muscular strength was assessed with a handgrip dynamometer, muscular endurance was assessed by having subject perform curl-ups and push-ups for one-min, flexibility was assessed using a sit-and-reach box, and percent body fat (%BF) was assessed using 7-site skin folds. BMI, WHR, resting BP, and resting HR were measured. Subjects wore a pedometer for a week and average number of steps for the week was recorded. Independent t-tests were used to analyze the results at the .05 level of significance. ON were taller (166.0±8.2 cm) and heavier (76.0±13.2 kg) than OFF (160.4±7.6 cm and 61.1±11.0 kg respectively). The BMI for ON (27.6±4.1 kg/m2) and %BF (27.2±5.2%) was greater than for OFF (23.8±4.6 kg/m2 and 22.1±5.9%, respectively). OFF recorded more average steps per week (9631.9±3872.4) than did ON (7599.5±4113.4). OFF performed more push-ups and flexibility than did ON. Only %BF was significantly different between ON and OFF (p=0.045); however, this difference disappeared when adjusted for height. Factors such as the convenience of dining areas and further proximity of campus recreation areas on-campus may account for these observations.

EVALUATION OF AGREEMENT BETWEEN BIOELECTRICAL IMPEDANCE (BIA) AND DUAL ENERGY X-RAY ABSORPTIOMETRY (DXA) IN ESTIMATING BODY COMPOSITION CHANGES FOLLOWING GASTRIC BYPASS SURGERY

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P53 BIA and DXA are commonly employed techniques for assessing body composition before and after weight loss. While DXA is thought to be a more valid and reliable technique for assessing body composition changes in obese populations, it is more costly and availability is often limited. The purpose of this study was to compare the level of agreement between BIA and DXA in detecting changes in body composition of morbidly obese females undergoing gastric bypass surgery (GBS). Nine females (37.4±9.7 yrs; 42.9±4.1 kg/m²) volunteered to participate in the study. Body fat percentage (%BF), fat mass (FM), and fat-free mass (FFM) were assessed 2 weeks prior to surgery, 1-month post-GBS, and 3-months post-GBS. Pre-surgery %BF (BIA 53.3±11.7% vs. DXA 52.4±3.9, p=0.797), FM (BIA 64.1±17.2 kg vs. DXA 59.3±9.1 kg, p=0.266), and FFM (BIA 55.2±12.3 kg vs. DXA 53.4±4.8 kg, p=0.652) as assessed by BIA and DXA were not significantly different. There were no significant differences in detected changes in %BF, FM and FFM between BIA and DXA with the exception of %BF at 1 month post-GBS (BIA 1.5±1.9% vs. DXA 0.5±1.5%, p<0.05). In conclusion, the similar detected changes in %BF, FM, and FFM between the two assessment techniques suggest that BIA may be a viable alternative method to DXA in assessing weight loss following GBS.

RESISTANCE TRAINING TO MAINTAIN BODY COMPOSITION DURING PREGNANCY: A CASE STUDY

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P54 This case study reports safety and efficacy of resistance training (RT) during second and third trimesters to promote gains in lean mass and minimize gains in fat mass. A healthy, obese (pre-pregnancy BMI 35.0) 30-year old woman was enrolled in a RT program 18 weeks prior to delivery. She had engaged in a weight loss diet prior to enrollment so was instructed to cease caloric restriction and maintain an adequate diet for the remainder of the pregnancy. RT continued three times a week and consisted of three sets of 8-12 repetitions of eight upper and lower body exercises. Heart rate was monitored after each set. Progression was based on heart rate and load increased 5-10% when peak heart rate \geq 110 bpm after completion of all three sets of an exercise. Body composition was measured using air displacement plethysmography (BodPod) one week prior to pregnancy and six weeks post-partum. RT was well tolerated with no adverse effects and continued until 24 hours prior to active labor. Total RT volume increased from 7,672 lbs per session at the end of week 1 to 14,165 lbs per session at the end of week 18. Pre-pregnancy body weight was 103.6 kg (54.6 kg lean mass; 49.0 kg fat mass) with 47.3% body fat. At mid-pregnancy, prior to beginning RT, body weight had decreased to 96.0 kg due to dietary restriction. Although body weight increased 9.7 kg during the second and third trimester RT program, at six weeks post-partum body weight and body fat % remained below pre-pregnancy values (95.9 kg and 42.6% respectively) while lean mass had increased slightly to 55.0 kg (+0.4 kg greater than pre-pregnancy). These data indicate that a supervised RT program during the second and third trimesters of pregnancy is safe and may assist women to maintain a healthy weight and body composition.

CORRELATIONS BETWEEN BODY FAT, LOWER EXTREMITY ABSOLUTE PEAK POWER AND SPEED IN COLLEGE FEMALE SOFTBALL PLAYERS

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P55 Muscle power is an important component in the production of speed. A common assumption is that muscle power and speed are significantly correlated; however the science to support this assumption is limited. The purpose of this study was to examine correlations among body fat (BF), anaerobic power and player speed (PS) on the base paths. Sixteen female softball players at a mid-major NCAA Division I college participated in the study. Performance testing assessed peak and mean power using a Wingate Anaerobic Test with a resistance of 9% of individual player body mass. PS was assessed on the base paths from home to first, home to second (HTS), and home to home (HTH) with a Brower laser timing system. Bivariate two-tailed Pearson correlations assessed the relationship between variables. Mean subject age was 19.3 ± 1.2 years, BF was 19.1 ± 3.9 %, height was 167.9 ± 5.5 cm. HTS was positively correlated with actual resistance (AR)(r=0.61; p<0.009), absolute peak power (PP) (r=0.54; p<0.03) and calculated resistance (r=0.62; p<0.008). BF was correlated with AR (r=0.84; p<0.001), absolute PP (r=0.68; p<0.003) and HTH time (r=0.53; p<0.03) and was negatively correlated with relative PP (r=-0.58; p<0.02) and relative mean power r-0.69; p<0.004). Based on our sample there is a positive correlation between HTS speed and muscle power variables. This finding seems counter intuitive since as power increases PS along the base path would decrease resulting in a negative correlation. BF was positively correlated with PP, AR, and HTH PS indicating that as BF increases time from HTH increases. These findings require further evaluation.

EVALUATION OF FITNESS DATA TO PREDICT THE SUCCESS OF NASCAR PIT CREWS.

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P56 With the growing popularity of the National Association for Stock Car Auto Racing (NASCAR) there is a demand for skilled pit crew athletes that will aid in the success of NASCAR teams. To this end, very little is known regarding the physical characteristics of successful pit crew athletes. The purpose of this study was to evaluate existing data and begin to develop prediction equations for pit crew athlete success. We evaluated an existing database of physical demographics (e.g. age, weight, height, BMI etc.) and skill tests (e.g. leg press, vertical jump height, etc.) of a large cohort (n=174) of pit crew athletes that have been trained in the past seven years. A significant equation (r=0.42, r²=0.18, p<0.05) was found that predicted the highest level of competition in which a pit crew athlete could succeed. The two strongest predictors of pit crew athlete success were performance of pit crew specific tasks (four tire shuttle run, right side tire shuttle run, and left side tire shuttle run) and general agility(long jump and vertical jump). This prediction equation would provide race teams a method of recruiting individuals that have a higher chance of success and would serve as a training guide for current pit crew members.

DIFFERENCE IN WINGATE POWER OUTPUT IN RESPONSE TO MUSIC AS MOTIVATION

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Wingate testing while using music to enhance performance has produced mixed results in past studies. The effect of motivational music on anaerobic power is unclear. Therefore, the purpose of this study was to test Wingate performance with the presence of music as a motivational tool, and without the presence of music. The study aimed to identify if music played a significant role in performance enhancement. Subjects were randomized into two groups. The two groups were composed of a „music first“ trial group and a „music last“ trial group, as the testing order was counterbalanced between groups. Subjects were tested with or without music, according to randomized groups. Music was deemed motivational by the Brunel Music Rating Inventory. Results indicated a significant difference in anaerobic performance when using motivational music. Peak power, average power, overall anaerobic power, and the drop in power over time were all significantly different ($p < .01$) than when music was not used. Performance was significantly better in all categories when motivational music was present ($p < .01$). The order in which the music was played (during the first trial or the second trial) did not have a significant difference on performance. It was concluded that motivational music has a positive impact on anaerobic performance during a Wingate test. This can translate into a possible increase in anaerobic sports performance. Future studies may look at unmotivational music and performance, or at the application of using music during anaerobic conditioning.

GENDER DIFFERENCES IN RUNNING ECONOMY OF DIVISION I COLLEGIATE DISTANCE RUNNERS

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The influence of gender on running economy was investigated in 14 highly trained collegiate distance runners (7 males and 7 females). Each participant performed a VO₂max test on a motorized treadmill until exhaustion, while expired gases were measured continuously. Participants ran at each treadmill speed for six minutes, and there was a five minute passive recovery following each stage. Females began at 8.5mph, while males began at 9.5mph, and treadmill speed increased 0.5mph each stage. Percentage of VO₂max was calculated at each running speed for each participant. These VO₂ values were then grouped into three relative intensity ranges (categories: 75-80%, 81-85%, and 86-90% of VO₂max). Predicted values of oxygen cost were calculated at each speed using ACSM equations. Percent differences between predicted and measured VO₂ values for each category were then calculated. Females were 9.7% below predicted VO₂, while males were 11.5% below predicted VO₂ at 75-80% of VO₂ max ($p=0.62$). Females were 6.7% below predicted VO₂, while males were 6.8% below predicted VO₂ at 81-85% of VO₂max ($p=0.96$). Females were 4.6% below predicted VO₂, while males were 5.4% below predicted VO₂ at 86-90% of VO₂max ($p=0.84$). These results suggest that there is no difference in running economy between highly trained male and female collegiate distance runners at intensities between 75-90% of VO₂max.

THE ACCURACY OF A NON-EXERCISE MAXIMAL OXYGEN UPTAKE PREDICTION EQUATION FOR CROSS COUNTRY ATHLETES

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To establish themselves as elite athletes, collegiate cross-country runners are required to have adequate cardiorespiratory fitness to perform at a high level. This study attempted to determine the accuracy of a non-exercise VO₂max prediction equation (Jackson et al, 1990) with previously measured maximal oxygen uptake values in an elite population of collegiate athletes. After the 2008 NCAA indoor track and field season, 8 male volunteer ULM cross country athletes, mean age (21.63 ± SD 2.134) performed a maximal oxygen uptake test and had their body composition measured utilizing the three site Jackson-Pollock skinfolds equation. The participants completed a physical activity rating questionnaire (PA-R)(Jackson et al, 1990) to assess physical activity for the previous month. The activity levels included values for sedentary lifestyle (PA-R = 0) to running 25 miles per week (PA-R = 10). The test administrator expanded the original scale to include running from 30 (PA-R =11) to 60 miles per week (PA-R =14) and to account for the runners, training schedules. Non-parametric (Spearman, ρ) correlations were used to analyze relationships between measured VO₂max values and non-exercise regression equations featuring BMI and body fat percentages. Between measured VO₂max values and a male specific prediction including BMI/PA-R values, a significant relationship ($r = .762$) at $P < .05$ was established. In a restricted sample of male collegiate athletes (N= 8), non-exercise maximal oxygen uptake prediction equations are accurate prediction tools for aerobic power as compared with measuring VO₂max directly.

THE EFFECT OF A HIGH PROTEIN HIGH FAT OR HIGH PROTEIN LOW FAT DIET ON INFLAMMATORY MARKERS IN OVERWEIGHT/OBESE WOMEN

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Elevated levels of inflammatory markers such as C-reactive protein (Crp) and interleukin-6 (IL-6) have been reported in obese individuals and may be linked to subsequent obesity related diseases and disorders. The purpose of this study was to examine changes in inflammatory markers in overweight/obese females (BMI ≥ 25) following either a high protein high fat (HPHF) or high protein low fat (HPLF) diet for a six-week period. Twenty two participants initially reported to the Human Performance Laboratory for completion of University approved informed consent forms and baseline blood collection. Participants were then randomly assigned to HPHF diet (34% protein, 43% fat, 23% carbs) or HPLF diet (28% protein, 24% fat, 52% carbs). Pre- and post-diet blood samples were collected on 10 participants (45%). Two one-way ANOVAs with repeated measures revealed no significant main effect or any interaction effect for Crp and IL-6 level ($p > 0.05$). The preliminary findings indicate a six week HPHF or HPLF diet may not be long enough to induce changes in inflammatory markers.

Supported by a grant from Georgia Southern University

EFFECTS OF EXERCISE INTENSITY ON POST-PRANDIAL GLUCOSE DISPOSAL IN ABDOMINALLY OBESE ADULTS.

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The effects of acute exercise on post-prandial glucose disposal are equivocal. We examined the impact of exercise intensity on blood glucose and insulin responses to an oral glucose tolerance test (OGTT). Eleven abdominally obese adults (n=11; age, 25.2 +/- 1.3 yrs; BMI, 38.5 +/- 1.5 kg/m²; %BF, 43.9 +/- 2.1%; WC, 114.2 +/- 4.1 cm; VO₂peak, 17.7 +/- 1.1 ml/kg/min) completed a VO₂peak/lactate threshold protocol plus 4 randomly assigned exercise sessions; 1) rest (C; no exercise); 2) low, (L; 50% of difference between LT and rest), 3) moderate (M; @ LT); and 4) high, (H; 50% of difference between LT and peak). Sessions were calorically equivalent to 200kcal, calculated from min-by-min energy expenditure by open circuit spirometry. One hour after the onset of exercise, subjects received a 75-g OGTT. Glucose and insulin were assayed from blood samples collected before (-30 to 0 min), during (0 to 60min) and after exercise (60 to 240min) at 5-10min intervals. There were no significant differences among conditions in post OGTT 1) area under the glucose concentration curve (mg/dl/180-min; C, 21690 +/- 1288; L, 21691 +/- 1192; M, 22502 +/- 1369; H, 21748 +/- 1152; p=.80) and 2) area under the insulin response curve (iIU/dl/180-min; C, 9936 +/- 1091; L, 10222 +/- 778; M, 9823 +/- 876; H, 9771 +/- 894; p=.97, n=9). Blood glucose concentrations returned to baseline by 180-min after OGTT in all experimental conditions (mg/dl; baseline, C=89, L=92, M=94, H=93; 180-min, C= 84, L=94, M=90, H=89; p=.887). In abdominally obese adults a single bout of exercise did not affect post-prandial glucose and insulin responses.

An Examination of Catecholamine and Interleukin-2 Responses on Oxidative Stress Utilizing a Dual Stress Model

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Oxidative Stress has been implicated as a critical contributor to the pathogenesis of cardiovascular disease. Furthermore, catecholamine increases and inflammation have been demonstrated to increase oxidative stress. Both physical and mental stress elicit elevations in catecholamine release and inflammation, although there are no studies examining the impact of these responses on oxidative stress. This study examined the catecholamine and IL-2 responses and their relationship to 8-Isoprostane in response to a dual stress condition. Seven subjects (VO₂max=45.13±7.70 ml•kg•min⁻¹) completed two experimental conditions. The exercise-alone condition (EAC) consisted of cycling at 60% VO₂max for 37 minutes, while the dual-stress condition (DSC) included 20 minutes of a mental challenge while cycling. EPI and 8-isoprostane revealed a significant condition by time interaction. In addition, significant main effects for time were observed in NE and IL-2. EPI area-under-the-curve (AUC) was positively correlated with NE AUC and IL-2 AUC. Additionally, NE AUC was positively correlated with IL-2 AUC and peak 8-isoprostane. Finally, peak IL-2 was positively correlated with peak 8-isoprostane. These results suggest that potential mechanisms for elevated oxidative stress during dual stress may be through the release of catecholamines and IL-2. The subsequent impacts of elevated catecholamines and inflammation on oxidative stress may play an important role in the pathogenesis of cardiovascular disease. Cautious interpretation and further investigation are warranted to understand these results in the context of cardiovascular disease and stress.

RELATIONSHIPS AMONG SERUM LEPTIN, BODY WEIGHT STATUS, AND CARDIORESPIRATORY FITNESS IN OBESE AFRICAN AMERICAN FEMALE ADOLESCENTS ENROLLED IN A WEIGHT MANAGEMENT PROGRAM

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Leptin, an adipose-derived hormone, is positively correlated to adiposity in humans and hyperleptinemia has been implicated in several obesity-related comorbidities. Reduced leptin following weight loss has been correlated to initial leptin concentration and changes in fat mass. The purpose of this study was to examine the relationships among leptin, body weight status, and cardiorespiratory fitness (CRF) before and after 6 months of participation in a multidisciplinary weight management program. Thirty-six African American female adolescents (13.4±1.6 yrs; 36.4±5.4 kg/m²) were enrolled in the intervention, which included physical activity, nutrition education, and behavioral support. Baseline leptin was positively correlated (p<0.05) with body mass, body fat percentage (%BF), body mass index (BMI), and BMI z-score (BMIz) and negatively correlated with CRF. Twenty-six participants (72%) completed 6 months and had reduced leptin (70.0±19.3 ng/ml vs. 50.4±19.2 ng/ml, p<0.01), %BF (51.9±5.0% vs. 50.5±5.8%, p<0.01), and BMIz (2.43±0.27 vs. 2.36±0.29, p<0.01). CRF did not change significantly (p=0.183). Changes in leptin were correlated with reductions in BMI (r=-0.521, p<0.05) and BMIz (r=-0.493, p<0.05) but not with baseline leptin or changes in %BF or CRF. These findings suggest that a weight management program can contribute to reductions in leptin independent of changes in CRF. Reducing leptin in obese adolescents may attenuate the progression toward obesity-related comorbidities in adulthood.

RESPONSE OF PERCEIVED AND PERFORMANCE BASED FUNCTION IN OLDER ADULTS WITH EXERCISE INTERVENTION

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P64

Exercise interventions have been used to increase physical function in older adults. However, with some older adults, measures of perceived and performance-based physical function are not aligned. Individuals who express little or no functional limitation may have low functional performance putting them at risk of future dependency (Cress & Meyer, 2003). This study evaluates the influence of exercise on both perceived and performance-based physical function with the hypothesis that after the exercise intervention, more individuals would have alignment between perceived and performance-based function. Using cross-sectional and longitudinal designs, older adults, 74.5 years ± 6.21(n=73), from community or retirement dwellings responded to the SF36 physical function (SF36PF) questionnaire and performed the Continuous Scale Physical Functional Performance (CS-PFP) test. SF36PF <65 (0-100) and CS-PFP <57 (0-100) are associated with increased dependence, i°at riskj± (Cress & Meyers, 2003). Participants were randomly assigned to either a control or an aerobic/strength combined or walking exercise group. For analysis, participant's baseline results were stratified into four groups (CS-PFP <57and SF36 scores jÜ65, CS-PFP j†57and SF36 jÜ65, CS-PFP<57 and SF36 >65, and CS-PFP j†57 and SF36 >65 scores). At baseline testing, the prevalence of those i°at riskj± was approximately equal in the exercise (48.6%) and control (47.3%) groups. Following the intervention, the control group showed a slight decrease (7.8%) in the prevalence of i°at riskj± participants, however, the decrease in the exercise (25.7%) was dramatic. The non-alignment of perceived and performance-based function can be an effective tool for targeting individuals at greatest risk of dependency, while exercise interventions can reduce the prevalence of that risk

THE EFFECT OF AN AUDITORY RHYTHM-BASED WALKING PROGRAM ON FITNESS IN PERSONS WITH PARKINSON'S DISEASE

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P65

Parkinson's disease is a progressive neuromuscular disorder that results in significant functional limitations and many secondary conditions associated with inactivity. As a part of a larger study the purpose of this investigation was to evaluate whether an auditory rhythm based walking program would improve physical fitness. Eight participants (6 males, 2 females) with a diagnosis of Parkinson's disease classified as Stages 1 to 3 on the Hoehn and Yahr scale with a mean age of 65.88 ± 8.58 yrs participated in a supervised walking program 30min/3x/wk, each completing 24 individual sessions. Fitness evaluations were conducted pre and post intervention including: chair stands, curl-ups, sit-and-reach, timed up-and-go, grip strength, 6-min walk, and % body fat (BOD POD). Student's paired t-tests showed a significant ($p < 0.05$) improvement in the 6-min walk [Pre: $x = 1252.7 \pm 317.19$ m; Post: $x = 1623.45 \pm 223.39$ m]. A significant ($p < 0.05$) reduction in % body fat was also observed [Pre: $x = 31.89 \pm 8.74\%$; Post: $x = 30.93 \pm 8.62\%$]. Study results demonstrate that an 8-week auditory rhythm walking program improves cardiorespiratory fitness and body composition in people with Parkinson's disease.

CAROTID ARTERIAL STIFFNESS AND INFLAMMATION IN SPINAL CORD INJURED SUBJECTS

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P66

Cardiovascular disease has emerged as the leading cause of mortality in patients with spinal cord injury (SCI). Carotid arterial stiffness is associated with atherosclerosis, ischemic stroke, and cardiovascular mortality. The purpose was to determine if SCI subjects have increased carotid arterial stiffness compared to appropriately matched able-bodied (AB) controls and to determine if carotid arterial stiffness correlates to C-reactive protein (CRP) and adiponectin. SCI ($n = 13$) and AB ($n = 13$) subjects between the age of 20-52 years were recruited to participate in the study. B-mode Doppler ultrasound was used to obtain carotid artery diameter measurements at a rate of 30 frames per second. Arterial stiffness was assessed via the stiffness index, which is based on the relationship between the logarithm of the relative blood pressure and the arterial distension ratio. Inflammation was assessed via fasting serum levels of CRP and adiponectin. The stiffness index was not significantly different ($p = 0.061$) between the SCI and AB groups. There was a significant positive correlation between stiffness index and CRP within the SCI group ($p = 0.022$), not in the AB group ($p = 0.207$). There was a significant inverse correlation between stiffness index and adiponectin in the AB group ($p = 0.015$), not in the SCI group ($p = 0.149$). Within the SCI group, carotid arterial stiffness was associated with the inflammatory effects of CRP and not with the anti-inflammatory effects of adiponectin. These associations may indicate an adverse atherosclerotic risk in the SCI population.

THE ACUTE EFFECTS OF EXERCISE INTENSITY ON ENDOTHELIAL FUNCTION IN LEAN & OBESE YOUNG ADULTS

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P67

Endothelial dysfunction is an early marker of increased risk of atherosclerosis and cardiovascular disease and has increased prevalence in obesity. Exercise has been suggested as an intervention for improving endothelial function. We examined the effects of exercise intensity on acute changes in endothelial function. Fourteen lean ($BMI < 25$, age 23 ± 4 yr) and 10 obese ($BMI > 30$, age 26 ± 6 yr) adults completed a cycle ergometry lactate threshold (LT)/VO₂peak test. Subjects were studied during 3 randomized admissions [control (C, no exercise), moderate (M, @ LT) and high (H, > LT) intensity cycle ergometer exercise (30 min)]. Flow-mediated dilation (FMD) was assessed by Doppler ultrasound at baseline and at 1, 2, and 4 h post-exercise. In lean subjects, FMD increased over time in all conditions. A condition effect was observed for absolute increase in FMD above baseline ($p < 0.05$), H having the greatest effect (from 7.2 to 10.2%), with similar results for relative increases in FMD above baseline (28%, 24%, 65% for C, M, and H, respectively). FMD responses were significantly blunted in obese subjects ($p < 0.05$) and did not change significantly over time in any condition (although absolute changes after M were comparable to lean subjects). Max change in FMD was significantly impaired in the obese compared to lean, in both absolute (1.1 vs. 3.1%) and relative (21 vs. 65%) terms. We conclude that in lean young adults, high-intensity exercise enhances endothelial function more than moderate-intensity exercise of the same duration. In contrast, obese subjects are resistant to the salutary effect of acute exercise on FMD.

GENDER DIFFERENCES IN PLASMA VOLUME SHIFT IN RESPONSE TO ERGOMETER EXERCISE

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P68

Plasma volume (PV) shifts in response to arm and leg ergometry were determined in 10 healthy young subjects, 5 men (mean age 24.8) and 5 women (mean age 24.4). Women were tested in the early follicular phase of the menstrual cycle. Leg ergometry protocol consisted of a graded exercise test (GXT) in which workload increased by 0.5 KP every 2 minutes until a heart rate (HR) of 170 bpm was reached, followed by 8 min at a workload adjusted to keep HR in the target range of 170 ± 5 bpm. Arm ergometry consisted of the same exercise protocol except the GXT workload increased 0.25 kp every 60 sec until HR of 170 bpm was reached. A blood sample was obtained by venipuncture before and immediately at the end of the exercise bout. Hemoglobin and hematocrit were measured to determine plasma volume using the method of Dill and Costill. Plasma volume declined for both leg (men, -21.33 ± 5.4 ; women, -15.21 ± 5.6) and arm ergometry (men, -20.25 ± 3.9 ; women, -15.32 ± 4.1). There were no gender or exercise mode differences for PV shifts. PV shifts were very consistent between exercises for each subject. Data suggest that for a moderately high level of cardiovascular stress, upper and lower body aerobic exercise elicit similar PV shifts regardless of gender.

AVERAGE NIGHTTIME BLOOD PRESSURE WAS NOT LOWER AFTER ACUTE EXERCISE IN PREHYPERTENSIVE WOMEN, BUT FEWER WOMEN WERE NON-DIPPERS

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P69

The relationship between chronic exercise and a non-dipper (ND) blood pressure pattern is inconsistent. Recent studies show that acute exercise can improve the ND pattern in hypertensive individuals. Prehypertensive individuals are at increased risk for developing hypertension and for having a ND pattern. Therefore, we assessed 24-hour blood pressure in 13 low to moderately active prehypertensive women on two days separated by one week. Each wore the monitor on non-exercise weekdays, and no one exercised before the first session. All walked on a treadmill for 30 minutes at a moderate intensity before the second 24-hour measurement. Participants kept activity diaries and sleep records each day they wore the monitor. Differences in systolic (SBP), diastolic (DBP), and mean (MAP) pressure for day and night averages were assessed with paired sample t-tests. Differences also were assessed for the day to night dip in blood pressure for SBP, DBP, and MAP. There were no significant differences for day or night SBP ($p > .05$), DBP ($p > .05$) or MAP ($p > .05$). Differences in the day to night dip also were not significant for SBP ($p > .05$), DBP ($p > .05$) or MAP ($p > .05$). However, the number of participants with a ND pattern for SBP was reduced from 71.4% to 46.2% after acute exercise. While these results do not show an overall reduction in nighttime blood pressure in prehypertensive women, they do suggest that acute exercise might improve a ND pattern for SBP.

Supported by: College of William & Mary Summer Research Grant; Borgenicht Program for Aging Studies and Exercise Science.

NO DIFFERENCE IN SLEEP APNEA INDEX BETWEEN COLLEGE FOOTBALL LINEMEN AND ADULTS

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P70

There is little information concerning sleep apnea in college football linemen and adult men and women. This study was undertaken to determine if there was a significant difference in the sleep apnea index between college football linemen and adult men and women. Twenty offensive and defensive linemen and 18 adults (11 men and 7 women) volunteered to participate. Volunteers were taken from the local NCAA Division I football team while the adults were faculty/staff at the local university. Mean age, height, and weight, for the football team were 19.3 yr, 188.5 cm, and 122.2 kg, respectively. For the adult men they were 53.4 yr, 175.3 cm, and 88.8 kg; the women were 51.4 yr, 154.2 cm, and 85.2 kg. Systolic and diastolic blood pressures were 145.3 and 76.9 for the football players and 134.3 and 85.6 for the adults. Mean neck circumference, BMI, and percent fat from skinfolds for the football players were 44.3 cm, 30.9, and 20.0, respectively. For the adults they were 42.7 cm, 34.2, and 30.7. The Epworth Sleepiness Scale was 9.4 for the football linemen and 7.4 for the adults. There was no significant difference between the two groups on the multivariable sleep apnea index ($p > .05$). The mean values were .49 for the football linemen and .47 for the adults. Therefore, there was no difference in the multivariable sleep apnea index between the football linemen and the adults. For individuals with an index of .50 or higher, a sleep apnea test is usually recommended.

DEVELOPMENT OF A PHYSICAL ACTIVITY STATUS SCALE FOR WHEELCHAIR USERS AND ITS COMPARISON TO COMPONENTS OF THE METABOLIC SYNDROME: A PILOT STUDY

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P71

There is evidence that, in a wheelchair population associated constraints often result in habitually low physical activity (PA), consequently increasing health risks (vs. ambulatory persons). Using past questionnaires and feedback from wheelchair users as a guide, we have developed an instrument to assess PA in wheelchair users. Following completion of the new physical activity status scale (PASS) seven wheelchair users (4 females, 3 males; age 24.9 ± 5.3) completed the PASS, had waist circumference and blood pressure measured, completed a short interview to provide feedback regarding the PASS, and underwent a lipid/glucose profile screening. Results: 1) All participants were in the most active of the three possible subdivisions of the PASS; 2) All participants were classified as low or very low risk for disease based on waist circumference 3) Values (mean \pm SD) for blood pressure ($112/73 \pm 13/11$), total cholesterol (177 ± 29), triglycerides (59 ± 18), HDL (52 ± 9), TC/HDL ratio (3.5 ± 0.8) and fasting glucose (79 ± 7) were at favorable levels. In conclusion, values for components of the metabolic syndrome were consistent with high reported PA of this small sample. Future research comparing age, waist circumference and PASS scores to measures of disease risk in large, diverse samples of wheelchair users could provide information to develop a health screening tool and aid in prescribing more effective exercise guidelines for this population.

EFFECTS OF A MODERATE-VOLUME OF MODERATE-INTENSITY AEROBIC EXERCISE ON INSULIN SENSITIVITY IN SEDENTARY ADULTS WITH IMPAIRED FASTING GLUCOSE

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P72

The effect of an 8-wk program of moderate-intensity treadmill walking (4 sessions per week comprised of 5 min warm-up, 30 min of treadmill walking at 40-60% of heart rate reserve [HRR], and 5 min of cool-down) was determined in a sample of sedentary adults (48.2 ± 9.7 yr) with impaired fasting glucose (103.7 ± 9.6 mg/dl). Fasting insulin and glucose, and fasting indices of insulin sensitivity (homeostasis model assessment [HOMA] and quantitative insulin-sensitivity check index [QUICKI]) were determined. In addition, oral glucose tolerance tests (OGTT) were performed and data from those assessments were used in several quantitative insulin sensitivity models. Blood lipids, blood pressure, and anthropometric data were also collected. The exercise intervention resulted in reductions in systolic (132.1 ± 15.1 to 125.3 ± 11.7 mmHg) and diastolic (81.7 ± 8.5 to 77.6 ± 7.2 mmHg) blood pressure and waist circumference (102.8 ± 16.6 to 100.6 ± 16.3 cm), and in a trend towards improvement in glucose tolerance (glucose @ 2 hr of OGTT from 143.1 ± 67.5 to 129.9 ± 58.8 mg/dl), but no change in fasting insulin or fasting glucose. Compared with other studies wherein similar exercise resulted in significant improvements in fasting glucose (moderate intensity, 300-400 kcal/session), energy expenditure in the current investigation (191.5 ± 46.2) may have been below the threshold necessary to produce improvements with moderate-intensity exercise. These results emphasize the importance of considering energy expenditure along with exercise intensity, duration, and frequency, in prescribing exercise for the purpose of improving insulin sensitivity in sedentary, pre-diabetic adults

BREATHE RIGHT® EXTERNAL NASAL DILATOR STRIPS AS AN ERGOGENIC AID TO EXERCISE

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P73

Having the ability to breathe easily through the nose is an important part of exercising. The nose effectively warms and humidifies incoming air to better suit the bodies needs. It is known that having difficulty breathing through the nose can negatively affect exercise performance. The purpose of this study is to investigate the effects of the Breathe Right® external nasal dilator strip on exercise performance at 80% of an individual's VO₂ max. Eighteen people participated in the study. Subjects signed an informed consent, PAR-Q, additional questionnaire, and rated their ease of breathing through their nose on a 1 to 10 scale prior to testing. Testing was performed in the Human Performance Laboratory at the University of Louisiana at Monroe. Subjects VO₂ max was measured using open spirometry on a treadmill ergometer. On two separate occasions participants returned to the laboratory for a treadmill run at 80% of the subjects predetermined VO₂ max; once with the nasal dilator strip and once with a placebo. Heart rate (HR), Borg's Rate of Perceived Exertion (RPE), and time to exhaustion were measured. Statistical analysis was conducted using SPSS 14.0. Significance level was preset at p<.05. A significant difference was found in the time to exhaustion between runs with the Breathe Right® strip vs. runs with the placebo strip. No significant difference in HR or RPE was found between runs with the Breathe Right® strip vs. runs with the placebo strip. Prior data shows mixed results when testing at a high percentage of VO₂ max. This study provides further support that Breathe Right® strips may have an ergogenic effect on aerobic exercise performance.

INFLUENCE OF BODY POSITION ON FORCED VITAL CAPACITY MEASURES TAKEN IN AIR AND WATER IN COMPETITIVE SWIMMERS

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P74

A portion of a swimmer's training regimen is directed towards breathing training such as snorkel swims, alternate or reduced breathing stroke patterns, or breath holding drills. Additionally, swimmers are unique as athletes because of this tenuous relationship between work and the ability to breathe during performance. In this investigation, measures of forced vital capacity (FVC) were taken in water and air under the following conditions: 1) vertical standing, 2) streamline swim position, 3) horizontal air (chest region suspended from starting block), and 4) horizontal streamline position in pool using the gutter for support. All FVC measures were made using a portable SpiroLab II spirometer. The participants were 16 competitive swimmers (9 men, 7 women) ranging in age from 19-50 years. Each subject's data was collected within a single session. Statistical analysis was performed using a 2 X 4 X 2 repeated measures ANOVA for condition (land, water), position (vertical standing, vertical streamline, horizontal, horizontal streamline) and sex (male, female) with the confidence level set at P<0.05. When multiple means were significant, a paired T test was used to determine specific differences. The results indicated a significantly greater FVC (280 ml) when obtained on land versus testing in the water. Additionally, streamline position testing was statistically less (180 ml) from vertical or horizontal testing only when performed on the land. These results suggest that a land-based model for FVC measurement in competitive swimmers may not be an accurate indicator of pulmonary performance in water.

EXERCISE CHANGES IN TNF-alpha AND CORTISOL, DOES A CHANGE IN CORE TEMPERATURE MATTER? AN EXPLORATORY INVESTIGATION

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P75

Cortisol and TNF-alpha are increased in response to the stress of exercise. The purpose of this investigation was to examine if the level of change is dependent upon core temperature (CT) change. To induce CT change 8 male subjects (age 24±1.6 yrs, VO₂max 52.8±3.7ml/kg/min, BMI 24.2±1.9) participated in two 40 minute randomized trials of cycle ergometry at 65% of VO₂max immersed to chest level in 25 and 38 degree Celcius water. Core temperature was monitored via rectal thermometer throughout each trial with blood draws taken immediately pre and post each trial. Pearson product correlations were calculated on change scores of plasma cortisol, plasma TNF-alpha, and rectal temp. Correlations between cortisol and TNF-alpha (r=0.551, p=0.023), cortisol and core temp. (r=0.557, p=0.025), TNF-alpha and core temp. (r=0.483, p=0.058) show moderate relationships between all variables. Regression of CT on cortisol and TNF-alpha was near significance (R²=0.353, p=0.591) but neither variable controlled that relationship (cortisol, p=0.146, TNF-alpha, p=0.373). In conclusion, as CT change increased so did the increase in exercise response to both TNF-alpha and cortisol regardless of trial, however data prevents us from being able to determine the driving force for the increases.

EFFECTS OF DECEPTION ON RPE DURING MODERATE INTENSITY CYCLING.

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01

RPE has been theorized to function through a feed forward, scalar model, although this model is not well understood. This study investigated RPE during moderate intensity cycling when subjects were deceived about duration and intensity. Eight individuals performed a maximal cycle test and three moderate intensity cycling bouts. During the first trial, subjects performed the anticipated trial (REAL) (40-min, 50% VO₂max) while the second and third trials were deceptive. In a counterbalanced order, participants completed a trial 15% shorter (34-min) but with 15% greater workload (SHORT) and a trial 15% longer (46-min) with 15% reduced workload (LONG). Differentiated [RPE overall (RPE-O), legs (RPE-L), breathing (RPE-B)], VO₂, VE, blood lactate, and HR were assessed at 25%, 50%, 75%, and 100% completion of each bout. Repeated measures ANOVAs revealed significant ($P < 0.05$) main effects among trials for all variables. Post-hoc tests revealed significantly lower RPE-O and RPE-L for LONG at 25%, 50%, and 100% completion vs REAL and significantly lower RPE-O values for LONG at 25%, 50%, and 75% completion vs. SHORT. RPE-B for LONG was significantly lower (vs. REAL) at 25%, 50%, 75%, and 100% and significantly lower vs. SHORT at 50%, 75%, and 100% completion. As expected, variables reflecting physiological strain changed relative to intensity among trials. Results suggest RPE correspond more closely to physiologic strain vs the effect of feed forward, scalar mechanisms when subjects are deceived about intensity and duration (despite equated total work).

PHYSICAL ACTIVITY IN RURAL AND URBAN MIDDLE SCHOOL YOUTH: PERCEPTIONS OF OPPORTUNITIES, ENVIRONMENTAL SUPPORTS AND BARRIERS FOR PARTICIPATION.

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02

The present study examined differences in physical activity rates, opportunities for physical activity, and aspects of the built environment between rural and urban dwelling middle school children. Participants completed a survey which addressed their perceptions of opportunities, barriers and supports for physical activity, race (parent/child), education attainment (parent), and length at their current residence. The children provided information regarding their level of physical activity, P.E./sports participation, television viewing, and video game time. Forty-one parents (20 rural, 21 urban, 10% male, mean age = 41.0yrs) and their 50 children (22 rural, 28 urban, 44% male, mean age = 12.6yrs, 58% 6th grade) provided data. For children, no significant differences in level of physical activity, sports participation, television viewing, and video game time we found. Results of the chi-square tests indicated significant differences for children and parents for presence of stores within walking distance (Urban > Rural), presence of sidewalks (Urban > Rural), presence of basketball courts (Urban > Rural), presence of playing fields (Urban > Rural), presence of parks (Urban > Rural), presence of a recreation center (Urban > Rural), presence of a trail (Urban > Rural), and ease of walking to a bus stop (Urban > Rural). Rural and urban middle school youth and their parents perceive different levels of opportunities, environmental supports and barriers for physical activity despite no observed differences in self reported physical activity.

Supported by the Centers for Disease Control and Prevention

TRAINING MOTIVATIONS FOR COLLEGIATE FEMALE STUDENT-ATHLETES

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03

The purpose of this research was to explore physical training motivations for collegiate female student-athletes at mandatory training activities. Understanding these motivations can assist coaches in structuring training protocols to not only meet the demands of the sport but also personal motivations. Data collection was at a university in the Southeast and resulted in 132 respondents. The questionnaire contained statements regarding previously identified factors as to why the respondents participated in physical training as well as exploring the motivation of external pressure. Respondents were asked to rate their agreement with statements using a Likert-type scale anchored by 1=strongly disagree and 7=strongly agree. Exploratory factor analyses revealed a six-factor model explaining 73.08% of the variance. The factors were: 1) eustress, 2) muscular pliability, 3) stress release, 4) body image, 5) muscular fitness, and 6) social. The results showed that external pressure was not a motivational factor as to why female student-athletes train. The student-athletes do not feel they have to attend the training sessions but rather they want to do train. Student-athletes recognize the importance of muscular development and muscular pliability, but they also enjoy the benefits of exercising such as stress release and social interaction. Coaches can use this information in developing training protocols for student-athletes so they will perceive the workouts as beneficial in all aspects of their life and not doing them just because they are mandatory

INCREASED PERCEIVED QUALITY OF LIFE BURDEN WITH AGE-ASSOCIATED DECLINE IN VASCULAR AND PHYSICAL FUNCTION

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04

Vascular impairment is associated with reductions in physical function and health-related quality of life (QOL). The QOL burden associated with age-dependent changes in vascular and physical function, and the potential role of daily activity, is not well understood. Purpose: (1) To examine age-associated changes in vascular and physical function and its relation to QOL, in older adults; and (2) To assess the modifying role of physical activity. Methods: Subjects from the Louisiana Healthy Aging Study (n=143; Age: 83±11) were used for these analyses. Physical activity patterns (Activity Index: AI) were obtained from the Yale Activity Questionnaire. Brachial reactivity (BAR) was determined from ultrasonography. Physical function (PFP) was determined from a battery of tests for activities of daily living. QOL was obtained from SF36. Results: All dependent measures declined from the 7th to 10th decade of life (AI: 10U/decade, $r = -0.42$; BAR: 1.2%/decade, $r = -0.37$; PFP: 13U/decade, $r = -0.68$). The decline in SF36 physical component score (PCS) was 2.5U/decade, $r = -0.28$. The PCS was associated with AI ($r = 0.40$), PFP ($r = 0.56$), and BAR ($r = 0.20$). BAR ($r = 0.32$) was related to PFP. Nonagenarians, in the highest AI tertile, had higher scores on the PCS ($p = 0.001$), PFP ($p = 0.02$), but not BAR. Conclusion: These data confirm an age-dependent decline in BAR and PFP. This decline may contribute to a greater QOL burden. Importantly, the most active nonagenarians have a lower QOL burden and higher PFP than the least active.

POSSIBLE MECHANISMS INFLUENCING POSITIVE CHANGES IN BODY IMAGE AFTER PARTICIPATION IN ALAMANCE-GIRLS IN MOTION

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05

Data from girls participating in Alamance-Girls in Motion (A-GIM), a program addressing body image, nutrition, and exercise through mentorship and education in girls ages 10-11, suggests that following participation, perceived body image is significantly improved. The mechanisms influencing this change are unknown. It has been suggested that increasing self-esteem can positively affect body image and that physical activity is related to improvements in self-esteem. The purpose of this study was to evaluate if changes in self-esteem and physical activity rates following participation in A-GIM offers an explanation for the improvement observed in perceived body image. Fifteen Elon University women and 15 girls volunteered to participate in A-GIM as mentors and mentees. Mentors were matched one on one with girls based on shared interests and they met weekly to exercise and discuss program topics. Prior to, and following completion of the program, mentees completed the SPAS-C, Rosenberg Self-Esteem Scale (SES), 2 subscales of the Eating Disorder Inventory (Drive for Thinness [DT] and Body Dissatisfaction [BD]), and an activity questionnaire. A significant improvement in SPAS-C (PRE=30.5±3.31 and POST=24.8±3.10), SES (PRE= 20.75±2.63 and POST=25.75±1.28), DT (PRE=6.6±3.7 and POST=3.7±1.01) and BD (PRE=14.4±3.77 and POST=7.0±2.64) was found from pre to post testing ($p < 0.05$), suggesting improved body image and self esteem. Increased rates of physical activity were also observed ($p < 0.05$), supporting a positive association between improved body image, self-esteem and physical activity.

PSYCHOSOCIAL CORRELATES OF PHYSICAL ACTIVITY IN APPARENTLY HEALTHY ADOLESCENTS

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06

This study was designed to describe social, cognitive and psychomotor factors associated with physical activity in adolescents. It has often been hypothesized that high-levels of physical activity is often associated with improved self-esteem. Therefore, 92 adolescents, aged 10-16 were monitored using motion detectors for habitual and physical activity. Social and cognitive factors were examined through the use of the Piers-Harris Children's Self-Concept Scale and the Revised Children's Manifest Anxiety Scale. Conclusions established 75.5% of these individuals spent the day inactive and less than 1.4% of the day spent in vigorous activity. Correlations were found between self-efficacy and social influence scores. Therefore, there was a positive correlation for increased levels of physical activity in the development of self-esteem in adolescents.

THE RELATIONSHIP BETWEEN LUNG FUNCTION AND PEAK POWER OUTPUT AMONG INDIVIDUALS WITH PHYSICAL DISABILITIES WHO ENGAGE IN RECREATIONAL SPORT

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07

The purpose of this study was to examine the relationship between lung function and peak power output among individuals with physical disabilities who engage in recreational sport. Participants (N = 16, Age = 24.4 ± 7.4 yrs, Height = 156.6 ± 23.0 cm, Weight = 64.7 ± 15.8 kg) with spinal cord injury (SCI), cerebral palsy (CP), and amputations (AMP) reported to the lab to complete a peak lung function and peak oxygen uptake test (CardioCoach metabolic system, Korr Technologies). Oxygen uptake was assessed using a continuous arm ergometer protocol consisting of one-minute increments of 5 to 10 watts until exhaustion (Raymond, et al., 1999). Polar s610i monitors were used to measure heart rate every 5-sec during peak exercise tests. Lung function, measured as forced expiratory volume (FEV) using a spirometer, and self-report physical activity level were collected prior to testing. FEV was not related to peak power output in SCI ($r = .26$) or CP ($r = .08$) but was related in AMP ($r = .97$). Minutes of weekly vigorous activity was related to peak power output in SCI ($r = .53$), CP ($r = .83$) and AMP ($r = .95$). Although previous reports have demonstrated compromised lung function among individuals with SCI and CP, this outcome does not influence peak power output to the same extent as other modifiable variables (e.g., vigorous physical activity).

IMPROVED LIPID PROFILE IN HIV POSITIVE MEN AFTER 6 WEEKS OF COMBINED RESISTANCE AND AEROBIC TRAINING

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08

Even though the life expectancy of HIV+ patients has tripled since the introduction of antiretroviral therapy (ART), certain components of ART can exacerbate metabolic abnormalities and severely increase the risk of cardiovascular disease (CVD). This study examined the effect of exercise training on plasma triglyceride and cholesterol in HIV+ men. Sixteen subjects were recruited and randomized into either the exercise (EX) or control (CON) group. The EX subjects participated in moderate intensity resistance training at 60% of their 3-rep max, as well as aerobic exercise on a treadmill or bike for 30 minutes at 60% of their age predicted heart rate max for a total of 6 weeks (twice per week). The CON group received standard care during the same 6 week session and did not increase their activity level. Subjects provided a 12-hour fasting blood draw for analysis before and after the intervention. A significant reduction in triglyceride level (155±70 to 110±30 mg/dl) and a trend ($p=0.07$) towards a decrease in LDL cholesterol (182±55 to 171±33 mg/dl) was observed in the EX group. These data show that HIV infected individuals can decrease plasma triglycerides and LDL cholesterol within 6 weeks after engaging in moderate intensity resistance and aerobic exercise. The results suggest that HIV infected individuals who engage in moderate intensity resistance and aerobic training can obtain improved circulating lipids, thus reducing the risk for CVD. This project was supported by the NIH/NCMHHD, the American College of Sports Medicine, and the Arnold School of Public Health.

12-WEEK EXERCISE PROGRAM AND QUALITY OF LIFE IN ADULTS WITH CEREBRAL PALSY

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09

The Surgeon's General First Call to Action on Disability released in July, 05 asked all Americans to help increase health and wellness for people with disabilities. Physical activity has been associated with health-related quality of life in the general population. Jahnsen et al. (2004) surveyed 406 individuals with cerebral palsy (CP) and found persons with one or more pain sites reported only moderate levels of life satisfaction. The purpose of this study was to examine changes in health-related quality of life (QOL) following a 12-week exercise intervention in adults with CP who reported chronic pain. Participants included 21 adults (13 females, 8 males; 13 Caucasian, 8 African-American) with a mean age of 40.8 yrs (± 11.1); 11 were ambulatory and 10 utilized a wheelchair for mobility. Participants engaged in an exercise intervention 3x/wk for an hour each session. Sessions were conducted in a group format and included both aerobic and resistive activities. The SF12v2 was completed by participants pre and post intervention. The norm-based subscale (Physical Functioning, Role Limitations due to Physical Health, Bodily Pain, General Health, Vitality, Social Functioning, Role Limitations due to Emotional Health, Mental Health) and summary (Physical, Mental) scores were computed. Student's t-tests revealed a significant improvement ($p < .05$) in Role Limitations due to Physical Health subscale score at completion of the intervention. This 12-week exercise program positively affected QOL in adults with CP, an important aspect of health and wellness.

AEROBIC FITNESS AS A MODIFIER OF AMBULATORY BLOOD PRESSURE IN ADOLESCENTS BORN PREMATURELY WITH VERY LOW BIRTH WEIGHT

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010

Prematurity, very low birth weight (VLBW), and lower aerobic fitness are associated with increased risk for developing hypertension. Adolescents born pre-term with VLBW have been shown to have higher resting and ambulatory blood pressure (BP) than their term born peers. The purpose of this study was to examine the effect of aerobic fitness on resting and ambulatory blood pressure in adolescents born prematurely with VLBW. Forty 14 year-old adolescents (11 males, 18 AA) performed a progressive maximal exercise test on a cycle ergometer to determine aerobic fitness from peak oxygen uptake (VO_2 pk). On a separate day, each wore a Spacelabs 90207 ambulatory blood pressure monitor for 24 hours to determine average SBP (SBP24) and DBP (DBP24) for the 24-hour period, as well as, average SBP and DBP for wake and sleep periods. The % change from wake to sleep (nighttime dipping) was also examined. Average SBP and DBP percentiles were 37 + 22 and 35 + 19 mmHg, respectively. Although only one subject had elevated resting BP (>95 th %ile), 55% had elevated BP load, defined as having $>25\%$ of the 24-hour readings above the 95th %ile. VO_2 pk was significantly inversely correlated with resting SBP ($r=-0.392$), but not resting DBP ($r=-0.199$). VO_2 pk was not correlated with SBP24 or DBP24, but was significantly correlated with SBPsleep ($r=-0.374$). Subjects with higher aerobic fitness exhibited greater nighttime dipping ($r=0.461$ and 0.338 for SBP and DBP, respectively.) In conclusion, aerobic fitness was associated with lower BP at rest and during sleep, and greater nighttime dipping, and may help to reduce risk for developing hypertension in this predisposed population.

011

NEUROPEPTIDE Y1 RECEPTOR: OBESITY AND SKELETAL MUSCLE FATTY ACID OXIDATION

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Current studies show that two out of three adult Americans are overweight, defined as a body mass index greater than 25. The alarming incidence of obesity has stimulated a research effort with aims of seeking a better understanding of the pathophysiology behind obesity so that more sophisticated approaches to treatment can be made available. Recently published articles have investigated a neurotransmitter called Neuropeptide Y, a 36-amino acid residue found mainly in the nervous system (1). Neuropeptide Y (NPY) is known to stimulate appetite and adipogenesis, and studies in animals show that plasma NPY is increased in obese rats, with lower rates recorded in normal weight controls, which suggest a possible link between NPY levels and obesity (1, 2). Studies have proven that NPY1 Receptor is expressed in adipocytes and nerve tissue, but studies have yet to look at NPY1R's expression in skeletal muscle. A recent article published in Nature Medicine showed that NPY has an effect in the periphery, not just on neurons, which opened the door to many more analytical approaches to examining NPY (3). Our laboratory has preliminary evidence that NPY1R is expressed in skeletal muscle and that transcript levels are higher in skeletal muscle of obese humans relative to normal weight controls. Our laboratory used L6 (rat) skeletal muscle cells which were treated with varying concentrations of the NPY1R agonist [Leu31, Pro 34] NPY. These treatments proved NPY has an acute effect on fatty acid oxidation and lipid synthesis in skeletal muscle.

REVIEW OF PROTEIN/AMINO ACID SUPPLEMENT RESEARCH DESIGN IN EXERCISE.

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012

Driven by what is now a billion dollar industry, the depth and breadth of supplement/nutritional research has also experienced significant growth. The two main objectives of this tutorial are to firstly review the fundamentals of protein/amino acid (PRO/AA) digestion and influences on absorption. Secondly provide an overview of current PRO/AA research design methodologies. Specifically this tutorial will review those factors that influence digestion/absorption and utilization of PRO/AA such as exercise intensity, meal content, supplement delivery systems and nutrient timing. Review of research methodologies will encompass the importance of accurately assessing the nutritional status of research participants prior to and during testing and treatment. Also reviewed will be design related considerations for conducting sports-nutrition related research, specifically PRO/AA supplementation utilizing two modes of exercise: resistance and endurance. Discussions will center on evaluation of the adequacy of the chosen training program relative to specific goals and outcomes. An introduction of many of the commonly chosen end points that are currently being used in the literature will be discussed ranging from strength changes, hemodynamics, intramuscular genetic adaptations and performance. This section will conclude with an evaluation of a few published studies which can serve as positive examples of appropriate design related considerations for this type of research. Intended conclusions will be to increase understanding of the many design considerations in PRO/AA research

EFFECT OF MIXED FLAVONOIDS, ANTIOXIDANTS, AND OMEGA-3 FATTY ACIDS ON PLASMA OXIDATIVE DAMAGE.

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013

Plant polyphenolic compounds such as quercetin have demonstrated potent antioxidant and anti-inflammatory activity in vitro. The objective was to evaluate if quercetin (Q) or quercetin in combination with other anti-inflammatory factors (isoquercetin, catechins, vitamin C, and omega-3 fatty acids) (QA) would increase plasma antioxidant capacity and attenuate exercise-induced oxidative damage versus placebo (P). Thirty-nine athletes were recruited and randomized to Q, QA, or P. Subjects consumed 1000 mg quercetin, 1000 mg quercetin plus-anti inflammatory compounds, or placebo each day for 2-wks prior to and during 3-d of cycling at 57% Watts max for 3-h. Blood was collected at baseline, post 2-wks supplementation, immediately post exercise, and 14 hours post exercise and analyzed for F2-isoprostanes, FRAP, TEAC, and vitamin C concentrations. Statistical analyses utilized a 3 (treatment) x 4 (times) repeated measures ANOVA for main effects and Student's t-tests to test mean differences between treatments at specific time points. F2-isoprostanes, FRAP, and vitamin C were significantly elevated as a result of exercise ($P < 0.001$) but, no overall treatment effects were found. However, supplementation of QA indicated significant reduction in F2-isoprostanes at 2-wks post supplementation and immediately post-exercise compared to Q and P. These results suggest that quercetin in combination with other anti-inflammatory factors significantly lowered oxidative damage following 3-d intense exercise compared to quercetin alone or placebo.

ACUTE TIMING EFFECTS OF β -HYDROXY β -METHYL BUTYRATE (HMB) SUPPLEMENTATION ON SERUM INDICES OF MUSCLE DAMAGE

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014

Previous studies suggest that chronic β -hydroxy β -methylbutyrate (HMB) supplementation (>2 wk) lowers serum indices of muscle damage such as creatine kinase (CK) and lactate dehydrogenase (LDH) via a possible increase in sarcolemmal integrity. However, HMB's acute or timing effects have not yet been examined. Therefore, the purpose of this study was to investigate the acute timing effects of HMB on changes in serum CK and LDH after a bout of eccentric exercise. Sixteen non-resistance trained men (22 ± 2 yrs) were assigned to HMB-Pre or HMB-Post groups. All subjects performed 55 maximal eccentric knee extension/flexion contractions on 2 occasions on either the right or left leg, in a crossover design. HMB-Pre ($N=8$) randomly received 3 grams of either a placebo or HMB before and a placebo after exercise. HMB-Post ($N=8$) received a placebo before and either 3 grams of HMB or a placebo after exercise. Blood was drawn for the determination of CK and LDH before, at 8, 24, 48, and 72 hrs post exercise. Serum indices of damage increased, peaking at 48 hrs for CK (773%, $p < 0.001$) and 72 hrs for LDH (180%, $p < 0.001$). While there were no time x group effects of HMB on CK and LDH, post hoc analysis revealed that only HMB-Pre showed no significant increase in LDH levels following exercise. Our findings suggest there are no acute or timing effects of HMB supplementation on indices of muscle damage. However, consuming HMB before exercise appeared to prevent increases in LDH, suggesting further research is warranted.

HEART RATE, RPE, AND BLOOD LACTATE RESPONSES TO AEROBIC EXERCISE IN BREAST CANCER PATIENTS

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015

This study compared heart rate (HR), rate of perceived exertion (RPE), and blood lactate responses to low, moderate, and high intensity aerobic exercise between 7 post-treated breast cancer patients and 7 healthy age-matched controls. The intent was to determine the validity of these measures for monitoring exercise intensity in breast cancer patients. The Modified Bruce protocol was used to estimate VO_{2max} for each subject. Subjects completed 3 randomly assigned 9-minute bouts of aerobic exercise on the treadmill at 40%, 60%, and 70% of VO_{2max} . HR and RPE were recorded at the end of every minute of exercise. Lactate analysis was performed 3 minutes post-exercise. No significant differences between patients and controls were observed in HR or RPE for the exercise bouts at 40%, 60% and 70% of VO_{2max} . Lactate did not differ between the groups at 40% or 60% of VO_{2max} . However, the control group had a significantly higher lactate response at 70% VO_{2max} compared to the patient group (7.0 ± 1.6 mM/L vs. 3.3 ± 1.1 mM/L; $p < 0.0005$). Post-treated breast cancer patients and healthy age-matched controls appear to respond similarly to these 3 different exercise intensities, except for blood lactate response at 70% of VO_{2max} . The mechanism inducing this lactate difference between the patient group and the control group at high intensity aerobic exercise is unclear. Further investigations with larger sample sizes are needed for a clearer understanding of the current findings.

Supported by the Lineberger Comprehensive Cancer Center Clinical/Translational Research Award 07/08

CORRELATION OF VO_{2max} , VO_{2max} RELATIVE TO LEAN MASS, AND THE MODIFIED HOFF TEST IN FEMALE COLLEGIATE SOCCER PLAYERS

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016

A high level of cardiovascular fitness (CVF) is required for those who play collegiate soccer. Assessment of CVF can be determined by several methods including laboratory VO_{2max} testing with a metabolic cart, the Cooper 12-minute run and field tests such as the Modified Hoff Test (MHT). The MHT is a circuit-like field test that includes a series of obstacles and soccer specific skills with the objective of moving as far through the circuit as possible in 10 minutes. The purpose of this study was to investigate correlations between a VO_{2max} test, VO_2 test relative to lean mass, and the MHT. Thirteen female soccer players at an NCAA Division I college participated in the study. Laboratory performance testing used a modified Fox and Costill protocol. Hydrostatic weighing was used to calculate body composition. A two-tailed Pearson correlation evaluated the relationship between variables. Player mean age was 19.38 ± 0.96 years and body fat was $13.9 \pm 4.4\%$. Significant correlations were found between the MHT and VO_{2max} ($r=0.74$; $p < 0.004$) and VO_{2lean} ($r=0.74$; $p < 0.004$), and between body mass and liters/m ($r=0.58$; $p < 0.04$) and lean mass and liters/m ($r=0.58$; $p < 0.04$). A mild trend was seen between VO_{2lean} and liters/m ($r=0.51$; $p < 0.08$). The correlation coefficients suggest that 45-50% of the variance in MHT is unaccounted for when compared with the traditional forms of laboratory fitness assessment testing. A larger sample may reduce this variance and would be a logical next step in this research to assess the effectiveness of the MHT in determining soccer aerobic fitness in college females.

EFFECT OF BLOOD DONATION ON MAXIMAL OXYGEN CONSUMPTION

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The objective of this study was to determine whether donation of one standard unit of blood would affect maximal oxygen consumption (VO₂ max). Following consent, ten subjects (five males and five females), average age of 22 years, underwent a graded exercise test (GXT) to volitional exhaustion. Under standard conditions, a treadmill protocol designed for young healthy subjects was utilized to determine VO₂ max. The initial GXT was performed on a Friday for each subject. On the following Thursday, each subject donated one pint of blood to Sheppard Community Blood Center, the supplier of blood to hospitals in Aiken, SC. The donated blood was used for patients needing blood in accordance with standard procedures. Twenty-four hours after completion of blood donation, each subject underwent a second maximal GXT that was carried out exactly as the initial GXT. Paired t tests were used to determine probability levels for differences in pre- and post-blood donation VO₂ max. Statistical significance was established at the $p < 0.05$ level. For all male and female subjects, the mean \pm SD pre-blood donation VO₂ max was 36.0 ± 4.3 and dropped significantly ($p = 0.001$) to 32.0 ± 5.1 following donation. The drop was more prominent in males. These findings indicate that VO₂ max is attenuated 24 hours after blood donation. While the authors support the practice of donating blood, it is suggested that athletes and exercisers avoid donating blood during the days prior to an important event involving strenuous physical activity.

Supported in part by a University of South Carolina Aiken Executive Vice Chancellor Grant for undergraduate research

VALIDITY AND RELIABILITY EVIDENCE OF OMRON Pedometers

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The purpose of this study was to establish validity and reliability evidence for the Omron HJ-151 and HJ-720ITC pedometers under controlled and free-living conditions. A total of 47 adults (23 females; age = 24 ± 4.4 yrs; BMI = 25.7 ± 4.2 kg/m²) participated in this study. In the controlled setting, 34 participants completed three randomized 100-m walking trials through a range of scripted walking speeds (slow, moderate, very brisk) for each pedometer model. In the free-living setting, 31 participants completed one 1-mile walk on a standardized course for each model. HJ-151 pedometers were worn around the waist at the right hip, left hip and mid-back; whereas HJ-720ITC pedometers incorporated right pocket, left pocket, and backpack positions in addition to the three waist-mounted sites. Absolute percent error (APE) scores were calculated to examine pedometer accuracy between actual steps (a criterion measure) and pedometer determined steps for each mounting position during the different settings. Coefficient of variation (CoV) was computed to describe inter-device reliability during the different settings. With the exception of the HJ-720ITC at the backpack position in the control setting (mean APE = 3.4%), the HJ-151 and HJ-720ITC accurately reported step counts under controlled and free-living conditions (all APE values $< 3.0\%$). Moreover, inter-device reliability evidence was established for the HJ-151 and HJ-720ITC under controlled and free-living conditions (all CoV values $< 2.1\%$). The Omron HJ-151 and HJ-720ITC pedometers demonstrated validity and reliability at various mounting positions under controlled and free-living conditions with both healthy and overweight adults.

RESISTANCE TRAINING EFFECTS ON BRACHIAL ARTERY FLOW MEDIATED DILATION: A META-ANALYSIS

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A meta-analysis was performed on the effects of resistance training (RT) on brachial artery flow mediated dilation (FMD). A search of online data-bases was conducted in the first quarter of 2008. Studies which examined FMD and utilized whole body RT were included. Studies were excluded if the RT protocol used less than half of all major muscle groups or if sufficient information to generate an analysis was not available. Articles which assessed two RT treatments were divided into separate treatment groups. Eighty-six studies were evaluated. Twelve studies were included and formed 14 study groups. There was an overall positive standard difference in the means of 0.459 (95% CI = 0.321, 0.597, $Z = 6.53$, $p < 0.001$). Of those, four studies reported no concurrent cardiovascular training and generated a standard difference in the means of 0.151 (95% CI = -0.126, 0.428, $Z = 1.066$, $p = 0.286$) while 10 studies included aerobic training and generated a standard difference in the means of 0.561 (95% CI = 0.402, 0.720, $Z = 6.916$, $p < 0.001$). RT appears to have no effect or a small positive effect on FMD which is increased with concurrent cardiovascular training.

O17

O19

O18

O20

GEOCACHING: UTILIZING TECHNOLOGY TO INCREASE PHYSICAL ACTIVITY ON CAMPUS

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This pilot project was designed to encourage physical activity in a segment of the university population that is drawn to technology for their leisure time pursuits. GeoCaching is a widely popular environmental adventure game where players use Global Positioning Systems (GPS) technology to locate a hidden object (cache) based on its longitude and latitude coordinates. Locating a cache requires the player to hike a short distance. Students were offered the opportunity to check out a GPS unit and pedometer through the Eco Adventures program on campus and attempt to find hidden caches. We assessed initial student interest, distance walked, and number of students who returned to utilize this activity a second time. In the first 30 days, forty-one students checked out a GPS unit and pedometer from the Eco Adventures office in an attempt to find an introductory cache. The average distance walked was 886 steps or just under a half mile. Eight students returned within 2 weeks to complete a more difficult "find" and averaged 8012 steps or about 4 miles. The distances walked during the more difficult finds represent a significant amount of physical activity and suggest that geocaching would make a great addition to the physical activities offered to students on campus.

CHANGES IN VASCULAR & PHYSICAL FUNCTION WITH EXERCISE TRAINING IN THE OLDEST OLD

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021

The vasculature responds favorably to regional exercise, even in those in their 9th-10th decade of life. Few studies have examined whether changes in vascular function can be induced through whole-body training and contribute to preserving functionality in the oldest old. **PURPOSE:** To determine the effects of 8 wks of training on measures of vascular and physical function in individuals in their 8th-10th decade of life. **METHODS:** Subjects (Age: 83±5yrs) engaged in 8 wks of structured exercise, consisting of resistance/aerobic training, for 60min, 2-times per wk. Brachial artery dimensions and reactivity (BAR) were measured before and after, using high resolution ultrasonography. The PFP10 was used to assess activities of daily living. **RESULTS:** Training volume increased significantly from the first to the last week of training (Resistance: 2920±1328 to 5981±1749 lbs; Aerobic: 3.5±1.3 to 4.6±1.5U). Brachial artery resting (Pre: 4.41±0.91 to Post: 4.49±0.94, p=0.005) diameter increased significantly after training (p<0.05). BAR increased in 6 of 9 participants (Pre: 3.8±1.8% to Post: 5.0±2.2%, p=0.17). Significant changes in physical function were noted in all PFP10 domain scores, except upper body flexibility. The PFP10 score increased 20% (Pre: 50±16U to Post: 59±17, p=0.02). **CONCLUSION:** This study indicates the ability to progress individuals, in their 8th to 10th decade of life, in an exercise program. The data suggest the training contributed to an increase in vascular (although not all participants) and physical function.

This research was supported by a grant from the NIA (1 P01 AG022064) (S.M. Jazwinski)

EFFECT OF AEROBIC FITNESS ON CARDIORESPIRATORY AND STRESS HORMONE RESPONSES TO CONCURRENT MENTAL AND PHYSICAL STRESS

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022

The purpose of this study was to examine the effect of aerobic fitness on cardiorespiratory and stress hormone (cortisol [CORT], epinephrine [EPI], and norepinephrine [NE]) responses to concurrent mental and physical stress. Eight above average (high-fit [HF], VO₂max = 51.18 ± 2.09 ml•kg⁻¹•min⁻¹) and eight below-average fitness (low-fit [LF], VO₂max = 36.58 ± 3.36 ml•kg⁻¹•min⁻¹) participants completed two experimental conditions. The exercise-alone condition (EAC) consisted of cycling at 60% VO₂max for 37 minutes, while the dual-stress condition (DSC) included concurrent participation in a mental challenge while cycling. Heart rate, respiration rate, minute ventilation, and ventilatory efficiency were exacerbated in the DSC, and were also elevated in the HF participants. The DSC elicited greater overall CORT, EPI, and NE responses. Additionally, LF participants had a greater overall release of CORT between conditions. However, HF demonstrated greater EPI and NE responses, paralleled with cardiorespiratory responses. Thus, LF individuals seem to demonstrate unnecessary and possibly unfavorable CORT responses to the DSC compared to HF individuals. The higher levels of EPI and NE in HF participants may explain the elevated cardiorespiratory responses compared to LF participants.

PROFILES OF SEDENTARY BEHAVIOR IN CHILDREN AND ADOLESCENTS: NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY 2001-2006

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023

Objective: To show the prevalence of time spent in leisure time sedentary behaviors (LTSB) (e.g., TV/video and computer use) in youth in the U.S. **Methods:** National Health and Nutrition Examination Survey 2001-06 was analyzed examining the selected self-report sedentary variables, age groups (2-5, 6-11, and 12-15 years of age), ethnic groups (European (EA), African (AA), and Mexican American (MA)), and International Obesity Task Force BMI classifications (normal weight, overweight, obese). The sample included 8,707 (50.7% males) young people aged 2 to 15 years. Seventy percent of the sample was normal weight, 18.1% was overweight, and 11.5% was obese. The total proportion of young people engaged in TV/video, computer, and total screen time ≥ 2 hours daily was 33.0%, 6.7%, and 47.3%, respectively. More males (49.4%) versus females (45.0%); older adolescents (12-15 yrs: 56.0%) versus younger age groups (2-5 yrs: 35.3% and 6-11 yrs: 49.1%); AA (66.1%) versus EA (42.5%) and MA (48.1%); and obese (58.5%) versus normal (44.6) and overweight (58.5%) young people spent ≥ 2 hours daily in screen time than their counterparts. Nearly half (47%) of U.S. young people exceed the recommended amount (≤ 2 hours/day) of time in LTSB. Further, it appears there are gender (49% males), age (56.0% 12-15 yrs), ethnic group (AA 66.1%), and BMI-defined weight status (obese 58.5%) differences in exceeding LTSB recommendations. This is of concern since emerging research has highlighted the health risks associated with extended bouts of LTSB including metabolic syndrome, diabetes, cardiovascular disease and obesity in young people.

WEIGHT MANAGEMENT AND HYPERTENSION SERVICES IN A RURAL PUBLIC HEALTH CLINIC

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024

Purpose: To improve chronic disease health outcomes through a culturally and linguistically competent, preventive care intervention for the underserved, economically disadvantaged, underinsured, people of a rural Alabama county. **Method:** A free, weekly clinic is held at the county health department. The clinic is staffed by Samford University pharmacy and exercise science faculty, a public health pharmacy practice resident, senior pharmacy students, and undergraduate exercise science majors. During weekly visits patients have baseline measures assessed and are interviewed on medication therapy, dietary practice, and exercise regimen. **Results:** In 2005 and 2006, new patients making clinic visits amounted to 100 and 105, respectively. The intervention clinic averages 10 patients per week. Adult participants at their initial clinic visit had a mean age of 55.7±17.8 and BMI of 32.8±7.2. Their initial systolic blood pressure was 141.3±22.1 mmHg and diastolic 81.7±12.2. Where follow-up blood pressures were available (n=96), the mean change in systolic blood pressure was a reduction of 3.6±20.2 mmHg while the reduction in diastolic blood pressure had a mean of 1.4±13.0 mmHg. **Conclusion:** Preventive services provided by pharmacists and health educators appear to have a positive effect on clinical outcomes.

PARITY, WEIGHT LOSS, AND BODY COMPOSITION

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025

Whether weight loss affects body composition differently in parous vs. nulliparous women was investigated in 48 nulliparous and 65 parous women. Body composition measures were determined using dual energy x-ray absorptiometry (DXA) with the exception of intra-abdominal adipose tissue (IAAT) which was determined using computed tomography and insulin sensitivity (Si) was derived via collection of sera and tolbutamide-modified, frequently sampled intravenous glucose tolerance testing. A 2 (time) by 2 (parity; nulliparous and parous) analysis of variance (ANOVA) with repeated measures on time revealed a significant time effect with all variables except height. With the exception of age (parous older than nulliparous), there were no significant differences between the parity groups. There was however, a trend for parous women to have slightly less fat-free mass than the nulliparous women ($p=0.06$). When body composition was examined compartmentally, parous women had significantly more IAAT (19.04 kg before weight loss vs. 13.0 kg after weight loss, $p<0.01$) and lost a greater percentage than nulliparous women (46% vs. 36%); they also had significantly less overall limb and leg lean mass (18.4 ± 2.1 vs. 19.4 ± 2.1 kg; 13.85 ± 1.6 vs. 14.7 ± 1.7 kg respectively, $p\leq 0.01$ for both). In addition with weight loss, IAAT decreased and Si increased more in parous women. The results of this study confirm a disproportionate accumulation of IAAT among parous women when compared to nulliparous women and that parous women benefit more from weight loss with greater reductions in IAAT and improvements in Si.

RURAL APPALACHIA MIDDLE SCHOOL GIRLS SELF EFFICIACY AND PHYSICAL ACTIVITY BEHAVIOR IN RELATIONSHIP TO OBESITY

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026

The prevalence of obesity and type of II diabetes has continued to rise in the Southeast, especially the rural Appalachian region over the last several decades. The school setting has been shown to be a primary focus for intervention methods. The purpose of this survey was to assess middle school student,s behavior in relation to self-efficacy and physical activity. Students were asked to complete a questionnaire developed by the researchers including items from CDC School Health Index to assess nutrition, self- efficacy, and physical activity. Six regional school systems participated with a mean age of 11.74 for girls. Eighty-five percent of girls surveyed reported that most of their friends wanted them to be physically active. When asked if the girls felt they could play hard at school 93 percent reported that they either knew they could play hard or thought they could play hard. When asked how many sports teams they played on there was no percent difference between boys or girls. Forty percent of girls said they were really thinking of starting to be more physically active, while 31 percent said they started being physically active in the past six months. Fifty-nine percent of girls surveyed about their weight said they were about the right weight; twenty-six percent felt that they were either slightly or very overweight. Compared to U.S. middle school students, sixth grade students in this sample from rural Appalachia are receiving PE less often, but participating in sports teams more frequently. A greater proportion of girls in sample reported complying with physical activity recommendations

BIOMECHANICAL AND PROPRIOCEPTIVE DIFFERENCES BETWEEN DANCERS AND NON-DANCERS DURING DROP LANDINGS

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027

Dancers are athletes that often land from various heights with grace and without vision of the ground; thus relying on proprioception. The role of proprioception in landing has been previously investigated, but this is one of the first studies to examine dancers. The focus of this research was to determine if female dancers have differing kinematic and kinetic characteristics when landing from 3 heights (.2, .5, and .8m) both with and without vision compared to non-dancers. Ten collegiate dancers and ten collegiate controls who were neither dancers nor athletes volunteered for this study. Drops were self-initiated, and participants were instructed to land in a preferred manner on both feet. Lower limb joint angles were measured at 100Hz prior to landing through stability with a high speed camera and analyzed with HUMAN software. Ground reaction forces were measure with an AMTI indwelling force plate in the Center for Fitness and Human Movement Studies at Alamance Regional Medical Center. Preliminary results indicate biomechanical differences between groups as well as across height and vision conditions. Specifically dancers have more range of motion in joints from the highest drop compared to controls and have fewer kinematic differences between vision and no vision. These findings suggest that dancers rely on proprioception across conditions. Thus, training dancers to use proprioception in all aspects of their performance may impact dance instruction and reduce the risk of injuries when landing.

Supported by Elon Honors Program award to Katie Volkerding.

VARIABILITY IN 1-RM STRENGTH AMONGST PARKINSON DISEASE PATIENTS

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028

As a secondary consequence of pharmacological management of Parkinson disease, patients experience substantial motor fluctuations resulting in motor performance variability. PURPOSE: To assess the variability in 1-RM strength in PD patients. METHODS: A total of 37 PD patients were tested for 1-RM strength on two separate occasions, 3 to 5 days apart. The 1-RM protocol recommended by Kraemer and Fry was utilized. All 37 subjects completed testing on Knee Extension, 25 subjects completed testing on double chest press, and multi-biceps curl. Additionally, 12 subjects were tested on knee flexion and the maximum number of abdominal curls in performed one minute. RESULTS: Paired sample T-tests revealed significant differences between trial 1 and trial 2 for knee extension (64.3 ± 29.3 kg vs. 69.0 ± 30.8 kg, $p=0.001$), double chest press (56.3 ± 19.8 kg vs. 58.9 ± 20.5 kg, $p=0.043$), and multi-biceps (43.9 ± 15.6 kg vs. 46.5 ± 17.6 kg, $p=0.001$). No differences were noted for knee flexion or abdominal curls in one minute. CONCLUSION: Motor fluctuations in PD patients result in significant variability in 1-RM testing. While the initial 1-RM test is strenuous for the untrained population, it is unlikely that this alone would be the catalyst for the differences between sessions. The improvements are more likely the combined result of learning how to perform maximal voluntary contractions, familiarization with the experimental situation, and increased psychological comfort level during the second session. Exercise specialists should utilize caution when interpreting data from a single 1-RM session when designing exercise programs for PD patients.

RELATIONSHIP BETWEEN VO₂ AT LACTATE THRESHOLD (LT) AND VO₂ AT MAXIMAL RATE OF FAT OXIDATION (FATMAX) ACROSS AGE, FITNESS STATUS, AND SEX.

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We investigated the relationship between VO₂ at LT and VO₂ at FATmax across age, fitness status and sex. 77 men and 76 women (Age- 33.2±1.7, 29.4±1.4; BMI- 26.3±0.5, 29.1±0.9; %body fat-22.5±1, 35.1±1.2; VO₂peak-32.9±1.1, 23.9±1.1 respectively) completed a continuous incremental VO₂peak/LT protocol. Fat oxidation rates were determined using indirect calorimetry and averaged over the last minute of each 3-min stage. The highest recorded fat oxidation rate was chosen as FATmax. The breakpoint in the VO₂-blood lactate relationship was chosen as LT. VO₂ at FATmax preceded VO₂ at LT in both men and women (48% v. 54% & 42% v. 47% VO₂peak, p = 0.014, p < 0.001, respectively). The relationship between VO₂ at FATmax and VO₂ at LT remained constant across young and older subjects (18-35yrs - r=0.81 p<.001; >50yrs - r=0.74, P<.001), across VO₂peak after controlling for age (highest quartile v. lower 3 quartiles \hat{r} =0.58, \hat{r} =0.52, p<.001, respectively), and was maintained irrespective of sex (M \hat{r} =0.80, F \hat{r} =0.77, p<.001). RPE at Fatmax was lower than RPE at LT in all comparisons: young (10.6 ± 0.2 vs. 9.3 ± 0.2), least fit (10.9 ± 0.6 vs. 9.0 ± 0.2) women (10.5 ± 0.2 vs. 9.0 ± 0.2) (all p<.001); old (12 ± 1.5 vs. 9.4 ± 0.3, p=.085), most fit (11.1 ± 0.3 vs. 10.7 ± 0.5, p=.33) and men (11.5 ± 0.9 vs. 9.8 ± 0.3, p=.075). We conclude that the relationship between VO₂LT and VO₂Fatmax is robust and not affected by age, sex, or fitness status.

DP1

CAFFEINE CO-INGESTED WITH CARBOHYDRATE: ADDITIONAL ERGOGENIC EFFECT FOR ENDURANCE EXERCISE?

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Utilizing a systematic review of the literature combined with a meta-analysis, this investigation sought to objectively assess the effect of caffeine co-ingested with carbohydrate on endurance performance compared to that of carbohydrate alone. PubMed, SportDiscus, and ProQuest databases were searched using the key words: caffeine, endurance, exercise, carbohydrate, and performance. A total of 140 studies were identified by the search terms. Inclusion criteria were studies utilizing human subjects performing an endurance exercise bout that included a performance task, a carbohydrate (CHO) ingestion condition, and a CHO with the addition of caffeine (CHO+CAF) condition. Sixteen studies met the inclusion criteria. Data from each study were converted into an effect size, i.e. standardized difference in means. The effect sizes for each study ranged from -0.08 (no effect but tending to favor CHO only) to 1.54 (very strong effect favoring CHO+CAF). The overall effect size for the meta-analysis equaled 0.40 and was statistically significant (p = 0.001). Study effect sizes were not significantly related (p > 0.05) to the duration of the performance test, the method in which performance was assessed, or the caffeine dosage. Meta-analysis of the available literature indicates that CHO+CAF provides a significant added endurance performance benefit compared to CHO alone that approaches a moderate-sized effect (roughly 5.9% performance improvement).

DP2

ASSOCIATION BETWEEN DAILY ACTIVITY, VASCULAR AND PHYSICAL FUNCTION: ROLE OF HOMOCYSTEINE

DP Credeur, D Johansson, DA Dobrosielski, A Arce-Esquivel, E Ravussin, MA Welsch, SM Jazwinski. Dept. of Kinesiology, LSU, Pennington Biomedical Research Center, and Tulane Univ., LA

Elevated Homocysteine (Hcy) is associated with a decline in vascular and physical function in older adults. PURPOSE: (1) To examine physical activity patterns, vascular and physical function in older adults; (2) To explore the possible mediating role of Hcy. METHODS: Subjects from the Louisiana Healthy Aging Study (n=46; Age: 83±12) were used for these analyses. Physical activity patterns (Activity Index: AI) were obtained from the Yale Activity Questionnaire and doubly-labeled water (total daily energy expenditure: TDEE). Plasma Hcy was analyzed from fasting blood draws. Vascular structure (Carotid Arterial Mass: CMASS) and reactivity (Brachial Reactivity: BAR) were determined from ultrasonography. Physical function (PFP) was determined from tests for activities of daily living. RESULTS: The average score for the AI was 41±26U, and TDEE 2096.65±606.82.75kcal. Plasma Hcy was 10.55±3.33µmol/L. CMASS and BAR were 12.88±1.93mm² and 4.04±3.19%, respectively. The PFP score was 43.41±21.20U. All dependent measures were significantly related to age. A MANCOVA revealed those in the top AI and TDEE tertiles had lower Hcy (p<0.05), and higher PFP (p<0.05), compared to the lowest tertile. In addition, Hcy was related to CMASS (r=0.33, p=0.02), BAR (r=0.39, p=0.007), and PFP (r=-0.45, p=0.002). Both CMASS (r=-0.36, p=0.01) and BAR (r=0.37, p=0.01) were related to PFP. CONCLUSION: These data confirm significant age-dependent changes in vascular and physical function, which may be mediated through the effects of Hcy.

This research was supported by a grant from the NIA (1 P01 AG022064) (S.M. Jazwinski)

DP3

COMPARISON OF BODY COMPOSITION DISTRIBUTION IN AFRICAN-AMERICAN WOMEN WITH AND WITHOUT METABOLIC SYNDROME

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This study evaluated body composition distribution in middle-aged, African-American women with metabolic syndrome (MS) and those without metabolic syndrome (NMS). Height, weight, waist and hip circumferences, body composition variables via dual-energy X-ray absorptiometry, and resting blood pressure were measured in 46 African-American females (48±5 years, mean ± SD). Fasting blood glucose, triglycerides, and high-density lipoprotein cholesterol (HDL-C) were also measured. Subjects were divided into 2 groups based on their number of MS risk factors: MS (n=18) had ≥3 risk factors and NMS (n=28) had <3 risk factors. Risk factors included waist circumferences >88cm, blood pressure;†130/85 mmHg, triglycerides †150 mg/dL, fasting glucose †100 mg/dL, and HDL-C <50 mg/dL. A one-way analysis of variance (ANOVA) was performed to examine the body composition variables between the two groups. Values for body weight (NMS: 89.6±18.0 kg; MS: 103.5±20.1 kg), waist circumference (NMS: 98.8±16.5 cm; MS: 120.9±58.7 cm), % body fat (NMS: 44.0±5.9%; MS: 48.2±5.7%), trunk fat mass (NMS: 20.0±6.8 kg; MS: 28.4±9.0 kg), and android fat mass (NMS: 3.5±1.4 kg; MS: 4.9±1.6 kg) were all significantly higher in women with MS (p< 0.05). There were no significant differences between the groups for height, leg fat mass, gynoid fat mass, and lean body mass. It was concluded that African-American women with greater fat distribution in their upper bodies have a poorer metabolic risk profile.

DP4

FOREARM BLOOD FLOW AND REACTIVE HYPEREMIA IN WOMEN WITH FIBROMYALGIA

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It has been suggested that women with Fibromyalgia (FM) have impaired muscle blood flow. We evaluated the effects of a single bout of resistance exercise on forearm blood flow (FBF) in 9 women with FM (42±5 yrs; mean±SD) and 20 healthy (45±4 yrs) control (HC) women. Vasodilatory capacity was assessed by strain-gauge plethysmography at rest and followed by 4 minutes of circulatory occlusion (240 mmHg) to induce reactive hyperemia (RH) before and after 5 sets of 10 repetitions at 75% of 1RM on the leg press. Height, weight, body mass index and maximal muscle strength (FM: 1.64±0.06 m, 80.7±10.0 kg, 30±3.6 kg/m², 140±28.2 kg; HC: 1.67±0.06 m, 79.1±9.6 kg, 28.3±2.8 kg/m², 154.5±24.1 kg) were similar in both groups. Pre-exercise FBF (FM vs. HC: 4.1±2.4 vs 2.7±1.1 ml/min/100 ml of blood) at rest and following RH (FM vs. HC: 11.8±4.2 vs. 12.0±4.8 ml/min/per 100 ml of blood) were similar in both groups. Postexercise FBF (FM vs. HC: 3.9±2.3 vs. 3.4±2.2 ml/min/per 100 ml of blood) and peak vasodilatory capacity (FM vs. HC: 12.2±5.9 vs. 10.9± 4.2 ml/min/100 ml of blood) were also similar. Recovery time of FBF before and after exercise was similar between groups such that FBF decreased to baseline levels at 90 seconds. In contrast with current data, these results suggest that forearm flow-mediated dilation in women with FM is not different from healthy women before or after an acute bout of resistance exercise.

Sponsored by Grants from ACSM and FSU.

DP5

THE RELATIONSHIP BETWEEN CARDIORESPIRATORY FITNESS AND ALL-CAUSE MORTALITY IN WOMEN WITH IMPAIRED FASTING GLUCOSE AND NON-DIAGNOSED DIABETES.

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Background: The relationship between cardiorespiratory fitness (CRF) and all-cause mortality in women with impaired fasting glucose (IFG) or undiagnosed diabetes was evaluated. Methods: Participants were 3044 women (mean age 47.4) who were recognized as having impaired glucose or undiagnosed diabetes. All completed a maximal exercise treadmill test (1971 to 2001) and were without a previous cardiovascular disease event or diabetes at baseline. CRF was defined categorically as low (20%), moderate (middle 40%), or high (upper 40%) according to previously published ACLS manuscripts. Results: There was an inverse association between CRF levels and all-cause mortality. Those with moderate and high CRF were associated with 35% and 36% lower risk of mortality (p trend = 0.03), respectively. Also, an exercise capacity less than 7 METs was associated with a 1.5-fold higher death risk compared with 9 METs and greater (p for difference = 0.05). Lastly, it is worth noting that the death rates in unfit women with higher BMI (↑ 25 kg/m²) were more than double the death rates in fit women with higher BMI (54.6 vs. 24.6, respectively). Conclusion: CRF is a significant determinant for all-cause mortality in women with IFG or undiagnosed diabetes. Assessment of CRF levels provides important prognostic information independent of traditional risk factors.

DP6

ASSOCIATIONS BETWEEN PAIN, FATIGUE, AND INJURY IN COLLEGIATE BASEBALL PITCHERS

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Sports injury literature has mainly focused on biomechanical factors postulated to be associated with pitching injury, and has paid scant attention to pitching volume as an injury risk factor. The primary purpose of this study was to examine associations between pitching with pain, arm tiredness, and injury in collegiate baseball pitchers. A self-administered survey was used (N=628). College baseball pitchers (age=20.09±1.58 years) reported their pitching injuries to the arm, elbow, and shoulder that resulted in 7 or more days lost to pitching, and their experiences pitching with elbow or shoulder pain and/or arm tiredness in the past 12 months. Chi-square tests and odds ratios were used to examine associations between pain, fatigue, and injury. Significant associations were observed between pitching with pain and upper extremity injury (Chi-Square (1)=15.34; p<0.001), with individuals reporting pitching with pain being more likely to indicate an injury. (OR=2.24; 95% CI: 1.487, 3.374). Pitching when the arm was tired was also significantly associated with injury (Chi-Square (1)=15.194; p<0.001); individuals who reported pitching when the arm was tired were more likely to indicate an injury. (OR=2.74; 95% CI: 1.627, 4.629). Overall, 89% and 80% reported pitching when the arm was tired and pitching with pain over the past year respectively. Prevalence of elbow injury was 43%, shoulder injury was 32%, and arm injury was 12%. Our data yielded strong associations between pitching volume and injury, reinforcing the regulation of pitching volume and over-pitching among baseball pitchers. Funding: Yawkey Foundation

DP7

VO₂ AT MAXIMAL RATE OF FAT OXIDATION IS NOT RELATED TO THE LACTATE THRESHOLD IN ABDOMINALLY OBESE WOMEN WITH THE METABOLIC SYNDROME (MS).

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We examined the relationship between VO₂ at lactate threshold (LT) and at maximal rate of fat oxidation (FATmax) in abdominally obese women with and without MS. Three groups of females 1) MS (n=26; age, 47.8 ± 2.2 yrs; BMI, 34.5 ± 1.2 kg/m²; % body fat, 44.7 ± 0.9%; VO_{2peak}, 21.1 ± 0.7 ml/kg-1 min-1); 2) obese %body fat matched controls without MS (O) (n=52; age, 37.2 ± 2.4 yrs; BMI, 34.1 ± 1.1 kg/m²; % body fat, 44.7 ± 0.8%; VO_{2peak}, 17.6 ± 0.6 ml/kg-1 min-1); and 3) lean (L) (n=41; age, 28.9 ± 2.1 yrs; BMI, 21.8 ± 0.2 kg/m²; % body fat, 24.9 ± 1.0%; VO_{2peak}, 33.1 ± 1.3 ml/kg-1 min-1) completed a continuous incremental (3 min stages) VO_{2peak}/LT protocol. Fat oxidation rates were determined using indirect calorimetry and averaged over the last minute of each stage. The exercise intensity corresponding to the highest recorded fat oxidation rate was chosen as FATmax and LT was chosen as the breakpoint in the VO₂ blood lactate relationship. LT occurred at a higher %VO₂ than FATmax in all groups (63% v. 52%, 57% v. 48%, and 53% v. 46% in MS, O, and L respectively, p<0.05). Strong correlations between VO₂ at LT and FATmax were observed in O and L (r=0.68, r=0.69; p<0.001) but not in the MS group (r=0.39, p=0.053) after controlling for age and when VO₂ was expressed as ml/kg/min. This relationship persisted when VO₂ was normalized to fat-free mass (ml/kgFFM/min; MS, r=0.38, p=0.058; O, r=0.64, p<0.001; L, r=0.64, p<0.001). In abdominally obese females with the MS, the VO₂ at FATmax and LT are not related even after accounting for differences in fat free mass

DP8

EFFECTS OF CARDIORESPIRATORY FITNESS (CRF) ON ENDOTHELIAL FUNCTION FOLLOWING A HIGH-FAT MEAL IN POSTMENOPAUSAL WOMEN

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Endothelial dysfunction is a known predictor of coronary artery disease (CAD) and may be worsened in the postprandial state, particularly after ingestion of a high-fat meal. Post-menopausal status also confers a greater risk for the development of endothelial dysfunction and CAD, whereas CRF is positively associated with endothelial function. As humans spend much of their time in the postprandial state, we examined the effects of CRF (VO₂max) on postprandial endothelial function following the ingestion of a high-fat meal challenge (57% FAT, 25% PROT, 18% CHO) in 15 sedentary post-menopausal women (Age=56.6 +/- 4.1 yr; BMI=27.0 +/- 4.9 kg/m²; % body fat=40.9 +/- 7.1%; VO₂max =22.6 +/- 4.3 ml/kg/min; range 16.4-31.5 ml/kg/min). Subjects underwent an incremental VO₂max treadmill protocol and serial brachial artery flow-mediated dilation (BAFMD) measurements (baseline, 2 and 4-hours after meal ingestion) on 2 separate days. Percent BAFMD was quantified by comparing B-mode ultrasound images of the brachial artery at rest and during reactive hyperemia following 5-min of forearm occlusion with a blood pressure cuff at 50mmHg above systolic blood pressure. A significant relationship was observed between VO₂max and %BAFMD at 2 hours (r=.52, p=0.047) and 4 hours (r=0.63, p=0.012) postprandially. These results suggest that in postmenopausal women fitness is associated with increased %BAFMD following a high-fat meal challenge, with elevated fitness associated with an improved endothelial response in the postprandial period. This may be yet another mechanism by which increased CRF lowers cardiovascular risk

DP9

MU2

SATELLITE CELL ACTIVATION IN THE DIAPHRAGM FOLLOWING TRACHEAL OCCLUSION IN RATS

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This study investigated satellite cell activation following diaphragmatic loading, in an experimental model of tracheal occlusion. Acute bouts of tracheal occlusion were used to load the diaphragm, using an inflatable cuff that was surgically implanted in the trachea of young male rats. In the experimental group (n=3), rats experienced five sets of 8-10 occluded breaths five times weekly for two weeks. Occluded breaths were separated by 10 minutes of unoccluded (unloaded) breaths. In the sham group (n=3), the cuff remained deflated throughout all sessions. After the final session, the rats were euthanized and the diaphragm and soleus muscles were removed and quick-frozen. Immunofluorescence was used to detect satellite cells using Pax7, and the number of Pax7-positive cells was expressed per 100 muscle fibers. A similar number of satellite cells was detected in the diaphragm of experimental and sham groups (5/100 fibers vs. 4/100 fibers, respectively), but not in the soleus (7/100 fibers vs. 1/100 fibers, respectively). These findings indicate that acute bouts of intermittent tracheal occlusion were not sufficient to activate muscle regeneration in the diaphragm.

Supported by the Howard Hughes Medical Institute

MU1

MU3

INTERVAL SPECIFIC HAPLOTYPE ANALYSIS BETWEEN HIGH ACTIVE AND LOW ACTIVE MICE WITHIN CHROMOSOMES 9 AND 13

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Previous research shows that the level of physical activity is significantly regulated by genetics. However, the specific mechanisms of genetic regulation of physical activity have not been identified. The objective of this study was to use computational comparative genomics to conduct interval specific haplotype analysis within two strains of mice that are differentially active. Previously, C57L/J (high active) and C3H/HeJ (low active) mice were used to determine an essentially complete map of the genomic regions (QTL) associated with physical activity. The haplotype structure of all annotated genes (n=97) within the confidence intervals of the two most significant QTL (Chrm. 9, 7cM and Chrm. 13, 11cM) were compared using the Perlegen Haplotype Block Viewer and the recently released very dense SNP map (>8 million SNPs). Of the 97 annotated genes within the QTL, 51 percent of genes (n=18) in the Chrm 9 QTL and 61 percent of genes in the Chrm 13 QTL (n=40) were structurally different between C57L/J and C3H/HeJ mice. Included within these genes are genes that functionally could relate to regulation of physical activity, such as Actinin- α 2, butyrophilin subfamily 1, member A1, geranylgeranyl diphosphate synthase1 and aldo-keto reductase family 1. This study suggests that of the annotated genes within previously identified significant physical activity QTL, approximately 60% have differing haplotypes between high and low active strains. These methods effectively reduced the possible candidate genes involved in regulation of activity and have thus aided in narrowing the search for the regulatory genes of physical activity

EFFECT OF BODY MASS INDEX ON PHYSICAL FUNCTION IN PULMONARY DISEASE PATIENTS

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Objective: In older adults, obesity is associated with a greater risk of impaired physical function. Additionally, chronic obstructive pulmonary disease (COPD) patients also experience declines in physical function. Therefore, the purpose of this study was to examine the effects of body mass index (as a measure of obesity) on physical function and self-reported fatigue in COPD patients. Methods: This study included 268 COPD patients who completed pulmonary function testing, a 6-minute walk and stair climb test to assess physical function and a self-reported fatigue questionnaire. A general linear model controlling for disease severity was used to determine differences in measures of physical function and fatigue among normal (n=94), overweight (n=100) and obese (n=74) COPD patients. Results: Six minute walk distance was significantly less in COPD patients classified as obese (435.4 \pm 11.1 meters) versus COPD patients classified as overweight (481.2 \pm 9.6 meters) and normal weight (477.7 \pm 9.8 meters). Stair climb time was significantly longer in COPD patients classified as obese (14.2 \pm 0.5 seconds) versus COPD patients classified as overweight (12.0 \pm 0.4 seconds) and normal weight (12.5 \pm 0.4 seconds). Self-reported fatigue was significantly greater in COPD patients classified as obese (3.7 \pm 0.1 units) versus COPD patients classified as overweight (4.3 \pm 0.1 units) and normal weight (4.2 \pm 0.1 units). Conclusion: After controlling for disease severity, excess body weight significantly effects physical function and self-reported fatigue in COPD patients.

Supported by NIH grants HL 53755 and AG 1048

COMPARISON OF CALORIC EXPENDITURE CALCULATED BY A TREADMILL CALORIMETER AND INDIRECT CALORIMETRY DURING SUB-MAXIMAL EXERCISE

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MU4

Treadmill use has become a popular mode of exercise for individuals concerned with improving cardiorespiratory fitness and managing body mass. Many treadmills are equipped with a digital calorimeter to provide the user with an indication of one's caloric expenditure. The accuracy of these calorimeters has been scrutiny. Therefore, the purpose of this study was to determine the accuracy of a treadmill calorimeter during sub-maximal exercise. Twenty-six recreationally-active subjects (n=20 females) age 20.8 ± 1.3 yrs, height 168.9 ± 9.5 cm, mass 64.1 ± 13.1 kg volunteered to participate. Subjects walked and ran at 3.5 and 5.5 mph, respectively, for 20 minutes each on a motorized treadmill (TM) (TrackMaster Silver Series) while expired gases were analyzed by indirect calorimetry (IC) (ParvoMedics TrueOne 2400 metabolic cart). Linear regression and paired t-tests were used to compare caloric expenditure from IC and TM at both intensities. Caloric expenditure from IC and TM were significantly correlated for both walking ($r = 0.976$, $p < 0.001$) and running ($r = 0.985$, $p < 0.001$). There was a significant difference ($p < 0.001$) between the IC and TM for both walking and running at each minute (excluding minutes 2 and 3 for walking). Following 20 minutes, the treadmill calorimeter underestimated caloric expenditure (-11 ± 2 kcal) during walking and overestimated caloric expenditure (15 ± 3 kcal) during running. These results indicate that treadmill calorimeters may not accurately estimate caloric expenditure which may adversely affect individuals, fitness outcomes.

MU6

ANTIOXIDANT ENZYME FUNCTION IN ISCHEMIC AND PERFUSED CARDIAC TISSUE OF EXERCISED RATS

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MU5

Evidence shows exercise has a contributory role in cardioprotection against ischemia reperfusion (IR) damage. Although the exact mechanisms are not fully known, an existing rationale suggests that the protection is due to the involvement of endogenous antioxidant enzymes found in cardiac tissue. More specifically, the enzymes of potential interest in the exercised heart are catalase (CAT), glutathione peroxidase (GPx), and superoxide dismutase (SOD). PURPOSE: To identify the specific antioxidant enzyme(s) responsible for exercise induced cardioprotection against IR damage. METHOD: Thirty four-month old Sprague Dawley rats were subjected to either cardioprotective (3 days, 60 min, 70% VO₂max) or sedentary conditions. Twenty-four hours following exercise, or sedentary conditions, rats were anesthetized and exposed to *in vivo* ischemia (20 min) reperfusion (30 min). Arterial Evans Blue dye injections indicated ischemic and perfused myocardia. Hearts were excised and stored for assay of SOD (Mn and CuZn isoforms), GPx, and CAT activity. RESULTS: The cardiac area at risk was identical for all treatments. In all groups, no difference existed in antioxidant enzyme activities between ischemic and perfused tissue. When compared to sham hearts, sedentary hearts exhibited a significant rise in protein carbonyls while exercised hearts exhibited elevated MnSOD ($p < 0.05$). CONCLUSION: Exercise produced a significant rise in MnSOD activities, which were not diminished by ischemia. This increased antioxidant defense was associated with attenuation of oxidative stress and arrhythmia prevention during IR

MU7

QUERCETIN AS AN ANTIOXIDANT: A COMMUNITY TRIAL

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Quercetin is a polyphenolic flavonol that is commonly found in fruits and vegetables. *In vitro* experiments and animal studies indicate a strong antioxidant influence for quercetin. This study examined the effects of quercetin supplementation on antioxidant and oxidative measures in a community setting. Subjects (N=509) ages 18 to 78 years (44.7 ± 15.7 y) were randomized into 1 of 3 groups: Q-500 (500 mg quercetin/day, N=168), Q-1000 (1000 mg/day, N=165), or placebo (P) (N=164) using a double blind method and were then stratified by gender (60% F, 40% M) and BMI (27.0 ± 0.3). Subjects ingested 2 soft chew supplements twice daily (upon awakening, and between 2 pm and the last meal of the day) during the 12-week study period. Fasting blood samples were taken pre- and post-study on 504 subjects completing the study. Blood samples were analyzed for measures of oxidative stress (F₂-isoprostanes) and antioxidant capacity (FRAP). FRAP ($\mu\text{M/L}$ ascorbate equivalents) increased significantly for Q-500 (452 to 496) and Q-1000 (455 to 491) ($P=0.007$ and $P=0.009$, respectively) relative to P (485 to 463) for women but not men. Changes in plasma F₂-isoprostanes did not differ between groups ($P=11.6 \pm 3.6$, Q-500= 8.6 ± 3.3 , Q-1000= 12.4 ± 3.6 pg/ml, $P\text{-value}=0.610$) even after adjustment for age, gender, or BMI. After ingestion, quercetin undergoes extensive metabolic transformation into conjugate forms. Subsequently, its ability to perform as an antioxidant is greatly reduced. Quercetin effectively increased the plasma antioxidant potential in women, but failed to induce significant positive changes in oxidative stress in either gender. Supported by a grant from Quercegen Pharma, Newton, MA and Coca-Cola, Atlanta, GA

INFLUENCE OF SUPPLEMENTAL QUERCETIN AND EPIGALLOCATECHIN 3-GALLATE ON IMMUNITY AND INFLAMMATION

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Quercetin is a flavonol with broad spectrum bioactive effects that include anti-inflammatory, anti-pathogenic, antioxidant activity, and immunoregulatory influences. The purpose was to test the influence of 1000 mg quercetin (Q) with or without 120 mg epigallocatechin 3-gallate (EGCG), 400 mg isoquercetin, and 400 mg EPA-DHA (Q-EGCG) on changes in measures of immunity and inflammation before and after a 3-day period of heavy exertion. Trained cyclists (N=39) were randomized to placebo, Q, or Q-EGCG, and ingested supplements in a double blinded fashion for two weeks prior to, during, and one-week after a 3-d period in which subjects cycled for 3 h/day at ~57% Wattmax. Blood and saliva samples were collected before and after two weeks supplementation, immediately following the exercise bout on the third day and 14-h post-exercise. Two weeks supplementation resulted in a significant increase in granulocyte oxidative burst activity (GOBA) in Q-EGCG relative to P and increases in plasma quercetin for Q and Q-EGCG. Immediately after the third exercise bout, significant decreases for C-reactive protein, plasma IL-6 and IL-10 were measured in Q-EGCG compared to P. Granulocyte colony stimulating factor (GCSF) and CRP were reduced in Q-EGCG 14-h post-exercise. Two weeks supplementation with Q-EGCG was effective in augmenting GOBA, and countering inflammation following three days of heavy exertion in trained cyclists. Supported by a grant from Quercegen Pharma.

MITOCHONDRIAL KATP CHANNEL INHIBITION BLUNTS ARRHYTHMIA PROTECTION IN ISCHEMIC EXERCISED HEARTS

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MU8

Exercise is well established as a cardioprotective intervention, though the precise mechanisms of protection are not fully known. The purpose of this investigation was to test whether the mitochondrial ATP sensitive potassium channel (Mito KATP) provides exercise-induced cardioprotection against arrhythmias generated during ischemia reperfusion (IR) in sedentary and exercised male Sprague Dawley rats. Treadmill exercise was performed at 70% maximal aerobic capacity for 60 minutes on 3 consecutive days. 24 hours following day 3 exercise, anesthetized rats received a surgically induced IR (I = 20 min, R = 30 min) to produce arrhythmias. Two separate groups of exercised rats received pharmacologic inhibitors to either the Mito KATP channel (5HD) or the sarcolemmal ATP sensitive potassium channel (HMR-1098) prior to IR. Electrocardiographic recordings were evaluated for ventricular arrhythmias using an established arrhythmia scoring system. IR induced a significant arrhythmic load ($P < 0.001$) which was attenuated by exercise. Exercised animals receiving 5HD did not exhibit arrhythmic cardioprotection and had a rise in protein carbonyl formation. Alternately, MnSOD antioxidant activity was elevated in exercised hearts independent of treatment. In combination with previous results, these findings indicate that both MnSOD and the mitochondrial ATP sensitive potassium channel are independent cardioprotective mechanisms in the exercised heart.

Supported by App State Univ Research Council and the National Institute of Health (NHLBI; JCQ - 1R15HL087256-01).

QUERCETIN,S INFLUENCE ON EXERCISE PERFORMANCE AND MUSCLE MITOCHONDRIAL BIOGENESIS IN UNTRAINED MALES

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MU9

The purpose of this study was to determine the influence of 2-weeks quercetin supplementation (1000 mg/day) compared to placebo ingestion on exercise performance and markers of mitochondrial biogenesis in skeletal muscle in untrained, physically inactive, young adult males (N=26, age 20.2±0.4, VO₂max 46.3±1.2 ml.kg.min⁻¹). Utilizing a randomized, crossover design with a 2-week washout period, subjects provided blood and muscle biopsy samples pre- and post-supplementation periods, and were given 12-minute time trials on 15% graded treadmills following 60-min moderate exercise pre-loads at 60% VO₂max. Skeletal muscle mRNA expression tended to increase during supplementation with quercetin compared to placebo for SIRT-1 (P-value=0.152), PGC-1 α (P=0.192), cytochrome c oxidase (P=0.081), and citrate synthase (P=0.166). In summary, 1000 mg/d quercetin supplementation for two weeks by untrained males was associated with an improvement in 12-minute treadmill time trial performance and 16% to 25% increases above placebo levels for mRNA expression for four genes related to mitochondrial biogenesis.

Supported by a Grant from Quercegen Pharma

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